

Application Descriptions

Lighting

Lighting Actuators

Supplement 1 LTE-Mode Extensions

Summary

This document specifies the Functional Blocks for actuators in the Lighting Application Domain.

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References

- [01] Chapter 3/7/2 "Datapoint Types"
- [02] Chapter 7/1/2 "Common Sensors"
- [03] Chapter 7/20/1 "Lighting Sensors"
- [04] Chapter 7/20/2 "Lighting Actuators"
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Abbreviations

COV	Change Of Value
IR	LTE-Mode InfoReport service
LDAB	FB Light Dimming Actuator Basic
LDSB	FB Light Dimming Sensor Basic
LSAB	FB Light Switching Actuator Basic
LSSB	FB Light Switching Sensor Basic
LTE-Mode	Logical Tag Extended easy mode
SCS	FB Scene Sensor
W	LTE-Mode Write service

1 FB Light Switching Actuator Basic (LSAB)

1.1 Aims and objectives

The definitions in this document for FB Light Switching Actuator Basic (LSAB) are an extension to the existing specification in [04] to describe the standardized LTE-Mode runtime interface and LTE-Mode specific parameters of FB LSAB.

The FB LSAB is used in the Application Domain Lighting:

- to exchange light switching commands and status information with light Switching and Dimming Sensors (traditional direct sensor actuator communication) ⇒ see also LTE-Mode extensions for [03]
- to be connected and controlled by a Lighting Controller (sensor controller actuator communication)

1.2 Functional specification

1.2.1 Overview

This functional specification focuses on LTE-Mode specific runtime process data exchange and LTE-Mode specific parameters. LSAB functionality, state machines and standardized LSAB parameters are already specified in [04] and are therefore only referenced in this document.

Runtime interworking and binding of LSAB is based on LTE-Mode zoning concepts. Control commands and status feedback information are exchanged according to LTE-Mode mechanisms in a common LightingGroup.

In the LTE-Mode runtime system LightingGroup is mapped to existing LTE-Mode Geographical zones. Runtime process communication of LSAB is disabled if LightingGroup is 'OutOfService'

If the LSAB is connected to a Lighting Controller, the LTE-Mode runtime data interface of the LSAB is partially different from the runtime interworking between LSAB and lighting sensors LSSB/LDSB. The different mechanisms in the LTE-Mode runtime system are outlined in the following clauses.

The connection type (Sensor- or Controller-Connection) of the LSAB is configurable via parameter ActuatorMode.

1.2.2 Application model for direct sensor – actuator binding

1.2.2.1 Illustrations

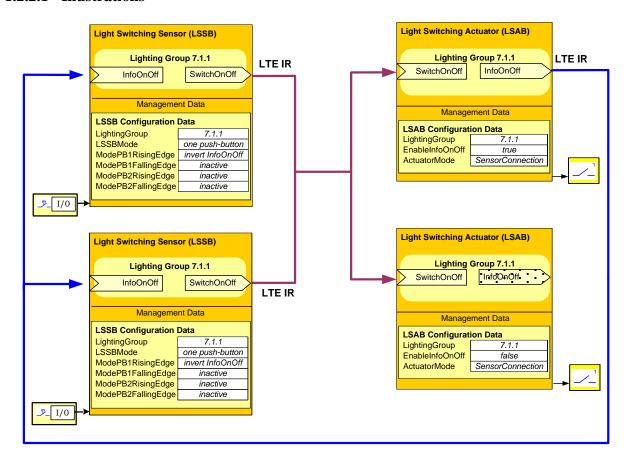


Figure 1 – Example of direct actuator communication with 2 push buttons (toggle mode)

Figure 1 illustrates the binding of two parallel Light Switching Sensors LSSB with two parallel Light Switching Actuators LSAB in the same LightingGroup.

Control command SwitchOnOff is provided by both LSSB using LTE-Mode InfoReport Service and received by both LSAB in the same LightingGroup.

Both LSSB are configured to invert the output SwitchOnOff on each transmission according to the received InfoOnOff actuator feedback information (toggle mode).

Actuator feedback information InfoOnOff is provided by one LSAB actuator (configured as group-speaker) to support toggle functionality in the LSSB. Transmission of InfoOnOff status information may be enabled or disabled via LSAB configuration parameter EnableInfoOnOff.

NOTE 1 Since both actuators are controlled together, InfoOnOff could in principle be provided by both LSAB. On/Off value of both actuator feedback messages would normally be identical (\Rightarrow last wins principle on the input in the LSSB). Redundant InfoOnOff messages create unnecessary traffic and should be avoided.

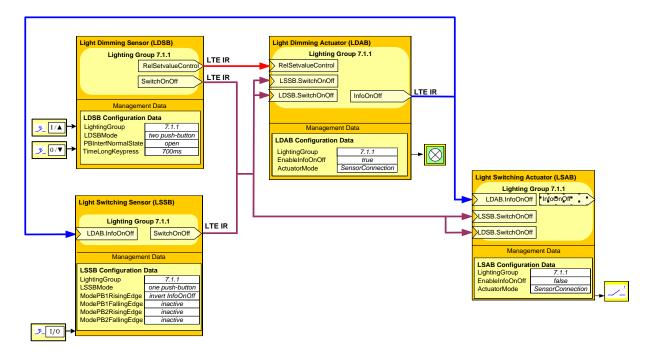


Figure 2 – Example of parallel light switching and dimming actuators in the same LightingGroup

Figure 2 illustrates runtime interworking mechanisms in case of combined light switching and dimming functionality in the same LightingGroup.

SwitchOnOff control commands are provided by both LSSB and LDSB in the same LightingGroup. LSAB receives and executes SwitchOnOff commands from LSSB and LDSB (last wins principle).

Dimming commands from LDSB (e.g. RelSetvalueControl) are processed by the LDAB but are ignored by the LSAB. Dimming commands may change the light On/Off state of the LDAB.

LDAB.InfoOnOff state of the dimming actuator is propagated to the LSAB in order to synchronize On/Off state of dimming and switching actuators in the same LightingGroup. The LSAB can, if wanted, also listen to the Output InfoOnOff of the LDAB. This allows switching the LSAB through the LDAB in a master/slave relationship.

LTE-Mode InfoReport inputs LSSB.SwitchOnOff, LDSB.SwitchOnOff and LDAB.InfoOnOff on the LSAB have the same priority (last wins principle).

Actuator feedback information InfoOnOff shall be provided by one LDAB actuator (configured as group-speaker) to support toggle functionality in the LSSB/LDSB and to synchronize On/Off state of parallel LSAB in the same LightingGroup.

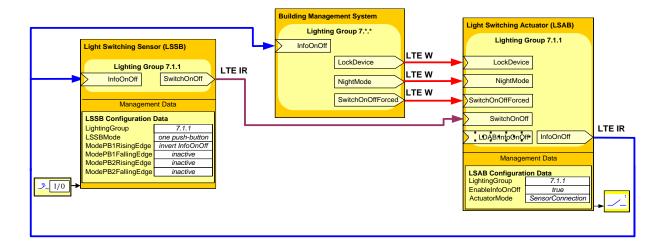


Figure 3 – Example of Building Management System overriding local LSSB commands

Figure 3 shows direct binding of a Light Switching Sensor LSSB with a Light Switching Actuator LSAB as illustrated in Figure 1. In addition a Building Management System may control the actuator with highest priority using SwitchOnOffForced commands and LTE-Mode Write Service. LTE-Mode wildcard features may be used to control all actuators in the same BuildingZone (e.g. 7.*.*).

Prioritized SwitchOnOffForced commands inhibit low priority input SwitchOnOff on the LSAB.

Autonomous switching off of the actuator may be enabled/disabled via NightMode control input using LTE-Mode Write Service. Control commands with low priority can temporarily set the actuator in the On state (e.g. triggered via LSSB by the cleaning staff) but the actuator will autonomously switch off the light after a defined time period.

A Building Management System may freeze the actual state of the actuator via control command LockDevice using LTE-Mode Write Service. The specific behavior related to lock and unlock states and transitions can be controlled with additional LSAB configuration parameters.

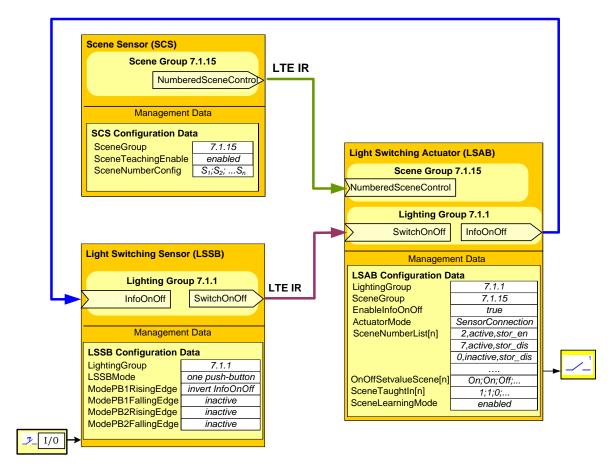


Figure 4 – Example Scene Control

Figure 4 illustrates the binding of a LSAB with a LSSB and a Scene Sensor SCS (see [02]).

SCS provides NumberedSceneControl information to recall or teach-in a scene. NumberedSceneControl message is distributed using LTE-Mode InfoReport mechanisms in a dedicated SceneGroup.

In the LTE-Mode runtime system SceneGroup is mapped to existing LTE-Mode Geographical zones.

On LSAB the NumberedSceneControl input has the same priority as SwitchOnOff input (last wins principle).

NumberedSceneControl command is received and processed by the LSABs belonging to a SceneGroup. After the execution of a scene recall command the LSAB group-speaker will provide updated InfoOnOff feedback information.

Execution of the scene command by the LSAB depends on various local scene configuration parameters. Therefore multiple LSAB in the same LightingGroup may react differently. In this case InfoOnOff status of the group-speaker will not represent the state of all LSAB in the LightingGroup!

It is highly recommended that pre-engineered scene configuration (storage function disabled) shall be identical for all LSAB in the same LightingGroup. The problem of inconsistent scene execution does not occur if scene learning feature is enabled on all LSAB for a given scene number.

NOTE 2 Calling scenes without storage function (DPT_SceneNumber, DPT_ID 17.001) is not supported. DPT_Scene_AB (DPT_ID 1.022) is not supported either.

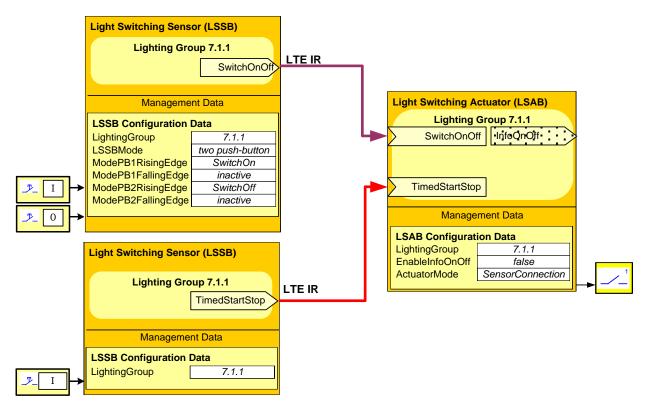


Figure 5 – Example of Autonomous switch-off function via TimedStartStop signal

Figure 5 illustrates the mechanism to trigger an autonomous switch-off function on the LSAB.

LSSB may provide an optional, dedicated trigger signal TimedStartStop to implement e.g. a 'staircase-function'. TimedStartStop is distributed using LTE-Mode InfoReport mechanisms.

Input TimedStartStop on the LSAB will temporarily switch the actuator in the On-state for a defined time. Afterwards LSAB executes an autonomous switch-off function. A manufacturer-specific pre-warning action may be performed.

1.2.2.2 LSAB input signals

Binary On/Off state of the LSAB can be controlled via various input Datapoints. The application program of the actuator prioritizes the different inputs to determine the resulting On/Off state.

- **SwitchOnOff**: low priority LTE-Mode IR input to receive light switching commands from lighting sensors.
 - input LSSB.SwitchOnOff to support light switching commands from LSSB
 - input LDSB.SwitchOnOff to support light switching commands from LDSB
 - Both SwitchOnOff inputs are mandatory to connect the LSAB to Light Switching Sensors (LSSB) or Light Dimming Sensors (LDSB).
- **LDAB.InfoOnOff**: low priority LTE-Mode IR input to receive the actual light On/Off state of a parallel dimming actuator LDAB in the same LightingGroup.
- This input is mandatory to synchronize the On/Off state of the Light Switching Actuator with parallel dimming actuators; see Figure 2.
- **TimedStartStop**: optional, low priority LTE-Mode IR trigger input to switch the LSAB actuator in the On-state for the time that is specified by the parameter TimedOnDuration and afterwards the LSAB will execute an autonomous switch-off function. Before the On time elapses, a manufacturer specific pre-warning action may be performed. The pre-warning time shall be specified by the parameter PrewarningDuration. For further details: see [04]
 - input LSSB.TimedStartStop to support trigger commands from LSSB
 - input LDSB.TimedStartStop to support trigger commands from LDSB

NOTE 3 Alternatively this behavior may also be achieved via NightMode control command in combination with e.g. SwitchOnOff input. Combination of TimedStartStop and NightMode inputs is usually not meaningful

• **NightMode**: optional LTE-Mode W input to be written by e.g. a Building Management Station.

This input is used to activate/deactivate night mode of the actuator by a management client. During night mode permanent On state of the actuator is disabled. Input signals with low priority can temporarily set the actuator in the On state (e.g. triggered by the cleaning staff) but the actuator will autonomously switch off the light after a defined time period (e.g. defined by the parameter TimedOnDuration).

Before the actuator autonomously switches off, a manufacturer specific pre-warning action may be executed (e.g. blinking of the light). The parameter PrewarningDuration defines the duration between the start of this action and the time when the switch-off function is actually executed.

NOTE 4 Alternatively this behavior may also be achieved via TimedStartStop input. Combination of TimedStartStop and NightMode inputs is usually not meaningful

- **NumberedSceneControl**: optional, low priority LTE-Mode IR input to receive numbered scene commands from a scene sensor SCS.
 - This trigger input is used to call and store a maximum of 64 different On/Off-States in the LSAB.
 - NumberedSceneControl message is distributed by FB Scene Sensor SCS using LTE-Mode InfoReport mechanisms in a dedicated SceneGroup. In the LTE-Mode runtime system SceneGroup is mapped to existing LTE-Mode Geographical zones.
 - The number of scenes supported by the actuator can be lower than 64. It is optionally allowed that the functionality of the actuator is solely limited to recalling scenes without teaching.

Scene configuration parameters:

- SceneLearningModeEnable defines globally for all scenes if teach-in function is enabled or not
- SceneNumberLists defines a list of Scene Numbers that are supported by FB LSAB.

Each element of the list defines for a dedicated scene index:

- the corresponding SceneNumber (0 to 63)
- scene active/inactive
- storage function enable/disable
- OnOffSetvalueScene defines the recalled On/Off state for each scene index

NOTE 5 In the LTE-Mode implementation the Datapoints for binary scene control as well as SceneNumber to recall numbered scenes are not supported.

- **SwitchOnOffForced**: optional, high priority LTE-Mode W input to be written by e.g. a Building Management Station.
 - This control command is used to overrule lower priority inputs by a management client according to the following rules:

Value of SwitchOnOffForced	Mandatory behavior of the actuator
00b, 01b	SwitchOnOffForced is inactive. Low priority inputs are active.
11b	high priority On-state
10b	high priority Off-state

- **LockDevice**: optional, high priority LTE-Mode W input to be written by e.g. a Building Management Station. This control command is used to freeze the actual setpoint of the actuator by a management client. The specific behavior related to lock and unlock states and transitions can be controlled with additional parameters. For further details: see [04].
- ControlModeUser: optional LTE-Mode IR input to receive a control command from FB LSSB or LDSB to indicate whether automatic control or manual control is requested by the room occupant. This process signal is usually intended for the runtime communication between a Lighting Sensor and a Lighting Controller, see specification of FB LSSB / LDSB and illustration in clause 1.2.3.
- However, from the perspective of the Lighting Sensor the Controller behaves like a LSAB actuator proxy to emulate traditional direct Sensor Actuator communication. Therefore input 'ControlModeUser' is listed in this document as process signal of actuator proxy FB LSAB.
- In case of sophisticated actuators with built in controller functionality this input signal may also be useful on the LSAB for direct Sensor Actuator communication.

If the LSAB is directly controlled by lighting sensors, the LSAB input SwitchOnOffControlCmd is disabled

The behavior is controlled by configuration parameter ActuatorMode

1.2.2.3 Input priority handling

High priority input SwitchOnOffForced having the value 'high priority On-state' or 'high priority Offstate' shall override all lower priority inputs:

- SwitchOnOff,
- LDAB.InfoOnOff,
- NumberedSceneControl,
- TimedStartStop
- NightMode

so that only SwitchOnOffForced input shall be relevant for generating the On/Off state of the actuator.

Groups of inputs with the same priority shall be processed independently from each other, i.e. the last message notification to an input shall be executed.

The functionality of LockDevice input and the behaviour related to lock and unlock states and transitions is specified in [04].

1.2.2.4 LSAB output signals

• **InfoOnOff**: LTE-Mode IR output ¹⁾

Mandatory output to provide the current On/Off state of the actuator. Transmission of this output signal is triggered by COV and is cyclically repeated (heartbeat).

This information can be used solely for visualization purposes or for implementing the toggle functionality in the Light Switching Sensor (LSSB) or Light Dimming Sensor (LDSB).

Spontaneous transmission of InfoOnOff in the LTE-Mode runtime system may be enabled or disabled via configuration parameter EnableInfoOnOff. However the value of InfoOnOff is always accessible via Property Read service.

• **ActuatorStatus**: LTE-Mode IR output ¹⁾

Optional output containing the actual On/Off Level and various additional statuses attributes. Details: see DPT definition in [01]

Spontaneous transmission of ActuatorStatus in the LTE-Mode runtime system may be enabled or disabled via configuration parameter EnableActuatorStatus. However the value of ActuatorStatus is always accessible via Property Read service.

• ActuatorErrorInfo: LTE-Mode IR output

Optional output containing error attributes of the actuator. Details: see DPT definition in [01] Spontaneous transmission of ActuatorErrorInfo in the LTE-Mode runtime system may be enabled or disabled via configuration parameter EnableActuatorErrorInfo. However the value of ActuatorErrorInfo is always accessible via Property Read service.

- ControlModeEff: optional LTE-Mode IR output to indicate if manual or automatic control is currently active in the LightingGroup. This process signal is usually intended for the runtime communication between a LSSB/LDSB and a Lighting Controller, see specification of FB LSSB / LDSB and illustration in clause 1.2.3. However, from the perspective of the LSSB / LDSB the Controller behaves like a LSAB actuator proxy to emulate traditional direct Sensor Actuator communication. Therefore output 'ControlModeEff' is listed in this document as process signal of actuator proxy FB LSAB.
- In case of sophisticated actuators with built in controller functionality this signal may also be useful on the LSAB for direct Sensor Actuator communication.

¹⁾ At runtime both actuator status outputs may be activated by configuration
Basic InfoOnOff information to implement the toggle functionality in the Lighting Sensor
Extended ActuatorStatus information for visualization purpose, e.g. on a Building Management Station.

1.2.3 Application model for lighting sensor – controller – actuator binding

1.2.3.1 Illustrations

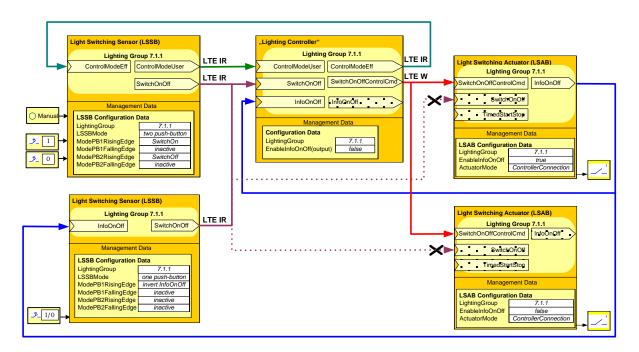


Figure 6 – Lighting sensor – controller – actuator model: basic features

Figure 6 illustrates the basic application model for <u>indirect</u> binding of Lighting Sensors LSSB with a Light Switching Actuator LSAB via a Lighting Controller. LSAB parameter ActuatorMode is set to "ControllerConnection". In this state, the actuator shall ignore data from the Lighting Sensor.

The LTE-Mode lighting application model supports binding of lighting sensors – controller and actuators in the same LTE-Mode Lighting Group. However it is possible to configure separate Lighting Groups for the sensor-controller and the controller-actuator bindings; see Figure 7.

Runtime interworking LSSB – Lighting Controller:

The LTE-Mode Lighting application model does not define a dedicated FB 'Lighting Controller'. The 'Lighting Controller' is largely a black box: it may for instance be part of a room controller. The design and runtime interface of the Lighting Controller is manufacturer specific. However in the runtime system, the Lighting Controller shall emulate a Lighting Actuator "proxy LSAB" as the counterpart for the Lighting Sensors.

Lighting Sensors LSSB are connected to a Lighting Controller to notify **SwitchOnOff** direct control commands requested by the room occupant (manual lighting control). SwitchOnOff commands are provided by the LSSB using LTE-Mode InfoReport Service and are received and processed by the Lighting Controller.

In addition LSSB may provide the optional signal **ControlModeUser** representing a request by the user to change from manual to automatic lighting control mode (and vice versa). The Lighting Controller provides the current lighting control mode **ControlModeEff** (automatic/manual) as optional feedback information for the LSSB. For further details: see specification of FB LSSB.

The Lighting Controller determines the current On/Off setpoint of the connected LSAB according to control commands from LSSB and other criteria (e.g. scheduler, room occupancy etc.).

Runtime interworking Lighting Controller - LSAB:

Input **SwitchOnOffControlCmd** is introduced on the LSAB to change the light on/off state by the Lighting Controller. SwitchOnOffControlCmd is sent to the LSAB using LTE-Mode Write Service ²⁾ and is executed by the actuator with low priority (last wins principle).

The following LSAB inputs are generally disabled to inhibit all direct control commands from lighting sensors LSSB and LDSB in the same LightingGroup:

- SwitchOnOff
- TimedStartStop

These inputs are disabled via LSAB configuration parameter ActuatorMode

LSAB status information

Actuator feedback information InfoOnOff is provided by one LSAB actuator (configured as group-speaker) using LTE-Mode InfoReport Service. Transmission of InfoOnOff status information may be enabled or disabled via LSAB configuration parameter EnableInfoOnOff.

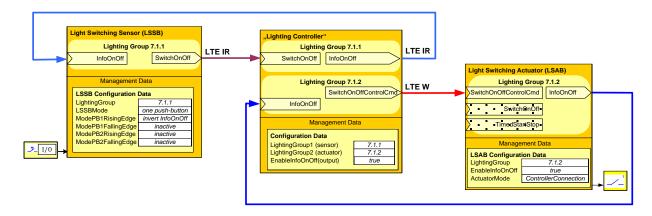


Figure 7 – Example with separate LightingGroups for sensors and actuators

Actuator feedback information InfoOnOff is received by the Lighting Controller. InfoOnOff from LSAB may be received by the LSSB as well if lighting sensors – controller and actuators are connected via the same LightingGroup; see example in Figure 6. Otherwise the Lighting Controller may act as an actuator proxy to route InfoOnOff to the LSSB in a different LightingGroup; see example in Figure 7. Though this is useful in some cases, it has the disadvantage that the InfoOnOff information has to be routed twice: once from the actuator to the controller and a second time from the controller to the sensor. This model is possible due to the LTE-Mode-zoning, but it is not favored.

²⁾ The LTE-Mode Write Service addresses the destination FB of the receiver (in this example the LSAB) whereas LTE-Mode InfoReport Service contains the source FB of the sender.

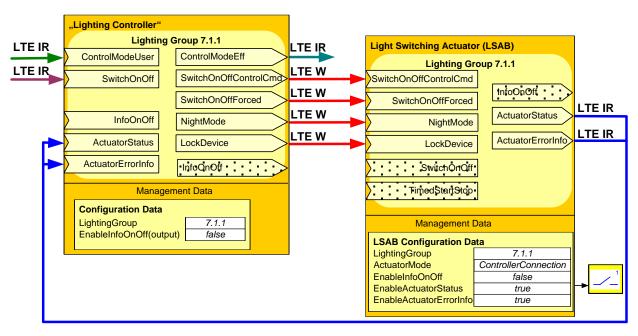


Figure 8 – Lighting sensor – controller – actuator model: extended features

Figure 8 illustrates the features of additional process signals between the Lighting Controller and the Lighting Actuator.

The Lighting Controller may control the actuator with highest priority using **SwitchOnOffForced** commands and LTE-Mode Write Service. LTE-Mode wildcard features may be used to control all actuators in the same BuildingZone (e.g. 7.*.*).

Prioritized SwitchOnOffForced command overrides input SwitchOnOffControlCmd on the LSAB.

Autonomous switching off of the actuator may be enabled/disabled via **NightMode** control input using LTE-Mode Write Service. A received control command SwitchOnOffControlCmd can temporarily set the actuator in the On state (e.g. triggered via LSSB by the cleaning staff) but the actuator will autonomously switch off the light and reset SwitchOnOffControlCmd to Off after a defined time period.

The Lighting Controller or an additional Management Client may freeze the actual state of the actuator via control command **LockDevice** using LTE-Mode Write Service. The specific behavior related to lock and unlock states and transitions can be controlled with additional LSAB configuration parameters.

The actuator may provide additional status and error information. See description of outputs **ActuatorStatus** and **ActuatorErrorInfo** in clause 1.2.2.4.

In the example in Figure 8 output ActuatorStatus replaces output InfoOnOff which is disabled via parameter EnableInfoOnOff.

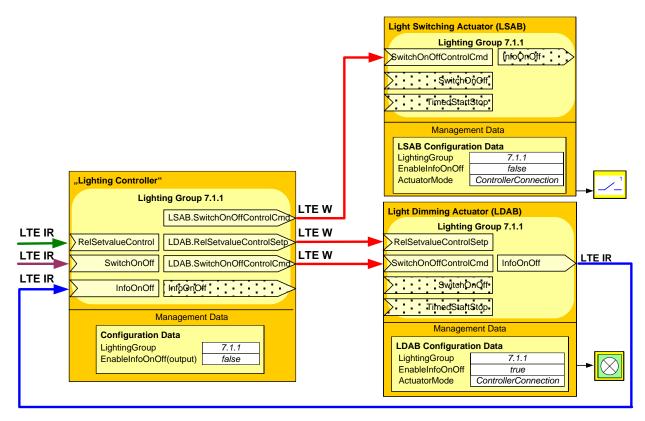


Figure 9 – Example of parallel light switching and dimming actuators in the same LightingGroup

Figure 9 illustrates runtime interworking mechanisms if parallel light switching and dimming actuators are connected to the Lighting Controller in the same Lighting Group.

The Lighting Controller determines the current SwitchOnOffControlCmd of the connected lighting actuators according to control commands from LSSB/LDSB and other criteria (e.g. scheduler, room occupancy etc.). Control command SwitchOnOffControlCmd is sent to the LSAB and LDAB separately (2 messages) using LTE-Mode Write Service.

NOTE 6 The LTE-Mode Write Service addresses the destination FB of the receiver (in this example the LSAB or the LDAB).

Dimming commands from the Lighting Controller to the LDAB (e.g. RelSetvalueControlSetp) are processed by the LDAB but are ignored by the LSAB. Dimming commands may change the light On/Off state of the LDAB. InfoOnOff feedback information provided by the LDAB (group-speaker) is received by the Lighting Controller and then propagated to the LSAB using control command SwitchOnOffControlCmd. This message is sent to LSAB only in order to synchronize the On/Off state of dimming and switching actuators in the same LightingGroup.

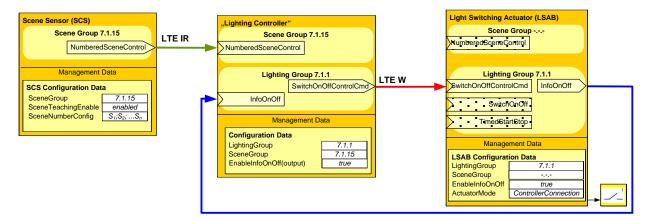


Figure 10 – Execution of Scene commands by the Lighting Controller

Figure 10 illustrates the binding of the Lighting Controller with a Scene Sensor SCS (see [02]).

SCS provides NumberedSceneControl information to recall or teach-in a scene. NumberedSceneControl message is distributed using LTE-Mode InfoReport mechanisms in a dedicated SceneGroup. In the LTE-Mode runtime system SceneGroup is mapped to existing LTE-Mode Geographical zones.

NumberedSceneControl command is received and processed by the Lighting Controller. Mapping of NumberedSceneControl command to scene number specific actuator states is handled by the Lighting Controller. The corresponding SwitchOnOffControlCmd commands are sent to the actuators that are affected by the scene command.

Input NumberedSceneControl on the LSAB shall be disabled via SceneGroup to be configured with the value 'OutOfService'

This is the preferred model to handle scenes by the Lighting Controller. Parallel LSAB in a LightingGroup are controlled in the same way and therefore actuator feedback information of the group-speaker represents the state of all actuators in the LightingGroup.

Alternative scene control model:

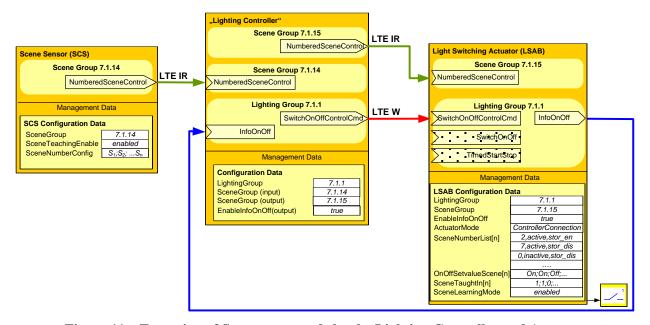


Figure 11 – Execution of Scene commands by the Lighting Controller and Actuator

Figure 11 illustrates an alternative solution to handle scenes by the Lighting Controller and the Lighting Actuator in a combined way.

Scene Sensor SCS and Lighting Actuators shall belong to separate SceneGroups to inhibit direct communication between the SCS and the LSAB.

NumberedSceneControl command from the SCS is received by the Lighting Controller and may be further processed and propagated to specific Lighting Actuators. Transformation of the NumberedSceneControl command by the Lighting Controller includes a mapping of scene numbers and scene groups.

The Lighting Controller acts as a proxy SCS and generates corresponding NumberedSceneControl command using LTE-Mode InfoReport Service.

NumberedSceneControl command is received and processed by the LSABs belonging to that SceneGroup; see description of Figure 4.

Execution of the scene command by the LSAB depends on local scene configuration parameters. Therefore multiple LSAB in the same LightingGroup may react differently. In this case InfoOnOff value of the group-speaker will not represent the state of all LSAB in the LightingGroup

1.2.3.2 LSAB input signals

Binary On/Off state of the LSAB can be controlled via various input Datapoints. The application program of the actuator prioritizes the different inputs to determine the resulting On/Off state.

- **SwitchOnOffControlCmd**: mandatory, low priority LTE-Mode W input to be written by the connected Lighting Controller. This command triggers an update of the On/Off setpoint of the actuator, which may be influenced by other inputs too (last wins principle).
- **NightMode**: same functionality as described in clause 1.2.2.2
- NumberedSceneControl: same functionality as described in clause 1.2.2.2
- **SwitchOnOffForced**: optional, high priority LTE-Mode W input to be written by the connected Lighting Controller or by a Management Client. Same functionality as described in clause 1.2.2.2
- LockDevice: same functionality as described in clause 1.2.2.2
- ControlModeUser: same functionality as described in clause 1.2.2.2

If the LSAB is connected to a Lighting Controller, the following LSAB inputs are generally disabled:

- SwitchOnOff
- LDAB.InfoOnOff
- TimedStartStop

The behavior is controlled by configuration parameter ActuatorMode

1.2.3.3 Input priority handling

High priority input SwitchOnOffForced having the value 'high priority On-state' or 'high priority Offstate' shall override all lower priority inputs

- SwitchOnOffControlCmd.
- NumberedSceneControl,
- NightMode

so that only SwitchOnOffForced input shall be relevant for generating the On/Off state of the actuator.

Groups of inputs with the same priority (SwitchOnOffControlCmd, NumberedSceneControl) shall be processed independently from each other, i.e. the last message notification to an input shall be executed.

The functionality of LockDevice input and the behavior related to lock and unlock states and transitions is specified in [04].

1.2.3.4 LSAB output signals

- InfoOnOff ³⁾: same functionality as described in clause 1.2.2.4
- ActuatorStatus 3): same functionality as described in clause 1.2.2.4
- **ActuatorErrorInfo**: same functionality as described in clause 1.2.2.4
- **ControlModeEff**: same functionality as described in clause 1.2.2.4

³⁾ In case of Controller – Actuator interworking only one of both actuator status outputs will normally be activated by configuration. Extended actuator status information fits more for the use with a Lighting Controller.

1.2.4 Power-return, power-failure and backup behavior

1.2.4.1 Power-return and restart behaviour

After power-return or an application restart, the actuator output shall always be in a defined state. The behaviour may be manufacturer specific or is defined via the following optional configuration parameters:

PowerReturnMode:

- off
- on
- no change (meaningful in case of bistable relay outputs)
- last (value before power down)

1.2.4.2 Power-failure behaviour

In case of power failure (e.g. interruption of mains power), the LSAB may set the actuator output to a defined state before shutdown of the microcontroller. The behaviour may be manufacturer specific or is defined via the following optional configuration parameter:

PowerFailureMode:

- off
- on
- no change

1.2.4.3 Backup behaviour

In case of a communication failure (e.g. bus interruption) the LSAB may set the actuator output to a defined state. The behaviour may be manufacturer specific or is defined via the following optional configuration parameters:

BusFailureMode:

- off
- on
- no change

After recovery of the bus communication, the LSAB may set the actuator output to a defined state. The behaviour may be manufacturer specific or is defined via the following optional configuration parameters:

BusReturnMode

- off
- on
- no change
- last (value before bus failure)

1.3 Functional Block diagram

FB Light Switching A	Actuator Basic (LSAB)	417
Inputs		Outputs
Binding Grp.: Light	tingGroup (Geographical)	•
IR: LSSB.SwitchOnOff		IR: InfoOnOff
IR: LDSB.SwitchOnOff		IR: ActuatorStatus
IR: LDAB.InfoOnOff		IR: ActuatorErrorInfo
IR: LSSB.TimedStartStop		IR: ControlModeEff
IR: LDSB.TimedStartStop		
IR: LSSB.ControlModeUser		
IR: LDSB.ControlModeUser		
W: SwitchOnOffControlCmd ⁴⁾		
W: SwitchOnOffForced ⁴⁾		
W: LockDevice 4)		
W: NightMode ⁴⁾		
Pinding Crn : Soo	noCroup (Coographical)	
IR: SCS.NumberedSceneControl	neGroup (Geographical)	
IIV. 000.IVambeledoceneconido		
additional I/Os	Р	arameters, Diagnostic Data
None		LightingGroup (Geographical)
		SceneGroup (Geographical)
		ActuatorMode
		EnableInfoOnOff EnableActuatorStatus
		EnableActuatorErrorInfo
		OnDelay
		OffDelay
		TimedOnDuration
		PrewarningDuration
		PowerReturnMode
		BusFailureMode
		BusReturnMode
		PowerFailureMode
		BehaviourAtLocking
		BehaviourAtUnlocking SceneLearningModeEnable
		SceneNumberList[n]
		SceneTaughtIn[n]
		OnOffSetvalueScene[n]
mandatory optiona	I IR: LTE-Mode InfoRep	oort W: LTE-Mode Write
E! 40 E // IDI I D!	6 TD T 1 1 C 1 1 1	A 4 4 TS •

Figure 12 – Functional Block Diagram for FB Light Switching Actuator Basic

NOTE 7 The LTE-Mode Write Service addresses the destination FB of the receiver (i.e. LSAB for the SwitchOnOffControlCmd input) whereas LTE-Mode InfoReport Service contains the source FB of the sender (i.e. SCS for the NumberedSceneControl input). Therefore all LTE-Mode W inputs are directly addressing local properties of the LSAB. For further details: see LTE-Mode Specification in Vol 10 of the KNX Specification

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⁴⁾ These input Datapoints are used to control both LSAB and LDAB. Due to the usage of LTE-Mode Write Service the destination FB is addressed. I.e. a Lighting Controller must send two messages to control parallel LSAB and LDAB in the same Lighting Group.

1.4 Datapoints

Datapoint	Description	Datapoint Type	LSAB PID
Inputs			
LSSB.SwitchOnOff LDSB.SwitchOnOff	Request from a Lighting Sensor LSSB, LDSB to switch the light on (=1) or off (=0)	DPT_Switch (1.001)	LSSB PID 61 LDSB PID 61
LDAB.InfoOnOff	Input to receive the actual light On/Off state of a parallel dimming actuator LDAB. This input is used to synchronize the On/Off state of the LSAB with parallel dimming actuators	DPT_Switch (1.001)	LDAB PID 51
LSSB.TimedStartStop LDSB.TimedStartStop	Trigger from a Lighting Sensor LSSB, LDSB to activate a timed switch on and autonomous switch off function	DPT_Start (1.010)	LSSB PID 65 LDSB PID 65
SCS.NumberedSceneControl	Trigger form a Scene Sensor or a Lighting Controller (sender FB SCS) to recall or learn the output state related to the encoded scene number	DPT_SceneControl (18.001)	SCS PID 61
LSSB.ControlModeUser LDSB.ControlModeUser	Request from a Lighting Sensor LSSB / LDSB to select automatic or manual light control	DPT_LightControl- Mode (20.604)	LSSB PID 64 LDSB PID 64
SwitchOnOffControlCmd	On/off setpoint to control the actuator by a Lighting Controller	DPT_Switch (1.001)	PID 60
SwitchOnOffForced	Input to override the current actuator setpoint by a management client e.g. by a Lighting Controller or by a BMS. This input can overrule lower priority inputs like SwitchOnOff, SwitchOnOffControlCmd.	DPT_Switch_Control (2.001)	PID 61
NightMode	Input to activate/deactivate night mode of the actuator, e.g. by a BMS. During night mode low priority input signals can temporarily set the actuator in the On state but the actuator will autonomously switch off the light after a defined time period.	DPT_Enable (1.003)	PID 63
LockDevice	Input to freeze the actual setpoint of the actuator e.g. by a Lighting Controller or by a BMS. The specific behaviour related to lock and unlock states and transitions can be controlled with additional parameters	DPT_Enable (1.003)	PID 69

Datapoint	Description	Datapoint Type	LSAB PID
Outputs			
InfoOnOff	Status information from the actuator to indicate the status of the light on (=1) or off (=0)	DPT_Switch (1.001)	PID 51
ActuatorStatus	Switching actuator status information indicating the current On/Off state of the lamp and additional status attributes	DPT_StatusLightingActua tor (207.600)	PID 53

Datapoint	Description	Datapoint Type	LSAB PID
Outputs			
ControlModeEff	Feedback information from the actuator to indicate if manual or automatic control is currently active in the LightingGroup	DPT_LightControlMode (20.604)	PID 54
ActuatorErrorInfo	Switching actuator status information containing error attributes of the actuator	DPT_LightActuatorErrorIn fo (21.601)	PID 55

Datapoint	Description	Datapoint Type	LSAB PID
Parameters			
LightingGroup (3 Properties)	LTE-Mode Geographical Zone - Building zone like Floor, Apartment - Room within the Building zone - Subzone within the Room	- DPT_UcountValue8_Z (202.002) - DPT_UcountValue8_Z (202.002) - DPT_UcountValue8_Z (202.002)	PID 101- 103
SceneGroup (3 Properties)	LTE-Mode Geographical Zone - Building zone like Floor, Apartment - Room within the Building zone - Subzone within the Room	- DPT_UcountValue8_Z (202.002) - DPT_UcountValue8_Z (202.002) - DPT_UcountValue8_Z (202.002)	PID 104- 106
ActuatorMode	Parameter to define whether the LSAB is connected to Lighting Sensors or to a Lighting Controller - 1: SensorConnection - 2: ControllerConnection	DPT_ActuatorConnect- Type (20.020)	PID 110
EnableInfoOnOff	Parameter to enable or disable spontaneous transmission of actuator state InfoOnOff in the LTE-Mode runtime system	DPT_Enable (1.003)	PID 111
OnDelay	Delay before changing from OFF-state -> ON-state.	DPT_TimePeriod 10msec (7.003)	PID 113
OffDelay	Delay before changing from ON-state -> OFF-state.	DPT_TimePeriod 10msec (7.003)	PID 114
TimedOnDuration	ON time before an autonomous switch- off function is executed	DPT_TimePeriodSec (7.005)	PID 115
PrewarningDuration	Pre-warning time before an autonomous switch-off function is executed.	DPT_TimePeriodSec (7.005)	PID 116
EnableActuatorStatus	Parameter to enable or disable spontaneous transmission of output ActuatorStatus in the LTE-Mode runtime system	DPT_Enable (1.003)	PID 117
EnableActuatorErrorInfo	Parameter to enable or disable spontaneous transmission of output ActuatorErrorInfo in the LTE-Mode runtime system	DPT_Enable (1.003)	PID 118

SceneNumberList.

Datapoint	Description	Datapoint Type	LSAB PID
Parameters			FID
SceneNumberList[n]	List of Scene Numbers that are supported by this FB LSAB. This parameter is implemented as an array property with n (up to 64) elements. This list shall allow linking a Scene Number to a Scene Index within the FB. Each array element defines for a dedicated scene: SceneNumber (063) activation/inactivation storage function enable/disable	DPT_SceneConfig (238.001)	PID 132
SceneTaughtIn[n]	This parameter is implemented as an array property with n (up to 64) elements. Each element indicates for a dedicated scene, whether the scene n has been taught in or not	DPT_Bool (1.002)	PID 133
OnOffSetvalueScene[n]	Parameter to define the actuator On/Off state after recalling a dedicated scene number. This parameter is implemented as an array property with up to 64 elements	DPT_Switch (1.001)	PID 134

Table 1 - support of LTE-Mode runtime process data

		Act	uatorMode		
		SensorConnection	ControllerConnection		
Inputs	LSSB.SwitchOnOff LDSB.SwitchOnOff	M	NA		
	LDAB.InfoOnOff	M	NA		
	LSSB.TimedStartStop LDSB.TimedStartStop	0	NA		
	SCS.NumberedSceneControl	0	0		
	SwitchOnOffControlCmd	NA	М		
	SwitchOnOffForced	0	0		
	LockDevice	0	0		
	NightMode	0	0		
	LSSB.ControlModeUser ⁵⁾ LDSB.ControlModeUser ⁵⁾	0	NA		
Outputs	InfoOnOff	0	M		
	ActuatorStatus	0	0		
	ActuatorErrorInfo	0	0		
	ControlModeEff 5)	0	0		

Table 2 - LTE-Mode specific Properties

-		Support
Parameter	LightingGroup	М
	SceneGroup	0
	ActuatorMode	М
	EnableInfoOnOff	М
	EnableActuatorStatus	0
	EnableActuatorErrorInfo	0

⁵⁾ Process signals 'ControlModeUser' and 'ControlModeEff' are usually intended for the runtime communication between a Lighting Sensor and a Lighting Controller, see specification of FB LSSB / LDSB.However, from the perspective of the Lighting Sensor the Controller behaves like a LSAB actuator proxy to emulate traditional direct Sensor – Actuator communication. Therefore input 'ControlModeUser' and output 'ControlModeEff' are listed in this document as process signals of actuator proxy FB LSAB.In case of sophisticated actuators with built in controller functionality these signals may also be useful on the LSAB for direct Sensor - Actuator communication. In case of Sensor - Controller – Actuator communication, the LSAB in the Actuator shall disable these process signals.

Table 3 - Standard Properties of Interface Object

_		Support
Parameter	On Delay	0
	Off Delay	0
	TimedOnDuration	0
	PrewarningDuration	0
	PowerReturnMode	0
	BusFailureMode	0
	BusReturnMode	0
	PowerFailureMode	0
	BehaviourAtLocking	0
	BehaviourAtUnlocking	0
	SceneLearningModeEnable	0
	SceneNumberList[n]	0
	SceneTaughtIn[n]	0
	OnOffSetvalueScene[n]	0
Diagnostic Data		

1.5 Detailed specification of the Datapoints

1.5.1 Output InfoOnOff

FB:	LSAB LTE-Mode Server Output Name: InfoOnOff Mandatory ∑ ¹) Optional ☐											
Desc	ription:				<u>-</u>			-				
This	informatio	n car	be us	ides the current binar ed solely for visualiza Sensors or for other	ation purpos			-		le functio	onality in	
DPT:	Name	D	PT_Sv	vitch	DPT ID	1.001		Datatype	e format B ₁			
Field	•		Des	scription		Sup.	R	ange	Unit	COV	Default	
the Off				cates the switching s lighting actuator: On (0)		M	{0), 1}	-	-	-	
Com	Communication:											
Binding Group:												
Clas	SS			Туре			D	efault				
Geo	graphical			BuildingZone.Room	.Subzone		cs	s (see par	ameter Li	ghtingGr	oup)	
Application Specific												
Unassigned												
DP Address: IO Type(ID): 417 (LSAB) Property ID: 51												
	-Mode-S	ervic	es	COV 🖂 N	/linRepTime	:		sec	Hearth	oeat:	15 min	
-	ent):			Output per default o	ommunicati	ng 🛚	E	Binding G	roup Wild	card allo	wed 🗌	
	Report E-Mode R	02d-		Tx Prio:	High 🗌			Normal [$\overline{\square}$	Low		
Res the	ponse po output sha supported	lling o		Transm after Powerup: Stored Value ☐ Act Value ☑ Default Value ☐								
	perty-Ser lividual a		s):	Read only 🛛	I	Read/W	/rite	· 🗆				
Exce	ption Ha	ndlin	g:						Save at	Powerdo	own 🗌	
Spec	ial Featu	res:										
 Special Features: Mandatory in case of ControllerConnection, optional in case of SensorConnection However, spontaneous transmission of InfoOnOff may be disabled if optional output ActuatorStatus is implemented and activated by configuration. Each binary toggle of the actuator state will trigger the transmission of InfoOnOff. If multiple actuators are in the same zone, each actuator may send its own InfoOnOff message. Since all actuators in the same zone are controlled together, subsequent InfoOnOff feedback messages would be identical ⇒ last wins principle on the receivers. Group speaker: in order to reduce network traffic, one group speaker out of all LSAB in the same Lighting Group can be nominated by LSAB configuration via parameter EnableInfoOnOff. 												
	transmiss			nOff is disabled, Info	OnOff signa	ıl can't b	ое и	used for li	fe-check	functions	for	

1.5.2 Output ActuatorStatus

	U ₈ B ₈ COV	butes. Defaul t
This information can be used solely for visualization purposes or for other purposes. DPT: Name DPT_StatusLightingActuator DPT ID 207.600 Datatype format Field Description Sup. Range Unit	U ₈ B ₈	Defaul
Field Description Sup. Range Unit	COV	
ActualValue Current on/off level in %. M 0 %;100 % %	100 %	
		-
In case of a switching actuator LSAB the range is limited to the discrete values 0 % and 100 %		
Attributes Bit #		
-ValidActualValue 0 Validity of field ActualValue M {0, 1}	Υ	cs
- Locked 1 true ⇒ actuator is locked, e.g. via input LockDevice O {0, 1}	Y	0
- Forced 2 true ⇒ forced on/off control of sactive, e.g. via input SwitchedOnOffForced {0, 1}	Y	0
- NightModeActive 3 true ⇒ night mode is active e.g. via input NightMode; the actuator will autonomously switch off the light after a defined time 1	Y	0
- StaircaseLighting Function 4 true ⇒ staircase lighting function is active; e.g. via input TimedStartStop O {0, 1}	Y	0
- Dimming 5 Not applicable for switching NA 0 actuator LSAB		0
- LocalOverride 6 true ⇒ actuator on/off setvalue is locally overridden, e.g. via a local user interface 6 true ⇒ actuator on/off setvalue is locally overridden, e.g. via a local user interface	Υ	0
- Failure 7 General actuator failure O {0, 1}	3)	0
Communication:		
Binding Group:		
Class Type Default		
Geographical BuildingZone.Room.Subzone cs (see parameter Light	ntingGro	up)
Application Specific		
Unassigned		
DP Address: IO Type(ID): 417 (LSAB) Property ID: 53	3	
LTE-Mode-Services COV ⊠ MinRepTime: sec Heartbe	at: 1	5 min
(event): Output per default communicating ⊠ Binding Group Wildca	rd allow	red 🗌
InfoReport	Low [
Response polling of	ault Valı	ue 🗌
Property-Service (individual access): Read only ⊠ Read/Write □		

Exception Handling:	Save at Powerdown
Special Features:	
Spontaneous transmission of this output can be enabled disabled via t EnableActuatorStatus.	the parameter
Group speaker: in order to reduce network traffic, one group speaker of LightingGroup can be nominated by LSAB configuration via parameter transmission of ActuatorStatus is disabled, this signal can't be used for functions for individual actuators anymore	r EnableActuatorStatus. If
In case of Lighting Controller – Actuator interworking this output may be InfoOnOff because extended actuator status information fits more for the status information for the status in	

1.5.3 Output ActuatorErrorInfo

FB:	LSAB	LTE-Me Name:	ode Se	rver Output	Ac	tuatorErrorl	Info		Mar	Mandatory ☐ Optional ⊠				
Desc	ription:				_									
Actua to be	torErrorIr	nfo repre with a T	sents s echnica	ontains basic e tatic error inforn al Alarm which s	natio	on which ca	n e.g.	be ı	used for v	visualizat	tion pur	pose	e (not	
DPT:	Name	DPT_	_LightA	ctuatorErrorInfo)	DPT ID	21.60	01	Datatyp	e forma	t B ₈			
Field			Descr	iption	•		Sup		Range	Unit	COV	D	efault	
Attributes B			Bit #											
- Load	dDetectio	nError	0	Load detection		led /	0		{0, 1}		Υ		0	
- Und	ervoltage		1	wrong load ty Undervoltage supply		nains	0		{0, 1}		Υ		0	
- Ove	rcurrent		2	Overcurrent / on load side	shoi	t circuit	0		{0, 1}		Υ		0	
- Und	erload		3	Underload / no	o loa	ad on	0		{0, 1}		Υ		0	
- Defe	ectiveLoa	d	4	Overvoltage / pulses on load			0		{0, 1}		Υ		0	
- Lam	pFailure		5	General failure of the lamp					{0, 1}		Υ		0	
0				Thermal overl actuator	rload of the O {C			{0, 1}		Υ		0		
- rese	erved		7		0			0				0		
Comi	munication	on:												
Bind	ling Groເ	ıp:												
Clas	s		Ту	oe				Def	ault					
Geo	graphical	\triangleright	Bu	BuildingZone.Room.Subzone					cs (see parameter LightingGroup)					
Appl	ication Sp	pecific [
Una	ssigned		Bro	oadcast 🗌 💮	Con	figurable 🗌]							
	Address:			Type(ID):	41	7 (LSAB)		Pro	perty ID:	erty ID: 55				
	-Mode-Se	ervices)V 🛛		RepTime:			sec	Hearth		60	min	
(eve	Report	\boxtimes	₁ Ou	tput per default	con	nmunicating	<u>y 🛛 </u>	Bir	nding Gro	up Wild	card all	owe	<u> </u>	
	E-Mode R		Tx	Prio:	H	ligh 🗌		Ν	Iormal 🛚		Lov	v 🗌		
Resp	ponse pol output sha upported)	ling of all always	S Tra	ansm after Powe	erup	: Stored Va	alue 🗌		Act Value	e⊠ D	efault V	/alue		
	perty-Ser ividual a		Re	ad only 🛚 🗵	1	Re	ead/Wr	rite						
Exce	ption Hai	ndling:								Save at	Power	dowr		
Spec	ial Featu	res:												
	taneous t leActuato			his output can t	oe ei	nabled disa	bled v	ia th	ne parame	eter				

1.5.4 Output ControlModeEff

FB:	LSAB	LTE- Nam		Server Output	ControlMo	deEff		Ма	ndatory [datory ☐ Optional ⊠ ¹⁾			
Desc	ription:							÷					
				licates if manual or				•			•		
				ed solely for visualins LSSB/LDSB in th						ModeUs	er values		
DPT:				htControlMode	DPT ID	20.604	1	Datatype		N ₈			
Field	Name			cription	טו וט	Sup.		inge	Unit	COV	Default		
CantualMada				field shall indicate v	hothor	M		1 *)	-	-	CS		
	auto			matic control (0) or			0,	' /			00		
			contr	ol (1) is currently ac	tive								
				es 2 to 255 are rese e extensions	rved for								
Com	municatio	on:	ratar	C CALCITOTOTIO									
Binding Group:													
Clas		•		Туре			D	efault					
			\boxtimes	BuildingZone.Roo	m.Subzone		cs	(see par	ameter Li	ghtingGr	oup)		
App	lication Sp	ecific											
Una	ssigned			Broadcast Configurable									
DP A	Address:			IO Type(ID):	417 (LSAB)			Property ID: 54					
	-Mode-Se	ervice	s	COV 🖂	MinRepTim	e:	sec Heartbeat: 15 min						
(eve	-			Output per default	communica	ıting 🛚	Binding Group Wildcard allowed 🗵						
	Report E-Mode Re	ead-		Tx Prio:	High 🗌		Normal Low						
Res	ponse pol	ling of			0.						_		
	output sha upported)		ays	Transm after Power	erup: : Store	ed Value		Act Val	ue 🖂 D	efault Va	alue 🖂		
	perty-Ser		_	Read only		Read/V	Vrite) [
•	(Individual access):									🗆			
Exce	ption Har	naling	<u>.</u>						Save at	Powerd	own 📙		
Snoo	ial Eastur	rocı											
	ial Featu				a Cantucilia	-اماماندس		ulataa a l	CAD activ	.4			
	nents in cl			only implemented ir	a Controlle	i wiich	eml	iiates a L	SAB actua	ator prox	ty, see		
This	output is c	lisable	d if th	ne LSAB is controlle	d by a Cont	roller (=	> se	e parame	eter Actuat	orMode)		

1.5.5 Input SwitchOnOff

FB:	LSAB	LTE-Mode Name:	de Client Input SwitchOnOff					1	Mandatory ⊠ ¹⁾ Optional □				
Desc	ription:												
	nput Swic or off (=0)	hOnOff indi	cates the request	t fro	om a Lighting	Senso	r LS	SSB, LI	DSB to	swite	ch the ligl	nt on	
DPT:	Name	DPT_Sw	vitch		DPT ID	1.001		Dataty	/pe form	nat	B ₁	B ₁	
Field			Description						Su	ıp.	Unit	Default	
b			This field indica requests to swit						N	/1		Off	
Communication:													
Binding Group:													
Class	5		Туре				De	fault					
Geog	graphical		BuildingZone.Re	oon	n.Subzone		cs	(see p	aramete	er Li	ghtingGro	oup)	
Application Specific													
Unas	signed		Broadcast		Configurable	е 🗌							
DP Address:			IO Type(ID):		421 (LSSB) 420 (LDSB)			roperty	ID:		61		
	Mode-Se	rvice	InfoReport Snif	InfoReport Sniffer on Binding Group:									
(evei	nt): Report	\boxtimes	Timeout:				Mi	n					
(poll	Mode-Se ing): I – Respo		Read Wildcard	/ Re	esp Sniffer or	n Bindir	ng G	Group:					
Value	after Po	werup:	Defau	ılt V	/alue ⊠				•	S	tored Val	ue 🗌	
Exce	ption Har	ndling:						9	Save at	Pow	verdown		
Spec	ial Featu	res:											
This low priority input on the actuator can be overruled by other inputs. See priority handling in clause 1.2.2.3													
imple	mented		Mode, a timed swi										
1) This Actua	s input is (torMode)	disabled if t	he LSAB is contro	olle	d by a Lightir	ng Con	troll	er (⇒	see par	ame	eter		

1.5.6 Input InfoOnOff from Dimming Actuator

FB:	LSAB	LTE-Mode Name:	e Client Input	Client Input InfoOnOff						Mandatory ☐ Optional ☐ 1)					
Desc	ription:														
			sents the actual lig s input is used to s												
DPT:	Name	DPT_Sw	vitch		DPT ID	1.	001		Datat	type	format	B ₁			
Field			Description								Sup.	Unit	Default		
b			This field indicat (1) or off (0)	es	whether th	ne L	DAB :	stat	e is or	า	М		Off		
Com	municatio	on:	-							_					
Binding Group:															
Clas	s		Туре					De	efault						
Geo	graphical	\boxtimes	BuildingZone.Ro	om	n.Subzone	:		cs	(see p	oara	meter Lig	ghtingGro	oup)		
Application Specific															
Unas	ssigned		Broadcast	Configurable 🗌											
DP Address: IO Type(ID):					418 (LDA	AB)		Р	ropert	y ID	:	51			
	-Mode-Se	rvice	InfoReport Sniff	InfoReport Sniffer on Binding Group:											
(eve InfoF	nt) : Report	\boxtimes	Timeout:					Mi	in						
(poll	- Mode-Se l ing): d – Respo		Read Wildcard /	Re	esp Sniffer	on	Bindir	ng (Group:	-	-				
Value	after Po	werup:	Defau	lt V	alue 🛚					-	St	tored Val	ue 🗌		
Exce	ption Har	ndling:								Sav	e at Pow	erdown			
Spec	ial Featui	es:													
This I	This low priority input on the actuator can be overruled by other inputs. See priority handling in clause 1.2.2.3														
	s input is (itorMode)	disabled if t	he LSAB is contro	olle	d by a Ligh	hting	g Con	trol	ler (⇒	see	parame	ter			

1.5.7 Input TimedStartStop

FB:	LSAB	LTE-Mod Name:	e Client Input	Client Input TimedStartStop				ndatory Optional 1)					
Desc	ription:						<u>-</u>						
			indicates the reques switch off function		nting Se	ensor L	SSB, L	DSB to to	rigger a t	imed			
DPT:	Name	DPT_St	art	DPT ID	1.010	Da	tatype	format	B ₁				
Field			Description					Sup.	Unit	Default			
b			b = 1 triggers the	start of the tin	ned swi	tch on	and	М					
				s switch off fu									
			b = 0: switch off i	mmediately ar	nd stop	the tim	er						
	Communication:												
	ing Grou	p:	T										
Class			Туре			Defau							
	graphical		BuildingZone.Ro	om.Subzone		cs (se	see parameter LightingGroup)						
Appli	cation Sp	ecific											
Unas	signed		Broadcast	Configurab									
DP A	ddress:		IO Type(ID):	IO Type(ID): 421 (LSSB) 420 (LDSB)				Property ID: 65					
	Mode-Se	rvice	InfoReport Sniffe	er on Binding	Group:		-						
(evei	nt): Report	\boxtimes	Timeout:			Min							
(poll	Mode-Se i ng): I – Respo		Read Wildcard /	Resp Sniffer o	n Bindiı	ng Grou	ıp:						
Value	after Po	werup:	Default	t Value 🛚				St	ored Val	ue 🗌			
Exce	ption Har	ndling:					Sav	e at Pow	erdown				
Spec	ial Featu	res:											
	ow priority e 1.2.2.3	y input on t	he actuator can be	overruled by	other in	outs. S	ee pric	rity hand	ling in				
	s input is o torMode)		he LSAB is control	led by a Lighti	ng Con	troller (⇒see	paramet	er				

Input NumberedSceneControl 1.5.8

FB:	LSAB	LTE Nar		e Client Input	N	umberedSo	ceneCon	itrol	N	Man	datory [Optio	nal 🛚
Desc	ription:								=				
Senso	or proxy ir	n a Li	ghting	eControl indicates Controller to reca ne number that is	all o	r learn a so	cene ide	ntifie	d by th	ne co	ontained	l scene r	
DPT:	Name	D	PT_Sc	ceneControl		DPT ID	18.001		Dataty	pe f	ormat	B ₁ r ₁ U ₆	
Field				Description							Sup.	Unit	Default
c Scene	eNumber			Control informat scene control inf 0: recall the scene to the field Scane to the field Scane to the field Scane Selects the num	forn ne (cen cen cen	nation: correspond eNumber ne correspo eNumber	ling				M	-	-
				to 63)									
	Communication:												
	ling Grou	ıp:		T				I					
Clas				Type		0.1			ault				
	graphical			BuildingZone.Ro	om	n.Subzone		cs ((see pa	aram	neter Sc	eneGrou	ıp)
	ication Sp	ecitio					. —						
	ssigned			Broadcast		Configurat							
	Address:			IO Type(ID):		403(SCS)		Pro	operty	ID:	(61	
LTE-	·Mode-Se	ervice	9	InfoReport Sniff	er	on Binding	Group:						
•	Report		\boxtimes	Timeout:				Min)				
(poll	· Mode-Se ing): d – Respo			Read Wildcard /	Re	esp Sniffer	on Bindi	ng G	roup:				
Value after Powerup: Default Value □											St	ored Val	ue 🗌
Exce	ption Har	ndlin	g:						5	Save	at Pow	erdown	
				rt less than the ma t supported, then					es. If a	a sce	ene is ca	alled/lear	ned with
Spec	ial Featu	res:											
	pecial Features: nis low priority input on the actuator can be overruled by other inputs. See priority handling in ause 1.2.2.3												

1.5.9 Input SwitchOnOffControlCmd

FB:	LSAB	LTE-Mod Name:	e Server Input	S	witchOnOff	Control	Cmd	Man	datory [⊠ ¹⁾ Optio	onal 🗌	
Desc	ription:			-				_				
On/O	ff setpoint	t to control	the actuator by a L	igh	nting Contro	oller.						
DPT:	Name	DPT_S	witch		DPT ID	1.001		Datatype t	ormat	B ₁		
Field			Description						Sup.	Unit	Default	
b			This field indicate requests to switch					ontroller	M		cs	
Comi	municatio	on:										
Bind	ing Grou	p:										
Class	5		Туре				Def	ault				
Geog	graphical		BuildingZone.Ro	om	n.Subzone		cs ((see parar	neter Li	ghtingGro	oup)	
Appli	cation Sp	ecific										
Unassigned Broadcast Configurable												
DP A	ddress:		IO Type(ID):		417 (LSAE	3)	Pro	operty ID:		60		
LTE- (ever	-	rvice	Timeout:				Min	ı				
	erty-Serv		Read only			Read/W	/rite					
Value	after Po	wer-up:	Defaul	lt V	alue 🗌				St	tored Val	ue 🗌	
Exce	ption Har	ndling:						Sav	e at Pov	ver-down		
	avior at P ımeters.	ower Dowr	or after PowerUp	is	product spe	ecific an	d ma	y be defin	ed by c	onfigurati	on	
Spec	ial Featu	res:										
handl In cor imple ¹⁾ If th	Finis input can be overruled by high priority inputs SwitchOnOffForced or LockDevice. See priority nandling in clause 1.2.3.3 In combination with NightMode, a timed switch on and autonomous switch off function can be implemented If the LSAB is directly controlled by lighting sensors, SwitchOnOffControlCmd input is disabled. The behavior is controlled by configuration parameter ActuatorMode.											

1.5.10 Input SwitchOnOffForced

FB:	LSAB	LTE-Mode Name:	Server Input	SwitchOnOff	Forced		Man	datory	Optio	onal 🛚		
Desc	ription:					•						
Buildi	ng Manag		nt actuator setpoint ion. This input can							er or by a		
DPT:	Name	DPT_Sw	ritch_Control	DPT ID	2.001	Data	type f	ormat	B ₂			
Field			Description					Sup.	Unit	Default		
C V			0: SwitchOnOffFor Lower priority in 1: SwitchOnOffFor Actuator setpoin Lower priority in If c=0: v is void If c=1: - v=0: high priority - v=1: high priority	nputs are action or ced is active or according on puts are over y Off-state	ve. e. v field			M		cs cs		
Communication:												
Bind	ing Grou	p:										
Class	5		Туре			Default						
Geog	graphical	\boxtimes	BuildingZone.Roo	om.Subzone		cs (see p	paran	neter Li	ghtingGro	oup)		
Appli	cation Sp	ecific										
Unas	signed		Broadcast	Configurat	ole 🗌							
DP A	ddress:		IO Type(ID):	417 (LSAI	3)	Propert	y ID:		61			
LTE- (ever	•	rvice	Timeout:			Min						
	erty-Serv vidual ac	_	Read only [Read/W	/rite						
Value	after Po	wer-up:	Default	Value 🗌				S	tored Val	ue 🗌		
Exce	ption Har	ndling:					Save	at Pov	ver-down			
- Beh	avior at P	ower Down	or after PowerUp	is product sp	ecific an	d may be	defin	ed by p	arameter	s.		
Spec	ial Featui	res:										
handl	nis high priority input on the actuator can overrule other normal and low priority inputs. See priority andling in clause 1.2.2.3and 1.2.3.3 ne input may be set out of service by means of the c field in order to enable lower priority inputs											

1.5.11 Input LockDevice

FB:	LSAB	LTE-N Name:		e Server Input	Lo	ockDevice				Mandato	ory	Optio	onal 🛚
Desc	ription:												
Mana	igement S	Station.	The	setpoint of the actu specific behavior parameters									ре
DPT:	Name	DPT	_Er	nable		DPT ID	1.003		Dataty	pe forma	at	B ₁	
Field				Description						Sup	٠.	Unit	Default
b				1: shall lock the a 0: shall unlock th			current	sta	te	М			cs
Com	municatio	on:											
Bind	ding Grou	лb:											
Class Type Default													
Geo	graphical		\boxtimes	BuildingZone.Ro	om	.Subzone		cs	(see pa	arametei	r Liç	ghtingGro	oup
App	lication Sp	pecific [
Una	ssigned	[Broadcast		Configurat	ole 🗌						
DP /	Address:			IO Type(ID):		417 (LSAE	3)	Р	roperty	ID:		69	
LTE (eve Write	-		⊴	Timeout:				Mi	in				
	perty-Ser ividual ad			Read only			Read/W	/rite	e [\boxtimes			
Value	after Po	wer-up	:	Defaul	t Va	alue 🗌					St	tored Valu	ne 🗌
Exce	ption Har	ndling:								Save at	Po	wer-dowr	ו 🗆
value	Behavior after power-return: either persistent storage of LockDevice value or initialization with a default value is allowed. The mechanism is product specific and may be defined by parameters. Usually after power-return the default value is set to unlocked (0)												
	Special Features:												
-			on :	the actuator can o	VAr	rule other l	ower pri	Orit	v innute	See nr	iorit	v handlin	a in
	e 1.2.2.3				v C I	i die Otilei i	ower bu	Jiit,	y iriputs	. Oee pii	iOi it	y Hariulli	9 ""

1.5.12 Input NightMode

FB:	LSAB	LTE-Mode Name:	e Server Input	NightMode			Mandatory	Opti	onal 🛚
Desc	ription:								
the action (e.g. time p	ctuator is triggered l	disabled. In by the clear fore the act	leactivate night mod put signals with low ning staff) but the ac tuator autonomously	priority can tuator will a	tempora utonomo	arily set the ously switcl	actuator in off the ligh	the On s	tate defined
DPT:	Name	DPT_En	able	DPT ID	1.003	Dataty	pe format	B ₁	
Field			Description				Sup.	Unit	Default
b			1: enables night m 0: disables night m				M		cs
Comi	municatio	on:					<u>-</u>		=
Bind	ling Grou	ıp:							
Clas	s		Default						
Geo	graphical	\boxtimes	BuildingZone.Room	m.Subzone		cs (see p	arameter Liç	ghtingGro	oup
Appl	ication Sp	ecific 🗌							
Una	ssigned		Broadcast	Configurat	ole 🗌				
DP A	Address:		IO Type(ID):	417 (LSAI	3)	Property	ID:	63	
LTE- (eve Write	•	ervice	Timeout:			Min			
	erty-Servividual ac		Read only]	Read/W	/rite	\boxtimes		
Value	after Po	wer-up:	Default \	√alue □			St	ored Val	ue 🗌
Exce	ption Har	ndling:					Save at Po	wer-dowi	n 🗆
			n: either persistent s hanism is product sp					with a de	efault
	<u> </u>		the default value is	set to 'disab	ole' (0).				
Spec	ial Featu	res:							

1.5.13 Input ControlModeUser

FB:	LSAB	LTE-I		Client Input	С	ontrolMode	User			Mandatory	/ 🗌 Opti	onal 🛚
Desc	ription:								-			
				ModeUser indicat ng control	es	the reques	t from a	Lighting	Se	nsor LSSE	3/LDSB to	request
DPT:	Name	DP	T_Liç	ghtControlMode		DPT ID	20.604	Dat	aty	pe format	N ₈	
Field				Description						Sup.	Unit	Default
Contr	olMode			This field shall in (0) or manual co	ntr	ol (1) is cur	rently ac	ctive		M		cs
Comi	nunicatio	n.		values 2 to 255 a	are	reserved i	or ruture	extensi	ons			
	ling Grou											
Clas		.p.		Туре				Default	t			
71										rameter B	lindsGrou	p)
Application Specific												
Unassigned Broadcast Configurable												
DP Address: 421 (LSSR)								Prope	rty	ID:	64	
	-Mode-Se	rvice		InfoReport Sniff	er	on Binding	Group:					
(eve InfoF	nt): Report		\boxtimes	Timeout:				Min				
(poll	· Mode-Se ing): d – Respo			Read Wildcard /	Re	esp Sniffer o	on Bindir	ng Grou	p:			
Value	after Po	werup):	Defau	lt V	′alue 🛚				Sto	red Value	2)
Exce	ption Har	ndling	:						[;	Save at Po	owerdown	∑ ²⁾
Spec	ial Featu	res:										
1) Usu comm	Usually this input may only implemented in a Controller which emulates a LSAB actuator proxy, see comments in clause 1.2.3											
	nis input is disabled if the LSAB is controlled by a Controller (\Rightarrow see parameter ActuatorMode) Initialization of this input after power return is implementation specific. Persistent storage is an optional											

1.5.14 Parameter-set LightingGroup

LightingGroup is implemented using the LTE-Mode Geographical zone concept. It consists of 3 properties belonging together.

1.5.14.1 Parameter BuildingZone

FB:	LSAB	Property	/ N	lame (<u>Server</u>):	Liç	ghtingGrou	ıp.Buildin	ıgZ	Zone	Mandatory	√⊠ Opti	onal 🗌	
Desc	ription:												
	•	•		meter set mappe			le Geogra	apl	hical z	zone:			
-> Bu	ildingEnt	ity (Floor,	<u>Ar</u>	partment, Building	j se	ection etc.)							
DPT:	Name	e DPT_	Jc	ountValue8_Z		DPT ID	202.002	2	Data	atype format	U ₈ Z ₈		
Field				Description		S	Sup.	Range	Unit	Default			
Coun	terValue			Number of the Bu	uild	ingZone			М	1 to 126		cs	
	OfServic	_		zone active /inac not supported, fix					O NA	true/false	bitset	cs	
- all other flags Command - NormalWrite - SetOSV & ResetOSV - all other commands				set zone inactive not supported	/ a	ctive			M O NA		enum		
Com	municat	ion:											
DP	Address	s:		IO Type(ID):	41	17 (LSAB)		F	rope	rty ID:	101		
(in t	the serv	er)		Start-Index:	1			١	√of e	elements	1		
Pro	perty ac	cess:		Read only			Read/W	/rit	e				
Pro	tection			Read level				٧	Vrite I	evel			
Exce	ption Ha	ndling:	١	/alue after Power	up:	Stored	Value 🛚	Α	ct Va	lue 🗌 Def	ault Value		
Spec	ial Featu	ıres:											
'OutC	Special Features: LSAB runtime Datapoints (except NumberedSceneControl) are not LTE-Mode communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)												

1.5.14.2 Parameter Room

FB:	LSAB	Property I	Name (<u>Server</u>):	Lig	ghtingGrou	p.Room			Mandatory	<i>i</i> [2	Optio	onal 🗌	
Desc	ription:		-										
	_		ameter set mapped	d to	LTE-Mode	e Geogra	ph	ical z	one:				
-> Ro	om withi	n BuildingZo	one										
DPT:	Name	e DPT_U	countValue8_Z		DPT ID	202.002	2	Data	atype format		U ₈ Z ₈		
Field			Description				S	Sup.	Range	U	nit	Default	
Coun	terValue		Room number					М	1 to 63		i	cs	
	s OfService ther flag:	-	zone active /inact not supported, fix					O NA	true/false	b	itset	cs	
- Set0	malWrite	esetOSV	set zone inactive not supported	/ a	ctive			M O VA		е	num		
Com	municati	ion:								-			
	Address		IO Type(ID):		417 (LSAE	3)		•	rty ID:	1	02		
•	he serve		Start-Index:	_	1				elements	1			
Pro	perty ac	cess:	Read only	Ш		Read/W	rite	9	\square				
Pro	tection		Read level				٧	Vrite I	evel		ı		
Exce	ption Ha	ndling:	Value after Poweru	ıp:	Stored \	/alue ⊠	A	ct Va	lue 🗌 Def	au	lt Value		
Spec	pecial Features:												
'OutC	Special Features: SAB runtime Datapoints (except NumberedSceneControl) are not LTE-Mode communicating if zone is OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)												

1.5.14.3 Parameter Subzone

FB:	LSAB	Pro	perty I	Name (<u>Server</u>):	Lig	ghtingGrou	p.Subzor	ne		Mandatory	/ 🛛 Opti	onal 🗌	
Desc	ription:									<u>-</u>			
	_	-		ameter set mappe	ed to	LTE-Mod	e Geogra	aph	ical z	zone:			
-> Su	<u>bzone w</u>	ithin	Building	gZone.Room									
DPT:	Name	e C	DPT_U	countValue8_Z		DPT ID	202.002	2	Dat	atype format	U ₈ Z ₈		
Field				Description		S	up.	Range	Unit	Default			
Coun	terValue			Subzone numbe	r				М	1 to 15		cs	
	s OfService ther flag:	-		zone active /inac not supported, fix					O NA	true/false	bitset	cs	
- Set0	nand malWrite DSV & R ther com	esetC		set zone inactive	e / ad	ctive			M O NA		enum		
Comi	municati	ion:	_				-		•				
	Address			IO Type(ID): Start-Index:		417 (LSAI 1	3)			rty ID: elements	103 1		
	perty ac		 ::	Read only	П	ı	Read/W				ı		
	tection			Read level					Vrite	_			
Exce	ption Ha	ndlir	ng:	<u>.</u> Value after Powe	rup:	Stored \	/alue ⊠	A	ct Va	lue Def	ault Value		
Spec	ial Featu	ıres:											
'OutC	Special Features: LSAB runtime Datapoints (except NumberedSceneControl) are not LTE-Mode communicating if zone is OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)												

1.5.15 Parameter-set SceneGroup

SceneGroup is implemented using the LTE-Mode Geographical zone concept. It consists of 3 properties belonging together.

1.5.15.1 Parameter BuildingZone

FB:	LSAB	Р	roperty N	lame (<u>Server</u>):	So	ceneGroup	Building	Zor	ne	Mandatory	Op	tional 🛚
Desc	ription:											
				neter set mapped partment, Building			Geograp	hic	al zo	ne:		
DPT:	Nam	е	DPT_Uc	ountValue8_Z		DPT ID	202.002	2	Data	atype format	U ₈ Z ₈	
Field				Description				S	up.	Range	Unit	Default
Coun	iterValue)		Number of the B	uilc	dingZone			М	1 to 126		cs
	is OfServic other flag	-		zone active /inac		_			O NA	true/false	bitset	cs
- Nor	mand malWrite OSV & R other con	ese		set zone inactive	e / a	active			M O VA		enum	
Com	municat	ion	1									
	Address the serv			IO Type(ID): Start-Index:		417 (LSAI 1	3)		•	rty ID: elements	104 1	
Pro	perty ac	се	ss:	Read only			Read/W	rite	9	\boxtimes		
Pro	tection			Read level				٧	Vrite I	evel		
Exce	ption Ha	and	lling:	Value after Power	up:	Stored \	/alue ⊠	Α	ct Va	lue 🗌 Defa	ault Valu	іе 🗌
Spec	ial Feat	ure	s:									
'OutC	SAB runtime Datapoint NumberedSceneControl is not LTE-Mode communicating if zone is DutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone arameters are 'OutOfService' (common flag)											

1.5.15.2 Parameter Room

FB:	LSAB	Property	Name (Server): SceneGroup.Room Mandatory ☐ Optional ☐										
Desci	iption:												
	f Scene(ngZone	Group para	nmeter set mapped	d to I	LTE-Mode	Geograp	hic	al zo	one: -> Room	within			
DPT:	Name	DPT_U	lcountValue8_Z		DPT ID	202.002	2	Dat	atype format	U ₈ Z ₈			
Field			Description				S	up.	Range	Unit	Default		
Count	erValue		Room number					M	1 to 63		cs		
	s OfService her flags	•	zone active /ina					NA O	true/false	bitset	cs		
Comn - Norr - SetC	nand nalWrite	esetOSV	set zone inactive	e / a	ctive		(M O NA		enum			
Comr	nunicati	on:				-				_	_		
	Address he serve		IO Type(ID): Start-Index:		417 (LSAI 1	3)			rty ID: elements	105 1			
Pro	perty ac	cess:	Read only			Read/W	rite)	\boxtimes				
Prof	ection		Read level				V	/rite	level				
Exce	otion Ha	ndling:	Value after Powe	rup:	Stored \	/alue 🛚	Ad	ct Va	llue 🔲 De	fault Value	e 🗌		
Speci	Special Features:												
'OutO	SAB runtime Datapoint NumberedSceneControl is not LTE-Mode communicating if zone is OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone arameters are 'OutOfService' (common flag)												

1.5.15.3 Parameter Subzone

FB:	LSAB	Property N	lame (<u>Server</u>):	Sc	eneGroup.	Subzone	Э		Mandator	/ 🗌 Opti	onal 🛚
Desc	ription:								-		
Part o	of Scene	Group paran	neter set mapped	to I	_TE-Mode	Geograp	hic	al zo	ne:		
-> Su	bzone w	ithin Building	Zone.Room								
DPT:	Name	e DPT_U	countValue8_Z		DPT ID	202.002	2	Dat	atype format	U ₈ Z ₈	
Field	•		Description				S	up.	Range	Unit	Default
Coun	terValue		Subzone numbe	er				М	1 to 15		cs
Statu	S									bitset	
	OfService	-	zone active /inac		-			0	true/false		CS
- all o	ther flags	S	not supported, fi	xec	l to '0'		١	۱A			
Comr										enum	
	malWrite							M			
- Set0	DSV & R	esetOSV	set zone inactive	e / a	ctive			O			
- all o	ther com	ımands	not supported				١	۱A			
Com	municati	ion:				•			-		-
DP	Address	: :	IO Type(ID):		417 (LSAE	3)	Р	rope	rty ID:	106	
(in t	he serve	er)	Start-Index:		1		Ν	l° of	elements	1	
Pro	perty ac	cess:	Read only			Read/W	rite)	\boxtimes		
Pro	tection		Read level				V	Vrite	level		
Exce	ption Ha	ndling:	√alue after Power	up:	Stored \	/alue 🛚	A	ct Va	llue 🗌 Def	ault Value	-
Spec	ial Featu	ıres:									
LSAE	runtime	Datapoint N	lumberedSceneC	onti	rol is not L7	TE-Mode	CO	mmı	unicating if zo	ne is	
'OutC)fService	'. If paramet	er BuildingZone is	s 'O	utOfService	e' also th	ne c	corre	sponding Ro	om and Si	ubzone
paran	neters ar	e 'OutOfSer	vice' (common fla	g)							

1.5.16 Parameter Actuator Mode

FB:	LSAB	Proper	y Name (<u>Server</u>):	ActuatorMo	ode		Mandator	y 🛛 Opt	ional 🗌
Desc	ription:	_	_						
			the LTE-Mode runtim ighting Controller.	e system to	o define v	whethe	the LSAB is	connecte	d to
DPT:	Name	DPT_A	ctuatorConnectType	DPT ID	20.020	Dat	atype format	N ₈	
Field			Description			Sup.	Range	Unit	Default
1: SensorConnection [1, 2]							cs		
	2: ControllerConnection								
Comi	munication	n:			•	=	-		
DP	Address:		IO Type(ID):	417 (LSA	B)	Prope	erty ID:	110	
(in t	he server)		Start-Index:	1		N° of	elements	1	
Pro	perty acce	ss:	Read only		Read/W	rite	\boxtimes		
Pro	tection		Read level			Write	level		
Exce	ption Hand	lling:	Value after Powerup:	Stored V	∕alue ⊠	Act Va	lue 🗌 Def	ault Value	
Spec	ial Feature	s:		<u> </u>					<u> </u>

1.5.17 Parameter EnableInfoOnOff

FB:	LSAB	Proper	ty Name (<u>Server</u>):	EnableInfo	OnOff		Mandatory	y⊠ Opt	ional 🗌
Desc	ription:	-							
	oarameter i InfoOnOff.	s used ir	the LTE-Mode runtir	ne system t	o enable	or disa	able transmiss	ion of act	uator
DPT:	Name	DPT_E	nable	DPT ID	1.003	Da	tatype format	B ₁	
Field			Description			Sup.	Range	Unit	Default
			0: disable 1: enable						disable
Comr	nunication	า:				=			
	Address: he server)		IO Type(ID): Start-Index:	` ,			erty ID: elements	111 1	
Pro	perty acce	ss:	Read only		Read/W	/rite	\boxtimes		
Pro	tection		Read level			Write	level		
Exce	ption Hand	dling:	Value after Powerup	: Stored \	/alue ⊠	Act V	alue 🗌 Def	ault Value	
-									
Spec	ial Feature	es:							
			_			•			

1.5.18 Parameter OnDelay

FB:	LSAB	Proper	ty Name (<u>Server</u>):	OnDelay			Mandatory	√	tional 🛚
Desc	ription:						-		
•			ne delay before chang		•				9
The s	election of	inputs th	at are affected by the	e delay mech	anism is	manufa	acturer specifi	C.	
DPT:	Name	DPT_T	imePeriod_10msec	DPT ID	7.003	Dat	atype format	U ₁₆	
Field			Description			Sup.	Range	Unit	Default
Timel	Period		OnDelay time with a	resolution o	f 10ms	М	CS	s	cs
	The maximum delay time is 10'55"								
Comi	munication	n:							
DP	Address:		IO Type(ID):	417 (LSA	B)	Prope	erty ID:	113	
(in t	he server)		Start-Index:	1		N° of	elements	1	
Pro	perty acce	ss:	Read only]	Read/W	rite			
Pro	tection		Read level			Write	level		
Exce	ption Hand	lling:	Value after Powerup	: Stored V	alue 🛚	Act Val	ue 🗌 Defa	ult Value	
Spec	ial Feature	s:							
		•				•	_		

1.5.19 Parameter OffDelay

FB:	LSAB	Proper	ty Name (<u>Server</u>):	OffDelay			Mandatory	/ 🗌 Op	tional 🛚
Desc	ription:			-					
			ne delay before chang at are affected by the			•			e
DPT:	Name	DPT_T	imePeriod_10msec	DPT ID	7.003	Dat	atype format	U ₁₆	
Field Description Sup. Range Ur							Unit	Default	
TimePeriod OffDelay time with a resolution of 10ms The maximum delay time is 10'55"							CS		
Com	munication	1:							
	Address: the server)		IO Type(ID): Start-Index:	417 (LSA 1	B)	•	rty ID: elements	114 1	
Pro	perty acce	ss:	Read only]	Read/W	/rite			
Pro	tection		Read level			Write	level		
Exce	exception Handling: Value after Powerup: Stored Value 🖂 Act Value 🗌 Default Value 🗌								
Spec	ial Feature	s:							

1.5.20 Parameter TimedOnDuration

FB:	LSAB	Proper	ty Name (<u>Server</u>):	TimedOnD	uration			Mandatory	Op	tional 🛚
Desc	ription:							-		
			the time after which the this autonomous me						The sele	ection of
DPT:	Name	DPT_T	imePeriodSec	DPT ID	7.005	D	ataty	ype format	U ₁₆	
Field			Description			Sup	. R	Range	Unit	Default
Timel	Period		On time with a resolu	ution of 1s		М	С	s	S	CS
Comi	munication	1 :			•	=	<u>=</u>	-		
	Address: he server)		IO Type(ID): Start-Index:	417 (LSAB) Property 1 N° of ele						
Pro	perty acce	ss:	Read only		Read/W	rite		\boxtimes		
Pro	tection		Read level			Writ	e lev	vel		
Exce	ption Hand	lling:	Value after Powerup	Stored \	/alue 🛚	Act \	/alue	e 🗌 🛮 Defa	ult Value	; 🗌
Spec	ial Feature	s:								
					•	•	•		•	

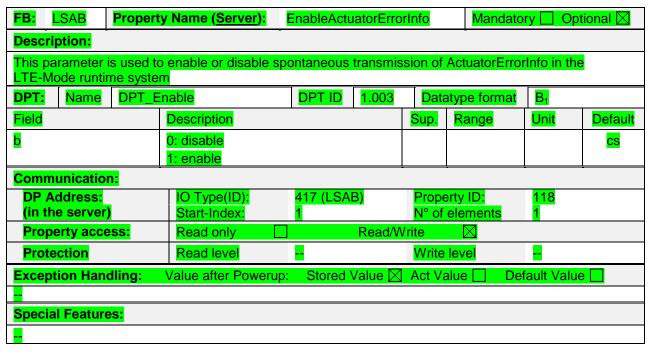
1.5.21 Parameter PrewarningDuration

FB:	LSAB	Proper	rty Name (Server): PrewarningOnDuration Mandatory (tional 🛚
Desc	ription:	_							
	oarameter o		ne time during which a ching off.	a manufacti	urer spec	ific pre-	warning actio	n is exec	uted
DPT:	Name	DPT_T	imePeriodSec	DPT ID	7.005	Dat	atype format	U ₁₆	
Field			Description			Sup.	Range	Unit	Default
Time	Period		Pre-warning time wit	th a resoluti	on of	М	CS	s	cs
Com	munication	า:							
	Address: the server)	1	IO Type(ID): Start-Index:	417 (LSAB) 1		Property ID: N° of elements		116 1	
Pro	perty acce	ss:	Read only		Read/W	/rite	\boxtimes		
Pro	tection		Read level			Write	level		
Exce	ption Hand	dling:	Value after Powerup	: Stored '	Value ⊠	Act Va	lue 🗌 Def	ault Value	e 🗌
Spec	ial Feature	es:							
If Pre	warningDu	ration = 0	the pre-warning fund	ction is imp	licitly disa	abled.			

1.5.22 Parameter EnableActuatorStatus

FB:	LSAB	Propert	y Name (<u>Server</u>):	EnableActu	uatorStat	us	Mandato	ry 🗌 O	ptional 🛚			
Descr	Description:											
This parameter is used to enable or disable spontaneous transmission of ActuatorStatus in the LTE-Mode runtime system												
DPT:	Name	DPT_E	<mark>nable</mark>	DPT ID	1.003	Data	atype format	B ₁				
Field			Description			Sup.	Range	Unit	Default			
٥			0: disable 1: enable						CS			
Comn	nunicatio	n:				_	-	-				
	Address: he server)	IO Type(ID): Start-Index:				erty ID: elements	117 1				
Prop	perty acce	ess:	Read only [Read/W	/rite						
Prot	ection		Read level	-		Write	level	-				
Excep	otion Han	dling:	Value after Poweru	p: Stored	Value 🛚	Act V	alue De	fault Valı	ue 🔲			
Speci	al Feature	es:										
		•		_				•				

1.5.23 Parameter EnableActuatorErrorInfo



1.5.24 Parameter PowerReturnMode

FB: LSAB	Proper	y Name (<u>Server</u>):	PowerRetu	ırnMode		Mandator	у 🔲 О	ptional 🛚
Description:	-	-				_		
Parameter to de application.	fine the b	ehavior of the actuato	or after retu	rn of the s	supply	power or afte	r a resta	rt of the
DPT: Name	DPT_Bown	ehaviourBusPowerU	ourBusPowerU DPT ID 20.601 Da		Da	tatype format	N ₈	
Field		Description			Sup.	Range	Unit	Default
Mode		 0 = off 1 = on 2 = no change (meanistable relay or 4 = last (saved value) 	utput)	down)	M	[0;1;2;4]		off
Communication	n:					-	=	
DP Address: (in the server))	IO Type(ID): Start-Index:	417 (LSA 1	B)		erty ID: elements	120 1	
Property acce	ess:	Read only		Read/Wi	rite			
Protection		Read level	•		Write	level	-	
Exception Hand	dling:	Value after Powerup:	Stored \	/alue ⊠	Act Va	llue 🗌 Def	ault Valu	ie 🔃
Special Feature	es:							
It is allowed to re	estrict the	range of values of th	is paramete	er, e.g.				
		if the actuator output						
		if the actuator is not	able to save	e its state	during	/before powe	r down	
in non volatile ı	memory							

1.5.25 Parameter BusFailureMode

FB: LSAB Proper	ty Name (<u>Server</u>):	BusFailureMode		Mandato	ory 🗌 O	ptional 🛚
Description:				-		
Parameter to define the l	pehavior of the actuate	or in case of a bus	failure			
DPT: Name DPT_E pDown	BehaviourBusPowerU	DPT ID 20.60	Dat	atype forma	at N ₈	
Field	Description		Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on		M	[0 to 2]		cs
	- 1 = 011 - 2 = no change					
Communication:				-		
DP Address: (in the server)	IO Type(ID): Start-Index:	417 (LSAB) 1		erty ID: elements	122 1	
Property access:	Read only	Read/	Write			
Protection	Read level	-	Write	level	-	
Exception Handling:	Value after Powerup	Stored Value	Act Va	lue 🔲 De	efault Valu	e 🗌
<u></u>						
Special Features:						
•						

1.5.26 Parameter BusReturnMode

FB: LSAB	Proper	ty Name (<u>Server</u>):	BusReturn	Mode		Mandator	у 🔲 О	ptional 🛚			
Description:											
Parameter to def	ine the b	ehavior of the actuato	r in case of	f a recove	ery of th	ne bus.					
DPT: Name	DPT ID	20.601	Datatype format N ₈								
Field		Description			Sup.	Range	Unit	Default			
Mode		- 0 = off - 1 = on - 2 = no change	inge aved value at bus failure)			[0;1;2;4]		cs			
Communication	<u>.</u>	- 4 = last (saved value	e at bus iai	iure)							
DP Address: (in the server)	_	IO Type(ID): Start-Index:	417 (LSA 1	B)		erty ID: elements	124 1				
Property acces	ss:	Read only		Read/Wi	rite						
Protection		Read level	-		Write	level	-				
Exception Hand	lling:	Value after Powerup:	Stored \	/alue ⊠	Act Va	lue 🗌 Det	fault Valu	ıe 🗌			
											
Special Feature	Special Features:										
It is allowed to re	It is allowed to restrict the range of values of this parameter										

1.5.27 Parameter PowerFailureMode

FB: LSAB Propert	y Name (<u>Server</u>):	PowerFailu	reMode		Mandatory	y 🔲 O	ptional 🛚
Description:							
Parameter to define the be bistable relay before power			the supp	oly pow	er failure, to s	switch e.	g. a
DPT: Name DPT_BehaviourBusPowerU DPT ID 20.601 Datatype format N₃							
Field	Description			Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on - 2 = no change			M	[0 2]		cs
Communication:							
DP Address: (in the server)	IO Type(ID): Start-Index:	417 (LSAE 1	3)		erty ID: elements	126 1	
Property access:	Read only		Read/Wi	rite			
Protection	Read level			Write	level	H	
Exception Handling:	Value after Powerup:	Stored V	alue 🗵	Act Va	lue 🔲 Defa	ault Valu	ie 🗌
-							
Special Features:							
•							

1.5.28 Parameter BehaviourAtLocking

FB: LSAB	Proper	rty Name (<u>Server</u>):	Behaviour	AtLocking	,	Mandator	y 🔲 O _l	ptional 🛚		
Description:			-			-				
Parameter to define the behavior of the actuator in case of input LockDevice changing from										
false -> true										
DPT: Name DPT_Behaviour_Lock_ DPT ID 20.600 Datatype format N ₈										
Field		Description			Sup.	Range	Unit	Default		
Mode		- 0 = off			M	[0;1;2]		cs		
- 1 = on - 2 = no change										
Communication	on:	-				-	-	-		
DP Address		IO Type(ID):	417 (LSA	B)		erty ID:	127			
(in the serve	<mark>r)</mark>	Start-Index:	1		N° of	elements	1			
Property acc	cess:	Read only]	Read/W	rite					
Protection		Read level	-		Write	level	-			
Exception Ha	ndling:	Value after Powerup	: Stored \	/alue ⊠	Act Va	llue 🔲 Def	ault Valu	ie 🗌		
Special Featu	res:									
It is allowed to	restrict the	e range of values of th	nis paramet	er						

1.5.29 Parameter BehaviourAtUnlocking

				8						
FB:	LSAB	Propert	y Name (<u>Server</u>):	BehaviourAtUnlocking Mandatory Optional						
Descri	Description:									
Parame	eter to de	fine the b	ehavior of the actuato	r in case of	finput Lo	ockDev	rice changing fr	om		
true ->	true -> false									
DPT: Name DPT_Behaviour_Lock_				DPT ID	20.600	Da	atatype format	N ₈		
		Unlock								
Field		Description			Sup.	Range	Unit	Default		
Mode			-0 = off			M	[0;1;2,4,5,6]		<mark>CS</mark>	
			1 = on2 = no change							
			- 4 = memory function value							
			5 = updated value							
		<u>_</u>	- 6 = value before loc	king				<u> </u>		
	unication	<mark>):</mark>								
	ddress:	l	IO Type(ID):	417 (LSA	B)		roperty ID: 129			
	e server)		Start-Index:							
	erty acce	SS:	Read only	_	Read/W	<u> </u>		_		
Prote	ection	Read level	Write level							
Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐										
	<u>-</u>									
Specia	I Feature	s:								
It is allo	owed to re	estrict the	range of values of thi	s paramete	e <mark>r</mark>					

1.5.30 Parameter SceneLearningModeEnable

FB:	LSAB	Property	y Name (<u>Server</u>): SceneLearningMod			Enable	Mandatory	/ ☐ Opt	ional 🛚	
Desc	Description:									
(e.g. t	This parameter is used to enable or disable globally for all scene numbers the learning of new scenes (e.g. to prevent unauthorized modification of scenes), regardless of the value of the field StorageFunction of the Scene Index in the Parameter SceneNumberList									
DPT:	OPT: Name DPT_Enable			DPT ID	1.003	Da	tatype format	B ₁		
Field			Description			Sup.	Range	Unit	Default	
			0: disable scene le	0: disable scene learning					disable	
			1: enable scene lea	earning						
Comi	municatio	on:								
	Address:		IO Type(ID):	417 (LSAB)		Property ID:		131		
(in t	he serve	r)	Start-Index:	1 N° o			of elements 1			
Pro	perty acc	ess:	Read only Read/Write 🖂				\boxtimes			
Protection			Read level	Read level			Write level			
Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐							• 🗌			
Spec	Special Features:									

1.5.31 Parameter SceneNumberList[n]

FB:	LSAB	Property Name (<u>Server</u>):	SceneNumberList[n]	Mandatory Optional				
Description:								
This parameter contains the list of Scene Numbers that are supported by FB LSAB. The list shall be								

implemented as an array property with:

- current_nr_of_elem: shall equal the number of scenes that is currently configured in this FB
- max_nr_of_elem: shall equal the maximal number of scenes that is supported by this FB
- current_nr_of_elem ≤ max_nr_of_elem ≤ 64

Array elements beyond the current_nr_of_elem are void and shall not be evaluated by the FB at runtime. These array elements have not been configured yet and are invalid.

Each array element represents scene configuration information for one Scene Index.

This list shall allow linking a Scene Number to a Scene Index within the FB.

Values at an index n in this array Property shall relate to the same Scene Number as the array elements in the following array Properties:

- SceneTaughtIn[]
- OnOffSetvalueScene[]

Each array element defines the following configuration information for one dedicated Scene Index:

- SceneNumber (0 to 63)
- activation/inactivation
- storage function enable/disable

FB: I	LSAB	Pr	operty I	Name (<u>Server</u>):	S	SceneNumb	erList[n]		Mandatory	/ Opt	ional 🛚
DPT:	Name]	OPT_Sc	PT_SceneConfig DPT ID 238.001 Datatype format B ₂ U ₆							
Field			Descri	ption	Sup.	Range	Unit	Default			
StorageFunction This field shall indicate whether it shall be possible or not to change the on/off set value for this Scene Number at runtime over the bus from FB SCS through input NumberedSceneControl. - 0: teach-in function enabled - 1: teach-in function disabled								cs			
SceneActive This field shall indicate whether or not the scene is active. If this field has the value <i>inactive</i> then this Scene Index is inactive and the contained Scene Number shall be regarded as void and not supported by the FB. 0 = scene is active 1 = scene is inactive								CS			
Scene	Constitution of the field shall contain the Constitution that the Market							CS			
Comm	Communication:										
DP Address: (in the server)				IO Type(ID): Start-Index:		417 (LSAI 1		Property N° of ele		132 see above	
Property access:				Read only			Read/Write	e l	\boxtimes		
Protection Read level						V	Vrite lev	rel			
Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐											
Special Features:											
This list does not need to be sorted. Active and inactive Scene Numbers can be at any Index position. Any Scene Number shall appear at maximum once in this list, and this list shall not have duplicate											

entries. This is the responsibility of the Management Client that sets this Property Value.

Behavior of the property server if this field is not supported: the receiver (server) shall ignore the written value of this bit and respond with the actual (default) value.

¹⁾ Support of this control field is optional. Teach-in may be enabled/disabled globally via ScenelearningModeEnable parameter.

1.5.32 Parameter SceneTaughtIn[n]									
FB:	LSAB	Property I	Name (<u>Server</u>):	SceneTaugl	ntln[n]		Mandator	y 🗌 Opt	ional 🛚
Desc	Description:								
For e scene This support - cu - m - cu Array Thes Scen this a Prope - Sc - O	For each Scene Index this Property shall contain a boolean indication whether or not the corresponding scene has been taught in already via input NumberedSceneControl. This Datapoint shall be an array Property which contains one entry for each Scene Index that is supported by the FB LSAB, with: - current_nr_of_elem: shall equal the number of scenes that is currently configured in this FB - max_nr_of_elem: shall equal the maximal number of scenes that is supported by this FB - current_nr_of_elem ≤ max_nr_of_elem ≤ 64 Array elements beyond the current_nr_of_elem are void and shall not be evaluated by the FB at runtime. These array elements have not been configured yet and are invalid. SceneTaughtIn information is interlinked with Scene Number via the Scene Index. Values at an index n in this array Property shall relate to the same Scene Number as the array elements in the following array Properties: - SceneNumberList[] - OnOffSetvalueScene[]								
DPT:	Name	DPT_Bo		DPT ID	1.002		type format		
Field		Descripti					Range	Unit	Default
b [n] - false: the Scene with Scene Index n is not (yet) taught in. - true: the Scene with Scene Index n is taught in. fal {0, 1} none fal						false			
Com	municatio	on:							
· · · · · · · · · · · · · · · · · · ·			IO Type(ID): Start-Index:	417 (LSAI 1	3)	Property ID: N° of elements		133 see above ¹⁾	
Pro	perty acc	ess:	Read only		Read/Write 🖂				
Pro	tection		Read level			Write le	evel		

Stored Value ☐ Act Value ☐

Special Features:

Exception Handling:

Value after Powerup:

Default Value

¹⁾ The number of array elements shall be the same as for Property SceneNumberList.

1.5.33 Parameter OnOffSetvalueScene[n]

1.3.33	1.3.33 Tatameter Ononsetvaluescene[n]									
FB: L	SAB	Property I	Name (<u>Server</u>):	Or	nOffSetval	ueScene	[n]	Mandator	y 🗌 Opt	ional 🛚
Descrip	Description:									
For each Scene N			Property shall defi	ine	the actuat	or On/Of	f state	after recalling	g a dedica	ted
	This Datapoint shall be an array Property which contains one entry for each Scene Index that is supported by the FB LSAB, with:									
- current_nr_of_elem: shall equal the number of scenes that is currently configured in this FB										
- max_	_nr_of_	elem: shall	equal the maximal	l nu	ımber of so	enes tha	at is su	pported by the	is FB	
- curre	ent_nr_	of_elem ≤ n	nax_nr_of_elem ≤	64						
Array elements beyond the current_nr_of_elem are void and shall not be evaluated by the FB at runtime. These array elements have not been configured yet and are invalid. OnOffSetvalueScene information is interlinked with Scene Number via the Scene Index. Values at an index n in this array Property shall relate to the same Scene Number as the array elements in the following array Properties: - SceneNumberList [] - SceneTaughtIn [] OnOffSetvalueScene may be solely defined by configuration or may be changed at runtime via input NumberedSceneControl if the storage function is enabled for that Scene Index.										
DPT:	Name				DPT ID	1.001		tatype format	B ₁	
Field		Description	า				Sup.	Range	Unit	Default
b [n] - off: calling of this scene will switch-off the light - on: calling of this scene will switch-on the light - on: calling of this scene will switch-on the light										
Commu	ınicatio	on:								
DP Address: IO Type(ID): 417 (LSAB) Property ID: 134						1)				
(in the server) Start-Index: 1 N° of elements see above 1)							ve ''			
	rty acc	ess:	Read only [Read/W				
Protec			Read level					level		
Excepti	Exception Handling: Value after Powerup: Stored Value 🖂 Act Value 🗌 Default Value 🗌									

Special Features:

1) The number of array elements shall be the same as for Property SceneNumberList.

2 FB Light Dimming Actuator Basic (LDAB)

2.1 Aims and objectives

The definitions in this document for FB Light Dimming Actuator Basic (LDAB) are an extension to the existing specification in [04] to describe the standardized LTE-Mode runtime interface and LTE-Mode specific parameters of FB LDAB.

The FB LDAB is used in the Application Domain Lighting:

- to exchange light switching and dimming commands and status information with light **Switching** and **Dimming Sensors** (traditional direct sensor actuator communication)
- ⇒ see also LTE-Mode extensions for [03] to be connected and controlled by a Lighting Controller (sensor controller actuator communication)

2.2 Functional specification

2.2.1 Overview

This functional specification focuses on LTE-Mode specific runtime data exchange and LTE-Mode specific parameters. LDAB functionality, state machines and standardized LDAB parameters are already specified in [04] and are therefore only referenced in this document.

Runtime interworking and binding of LDAB is based on LTE-Mode zoning concepts. Control commands and status feedback information are exchanged according to LTE-Mode mechanisms in a common LightingGroup.

In the LTE-Mode runtime system LightingGroup is mapped to existing LTE-Mode Geographical zones. Runtime process communication of LDAB is disabled if LightingGroup is 'OutOfService'

If the LDAB is connected to a Lighting Controller, the LTE-Mode runtime data interface of the LDAB is partially different from the runtime interworking between LDAB and lighting sensors LSSB/LDSB. The different mechanisms in the LTE-Mode runtime system are outlined in the following clauses.

The connection type (Sensor- or Controller-Connection) of the LDAB is configurable via parameter ActuatorMode.

2.2.2 Application model for direct sensor – actuator binding

2.2.2.1 Illustrations

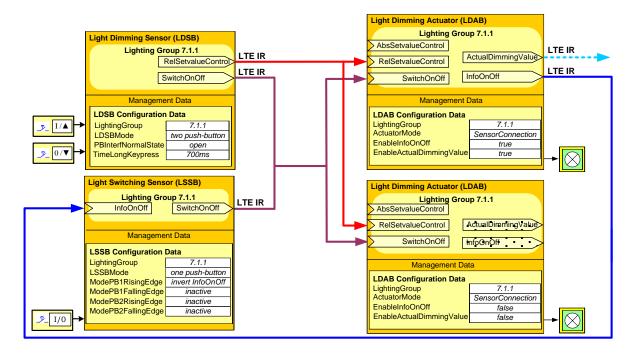


Figure 13 - Example of direct actuator communication with LDSB and LSSB

Figure 13 illustrates the binding of parallel Light Switching/Dimming Sensors LSSB/LDSB with two parallel Light Dimming Actuators LDAB in the same LightingGroup.

Control command SwitchOnOff is provided by both LSSB and LDSB using LTE-Mode InfoReport Service and received by both LDAB in the same LightingGroup.

Actuator feedback information InfoOnOff is provided by one LDAB actuator (configured as group-speaker) to support toggle functionality in the LSSB or to synchronize the binary state of a parallel LSAB, see example in Figure 2.

Transmission of InfoOnOff status information may be enabled or disabled via LDAB configuration parameter EnableInfoOnOff.

NOTE 8 Since both actuators are controlled together, InfoOnOff could in principle be provided by both LDAB. On/Off value of both actuator feedback messages would normally be identical (\Rightarrow last wins principle on the input in the LSSB). Redundant InfoOnOff messages create unnecessary traffic and should be avoided.

Control command RelSevalueControl to start/stop dimming up/down is provided by the LDSB using LTE-Mode InfoReport Service and received by both LDAB in the same LightingGroup.

Actuator feedback information ActualDimmingValue representing the current lighting level (% value) of the actuator is provided by one LDAB actuator (configured as group-speaker). This information may be useful for visualization for any other purpose. Transmission of ActualDimmingValue status information may be enabled or disabled via LDAB configuration parameter EnableActualDimmingValue.

NOTE 9 Since the dimming behavior of both actuators may not be identical it is recommended to provide this feedback information by one LDAB only. Otherwise the receiver of ActualDimmingValue will receive multiple subsequent messages with different values (last wins principle).

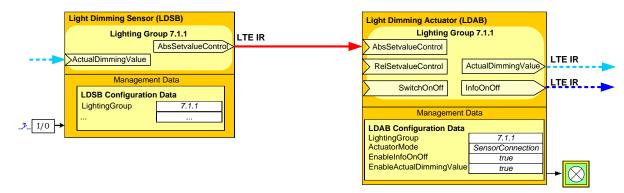


Figure 14 – LDSB providing control command to set LDAB to an absolute dimming value

Figure 14 illustrates the runtime interworking mechanisms between a LDSB and a LDAB with the purpose to directly control the absolute dimming value (% value) of the actuator.

Control command AbsSetvalueControl is provided by the LDSB using LTE-Mode InfoReport Service and received by the LDAB in the same LightingGroup.

Input AbsSetvalueControl has the same priority as inputs RelSetvalueControl or SwitchOnOff (last wins principle).

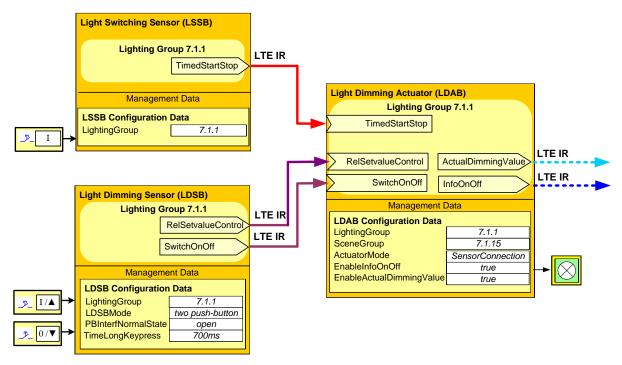


Figure 15 – Example of Autonomous switch-off function via TimedStartStop signal

Figure 15 illustrates the mechanism to trigger an autonomous switch-off function on the LDAB.

A LSSB or LDSB may provide an optional, dedicated trigger signal TimedStartStop to implement e.g. a 'staircase-function' in the actuator. TimedStartStop is distributed using LTE-Mode InfoReport mechanisms.

Input TimedStartStop on the LDAB will temporarily switch the actuator in the On-state for a defined time. Afterwards LDAB executes an autonomous switch off function. A manufacturer-specific prewarning action may be performed.

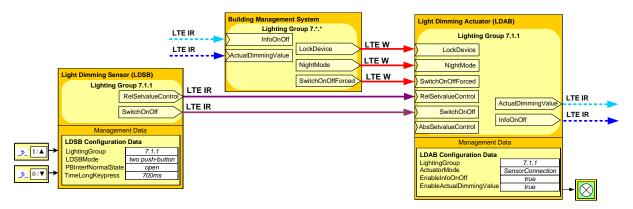


Figure 16 - Example of Building Management System overriding local LDSB commands

Figure 16 shows direct binding of a LDSB with a LDAB as illustrated in Figure 13. In addition a Building Management System may control the actuator with highest priority using SwitchOnOffForced commands and LTE-Mode Write Service. LTE-Mode wildcard features may be used to control all actuators in the same BuildingZone (e.g. 7.*.*).

Prioritized SwitchOnOffForced command overrides low priority inputs SwitchOnOff, RelSetvalueControl, AbsSetvalueControl and TimedStartStop to change the On/Off state of the LDAB.

Autonomous switching off of the actuator may be enabled/disabled via NightMode control input using LTE-Mode Write Service. Control commands with low priority can temporarily set the actuator in the On state (e.g. triggered via LDSB by the cleaning staff) but the actuator will autonomously switch off the light after a defined time period.

A Building Management System may freeze the actual state of the actuator via control command LockDevice using LTE-Mode Write Service. The specific behavior related to lock and unlock states and transitions can be controlled with additional LDAB configuration parameters.

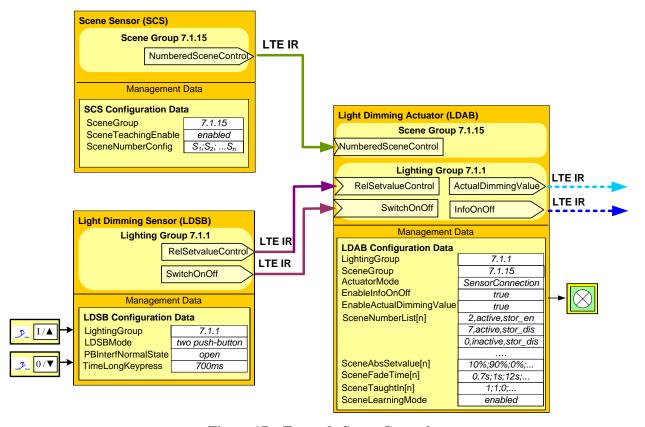


Figure 17 – Example Scene Control

Figure 17 illustrates the binding of a LDAB with a LDSB and a Scene Sensor SCS (see [02]).

SCS provides NumberedSceneControl information to recall or teach-in a scene. NumberedSceneControl message is distributed using LTE-Mode InfoReport mechanisms in a dedicated SceneGroup.

In the LTE-Mode runtime system SceneGroup is mapped to existing LTE-Mode Geographical zones.

On LDAB NumberedSceneControl input has the same priority as SwitchOnOff, RelSetvalueControl, AbsSetvalueControl inputs (last wins principle).

NumberedSceneControl command is received and processed by the LDABs belonging to a SceneGroup. After the execution of a scene recall command the LDAB group-speaker will provide updated InfoOnOff and ActualDimmingValue feedback information.

Execution of the scene command by the LDAB depends on various local scene configuration parameters. Therefore multiple LDAB in the same LightingGroup may react differently. In this case InfoOnOff and ActualDimmingValue information of the group-speaker will not represent the state of all LDAB in the LightingGroup.

It is highly recommended that pre-engineered scene configuration (storage function disabled) shall be identical for all LDAB in the same LightingGroup. The problem of inconsistent scene execution does not occur if scene teach-in feature is enabled on all LDAB for a given scene number.

2.2.2.2 LDAB input signals

Binary On/Off state and the dimming level of the LDAB can be controlled via various input Datapoints. The application program of the actuator prioritizes the different inputs to determine the resulting actuator setpoint.

- **SwitchOnOff**: low priority LTE-Mode IR input to receive light switching commands from lighting sensors.
 - input LSSB.SwitchOnOff to support light switching commands from LSSB
 - input LDSB.SwitchOnOff to support light switching commands from LDSB
- Both SwitchOnOff inputs are mandatory to connect the LDAB to Light Switching Sensors (LSSB) or Light Dimming Sensors (LDSB).
- **RelSetvalueControl**: mandatory, low priority LTE-Mode IR input to receive relative light dimming commands from LDSB. Depending on the received command this control signal triggers:
 - either a gradual increase/decrease of the dimming value by the dimming actuator starting from the current dimming level
 - or a stop of the dimming process
- **AbsSetvalueControl**: mandatory, low priority LTE-Mode IR input to receive absolute light dimming commands from LDSB. AbsSetvalueControl shall directly affect the setpoint (% value) of the actuator; with the additional rule that
 - AbsSetvalueControl = 0 % is interpreted as switch-off command
 - AbsSetvalueControl > 0 % is interpreted as switch-on command
- **TimedStartStop**: optional, low priority LTE-Mode IR trigger input to switch the LDAB actuator in the On-state for the time that is specified by the parameter TimedOnDuration and afterwards the LDAB will execute an autonomous switch-off function. Before the On time elapses, a manufacturer specific pre-warning action may be performed. The pre-warning time shall be specified by the parameter PrewarningDuration. For further details: see [04]
 - input LSSB.TimedStartStop to support trigger commands from LSSB
 - input LDSB.TimedStartStop to support trigger commands from LDSB

NOTE 10 Alternatively this behavior may also be achieved via NightMode control command in combination with e.g. SwitchOnOff input. Combination of TimedStartStop and NightMode inputs is usually not meaningful

Lighting

- **NightMode**: optional LTE-Mode W input to be written by e.g. a Building Management Station.
 - This input is used to activate/deactivate night mode of the actuator by a management client. During night mode permanent On state of the actuator is disabled. Input signals with low priority can temporarily set the actuator in the On state (e.g. triggered by the cleaning staff) but the actuator will autonomously switch off the light after a defined time period (e.g. defined by the parameter TimedOnDuration).
 - Before the actuator autonomously switches off, a manufacturer specific pre-warning action may be executed (e.g. blinking of the light). The parameter PrewarningDuration defines the duration between the start of this action and the time when the switch-off function is actually executed.

NOTE 11 Alternatively this behavior may also be achieved via TimedStartStop input. Combination of TimedStartStop and NightMode inputs is usually not meaningful

- **NumberedSceneControl**: optional, low priority LTE-Mode IR input to receive numbered scene commands from a scene sensor SCS.
 - This trigger input is used to call and store a maximum of 64 different On/Off-States in the LDAB.
 - NumberedSceneControl message is distributed by FB Scene Sensor SCS using LTE-Mode InfoReport mechanisms in a dedicated SceneGroup. In the LTE-Mode runtime system SceneGroup is mapped to existing LTE-Mode Geographical zones.
 - The number of scenes supported by the actuator can be lower than 64.
 - It is optionally allowed that the functionality of the actuator is solely limited to recalling scenes without teaching.

Scene configuration parameters:

SceneLearningModeEnable defines globally for all scenes if teach-in function is enabled or not SceneNumbers defines a list of Scene Numbers that are supported by FB LDAB.

- Each element of the list defines for a dedicated scene:
- ▲ the corresponding SceneNumber (0 to 63)
- ▲ scene active/inactive
- ▲ storage function enable/disable

SceneFadeTime defines the dimming speed for a dedicated scene.

BrightnessSceneNumber defines the absolute dimming value for a dedicated scene

NOTE 12 In the LTE-Mode implementation the Datapoints for binary scene control as well as SceneNumber to recall numbered scenes are not supported.

• **SwitchOnOffForced**: optional, high priority LTE-Mode W input to be written by e.g. a Building Management Station.

This control command is used to overrule lower priority inputs by a management client according to the following rules:

Value of SwitchOnOffForced	Mandatory behavior of the actuator
00b, 01b	SwitchOnOffForced is inactive. Low
	priority inputs are active.
11b	high priority On-state
10b	high priority Off-state

• **LockDevice**: optional, high priority LTE-Mode W input to be written by e.g. a Building Management Station. This control command is used to freeze the actual setpoint of the actuator by a management client. The specific behavior related to lock and unlock states and transitions can be controlled with additional parameters. For further details: see [04].

Lighting

- ControlModeUser: optional LTE-Mode IR input to receive a control command from FB LSSB or LDSB to indicate whether automatic control or manual control is requested by the room occupant. This process signal is usually intended for the runtime communication between a Lighting Sensor and a Lighting Controller, see specification of FB LSSB / LDSB and illustration in clause 2.2.3.
- However, from the perspective of the Lighting Sensor the Controller behaves like a LDAB actuator
 proxy to emulate traditional direct Sensor Actuator communication. Therefore input
 'ControlModeUser' is listed in this document as process signal of actuator proxy FB LDAB.
- In case of sophisticated actuators with built in controller functionality this input signal may also be useful on the LDAB for direct Sensor Actuator communication.
- **RelDimminmgSpeed**: optional LTE-Mode W input to be written by e.g. a Building Management Station. The value of RelDimmingSpeed defines the dimming speed to execute relative light dimming commands RelSetvalueControl.

If the LDAB is directly controlled by lighting sensors, the following LDAB inputs are disabled:

- SwitchOnOffControlCmd
- RelSetvalueControlCmd
- AbsSetvalueControlCmd
- FadeToControlCmd

The behavior is controlled by configuration parameter ActuatorMode

2.2.2.3 Input priority handling

High priority input SwitchOnOffForced having the value 'high priority On-state' or 'high priority Offstate' shall override the following low priority inputs that may change the On/Off state of the actuator

- SwitchOnOff,
- RelSetvalueControl
- AbsSetvalueControl
- NumberedSceneControl,
- TimedStartStop
- NightMode

so that only SwitchOnOffForced input shall be relevant for generating the On/Off state of the actuator. Groups of inputs with the same priority shall be processed independently from each other, i.e. the last message notification to an input shall be executed.

The functionality of LockDevice input and the behavior related to lock and unlock states and transitions is specified in [04].

2.2.2.4 LDAB output signals

- InfoOnOff: LTE-Mode IR output
 - Mandatory output to provide the current On/Off state of the actuator. Transmission of this output signal is triggered by COV and is cyclically repeated (heartbeat). This information can be used solely for visualization purposes or for implementing the toggle functionality in the Light Switching Sensor (LSSB) or Light Dimming Sensor (LDSB).
 - LTE-Mode representation of InfoOnOff may be enabled or disabled via configuration parameter EnableInfoOnOff. However the value of InfoOnOff is always accessible via Property Read service.

• **ActualDimmingValue**: LTE-Mode IR output ⁶⁾

- Mandatory output to provide the current dimming value of the actuator. Transmission of this output signal is triggered by COV and is cyclically repeated (heartbeat). During dimming the update characteristics of ActualDimmingValue may be defined by additional product specific parameters. This information can be used solely for visualization purposes or for any other purpose. Spontaneous transmission of ActualDimmingValue may in the LTE-Mode model be enabled or disabled via configuration parameter EnableActualDimmingValue. However the value of EnableActualDimmingValue is always accessible via Property Read service.

- ActuatorStatus: LTE-Mode IR output 6)

- Optional output containing the actual On/Off Level and various additional statuses attributes. This extended actuator status information fits more for the use with a Lighting Controller.
- Details: see Datapoint Type definition in [01].
- Spontaneous transmission of ActuatorStatus in the LTE-Mode runtime system may be enabled or disabled via configuration parameter EnableActuatorStatus. However the value of ActuatorStatus is always accessible via Property Read service.

ActuatorErrorInfo: LTE-Mode IR output

- This optional output contains error attributes of the actuator. Details: see Datapoint Type definition in [01].
- Spontaneous transmission of ActuatorErrorInfo in the LTE-Mode runtime system may be enabled or disabled via configuration parameter EnableActuatorErrorInfo. However the value of ActuatorErrorInfo is always accessible via Property Read service.

• **ControlModeEff**: LTE-Mode IR output

- This optional output indicates if manual or automatic control is currently active in the LightingGroup. This process signal is usually intended for the runtime communication between a LSSB/LDSB and a Lighting Controller, see specification of FB LSSB / LDSB and illustration in clause 2.2.3
- However, from the perspective of the LSSB / LDSB the Controller behaves like a LDAB actuator proxy to emulate traditional direct Sensor Actuator communication. Therefore output 'ControlModeEff' is listed in this document as process signal of actuator proxy FB LDAB.
- In case of sophisticated actuators with built in controller functionality this signal may also be useful on the LDAB for direct Sensor Actuator communication.

• **DetectedLoadType**: LTE-Mode IR output

- This optional output indicates the effective load type that is detected and applied by the actuator. Spontaneous transmission of DetectedLoadType in the LTE-Mode runtime system may be enabled or disabled via configuration parameter EnableDetectedLoadType. However the value of DetectedLoadType is always accessible via Property Read service.

⁶⁾ At runtime only one of both actuator status outputs will normally be activated by configuration either basic information containing the current lighting level or extended information containing the current lighting level and additional status attributes.

2.2.3 Application model for lighting sensor – controller – actuator binding

2.2.3.1 Illustrations

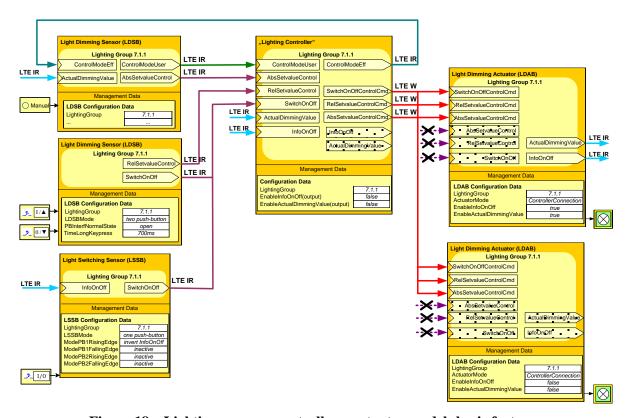


Figure 18 – Lighting sensor – controller – actuator model: basic features

Figure 18 illustrates the basic application model for <u>indirect</u> binding of Lighting Sensors LDSB with a Light Dimming Actuator LDAB via a Lighting Controller.

The LTE-Mode lighting application model supports binding of lighting sensors – controller and actuators in the same LTE-Mode Lighting Group. However it is possible to configure separate LightingGroups for the sensor-controller and the controller-actuator bindings.

Runtime interworking LSSB, LDSB – Controller:

The LTE-Mode Lighting application model does not define a dedicated "Lighting Controller" FB. The design and runtime interface of the Lighting Controller is manufacturer specific. However in the runtime system, the Lighting Controller shall emulate a Lighting Actuator "proxy LDAB" as the counterpart for the Lighting Sensors.

Lighting Sensors LSSB and LDSB are connected to a Lighting Controller to notify **SwitchOnOff** direct control commands requested by the room occupant (manual lighting control).

Lighting Sensors LDSB notify **RelSetvalueControl** or **AbsSetvalueControl** commands requested by the room occupant (manual lighting control). RelSetvalueControl and AbsSetvalueControl commands are provided by the LDSB using LTE-Mode InfoReport Service and are received by the Lighting Controller.

Inputs SwitchOnOff, RelSetvalueControl and AbsSetvalueControl on the Lighting Controller are usually processed with the same priority (last wins principle).

In addition LDSB may provide the optional signal **ControlModeUser** representing a request by the user to change from manual to automatic lighting control mode (and vice versa). The Lighting Controller provides the current lighting control mode ControlModeEff (automatic/manual) as optional feedback information for the LDSB. For further details: see specification of FB LDSB.

The Lighting Controller determines the resulting control command to change the setpoint of the connected LDAB according to control commands from LSSB, LDSB and other criteria (e.g. scheduler, room occupancy etc.).

Runtime interworking Lighting Controller- LDAB

The following dedicated, LTE-Mode specific process signal inputs are introduced on the LDAB to set the ON/Off state and to change the dimming level of the actuator.

- **SwitchOnOffControlCmd**: representing the On/Off setpoint of the actuator.
- **RelSetvalueControlCmd**: control command to start/stop dimming up/down.
- **AbsSetvalueControlCmd**: control command to set the absolute dimming level (% value) of the actuator.

These control commands are sent to the LDAB using LTE-Mode Write Service ⁷⁾ and are executed by the actuator with the same low priority (last wins principle).

The following LDAB inputs are generally disabled to inhibit all direct control commands from lighting sensors LSSB and LDSB.

- SwitchOnOff
- RelSetvalueControl
- AbsSetvalueControl
- TimedStartStop

These inputs are disabled on the LDAB via configuration parameter ActuatorMode.

LDAB status information

The dimming actuator may provide actuator feedback information **InfoOnOff** and **ActualDimmingValue** using LTE-Mode InfoReport Service.

Transmission of InfoOnOff status information may be enabled or disabled via LDAB configuration parameter EnableInfoOnOff.

Transmission of ActualDimmingValue information may be enabled or disabled via LDAB configuration parameter EnableActualDimmingValue

Usually actuator status information is provided by one LDAB only (configured to act as group-speaker).

InfoOnOff and ActualDimmingValue from LDAB may be received by the Lighting Controller and the Lighting Sensors as well, if Lighting Sensors – Controller and Actuators are connected via the same LTE-Mode LightingGroup. Otherwise the Lighting Controller may act as an actuator proxy to route InfoOnOff and ActualDimmingValue to the LSSB, LDSB in a different LightingGroup; see example in Figure 19.

NOTE 13 It is highly recommended to enable LDAB outputs ActualDimmingValue and InfoOnOff on a group-speaker in order to provide actual actuator status after power-return, or after execution of a scene command etc.

Please note that LTE Mode Write Service addresses the destination FB of the receiver (in this example the LDAB) whereas LTE Mode InfoReport Service contains the source FB of the sender.

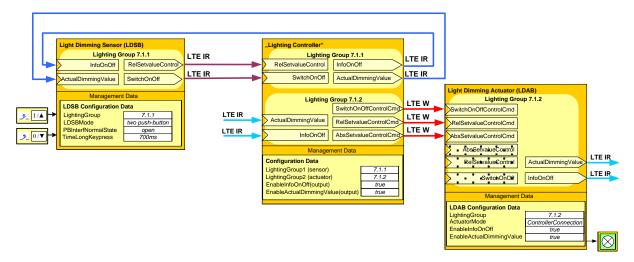


Figure 19 - Example with separate LightingGroups for sensors and actuators

Figure 19 illustrates binding of sensors and actuators with the Lighting Controller via separate LightingGroups.

- LDSB is connected to the Lighting Controller via in LightingGroup 7.1.1.
- LDAB is connected to the Lighting Controller via in LightingGroup 7.1.2.

Status information InfoOnOff, ActualDimmingValue from the LDAB is received by the Lighting Controller only. The Lighting Controller acts an actuator proxy to route InfoOnOff and ActualDimmingValue to the LDSB in a different LightingGroup.

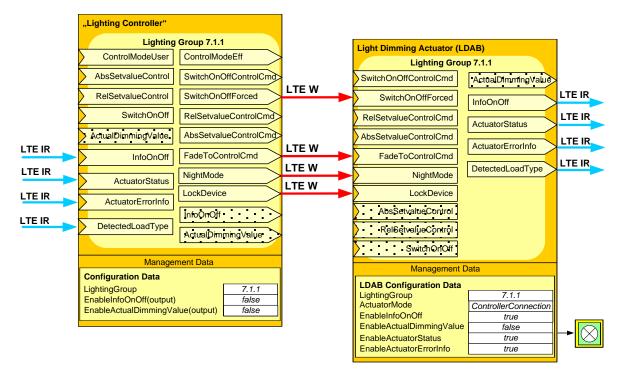


Figure 20 – Lighting sensor – controller – actuator model: extended features

Figure 20 illustrates the features of additional process signals between the Lighting Controller and the Lighting Actuator.

The Lighting Controller may control the On/Off state of actuator with highest priority using **SwitchOnOffForced** commands and LTE-Mode Write Service. LTE-Mode wildcard features may be used to control all actuators in the same BuildingZone (e.g. 7.*.*).

Prioritized SwitchOnOffForced command overrides input SwitchOnOffControlCmd, RelSetvalueControlCmd, AbsSetvalueControlCmd to change the On/Off state of the LDAB.

Autonomous switching off of the actuator may be enabled/disabled via **NightMode** control input using LTE-Mode Write Service. Control commands with low priority can temporarily set the actuator in the On state (e.g. triggered via LDSB by the cleaning staff) but the actuator will autonomously switch off the light after a defined time period

The Lighting Controller or an additional Management Client may freeze the actual state of the actuator via control command **LockDevice** using LTE-Mode Write Service. The specific behavior related to lock and unlock states and transitions can be controlled with additional LDAB configuration parameters.

Change of the dimming value triggered by RelSetvalueControlCmd, AbsSetvalueControlCmd messages is usually executed with a predefined, configured dimming speed. This mechanism does not support flexible dimming timings that can be changed for every dimming sequence. The process signal **FadeToControlCmd** containing the target dimming level and the fade time is introduced to fill this gap.

- field *target-level* represents the final dimming value (%)
- field *fade-time* represents the absolute dimming time from the actual dimming level to the target-level.

The Lighting Controller uses LTE-Mode Write Service to transmit FadeToControlCmd to the LDAB.

The actuator may provide additional status and error information. See description of outputs **ActuatorStatus**, **ActuatorErrorInfo** and **DetectdedLoadType** in clause 2.2.2.4.

In the example in Figure 20 output ActuatorStatus replaces output ActualDimmingValue which is disabled via parameter EnableActualDimmingValue.

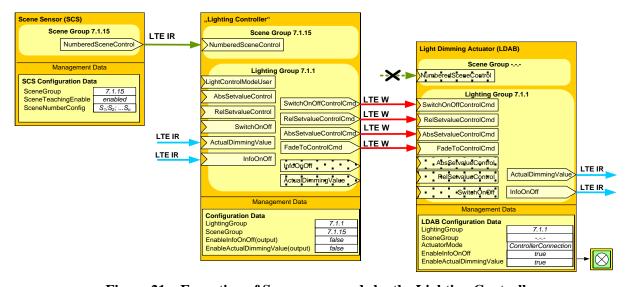


Figure 21 – Execution of Scene commands by the Lighting Controller

Figure 21 illustrates the binding of the Lighting Controller with a Scene Sensor SCS (see [02]).

SCS provides NumberedSceneControl information to recall or teach-in a scene. NumberedSceneControl message is distributed using LTE-Mode InfoReport mechanisms in a dedicated SceneGroup. In the LTE-Mode runtime system SceneGroup is mapped to existing LTE-Mode Geographical zones.

NumberedSceneControl command is received and processed by the Lighting Controller. Mapping of NumberedSceneControl command to scene number specific actuator states is handled by the Lighting Controller. The corresponding control commands are sent to the actuators that are affected by the scene command.

Input NumberedSceneControl on the LDAB shall be disabled via SceneGroup to be configured with the value 'OutOfService'

This is the preferred model to handle scenes by the Lighting Controller. Parallel LDAB in a LightingGroup are controlled in the same way and therefore actuator feedback information of the group-speaker represents the state of all actuators in the LightingGroup.

Alternative scene control model:

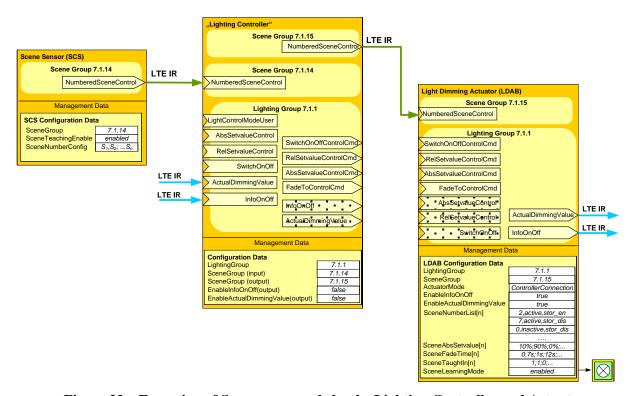


Figure 22 – Execution of Scene commands by the Lighting Controller and Actuator

Figure 22 illustrates an alternative solution to handle scenes by the Lighting Controller and the Lighting Actuator in a combined way.

Scene Sensor SCS and Lighting Actuators shall belong to separate SceneGroups to inhibit direct communication between the SCS and the LDAB.

NumberedSceneControl command from the SCS is received by the Lighting Controller and may be further processed and propagated to specific Lighting Actuators. Transformation of the NumberedSceneControl command by the Lighting Controller includes a mapping of scene numbers and scene groups.

The Lighting Controller acts as a proxy SCS and generates corresponding NumberedSceneControl command using LTE-Mode InfoReport Service.

NumberedSceneControl command is received and processed by the LDABs belonging to that SceneGroup; See description of Figure 17.

Execution of the scene command by the LDAB depends on local scene configuration parameters. Therefore multiple LDAB in the same LightingGroup may react differently. In this case InfoOnOff and ActualDimmingValue of the group-speaker will not represent the state of all LDAB in the LightingGroup.

2.2.3.2 LDAB input signals

Binary On/Off state and the dimming level of the LDAB can be controlled via various input Datapoints. The application program of the actuator prioritizes the different inputs to determine the resulting actuator setpoint.

- **SwitchOnOffControlCmd**: mandatory LTE-Mode W input to be written by the connected Lighting Controller. This command triggers an update of the On/Off setpoint of the actuator, which may be influenced by other inputs too (last wins principle).
- **RelSetvalueControlCmd**: mandatory LTE-Mode W input to be written by the connected Lighting Controller. Depending on the received command this control signal triggers:
 - either a gradual increase/decrease of the dimming value by the dimming actuator starting from the current dimming level
 - or a stop of the dimming process
- **AbsSetvalueControlCmd**: mandatory LTE-Mode W input to be written by the connected Lighting Controller to trigger dimming to an absolute dimming value. AbsSetvalueControlCmd shall directly affect the setpoint (% value) of the actuator; with the additional rule that
 - AbsSetvalueControl = 0 % is interpreted as switch-off command
 - AbsSetvalueControl > 0 % is interpreted as switch-on command
- **FadeToControlCmd**: optional LTE-Mode W input to be written by the connected Lighting Controller to trigger dimming to an absolute dimming value according to the command field *target-level*. Dimming shall be executed according to the additional command field *fade time*. Command field *fade time* represents the absolute dimming time from the actual dimming level to the *target-level*.
- **NightMode**: same functionality as described in clause 2.2.2.2
- NumberedSceneControl: same functionality as described in clause 2.2.2.2
- **SwitchOnOffForced**: optional, high priority LTE-Mode W input to be written by the connected Lighting Controller or by a Management Client. Same functionality as described in clause 2.2.2.2
- LockDevice: same functionality as described in clause 2.2.2.2
- ControlModeUser: same functionality as described in clause 2.2.2.2
- RelDimminmgSpeed: optional LTE-Mode W input to be written by the connected Lighting Controller to define the dimming speed to execute relative light dimming commands RelSetvalueControlCmd.

If the LDAB is connected to a Lighting Controller, the following LDAB inputs are generally disabled:

- SwitchOnOff
- RelSetvalueControl
- AbsSetvalueControl
- TimedStartStop

The behavior is controlled by configuration parameter ActuatorMode.

2.2.3.3 Input priority handling

High priority input SwitchOnOffForced having the value 'high priority On-state' or 'high priority Offstate' shall override all lower priority inputs

- SwitchOnOffControlCmd,
- RelSetvalueControlCmd
- AbsSetvalueControlCmd
- FadeToControlCmd
- NumberedSceneControl,
- NightMode

so that only SwitchOnOffForced input shall be relevant for generating the On/Off state of the actuator.

Groups of inputs with the same priority (SwitchOnOffControlCmd, RelSetvalueControlCmd, AbsSetvalueControlCmd, FadeToControlCmd, NumberedSceneControl) shall be processed independently from each other, i.e. the last message notification to an input shall be executed.

The functionality of LockDevice input and the behavior related to lock and unlock states and transitions is specified in [04].

2.2.3.4 LDAB Output signals

- **InfoOnOff**: same functionality as described in clause 2.2.2.4
- ActualDimmingValue: same functionality as described in clause 2.2.2.4
- **ActuatorStatus**: optional LTE-Mode IR output containing the actual On/Off Level and various additional statuses attributes. Details: see DPT definition in [01].
- Spontaneous transmission of ActuatorStatus in the LTE-Mode runtime system may be enabled or disabled via configuration parameter EnableActuatorStatus. However the value of ActuatorStatus is always accessible via Property Read service.
- ActuatorErrorInfo: optional LTE-Mode IR output containing error attributes of the actuator.
 Details: see Datapoint Type definition in [01]. Spontaneous transmission of ActuatorErrorInfo in the
 LTE-Mode runtime system may be enabled or disabled via configuration parameter
 ActuatorErrorInfo. However the value of ActuatorErrorInfo is always accessible via Property Read
 service.
- **ControlModeEff**: same functionality as described in clause 2.2.2.4
- **DetectedLoadType**: same functionality as described in clause 2.2.2.4

2.2.4 Power-return, power-failure and backup behavior

2.2.4.1 Power-return and restart behaviour

After power-return or an application restart, the actuator output shall always be in a defined state. The behaviour may be manufacturer specific or is defined via the following optional configuration parameters:

PowerReturnMode:

- off
- on
- no change (meaningful in case of bistable relay outputs)
- value according to parameter PowerReturnValue
- last (value before power down)
- PowerReturnValue: predefined dimming value 0 % to 100 %

2.2.4.2 Power-failure behaviour

In case of power failure (e.g. interruption of mains power), the LSAB may set the actuator output to a defined state before shutdown of the microcontroller. The behaviour may be manufacturer specific or is defined via the following optional configuration parameter:

PowerFailureMode:

- off
- on
- no change

2.2.4.3 Backup behaviour

In case of a communication failure (e.g. bus interruption) the LSAB may set the actuator output to a defined state. The behaviour may be manufacturer specific or is defined via the following optional configuration parameters:

BusFailureMode:

- off
- on
- no change
- value according to parameter BusFailureValue
- BusFailureValue: predefined dimming value 0 to 100 %

After recovery of the bus communication, the LSAB may set the actuator output to a defined state. The behaviour may be manufacturer specific or is defined via the following optional configuration parameters:

BusReturnMode:

- off
- on
- no change
- value according to parameter BusReturnValue
- last (value before bus failure
- BusReturnValue: predefined dimming value 0 to 100 %

2.3 Functional Block diagram

FB Light	Dimming Actua	ator Basic (LDAB)	418
Inputs	<u> </u>	, /	Outputs
	ng Grp.: Lighting	Group (Geographical)	•
IR: LSSB.SwitchOnOff			IR: InfoOnOff
IR: LDSB.SwitchOnOff			IR: ActualDimmingValue
IR: LDSB.RelSetvalueControl			IR: ActuatorStatus
IR: LDSB.AbsSetvalueControl			IR: ActuatorErrorInfo
IR: LSSB.TimedStartStop			IR: DetectededLoadType
IR: LDSB.TimedStartStop			IR: ControlModeEff
IR: LSSB.ControlModeUser			
IR: LDSB.ControlModeUser			
W: SwitchOnOffControlCmd 8)			
W: SwitchOnOffForced ⁸⁾			
W: RelSetvalueControlCmd			
W: AbsSetvalueControlSetp			
W: FadeToControlCmd			
W: LockDevice ⁸⁾			
W: NightMode ⁸⁾			
W: RelDimmingSpeed			
<u> </u>			
	g Grp.: SceneG	Group (Geographical)	
IR: SCS.NumberedSceneControl			
additional I/Os			Parameters, Diagnostic Data
None			LightingGroup (Geographical)
			SceneGroup (Geographical
			ActuatorMode
			EnableInfoOnOff
			EnableActualDimmingValue
			EnableActuatorStatus EnableActuatorErrorInfo
			EnableDetectedLoadType
			OnDelay
			OffDelay
			TimedOnDuration
			PrewarningDuration
		PowerF	ReturnMode + PowerReturnValue
			ısFailureMode + BusFailureValue
		Вι	usReturnMode + BusReturnValue
			PowerFailureMode
			haviourAtLocking + LockSetvalue
		Behavi	ourAtUnlocking + UnlockSetvalue
			SceneLearningModeEnable
			SceneNumberList[n]
			SceneTaughtIn[n] SceneAbsSetvalue[n]
			SceneFadeTime[n]
			MinimumSetvalue
			MaximumSetvalue
			DimmModeSelection
			SwitchOnMode
			SwitchOnSetvalue
			RelativOffEnable
			LoadAdatptation
	1		2000.10017

⁸⁾ Important note: These input Datapoints are used to control both LSAB and LDAB. Due to the usage of LTE Mode Write Service the destination FB is addressed. I.e. a Lighting Controller must send two messages to control parallel LSAB and LDAB in the same Lighting Group.

mandatory	optional	IR: LTE-Mode InfoReport	W: LTE-Mode Write

Figure 23 – Functional Block Diagram for FB Light Dimming Actuator Basic

NOTE 14 The LTE-Mode Write Service addresses the destination FB of the receiver (i.e. LDAB for the SwitchOnOffControlCmd

input) whereas LTE-Mode InfoReport Service contains the source FB of the sender (i.e. SCS for NumberedSceneControl input). Therefore all LTE-Mode W inputs are directly addressing local properties of the LDAB. For further details: see [05].

2.4 Datapoints

Datapoint	Description	Datapoint Type	LDAB PID
Inputs			
LSSB.SwitchOnOff LDSB.SwitchOnOff	Request from a Lighting Sensor LSSB, LDSB to switch the light on (=1) or off (=0)	DPT_Switch (1.001)	LSSB PID 61 LDSB PID 61
LDSB.RelSetvalueControl	Input to receive relative light dimming commands from LDSB. Depending on the received command this control signal triggers either a gradual increase/decrease of the dimming value or a stop of the dimming process	DPT_Control_Dimming (3.007)	LDSB PID 62
LDSB.AbsSetvalueControl	Input to receive absolute light dimming commands from LDSB. AbsSetvalueControl shall directly affect the setpoint (% value) of the actuator	DPT_Scaling (5.001)	LDSB PID 63
LSSB.TimedStartStop LDSB.TimedStartStop	Trigger from a Lighting Sensor LSSB, LDSB to activate a timed switch on and autonomous switch off function	DPT_Start (1.010)	LSSB PID 65 LDSB PID 65
SCS.NumberedScene- Control	Trigger form a Scene Sensor or a Lighting Controller (sender FB SCS) to recall or learn the output state related to the encoded scene number	DPT_SceneControl (18.001)	SCS PID 61
LSSB.ControlModeUser LDSB.ControlModeUser	Request from a Lighting Sensor LSSB / LDSB to select automatic or manual light control	DPT_LightControlMode (20.604)	LSSB PID 64 LDSB PID 64
SwitchOnOffControlCmd	Input to control the actuator On/off state by a Lighting Controller	DPT_Switch (1.001)	PID 60
SwitchOnOffForced	Input to override the current actuator setpoint by a management client e.g. by a Lighting Controller or by a BMS. This input can overrule lower priority inputs like SwitchOnOff, SwitchOnOffControlCmd.	DPT_Switch_Control (2.001)	PID 61
NightMode	Input to activate/deactivate night mode of the actuator, e.g. by a BMS. During night mode low priority input signals can temporarily set the actuator in the On state but the actuator will autonomously switch off the light after a defined time period.	DPT_Enable (1.003)	PID 63

Datapoint	Description	Datapoint Type	LDAB PID
Inputs			
RelSetvalueControlCmd	Input to receive relative light dimming commands from a Lighting Controller. Depending on the received command this control signal triggers either a gradual increase/decrease of the dimming value or a stop of the dimming process	DPT_Control_Dimming (3.007)	PID 64
AbsSetvalueControlCmd	Input to receive absolute light dimming commands from a Lighting Controller. AbsSetvalueControlCmd shall directly affect the setpoint (% value) of the actuator	DPT_Scaling (5.001)	PID 65
FadeToControlCmd	Input to be written by a Lighting Controller to trigger dimming to an absolute dimming value according to the command field target-level. Dimming shall be executed according to the additional command field fade time. Command field fade time represents the absolute dimming time from the actual dimming level to the target-level.	DPT_ScalingSpeed (225.001)	PID 66
RelDimmingSpeed	Runtime parameter to define the dimming speed to execute relative light dimming commands RelSetvalueControl and RelSetvalueControlCmd This parameter may be implemented as a normal parameter Property without support of LTE-Mode runtime communication features	DPT_TimePeriod 100MSec (7.004)	PID 67
LockDevice	Input to freeze the actual setpoint of the actuator e.g. by a Lighting Controller or by a BMS. The specific behavior related to lock and unlock states and transitions can be controlled with additional parameters	DPT_Enable (1.003)	PID 69

Datapoint	Description	Datapoint Type	LDAB PID
Outputs			
InfoOnOff	Status information from the actuator to indicate the status of the light on (=1) or off (=0)	DPT_Switch (1.001)	PID 51
ActualDimmingValue	Status information from the actuator representing the current dimming value of the actuator.	DPT_Scaling (5.001)	PID 52
ActuatorStatus	Dimming actuator status information including the actual dimming value and various status attributes	DPT_StatusLighting- Actuator (207.600)	PID 53

Datapoint	Description	Datapoint Type	LDAB PID
Outputs			
ControlModeEff	Feedback information from the actuator to indicate if manual or automatic control is currently active in the LightingGroup	DPT_LightControlMode (20.604)	PID 54
ActuatorErrorInfo	Dimming actuator status information containing various error attributes of the actuator	DPT_LightActuatorError Info (21.601)	PID 55
DetectedLoadType	Actuator status information indicating the detected load type - 0 = undefined - 1 = leading edge (inductive load) - 2 = trailing edge (capacitive load) - 3 = detection not possible or error DetectedLoadType may be implemented as a normal diagnostic Property without support of LTE-Mode runtime communication features	DPT_LoadType- Detected (20.610)	PID 56

Datapoint	Description	Datapoint Type	LDAB PID
Parameters			
LightingGroup (3 Properties)	LTE-Mode Geographical Zone - Building zone like Floor, Apartment - Room within the Building zone - Subzone within the Room	- DPT_UcountValue8_Z (202.002) - DPT_UcountValue8_Z (202.002) - DPT_UcountValue8_Z (202.002)	PID 101- 103
SceneGroup (3 Properties)	LTE-Mode Geographical Zone - Building zone like Floor, Apartment - Room within the Building zone - Subzone within the Room	- DPT_UcountValue8_Z (202.002) - DPT_UcountValue8_Z (202.002) - DPT_UcountValue8_Z (202.002)	PID 104- 106
ActuatorMode	Parameter to define whether the LDAB is connected to Lighting Sensors or to a Lighting Controller - 1: SensorConnection - 2: ControllerConnection	DPT_ActuatorConnect- Type (20.020)	PID 110
EnableInfoOnOff	Parameter to enable or disable spontaneous transmission of actuator state InfoOnOff in the LTE-Mode runtime system	DPT_Enable (1.003)	PID 111
EnableActualDimming- Value	Parameter to enable or disable spontaneous transmission of actuator state ActualDimmingValue in the LTE-Mode runtime system	DPT_Enable (1.003)	PID 112
OnDelay	Delay before changing from OFF-state -> ON-state.	DPT_TimePeriod- _10msec (7.003)	PID 113
OffDelay	Delay before changing from ON-state -> OFF-state.	DPT_TimePeriod- _10msec (7.003)	PID 114
TimedOnDuration	ON time before an autonomous switch- off function is executed	DPT_TimePeriodSec (7.005)	PID 115

Datapoint	Description	Datapoint Type	LDAB PID
Parameters			
PrewarningDuration	Pre-warning time before an autonomous switch-off function is executed.	DPT_TimePeriodSec (7.005)	PID 116
EnableActuatorStatus	Parameter to enable or disable spontaneous transmission output ActuatorStatus in the LTE-Mode runtime system	DPT_Enable (1.003)	PID 117
EnableActuatorErrorInfo	Parameter to enable or disable spontaneous transmission of output ActuatorErrorInfo in the LTE-Mode runtime system	DPT_Enable (1.003)	PID 118
EnableDetectedLoadType	Parameter to enable or disable spontaneous transmission of DetectedLoadType	DPT_Enable (1.003)	PID 119
PowerReturnMode	Parameter to define the behaviour of the actuator after return of the supply power or after a restart of the application. Lighting state of the actuator: - 0 = off - 1 = on - 3 = value according additional parameter PowerReturnValue - 4 = last (saved value at power down)	DPT_BehaviourBus- Power UpDown (20.601)	PID 120
PowerReturnValue	Parameter in addition to parameter PowerReturnMode = 3; to define the behaviour after power return	DPT_Scaling (5.001)	PID 121
BusFailureMode	Parameter to define the behaviour of the actuator in case of a bus failure. Lighting state of the actuator: - 0 = off - 1 = on - 2 = no change - 3 = value according additional parameter BusFailureValue	DPT_BehaviourBus- Power UpDown (20.601)	PID 122
BusFailureValue	Parameter in addition to parameter BusFailureMode = 3; to define the behaviour in case of a bus failure	DPT_Scaling (5.001)	PID 123
BusReturnMode	Parameter to define the behaviour of the actuator in case of a recovery of the bus. Lighting state of the actuator: - 0 = off - 1 = on - 2 = no change - 3 = value according additional parameter BusReturnValue - 4 = last (saved value at bus failure)	DPT_BehaviourBus- PowerUpDown (20.601)	PID 124
BusReturnValue	Parameter in addition to parameter BusReturnMode = 3; to define the behaviour after a recovery of the bus.	DPT_Scaling (5.001)	PID 125

Datapoint	Description	Datapoint Type	LDAB PID
Parameters			
PowerFailureMode	Parameter to define the behaviour of the actuator in case of the supply power failure, to switch e.g. a bistable relay before power down of the device: - 0 = off - 1 = on - 2 = no change	DPT_BehaviourBus- Power UpDown (20.601)	PID 126
BehaviourAtLocking	Parameter to define the behaviour of the actuator in case of input LockDevice changing from false -> true: - 0 = off - 1 = on - 2 = no change - 3 = value according to parameter LockSetvalue	DPT_Behaviour_Lock_ Unlock (20.600)	PID 127
LockSetvalue	Parameter in addition to parameter BehaviourAtLocking = 3; to define the behaviour at the beginning of the lock state	DPT_Scaling (5.001)	PID 128
BehaviourAtUnlocking	Parameter to define the behaviour of the actuator in case of input LockDevice changing from true -> false: - 0 = off - 1 = on - 2 = no change - 3 = value according to parameter UnlockSetvalue - 4 = memory function value - 5 = updated value - 6 = value before locking	DPT_Behaviour Lock_Unlock (20.600)	PID 129
UnlockSetvalue	Parameter in addition to parameter BehaviourAtUnlocking = 3; to define the behaviour at the end of the lock state	DPT_Scaling (5.001)	PID 130
SceneLearningMode- Enable	Enables or disables globally for all scene numbers the learning of new scenes, regardless of the value of any field Storage Function of the Scene Index in the Parameter SceneNumberList.	DPT_Enable (1.003)	PID 131
SceneNumberList[n]	List of Scene Numbers that are supported by this FB LDAB. This parameter is implemented as an array property with n (up to 64) elements. This list shall allow linking a Scene Number to a Scene Index within the FB. Each array element defines for a dedicated scene: SceneNumber (0 to 63) activation/inactivation storage function enable/disable	DPT_SceneConfig (238.001)	PID 132

Datapoint	Description	Datapoint Type	LDAB PID
Parameters			
SceneTaughtIn[n]	This parameter is implemented as an array property with n (up to 64) elements. Each element indicates for a dedicated scene, whether the scene n has been taught in or not	DPT_Bool (1.002)	PID 133
SceneAbsSetvalue[n]	This parameter is implemented as an array property with n (up to 64) elements. Each element defines the absolute dimming value for a dedicated scene	DPT_Scaling (5.001)	PID 134
SceneFadeTime[n]	This parameter is implemented as an array property with n (up to 64) elements. Each element defines the dimming speed as fixed total time after which the new set value of the recalled scene shall be reached	DPT_TimePeriod 100MSec (7.004)	PID 135
MinimumSetvalue	This parameter defines the minimum dimmable value. A value below the minimum dimming value forces a switch-off or setting the actual dimming value to MinimumSetvalue (default behaviour).	DPT_Scaling (5.001)	PID 140
MaximumSetvalue	This parameter defines the maximum dimming value. A value above the maximum dimming value is limited by the MaximumSetvalue.	DPT_Scaling (5.001)	PID 141
DimmModeSelection	Selects the behaviour dimming/jumping after reception of AbsSetvalueControl or AbsSetvalueControlCmd	DPT_Ramp (1.004) (no ramp == jumping)	PID 142
SwitchOnMode	This parameter defines the initial dimming value after changing from OFF-state -> ON-state due to commands SwitchOnOff and SwitchOnOffControlCmd - 0 = last actual value - 1 = value according additional parameter SwitchOnSetvalue - 2 = last received absolute setvalue	DPT_SwitchOnMode (20.608)	PID 143
SwitchOnSetvalue	Parameter in addition to parameter SwitchOnMode = 1 to define the initial dimming value after changing from OFF-state -> ON-state	DPT_Scaling (5.001)	PID 144
RelativOffEnable	Parameter to enable/disable switching- off the light due to commands - RelSetvalueControl - RelSetvalueControlCmd if the newly calculated set value is below MinimumSetvalue.	DPT_Enable (1.003)	PID 145
LoadAdaptation	Parameter to select the load type - 0 = automatic - 1 = leading edge (inductive load) - 2 = trailing edge (capacitive load)	DPT_LoadTypeSet (20.609)	PID 146

Table 4 - support of LTE-Mode runtime process data

		Act	uatorMode
		SensorConnection	ControllerConnection
Inputs	LSSB.SwitchOnOff LDSB.SwitchOnOff	M	NA
	LDSB.RelSetvalueControl	M	NA
	LDSB.AbsSetvalueControl	M	NA
	LSSB.TimedStartStop LDSB.TimedStartStop	0	NA
	SCS.NumberedSceneControl	0	0
	SwitchOnOffControlCmd	NA	М
	RelSetvalueControlCmd	NA	М
	AbsSetvalueControlCmd	NA	М
	FadeToControlCmd	NA	0
	SwitchOnOffForced	0	0
	LockDevice	0	0
	NightMode	0	0
	RelDimmingSpeed	O 1)	O 1)
	LSSB.ControlModeUser ⁹⁾ LDSB.ControlModeUser ¹⁰	0	NA
Outputs	InfoOnOff	0	М
	ActualDimmingValue	M	М
	ActuatorStatus	0	0
	ActuatorErrorInfo	0	0
	DetectedLoadType	O 1)	O 1)
	ControlModeEff *)	0	0

⁹⁾ These Datapoints may be implemented as normal diagnostic or configuration Properties with or without support of LTE-Mode runtime communication features.

¹⁰⁾ Process signals 'ControlModeUser' and 'ControlModeEff' are usually intended for the runtime communication between a Lighting Sensor and a Lighting Controller, see specification of FB LSSB / LDSB. However, from the perspective of the Lighting Sensor the Controller behaves like a LDAB actuator proxy to emulate traditional direct Sensor – Actuator communication. Therefore input 'ControlModeUser' and output 'ControlModeEff' are listed in this document as process signals of actuator proxy FB LDAB. In case of sophisticated actuators with built in controller functionality these signals may also be useful on the LDAB for direct Sensor - Actuator communication. In case of Sensor - Controller – Actuator communication, the LDAB in the Actuator shall disable these process signals.

Table 5 - LTE-Mode specific Properties

		Support
Parameter	LightingGroup	М
	SceneGroup	0
	ActuatorMode	М
	EnableInfoOnOff	М
	EnableActualDimmingValue	М
	EnableActuatorStatus	0
	EnableActuatorErrorInfo	0
	EnableDetectedLoadType	0

Table 6 - Standard Properties of Interface Object

		Support
Parameter	OnDelay	0
	OffDelay	0
	TimedOnDuration	0
	PrewarningDuration	0
	PowerReturnMode	0
	PowerReturnValue	0
	BusFailureMode	0
	BusFailureValue	0
	BusReturnMode	0
	BusReturnValue	0
	PowerFailureMode	0
	BehaviourAtLocking	0
	LockSetvalue	0
	BehaviourAtUnlocking	0
	UnlockSetvalue	0
	SceneLearningModeEnable	0
	SceneNumberList[n]	0
	SceneTaughtIn[n]	0
	SceneAbsSetvalue[n]	0
	SceneFadeTime[n]	0
	MinimumSetvalue	0
	MaximumSetvalue	0
	DimmModeSelection	0
	SwitchOnMode	0
	SwitchOnSetvalue	0
	RelativOffEnable	0
	LoadAdaptation	0
	RelDimmingSpeed	O ¹¹⁾
Diagnostic Data	DetectedLoadType	O ¹¹⁾

¹¹⁾ These Datapoints may be implemented as normal diagnostic or configuration Properties with or without support of LTE Mode runtime communication features.

2.5 Detailed specification of the Datapoints

2.5.1 Output InfoOnOff

FB:	LDAB	LTE-M Name:		Server Output	InfoOnOff			Mandatory	⊠ ¹⁾ Opt	ional 🗌
Desc	ription:						÷			
				des the current bina						
				ed solely for visualiz		ses, for	implemen	ting the togg	le functio	onality in
	-			Sensors or for othe						
DPT:	Name				DPT ID	1.001		ype format	B ₁	
Field				cription		Sup.	Range	Unit	COV	Default
b				cates the switching		М	{0, 1}	-	-	-
			Off	lighting actuator: Or (0)	1 (1) Or					
Com	municatio	n:						·	.	
Bind	ling Grou	ıp:								
Clas	s			Туре			Default			
Geo	graphical		X	BuildingZone.Roor	m.Subzone		cs (see p	oarameter Li	ghtingGr	oup)
Appl	ication Sp	ecific [
Una	ssigned			Broadcast (Configurable					
	Address:			IO Type(ID):	418 (LDAB		Property		51	
	-Mode-Se	ervices			MinRepTime		sec			15 <u>min</u>
(eve		F	_	Output per default		ing 🖂		Group Wild	_	wed 📙
	Report			Tx Prio:	High 🗌		Norma	al 🔀	Low	
	E-Mode Reponse pol									
	output sha		/S	Transm after Powe	erup: Stored	Value [Act \	/alue 🛛 D	efault Va	alue 🗌
	upported)		•							
Prop	perty-Servividual ac	vice		Read only		Read/W	/rite			
	ption Har							Save at	Powerde	own \square
	ption mai	iaiiiig.						Cave at	1 OWCIG	JWII
Spec	ial Featur	es:								
¹⁾ Ma	andatory i	n case o		ontrollerConnection						
				ne actuator state will						
				in the same zone,						
				e zone are controlle	_	-	ent InfoO	nOff feedbac	ck messa	ages
				st wins principle on						
				r to reduce network						ıme
				nominated by LDAB nOff is disabled, Inf						for
	dividual a			· · · · · · · · · · · · · · · · · · ·	oonon signa	u call (l	oe useu IC	n ine-check	idilollolls	101

2.5.2 Output ActualDimmingValue

FB:	LDAB	LTE-Mo Name:	de Server Output	ActualDim	mingVa	lue	Mandatory	⊠¹) Opt	ional 🗌
Desc	ription:			-		*			
			gValue provides the					ıator.	
This i	nformatio		sed solely for visualiz		ses or f	or other pu	rposes.		
DPT:	Name	DPT_S	caling	DPT ID	5.001	Datat	pe format	U ₈	
Field			escription		Sup.	Range	Unit	COV	Default
Actua	ıl value	Α	ctual dimming value ir	n percent	М	0 to 100 %	%	cs 2)	-
Com	municatio	n:		•	•		-	-	
Bind	ling Grou	p:							
Clas	S		Туре			Default			
Geo	graphical	\boxtimes	BuildingZone.Roo	m.Subzone		cs (see p	arameter Li	ghtingGr	oup)
Appl	ication Sp	ecific 🗌							
Una	ssigned		Broadcast	Configurable	e 🗌				
DP A	Address:		IO Type(ID):	418 (LDAI	3)	Property	ID:	52	
LTE	-Mode-Se	rvices	COV 🔘 2)	MinRepTim	e:	cs sec	Heartl	oeat:	15 min
(eve	nt):		Output per default	communica	ting 🖂	Binding	Group Wild	card allo	wed 🗌
	Report	\boxtimes	Tx Prio:	High 🗌		Norma		Low	
Resp outp	E-Mode Re conse poll ut shall alvorted)	ing of the	Transm after Powe	erup: Stored	d Value	☐ Act V	′alue ⊠ C	efault Va	alue 🗌
Prop	erty-Servividual ac		Read only]	Read/V	Vrite			
Exce	ption Har	ndling:					Save	at Power	down
					·				
Spec	ial Featur	es:							

- After a change from DIMMING to On or Off state, the resulting stable ActualDimmingValue shall be sent just after completion of the dimming process.
- After entering the DIMMING state, ActualDimmingValue may be sent, with an allowed latency (e.g. few hundreds of ms).
- Further intermediate updates of ActualDimmingValue during DIMMING are optional

If multiple actuators are in the same zone, each actuator may send its own ActualDimmingValue message. Since all actuators in the same zone are normally controlled together, subsequent ActualDimmingValue feedback messages would be identical \Rightarrow last wins principle on the receivers. Group speaker: in order to reduce network traffic, one group speaker out of all LDAB in the same Lighting Group can be nominated by LDAB configuration via parameter EnableActualDimmingValue. If transmission of EnableActualDimmingValue is disabled, EnableActualDimmingValue signal can't be used for life-check functions for individual actuators anymore.

¹⁾ Spontaneous transmission of ActualDimmingValue may be disabled if optional output ActuatorStatus is implemented and activated by configuration.

²⁾ Transmission of this output signal is triggered by COV and is cyclically repeated (heartbeat). During dimming the update characteristics of ActualDimmingValue may be defined by additional product specific parameters.

2.5.3 Output ActuatorStatus

FB:	LI	DAB				e S	erver Output	Ac	ctuatorSt	atus			Manda	atory [Optio	onal 🛚
Desc	rin	tion:	IN	lame	e. <u> </u>			-								
			แล	torS	tatus	in	dicates the currer	nt d	imming v	alue of t	he la	mn :	and add	ditional	status	
							an be used solely									
DPT:		Name					sLightingActuato		DPT ID	207.6			tatype 1		U ₈ B	8
Field					Des	crip	otion			Sup.	Ra	nge		Unit	COV	Default
Actua	alVa	alue					dimming value in	pe	rcent	M	0 %	6 to	100 %	%	cs 2)	-
Attrib					Bit #	Ė										
		tualVa	lue	9	0		Validity of field A			M	{0,	•			Y 3)	1
- Locl	kec	t			1		true ⇒ actuator			0	{0,	1}			3)	0
					0		e.g. via input Lo				(0	41			3)	
- Ford	ceo	1			2		true ⇒ forced o			0	{0,	1}			0,	0
							is active, e.g. via SwitchedOnOffF									
- Niat	ntN/	1odeAc	tiv	_	3		true ⇒ night mo			0	{0,	13			3)	0
l vigi		1000/10		Ŭ	Ū		e.g. via input Ni				(0,	٠,				
							the actuator will		,							
							autonomously s									
							the light after a	defi	ned							
04=:		! :	4!	_	4		time		_		(0	41			3)	
- Stai Fur		seLigh	ıtın	g	4		true ⇒ staircase			0	{0,	1}			0,	0
i ui	ICII	OH					function is active input TimedStar									
- Dim	mii	na			5		true ⇒ actuator		•	0	{0,	13			2)	0
		9			Ū		DIMMING	13 1	II State		(0,	٠,				
							false ⇒ actuato	r is	not in							
							state DIMMING									
- Loca	alC	verride	9		6		true ⇒ actuator	set	tvalue is	0	{0,	1}			3)	0
							locally overridde									
- Fail					7		a local user inte				(0	41			3)	0
		inicatio	- m				General actuato	па	llure	0	{0,	1}				0
		g Grou														
Clas			_			Т	ype				Dof	ault				
					<u> </u>											
		aphical				В	uildingZone.Rooi	m.S	Subzone		cs (see	parame	eter Lig	htingGr	oup)
App	lica	ation Sp	oec	cific												
Una	ssi	gned				В	roadcast 🗌 💢	Cor	nfigurable							
		dress:				IC	D Type(ID):	4	18 (LDAE	3)	Pro	pert	y ID:	5	3	
		ode-Se	erv	vices	S		OV 🛛 1)		RepTim			sec		-leartbe		15 <u>min</u>
(eve							output per default			ting 🛚				Wildc	ard allo	wed 🗌
Infol		port Iode R	00			T	x Prio:		High 🗌		N	lorm	al 🛚		Low	
		nse pol								_			_	_		
		put sha				T	ransm after Powe	erup	o: Stored	l Value [Act '	Value 🏻	∐ De	fault Va	ılue 🗌
be s	up	ported))													
		ty-Ser				R	tead only	1		Read/W	/rite		П			
		dual ac				Ľ	Codd Only	И		. toda/vv						
Exce	pti	on Har	ndl	ling	:								Sa	eve at F	Powerdo	own 🗌

Special Features:

In case of Lighting Controller – Actuator interworking this output may be activated instead of output ActualDimmingValue because extended actuator status information fits more for the use with a Lighting Controller.

¹⁾ Spontaneous transmission of this output can be enabled disabled via the parameter EnableActuatorStatus. Spontaneous transmission is triggered by COV and is cyclically repeated (heartbeat).

Group speaker: in order to reduce network traffic, one group speaker out of all LDAB in the same LightingGroup can be nominated by LDAB configuration via parameter EnableActuatorStatus. If transmission of ActuatorStatus is disabled, this signal can't be used for life-check and supervisory functions for individual actuators anymore

- ²⁾ During dimming the update characteristics of ActuatorStatus.ActualValue may be defined by additional product specific parameters.
- After a change from DIMMING to ON or OFF state, the resulting stable ActuatorStatus shall be sent just after completion of the dimming process.
- After entering the DIMMING state, ActuatorStatus may be sent, with an allowed latency (e.g. few hundreds of ms).
- Further intermediate updates of ActuatorStatus during DIMMING are optional

³⁾ If this Attribute is supported: a COV of the binary Attribute triggers immediate spontaneous transmission in the states ON and OFF. An immediate update during DIMMING is optional, see ²⁾

2.5.4 Output ActuatorErrorInfo

FB: LDAB LTE-Mode Server Output Actuator ErrorInfo Mandatory ☐ Optional ☐ Name:											
Description:	<u> </u>				-						
The output A	ctuatorE	rrorli	nfo c	ontains basic e	rror status info	rmatic	n (bitset) of the	e actuat	or.	
				atic error inforn							ose (not
				al Alarm which	supports an A	arm st	ate macl	hine aı	nd Alarr	n	
acknowledge											
DPT : Nam	e DF			ctuatorErrorInfo	DPT ID	21.6			e forma		
Field				ption		Su	o. Rar	nge	Unit	COV	Default
Attributes	_		it #								_
- LoadDetecti	onError		0	Load detection wrong load type		0	{0, '	1}		Y	0
- Undervoltag	е		1	Undervoltage supply	of mains	0	{0,	1}		Υ	0
- Overcurrent			2	Overcurrent / on load side	short circuit	0	{0,	1}		Υ	0
- Underload			3	Underload / no load side	o load on	0	{0,	1}		Υ	0
- DefectiveLo	ad		4	Overvoltage /		0	{0,	1}		Υ	0
LampEailur			5	pulses on load General failur		0	{0,	11		Y	0
LampFailureOverheat	;		6	Thermal overl						Ϋ́	0
- Overneat			U	actuator	oad of the		ίο,	1 }		'	U
- reserved			7	actuator			0				0
Communicat											
Binding Gro	oup:										
Class			Тур	ре			Default				
Geographica			Bui	ldingZone.Roo	m.Subzone		cs (see	parar	neter Li	ghtingGr	oup)
Application S	Specific										
Unassigned			Bro	oadcast 🗌	Configurable [
DP Address			10	Type(ID):	418 (LDAB)		Proper	ty ID:		55	
LTE-Mode-S	Service	S	CO		MinRepTime:		se		Hearth		60 min
(event):				tput per default		ng 🖂			up Wild	card allo	wed 🗌
InfoReport		\boxtimes	Tx	Prio:	High 🗌		Norn	nal 🛚		Low	
(LTE-Mode											
Response p			Tra	nsm after Powe	erup: Stored \	/alue [Act	Value	D 🖂	efault Va	lue 🗌
the output sl be supported		ays			•	_			_		_
Property-Se											
(individual		١-	Rea	ad only 🛛 🗵		Read/W	/rite				
Exception H									Save at	Powerdo	own \square
								<u> </u>			
Special Feat	ures:										
	transm		of t	his output can b	oe enabled dis	abled	via the p	arame	eter		
EnableActuat	OIEIIOI	IIIIO									

2.5.5 Output ControlModeEff

FB:	LDAB	LTE-Mod Name:	E-Mode Server Output ControlModeEff Mandatory Option									
Desc	ription:			-								
This i	nformatio	n can be u	dicates if manual or sed solely for visuali ors LSSB/LDSB in th	zation purpo	ses, or	to synch	ronize	Controll				
DPT:	Name		ghtControlMode	DPT ID	20.604		_	format	N ₈			
Field			cription		Sup.	Range		Unit	COV	Default		
Contr	olMode	auto con valu	s field shall indicate was matic control (0) or crol (1) is currently across 2 to 255 are reserve extensions	manual ctive	M	0, 1 *)		-	-	cs		
Comi	nunicatio	<u>.</u>	TE EXTENSIONS									
	ling Grou											
Clas	s		Туре			Defau	lt					
Geo	graphical	\boxtimes	BuildingZone.Roo	m.Subzone		cs (se	e para	meter Li	ghtingGr	oup)		
Appl	ication Sp	ecific										
Una	ssigned		Broadcast	Configurable	e 🗌							
	Address:		IO Type(ID):	418 (LDA			rty ID:		54			
	-Mode-Se	ervices	COV 🛛	MinRepTim			ec	Hearth		15 min		
(eve			Output per default		iting 🖂			oup Wilde		wed 🗵		
	Report E-Mode Re		Tx Prio:	High 🗌		Nor	mal 🛚		Low			
Resp the d be s	oonse pol output sha upported)	ling of Ill always	Transm after Pow	erup: : Store	ed Value	☐ Ac	t Value	e⊠ D	efault Va	alue 🛚		
	perty-Servividual ac		Read only		Read/W	/rite						
Exce	ption Har	ndling:						Save at	Powerd	own 🗌		
	ial Featui											
¹⁾ Usu	ally this c	output may	only implemented in	n a Controlle	r which	emulate	s a LD	AB actua	ator prox	y, see		
		ause 1.2.3										
This o	output is d	isabled if t	he LDAB is controlle	ed by a Cont	roller (≕	see pa	ramet	er Actuat	orMode)		

2.5.6 Output DetectedLoadType

FB:	LDAB	LTE-Mode	e Server Output	DetectedLo	oadType	M	Mandatory Optional			
Desc	ription:					•				
	•	dLoadType	indicates the effect	ive load type	e that is	detected ar	nd applied b	y the ac	tuator.	
			that the detection of							
- Valu	e detection	on not poss	ible or error means	that the det	ection o	f the load ty	pe was tecl	hnically i	not	
pos	sible or h	as resulted	in an error							
			on procedure will res							
			sed solely for diagno			n purposes	or for other	purpose	es	
			Adaptation to select t	the load typ						
DPT:	Name		adTypeDetected	DPT ID	20.610		oe format	N ₈		
Field		Descri			Sup.	Range	Unit	COV	Default	
Load	Гуре		eld shall indicate the	detected	M	0 to 3	-	Υ	CS	
		load ty								
			ndefined							
			ading edge (inductiv							
			ailing edge (capaciti							
Came	nunicati		etection not possible	or error						
	nunication									
DIIIU	ing Grou	ıp:								
Clas	S		Туре			Default				
Geo	graphical		BuildingZone.Roor	m.Subzone		cs (see pa	rameter Li	ghtingGr	oup)	
	ication Sp	ecific								
	ssigned			Configurable						
	Address:		IO Type(ID):	418 (LDAI		Property I		56	1)	
	-Mode-Se	ervices		MinRepTim		sec	Heartb			
(eve			Output per default		ting 🖂		Group Wilde	card allo	wed 🔲	
	Report		Tx Prio:	High 🗌		Normal	\boxtimes	Low		
	:-Mode Re conse pol									
		ıll always	Transm after Powe	erup: : Store	d Value	☐ Act Va	alue 🛛 🛛 De	efault Va	ılue 🗌	
	upported)									
	erty-Ser			7						
	vidual ad		Read only]	Read/V	Vrite L				
	otion Har		-				Save at	Powerd	own 🗌	
							•			
Speci	ial Featu	es:								
•			of DetectedLoadTy	pe in the L7	E-Mode	runtime sy	stem may b	e enabl	ed or	
			parameter EnableDe							
is alw	ays acces	ssible via P	roperty Read service	∍.						
1) The	value of	the heartbe	eat repetition period i	is manufact	urer spe	cific. It is red	commende	d to impl	ement	
rather	long hea	rtbeat perio	ods (e.g. 60 minutes	or longer) s	ince the	probability	that the val	ue will c	hange is	
very lo	-	<u> </u>	· -							
· · · · · ·										

2.5.7 Input SwitchOnOff

FB:	LDAB	LTE-Mo-	de Client Input	Sı	witchOnOff			N	landatory [☑ ¹⁾ Opti	onal 🗌
Desc	ription:							Š			
			dicates the reques	t fro	om a Lightin	ng Senso	r L	SSB, LD	SB to swite	ch the ligi	nt on
	or off (=0).										
			tchOnSetvalue, Sv				n a	nd Max	imumSetva	lue define	e the
			nging from OFF-sta	ate							
DPT:	Name	DPT_S			DPT ID	1.001		Dataty	pe format	B ₁	
Field			Description						Sup.	Unit	Default
b			This field indica						M		none
			requests to swit	ch t	the light on	(1) or of	f (0)			
	municatio										
	ing Grou	p:	<u> </u>								
Class		<u> </u>	Туре					efault			
	graphical		BuildingZone.R	oon	n.Subzone		CS	(see pa	arameter Li	ghtingGro	oup)
	cation Sp	ecific			<u> </u>	. —					
	signed		Broadcast		Configurat						
DP A	Address:		IO Type(ID):		421 (LSSI 420 (LDSI	,	Р	roperty	ID:	61	
LTE-	Mode-Se	rvice	InfoReport Snif	fer	on Binding	Group:					
(eve	,		Timeout:				М	in			
	Report	\boxtimes	Timeout.				IVI	111			
	Mode-Se	rvice									
(poll			Read Wildcard	/Re	esp Sniffer	on Bindii	ng (Group:			
	l – Respo										
	after Po		Defau	ılt √	/alue 🗌				S	tored Val	ue <u> </u>
Exce	ption Har	ndling:						S	ave at Pow	erdown/	
	ial Featu										
		y input on	the actuator can b	e o	verruled by	other in	put	s. See p	riority hand	lling in	
	e 2.2.2.3				_						
		with Nigh	tMode, a timed sw	itch	on and aut	tonomou	IS S	witch-of	t tunction ca	an be	
	mented										
		disabled it	the LDAB is contr	olle	d by a Ligh	ting Con	itrol	ller (\Rightarrow s	see parame	eter	
Actua	itorMode)										

2.5.8 Input RelSetvalueControl

FB:	LDAB	LTE-Mode Client Input Name:	RelSetvalueControl	Mandatory 🛛 1) Optional 🗌							
Desc	ription:										
RelS	RelSetvalueControl is used for relative dimming to increase/decrease the setpoint of the dimming actu-										

RelSetvalueControl is used for relative dimming to increase/decrease the setpoint of the dimming actuator. RelSetvalueControl supports two mechanisms to implement the dimming function between LDSB and LDAB:

- the setpoint value of the dimmer is increased and decreased starting from the current value via combined start/stop and increase/decrease command attributes
- c field: 0 = dim down / 1 = dim up
- StepCode field: 000b = Stop dimming
- StepCode field: 001b = Start dimming in the full dimming range
- This is the standard mechanism for relative dimming
- The setpoint value of the dimmer is increased and decreased in relative steps starting from the current value via step increase/decrease attributes in the RelSetvalueControl signal. Each update of RelSetvalueControl triggers one dimming step in the actuator
- c field: 0 = dim down / 1 = dim up
- StepCode field: 000b = Stop dimming
- StepCode field: x, with x > 001b = Start dimming with a predefined step increment
- x: 010b... 111b indicates the number of intervals into which the dimming range of 0 % to 100 % is subdivided.
- Number of intervals= $2^{\Lambda^{(stepcode-1)}}$,.e.g. StepCode= 100b \Rightarrow number of intervals= 8 \Rightarrow 1 step= 12,5 %
- The following intervals can be encoded: 50 %, 25 %, 12,5 %, 6,25 %, 3,12 % and 1,625 %

- The following intervals t	zan be encoded. Sc	76, 23 %, 12,3 %	o, o,∠	25 %, 3,12	% and 1,0	25 %	
DPT : Name DPT_Co	ontrol_Dimming	DPT ID 3.00	07	Datatype	e format	B_1U_3	
Field	Description				Sup.	Unit	Default
С	Dimming direction	n: dim up (1) / dim	dov	vn (0)	M		
StepCode	Start/Stop comma	ands and number	of s	tep	M		
	intervals respective	vely are encoded;	see	above			
Communication:					-	•	-
Binding Group:							
Class	Туре			Default			
Geographical 🖂	BuildingZone.Roo	m.Subzone		cs (see pa	arameter Li	ghtingGro	oup)
Application Specific							
Unassigned	Broadcast	Configurable _					
DP Address:	IO Type(ID):	420 (LDSB)		Property	ID:	62	
LTE-Mode-Service	InfoReport Sniffe	er on Binding Gro	up:				
(event):	Timeout:			Min			
InfoReport 🖂	Timeout.			IVIIIII			
LTE-Mode-Service							
(polling):	Read Wildcard / F	Resp Sniffer on Bi	indir	ng Group:			
Read – Response							
Value after Powerup:	Default	Value 🛚			S	tored Val	ue 🗌
Exception Handling:				(3)	Save at Po	werdown	
Special Features:							
This low priority input can	be overruled by oth	ner inputs. See pri	iority	/ handling i	in clause 2	.2.2.3	
1) This input is disabled if t	he LDAB is control	led by a Lighting (Cont	troller (⇒ s	see parame	eter	
ActuatorMode)				,	•		
•							

2.5.9 Input AbsSetvalueControl

FB:	LDAB		LTE-Mode Client Input AbsSetvalueControl Mandatory ∑ ¹) Optional ☐									
		Name:										
	ription:											
			vided by FB LDSE								olute	
			tor. Parameter Dir									
			ection is set to 'rar									
			set-value immedia	itely ((default be	ehaviou	if param	eter	DimmMo	odeSelect	tion is	
	plemente											
DPT:	Name	DPT_S		[DPT ID	5.001	Datat	ype	format	U ₈		
Field			Description						Sup.	Unit	Defa	ult
SetVa			Dimming actuate	or set	tpoint in %	o			M	%		
	nunicatio											
	ing Grou	ıp:										
Class			Туре				Default					
	graphical		BuildingZone.Ro	om.S	Subzone		cs (see	para	meter Li	ghtingGro	oup)	
	cation Sp	ecific										
	ssigned		Broadcast		onfigurab							
	Address:		IO Type(ID):		120 (LDSE		Propert	y ID	:	63		
	Mode-Se	rvice	InfoReport Sniff	er or	n Binding	Group:		-	-			
(eve	•	_	Timeout:				Min					
	Report		Timeout.									
	Mode-Se	rvice		_			_					
(poll	•		Read Wildcard /	Resp	p Sniffer c	n Bindii	ng Group					
	l – Respo											
	after Po		Defau	lt Val	ue 🔛					tored Val	ue 💹	
Exce	ption Har	ndling:						Sav	e at Pov	verdown		
	ial Featui											
		y input on th	ne actuator can be	e ove	rruled by	other in	puts. See	prio	rity hand	lling in		
	e 2.2.2.3											
1) This	s input is o	disabled if t	he LDAB is contro	olled I	by a Light	ing Con	troller (⇒	see	parame	eter		
	torMode)											

2.5.10 Input TimedStartStop

FB:	LDAB		LTE-Mode Client Input Name:				imedStartSto	op		Ма	Mandatory ☐ Optional ☒ 1)			
Desc	ription:				-					<u> </u>				
	•				indicates the reque		t from a Light	ting Se	nsc	or LSSB,	LDSB to	trigger a t	imed	
switch	n on and a	aut	tonor	nous	s switch off function	n								
DPT:	Name	!	DPT	_Sta	art		DPT ID 1	1.010		Datatyp	e format	B ₁		
Field					Description						Sup.	Unit	Default	
b					b = 1 triggers the				tch	on and	M			
							switch off fun							
					b = 0: switch off in	mr	mediately and	d stop	the	timer				
	nunicatio													
	ing Grou	p:			T 			1	_					
Class					Туре					efault				
	raphical				BuildingZone.Roo	om	n.Subzone		CS	(see par	ameter L	ightingGro	oup)	
	cation Sp	ec	ITIC		D		0 6							
	signed				Broadcast		Configurable							
рр А	ddress:				IO Type(ID):		421 (LSSB) 420 (LDSB)		P	roperty II	D:	65		
	Mode-Se	rvi	ice		InfoReport Sniffe	er	on Binding G	Proup:						
(ever	•			_	Timeout:				Mi	in				
	eport			\boxtimes	Timeout.									
	Mode-Se	rvi	ice			_	0 ""	5		_				
(polli	•		-	_	Read Wildcard / I	Re	esp Sniffer on	Bindir	ng (Group:				
	l – Respo				5 ()	. ,								
	after Po				Default	: V	alue 🛚					Stored Val	ue 🖳	
Exce	ption Har	ndl	ling:							Sa	ve at Pov	verdown		
	ial Featui													
		y ir	nput	on th	ne actuator can be	O۷	erruled by of	ther inp	outs	s. See pri	ority han	dling in		
	e 2.2.2.3													
			abled	d if t	ne LDAB is control	lec	d by a Lightin	ig Cont	rol	ler (⇒ se	e parame	eter		
Actua	torMode)													

2.5.11 Input NumberedSceneControl

FB:	LDAB	LTE-Mode Name:	e Client Input	NumberedSceneControl				datory [Optio	nal 🛚
Desc	ription:									
			eControl indicates							
			Controller to reca							number
			cene number that	is supporte	d by the ac	ctuator is c	ompa	any spe	cific.	
DPT:	Name	DPT_S	ceneControl	DPT I	18.001	Datat	ype f	ormat	B ₁ r ₁ U ₆	
Field			Description					Sup.	Unit	Default
С			Control informati		de recall/le	arning of t	he	М	-	-
			scene control inf							
			0: recall the scer							
			to the field So							
			1: teach-in the se							
0	- N I I		to the field So					N 4		
Scene	eNumber		Selects the num	per of the s	cene to be	controlled	(0	М	-	-
Co			to 63)							
	municatio									
	Binding Group: Class Type Default									
		<u> </u>	Type							\
	graphical	Secific D	BuildingZone.Ro	om.Subzor	<u>1e</u>	cs (see p	aran	neter Sc	eneGrou	ıp)
	ication Sp	ecific	Danada a st	0 6						
	ssigned Address:		Broadcast	Configu		Droport	. ID.		<u>^</u>	
	·Mode-Se	rvioo	IO Type(ID): InfoReport Sniff	403(SC		Property	/ וט:		61	
(eve		ivice	mokepon Shin	er on bina	ng Group.					
	Report	\boxtimes	Timeout:			Min				
	·Mode-Se									
		VICE	Read Wildcard /	Resn Sniff	er on Rindi	na Group:				
	(polling): Read Wildcard / Resp Sniffer on Binding Group:									
	Value after Powerup: Default Value Stored Value									
	ption Har		20.00				Save		erdown	
			rt less than the ma	aximum nur	nber of 64					arned
			is not supported, t				u. 00.			
	ial Featu									
			ne actuator can be	overruled	by other in	puts. See	priori	ty hand	ling in	
	his low priority input on the actuator can be overruled by other inputs. See priority handling in ause 2.2.2.3									

2.5.12 Input SwitchOnOffControlCmd

FB:	LDAB	LTE-Mode Name:	Server Input	SwitchOn	OffControl	Cmd	Man	datory [⊠ ¹⁾ Optio	onal 🗌
	ription:			_			-			
	•	hOnOffCon	tolCmd is used to	directly cor	trol the Or	n/Off stat	e of th	e actuat	or by a L	ighting.
Contr										
DPT:	Name	DPT_Sv		DPT ID	1.001	Data	atype f		B ₁	
Field			Description					Sup.	Unit	Default
b			This field indicate				ller	M		CS
-			requests to switch	the light	on (1) or of	f (0)				
	municatio									
Bind	ing Grou	p:								
Class	3		Туре			Default				
Geog	graphical		BuildingZone.Ro	om.Subzor	ie	cs (see	paran	neter Lig	htingGro	oup)
Appli	cation Sp	ecific								
Unas	signed		Broadcast	Configu	able 🗌					
DP A	ddress:		IO Type(ID):	418 (LC	AB)	Proper	ty ID:		60	
	Mode-Se	rvice								
(eve	•	_	Timeout:			Min				
Write										
	erty-Serv		Read only		Read/V	Vrite	\boxtimes			
•	vidual ac		•							
	after Po		Defaul	t Value 🗌			1 -		ored Val	ue 📙
	ption Har								er-down	
	Behavior at Power Down or after PowerUp is product specific and may be defined by configuration arameters.									
Spec	Special Features:									
This i	nput can	be overrule	d by high priority in	nputs Switc	hOnOffFo	rced or L	ockDe	vice. Se	e priority	
		use 2.2.2.3								
		with NightN	Node, a timed swit	ch on and a	autonomou	ıs switch	off fur	ection ca	ın be	
	mented						_			
l '' If th	e LDAB i	s directly co	entrolled by lighting	g sensors, S	SwitchOnC	offContro	lCmd i	nput is o	disabled.	The
behav	ehavior is controlled by configuration parameter ActuatorMode.									

2.5.13 Input SwitchOnOffForced

FB:	LDA	В	LTE-Mode Name:	e Server Input	SwitchO	nOffl	Forced		Man	datory	Optio	onal 🛚
Desc	riptio	n:							-			
			e the currer	nt actuator setpoin	t by a ma	anage	ement cl	lient e.c	. by a l	_iahtina	Controlle	r or by a
				tion. This input car								
			ntrolCmd.	·				·				
DPT:	Na	ame	DPT_Sw	vitch_Control	DPT	ID	2.001	Da	atatype 1	format	B ₂	
Field				Description						Sup.	Unit	Default
С				orced is inactive.						M		cs
				nputs are active.					l			
		_		orced is active.					l			
				int according v field					ļ			
				nputs are overrule	d.				ļ			
V		-	: v is void						ļ	М		cs
		c=1:		~··					l			
			high priorit						l			
			high priorit	y On-state							<u> </u>	<u> </u>
	munic											
	ling G	irou	p:									
Class	Class Type Default											
Geog	graphi	cal	\boxtimes	BuildingZone.Ro	om.Subz	one		cs (se	e parar	neter Liç	ghtingGro	oup)
Appli	ication	ı Spe	ecific									
Unas	ssigne	d		Broadcast	Config	gurab	le 🗌					
DP A	Addres	ss:		IO Type(ID):	418 (l	LDAE	3)	Prope	erty ID:		61	
	Mode	-Se	rvice									
(eve			_	Timeout:				Min				
Write												
	erty-S			Read only			Read/W	√rite	\boxtimes			
	(individual access):											
				Defaul	t Value L						tored Val	
			ndling:	, 5 H							ver-down	
	- Behavior at Power Down or after PowerUp is product specific and may be defined by parameters. Special Features:											
												• :
				the actuator can o	verrule of	ther n	iormal a	ind low	priority	inputs.	See prio	rity
	handling in clause 2.2.2.3 and 2.2.3.3											
i ne ir	he input may be set out of service by means of the c field in order to enable lower priority inputs											

2.5.14 Input LockDevice

FB:	LDAB		Server Input	LockDevi	се			М	andatory	Opti	onal 🛚
		Name:		-							
	ription:								<u> </u>		
			etpoint of the actu								
			specific behavior						nd transit	ions can	be
			arameters Behavi		ing /	LockS	etva	llue			
			/ UnlockSetvalue								
DPT:	Name	DPT_Er		DPT II) 1	1.003		Datatype		B ₁	
Field			Description						Sup.	Unit	Default
b			1: shall lock the a			urrent	stat	e	M		CS
			0: shall unlock th	e actuator							_
	municatio										
Bind	ding Groເ	ıb:									
Clas	S		Туре				De	fault			
Geo	Geographical BuildingZone.Room.Subzone cs (see parameter LightingGroup										
App	Application Specific										
Una	ssigned		Broadcast	Configu	rable	:					
DP A	Address:		IO Type(ID):	418 (LI	DAB)		Pr	roperty ID):	69	
LTE	-Mode-Se	ervice	, , , ,	,							
(eve	ent):		Timeout:				Mir	n			
Write	е	\boxtimes									
	perty-Ser ividual ad		Read only		R	Read/W	/rite				
Value	after Po	wer-up:	Defaul	t Value 🗌					S	tored Val	ue 🗌
Exce	Exception Handling: Save at Power-down										
Beha	Behavior after power-return: either persistent storage of LockDevice value or initialization with a default										
	value is allowed. The mechanism is product specific and may be defined by parameters.										
Usual	lly after po	ower-return	the default value i	is set to un	locke	ed (0)					
	ial Featui										
	his high priority input on the actuator can overrule other lower priority inputs. See priority handling in										
claus	lause 2.2.2.3 and 2.2.3.3										

2.5.15 Input NightMode

FB:	LDAB	LTE-Mode Name:	Server Input	NightMode	•		Mandatory	Opti	onal 🛚
Desc	ription:		_			Ţ			
the action (e.g. time p	ctuator is	disabled. In by the clear fore the act	leactivate night mod put signals with low ning staff) but the ac uator autonomously	priority can tuator will a	tempora utonomo	arily set the ously switch	actuator in off the ligh	the On s t after a	tate defined
DPT:	Name	DPT_En	able	DPT ID	1.003	Dataty	pe format	B ₁	
Field	I		Description		l		Sup.	Unit	Default
b			1: enables night m	ode			M		CS
			0: disables night m						
Comi	nunicatio	on:					- i	"	-
Bind	ling Grou	ıp:							
Clas	Class Type Default								
Geographical BuildingZone.Room.Subzone cs (see parameter Lighting)				ghtingGro	oup				
Appl	ication Sp	ecific							
Unas	ssigned		Broadcast	Configurat	ole 🗌				
DP A	Address:		IO Type(ID):	418 (LDA	B)	Property	ID:	63	
LTE- (eve Write	•	ervice	Timeout:			Min			
	erty-Servividual ac		Read only]	Read/W	Vrite [\leq		
Value	after Po	wer-up:	Default \	/alue 🗌			St	ored Val	ue 🗌
Exce	Exception Handling: Save at Power-down Behavior after power-return: either persistent storage of NightMode value or initialization with a default								
									efault
			hanism is product sp			defined by p	arameters.		
			the default value is	set to 'disal	ole' (0).				
Spec	ial Featu	res:							

2.5.16 Input RelSetvalueControlCmd

FB:	LDAB	LTE-Mode Name:	Server Input	RelSetvalue	eControlC	Cmd	Ма	indatory [⊠ ¹⁾ Opti	onal 🗌
Desc	ription:									
The in RelSe Contr	nput RelS etvalueCo oller and e setpoint ombined s	ntrolCmd so LDAB: value of the tart/stop and	trolCmd is used to upports only the <u>s</u> e dimmer is incread d increase/decrea 1 1 = dim up	tandard mec	hanism for reased st	or relative tarting fr	e dim	ming bet	ween a L	ighting
5	StepCode StepCode	field: 000b field: 001b	= Stop dimming = Start dimming in epCode field: x, v				i			
DPT:	Name	DPT_Co	ntrol_Dimming	DPT ID	3.007	Dat	tatype	format	B₁U₃	
Field			Description					Sup.	Unit	Default
С			Dimming direction			wn (0)		M		CS
Step0			Start/Stop comm	nands see ab	ove					
	munication ling Grou									
Clas	S		Туре			Defaul	t			
Geo	Geographical BuildingZone.Room.Subzone cs (see parameter LightingGroup)									
Appl	ication Sp	ecific								
Una	ssigned		Broadcast	Configura						
	Address:		IO Type(ID):	418 (LDA	AB)	Prope	rty ID	•	64	
(eve Write	e ´	\boxtimes	Timeout:			Min				
	perty-Servividual ac		Read only		Read/W	/rite	\boxtimes			
Value	after Po	wer-up:	Defau	lt Value 🗌				St	tored Val	ue 🗌
Exce	ption Har	ndling:					Sa	ve at Pov	ver-down	
	ial Featu									
handl In cor imple 1) If th	This input can be overruled by high priority inputs SwitchOnOffForced or LockDevice. See priority handling in clause 2.2.2.3 In combination with NightMode, a timed switch on and autonomous switch off function can be implemented 1) If the LDAB is directly controlled by lighting sensors, RelSetvalueControlCmd input is disabled. The behavior is controlled by configuration parameter ActuatorMode.									
bolla	VIOI 13 COI	ti olica by C	orniguration parai	notor Actuall	nivioue.					

2.5.17 Input AbsSetvalueControlCmd

FB:	LDAB	LTE-Mod Name:	e Server Input	ver Input AbsSetvalueControlCmd Mandatory ⊠ ¹) Option						onal 🗌
Desc	ription:			-			=			
Contr Dimm jumps	oller. Para ModeSel	ameter Din	ntrolCmd is used to nmModeSelection of to 'ramp', the act nediately (default	defines the tuator enter	dimming b	ehaviour. DIMMIN	. If pa G. oth	ramete ierwise	r the actua	0 0
DPT:	Name	DPT_Sc	aling	DPT I	5.001	Data	type	format	U ₈	
Field			Description					Sup.	Unit	Default
SetVa	alue		Dimming actuate	or setpoint i	n %			М	%	cs
Com	nunicatio	n:	_					,		
Bine	ding Gro	ıp:								
Clas	ss		Туре			Default				
Ge	eographic	al 🖂	BuildingZone.Ro	om.Subzoi	ne	cs (see	parar	neter L	ightingGro	oup)
	Application Specific									
	assigned		Broadcast	Configu	rable 🗌					
DP.	Address:		IO Type(ID):	418 (LI	DAB)	Propert	ty ID:		65	
(eve	rite		Timeout:			Min				
	perty-Ser ividual a		Read only		Read/V	Vrite	\boxtimes			
Value	after Po	wer-up:	Defau	It Value 🗌				S	Stored Val	ue 🗌
Exce	Exception Handling: Save at Power-down									
	•									
	Special Features:									
handl In cor imple	This input can be overruled by high priority inputs SwitchOnOffForced or LockDevice. See priority handling in clause 2.2.2.3 In combination with NightMode, a timed switch on and autonomous switch off function can be implemented 1) If the LDAB is directly controlled by lighting sensors, AbsSetvalueControlCmd input is disabled. The									
behav	ehavior is controlled by configuration parameter ActuatorMode.									

2.5.18 Input FadeToControlCmd

FB:	LDAB	LTE-Mode Name:	Server Input	erver Input FadeToControlCmd Mandatory ☐ Optional					nal 🛚 1)	
Desc	ription:			•						
			md is written by a							
			o the command fi	eld <i>target-le</i>	evel. Dimm	ing s	shall be e	xecuted	according	to the
		mand field f								
		fade time r	epresents the abs	solute dimn	ning time fr	om 1	the actual	dimming	g level to t	:he
	t-level.									
DPT:	Name	DPT_Sc	alingSpeed	DPT II	225.00	1	Datatype		U ₁₆ U ₈	
Field			Description					Sup.	Unit	Default
fade-	time		Dimming time to	fade from	the actual I	evel	I to the	M	ms	CS
			target level							
			resolution: 100m		1.0		2.4.0/		0/	
	t-level		Dimming level in	percentag	e; resolutio	n ~(),4 %	М	%	CS
	municatio									
Bin	ding Gro	up:								
Cla	ss		Туре			De	efault			
<u> </u>			BuildingZone.Ro	om.Subzo	ne	cs	(see para	ameter L	ightingGro	oup)
Ap	oplication	Specific								
Uı	nassigned		Broadcast	Configu	rable 🗌					
	Address:		IO Type(ID):	418 (L[DAB)	Р	roperty ID):	66	
(ev	E-Mode-S ent): 'rite	ervice	Timeout:			Mi	n			
	perty-Sei lividual a		Read only		Read/W	Vrite				
Value	e after Po	wer-up:	Defau	It Value 🗌				S	Stored Val	ue 🗌
Exce	ption Har	ndling:					Sa	ve at Po	wer-down	
Spec	ial Featu	es:								
			d by high priority i	nputs Swite	hOnOffFor	rced	or LockD	evice. S	ee priority	,
		use 2.2.2.3								
		with NightN	Node, a timed swit	ch on and	autonomou	IS SV	witch off fu	unction c	an be	
	mented									
			ntrolled by lighting			ntrol	Cmd inpu	t is disal	oled. The	behavior
is cor	ntrolled by	configuration	on parameter Actu	uatorMode.						

2.5.19 Input ControlModeUser

FB:	LDAB	LTE-Mode Name:	e Client Input	ControlModeUser						
Desc	ription:		-							
			ModeUser indicate	es the reques	st from a	Lighting	Sens	or LSSE	3/LDSB to	request
		anual lightii	-							
DPT:	Name	DPT_Li	ghtControlMode	DPT ID	20.604	Data	atype	format	N ₈	
Field			Description					Sup.	Unit	Default
Contr	olMode		This field shall in				rol	M		CS
			(0) or manual co							
			values 2 to 255 a	are reserved t	or future	extension	ons			<u> </u>
	nunicatio									
	ling Grou	ıp:								
Clas			Туре			Default				
	graphical		BuildingZone.Ro	om.Subzone		cs (see	para	meter B	lindsGrou	p)
	ication Sp	ecific								
	Unassigned									
DP A	DP Address: IO Type(ID): 421 (LSSB) 420 (LDSB) Property ID: 64									
	-Mode-Se	rvice	InfoReport Sniff	er on Binding	g Group:		-			
(eve	•	_	Timeout:			Min				
	Report	\boxtimes	Tillicout.			IVIIII				
	-Mode-Se	rvice				_				
	ing):	_	Read Wildcard /	Resp Sniffer	on Bindir	ng Group	o: -	-		
	d – Respo									0)
	after Po		Defaul	lt Value ⊠				Sto	red Value	
Exce	ption Har	ndling:					Sa	ave at Po	owerdown	⊠ ²⁾
<u>.</u>	ial Featui									
1) Usu	ıally this iı	nput may o	nly implemented ir	n a Controller	which er	nulates a	a LD/	AB actua	ator proxy	, see
comm	nents in cl	ause 1.2.3								
			LDAB is controlle							
²⁾ Initi	alization o	of this input	after power return	n is implemen	tation sp	ecific. Pe	ersist	ent stora	age is an o	optional
featur			<u> </u>	<u> </u>						

2.5.20 Input RelDimmingSpeed

FB:	LDAB	LTE-Mode Name:	e Server Input	erver Input RelDimmingSpeed Mandatory ☐ Optional ☐ 1)						
Desc	ription:			-			-			
execu The in - LTE	ite relative nput RelD -Mode Wi	e light dimm immingSpe rite multicas	ents the dimming ning commands Reled is written by a st addressing in the individual addres	elSetvalueCor Lighting Contr e LightingGro	ntrol and	l RelS	etvalue(ControlC	md.	to
DPT:	Name	DPT_Tim	ePeriod_100MSec	DPT ID	7.004	С	atatype	format	U ₁₆	
Field			Description					Sup.	Unit	Default
time			Dimming time to resolution: 100m		6 to 100	%		M	ms	CS
	municatio						-	-		
Bin	ding Gro	up:								
Clas	SS		Туре			Defa	ult			
G	eographic	al 🛚	BuildingZone.Ro	om.Subzone		cs (s	ee para	meter Li	ghtingGro	oup)
Ap	plication	Specific								
Ur	nassigned		Broadcast	Configurat	ole 🗌					
	Address:		IO Type(ID):	418 (LDAI	В)	Pro	perty ID	:	67	
(eve	:-Mode-Sent): rite		Timeout:			Min				
	perty-Ser lividual a		Read only		Read/W	/rite	\boxtimes	1)		
Value	after Po	wer-up:	Defau	It Value 🗌				S	tored Val	ue 🛚
Exce	ption Har	ndling:					Sav	ve at Po	wer-down	\boxtimes
	ial Featui									
lf ir - th	Implementation of this Parameter is optional If implemented - this Parameter shall be accessible via individually addressed Property Service - additional support as LTE-Mode runtime parameter is optional									

2.5.21 Parameter-set LightingGroup

LightingGroup is implemented using the LTE-Mode Geographical zone concept. It consists of 3 properties belonging together.

2.5.21.1 Parameter BuildingZone

Same as for LSAB, see 1.5.14.1, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	101
(in the server)	Start-Index:	1	N° of elements	1

2.5.21.2 Parameter Room

Same as for LSAB, see 0, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	102
(in the server)	Start-Index:	1	N° of elements	1

2.5.21.3 Parameter Subzone

Same as for LSAB, see 0, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	103
(in the server)	Start-Index:	1	N° of elements	1

2.5.22 Parameter-set SceneGroup

SceneGroup is implemented using the LTE-Mode Geographical zone concept. It consists of 3 properties belonging together.

2.5.22.1 Parameter BuildingZone

Same as for LSAB, see 1.5.15.1, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	104
(in the server)	Start-Index:	1	N° of elements	1

2.5.22.2 Parameter Room

Same as for LSAB, see 0, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	105
(in the server)	Start-Index:	1	N° of elements	1

2.5.22.3 Parameter Subzone

Same as for LSAB, see 0, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	106
(in the server)	Start-Index:	1	N° of elements	1

2.5.23 Parameter Actuator Mode

Same as for LSAB, see 1.5.16, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	110
(in the server)	Start-Index:	1	N° of elements	1

2.5.24 Parameter EnableInfoOnOff

Same as for LSAB, see 1.5.17, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	111
(in the server)	Start-Index:	1	N° of elements	1

2.5.25 Parameter EnableActualDimmingValue

FB:	LDAB	Propert	y Name (Server): EnableActualDimmingValue Mandatory ☑ Optional ☐				tional 🗌	
Descr	Description:							
	This parameter is used to enable or disable spontaneous transmission of actuator state ActualDimmingValue in the LTE-Mode runtime system							
DPT:	Name	DPT_E	nable	DPT ID 1.003	Data	atype format	B ₁	
Field			Description		Sup.	Range	Unit	Default
b			0: disable					0
			1: enable					
Comn	nunicatio	n:			-	-	-	-
DP A	Address:		IO Type(ID):	418 (LDAB)	Prop	erty ID:	112	
(in th	he server)	Start-Index:	1	N° of elements 1		1	
Prop	erty acc	ess:	Read only] Read/V	Vrite	\boxtimes		
Prot	ection		Read level		Write	level		
Excep	tion Han	dling:	Value after Powerup	: Stored Value 🛚	Act V	alue 🔲 Def	fault Value	
Specia	al Featur	es:						

2.5.26 Parameter OnDelay

Same as for LSAB, see 1.5.18, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	113
(in the server)	Start-Index:	1	N° of elements	1

2.5.27 Parameter OffDelay

Same as for LSAB, see 1.5.19, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	114
(in the server)	Start-Index:	1	N° of elements	1

2.5.28 Parameter TimedOnDuration

Same as for LSAB, see 1.5.20, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	115
(in the server)	Start-Index:	1	N° of elements	1

2.5.29 Parameter PrewarningDuration

Same as for LSAB, see 1.5.21, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	116
(in the server)	Start-Index:	1	N° of elements	1

2.5.30 Parameter EnableActuatorStatus

Same as for LSAB, see 1.5.22, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	117
(in the server)	Start-Index:	1	N° of elements	1

2.5.31 Parameter EnableActuatorErrorInfo

Same as for LSAB, see 1.5.23, except

DP Address:	IO Type(ID):	417 (LDAB)	Property ID:	118
(in the server)	Start-Index:	1	N° of elements	1

2.5.32 Parameter EnableDetectedLoadType

FB:	LDAB	Proper	ty Name (<u>Server</u>):	EnableDetectedLoadType Mandator			ry 🗌 Optional 🛛			
Description:										
This parameter is used to enable or disable spontaneous transmission of DetectedLoadType in the										
LTE-Mode runtime system										
DPT:	Name	DPT_E	nable DPT ID 1.003		Data	Datatype format		B ₁		
Field	Field Descript		Description		Sup.	Range	Unit	Default		
b	0: disable		0: disable					CS		
			1: enable							
Communication:										
DP Address:		IO Type(ID):	418 (LDAB)	Property ID:		119				
(in the server)		Start-Index:	1	N° of elements		1				
Property access: Read or		Read only	☐ Read/Write ⊠							
Protection		Read level		Write	Write level					
Exce	Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐									
								·		
Special Features:										
								·		

2.5.33 Parameter PowerReturnMode

FB:			y Name (Server):	PowerReturnMode Mandator				y 🔲 Op	tional 🛚
Desc	ription:	-					_		
Paran	neter to de	fine the b	ehavior of the actuato	or after retu	rn of the	supply	power or afte	r a restar	t of the
applic	ation.								
DPT:	Name	DPT_B	ehaviourBusPowerU	DPT ID	20.601	Da	atatype format	: N ₈	
		pDown							
Field			Description			Sup.	Range	Unit	Default
Mode			-0 = off			M	[0;1;3;4]		off
			- 1 = on						
			- 3 = value according	additional					
			parameter Power	erReturnVa	lue				
			- 4 = last (saved value at power down)						
Comr	nunicatior	n:			,				_
DP .	Address:		IO Type(ID):	418 (LDA	B)	Prop	erty ID:	120	
(in t	he server)		Start-Index:	1		N° o	f elements	1	
Pro	perty acce	ss:	Read only		Read/W	rite	\boxtimes		
Pro	tection		Read level			Write	e level		
Exce	otion Hand	dling:	Value after Powerup:	Stored \	/alue 🛚	Act V	alue 🗌 🛮 Def	ault Value	-
-									
Spec	ial Feature	s:							
It is allowed to restrict the range of values of this parameter,									
e.g. v	alue 4 is no	ot applica	ble if the actuator is r	ot able to s	ave its st	tate du	ring/before po	wer dowr	າ in non
volatil	olatile memory								

2.5.34 Parameter PowerReturnValue

FB:	LDAB	Proper	ty Name (<u>Server</u>):	PowerReturnValue Mandator			y 🗌 Opt	ional 🛚
Desc	ription:							
Parar	neter in add	dition to	parameter PowerRetu	rnMode = 3;	to define	e the behavior after	power ret	urn
DPT:	Name	DPT_S	caling	DPT ID	5.001	Datatype format	U ₈	
Field			Description		Sup.	Range	Unit	Default
Setva	llue		Dimming value in per	rcentage		0 % to 100 %	%	CS
Comi	municatior	ո ։						
DP	Address:		IO Type(ID):	418 (LDAB)	Property ID:	121	
(in t	he server)		Start-Index:	1		N° of elements	1	
Pro	perty acce	ss:	Read only		Read/Wr	ite 🗵		
Pro	tection		Read level			Write level		
Exce	ption Hand	lling:	Value after Powerup:	Stored Va	alue 🛛	Act Value Def	ault Value	<u> </u>
Spec	ial Feature	s:						

2.5.35 Parameter BusFailureMode

FB: LDAB Property Nam			ty Name (<u>Server</u>):	BusFailure	Mode		Mandator	y 🔲 Opt	tional 🛚
Descr	iption:	-	<u>-</u>				_		
Param	eter to de	fine the b	ehavior of the actuato	r in case of	f a bus fa	ilure			
DPT:	Name	DPT_B	ehaviourBusPowerU	DPT ID	20.601	Dat	atype format	N ₈	
		pDown							
Field			Description				Range	Unit	Default
Mode			- 0 = off			M	[0 to 3]		CS
			- 1 = on						
			- 2 = no change						
			- 3 = value according additional						
			parameter BusFailureValue						
Comn	nunication	າ:							
DP A	Address:		IO Type(ID):	418 (LDA	B)	Prope	erty ID:	122	
(in t	he server)		Start-Index:	1		N° of	elements	1	
Prop	erty acce	ss:	Read only		Read/W	rite	\boxtimes		
Prot	ection		Read level			Write	level		
Excep	tion Hand	dling:	Value after Powerup:	Stored \	/alue ⊠	Act Va	lue 🗌 Def	ault Value	<u>,</u>
Speci	al Feature	s:							
		•						•	

2.5.36 Parameter BusFailureValue

FB:	LDAB	Proper	ty Name (<u>Server</u>):	BusFailure'	Val	lue	Mandator	y 🔲 Op	tional 🛚
Descr	ription:		•				-		
Param	neter in add	dition to	parameter BusFailure	Mode = 3; to	o d	efine th	ne behavior in case	of a bus	failure
DPT:	Name	DPT_S	caling	DPT ID	5.	001	Datatype format	U ₈	
Field			Description			Sup.	Range	Unit	Default
Setva	lue		Dimming value in pe	rcentage			0 % to 100 %	%	CS
Comn	nunicatior	า :				-			_
DP A	Address:		IO Type(ID):	418 (LDAE	3)		Property ID:	123	
(in t	he server)	1	Start-Index:	1			N° of elements	1	
Prop	perty acce	ss:	Read only		Re	ead/Wri	ite 🛛		
Prot	ection		Read level				Write level		
Excep	otion Hand	lling:	Value after Powerup:	Stored V	/alu	ue 🔯 🛚	Act Value 🗌 Def	ault Valu	e 🗌
Speci	al Feature	s:				·			

2.5.37 Parameter BusReturnMode

FB: LDAB Property Name (Server):			ty Name (<u>Server</u>):	BusReturnMode Mandatory				у 🗌 О	ptional 🛚	
Desc	ription:		-					-		
Paran	neter to def	fine the b	ehavior of the actuate	or in case of	a rec	overy	of the	bus.		
DPT:	Name	DPT_B	ehaviourBusPowerU	DPT ID	20.6	01	Data	type format	: N ₈	
		pDown								
Field			Description			Sup.	Rai	nge	Unit	Default
Mode			- 0 = off			М	[0 t	o 4]		cs
			- 1 = on							
			- 2 = no change							
			- 3 = value according	additional						
			parameter Bus	ReturnValu	е					
			- 4 = last (saved valu							
Comr	nunicatior):	·			•	•			•
DP .	Address:		IO Type(ID):	418 (LDA	B)	Р	ropert	y ID:	124	
(in t	he server)		Start-Index:	1		N	l° of el	ements	1	
Pro	perty acce	ss:	Read only		Read	/Write	!	\boxtimes		
Prof	tection		Read level			V	Vrite le	evel		
Exce	otion Hand	lling:	Value after Powerup:	Stored \	/alue	⊠ Ac	t Valu	e 🗌 Def	ault Valu	ue 🗌
Spec	ial Feature	s:								
It is a	is allowed to restrict the range of values of this parameter									

2.5.38 Parameter BusReturnValue

FB:	LDAB	Proper	ty Name (<u>Server</u>):	BusReturn'	Valu	ıe	Mandatory	y 🗌 Opt	ional 🛚
Desc	ription:								
Paran	neter in ad	dition to	parameter BusReturnl	Mode = 3; to	o de	fine the	behavior after a r	recovery o	of the bus
DPT:	Name	DPT_S	caling	DPT ID	5.0	01	Datatype format	U ₈	
Field			Description			Sup.	Range	Unit	Default
Setva	lue		Dimming value in pe	rcent			0 % to 100 %	%	CS
Comr	munication	າ:							
DP .	Address:		IO Type(ID):	418 (LDAE	3)	Р	roperty ID:	125	
(in t	he server)		Start-Index:	1		N	of elements	1	
Pro	perty acce	ss:	Read only		Rea	ad/Write			
Pro	tection		Read level			V	/rite level		
Exce	ption Hand	dling:	Value after Powerup:	Stored V	/alu	e 🛛 A	ct Value 🗌 Def	ault Value	-
Spec	ial Feature	s:							
	•							•	

2.5.39 Parameter PowerFailureMode

FB:	LDAB	Proper	ty Name (<u>Server</u>):	PowerFa	ailureMode		Mandato	ry 📙 Opt	ional 🖂
Desc	ription:	3					-		
Paran	neter to def	ine the b	ehavior of the actuat	or in case	of the supp	ply powe	er failure and	d shutdowi	n of the
LDAB	application	n prograr	m. This parameter ma	ay be usef	ful if the din	nmer ou	tput logic (e	.g. a co-pro	ocessor)
is pov	vered sepa	rately via	the mains power of	the lamp.					
DPT:	Name	DPT_B	ehaviourBusPowerU	pDown	DPT ID	20.60	1 Datatyp	e format	N ₈
Field			Description			Sup.	Range	Unit	Default
Mode			- 0 = off			М	[0 to 2]		CS
			- 1 = on						
			- 2 = no change						
Comr	nunication	n:							
DP .	Address:		IO Type(ID):	418 (LE	DAB)	Prope	rty ID:	126	
(in t	he server)		Start-Index:	1		N° of e	elements	1	
Pro	perty acce	ss:	Read only		Read/W	rite	\boxtimes		
Pro	tection		Read level			Write	level		
Exce	otion Hand	lling:	Value after Powerup	: Stored	d Value 🛛	Act Val	ue 🔲 🏻 De	fault Value	e 🔲
-									
Spec	ial Feature	s:							
	•		•			•			

2.5.40 Parameter BehaviourAtLocking

FB:	LDAB	Proper	ty Name (<u>Server</u>):	Behaviour	AtLocking	3	Mandator	y 🔲 Opt	ional 🛚			
Desc	ription:		-				-					
		fine the b	pehavior of the actuate	or in case o	f input Lo	ckDevi	ce changing f	from				
false -	-> true											
DPT:	Name	DPT_B	ehaviour_Lock_	DPT ID	20.600	Dat	tatype format	N ₈				
		Unlock										
Field			Description			Sup.	Range	Unit	Default			
Mode			-0 = off			M	[0 to 3]		CS			
			- 1 = on									
			- 2 = no change									
			- 3 = value according	g to parame	ter							
			LockSetvalue	•								
Comr	nunication	1:					<u>- </u>					
DP .	Address:		IO Type(ID):	418 (LDA	.B)	Prope	erty ID:	127				
(in t	he server)		Start-Index:	1		N° of	elements	1				
Pro	perty acce	ss:	Read only		Read/W	rite	\boxtimes					
Pro	tection		Read level			Write	level					
Exce	otion Hand	lling:	Value after Powerup	Stored \	/alue 🛚	Act Va	lue 🗌 Def	ault Value	: 🗌			
		-										
Spec	ial Feature	s:										
It is a	lowed to re	strict the	It is allowed to restrict the range of values of this parameter									

2.5.41 Parameter LockSetvalue

FB:	LDAB	Proper	ty Name (<u>Server</u>):	LockSetval	ue		Mandator	y 🔲 Opt	ional 🛚
Desc	ription:		.				<u>-</u>		
Parar	neter in add	dition to	parameter BehaviourA	tLocking =	3; t	to define	the behavior at the	ne beginni	ng of the
lock s	tate								
DPT:	Name	DPT_S	caling	DPT ID	5.0	001	Datatype format	U ₈	
Field			Description			Sup.	Range	Unit	Default
Setva	lue		Dimming value in per	centage			0 % to 100 %	%	CS
Comi	municatior	1:				,		,	
DP	Address:		IO Type(ID):	418 (LDAE	3)	Р	roperty ID:	128	
(in t	:he server)		Start-Index:	1		Ν	° of elements	1	
Pro	perty acce	ss:	Read only		Re	ad/Write			
Pro	tection		Read level			W	/rite level		
Exce	ption Hand	lling:	Value after Powerup:	Stored V	/alu	ie 🛛 Ac	ct Value 🗌 Def	ault Value	
Spec	ial Feature	s:							
		•							

2.5.42 Parameter BehaviourAtUnlocking

FB:	LDAB	Proper	ty Name (<u>Server</u>):	BehaviourAtUnlocking			Mandator	y 🔲 Opt	tional 🛚	
Desci	iption:	=	-				-			
Paran	neter to def	fine the b	ehavior of the actuato	or in case o	f input Lo	ockD	evice changing t	rom		
true ->	> false									
DPT:	Name	DPT_B	ehaviour_Lock_	DPT ID	20.600		Datatype format	N ₈		
		Unlock								
Field			Description			Sup	. Range	Unit	Default	
Mode			-0 = off			M	[0 to 6]		cs	
			- 1 = on							
			- 2 = no change							
			- 3 = value according		ter					
			UnlockSetvalue							
			- 4 = memory functio	n value						
			5 = updated value							
			- 6 = value before loc	king						
Comr	nunicatior	۱:								
DP A	Address:		IO Type(ID):	41((LDA	3)		perty ID:	129		
(in t	he server)		Start-Index:	1		N°	of elements	1		
Pro	perty acce	ss:	Read only		Read/W	/rite	\boxtimes			
Prot	ection		Read level			Wr	ite level			
Excep	otion Hand	lling:	Value after Powerup:	Stored \	/alue 🛚	Act	Value 🗌 Def	ault Value	=	
Speci	al Feature	s:								
It is al	t is allowed to restrict the range of values of this parameter									

2.5.43 Parameter UnlockSetvalue

FB:	LDAB	Proper	rty Name (<u>Server</u>):	UnlockSetv	valu	е	Mandatory	y 🔲 Opt	ional 🛚
Desc	ription:		•				-		
Parai	meter in add	dition to	parameter BehaviourA	tUnlocking	= 3	; to defir	ne the behavior at	t the end o	of the
lock s	state								
DPT:	Name	DPT_S	Scaling	DPT ID	5.0	001	Datatype format	U ₈	
Field			Description			Sup.	Range	Unit	Default
Setva	alue		Dimming value in per	rcentage			0 % to 100 %	%	CS
Com	municatior	າ:							
DP	Address:		IO Type(ID):	418 (LDA	3)	Pi	roperty ID:	130	
(in	the server))	Start-Index:	1		N'	° of elements	1	
Pro	perty acce	ss:	Read only		Rea	ad/Write	\boxtimes		
Pro	tection		Read level			W	rite level		
Exce	ption Hand	dling:	Value after Powerup:	Stored \	/alu	e 🛛 Ac	t Value 🗌 🛮 Def	ault Value	: <u> </u>
Spec	ial Feature	s:							
	•		_	•		•		•	•

2.5.44 Parameter SceneLearningModeEnable

Same as for LSAB, see 1.5.30, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	131
(in the server)	Start-Index:	1	N° of elements	1

2.5.45 Parameter SceneNumberList[n]

Same as for LSAB, see 1.5.31, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	132
(in the server)	Start-Index:	1	N° of elements	1

2.5.46 Parameter SceneTaughtIn[n]

Same as for LSAB, see 1.5.32, except

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	133
(in the server)	Start-Index:	1	N° of elements	1

2.5.47 Parameter SceneAbsSetvalue[n]

FB: L	_DAB	Property Name (Server):	SceneAbsSetvalue[n]	Mandatory ☐ Optional ⊠
Descri	ption:			

For each Scene Index this Property shall define the dimming level state after recalling a dedicated Scene Number.

This Datapoint shall be an array Property which contains one entry for each Scene Index that is supported by the FB LDAB, with:

- current nr of elem: shall equal the number of scenes that is currently configured in this FB
- max_nr_of_elem: shall equal the maximal number of scenes that is supported by this FB
- current_nr_of_elem ≤ max_nr_of_elem ≤ 64

Array elements beyond the current_nr_of_elem are void and shall not be evaluated by the FB at runtime. These array elements have not been configured yet and are invalid.

SceneAbsSetvalue information is interlinked with Scene Number via the Scene Index. Values at an index n in this array Property shall relate to the same Scene Number as the array elements in the following array Properties:

- SceneNumberList[]
- SceneTaughtIn[]
- SceneFadeTime[]

SceneAbsSetvalue may be solely defined by configuration or may be changed at runtime via input NumberedSceneControl if the storage function is enabled for that Scene Index.

DPT:	Name	DPT_Sc	aling	DPT ID	5.001	Datatype format	U ₈		
Field		Description	n		Sup.	Range	Unit	Default	
Setvalu	е	Dimming v	alue in percentage		0 % to 100 %		%	CS	
Communication:					-	-			
DP Address:			IO Type(ID):	418 (LDA	∖ B)	Property ID:	134		
(in the server)		r)	Start-Index:	1		N° of elements	see abo	ve ¹⁾	
Prope	erty acc	ess:	Read only		Read/W	rite 🖂			
Prote	ction		Read level			Write level			
Except	ion Har	ndling:	/alue after Powerup:	Stored	Value 🛛	Act Value Def	ault Value	e 🗌	
Special Features:									
1) The n	umber	of arrav ele	ments shall be the sa	ame as for	Property	SceneNumberList.			

The number of array elements shall be the same as for Property SceneNumberList.

2.5.48 Parameter SceneFadeTime[n]

FB:	LDAB	Property Name (Server):	SceneFadeTime[n]	Mandatory	Optional 🖂
Desc	ription:	-		-	

For each Scene Index this parameter shall define the dimming speed as fixed total time after which the new set value of the recalled scene shall be reached.

This Datapoint shall be an array Property which contains one entry for each Scene Index that is supported by the FB LDAB, with:

- current_nr_of_elem: shall equal the number of scenes that is currently configured in this FB
- max_nr_of_elem: shall equal the maximal number of scenes that is supported by this FB
- current_nr_of_elem ≤ max_nr_of_elem ≤ 64

Array elements beyond the current_nr_of_elem are void and shall not be evaluated by the FB at runtime. These array elements have not been configured yet and are invalid.

SceneFadeTime information is interlinked with Scene Number via the Scene Index. Values at an index n in this array Property shall relate to the same Scene Number as the array elements in the following array Properties:

SceneNumberList[]

- SceneTaughtIn[] - SceneAbsSetvalue[]								
DPT: Name DPT_TimePeriod_100MSec DPT ID 7.004 Datatype format U ₁₆								
Field			Sup.	Range	Unit	Default		
Time	Fade time	with a resolution of 1	00ms			CS	S	cs
Communication:								
DP Address: IO Type(ID): 418 (LDAB) Property ID: 135								
(in the serve	er)	Start-Index:	1		N° of	elements	see abo	ve 1)
Property acc	cess:	Read only		Read/W	rite	\boxtimes		
Protection		Read level			Write	level		
Exception Ha	Exception Handling: Value after Powerup: Stored Value Act Value Default Value							
Special Features:								
1) The number	of array ele	ments shall be the sa	me as for F	roperty	Scenel	NumberList.		

The number of array elements shall be the same as for Property ScenenumberList.

2.5.49 Parameter MinimumSetvalue

FB:	LDAB	Proper	ty Name (<u>Server</u>):	MinimumS	etv	/alue	Mandatory	/ 🗌 Opt	ional 🛚
Desc	ription:	-	-				-		
This p	oarameter o	defines th	ne minimum dimmable	e value.					
DPT:	DPT: Name DPT_Scaling DPT ID 5.001 Datatype form					Datatype format	U ₈		
Field			Description			Sup.	Range	Unit	Default
Setvalue			Dimming value in pe	rcentage			0 % to 100 %	%	CS
Comr	Communication:								
DP Address:			IO Type(ID):	418 (LDAB) Proj		Property ID:			
(in t	he server)		Start-Index:	1 N° of elements			1		
Pro	perty acce	ss:	Read only	☐ Read/Write ⊠					
Pro	tection		Read level			1	Nrite level		
Exce	ption Hand	dling:	Value after Powerup:	Stored \	/al	ue 🛛 A	ct Value 🗌 Def	ault Value	
Speci	Special Features:								
A valu	A value below the minimum dimming value forces a switch-off or setting the actual dimming value to								
Minim	numSetvalu	ie							

2.5.50 Parameter MaximumSetvalue

FB:	LDAB	Proper	ty Name (<u>Server</u>):	MaximumSetvalue Mandat			Mandatory	y 🔲 Opt	ional 🖂
Desc	ription:								
This p	oarameter o	defines tl	ne maximum dimmab	le value.					
DPT:	Name	DPT_Scaling DPT ID				5.001 Datatype format U ₈			
Field			Description			Sup.	Range	Unit	Default
Setvalue			Dimming value in pe	rcentage			0 % to 100 %	%	CS
Comi	munication	า:							
DP Address:			IO Type(ID):	418 (LDAB) F		Property ID:	141		
(in t	he server)		Start-Index:	1 N° of elements			N° of elements	1	
Pro	perty acce	ss:	Read only		R	ead/Writ	e 🛛		
Pro	tection		Read level			V	Write level		
Exce	ption Hand	dling:	Value after Powerup	Stored \	/al	ue 🛛 A	ct Value 🗌 Def	ault Value	
Spec	Special Features:								
A valu	ue above th	ne maxim	num dimming value is	limited by the	пe	Maximu	mSetvalue		

2.5.51 Parameter DimmModeSelection

FB:	LDAB	Property	Name (<u>Server</u>):	DimmMode	Selectio	n	Mandato	ry 🗌 Opt	tional 🛚	
Desc	Description:									
This p	parameter	selects the	e behavior 'dimming	' / 'jumping'	after rec	eption o	f AbsSetvalu	eControl o	r	
AbsS	AbsSetvalueControlCmd.									
If the	parameter	is set to '	Ramp', the actuator	enters the s	tate DIM	IMING to	o gradually re	each the s	et-value.	
Other	wise the s	et-value is	adopted immediate	ly.						
DPT:	Name	DPT_R	amp	DPT ID	1.004	Data	type format	B ₁		
Field			Description			Sup.	Range	Unit	Default	
b			0: No ramp				{0,1}	-	No	
			1: Ramp						ramp	
Comi	municatio	n:								
DP	Address:		IO Type(ID):	418 (LDA	B)	Prope	rty ID:	142		
(in t	he server)	Start-Index:	1		N° of	elements	1		
Pro	perty acce	ess:	Read only		Read/W	/rite	\boxtimes			
Pro	tection		Read level			Write	level			
Exce	ption Han	dling:	Value after Powerup	: Stored \	√alue ⊠	Act Va	lue 🗌 Def	ault Value	, 🗌	
Spec	ial Feature	es:								

2.5.52 Parameter SwitchOnMode

FB:	LDAB	Proper	ty Name (<u>Server</u>):	SwitchOnN	/lode		Mandator	y 🗌 Opt	ional 🛚	
Desc	ription:	-								
			ne initial dimming valu			n OFF-	state -> ON-s	state		
due to	due to commands SwitchOnOff and SwitchOnOffControlCmd									
DPT:	Name	DPT_S	witchOnMode	OnMode DPT ID 20.608 Datatype format N ₈						
Field			Description			Sup.	Range	Unit	Default	
Mode - 0 = last actual value in the last ON-Si - 1 = value according parameter Swite - 2 = last received about			State) g additional tchOnSetva	lue	М	[0 to 2]		cs		
Com	municatior	1:								
DP .	Address:		IO Type(ID):	418 (LDA	B)	Prope	rty ID:	143		
(in t	he server)		Start-Index:	1		N° of	elements	1		
Pro	perty acce	ss:	Read only		Read/W	rite	\boxtimes			
Pro	tection		Read level			Write	level			
Exce	ption Hand	lling:	Value after Powerup	Stored \	/alue ⊠	Act Va	lue 🗌 Def	ault Value) <u> </u>	
Spec	Special Features:									
	It is allowed to restrict the range of values of this parameter 1) target setvalue according to inputs AbsSetvalueControl, AbsSetvalueControlCmd, FadeToControlCmd									

2.5.52.1 Parameter SwitchOnSetvalue

FB:	LDAB	Proper	ty Name (<u>Server</u>):	SwitchOnSe	etvalue	Mandatory	☐ Opt	ional 🛚	
Desc	ription:	=	_			<u>-</u>			
Parai	Parameter in addition to parameter SwitchOnMode = 1 to define the initial dimming value after changing								
from	from OFF-state -> ON-state due to commands								
- SwitchOnOff									
- Swi	- SwitchOnOffControlCmd								
DPT:	Name	DPT_S	caling	DPT ID	5.001	Datatype format	U ₈		
Field			Description		Sup.	Range	Unit	Default	
Setva	Setvalue Dimming value in percent 0,4 % to 100 % % cs								
Com	Communication:								
DP	Address:		IO Type(ID):	418 (LDAB)	Property ID:	144		
(in	the server))	Start-Index:	1		N° of elements	1		
Pro	perty acce	ss:	Read only	ľ	Read/Writ	te 🛛			
Pro	tection		Read level		1	Write level			
Exce	ption Hand	dling:	Value after Powerup:	Stored Va	alue 🛛 🛭 A	Act Value 🗌 Defa	ult Value	; <u> </u>	
Spec	Special Features:								
The value of this parameter shall be in the range of MinimumSetvalue to MaximumSetvalue.									
If the	If the parameter is out of this range, the effective switch on set-value shall be limited by								
Minin	num/Maxim	umSeva	lue.						

2.5.53 Parameter RelativOffEnable

FB:	LDAB	Propert	y Name (<u>Server</u>):	RelativOffE	nable		Mandato	ry 🔲 Opt	ional 🛚	
Desc	Description:									
This p	This parameter is used to enable/disable switching-off the light due to commands									
- Rel	- RelSetvalueControl									
- Rel	SetvalueCo	ontrolCmo	t							
if the	newly calc	ulated se	t-value is below Minir	mumSetvalı	Je.					
DPT:	Name	DPT_E	nable	DPT ID	1.003	Data	type format	B ₁		
Field			Description			Sup.	Range	Unit	Default	
b			0: disable						0	
			1: enable							
Comi	nunicatio	n:								
DP	Address:		IO Type(ID):	418 (LDA	B)	Prope	rty ID:	145		
(in t	he server)	Start-Index:	1		N° of	elements	1		
Pro	perty acce	ess:	Read only]	Read/W	/rite	\boxtimes			
Pro	tection		Read level			Write	level			
Exce	ption Han	dling:	Value after Powerup	: Stored	Value ⊠	Act Va	lue 🗌 Def	ault Value	<u> </u>	
Spec	ial Feature	es:		_	-		·	_		

2.5.54 Parameter LoadAdaptation

FB:	LDAB	Propert	y Name (<u>Server</u>):	LoadAdaptation			Mandatory ☐ Optional ⊠			
Description:										
Parameter to select the load type. The load type may be detected automatically by the actuator or may be										
selected explicitely by configuration.										
The effective load type may cabbe reported by diagnostic Property DetectedLoadType										
DPT:	Name	DPT_Lc	padTypeSet	DPT ID	20.609	D	atatype format	N ₈		
Field			Description			Sup.	Range	Unit	Default	
Mode			- 0 = automatic			М	[0 to 2]		cs	
			1 = leading edge (inductive load)							
			2 = trailing edge (capacitive load)							
Communication:										
DP Address:			IO Type(ID):	41((LDAB)		Property ID:		146		
(in the server)			Start-Index:	1		N° of elements		1		
Property access:			Read only	Read/Write						
Protection			Read level			Write level				
Exce	otion Hand	lling:	Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐							
Special Features:										