Application Descriptions

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Lighting

Lighting Actuators

Supplement 1
LTE-Mode Extensions

Summary

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

Version 01.00.03 is a KNX Approved Standard.

This document is part of the KNX Specifications v2.1.

Document updates

Version	Date	Modifications
AN142 v02	2011.10.27	Preparation of the Draft for Voting.
v01.00.00	2013.09.13	Publication as Chapter 7/20/2 Supplement 1 “Lighting Actuators – LTE-Mode Extensions”
v01.00.01	2013.10.22	Editorial review in view of inclusion in the KNX Specifications v2.1.
01.00.02	2013.10.29	Editorial review in view of inclusion in the KNX Specifications v2.1.
01.00.03	2013.12.11	Final editorial review in view of publication of the KNX Specifications v2.1.

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”
[05] Part 10/1 “Logical Tag Extended”

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Contents

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

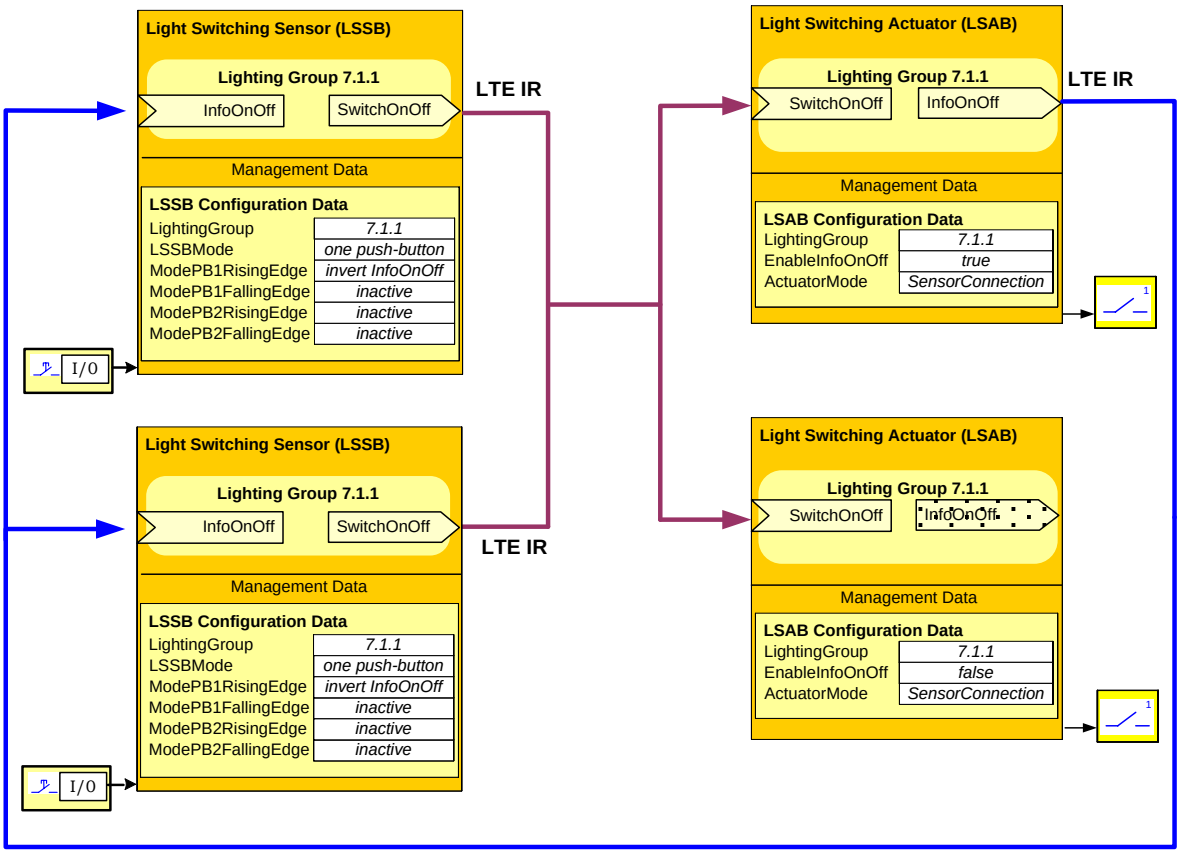

Figure 1 – Example of direct actuator communication with 2 push buttons (toggle mode)

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 (⇒ last wins principle on the input in the LSSB). Redundant InfoOnOff messages create unnecessary traffic and should be avoided.

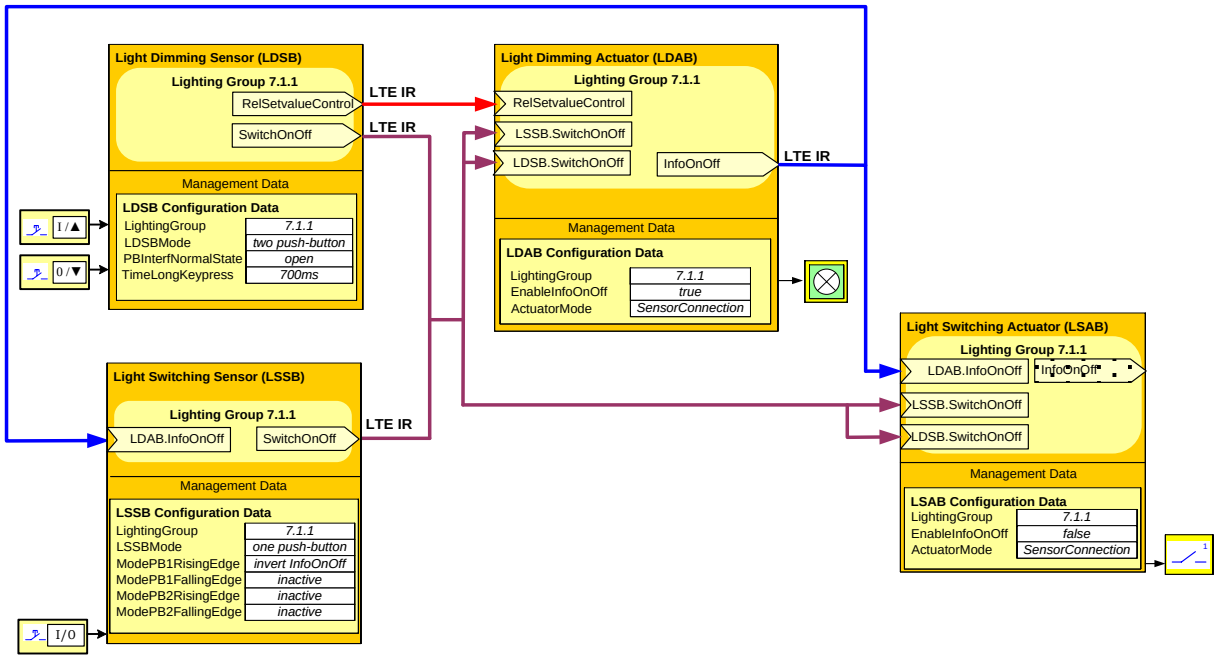

Figure 2 – Example of parallel light switching and dimming actuators in the same LightingGroup

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.

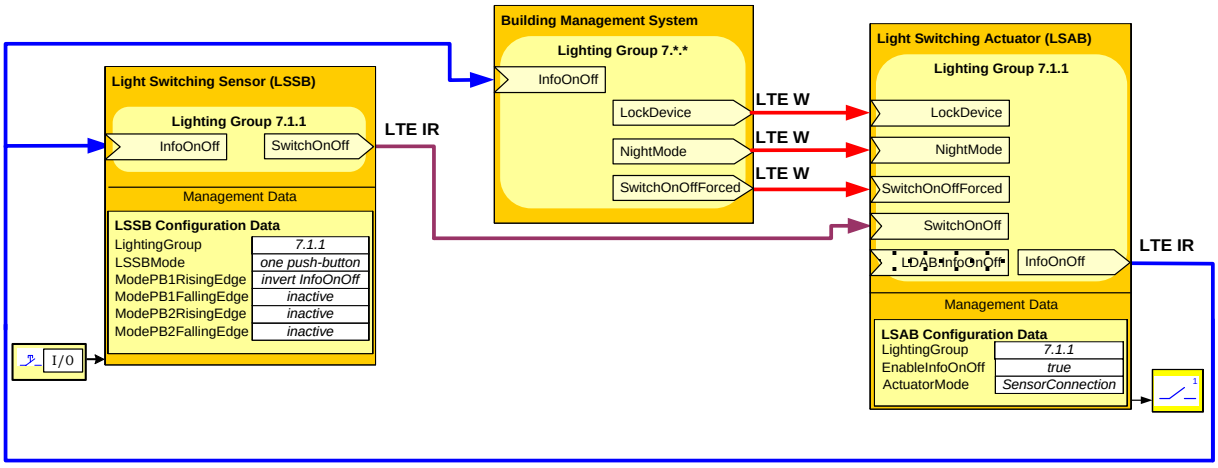

Figure 3 – Example of Building Management System overriding local LSSB commands

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.

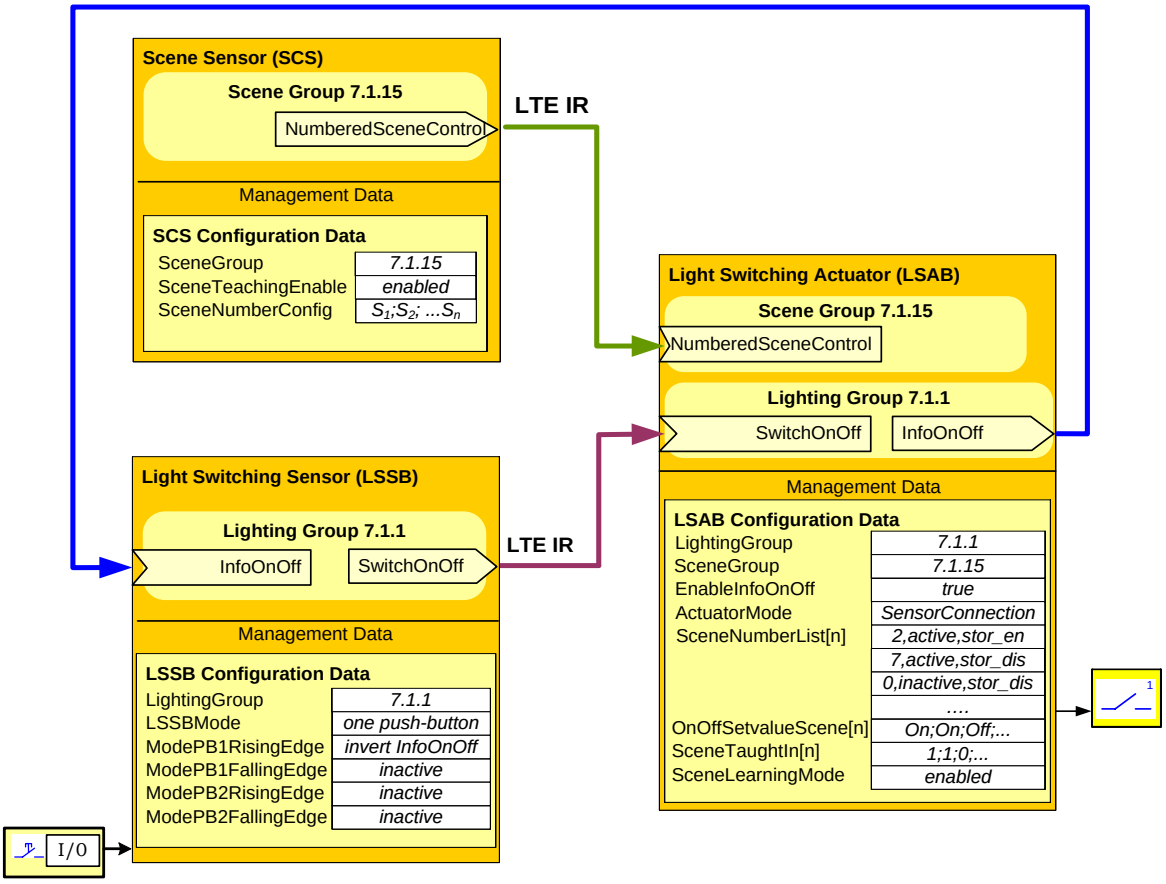

Figure 4 – Example Scene Control

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.

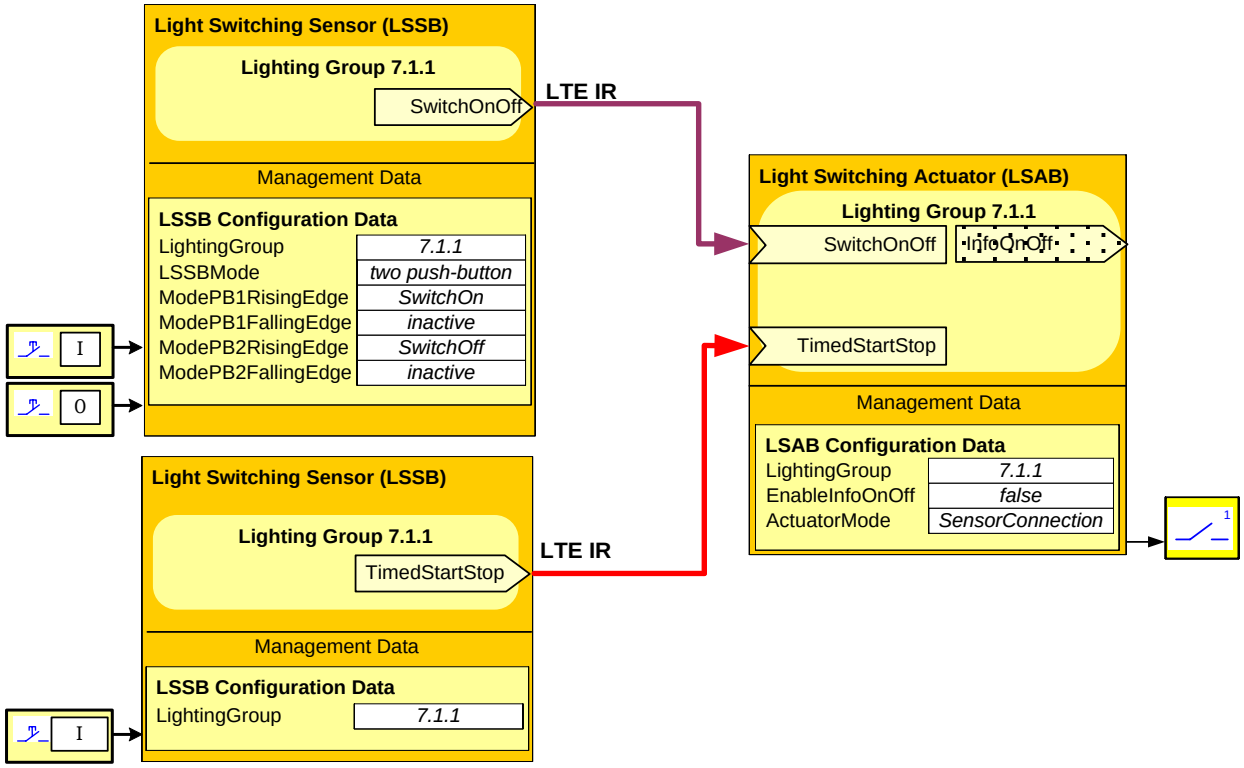

Figure 5 – Example of Autonomous switch-off function via TimedStartStop signal

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 Off-state’ 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

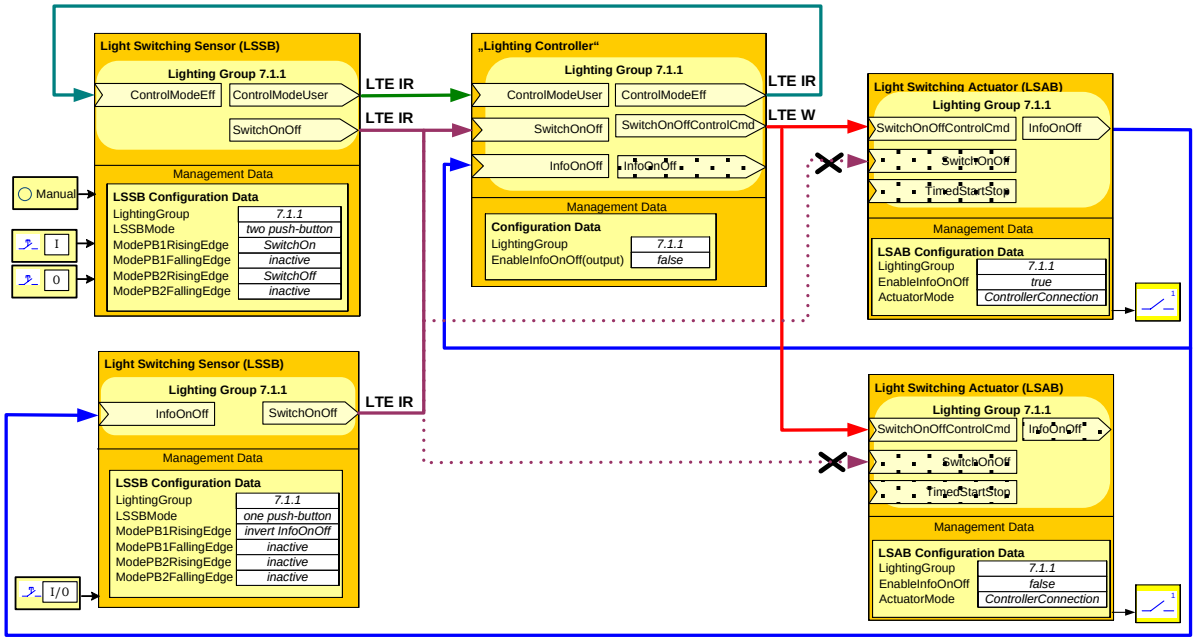

Figure 6 – Lighting sensor – controller – actuator model: basic features

Figure 6 illustrates the basic application model for indirect 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 LightingGroups 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.

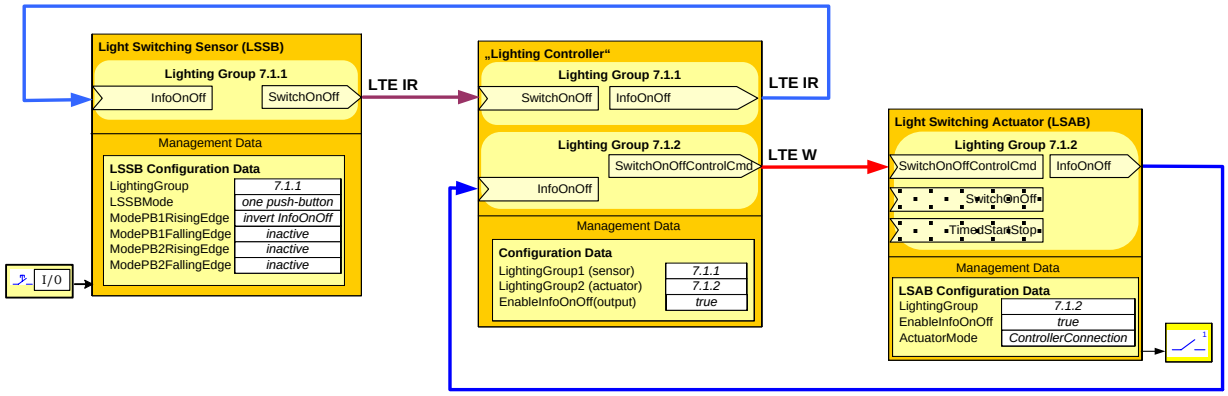

Figure 7 – Example with separate LightingGroups for sensors and actuators

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.

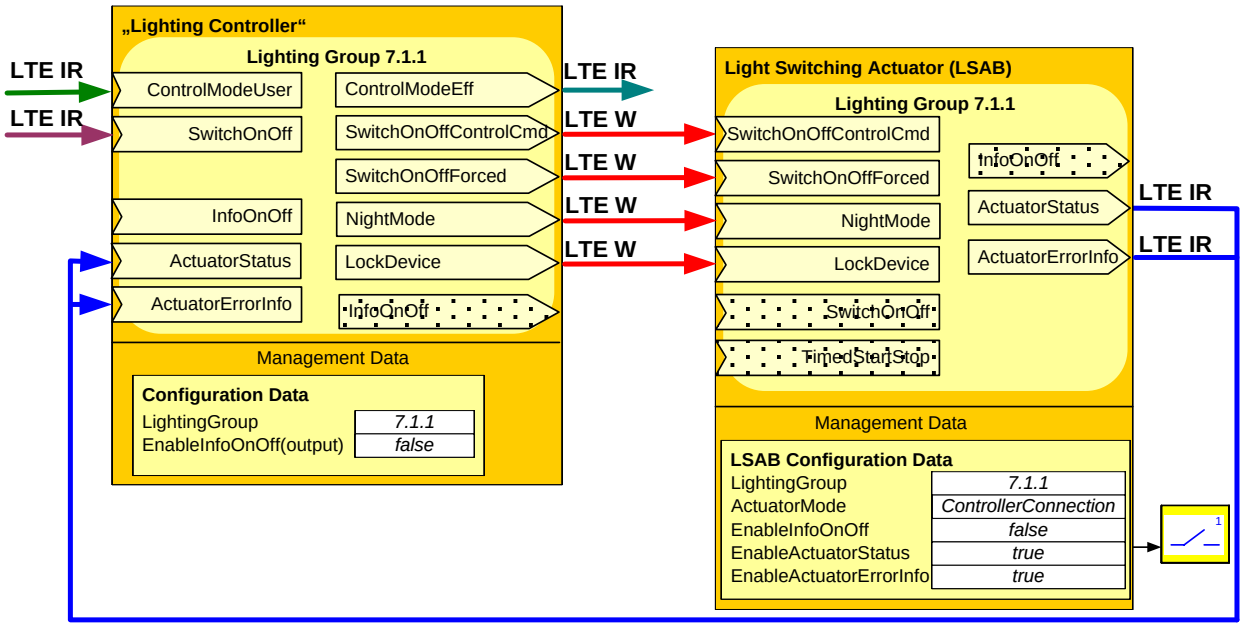

Figure 8 – Lighting sensor – controller – actuator model: extended features

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.

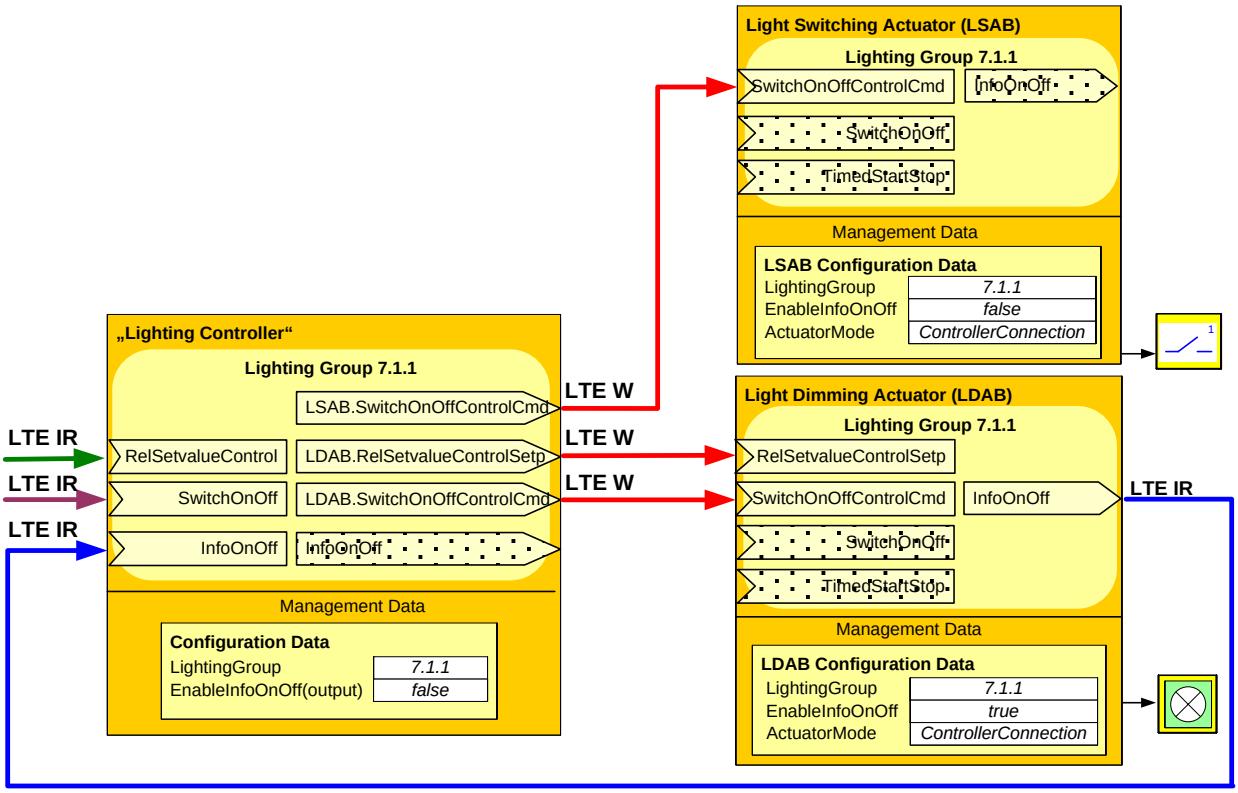

Figure 9 – Example of parallel light switching and dimming actuators in the same LightingGroup

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

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.

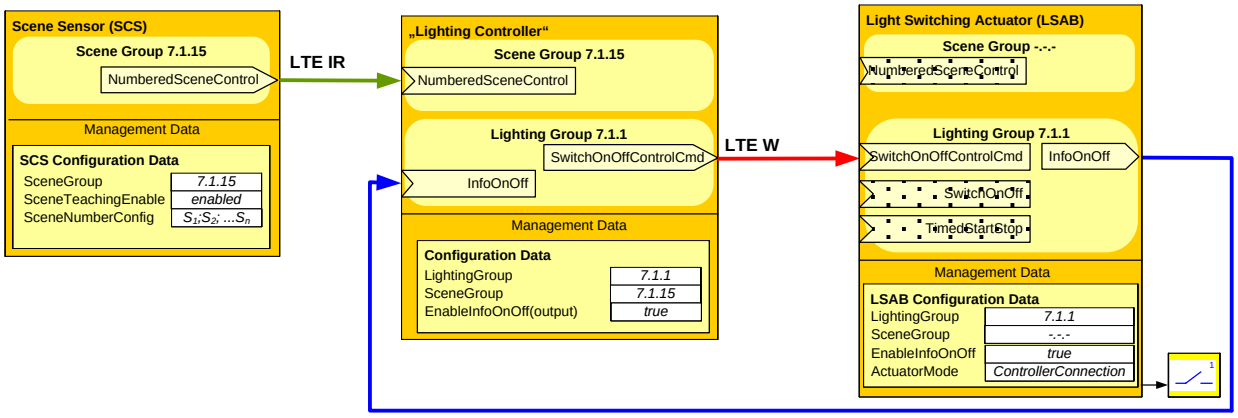

Figure 10 – Execution of Scene commands by the Lighting Controller

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:

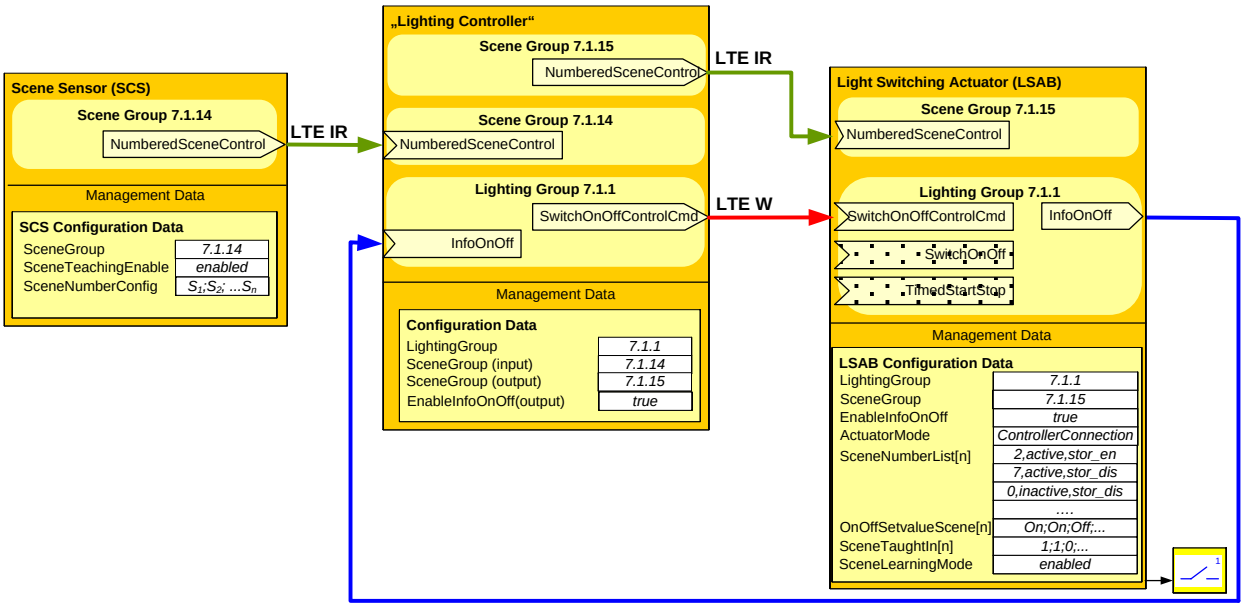

Figure 11 – Execution of Scene commands by the Lighting Controller and Actuator

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 Off-state’ 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 Actuator Basic (LSAB)	417
Inputs	**Outputs**
Binding Grp.: LightingGroup (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)]	
Binding Grp.: SceneGroup (Geographical)	
IR: SCS.NumberedSceneControl	

additional I/Os	**Parameters, 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 optional IR: LTE-Mode InfoReport W: LTE-Mode Write

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

[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_StatusLightingActuator (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_LightActuatorErrorInfo (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

Datapoint	Description	Datapoint Type	LSAB PID
Parameters			
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 - 2 = no change (meaningful for bistable relay output) - 4 = last (saved value at power down)	DPT_BehaviourBusPowerUpDown (20.601)	PID 120
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	DPT_BehaviourBusPowerUpDown (20.601)	PID 122
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 - 4 = last (saved value at bus failure)	DPT_BehaviourBusPowerUpDown (20.601)	PID 124
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_BehaviourBusPowerUpDown (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	DPT_Behaviour_Lock_-Unlock (20.600)	PID 127
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 - 4 = memory function value - 5 = updated value - 6 = value before locking	DPT_Behaviour_Lock_-Unlock (20.600)	PID 129
SceneLearningModeEnable	Enables or disables globally for all scene numbers the learning of new scenes, regardless of the value of the field Storage Function of the Scene Index in the Parameter SceneNumberList.	DPT_Enable (1.003)	PID 131

Datapoint	Description	Datapoint Type	LSAB PID
Parameters			
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 (0..63) 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

		ActuatorMode	
		SensorConnection	**ControllerConnection**
Inputs	LSSB.SwitchOnOff LDSB.SwitchOnOff	M	NA
	LDAB.InfoOnOff	M	NA
	LSSB.TimedStartStop LDSB.TimedStartStop	O	NA
	SCS.NumberedSceneControl	O	O
	SwitchOnOffControlCmd	NA	M
	SwitchOnOffForced	O	O
	LockDevice	O	O
	NightMode	O	O
	LSSB.ControlModeUser [5] *LDSB.ControlModeUser* [5]	O	NA
Outputs	InfoOnOff	O	M
	ActuatorStatus	O	O
	ActuatorErrorInfo	O	O
	ControlModeEff [5]	O	O

Table 2 - LTE-Mode specific Properties

		Support
Parameter	LightingGroup	M
	SceneGroup	O
	ActuatorMode	M
	EnableInfoOnOff	M
	EnableActuatorStatus	O
	EnableActuatorErrorInfo	O

[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	O
	Off Delay	O
	TimedOnDuration	O
	PrewarningDuration	O
	PowerReturnMode	O
	BusFailureMode	O
	BusReturnMode	O
	PowerFailureMode	O
	BehaviourAtLocking	O
	BehaviourAtUnlocking	O
	SceneLearningModeEnable	O
	SceneNumberList[n]	O
	SceneTaughtIn[n]	O
	OnOffSetvalueScene[n]	O
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 ☐

Description:

The output InfoOnOff provides the current binary state of the switching actuator.
This information can be used solely for visualization purposes, for implementing the toggle functionality in Light Switching / Dimming Sensors or for other purposes.

DPT:	Name	DPT_Switch	DPT ID	1.001	Datatype format	B_1

Field	Description	Sup.	Range	Unit	COV	Default
b	indicates the switching status of the lighting actuator: On (1) or Off (0)	M	{0, 1}	-	-	-

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	417 (LSAB)	Property ID:	51		
LTE-Mode-Services (event): InfoReport ☒ (LTE-Mode Read-Response polling of the output shall always be supported)	COV ☒	MinRepTime: -- sec	Heartbeat:	15 min		
	Output per default communicating ☒		Binding Group Wildcard allowed ☐			
	Tx Prio:	High ☐	Normal ☒	Low ☐		
	Transm after Powerup:	Stored Value ☐	Act Value ☒	Default Value ☐		
Property-Service (individual access):	Read only ☒		Read/Write ☐			

Exception Handling: Save at Powerdown ☐

--

Special Features:

[1] 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.
- If transmission of InfoOnOff is disabled, InfoOnOff signal can't be used for life-check functions for individual actuators anymore.

1.5.2 Output ActuatorStatus

FB:	LSAB	LTE-Mode Server Output Name:	ActuatorStatus	Mandatory ☐ Optional ☒

Description:

The output ActuatorStatus indicates the current On/Off state of the lamp and additional status attributes. This information can be used solely for visualization purposes or for other purposes.

DPT:	Name	DPT_StatusLightingActuator	DPT ID	207.600	Datatype format	U_8B_8

Field	Description		Sup.	Range	Unit	COV	Default
ActualValue	Current on/off level in %. In case of a switching actuator LSAB the range is limited to the discrete values 0 % and 100 %		M	0 %;100 %	%	100 %	-
Attributes	Bit #						
-ValidActualValue	0	Validity of field ActualValue	M	{0, 1}		Y	cs
- Locked	1	true ⇒ actuator is locked, e.g. via input LockDevice	O	{0, 1}		Y	0
- Forced	2	true ⇒ forced on/off control is active, e.g. via input SwitchedOnOffForced	O	{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	O	{0, 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 actuator LSAB	NA	0		--	0
- LocalOverride	6	true ⇒ actuator on/off setvalue is locally overridden, e.g. via a local user interface	O	{0, 1}		Y	0
- Failure	7	General actuator failure	O	{0, 1}		3)	0

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	417 (LSAB)	Property ID:	53	
LTE-Mode-Services (event): InfoReport ☒ (LTE-Mode Read-Response polling of the output shall always be supported)	COV ☒	MinRepTime: -- sec	Heartbeat:	15	min
	Output per default communicating ☒		Binding Group Wildcard allowed ☐		
	Tx Prio:	High ☐	Normal ☒	Low ☐	
	Transm after Powerup: Stored Value ☐	Act Value ☒	Default Value ☐		
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 the parameter EnableActuatorStatus.

Group speaker: in order to reduce network traffic, one group speaker out of all LSAB in the same LightingGroup can be nominated by LSAB 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

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

1.5.3 Output ActuatorErrorInfo

FB:	LSAB	LTE-Mode Server Output Name:	ActuatorErrorInfo	Mandatory ☐ Optional ☒

Description:

The output ActuatorErrorInfo contains basic error status information (bitset) of the actuator. ActuatorErrorInfo represents static error information which can e.g. be used for visualization purpose (not to be mixed up with a Technical Alarm which supports an Alarm state machine and Alarm acknowledgement in addition).

DPT:	Name	DPT_LightActuatorErrorInfo	DPT ID	21.601	Datatype format	B_8

Field	Description		Sup.	Range	Unit	COV	Default
Attributes	Bit #						
- LoadDetectionError	0	Load detection failed / wrong load type	O	{0, 1}		Y	0
- Undervoltage	1	Undervoltage of mains supply	O	{0, 1}		Y	0
- Overcurrent	2	Overcurrent / short circuit on load side	O	{0, 1}		Y	0
- Underload	3	Underload / no load on load side	O	{0, 1}		Y	0
- DefectiveLoad	4	Overvoltage / overcurrent pulses on load side	O	{0, 1}		Y	0
- LampFailure	5	General failure of the lamp	O	{0, 1}		Y	0
- Overheat	6	Thermal overload of the actuator	O	{0, 1}		Y	0
- reserved	7		--	0		--	0

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	417 (LSAB)	Property ID:	55
LTE-Mode-Services (event): InfoReport ☒ (LTE-Mode Read-Response polling of the output shall always be supported)	COV ☒	MinRepTime: -- sec	Heartbeat: 60 min	
	Output per default communicating ☒		Binding Group Wildcard allowed ☐	
	Tx Prio:	High ☐	Normal ☒	Low ☐
	Transm after Powerup:	Stored Value ☐	Act Value ☒	Default Value ☐
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 the parameter EnableActuatorErrorInfo

1.5.4 Output ControlModeEff

FB:	LSAB	LTE-Mode Server Output Name:	ControlModeEff	Mandatory ☐ Optional ☒[1)]

Description:

Output ControlModeEff indicates if manual or automatic control is currently active in the LightingGroup.
This information can be used solely for visualization purposes, or to synchronize ControlModeUser values of multiple Lighting Sensors LSSB/LDSB in the same zone, or for other purposes

DPT:	Name	DPT_LightControlMode	DPT ID	20.604	Datatype format	N_8

Field	Description	Sup.	Range	Unit	COV	Default
ControlMode	This field shall indicate whether automatic control (0) or manual control (1) is currently active values 2 to 255 are reserved for future extensions	M	0, 1 *)	-	-	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	417 (LSAB)	Property ID:	54
LTE-Mode-Services (event): InfoReport ☒ (LTE-Mode Read-Response polling of the output shall always be supported)	COV ☒	MinRepTime: -- sec	Heartbeat: 15 min	
	Output per default communicating ☒		Binding Group Wildcard allowed ☒	
	Tx Prio:	High ☐	Normal ☒	Low ☐
	Transm after Powerup: : Stored Value ☐	Act Value ☒	Default Value ☒	
Property-Service (individual access):	Read only ☒	Read/Write ☐		

Exception Handling: Save at Powerdown ☐

--

Special Features:

[1)] Usually this output may only implemented in a Controller which emulates a LSAB actuator proxy, see comments in clause 1.2.3

This output is disabled if the LSAB is controlled by a Controller (⇒ see parameter ActuatorMode)

1.5.5 Input SwitchOnOff

FB:	LSAB	**LTE-Mode Client Input Name:**	SwitchOnOff			Mandatory ☒ [1] Optional ☐	
Description:							
The input SwichOnOff indicates the request from a Lighting Sensor LSSB, LDSB to switch the light on (=1) or off (=0)							
DPT:	Name	DPT_Switch	DPT ID	1.001	Datatype format	B_1	
Field		Description			Sup.	Unit	Default
b		This field indicates whether the lighting sensor requests to switch the light on (1) or off (0)			M	--	Off
Communication:							
Binding Group:							
Class		Type			Default		
Geographical ☒		BuildingZone.Room.Subzone			cs (see parameter LightingGroup)		
Application Specific ☐							
Unassigned ☐		Broadcast ☐	Configurable ☐				
DP Address:		IO Type(ID):	421 (LSSB) 420 (LDSB)		Property ID:	61	
LTE-Mode-Service (event): InfoReport ☒		InfoReport Sniffer on Binding Group:			--		
		Timeout:	--	Min			
LTE-Mode-Service (polling): Read – Response ☐		Read Wildcard / Resp Sniffer on Binding Group:			--		
Value after Powerup:		Default Value ☒			Stored Value ☐		
Exception Handling:					Save at Powerdown ☐		
--							
Special Features:							
This low priority input on the actuator can be overruled by other inputs. See priority handling in clause 1.2.2.3 In combination with NightMode, a timed switch on and autonomous switch off function can be implemented [1] This input is disabled if the LSAB is controlled by a Lighting Controller (⇒ see parameter ActuatorMode)							

1.5.6 Input InfoOnOff from Dimming Actuator

FB: LSAB	**LTE-Mode Client Input Name:** InfoOnOff	Mandatory ☐ Optional ☒ [1)]

Description:

The input InfoOnOff represents the actual light On/Off state of a parallel dimming actuator LDAB in the same Lighting Group. This input is used to synchronize the On/Off state of the LSAB with parallel LDAB

DPT:	Name	DPT_Switch	DPT ID	1.001	Datatype format	B_1

Field	Description	Sup.	Unit	Default
b	This field indicates whether the LDAB state is on (1) or off (0)	M	--	Off

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID): 418 (LDAB)	Property ID: 51
LTE-Mode-Service (event): InfoReport ☒	InfoReport Sniffer on Binding Group: --	
	Timeout: -- Min	
LTE-Mode-Service (polling): Read – Response ☐	Read Wildcard / Resp Sniffer on Binding Group: --	

Value after Powerup:	Default Value ☒	Stored Value ☐

Exception Handling:	Save at Powerdown ☐

--

Special Features:

This low priority input on the actuator can be overruled by other inputs. See priority handling in clause 1.2.2.3

[1)] This input is disabled if the LSAB is controlled by a Lighting Controller (⇒ see parameter ActuatorMode)

1.5.7 Input TimedStartStop

FB:	LSAB	LTE-Mode Client Input Name:	TimedStartStop	Mandatory ☐ Optional ☒ 1)

Description:

The input TimedStartStop indicates the request from a Lighting Sensor LSSB, LDSB to trigger a timed switch on and autonomous switch off function

DPT:	Name	DPT_Start	DPT ID	1.010	Datatype format	B_1

Field	Description	Sup.	Unit	Default
b	b = 1 triggers the start of the timed switch on and autonomous switch off function b = 0: switch off immediately and stop the timer	M	--	--

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	421 (LSSB) 420 (LDSB)	Property ID:	65

LTE-Mode-Service (event): InfoReport ☒	InfoReport Sniffer on Binding Group:	--
	Timeout: --	Min

LTE-Mode-Service (polling): Read – Response ☐	Read Wildcard / Resp Sniffer on Binding Group:	--

Value after Powerup: Default Value ☒ Stored Value ☐

Exception Handling: Save at Powerdown ☐

--

Special Features:

This low priority input on the actuator can be overruled by other inputs. See priority handling in clause 1.2.2.3

1) This input is disabled if the LSAB is controlled by a Lighting Controller (⇒ see parameter ActuatorMode)

1.5.8 Input NumberedSceneControl

FB:	LSAB	LTE-Mode Client Input Name:	NumberedSceneControl	Mandatory ☐ Optional ☒

Description:

The input NumberedSceneControl indicates the request from a Scene Sensor SCS or from a Scene Sensor proxy in a Lighting Controller to recall or learn a scene identified by the contained scene number (0..63). The maximum scene number that is supported by the actuator is company specific.

DPT:	Name	DPT_SceneControl	DPT ID	18.001	Datatype format	$B_1r_1U_6$

Field	Description	Sup.	Unit	Default
c	Control information to encode recall/learning of the scene control information: 0: recall the scene corresponding to the field SceneNumber 1: teach-in the scene corresponding to the field SceneNumber	M	-	-
SceneNumber	Selects the number of the scene to be controlled (0 to 63)	M	-	-

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter SceneGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	403(SCS)	Property ID:	61
LTE-Mode-Service (event): InfoReport ☒	InfoReport Sniffer on Binding Group:		--	
	Timeout:	--	Min	
LTE-Mode-Service (polling): Read – Response ☐	Read Wildcard / Resp Sniffer on Binding Group:		--	

Value after Powerup: Default Value ☐ Stored Value ☐

Exception Handling: Save at Powerdown ☐

An application may support less than the maximum number of 64 scenes. If a scene is called/learned with a scene number that is not supported, then the device shall not react.

Special Features:

This low priority input on the actuator can be overruled by other inputs. See priority handling in clause 1.2.2.3

1.5.9 Input SwitchOnOffControlCmd

FB: LSAB	**LTE-Mode Server Input Name:** SwitchOnOffControlCmd	Mandatory ☒ [1] Optional ☐

Description:

On/Off setpoint to control the actuator by a Lighting Controller.

DPT:	Name	DPT_Switch	DPT ID	1.001	Datatype format	B_1

Field	Description	Sup.	Unit	Default
b	This field indicates whether the Lighting Controller requests to switch the light on (1) or off (0)	M	--	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	417 (LSAB)	Property ID:	60
LTE-Mode-Service (event): Write ☒	Timeout:	--	Min	
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up: Default Value ☐ Stored Value ☐

Exception Handling: Save at Power-down ☐

- Behavior at Power Down or after PowerUp is product specific and may be defined by configuration parameters.

Special Features:

This input can be overruled by high priority inputs SwitchOnOffForced or LockDevice. See priority handling in clause 1.2.3.3

In combination with NightMode, a timed switch on and autonomous switch off function can be implemented

[1] 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 Server Input Name:	SwitchOnOffForced	Mandatory ☐ Optional ☒

Description:

Input to override the current actuator setpoint by a management client e.g. by a Lighting Controller or by a Building Management Station. This input can overrule lower priority inputs like SwitchOnOff, SwitchOnOffControlCmd.

DPT:	Name	DPT_Switch_Control	DPT ID	2.001	Datatype format	B_2

Field	Description	Sup.	Unit	Default
c	0: SwitchOnOffForced is inactive. Lower priority inputs are active. 1: SwitchOnOffForced is active. Actuator setpoint according v field Lower priority inputs are overruled.	M	--	cs
v	If c=0: v is void If c=1: - v=0: high priority Off-state - v=1: high priority On-state	M	--	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	417 (LSAB)	Property ID:	61

LTE-Mode-Service (event): Write ☒	Timeout:	--	Min

Property-Service (individual access):	Read only ☐	Read/Write ☒

Value after Power-up: Default Value ☐ Stored Value ☐

Exception Handling: Save at Power-down ☐

- Behavior at Power Down or after PowerUp is product specific and may be defined by parameters.

Special Features:

This high priority input on the actuator can overrule other normal and low priority inputs. See priority handling in clause 1.2.2.3and 1.2.3.3

The 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-Mode Server Input Name:	LockDevice	Mandatory ☐ Optional ☒

Description:

Input to freeze the actual setpoint of the actuator e.g. by a Lighting Controller or by a Building Management Station. The specific behavior related to lock and unlock states and transitions can be controlled with additional parameters

DPT:	Name	DPT_Enable	DPT ID	1.003	Datatype format	B_1

Field	Description	Sup.	Unit	Default
b	1: shall lock the actuator on its current state 0: shall unlock the actuator	M	--	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	417 (LSAB)	Property ID:	69
LTE-Mode-Service (event): Write ☒	Timeout:	--	Min	
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up: Default Value ☐ Stored Value ☐

Exception Handling: Save at Power-down ☐

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:

This high priority input on the actuator can overrule other lower priority inputs. See priority handling in clause 1.2.2.3 and 1.2.3.3

1.5.12 Input NightMode

FB:	LSAB	LTE-Mode Server Input Name:	NightMode	Mandatory ☐ Optional ☒

Description:

Optional input to activate/deactivate night mode of the actuator. 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. Before the actuator autonomously switches off, a manufacturer specific pre-warning action may be executed.

DPT:	Name	DPT_Enable	DPT ID	1.003	Datatype format	B_1

Field	Description	Sup.	Unit	Default
b	1: enables night mode 0: disables night mode	M	--	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	417 (LSAB)	Property ID:	63
LTE-Mode-Service (event): Write ☒	Timeout:	--	Min	
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up: Default Value ☐ Stored Value ☐

Exception Handling: Save at Power-down ☐

Behavior after power-return: either persistent storage of NightMode 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 ‘disable’ (0).

Special Features:

--

1.5.13 Input ControlModeUser

FB:	LSAB	LTE-Mode Client Input Name:	ControlModeUser	Mandatory ☐ Optional ☒

Description:

An update of input ControlModeUser indicates the request from a Lighting Sensor LSSB/LDSB to request automatic or manual lighting control

DPT:	Name	DPT_LightControlMode	DPT ID	20.604	Datatype format	N_8

Field	Description	Sup.	Unit	Default
ControlMode	This field shall indicate whether automatic control (0) or manual control (1) is currently active values 2 to 255 are reserved for future extensions	M	--	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter BlindsGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	421 (LSSB) 420 (LDSB)	Property ID:	64

LTE-Mode-Service (event): InfoReport ☒	InfoReport Sniffer on Binding Group:	--
	Timeout:	-- Min

LTE-Mode-Service (polling): Read – Response ☐	Read Wildcard / Resp Sniffer on Binding Group:	--

Value after Powerup:	Default Value ☒	Stored Value ☒ 2)

Exception Handling:	Save at Powerdown ☒ 2)

--

Special Features:

1) Usually this input may only implemented in a Controller which emulates a LSAB actuator proxy, see comments in clause 1.2.3

This input is disabled if the LSAB is controlled by a Controller (⇒ see parameter ActuatorMode)

2) Initialization of this input after power return is implementation specific. Persistent storage is an optional feature.

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 Name (Server):** LightingGroup.BuildingZone	Mandatory ☒ Optional ☐

Description:

Part of LightingGroup parameter set mapped to LTE-Mode Geographical zone:
-> BuildingEntity (Floor, Apartment, Building section etc.)

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Number of the BuildingZone	M	1 to 126	--	cs
Status - OutOfService - all other flags	 zone active /inactive not supported, fixed to '0'	 O NA	 true/false	bitset	cs
Command - NormalWrite - SetOSV & ResetOSV - all other commands	 set zone inactive / active not supported	 M O NA		enum	

Communication:

DP Address: (in the server)	IO Type(ID): 417 (LSAB)	Property ID: 101
	Start-Index: 1	N° of elements 1
Property access:	Read only ☐	Read/Write ☒
Protection	Read level --	Write level --

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

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 Name (Server):** LightingGroup.Room	Mandatory ☒ Optional ☐

Description:

Part of LightingGroup parameter set mapped to LTE-Mode Geographical zone:
-> Room within BuildingZone

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Room number	M	1 to 63	--	cs
Status - OutOfService - all other flags	 zone active /inactive not supported, fixed to '0'	 O NA	 true/false	bitset	cs
Command - NormalWrite - SetOSV & ResetOSV - all other commands	 set zone inactive / active not supported	 M O NA		enum	

Communication:

DP Address: **(in the server)**	IO Type(ID): Start-Index:	417 (LSAB) 1	Property ID: N° of elements	102 1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

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)

1.5.14.3 Parameter Subzone

FB: LSAB	**Property Name (Server):** LightingGroup.Subzone	Mandatory ☒ Optional ☐

Description:

Part of LightingGroup parameter set mapped to LTE-Mode Geographical zone:
-> Subzone within BuildingZone.Room

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Subzone number	M	1 to 15	--	cs
Status - OutOfService - all other flags	 zone active /inactive not supported, fixed to '0'	 O NA	 true/false	bitset	cs
Command - NormalWrite - SetOSV & ResetOSV - all other commands	 set zone inactive / active not supported	 M O NA		enum	

Communication:

DP Address: (in the server)	IO Type(ID): Start-Index:	417 (LSAB) 1	Property ID: N° of elements	103 1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

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	**Property Name (Server):** SceneGroup.BuildingZone	Mandatory ☐ Optional ☒

Description:

Part of SceneGroup parameter set mapped to LTE-Mode Geographical zone:
-> BuildingEntity (Floor, Apartment, Building section etc.)

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Number of the BuildingZone	M	1 to 126	--	cs
Status - OutOfService - all other flags	 zone active /inactive not supported, fixed to '0'	 O NA	 true/false	bitset	cs
Command - NormalWrite - SetOSV & ResetOSV - all other commands	 set zone inactive / active not supported	 M O NA		enum	

Communication:

DP Address: (in the server)	IO Type(ID): Start-Index:	417 (LSAB) 1	Property ID: N° of elements	104 1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

LSAB runtime Datapoint NumberedSceneControl is not LTE-Mode communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)

1.5.15.2 Parameter Room

FB: LSAB	**Property Name (Server):** SceneGroup.Room	Mandatory ☐ Optional ☒

Description:

Part of SceneGroup parameter set mapped to LTE-Mode Geographical zone: -> Room within BuildingZone

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Room number	M	1 to 63	--	cs
Status - OutOfService - all other flags	 zone active /inactive not supported, fixed to '0'	 O NA	 true/false	bitset	cs
Command - NormalWrite - SetOSV & ResetOSV - all other commands	 set zone inactive / active not supported	 M O NA		enum	

Communication:

DP Address: (in the server)	IO Type(ID): 417 (LSAB)	Property ID: 105
	Start-Index: 1	N° of elements 1
Property access:	Read only ☐	Read/Write ☒
Protection	Read level --	Write level --

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

LSAB runtime Datapoint NumberedSceneControl is not LTE-Mode communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)

1.5.15.3 Parameter Subzone

FB: LSAB	Property Name (Server): SceneGroup.Subzone	Mandatory ☐ Optional ☒

Description:

Part of SceneGroup parameter set mapped to LTE-Mode Geographical zone:
-> Subzone within BuildingZone.Room

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Subzone number	M	1 to 15	--	cs
Status - OutOfService - all other flags	 zone active /inactive not supported, fixed to '0'	 O NA	 true/false	bitset	cs
Command - NormalWrite - SetOSV & ResetOSV - all other commands	 set zone inactive / active not supported	 M O NA		enum	

Communication:

DP Address: (in the server)	IO Type(ID): 417 (LSAB) Start-Index: 1	Property ID: 106 N° of elements 1
Property access:	Read only ☐	Read/Write ☒
Protection	Read level --	Write level --

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

LSAB runtime Datapoint NumberedSceneControl is not LTE-Mode communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)

1.5.16 Parameter ActuatorMode

FB: LSAB	Property Name (Server): ActuatorMode	Mandatory ☒ Optional ☐

Description:

This parameter is used in the LTE-Mode runtime system to define whether the LSAB is connected to Lighting Sensors or to a Lighting Controller.

DPT:	Name	DPT_ActuatorConnectType	DPT ID	20.020	Datatype format	N_8

Field	Description	Sup.	Range	Unit	Default
	1: SensorConnection 2: ControllerConnection		[1, 2]		cs

Communication:

DP Address: (in the server)	IO Type(ID): 417 (LSAB) Start-Index: 1	Property ID: 110 N° of elements 1
Property access:	Read only ☐	Read/Write ☒
Protection	Read level --	Write level --

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

1.5.17 Parameter EnableInfoOnOff

FB:	LSAB	Property Name (Server):	EnableInfoOnOff	Mandatory ☒ Optional ☐

Description:

This parameter is used in the LTE-Mode runtime system to enable or disable transmission of actuator state InfoOnOff.

DPT:	Name	DPT_Enable	DPT ID	1.003	Datatype format	B_1

Field	Description	Sup.	Range	Unit	Default
	0: disable 1: enable				disable

Communication:

DP Address: (in the server)	IO Type(ID):	417 (LSAB)	Property ID:	111
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

1.5.18 Parameter OnDelay

FB:	LSAB	Property Name (Server):	OnDelay	Mandatory ☐ Optional ☒

Description:

This parameter defines the delay before changing the actuator output from OFF-state to ON-state
The selection of inputs that are affected by the delay mechanism is manufacturer specific.

DPT:	Name	DPT_TimePeriod_10msec	DPT ID	7.003	Datatype format	U_{16}

Field	Description	Sup.	Range	Unit	Default
TimePeriod	OnDelay time with a resolution of 10ms The maximum delay time is 10'55"	M	cs	s	cs

Communication:

DP Address: (in the server)	IO Type(ID):	417 (LSAB)	Property ID:	113
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

1.5.19 Parameter OffDelay

FB: LSAB	Property Name (Server):	OffDelay	Mandatory ☐ Optional ☒

Description:

This parameter defines the delay before changing the actuator output from ON-state to OFF-state
The selection of inputs that are affected by the delay mechanism is manufacturer specific.

DPT:	Name	DPT_TimePeriod_10msec	DPT ID	7.003	Datatype format	U_{16}

Field	Description	Sup.	Range	Unit	Default
TimePeriod	OffDelay time with a resolution of 10ms The maximum delay time is 10'55"	M	cs	s	cs

Communication:

DP Address: (in the server)	IO Type(ID):	417 (LSAB)	Property ID:	114
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

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1.5.20 Parameter TimedOnDuration

FB: LSAB	Property Name (Server):	TimedOnDuration	Mandatory ☐ Optional ☒

Description:

This parameter specifies the time after which the actuator shall autonomously switch off. The selection of inputs that are affected by this autonomous mechanism is manufacturer specific.

DPT:	Name	DPT_TimePeriodSec	DPT ID	7.005	Datatype format	U_{16}

Field	Description	Sup.	Range	Unit	Default
TimePeriod	On time with a resolution of 1s	M	cs	s	cs

Communication:

DP Address: (in the server)	IO Type(ID):	417 (LSAB)	Property ID:	115
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

1.5.21 Parameter PrewarningDuration

FB:	LSAB	Property Name (Server):	PrewarningOnDuration	Mandatory ☐ Optional ☒

Description:

This parameter defines the time during which a manufacturer specific pre-warning action is executed before autonomous switching off.

DPT:	Name	DPT_TimePeriodSec	DPT ID	7.005	Datatype format	U_{16}

Field	Description	Sup.	Range	Unit	Default
TimePeriod	Pre-warning time with a resolution of 1s	M	cs	s	cs

Communication:

DP Address: (in the server)	IO Type(ID): Start-Index:	417 (LSAB) 1	Property ID: N° of elements	116 1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

If PrewarningDuration = 0 the pre-warning function is implicitly disabled.

1.5.22 Parameter EnableActuatorStatus

FB: LSAB	Property Name (Server):	EnableActuatorStatus	Mandatory ☐ Optional ☒

Description:

This parameter is used to enable or disable spontaneous transmission of ActuatorStatus in the LTE-Mode runtime system

DPT:	Name	DPT_Enable	DPT ID	1.003	Datatype format	B_1

Field	Description	Sup.	Range	Unit	Default
b	0: disable 1: enable				cs

Communication:

DP Address: (in the server)	IO Type(ID):	417 (LSAB)	Property ID:	117
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

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1.5.23 Parameter EnableActuatorErrorInfo

FB: LSAB	Property Name (Server):	EnableActuatorErrorInfo	Mandatory ☐ Optional ☒

Description:

This parameter is used to enable or disable spontaneous transmission of ActuatorErrorInfo in the LTE-Mode runtime system

DPT:	Name	DPT_Enable	DPT ID	1.003	Datatype format	B_1

Field	Description	Sup.	Range	Unit	Default
b	0: disable 1: enable				cs

Communication:

DP Address: (in the server)	IO Type(ID):	417 (LSAB)	Property ID:	118
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

1.5.24 Parameter PowerReturnMode

FB:	LSAB	**Property Name (Server):**	PowerReturnMode			Mandatory ☐	Optional ☒
Description:							
Parameter to define the behavior of the actuator after return of the supply power or after a restart of the application.							
DPT:	Name	DPT_BehaviourBusPowerUpDown	DPT ID	20.601	Datatype format	N_8	

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on - 2 = no change (meaningful for bistable relay output) - 4 = last (saved value at power down)	M	[0;1;2;4]		off

Communication:				
DP Address: (in the server)	IO Type(ID):	417 (LSAB)	Property ID:	120
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

It is allowed to restrict the range of values of this parameter, e.g.

- value 2 is not applicable if the actuator output is not implemented with bistable relay
- value 4 is not applicable if the actuator is not able to save its state during/before power down in non volatile memory

1.5.25 Parameter BusFailureMode

FB:	LSAB	**Property Name (Server):**	BusFailureMode			Mandatory ☐	Optional ☒
Description:							
Parameter to define the behavior of the actuator in case of a bus failure							
DPT:	Name	DPT_BehaviourBusPowerUpDown	DPT ID	20.601	Datatype format	N_8	

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on - 2 = no change	M	[0 to 2]		cs

Communication:				
DP Address: (in the server)	IO Type(ID):	417 (LSAB)	Property ID:	122
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

1.5.26 Parameter BusReturnMode

FB:	LSAB	Property Name (Server):	BusReturnMode			Mandatory ☐ Optional ☒	
Description:							
Parameter to define the behavior of the actuator in case of a recovery of the bus.							
DPT:	Name	DPT_BehaviourBusPowerUpDown	DPT ID	20.601	Datatype format	N_8	

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on - 2 = no change - 4 = last (saved value at bus failure)	M	[0;1;2;4]		cs

Communication:				
DP Address: (in the server)	IO Type(ID):	417 (LSAB)	Property ID:	124
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling:	Value after Powerup:	Stored Value ☒	Act Value ☐	Default Value ☐
--				
Special Features:				
It is allowed to restrict the range of values of this parameter				

1.5.27 Parameter PowerFailureMode

FB:	LSAB	Property Name (Server):	PowerFailureMode			Mandatory ☐ Optional ☒	
Description:							
Parameter to define the behavior of the actuator in case of the supply power failure, to switch e.g. a bistable relay before power down of the device							
DPT:	Name	DPT_BehaviourBusPowerUpDown	DPT ID	20.601	Datatype format	N_8	

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):	417 (LSAB)	Property ID:	126
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling:	Value after Powerup:	Stored Value ☒	Act Value ☐	Default Value ☐
--				
Special Features:				
--				

1.5.28 Parameter BehaviourAtLocking

FB:	LSAB	**Property Name (Server):**	BehaviourAtLocking			Mandatory ☐	Optional ☒
Description:							
Parameter to define the behavior of the actuator in case of input LockDevice changing from false -> true							
DPT:	Name	DPT_Behaviour_Lock_ Unlock	DPT ID	20.600	Datatype format	N_8	

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on - 2 = no change	M	[0;1;2]		cs

Communication:				
DP Address: (in the server)	IO Type(ID): 417 (LSAB) Start-Index: 1	Property ID: 127 N° of elements 1		
Property access:	Read only ☐	Read/Write ☒		
Protection	Read level --	Write level --		

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

It is allowed to restrict the range of values of this parameter

1.5.29 Parameter BehaviourAtUnlocking

FB:	LSAB	**Property Name (Server):**	BehaviourAtUnlocking			Mandatory ☐	Optional ☒
Description:							
Parameter to define the behavior of the actuator in case of input LockDevice changing from true -> false							
DPT:	Name	DPT_Behaviour_Lock_ Unlock	DPT ID	20.600	Datatype format	N_8	

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on - 2 = no change - 4 = memory function value - 5 = updated value - 6 = value before locking	M	[0;1;2,4,5,6]		cs

Communication:				
DP Address: (in the server)	IO Type(ID): 417 (LSAB) Start-Index: 1	Property ID: 129 N° of elements 1		
Property access:	Read only ☐	Read/Write ☒		
Protection	Read level --	Write level --		

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

It is allowed to restrict the range of values of this parameter

1.5.30 Parameter SceneLearningModeEnable

FB: LSAB	Property Name (Server):	SceneLearningModeEnable	Mandatory ☐ Optional ☒

Description:

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:	Name	DPT_Enable	DPT ID	1.003	Datatype format	B_1

Field	Description	Sup.	Range	Unit	Default
	0: disable scene learning 1: enable scene learning				disable

Communication:

DP Address: (in the server)	IO Type(ID): Start-Index:	417 (LSAB) 1	Property ID: N° of elements	131 1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

1.5.31 Parameter SceneNumberList[n]

FB: LSAB	Property Name (Server):	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: LSAB	Property Name (Server): SceneNumberList[n]			Mandatory ☐ Optional ☒	
DPT:	Name: DPT_SceneConfig	DPT ID: 238.001		Datatype format: B_2U_6	

Field	Description	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	O [1])	{0, 1}	none	cs
SceneActive	This field shall indicate whether or not the scene is active. If this field has the value *inactive* 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	M	{0, 1}	none	cs
SceneNumber	This field shall contain the Scene Number that is assigned to this Scene Index. In case less Scene Numbers are configured than supported by this FB, then the field SceneActive shall be set to “Inactive” for this index and the value of the field SceneNumber shall be don’t care.	M	0 to 63	none	cs

Communication:

DP Address: (in the server)	IO Type(ID):	417 (LSAB)	Property ID:	132
	Start-Index:	1	N° of elements	see above
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

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.

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

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.

1.5.32 Parameter SceneTaughtIn[n]

FB:	LSAB	Property Name (Server):	SceneTaughtIn[n]	Mandatory ☐ Optional ☒

Description:

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_Bool	DPT ID	1.002	Datatype format	B_1

Field	Description	Sup.	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.	M	{0, 1}	none	false

Communication:

DP Address: (in the server)	IO Type(ID):	417 (LSAB)	Property ID:	133
	Start-Index:	1	N° of elements	see above [1)]
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

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.

1.5.33 Parameter OnOffSetvalueScene[n]

FB:	LSAB	Property Name (Server):	OnOffSetvalueScene[n]	Mandatory ☐ Optional ☒

Description:

For each Scene Index this Property shall define the actuator On/Off 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 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.

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_Switch	DPT ID	1.001	Datatype format	B_1

Field	Description	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	M	{0, 1}	none	false

Communication:

DP Address: (in the server)	IO Type(ID): Start-Index:	417 (LSAB) 1	Property ID: N° of elements	134 see above [1)]
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

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

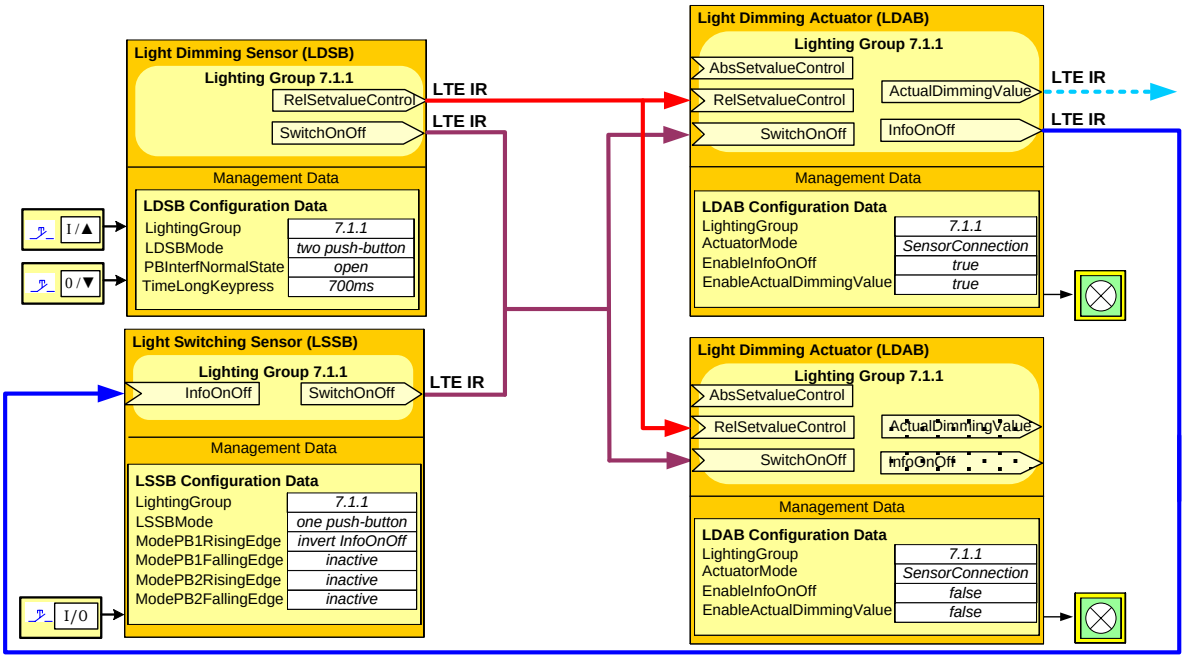

Figure 13 – Example of direct actuator communication with LDSB and LSSB

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 (⇒ 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).

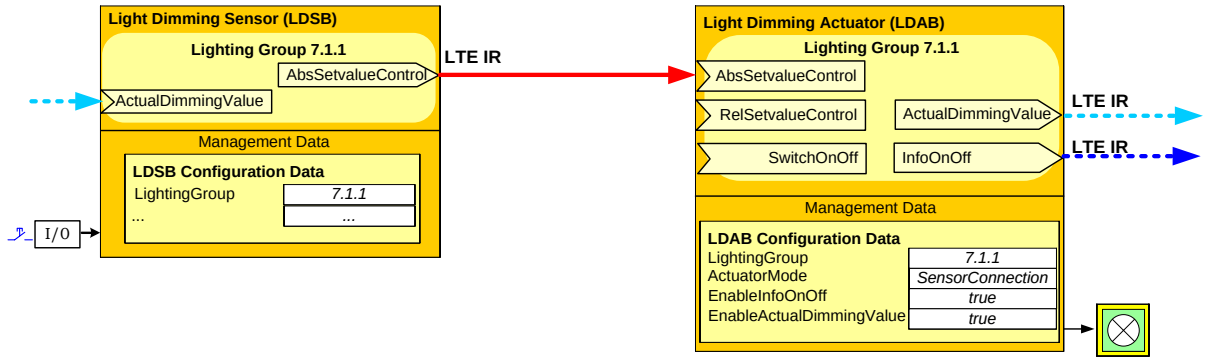

Figure 14 – LDSB providing control command to set LDAB to an absolute dimming value

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).

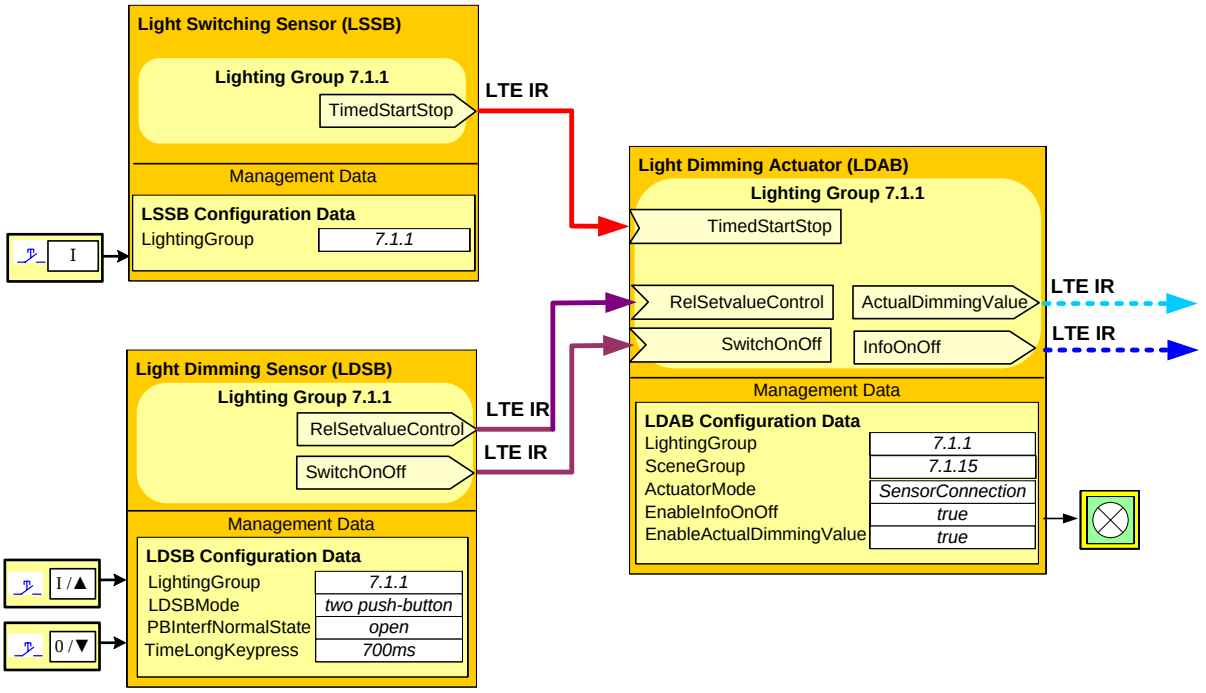

Figure 15 – Example of Autonomous switch-off function via TimedStartStop signal

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 pre-warning action may be performed.

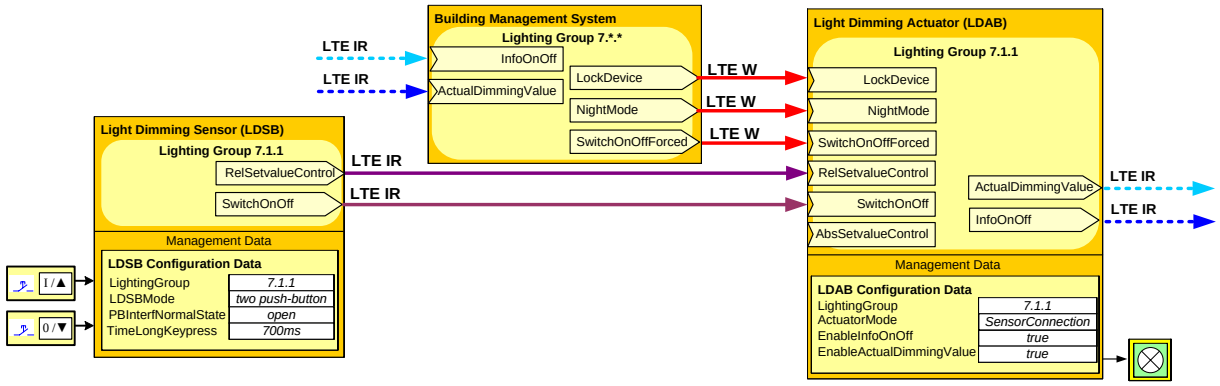

Figure 16 – Example of Building Management System overriding local LDSB commands

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.

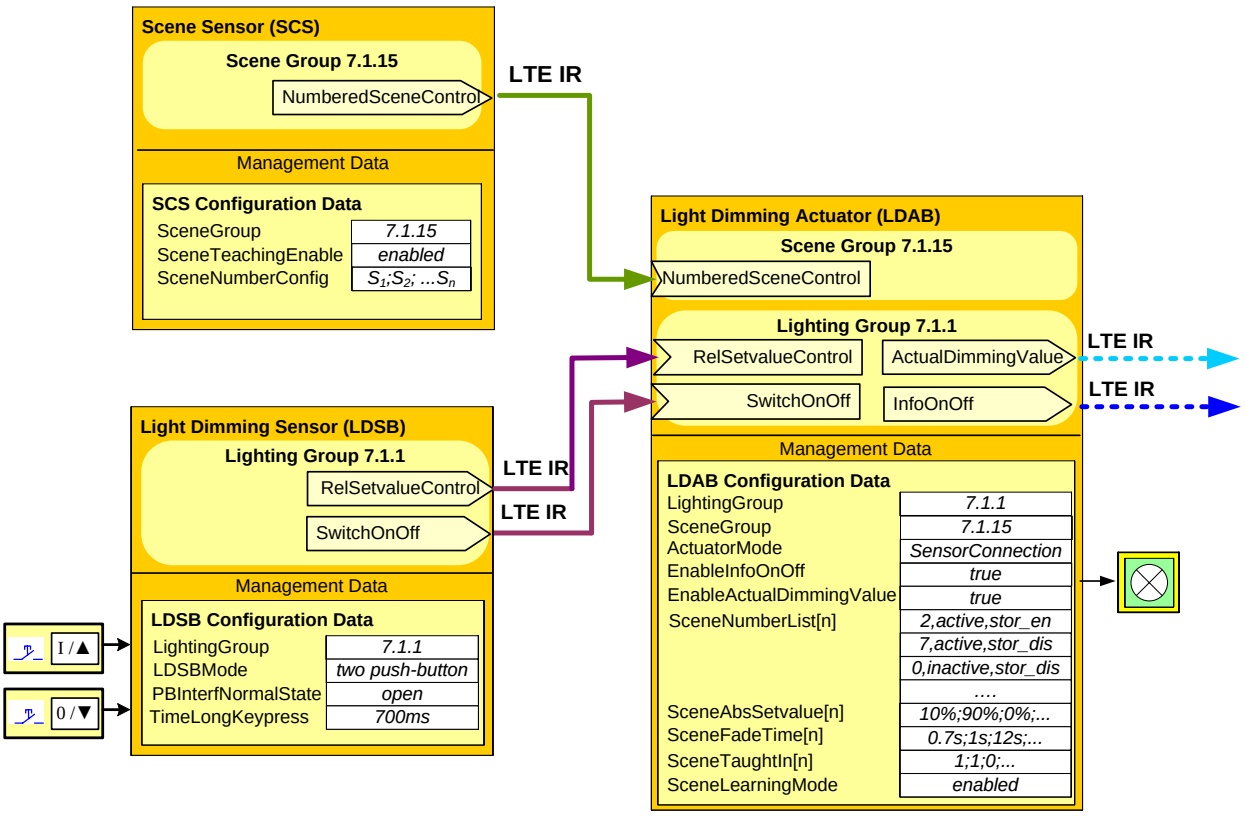

Figure 17 – Example Scene Control

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 informationof 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

- **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].

- **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 Off-state' 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

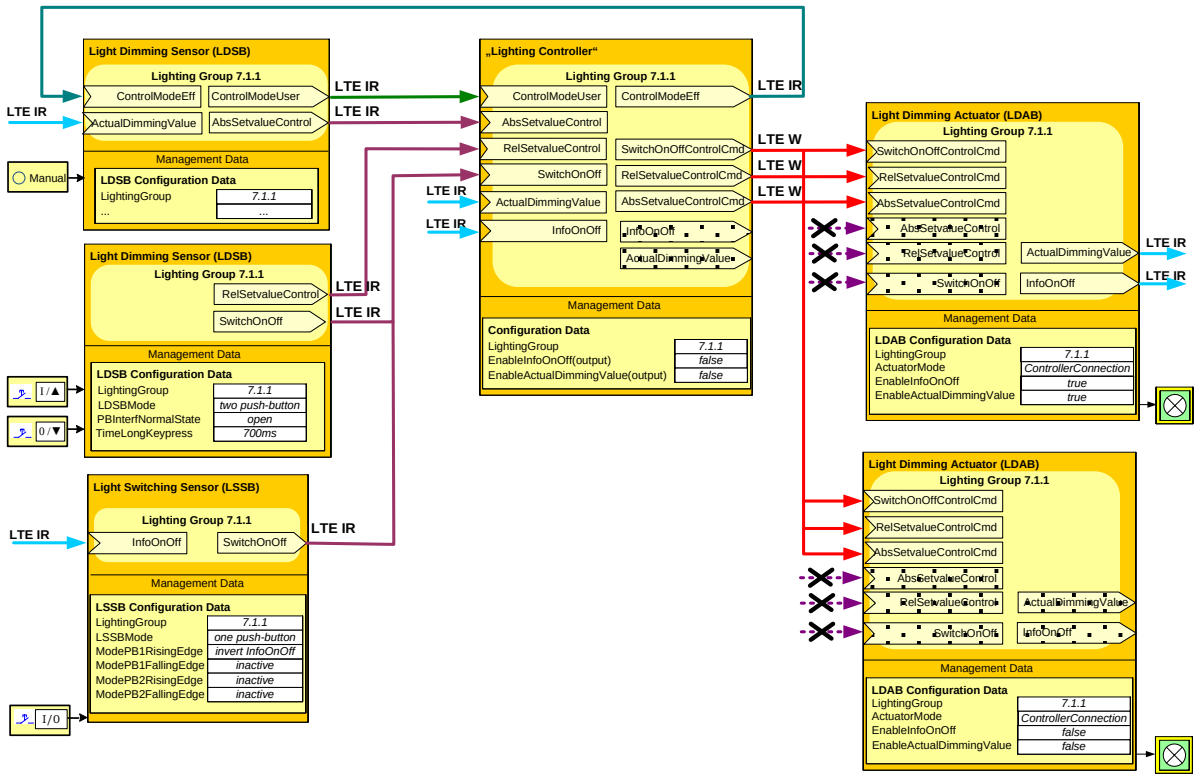

Figure 18 – Lighting sensor – controller – actuator model: basic features

Figure 18 illustrates the basic application model for indirect 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.

7) 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.

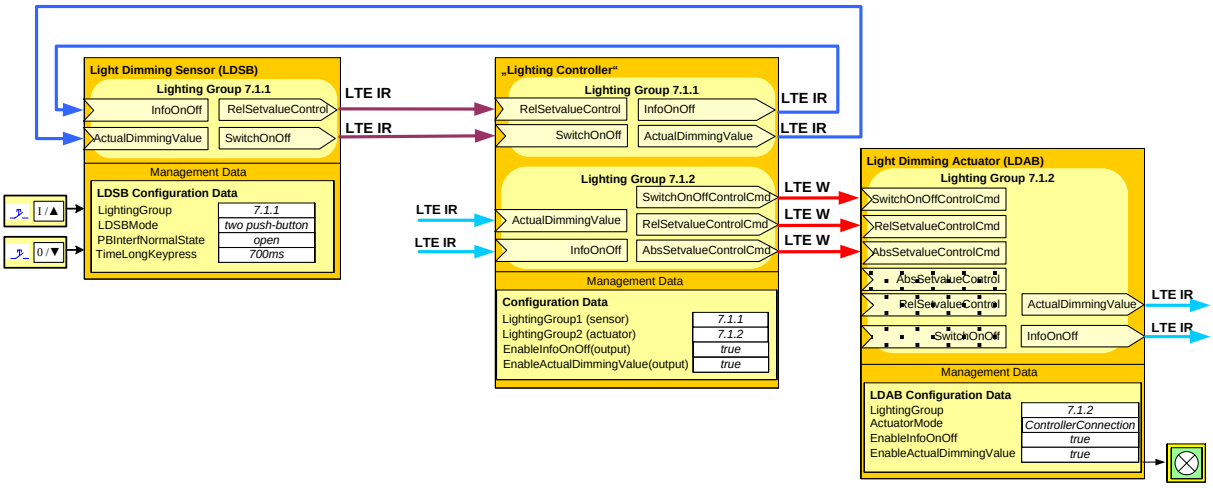

Figure 19 – Example with separate LightingGroups for sensors and actuators

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.

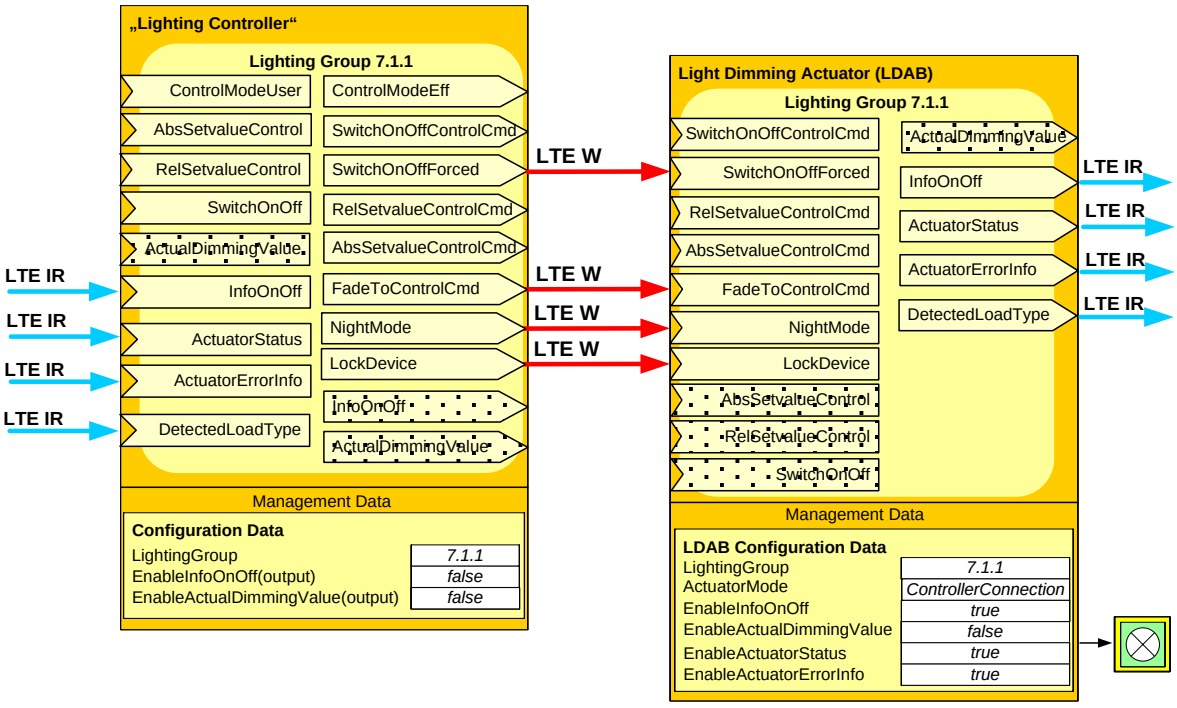

Figure 20 – Lighting sensor – controller – actuator model: extended features

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.

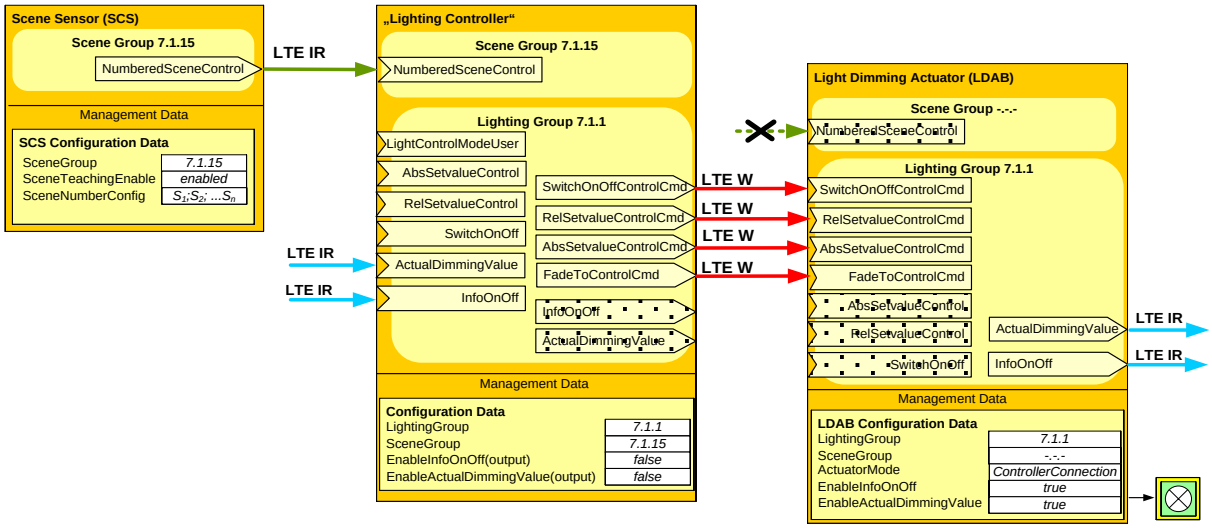

Figure 21 – Execution of Scene commands by the Lighting Controller

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:

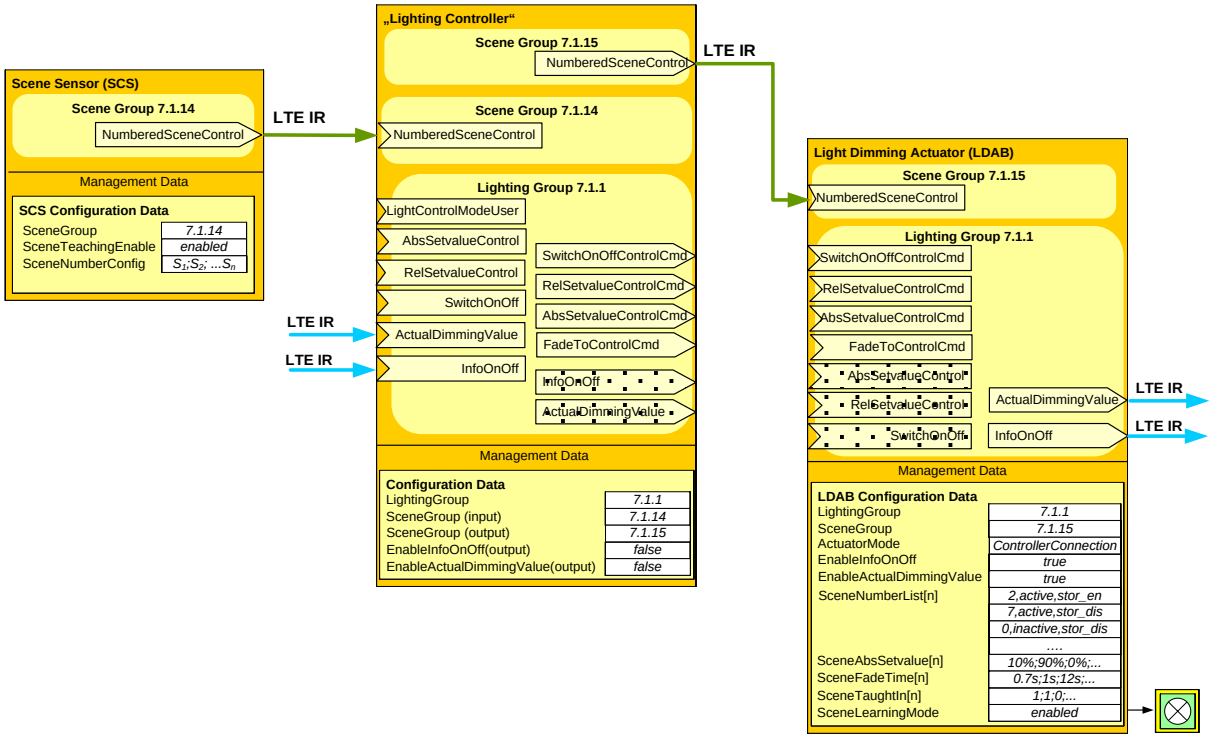

Figure 22 – Execution of Scene commands by the Lighting Controller and Actuator

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 Off-state’ 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 Actuator Basic (LDAB)	418
Inputs	**Outputs**
Binding Grp.: LightingGroup (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	
Binding Grp.: SceneGroup (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
	PowerReturnMode + PowerReturnValue
	BusFailureMode + BusFailureValue
	BusReturnMode + BusReturnValue
	PowerFailureMode
	BehaviourAtLocking + LockSetvalue
	BehaviourAtUnlocking + UnlockSetvalue
	SceneLearningModeEnable
	SceneNumberList[n]
	SceneTaughtIn[n]
	SceneAbsSetvalue[n]
	SceneFadeTime[n]
	MinimumSetvalue
	MaximumSetvalue
	DimmModeSelection
	SwitchOnMode
	SwitchOnSetvalue
	RelativOffEnable
	LoadAdatptation

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.

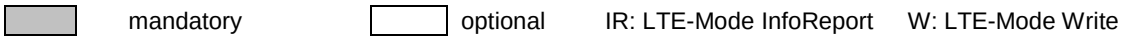

Figure 23 – Functional Block Diagram for FB Light Dimming Actuator Basic

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_LightActuatorErrorInfo (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

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

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	M
	SceneGroup	O
	ActuatorMode	M
	EnableInfoOnOff	M
	EnableActualDimmingValue	M
	EnableActuatorStatus	O
	EnableActuatorErrorInfo	O
	EnableDetectedLoadType	O

Table 6 - Standard Properties of Interface Object

		Support
Parameter	OnDelay	O
	OffDelay	O
	TimedOnDuration	O
	PrewarningDuration	O
	PowerReturnMode	O
	PowerReturnValue	O
	BusFailureMode	O
	BusFailureValue	O
	BusReturnMode	O
	BusReturnValue	O
	PowerFailureMode	O
	BehaviourAtLocking	O
	LockSetvalue	O
	BehaviourAtUnlocking	O
	UnlockSetvalue	O
	SceneLearningModeEnable	O
	SceneNumberList[n]	O
	SceneTaughtIn[n]	O
	SceneAbsSetvalue[n]	O
	SceneFadeTime[n]	O
	MinimumSetvalue	O
	MaximumSetvalue	O
	DimmModeSelection	O
	SwitchOnMode	O
	SwitchOnSetvalue	O
	RelativOffEnable	O
	LoadAdaptation	O
	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-Mode Server Output Name:** InfoOnOff	Mandatory ☒ [1] Optional ☐

Description:

The output InfoOnOff provides the current binary state of the dimming actuator.
This information can be used solely for visualization purposes, for implementing the toggle functionality in Light Switching / Dimming Sensors or for other purposes.

DPT:	Name	DPT_Switch	DPT ID	1.001	Datatype format	B_1

Field	Description	Sup.	Range	Unit	COV	Default
b	indicates the switching status of the lighting actuator: On (1) or Off (0)	M	{0, 1}	-	-	-

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	51
LTE-Mode-Services (event): InfoReport ☒ (LTE-Mode Read-Response polling of the output shall always be supported)	COV ☒	MinRepTime: -- sec	Heartbeat: 15 min	
	Output per default communicating ☒		Binding Group Wildcard allowed ☐	
	Tx Prio:	High ☐	Normal ☒	Low ☐
	Transm after Powerup: Stored Value ☐	Act Value ☒	Default Value ☐	
Property-Service (individual access):	Read only ☒	Read/Write ☐		

Exception Handling: Save at Powerdown ☐

--

Special Features:

[1] Mandatory in case of ControllerConnection, optional in case of SensorConnection

- 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 LDAB in the same Lighting Group can be nominated by LDAB configuration via parameter EnableInfoOnOff.
- If transmission of InfoOnOff is disabled, InfoOnOff signal can't be used for life-check functions for individual actuators anymore.

2.5.2 Output ActualDimmingValue

FB: LDAB	**LTE-Mode Server Output Name:**	ActualDimmingValue	Mandatory ☒[1] Optional ☐

Description:

The output ActualDimmingValue provides the current dimming value of the dimming actuator.
This information can be used solely for visualization purposes or for other purposes.

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	COV	Default
Actual value	Actual dimming value in percent	M	0 to 100 %	%	cs [2]	-

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	52		
LTE-Mode-Services (event): InfoReport ☒ (LTE-Mode Read-Response polling of the output shall always be supported)	COV ☒ [2]	MinRepTime:	cs	sec	Heartbeat: 15	min
	Output per default communicating ☒		Binding Group Wildcard allowed ☐			
	Tx Prio:	High ☐	Normal ☒	Low ☐		
	Transm after Powerup: Stored Value ☐	Act Value ☒	Default Value ☐			
Property-Service (individual access):	Read only ☒	Read/Write ☐				

Exception Handling: Save at Powerdown ☐

--

Special Features:

[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.

- 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 ⇒ 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.

2.5.3 Output ActuatorStatus

FB: LDAB	**LTE-Mode Server Output Name:** ActuatorStatus	Mandatory ☐ Optional ☒

Description:

The output ActuatorStatus indicates the current dimming value of the lamp and additional status attributes. This information can be used solely for visualization purposes or for other purposes.

DPT:	Name	DPT_StatusLightingActuator	DPT ID	207.600	Datatype format	U_8B_8

Field	Description		Sup.	Range	Unit	COV	Default
ActualValue	Actual dimming value in percent		M	0 % to 100 %	%	cs [2]	-
Attributes	Bit #						
-ValidActualValue	0	Validity of field ActualValue	M	{0, 1}		Y	1
- Locked	1	true ⇒ actuator is locked, e.g. via input LockDevice	O	{0, 1}		[3]	0
- Forced	2	true ⇒ forced on/off control is active, e.g. via input SwitchedOnOffForced	O	{0, 1}		[3]	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	O	{0, 1}		[3]	0
- StaircaseLighting Function	4	true ⇒ staircase lighting function is active; e.g. via input TimedStartStop	O	{0, 1}		[3]	0
- Dimming	5	true ⇒ actuator is in state DIMMING false ⇒ actuator is not in state DIMMING	O	{0, 1}		[2]	0
- LocalOverride	6	true ⇒ actuator setvalue is locally overridden, e.g. via a local user interface	O	{0, 1}		[3]	0
- Failure	7	General actuator failure	O	{0, 1}		[3]	0

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	53
LTE-Mode-Services (event): InfoReport ☒ (LTE-Mode Read-Response polling of the output shall always be supported)	COV ☒ [1]	MinRepTime: -- sec	Heartbeat: 15 min	
	Output per default communicating ☒		Binding Group Wildcard allowed ☐	
	Tx Prio:	High ☐	Normal ☒	Low ☐
	Transm after Powerup: Stored Value ☐	Act Value ☒	Default Value ☐	
Property-Service (individual access):	Read only ☒	Read/Write ☐		

Exception Handling:	Save at Powerdown ☐
--	

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 Name:	ActuatorErrorInfo	Mandatory ☐ Optional ☒

Description:

The output ActuatorErrorInfo contains basic error status information (bitset) of the actuator. ActuatorErrorInfo represents static error information which can e.g. be used for visualization purpose (not to be mixed up with a Technical Alarm which supports an Alarm state machine and Alarm acknowledgement in addition).

DPT:	Name	DPT_LightActuatorErrorInfo	DPT ID	21.601	Datatype format	B_8

Field	Description		Sup.	Range	Unit	COV	Default
Attributes	Bit #						
- LoadDetectionError	0	Load detection failed / wrong load type	O	{0, 1}		Y	0
- Undervoltage	1	Undervoltage of mains supply	O	{0, 1}		Y	0
- Overcurrent	2	Overcurrent / short circuit on load side	O	{0, 1}		Y	0
- Underload	3	Underload / no load on load side	O	{0, 1}		Y	0
- DefectiveLoad	4	Overvoltage / overcurrent pulses on load side	O	{0, 1}		Y	0
- LampFailure	5	General failure of the lamp	O	{0, 1}		Y	0
- Overheat	6	Thermal overload of the actuator	O	{0, 1}		Y	0
- reserved	7		--	0		--	0

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	55		
LTE-Mode-Services (event): InfoReport ☒ (LTE-Mode Read-Response polling of the output shall always be supported)	COV ☒	MinRepTime: -- sec	Heartbeat:	60 min		
	Output per default communicating ☒		Binding Group Wildcard allowed ☐			
	Tx Prio:	High ☐	Normal ☒	Low ☐		
	Transm after Powerup: Stored Value ☐	Act Value ☒	Default Value ☐			
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 the parameter EnableActuatorErrorInfo

2.5.5 Output ControlModeEff

FB: LDAB	**LTE-Mode Server Output Name:** ControlModeEff	Mandatory ☐ Optional ☒ [1)]

Description:

Output ControlModeEff indicates if manual or automatic control is currently active in the LightingGroup. This information can be used solely for visualization purposes, or to synchronize ControlModeUser values of multiple Lighting Sensors LSSB/LDSB in the same zone, or for other purposes

DPT:	Name	DPT_LightControlMode	DPT ID	20.604	Datatype format	N_8

Field	Description	Sup.	Range	Unit	COV	Default
ControlMode	This field shall indicate whether automatic control (0) or manual control (1) is currently active values 2 to 255 are reserved for future extensions	M	0, 1 *)	-	-	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	54		
LTE-Mode-Services (event): InfoReport ☒ (LTE-Mode Read-Response polling of the output shall always be supported)	COV ☒	MinRepTime: -- sec	Heartbeat:	15 min		
	Output per default communicating ☒		Binding Group Wildcard allowed ☒			
	Tx Prio:	High ☐	Normal ☒	Low ☐		
	Transm after Powerup: : Stored Value ☐	Act Value ☒	Default Value ☒			
Property-Service (individual access):	Read only ☒	Read/Write ☐				

Exception Handling: Save at Powerdown ☐

--

Special Features:

[1)] Usually this output may only implemented in a Controller which emulates a LDAB actuator proxy, see comments in clause 1.2.3

This output is disabled if the LDAB is controlled by a Controller (⇒ see parameter ActuatorMode)

2.5.6 Output DetectedLoadType

FB: LDAB	**LTE-Mode Server Output Name:** DetectedLoadType	Mandatory ☐ Optional ☒

Description:

Output DetectedLoadType indicates the effective load type that is detected and applied by the actuator.
- Value *undefined* means that the detection of the load type has not yet been done
- Value *detection not possible or error* means that the detection of the load type was technically not possible or has resulted in an error
- a successful load detection procedure will result in values *leading edge* or *traling edge*

This information can be used solely for diagnostic and visualization purposes or for other purposes
See also parameter LoadAdaptation to select the load type.

DPT:	Name	DPT_LoadTypeDetected	DPT ID	20.610	Datatype format	N_8

Field	Description	Sup.	Range	Unit	COV	Default
LoadType	This field shall indicate the detected load type - 0 = undefined - 1 = leading edge (inductive load) - 2 = trailing edge (capacitive load) - 3 = detection not possible or error	M	0 to 3	-	Y	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	56
LTE-Mode-Services (event): InfoReport ☒ (LTE-Mode Read-Response polling of the output shall always be supported)	COV ☒	MinRepTime: -- sec	Heartbeat: cs [1] min	
	Output per default communicating ☒		Binding Group Wildcard allowed ☐	
	Tx Prio:	High ☐	Normal ☒	Low ☐
	Transm after Powerup: : Stored Value ☐	Act Value ☒	Default Value ☐	
Property-Service (individual access):	Read only ☒	Read/Write ☐		

Exception Handling: Save at Powerdown ☐

--

Special Features:

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.

[1] The value of the heartbeat repetition period is manufacturer specific. It is recommended to implement rather long heartbeat periods (e.g. 60 minutes or longer) since the probability that the value will change is very low.

2.5.7 Input SwitchOnOff

FB: LDAB	**LTE-Mode Client Input Name:** SwitchOnOff	Mandatory ☒ [1] Optional ☐

Description:

The input SwichOnOff indicates the request from a Lighting Sensor LSSB, LDSB to switch the light on (=1) or off (=0).
Optional parameters SwitchOnSetvalue, SwitchOnMemoryFunction and MaximumSetvalue define the initial set-value after changing from OFF-state -> ON-state

DPT:	Name	DPT_Switch	DPT ID	1.001	Datatype format	B_1

Field	Description	Sup.	Unit	Default
b	This field indicates whether the lighting sensor requests to switch the light on (1) or off (0)	M	--	none

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	421 (LSSB) 420 (LDSB)	Property ID:	61
LTE-Mode-Service (event): InfoReport ☒	InfoReport Sniffer on Binding Group:	--		
	Timeout:	--	Min	
LTE-Mode-Service (polling): Read – Response ☐	Read Wildcard / Resp Sniffer on Binding Group:	--		

Value after Powerup: Default Value ☐ Stored Value ☐

Exception Handling: Save at Powerdown ☐

--

Special Features:

This low priority input on the actuator can be overruled by other inputs. 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] This input is disabled if the LDAB is controlled by a Lighting Controller (⇒ see parameter ActuatorMode)

2.5.8 Input RelSetvalueControl

FB:	LDAB	LTE-Mode Client Input Name:	RelSetvalueControl	Mandatory ☒ 1) Optional ☐

Description:

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= $2^{(stepcode-1)}$,.e.g. StepCode= 100b ⇒number of intervals= 8 ⇒ 1 step= 12,5 %
- The following intervals can be encoded: 50 %, 25 %, 12,5 %, 6,25 %, 3,12 % and 1,625 %

DPT:	Name	DPT_Control_Dimming	DPT ID	3.007	Datatype format	B_1U_3

Field	Description	Sup.	Unit	Default
c	Dimming direction: dim up (1) / dim down (0)	M	--	--
StepCode	Start/Stop commands and number of step intervals respectively are encoded; see above	M	--	--

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	420 (LDSB)	Property ID:	62
LTE-Mode-Service (event): InfoReport ☒	InfoReport Sniffer on Binding Group:	--		
	Timeout:	--	Min	
LTE-Mode-Service (polling): Read – Response ☐	Read Wildcard / Resp Sniffer on Binding Group:	--		

Value after Powerup: Default Value ☒ Stored Value ☐

Exception Handling: Save at Powerdown ☐

--

Special Features:

This low priority input can be overruled by other inputs. See priority handling in clause 2.2.2.3

1) This input is disabled if the LDAB is controlled by a Lighting Controller (⇒ see parameter ActuatorMode)

2.5.9 Input AbsSetvalueControl

FB: LDAB	**LTE-Mode Client Input Name:** AbsSetvalueControl	Mandatory ☒ [1] Optional ☐

Description:

AbsSetvalueControl is provided by FB LDSB and is used for absolute dimming, i.e. to set the absolute dimming level of the actuator. Parameter DimmModeSelection defines the dimming behaviour. If parameter DimmModeSelection is set to 'ramp', the actuator enters the state DIMMING. otherwise the actual value jumps to the set-value immediately (default behaviour if parameter DimmModeSelection is not implemented)

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Unit	Default
SetValue	Dimming actuator setpoint in %	M	%	--

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	420 (LDSB)	Property ID:	63
LTE-Mode-Service (event): InfoReport ☒	InfoReport Sniffer on Binding Group:	--		
	Timeout:	--	Min	
LTE-Mode-Service (polling): Read – Response ☐	Read Wildcard / Resp Sniffer on Binding Group:	--		

Value after Powerup: Default Value ☐ Stored Value ☐

Exception Handling: Save at Powerdown ☐

--

Special Features:

This low priority input on the actuator can be overruled by other inputs. See priority handling in clause 2.2.2.3

[1] This input is disabled if the LDAB is controlled by a Lighting Controller (⇒ see parameter ActuatorMode)

2.5.10 Input TimedStartStop

FB: LDAB	**LTE-Mode Client Input Name:**	TimedStartStop	Mandatory ☐ Optional ☒ [1)]

Description:

The input TimedStartStop indicates the request from a Lighting Sensor LSSB, LDSB to trigger a timed switch on and autonomous switch off function

DPT:	Name	DPT_Start	DPT ID	1.010	Datatype format	B_1

Field	Description	Sup.	Unit	Default
b	b = 1 triggers the start of the timed switch on and autonomous switch off function b = 0: switch off immediately and stop the timer	M	--	--

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	421 (LSSB) 420 (LDSB)	Property ID:	65

LTE-Mode-Service (event): InfoReport ☒	InfoReport Sniffer on Binding Group:	--
	Timeout:	-- Min

LTE-Mode-Service (polling): Read – Response ☐	Read Wildcard / Resp Sniffer on Binding Group:	--

Value after Powerup: Default Value ☒ Stored Value ☐

Exception Handling: Save at Powerdown ☐

--

Special Features:

This low priority input on the actuator can be overruled by other inputs. See priority handling in clause 2.2.2.3

[1)] This input is disabled if the LDAB is controlled by a Lighting Controller (⇒ see parameter ActuatorMode)

2.5.11 Input NumberedSceneControl

FB: LDAB	LTE-Mode Client Input Name:	NumberedSceneControl	Mandatory ☐ Optional ☒

Description:

The input NumberedSceneControl indicates the request from a Scene Sensor SCS or from a Scene Sensor proxy in a Lighting Controller to recall or learn a scene identified by the contained scene number (0 to 63). The maximum scene number that is supported by the actuator is company specific.

DPT:	Name	DPT_SceneControl	DPT ID	18.001	Datatype format	$B_1r_1U_6$

Field	Description	Sup.	Unit	Default
c	Control information to encode recall/learning of the scene control information: 0: recall the scene corresponding to the field SceneNumber 1: teach-in the scene corresponding to the field SceneNumber	M	-	-
SceneNumber	Selects the number of the scene to be controlled (0 to 63)	M	-	-

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter SceneGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	403(SCS)	Property ID:	61
LTE-Mode-Service (event): InfoReport ☒	InfoReport Sniffer on Binding Group:	--		
	Timeout:	--	Min	
LTE-Mode-Service (polling): Read – Response ☐	Read Wildcard / Resp Sniffer on Binding Group:	--		

Value after Powerup: Default Value ☐ Stored Value ☐

Exception Handling: Save at Powerdown ☐

An application may support less than the maximum number of 64 scenes. If a scene is called / learned with a scene number that is not supported, then the device shall not react.

Special Features:

This low priority input on the actuator can be overruled by other inputs. See priority handling in clause 2.2.2.3

2.5.12 Input SwitchOnOffControlCmd

FB: LDAB	**LTE-Mode Server Input Name:** SwitchOnOffControlCmd	Mandatory ☒ [1] Optional ☐

Description:

The input SwichOnOffContolCmd is used to directly control the On/Off state of the actuator by a Lighting Controller.

DPT:	Name	DPT_Switch	DPT ID	1.001	Datatype format	B_1

Field	Description	Sup.	Unit	Default
b	This field indicates whether the Lighting Controller requests to switch the light on (1) or off (0)	M	--	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	60
LTE-Mode-Service (event): Write ☒	Timeout:	--	Min	
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up: Default Value ☐ Stored Value ☐

Exception Handling: Save at Power-down ☐

- Behavior at Power Down or after PowerUp is product specific and may be defined by configuration parameters.

Special Features:

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, SwitchOnOffControlCmd input is disabled. The behavior is controlled by configuration parameter ActuatorMode.

2.5.13 Input SwitchOnOffForced

FB: LDAB	LTE-Mode Server Input Name:	SwitchOnOffForced	Mandatory ☐ Optional ☒

Description:

Input to override the current actuator setpoint by a management client e.g. by a Lighting Controller or by a Building Management Station. This input can overrule lower priority inputs like SwitchOnOff, SwitchOnOffControlCmd.

DPT:	Name	DPT_Switch_Control	DPT ID	2.001	Datatype format	B_2

Field	Description	Sup.	Unit	Default
c	0: SwitchOnOffForced is inactive. Lower priority inputs are active. 1: SwitchOnOffForced is active. Actuator setpoint according v field Lower priority inputs are overruled.	M	--	cs
v	If c=0: v is void If c=1: - v=0: high priority Off-state - v=1: high priority On-state	M	--	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	61
LTE-Mode-Service (event): Write ☒	Timeout:	--	Min	
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up:	Default Value ☐	Stored Value ☐
Exception Handling:		Save at Power-down ☐

- Behavior at Power Down or after PowerUp is product specific and may be defined by parameters.

Special Features:

This high priority input on the actuator can overrule other normal and low priority inputs. See priority handling in clause 2.2.2.3 and 2.2.3.3

The 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	**LTE-Mode Server Input Name:** LockDevice	Mandatory ☐ Optional ☒

Description:

Input to freeze the actual setpoint of the actuator e.g. by a Lighting Controller or by a Building Management Station. The specific behavior related to lock and unlock states and transitions can be controlled with additional parameters BehaviourAtLocking / LockSetvalue and BehaviourAtUnlocking / UnlockSetvalue

DPT:	Name	DPT_Enable	DPT ID	1.003	Datatype format	B_1

Field	Description	Sup.	Unit	Default
b	1: shall lock the actuator on its current state 0: shall unlock the actuator	M	--	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	69
LTE-Mode-Service (event): Write ☒	Timeout:	--	Min	
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up: Default Value ☐ Stored Value ☐

Exception Handling: Save at Power-down ☐

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:

This high priority input on the actuator can overrule other lower priority inputs. See priority handling in clause 2.2.2.3 and 2.2.3.3

2.5.15 Input NightMode

FB: LDAB	LTE-Mode Server Input Name:	NightMode	Mandatory ☐ Optional ☒

Description:

Optional input to activate/deactivate night mode of the actuator. 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. Before the actuator autonomously switches off, a manufacturer specific pre-warning action may be executed.

DPT:	Name	DPT_Enable	DPT ID	1.003	Datatype format	B_1

Field	Description	Sup.	Unit	Default
b	1: enables night mode 0: disables night mode	M	--	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	63
LTE-Mode-Service (event): Write ☒	Timeout:	--	Min	
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up: Default Value ☐ Stored Value ☐

Exception Handling: Save at Power-down ☐

Behavior after power-return: either persistent storage of NightMode 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 ‘disable’ (0).

Special Features:

--

2.5.16 Input RelSetvalueControlCmd

FB: LDAB	LTE-Mode Server Input Name:	RelSetvalueControlCmd	Mandatory ☒ 1) Optional ☐

Description:

The input RelSetvalueControlCmd is used to trigger relative dimming commands by a Lighting Controller. RelSetvalueControlCmd supports only the standard mechanism for relative dimming between a Lighting Controller 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
- step increments with StepCode field: x, with x >001b are not supported

DPT:	Name	DPT_Control_Dimming	DPT ID	3.007	Datatype format	B_1U_3

Field	Description	Sup.	Unit	Default
c	Dimming direction: dim up (1) / dim down (0)	M	--	cs
StepCode	Start/Stop commands see above			

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	64
LTE-Mode-Service (event): Write ☒	Timeout:	--	Min	
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up:	Default Value ☐	Stored Value ☐
Exception Handling:		Save at Power-down ☐

--

Special Features:

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.

2.5.17 Input AbsSetvalueControlCmd

FB: LDAB	**LTE-Mode Server Input Name:**	AbsSetvalueControlCmd	Mandatory ☒ [1] Optional ☐

Description:

The input AbsSetvalueControlCmd is used to set the absolute dimming level of the actuator by a Lighting Controller. Parameter DimmModeSelection defines the dimming behaviour. If parameter DimmModeSelection is set to 'ramp', the actuator enters the state DIMMING. otherwise the actual value jumps to the set-value immediately (default behaviour if parameter DimmModeSelection is not implemented)

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Unit	Default
SetValue	Dimming actuator setpoint in %	M	%	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	65
LTE-Mode-Service (event): Write ☒	Timeout:	--	Min	
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up:	Default Value ☐	Stored Value ☐
Exception Handling:		Save at Power-down ☐

--

Special Features:

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 behavior is controlled by configuration parameter ActuatorMode.

2.5.18 Input FadeToControlCmd

FB: LDAB	**LTE-Mode Server Input Name:** FadeToControlCmd	Mandatory ☐ Optional ☒ [1)]

Description:

The input FadeToControlCmd is 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:	Name	DPT_ScalingSpeed	DPT ID	225.001	Datatype format	$U_{16}U_8$

Field	Description	Sup.	Unit	Default
fade-time	Dimming time to fade from the actual level to the target level resolution: 100ms	M	ms	cs
target-level	Dimming level in percentage; resolution ~0,4 %	M	%	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID): 418 (LDAB)	Property ID: 66
LTE-Mode-Service (event): Write ☒	Timeout: --	Min
Property-Service (individual access):	Read only ☐	Read/Write ☒

Value after Power-up: Default Value ☐ Stored Value ☐

Exception Handling: Save at Power-down ☐

--

Special Features:

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, FadeToControlCmd input is disabled. The behavior is controlled by configuration parameter ActuatorMode.

2.5.19 Input ControlModeUser

FB: LDAB	**LTE-Mode Client Input Name:**	ControlModeUser	Mandatory ☐ Optional ☒

Description:

An update of input ControlModeUser indicates the request from a Lighting Sensor LSSB/LDSB to request automatic or manual lighting control

DPT:	Name	DPT_LightControlMode	DPT ID	20.604	Datatype format	N_8

Field	Description	Sup.	Unit	Default
ControlMode	This field shall indicate whether automatic control (0) or manual control (1) is currently active values 2 to 255 are reserved for future extensions	M	--	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter BlindsGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID):	421 (LSSB) 420 (LDSB)	Property ID:	64
LTE-Mode-Service (event): InfoReport ☒	InfoReport Sniffer on Binding Group:	--		
	Timeout:	--	Min	
LTE-Mode-Service (polling): Read – Response ☐	Read Wildcard / Resp Sniffer on Binding Group:	--		

Value after Powerup: Default Value ☒ Stored Value ☒ [2)]

Exception Handling: Save at Powerdown ☒ [2)]

--

Special Features:

[1)] Usually this input may only implemented in a Controller which emulates a LDAB actuator proxy, see comments in clause 1.2.3

This input is disabled if the LDAB is controlled by a Controller (⇒ see parameter ActuatorMode)

[2)] Initialization of this input after power return is implementation specific. Persistent storage is an optional feature.

2.5.20 Input RelDimmingSpeed

FB: LDAB	**LTE-Mode Server Input Name:** RelDimmingSpeed	Mandatory ☐ Optional ☒ [1]

Description:

RelDimmingSpeed represents the dimming time for the entire dimming range from 0 % to 100 % to execute relative light dimming commands RelSetvalueControl and RelSetvalueControlCmd.
The input RelDimmingSpeed is written by a Lighting Controller or a Management Client via
- LTE-Mode Write multicast addressing in the LightingGroup
- or via Property Write and individual addressing

DPT:	Name	DPT_TimePeriod_100MSec	DPT ID	7.004	Datatype format	U_{16}

Field	Description	Sup.	Unit	Default
time	Dimming time to fade from 0 % to 100 % resolution: 100ms	M	ms	cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	cs (see parameter LightingGroup)
Application Specific ☐		
Unassigned ☐	Broadcast ☐ Configurable ☐	

DP Address:	IO Type(ID): 418 (LDAB)	Property ID: 67
LTE-Mode-Service (event): Write ☒ [1]	Timeout: --	Min
Property-Service (individual access):	Read only ☐	Read/Write ☒ [1]

Value after Power-up:	Default Value ☐	Stored Value ☒
Exception Handling:		Save at Power-down ☒

--

Special Features:

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

2.5.21.2 Parameter Room

Same as for LSAB, see 0, except

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

2.5.21.3 Parameter Subzone

Same as for LSAB, see 0, except

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	103
	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: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	104
	Start-Index:	1	N° of elements	1

2.5.22.2 Parameter Room

Same as for LSAB, see 0, except

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

2.5.22.3 Parameter Subzone

Same as for LSAB, see 0, except

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

2.5.23 Parameter ActuatorMode

Same as for LSAB, see 1.5.16, except

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

2.5.24 Parameter EnableInfoOnOff

Same as for LSAB, see 1.5.17, except

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

2.5.25 Parameter EnableActualDimmingValue

FB: LDAB	**Property Name (Server):**	EnableActualDimmingValue	Mandatory ☒ Optional ☐

Description:

This parameter is used to enable or disable spontaneous transmission of actuator state ActualDimmingValue in the LTE-Mode runtime system

DPT:	Name	DPT_Enable	DPT ID	1.003	Datatype format	B_1

Field	Description	Sup.	Range	Unit	Default
b	0: disable 1: enable				0

Communication:

DP Address: **(in the server)**	IO Type(ID):	418 (LDAB)	Property ID:	112
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

2.5.26 Parameter OnDelay

Same as for LSAB, see 1.5.18, except

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

2.5.27 Parameter OffDelay

Same as for LSAB, see 1.5.19, except

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

2.5.28 Parameter TimedOnDuration

Same as for LSAB, see 1.5.20, except

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

2.5.29 Parameter PrewarningDuration

Same as for LSAB, see 1.5.21, except

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

2.5.30 Parameter EnableActuatorStatus

Same as for LSAB, see 1.5.22, except

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

2.5.31 Parameter EnableActuatorErrorInfo

Same as for LSAB, see 1.5.23, except

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

2.5.32 Parameter EnableDetectedLoadType

FB: LDAB	**Property Name (Server):** EnableDetectedLoadType				Mandatory ☐ Optional ☒
Description:					
This parameter is used to enable or disable spontaneous transmission of DetectedLoadType in the LTE-Mode runtime system					
DPT: Name: DPT_Enable	DPT ID: 1.003	Datatype format: B_1			
Field	Description	Sup.	Range	Unit	Default
b	0: disable 1: enable				cs
Communication:					
DP Address: **(in the server)**	IO Type(ID): 418 (LDAB)	Property ID: 119			
	Start-Index: 1	N° of elements 1			
Property access:	Read only ☐	Read/Write ☒			
Protection	Read level --	Write level --			
Exception Handling:	Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐				
--					
Special Features:					
--					

2.5.33 Parameter PowerReturnMode

FB: LDAB	Property Name (Server):	PowerReturnMode	Mandatory ☐ Optional ☒

Description:

Parameter to define the behavior of the actuator after return of the supply power or after a restart of the application.

DPT:	Name	DPT_BehaviourBusPowerUpDown	DPT ID	20.601	Datatype format	N_8

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on - 3 = value according additional parameter PowerReturnValue - 4 = last (saved value at power down)	M	[0;1;3;4]		off

Communication:

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	120
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

It is allowed to restrict the range of values of this parameter,
e.g. value 4 is not applicable if the actuator is not able to save its state during/before power down in non volatile memory

2.5.34 Parameter PowerReturnValue

FB: LDAB	**Property Name (Server):**	PowerReturnValue	Mandatory ☐ Optional ☒

Description:

Parameter in addition to parameter PowerReturnMode = 3; to define the behavior after power return

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	Default
Setvalue	Dimming value in percentage		0 % to 100 %	%	cs

Communication:

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	121
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

2.5.35 Parameter BusFailureMode

FB: LDAB	Property Name (Server): BusFailureMode	Mandatory ☐ Optional ☒

Description:

Parameter to define the behavior of the actuator in case of a bus failure

DPT:	Name	DPT_BehaviourBusPowerUpDown	DPT ID	20.601	Datatype format	N_8

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on - 2 = no change - 3 = value according additional parameter BusFailureValue	M	[0 to 3]		cs

Communication:

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	122
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐	Read/Write ☒		
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

2.5.36 Parameter BusFailureValue

FB: LDAB	Property Name (Server): BusFailureValue	Mandatory ☐ Optional ☒

Description:

Parameter in addition to parameter BusFailureMode = 3; to define the behavior in case of a bus failure

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	Default
Setvalue	Dimming value in percentage		0 % to 100 %	%	cs

Communication:

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	123
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐	Read/Write ☒		
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

2.5.37 Parameter BusReturnMode

FB: LDAB	Property Name (Server): BusReturnMode	Mandatory ☐ Optional ☒

Description:

Parameter to define the behavior of the actuator in case of a recovery of the bus.

DPT:	Name	DPT_BehaviourBusPowerUpDown	DPT ID	20.601	Datatype format	N_8

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on - 2 = no change - 3 = value according additional parameter BusReturnValue - 4 = last (saved value at bus failure)	M	[0 to 4]		cs

Communication:

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	124
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

It is allowed to restrict the range of values of this parameter

2.5.38 Parameter BusReturnValue

FB: LDAB	Property Name (Server): BusReturnValue	Mandatory ☐ Optional ☒

Description:

Parameter in addition to parameter BusReturnMode = 3; to define the behavior after a recovery of the bus

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	Default
Setvalue	Dimming value in percent		0 % to 100 %	%	cs

Communication:

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	125
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

2.5.39 Parameter PowerFailureMode

FB: LDAB	**Property Name (Server):** PowerFailureMode	Mandatory ☐ Optional ☒

Description:

Parameter to define the behavior of the actuator in case of the supply power failure and shutdown of the LDAB application program. This parameter may be useful if the dimmer output logic (e.g. a co-processor) is powered separately via the mains power of the lamp.

DPT:	Name	DPT_BehaviourBusPowerUpDown	DPT ID	20.601	Datatype format	N_8

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on - 2 = no change	M	[0 to 2]		cs

Communication:

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	126
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

2.5.40 Parameter BehaviourAtLocking

FB: LDAB	Property Name (Server): BehaviourAtLocking	Mandatory ☐ Optional ☒

Description:

Parameter to define the behavior of the actuator in case of input LockDevice changing from false -> true

DPT:	Name	DPT_Behaviour_Lock_Unlock	DPT ID	20.600	Datatype format	N_8

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on - 2 = no change - 3 = value according to parameter LockSetvalue	M	[0 to 3]		cs

Communication:

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	127
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

It is allowed to restrict the range of values of this parameter

2.5.41 Parameter LockSetvalue

FB: LDAB	Property Name (Server): LockSetvalue	Mandatory ☐ Optional ☒

Description:

Parameter in addition to parameter BehaviourAtLocking = 3; to define the behavior at the beginning of the lock state

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	Default
Setvalue	Dimming value in percentage		0 % to 100 %	%	cs

Communication:

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	128
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

--

2.5.42 Parameter BehaviourAtUnlocking

FB: LDAB	Property Name (Server): BehaviourAtUnlocking	Mandatory ☐ Optional ☒

Description:

Parameter to define the behavior of the actuator in case of input LockDevice changing from true -> false

DPT:	Name	DPT_Behaviour_Lock_ Unlock	DPT ID	20.600	Datatype format	N_8

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = off - 1 = on - 2 = no change - 3 = value according to parameter UnlockSetvalue - 4 = memory function value - 5 = updated value - 6 = value before locking	M	[0 to 6]		cs

Communication:

DP Address: (in the server)	IO Type(ID):	41((LDAB)	Property ID:	129
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

It is allowed to restrict the range of values of this parameter

2.5.43 Parameter UnlockSetvalue

FB: LDAB	Property Name (Server): UnlockSetvalue	Mandatory ☐ Optional ☒

Description:

Parameter in addition to parameter BehaviourAtUnlocking = 3; to define the behavior at the end of the lock state

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	Default
Setvalue	Dimming value in percentage		0 % to 100 %	%	cs

Communication:

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	130
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

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2.5.44 Parameter SceneLearningModeEnable

Same as for LSAB, see 1.5.30, except

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

2.5.45 Parameter SceneNumberList[n]

Same as for LSAB, see 1.5.31, except

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

2.5.46 Parameter SceneTaughtIn[n]

Same as for LSAB, see 1.5.32, except

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

2.5.47 Parameter SceneAbsSetvalue[n]

FB: LDAB	**Property Name (Server):** SceneAbsSetvalue[n]	Mandatory ☐ Optional ☒

Description:

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_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	Default
Setvalue	Dimming value in percentage		0 % to 100 %	%	cs

Communication:

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	134
	Start-Index:	1	N° of elements	see above [1)]
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

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.

2.5.48 Parameter SceneFadeTime[n]

FB: LDAB	Property Name (Server): SceneFadeTime[n]	Mandatory ☐ Optional ☒

Description:

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	Description	Sup.	Range	Unit	Default
Time	Fade time with a resolution of 100ms		cs	s	cs

Communication:

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	135
(in the server)	Start-Index:	1	N° of elements	see above [1)]
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

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.

2.5.49 Parameter MinimumSetvalue

FB: LDAB	**Property Name (Server):** MinimumSetvalue			Mandatory ☐ Optional ☒
Description:				
This parameter defines the minimum dimmable value.				

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	Default
Setvalue	Dimming value in percentage		0 % to 100 %	%	cs

Communication:				
DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	140
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling:	Value after Powerup:	Stored Value ☒	Act Value ☐	Default Value ☐
--				
Special Features:				
A value below the minimum dimming value forces a switch-off or setting the actual dimming value to MinimumSetvalue				

2.5.50 Parameter MaximumSetvalue

FB: LDAB	**Property Name (Server):** MaximumSetvalue			Mandatory ☐ Optional ☒
Description:				
This parameter defines the maximum dimmable value.				

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	Default
Setvalue	Dimming value in percentage		0 % to 100 %	%	cs

Communication:				
DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	141
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling:	Value after Powerup:	Stored Value ☒	Act Value ☐	Default Value ☐
--				
Special Features:				
A value above the maximum dimming value is limited by the MaximumSetvalue				

2.5.51 Parameter DimmModeSelection

FB: LDAB	**Property Name (Server):** DimmModeSelection	Mandatory ☐ Optional ☒

Description:

This parameter selects the behavior ‘dimming’ / ‘jumping’ after reception of AbsSetvalueControl or AbsSetvalueControlCmd.
If the parameter is set to ‘Ramp’, the actuator enters the state DIMMING to gradually reach the set-value. Otherwise the set-value is adopted immediately.

DPT:	Name	DPT_Ramp	DPT ID	1.004	Datatype format	B_1

Field	Description	Sup.	Range	Unit	Default
b	0: No ramp 1: Ramp		{0,1}	--	No ramp

Communication:

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	142
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

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2.5.52 Parameter SwitchOnMode

FB: LDAB	Property Name (Server): SwitchOnMode	Mandatory ☐ Optional ☒

Description:

This parameter defines the initial dimming value after changing from OFF-state -> ON-state due to commands SwitchOnOff and SwitchOnOffControlCmd

DPT:	Name	DPT_SwitchOnMode	DPT ID	20.608	Datatype format	N_8

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = last actual value (dimming value in the last ON-State) - 1 = value according additional parameter SwitchOnSetvalue - 2 = last received absolute setvalue [1)]	M	[0 to 2]		cs

Communication:

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	143
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

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	Property Name (Server): SwitchOnSetvalue	Mandatory ☐ Optional ☒

Description:

Parameter in addition to parameter SwitchOnMode = 1 to define the initial dimming value after changing from OFF-state -> ON-state due to commands
- SwitchOnOff
- SwitchOnOffControlCmd

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	Default
Setvalue	Dimming value in percent		0,4 % to 100 %	%	cs

Communication:

DP Address: (in the server)	IO Type(ID):	418 (LDAB)	Property ID:	144
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

The value of this parameter shall be in the range of MinimumSetvalue to MaximumSetvalue.
If the parameter is out of this range, the effective switch on set-value shall be limited by Minimum/MaximumSevalue.

2.5.53 Parameter RelativOffEnable

FB: LDAB	**Property Name (Server):** RelativOffEnable	Mandatory ☐ Optional ☒

Description:

This parameter is used to enable/disable switching-off the light due to commands
- RelSetvalueControl
- RelSetvalueControlCmd

if the newly calculated set-value is below MinimumSetvalue.

DPT:	Name	DPT_Enable	DPT ID	1.003	Datatype format	B_1

Field	Description	Sup.	Range	Unit	Default
b	0: disable 1: enable				0

Communication:

DP Address:	IO Type(ID):	418 (LDAB)	Property ID:	145
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	--	Write level	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

--

Special Features:

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2.5.54 Parameter LoadAdaptation

FB: LDAB	**Property Name (Server):** 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 ca be reported by diagnostic Property DetectedLoadType

DPT:	Name	DPT_LoadTypeSet	DPT ID	20.609	Datatype format	N_8

Field	Description	Sup.	Range	Unit	Default
Mode	- 0 = automatic - 1 = leading edge (inductive load) - 2 = trailing edge (capacitive load)	M	[0 to 2]		cs

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	--

Exception Handling: Value after Powerup: Stored Value ☒ Act Value ☐ Default Value ☐

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Special Features:

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