

BACnet PICS

PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT

Version 2.61.3



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1 BACnet PICS Top

2 PICS - PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT

Date: 2024-12-05

Vendor Name: BACMOVE

Product Name: DALION

Product Model Number: DALION-4, DALION-1

Application Software Version: 2.23.0

Firmware Revision: 2.23.5

BACnet Protocol Revision: 22

Product Description:

The DALION can be used to automatically perform DALI room control with occupancy, daylight harvesting, demand response, and more. The gateway functionality allows bidirectional communication between DALI (Digital Addressable Lighting Interface, IEC 62386) networks and BACnet systems. It integrates many functionalities to ease the installation of DALI lighting on the BACnet network.

BACnet Standardized Device Profiles Supported (Annex L):

☒ BACnet Application Specific Controller (B-ASC)

BACnet Interoperability Building Blocks Supported (Annex K):

Data Sharing - ReadProperty-B (DS-RP-B)

Data Sharing - ReadPropertyMultiple-B (DS-RPM-B)

Data Sharing - WriteProperty-B (DS-WP-B)

Data Sharing - WritePropertyMultiple-B (DS-WPM-B)

Data Sharing - COV-B (DS-COV-B)

Device Management - Dynamic Device Binding-A (DM-DDB-A)

Device Management - Dynamic Device Binding-B (DM-DDB-B)

Device Management - Dynamic Object Binding-B (DM-DOB-B)

Device Management - TimeSynchronization-B (DM-TS-B)

Device Management - UTCTimeSynchronization-B (DM-UTC-B)

Device Management - DeviceCommunicationControl-B (DM-DCC-B)

Device Management - ReinitializeDevice-B (DM-RD-B)

Segmentation Capability:

Not available.

Standard Object Types Supported:

- Objects cannot be dynamically created or deleted using the CreateObject and DeleteObject services.
- All Analog Input and Binary Input objects support COV.

3 BACnet Interface - Overview

BTL Listed BACnet Gateway (B-GW) allows bidirectional communication between DALI devices (Digital Addressable Lighting Interface) and BACnet systems.

DALI's channels, groups, lamps, and scenes are accessible through BACnet standard objects such as Analog Output, Analog Input, Multi-State Output, etc. The light sensors and occupancy sensors are also accessible via objects of the Analog Input and Binary Input types.

4 BACnet Interface - Device Object

4.1 Device Object

List of available properties for this object.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	W
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
System_Status	112	BACnetDeviceStatus	R
Vendor_Name	121	CharacterString	R
Vendor_Identifier	120	Unsigned16	R
Model_Name	70	CharacterString	R
Firmware_Revision	44	CharacterString	R
Application_Software_Version	12	CharacterString	R
Location	58	CharacterString	W
Description	28	CharacterString	W
Protocol_Version	98	Unsigned	R
Protocol_Revision	139	Unsigned	R
Protocol_Services_Supported	97	BACnetServicesSupported	R
Protocol_Object_Types_Supported	96	BACnetObjectTypesSupported	R
Object_List	76	BACnetARRAY[N] of BACnetObjectIdentifier	R
Max_APDU_Length_Accepted	62	Unsigned	R
Segmentation_Supported	107	BACnetSegmentation	R
Local_Time	57	Time	R
Local_Date	56	Date	R
UTC_Offset	119	INTEGER	R
Daylight_Savings_Status	24	BOOLEAN	R
APDU_Segment_Timeout	10	Unsigned	R
APDU_Timeout	11	Unsigned	W

Property Identifier	Property ID	Property Datatype	Conformance Code
Number_Of_APDU_Retries	73	Unsigned	W
Device_Address_Binding	30	BACnetLIST of BACnetAddressBinding	R
Database_Revision	155	Unsigned	R
Active_COV_Subscriptions	152	BACnetLIST of BACnetCOVSubscription	R
Last_Restart_Reason	196	BACnetRestartReason	R
Time_Of_Device_Restart	203	BACnetTimeStamp	R
Restart_Notification_Recipients	202	BACnetLIST of BACnetRecipient	R
Serial_Number	372	CharacterString	R
Property_List	371	BACnetARRAY[N] of BACnetPropertyIdentifier	R
System_RTC_Temperature	922	REAL	R
System_Uptime	928	Unsigned	R

4.1.1.1 *System_RTC_Temperature*

The internal temperature of the DALION in degree Celsius.

4.1.1.2 *System_Uptime*

The number of seconds since the last boot up of the DALION.

5 BACnet Interface - Network Port Object

5.1 Network Port Object

List of available properties for this object.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Status_Flags	111	BACnetStatusFlags	R
Reliability	103	BACnetReliability	R
Out_Of_Service	81	BOOLEAN	R
Network_Type	427	BACnetNetworkType	R
Protocol_Level	482	BACnetProtocolLevel	R
Changes_Pending	416	BOOLEAN	R
Network_Number	425	Unsigned16	R
Network_Number_Quality	426	BACnetNetworkNumberQuality	R
APDU_Length	399	Unsigned	R
MAC_Address	423	OCTET STRING	R
BACnet_IP_Mode	408	BACnetIPMode	W
IP_Address	400	OCTET STRING	R
BACnet_IP_UDP_Port	412	Unsigned16	R
IP_Subnet_Mask	411	OCTET STRING	R
IP_Default_Gateway	401	OCTET STRING	R
IP_DNS_Server	406	BACnetARRAY[N] of OCTET STRING	R
FD_BBMD_Address	418	BACnetHostNPort	W
FD_Subscription_Life_time	419	Unsigned16	W
IP_DHCP_Enable	402	BOOLEAN	R
IP_DHCP_Lease_Time	403	Unsigned	R
IP_DHCP_Lease_Time_Remaining	404	Unsigned	R
IP_DHCP_Server	405	OCTET STRING	R

6 BACnet Interface - Analog Output Object - Control of Lamp, Group, and Channel

6.1 Analog Output Object - Control of Lamp, Group, and Channel

To control the intensity of the lamps, use the Analog Output objects. Lamps parameters can also be modified with these objects.

6.1.1 Lamp

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	REAL	W
Description	28	CharacterString	R
Device_Type	31	CharacterString	R
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Reliability	103	BACnetReliability	R
Out_Of_Service	81	BOOLEAN	W
Units	117	BACnetEngineeringUnits	R
Min_Pres_Value	69	REAL	R
Max_Pres_Value	65	REAL	W
Priority_Array	87	BACnetPriorityArray	R
Relinquish_Default	104	REAL	R
Current_Command_Priority	431	BACnetOptionalUnsigned	R
Power_On_Level	512	REAL	W
System_Failure_Level	513	REAL	W
Fade_Time	514	REAL	W
Ramp_Rate	515	REAL	W
Min_Level	516	REAL	W
Groups	517	BIT STRING	W
Nominal_Power	518	REAL	W
Dim_Mode	520	Enumerated	W
Run_Hours	527	Unsigned	R
Run_Hours_Reset_Time	528	Unsigned	R
Colour_Temp	567	REAL	W
Command	900	Unsigned	W
Device_Type_Supported	925	BIT STRING	R

Property Identifier	Property ID	Property Datatype	Conformance Code
Energy_Usage_Accumulated	926	REAL	W
Emergency_Time_Until_Next_Function_Test	1010	Unsigned	W
Emergency_Time_Until_Next_Duration_Test	1011	Unsigned	W
Emergency_Battery_Charge	1012	REAL	R
Emergency_Duration_Test_Result	1013	Unsigned	R
Emergency_Emergency_Mode	1014	BIT STRING	R
Emergency_Failure_Status	1015	BIT STRING	R
Emergency_Emergency_Status	1016	BIT STRING	R
Emergency_Emergency_Level	1020	REAL	W
Emergency_Emergency_Minimum_Level	1021	REAL	R
Emergency_Emergency_Maximum_Level	1022	REAL	R
Emergency_Prolong	1023	Unsigned	W
Emergency_Function_Test_Interval_Time	1026	Unsigned	W
Emergency_Duration_Test_Interval_Time	1027	Unsigned	W
Emergency_Test_Execution_Timeout	1028	Unsigned	W
Emergency_Lamp_Emergency_Time	1029	Unsigned	R
Emergency_Lamp_Total_Operation_Time	1030	Unsigned	R
Emergency_Rated_Duration	1031	Unsigned	R

Property Identifier	Property ID	Property Datatype	Conformance Code
Emergency_Features	1032	BIT STRING	R
Dimming_Curve	6000	Enumerated	W
Colour_Type	8000	Enumerated	W
Colour_XYC_X	8010	REAL	W
Colour_XYC_Y	8011	REAL	W
Colour_TC_TC	8020	REAL	W
Colour_PN_P0	8030	REAL	W
Colour_PN_P1	8031	REAL	W
Colour_PN_P2	8032	REAL	W
Colour_PN_P3	8033	REAL	W
Colour_PN_P4	8034	REAL	W
Colour_PN_P5	8035	REAL	W
Colour_RGBWAF_RE D	8040	REAL	W
Colour_RGBWAF_GR EEN	8041	REAL	W
Colour_RGBWAF_BL UE	8042	REAL	W
Colour_RGBWAF_WH ITE	8043	REAL	W
Colour_RGBWAF_AM BER	8044	REAL	W
Colour_RGBWAF_FRE ECOLOUR	8045	REAL	W

6.1.2 Group

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	REAL	W
Description	28	CharacterString	R
Device_Type	31	CharacterString	R
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Reliability	103	BACnetReliability	R
Out_Of_Service	81	BOOLEAN	W
Units	117	BACnetEngineeringUnits	R
Min_Pres_Value	69	REAL	R
Max_Pres_Value	65	REAL	W
Priority_Array	87	BACnetPriorityArray	R
Relinquish_Default	104	REAL	R
Current_Command_Priority	431	BACnetOptionalUnsigned	R
Power_On_Level	512	REAL	W
System_Failure_Level	513	REAL	W
Fade_Time	514	REAL	W
Ramp_Rate	515	REAL	W
Min_Level	516	REAL	W
Nominal_Power	518	REAL	W
Dim_Mode	520	Enumerated	W
Run_Hours	527	Unsigned	R
Run_Hours_Reset_Time	528	Unsigned	R
Colour_Temp	567	REAL	W
LGC_Group_Control_Command	576	Unsigned	W
Command	900	Unsigned	W

Property Identifier	Property ID	Property Datatype	Conformance Code
Energy_Usage_Accumulated	926	REAL	W
Dimming_Curve	6000	Enumerated	W
Colour_Type	8000	Enumerated	W
Colour_XYC_X	8010	REAL	W
Colour_XYC_Y	8011	REAL	W
Colour_TC_TC	8020	REAL	W
Colour_PN_P0	8030	REAL	W
Colour_PN_P1	8031	REAL	W
Colour_PN_P2	8032	REAL	W
Colour_PN_P3	8033	REAL	W
Colour_PN_P4	8034	REAL	W
Colour_PN_P5	8035	REAL	W
Colour_RGBWAF_RE D	8040	REAL	W
Colour_RGBWAF_GR EEN	8041	REAL	W
Colour_RGBWAF_BL UE	8042	REAL	W
Colour_RGBWAF_WH ITE	8043	REAL	W
Colour_RGBWAF_AM BER	8044	REAL	W
Colour_RGBWAF_FRE ECOLOUR	8045	REAL	W

6.1.3 Channel

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	REAL	W
Description	28	CharacterString	R
Device_Type	31	CharacterString	R
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Reliability	103	BACnetReliability	R
Out_Of_Service	81	BOOLEAN	W
Units	117	BACnetEngineeringUnits	R
Min_Pres_Value	69	REAL	R
Max_Pres_Value	65	REAL	W
Priority_Array	87	BACnetPriorityArray	R
Relinquish_Default	104	REAL	R
Current_Command_Priority	431	BACnetOptionalUnsigned	R
Power_On_Level	512	REAL	W
System_Failure_Level	513	REAL	W
Fade_Time	514	REAL	W
Ramp_Rate	515	REAL	W
Min_Level	516	REAL	W
Nominal_Power	518	REAL	W
Dim_Mode	520	Enumerated	W
Run_Hours	527	Unsigned	R
Run_Hours_Reset_Time	528	Unsigned	R
Colour_Temp	567	REAL	W
LGC_Group_Control_Command	576	Unsigned	W
Command	900	Unsigned	W

Property Identifier	Property ID	Property Datatype	Conformance Code
Energy_Usage_Accumulated	926	REAL	W
Dimming_Curve	6000	Enumerated	W
Colour_Type	8000	Enumerated	W
Colour_XYC_X	8010	REAL	W
Colour_XYC_Y	8011	REAL	W
Colour_TC_TC	8020	REAL	W
Colour_PN_P0	8030	REAL	W
Colour_PN_P1	8031	REAL	W
Colour_PN_P2	8032	REAL	W
Colour_PN_P3	8033	REAL	W
Colour_PN_P4	8034	REAL	W
Colour_PN_P5	8035	REAL	W
Colour_RGBWAF_RE D	8040	REAL	W
Colour_RGBWAF_GR EEN	8041	REAL	W
Colour_RGBWAF_BL UE	8042	REAL	W
Colour_RGBWAF_WH ITE	8043	REAL	W
Colour_RGBWAF_AM BER	8044	REAL	W
Colour_RGBWAF_FRE ECOLOUR	8045	REAL	W
Network_Mode	923	Unsigned	W
Network_Command_ Repeat_Count	924	Unsigned	W

6.1.3.1 Object_Identifier

The object instance number is represented as TCLL.

- “T” is the type of object as follows, 0 for DALI lamps, 1 for DALI groups and 2 for DALI channels.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “LL” represents for lamp objects, numbers 00-63, for group objects, numbers 00-15 and for channel objects, number 00.

6.1.3.2 *Object_Name*

The name of the DALI lamp, group or channel.

6.1.3.3 *Object_Type*

ANALOG_OUTPUT (1).

6.1.3.4 *Present_Value*

The light intensity in percentages for the DALI lamp, group or channel.

6.1.3.5 *Description*

A description of the DALI lamp, group or channel.

6.1.3.6 *Device_Type*

- For lamp objects, it is **DALI lamp**.
- For group objects, it is **DALI group**.
- For channel objects, it is **DALI channel**.

6.1.3.7 *Status_Flags*

This property indicates the general “reliability” of the object.

6.1.3.8 *Reliability*

This property indicates whether the operation of the DALI output is reliable. The values are as follows:

- NO_FAULT_DETECTED (0) - No fault has been detected.
- NO_OUTPUT (6) - No DALI device is connected to the output object.
- COMMUNICATION_FAILURE (12) - DALI device is offline.
- UNRELIABLE_OTHER (7) - An error has been reported by the DALI lamp.

6.1.3.9 *Out_Of_Service*

This property indicates whether the physical device represented by the object is in service.

6.1.3.10 *Units*

The unit for the Present_Value is percent.

6.1.3.11 *Min_Pres_Value*

The minimum value is always zero (0). It represents the lowest value for the property Present_Value.

6.1.3.12 *Max_Pres_Value*

For lamp objects, this is the DALI variable “MAX LEVEL” of the lamp. It is writable for lamps, groups, and channels.

For groups and channels, the initial value of the property is 100 and it returns the last written value, which may differ from the actual value of the lamps.

6.1.3.13 *Priority_Array*

This property is a read-only array of prioritized values.

6.1.3.14 *Relinquish_Default*

It is the default value used for the Present_Value property when all command priority values in the Priority_Array property have a NULL value.

6.1.3.15 *Power_On_Level*

It represents the DALI variable “POWER ON LEVEL” of the DALI lamp in percentages. A value of NaN represents the DALI “MASK” value. It is writable for lamps, groups and channels. For groups and channels, it always read as NaN.

6.1.3.16 *System_Failure_Level*

It represents the DALI variable “SYSTEM FAILURE LEVEL” of the DALI lamp in percentages. A value of NaN represents the DALI “MASK” value. It is writable for lamps, groups and channels. For groups and channels, it always read as NaN.

6.1.3.17 *Fade_Time*

Represents the DALI variable “FADE TIME” in seconds for the DALI lamp. It is writable for lamps, groups and channels. For groups and channels, it always read as NaN.

6.1.3.18 *Ramp_Rate*

Represents the DALI variable “FADE RATE” in percent per second for the DALI lamp. It is writable for lamps, groups and channels. For groups and channels, it always read as NaN.

6.1.3.19 *Min_Level*

It represents the DALI variable “MIN LEVEL” of the DALI lamp in percentages. It is writable for lamps, groups and channels. For groups and channels, it always read as NaN.

6.1.3.20 *Groups*

Only available for lamp objects, it represents the DALI variables “GROUP_0_8” and “GROUP_9_15” concatenated in a 16 bit.

6.1.3.21 *Nominal_Power*

It represents the nominal power of the DALI lamp. It is writable for lamps, groups and channels. For groups and channels, it always read as NaN.

6.1.3.22 *Dim_Mode*

Indicates if fading (0) or ramping (1) is used when controlling the light intensity with the Present_Value.

6.1.3.23 *Run_Hours*

The number of seconds the lamp was On.

For group and channel objects, this property is available and returns 0.

6.1.3.24 *Run_Hours_Reset_Time*

Indicates the last time the Run_Hours was reset.

For group and channel objects, this property is available and returns 0.

6.1.3.25 *Colour_Temp*

For DALI Type 8 (DT8) lamps, whose colour control is colour temperature Tc, the current colour in Kelvin (K) can be modified. The objects for lamps, groups and channels can modify the colour temperature of lamps.

6.1.3.26 *Command*

Allows to execute commands on lamp, group, and channel objects.

6.1.3.26.1 NO COMMAND (1)

No command is executed.

6.1.3.26.2 GO TO SCENE (2-17)

Recall the scenes 0-15.

6.1.3.26.3 STORE SCENE (18-33)

Store the scenes 0-15.

6.1.3.26.4 REMOVE SCENE (34-49)

Delete the scenes 0-15.

6.1.3.26.5 RESET RUN HOURS (52)

Reset the run hours to zero.

6.1.3.26.6 EMERGENCY FUNCTION TEST START (54)

Start the function test for the lamps of the type “Self-contained emergency lighting (device type 1)”.

6.1.3.26.7 EMERGENCY DURATION TEST START (55)

Start the duration test for the lamps of the type “Self-contained emergency lighting (device type 1)”.

6.1.3.26.8 EMERGENCY TESTS STOP (56)

Stop the current test for the lamps of the type “Self-contained emergency lighting (device type 1)”.

6.1.3.26.9 DIM UP (57)

Start dimming up.

6.1.3.26.10 DIM ON AND UP (58)

Turn on and start dimming up.

6.1.3.26.11 DIM DOWN (59)

Start dimming down.

6.1.3.26.12 DIM DOWN AND OFF (60)

Dim down and turn off.

6.1.3.26.13 OFF (64)

Turn off the output.

6.1.3.26.14 DIM STEP UP (65)

Apply one dim step up.

6.1.3.26.15 DIM STEP DOWN (66)

Apply one dim step down.

6.1.3.26.16 GROUP ADD (67-82)

Add to the group 0-15.

6.1.3.26.17 GROUP REMOVE (83-98)

Remove from the group 0-15.

6.1.3.26.18 RECALL MIN LEVEL (200)

Recall Min Level.

6.1.3.26.19 RECALL MAX LEVEL (201)

Recall Max Level.

6.1.3.26.20 RECALL LAST LEVEL (202)

Recall Last Level.

6.1.3.26.21 EMERGENCY REST (203)

For the “Self-contained emergency lighting (device type 1)” only, starts the rest mode.

In this mode the lamp is intentionally off when it is powered from the battery.

Refer to the specification IEC 62386-202 for the complete details on the rest mode.

6.1.3.26.22 EMERGENCY INHIBIT (204)

For the “Self-contained emergency lighting (device type 1)” only, starts the inhibit mode.

In this mode the lamp is powered from the mains power supply but it is also prevented for 15 minutes from going into the emergency mode when an event of mains power failure occurs.

Refer to the specification IEC 62386-202 for the complete details on the inhibit mode.

6.1.3.26.23 EMERGENCY RESET INHIBIT (205)

For the “Self-contained emergency lighting (device type 1)” only, cancels the inhibit timer.

Refer to the specification IEC 62386-202 for the complete details on the inhibit mode.

6.1.3.26.24 EMERGENCY RESET FUNCTION TEST DONE FLAG (206)

For the “Self-contained emergency lighting (device type 1)” only, resets the function test done flag.

Refer to the specification IEC 62386-202 for the complete details on this command.

6.1.3.26.25 EMERGENCY RESET DURATION TEST DONE FLAG (207)

For the “Self-contained emergency lighting (device type 1)” only, resets the duration test done flag.

Refer to the specification IEC 62386-202 for the complete details on this command.

6.1.3.26.26 EMERGENCY START IDENTIFICATION (208)

For the “Self-contained emergency lighting (device type 1)” only, starts the identification.

Refer to the specification IEC 62386-202 for the complete details on this command.

6.1.3.27 LGC_Group_Control_Command

Allows writing a direct group-control value or an encoded command.

Direct value: 0 to 100 controls light intensity in percent.

Encoded command: values ≥ 1000 are interpreted as $1000 + \text{Command}$.

6.1.3.28 Energy_Usage_Accumulated

It represents the accumulated energy consumption in watt-hours for the DALI lamp. This value is the result of a calculation based on the Nominal_Power property. It is writable for lamps, groups and channels. For groups and channels, it always read as NaN.

6.1.3.29 Device_Type_Supported

Indicates the supported DALI types for the physical DALI device connected to the object.

Bit	Name
0	Fluorescent
1	Self-contained emergency
2	Discharge HID
3	Low-voltage halogen
4	Incandescent lamp
5	Conversion to DC voltage
6	LED
7	Switching relay
8	Colour

6.1.3.30 Emergency_Time_Until_Next_Function_Test

For the “Self-contained emergency lighting (device type 1)” only, represents the time until the next function test in minutes.

The valid values are from 0 to 983 025 minutes.

DALI lamps calculate this value in 15 minutes intervals.

6.1.3.31 *Emergency_Time_Until_Next_Duration_Test*

For the “Self-contained emergency lighting (device type 1)” only, represents the time until the next duration test in minutes.

The valid values are from 0 to 983 025 minutes.

DALI lamps calculate this value in 15 minutes intervals.

6.1.3.32 *Emergency_Battery_Charge*

For the “Self-contained emergency lighting (device type 1)” only, represents the battery charge in percentages.

The valid values are from 0 to 100 percent and a value of NaN represents the DALI “MASK” value. “MASK” means that the lamp cannot perform this functionality.

6.1.3.33 *Emergency_Duration_Test_Result*

For the “Self-contained emergency lighting (device type 1)” only, represents the duration test result in minutes.

The valid values are from 0 to 510 minutes.

6.1.3.34 *Emergency_Emergency_Mode*

For the “Self-contained emergency lighting (device type 1)” only, represents the emergency mode.

Bit	Name	Value
0	reset mode is active	0 = No
1	normal mode is active	0 = No
2	emergency mode is active	0 = No
3	extended emergency mode is active	0 = No
4	function test is in progress	0 = No
5	duration test is in progress	0 = No
6	hardwired inhibit is active	0 = Not active / not present
7	hardwired switch is on	0 = Off

6.1.3.35 *Emergency_Failure_Status*

For the “Self-contained emergency lighting (device type 1)” only, represents the failure status.

Bit	Name	Value
0	circuit failure	0 = No
1	battery duration failure	0 = No
2	battery failure	0 = No
3	emergency lamp failure	0 = No
4	function test maximum delay exceeded	0 = No
5	duration test maximum delay exceeded	0 = No
6	function test failed	0 = No
7	duration test failed	0 = No

6.1.3.36 *Emergency_Emergency_Status*

For the “Self-contained emergency lighting (device type 1)” only, represents the emergency status.

Bit	Name	Value
0	inhibit mode	0 = No
1	function test done and result valid	0 = No
2	duration test done and result valid	0 = No
3	battery fully charged	0 = In progress
4	function test request pending	0 = No
5	duration test request pending	0 = No
6	identification active	0 = No
7	physically selected	0 = No

6.1.3.37 *Emergency_Emergency_Level*

For the “Self-contained emergency lighting (device type 1)” only, represents the emergency level in percentages.

The valid values are from 0 to 100 percent and a value of NaN represents the DALI “MASK” value. “MASK” means that the value is unknown.

6.1.3.38 *Emergency_Emergency_Minimum_Level*

For the “Self-contained emergency lighting (device type 1)” only, represents the emergency minimum level in percentages.

The valid values are from 0 to 100 percent and a value of NaN represents the DALI “MASK” value. “MASK” means that the value is unknown.

6.1.3.39 Emergency_Emergency_Maximum_Level

For the “Self-contained emergency lighting (device type 1)” only, represents the emergency maximum level in percentages.

The valid values are from 0 to 100 percent and a value of NaN represents the DALI “MASK” value. “MASK” means that the value is unknown.

6.1.3.40 Emergency_Prolong

For the “Self-contained emergency lighting (device type 1)” only, represents the prolong time in seconds.

Valid values are between 0 and 7 650 seconds (127 minutes).

DALI lamps calculate this value in 30 second intervals.

6.1.3.41 Emergency_Function_Test_Interval_Time

For the “Self-contained emergency lighting (device type 1)” only, represents the function test interval time in days.

Valid values are between 0 and 255 days. The value 0 means that the automatic testing is not supported.

6.1.3.42 Emergency_Duration_Test_Interval_Time

For the “Self-contained emergency lighting (device type 1)” only, represents the duration test interval time in weeks.

Valid values are between 0 and 97 weeks. The value 0 means that the automatic testing is not supported.

6.1.3.43 Emergency_Test_Execution_Timeout

For the “Self-contained emergency lighting (device type 1)” only, represents the test execution timeout in days.

Valid values are between 0 and 255 days. A value of 0 means a 15 minutes execution timeout.

6.1.3.44 Emergency_Lamp_Emergency_Time

For the “Self-contained emergency lighting (device type 1)” only, represents the lamp emergency time in hours.

The valid values are from 0 to 254 hours and a value of 255 represents the maximum value of 254 hours or more.

6.1.3.45 Emergency_Lamp_Total_Operation_Time

For the “Self-contained emergency lighting (device type 1)” only, represents the lamp total operation time in hours.

The valid values are from 0 to 1 016 hours and a value of 1 020 represents the maximum value of 1 016 hours or more.

6.1.3.46 *Emergency_Rated_Duration*

For the “Self-contained emergency lighting (device type 1)” only, represents the rated duration.

The valid values are from 0 to 510 minutes.

6.1.3.47 *Emergency_Features*

For the “Self-contained emergency lighting (device type 1)” only, represents the features information describing the type of lamp.

Bit	Name	Value
0	integral emergency control gear	0 = No
1	maintained control gear	0 = No
2	switched maintained control gear	0 = No
3	auto test capability	0 = No
4	adjustable emergency level	0 = No
5	hardwired inhibit supported	0 = No
6	physical selection supported	0 = No
7	re-light in rest mode supported	0 = No

6.1.3.48 *Dimming_Curve*

The dimming curve determines how the DALI level should be translated into light output. The standard dimming curve is logarithmic. Some lamps allow modifying to dimming curve between logarithmic and a linear one.

The DALION automatically translates the requested light output of a percentage to the dimming curve configured in the lamp with the following formulas.

Logarithmic

$$\text{Light output}(\text{level}) = 10^{\frac{\text{level}-1}{253/3} - 1} \%$$

Linear

$$\text{Light output}(\text{level}) = \frac{\text{level}}{254} \times 100 \%$$

It is important to note that sending a dimming command to a group consisting of lamps of different dimming curves may not produce the expected result. Ideally, only group lamps configured with the same dimming curve.

It is recommended to configure the dimming curve before programming the other levels such as scenes, minimum level, maximum level, power on level, etc.

6.1.3.48.1 LOGARITHMIC (1)

Standard logarithmic dimming curve.

6.1.3.48.2 LINEAR (2)

Linear dimming curve.

6.1.3.49 Colour_Type

The current or requested colour control type.

The supported colour types are as follows.

Name	Value
xy-coordinate	1
colour temperature Tc	2
primary N	3
RGBWAF	4

6.1.3.50 Colour_XYC_X

For DALI Type 8 (DT8) lamps, whose colour control is xy-Coordinate, the x-coordinate of the current colour can be modified. The objects for lamps, groups and channels can modify the colour of lamps.

The valid values are from 0 to 65534 and a value of NaN represents the DALI “MASK” value.

The unit of the value is $1 / 65536$. Therefore the maximum corresponding x-coordinate is 0.99997.

6.1.3.51 Colour_XYC_Y

For DALI Type 8 (DT8) lamps, whose colour control is xy-Coordinate, the y-coordinate of the current colour can be modified. The objects for lamps, groups and channels can modify the colour of lamps.

The valid values are from 0 to 65534 and a value of NaN represents the DALI “MASK” value.

The unit of the value is $1 / 65536$. Therefore the maximum corresponding y-coordinate is 0.99997.

6.1.3.52 Colour_TC_TC

For DALI Type 8 (DT8) lamps, whose colour control is colour temperature Tc, the current colour temperature can be modified. The objects for lamps, groups and channels can modify the colour of lamps.

The valid values are from 1 to 65534 and a value of NaN represents the DALI “MASK” value.

The unit of the value is 1 Mirek. Therefore the minimum value is 1 Mirek (1000000 Kelvin) and the maximum value is 65534 Mirek (15.26 Kelvin).

Mirek = 1 000 000 / [Colour Temperature in Kelvin]

Kelvin = 1 000 000 / [value of Mirek]

6.1.3.53 Colour_PN_P0 to Colour_PN_P5

For DALI Type 8 (DT8) lamps, whose colour control is primary N, the current colour can be modified. The objects for lamps, groups and channels can modify the colour of lamps.

The valid values are from 0 to 65534 and a value of NaN represents the DALI “MASK” value.

The unit of the value is 1 / 65536. Therefore the maximum corresponding primary value is 0.99997.

6.1.3.54 Colour_RGBWAF_RED

For the lamps DALI Type 8 (DT8), whose colour control is RGBWAF, the current red colour can be modified. The objects for lamps, groups and channels can modify lamp colour.

The valid values are from 0 to 254 and a value of NaN represents the DALI “MASK” value.

6.1.3.55 Colour_RGBWAF_GREEN

For the lamps DALI Type 8 (DT8), whose colour control is RGBWAF, the current green colour can be modified. The objects for lamps, groups and channels can modify lamp colour.

The valid values are from 0 to 254 and a value of NaN represents the DALI “MASK” value.

6.1.3.56 Colour_RGBWAF_BLUE

For the lamps DALI Type 8 (DT8), whose colour control is RGBWAF, the current blue colour can be modified. The objects for lamps, groups and channels can modify lamp colour.

The valid values are from 0 to 254 and a value of NaN represents the DALI “MASK” value.

6.1.3.57 Colour_RGBWAF_WHITE

For the lamps DALI Type 8 (DT8), whose colour control is RGBWAF, the current white colour can be modified. The objects for lamps, groups and channels can modify lamp colour.

The valid values are from 0 to 254 and a value of NaN represents the DALI “MASK” value.

6.1.3.58 Colour_RGBWAF_AMBER

For the lamps DALI Type 8 (DT8), whose colour control is RGBWAF, the current amber colour can be modified. The objects for lamps, groups and channels can modify lamp colour.

The valid values are from 0 to 254 and a value of NaN represents the DALI “MASK” value.

6.1.3.59 *Colour_RGBWAF_FREECOLOUR*

For the lamps DALI Type 8 (DT8), whose colour control is RGBWAF, the current freecolour colour can be modified. The objects for lamps, groups and channels can modify lamp colour.

The valid values are from 0 to 254 and a value of NaN represents the DALI “MASK” value.

6.1.3.60 *Network_Mode*

Name	Value	Description
NORMAL	0	The controller is operating normally.
DISABLE	1	The controller is not authorized to communicate on the DALI channel.

6.1.3.61 *Network_Command_Repeat_Count*

The number of repeats of the DALI commands that affect the light intensity of the lamps.

7 BACnet Interface - Analog Input Object - Feedback of Lamp, Group, and Channel

7.1 Analog Input Object - Feedback of Lamp, Group, and Channel

To obtain the intensity of the lamps, use the Analog Input objects.

7.1.1 Lamp, Group and Channel

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	REAL	W
Description	28	CharacterString	R
Device_Type	31	CharacterString	R
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Reliability	103	BACnetReliability	R
Out_Of_Service	81	BOOLEAN	W
Units	117	BACnetEngineeringUnits	R
Min_Pres_Value	69	REAL	R
Max_Pres_Value	65	REAL	W
COV_Increment	22	REAL	W
Nominal_Power	518	REAL	W
Channel_Battery_Failure	532	BIT STRING	R
Channel_Function_Test_Failure	533	BIT STRING	R
Channel_Duration_Test_Failure	534	BIT STRING	R
Last_Level	906	REAL	R
Device_Type_Supported	925	BIT STRING	R
Energy_Usage_Accumulated	926	REAL	W
Emergency_Battery_Failure	1000	BOOLEAN	R
Emergency_Function_Test_Failure	1001	BOOLEAN	R
Emergency_Duration_Test_Failure	1002	BOOLEAN	R
Colour_Type	8000	Enumerated	R

Property Identifier	Property ID	Property Datatype	Conformance Code
Colour_XYC_X	8010	REAL	R
Colour_XYC_Y	8011	REAL	R
Colour_TC_TC	8020	REAL	R
Colour_PN_P0	8030	REAL	R
Colour_PN_P1	8031	REAL	R
Colour_PN_P2	8032	REAL	R
Colour_PN_P3	8033	REAL	R
Colour_PN_P4	8034	REAL	R
Colour_PN_P5	8035	REAL	R
Colour_RGBWAF_RE D	8040	REAL	R
Colour_RGBWAF_GR EEN	8041	REAL	R
Colour_RGBWAF_BL UE	8042	REAL	R
Colour_RGBWAF_WH ITE	8043	REAL	R
Colour_RGBWAF_AM BER	8044	REAL	R
Colour_RGBWAF_FRE ECOLOUR	8045	REAL	R

7.1.1.1 Object_Identifier

The object instance number is the same as the associated Analog Output object and is also represented as TCLK.

- “T” is the type of object as follows, 0 for DALI Lamps, 1 for DALI groups and 2 for DALI channels.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “LL” represents for lamp objects, numbers 00-63, for group objects, numbers 00-15 and for channel objects, number 00.

7.1.1.2 Object_Name

The **Object_Name** of the associated Analog Output object of the DALI lamp, group or channel ending with “Feedback”.

7.1.1.3 Object_Type

ANALOG_INPUT (0).

7.1.1.4 *Present_Value*

The current light intensity as a percentage for the DALI lamps, groups and channels.

7.1.1.5 *Description*

The **Description** of the associated Analog Output object of the DALI lamp, group or channel ending with “Feedback”.

7.1.1.6 *Device_Type*

A text description of the physical DALI device connected to the analog output, it is the DALI device type (ex. “**Fluorescent lamps**”, “**Conversion from digital signal into d.c. voltage**”, “**LED modules**”, “**Switching function**”). For group objects, it is “**DALI group**”. For channel objects, it is “**DALI channel**”.

7.1.1.7 *Status_Flags*

This property indicates the general “reliability” of an analog input object.

7.1.1.8 *Reliability*

This property indicates whether the operation of the DALI output is reliable. The values are as follows:

- NO_FAULT_DETECTED (0) - No fault has been detected.
- NO_SENSOR (1) - No physical device is connected to the input object.
- COMMUNICATION_FAILURE (12) - DALI device is offline.
- UNRELIABLE_OTHER (7) - A DALI error has been reported by the DALI lamp.

7.1.1.9 *Out_Of_Service*

It indicates whether the physical device that the object represents is in service.

7.1.1.10 *Units*

The unit for the Present_Value is percent.

7.1.1.11 *Min_Pres_Value*

The minimum value is always zero (0). It represents the lowest value for the property Present_Value.

7.1.1.12 *Max_Pres_Value*

The maximum value is always one hundred (100). It represents the highest value for the property Present_Value.

7.1.1.13 *COV_Increment*

This property specifies the minimum change of the Present_Value that issues a COVNotification.

7.1.1.14 *Nominal_Power*

It represents the nominal power of the DALI lamp. It is writable for lamps, groups and channels. For groups and channels, it always read as NaN.

7.1.1.15 *Channel_Battery_Failure*

Only available for channel objects, this property indicates whether a “Self-contained emergency lighting (device type 1)” is reporting a battery failure. Each 64 lamps of the channel are one bit of the 64-bit BIT STRING. When a battery failure is reported by a lamp, its associated bit is set.

7.1.1.16 *Channel_Function_Test_Failure*

Only available for channel objects, this property indicates whether a “Self-contained emergency lighting (device type 1)” is reporting a function test failure. Each 64 lamps of the channel are one bit of the 64-bit BIT STRING. When a function test failure is reported by a lamp, its associated bit is set.

7.1.1.17 *Channel_Duration_Test_Failure*

Only available for channel objects, this property indicates whether a “Self-contained emergency lighting (device type 1)” is reporting a duration test failure. Each 64 lamps of the channel are one bit of the 64-bit BIT STRING. When a duration test failure is reported by a lamp, its associated bit is set.

7.1.1.18 *Last_Level*

It represents the last level value in percentages.

7.1.1.19 *Device_Type_Supported*

Only available for lamp objects, this property indicates the supported DALI types for the physical DALI device connected to the object.

Bit	Name
0	Fluorescent
1	Self contained emergency
2	Discharge HID
3	Low voltage halogen
4	Incandescent lamp
5	Conversion to DC voltage
6	LED
7	Switching relay
8	Colour

7.1.1.20 *Energy_Usage_Accumulated*

It represents the accumulated energy consumption in watt-hours for the DALI lamp. This value is the result of a calculation based on the Nominal_Power property. It is writable for lamps, groups and channels. For groups and channels, it always read as NaN.

7.1.1.21 *Emergency_Battery_Failure*

Only available for lamp objects, this property indicates whether a “Self-contained emergency lighting (device type 1)” is reporting a battery failure. When a battery failure is reported by the lamp, the value is true.

7.1.1.22 *Emergency_Function_Test_Failure*

Only available for lamp objects, this property indicates whether a “Self-contained emergency lighting (device type 1)” is reporting a function test failure. When a function test failure is reported by the lamp, the value is true.

7.1.1.23 *Emergency_Duration_Test_Failure*

Only available for lamp objects, this property indicates whether a “Self-contained emergency lighting (device type 1)” is reporting a duration test failure. When a duration test failure is reported by the lamp, the value is true.

7.1.1.24 *Colour_Type*

The current colour control type.

The supported colour types are as follows.

Name	Value
xy-coordinate	1
temperature Tc	2
primary N	3
RGBWAF	4

7.1.1.25 *Colour_XYC_X*

The current x-coordinate value of DALI Type 8 (DT8) lamps, whose colour control is xy-Coordinate.

The valid values are from 0 to 65534 and a value of NaN represents the DALI “MASK” value.

The unit of the value is 1 / 65536. Therefore the maximum corresponding x-coordinate is 0.99997.

7.1.1.26 *Colour_XYC_Y*

The current y-coordinate value of DALI Type 8 (DT8) lamps, whose colour control is xy-Coordinate.

The valid values are from 0 to 65534 and a value of NaN represents the DALI “MASK” value.

The unit of the value is 1 / 65536. Therefore the maximum corresponding y-coordinate is 0.99997.

7.1.1.27 *Colour_TC_TC*

The current colour temperature of DALI Type 8 (DT8) lamps, whose colour control is colour temperature Tc.

The valid values are from 1 to 65534 and a value of NaN represents the DALI “MASK” value.

The unit of the value is 1 Mirek. Therefore the minimum value is 1 Mirek (1000000 Kelvin) and the maximum value is 65534 Mirek (15.26 Kelvin).

Mirek = 1 000 000 / [Colour Temperature in Kelvin]

$\text{Kelvin} = 1\,000\,000 / [\text{value of Mirek}]$

7.1.1.28 Colour_PN_P0 to Colour_PN_P5

The current primary N value of DALI Type 8 (DT8) lamps, whose colour control is primary N.

The valid values are from 0 to 65534 and a value of NaN represents the DALI “MASK” value.

The unit of the value is $1 / 65536$. Therefore the maximum corresponding primary value is 0.99997.

7.1.1.29 Colour_RGBWAF_RED

The current red value of DALI Type 8 (DT8) lamps, whose colour control is RGBWAF.

The valid values are from 0 to 254 and a value of NaN represents the DALI “MASK” value.

7.1.1.30 Colour_RGBWAF_GREEN

The current green value of DALI Type 8 (DT8) lamps, whose colour control is RGBWAF.

The valid values are from 0 to 254 and a value of NaN represents the DALI “MASK” value.

7.1.1.31 Colour_RGBWAF_BLUE

The current blue value of DALI Type 8 (DT8) lamps, whose colour control is RGBWAF.

The valid values are from 0 to 254 and a value of NaN represents the DALI “MASK” value.

7.1.1.32 Colour_RGBWAF_WHITE

The current white value of DALI Type 8 (DT8) lamps, whose colour control is RGBWAF.

The valid values are from 0 to 254 and a value of NaN represents the DALI “MASK” value.

7.1.1.33 Colour_RGBWAF_AMBER

The current amber value of DALI Type 8 (DT8) lamps, whose colour control is RGBWAF.

The valid values are from 0 to 254 and a value of NaN represents the DALI “MASK” value.

7.1.1.34 Colour_RGBWAF_FREECOLOUR

The current freecolour of DALI type 8 (DT8) lamps, whose colour control is RGBWAF.

The valid values are from 0 to 254 and a value of NaN represents the DALI “MASK” value.

8 BACnet Interface - Multi-State Output Object - Command Control of Lamp, Group and Channel

8.1 Multi-State Output Object - Command Control of Lamp, Group and Channel

To control DALI scenes and other commands for the lamps, groups and channels, use Multi-State Output objects. Among other things recall, store and delete scenes with these objects.

8.1.1 Lamp, Group and Channel

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	Unsigned	W
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Reliability	103	BACnetReliability	R
Out_Of_Service	81	BOOLEAN	W
Number_Of_States	74	Unsigned	R
State_Text	110	BACnetARRAY[N]of CharacterString	R
Priority_Array	87	BACnetPriorityArray	R
Relinquish_Default	104	REAL	R
Manual_Override	953	Unsigned	R

8.1.1.1 Object_Identifier

The object instance number is the same as the associated Analog Output object and is also represented as TCLK.

- “T” is the type of object as follows, 0 for DALI lamps, 1 for DALI groups and 2 for DALI channels.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “LL” represents for group objects, numbers 0-15 and for channel objects, number 00.

8.1.1.2 Object_Name

The **Object_Name** of the associated Analog Output object of the Group or Channel ending with “Scene”.

8.1.1.3 *Object_Type*

MULTISTATE_OUTPUT (14).

8.1.1.4 *Present_Value*

Among other things the Present_Value allows recalling, storing, and deleting the scenes. The available values are described below.

8.1.1.4.1 GO TO SCENE (1-16)

Allow sending the DALI command “**GO TO SCENE**” to the associated lamp, group or channel (broadcast).

8.1.1.4.2 STORE SCENE (17-32)

Allow sending the DALI command “**STORE DTR AS SCENE**” to the associated lamp, group or channel (broadcast).

8.1.1.4.3 REMOVE SCENE (33-48)

Allow sending the DALI command “**REMOVE FROM SCENE**” to the associated lamp, group or channel (broadcast).

8.1.1.4.4 NO COMMAND (50)

No command is executed.

8.1.1.4.5 RESET RUN HOURS (53)

Reset the run hours to zero.

8.1.1.4.6 EMERGENCY FUNCTION TEST START (55)

Start the function test for the lamps of the type “Self-contained emergency lighting (device type 1)”.

8.1.1.4.7 EMERGENCY DURATION TEST START (56)

Start the duration test for the lamps of the type “Self-contained emergency lighting (device type 1)”.

8.1.1.4.8 EMERGENCY TESTS STOP (57)

Stop the current test for the lamps of the type “Self-contained emergency lighting (device type 1)”.

8.1.1.4.9 DIM UP (58)

Allow sending the DALI command “**UP**” to the associated lamp, group or channel (broadcast).

8.1.1.4.10 DIM ON AND UP (59)

Allow sending the DALI command “**ON AND STEP UP**” to the associated lamp, group or channel (broadcast).

8.1.1.4.11 DIM DOWN (60)

Allow sending the DALI command “**DOWN**” to the associated lamp, group or channel (broadcast).

8.1.1.4.12 DIM DOWN AND OFF (61)

Allow sending the DALI command “**STEP DOWN AND OFF**” to the associated lamp, group or channel (broadcast).

8.1.1.4.13 OFF (65)

Allow sending the DALI command “**OFF**” to the associated lamp, group or channel (broadcast).

8.1.1.4.14 DIM STEP UP (66)

Allow sending the DALI command “**STEP UP**” to the associated lamp, group or channel (broadcast).

8.1.1.4.15 DIM STEP DOWN (67)

Allow sending the DALI command “**STEP DOWN**” to the associated lamp, group or channel (broadcast).

8.1.1.4.16 RECALL MIN LEVEL (68)

Allow sending the DALI command “**RECALL MIN LEVEL**” to the associated lamp, group or channel (broadcast).

8.1.1.4.17 RECALL MAX LEVEL (69)

Allow sending the DALI command “**RECALL MAX LEVEL**” to the associated lamp, group or channel (broadcast).

8.1.1.4.18 RECALL LAST LEVEL (70)

Recall Last Level.

8.1.1.4.19 EMERGENCY REST (71)

For the “Self-contained emergency lighting (device type 1)” only, starts the rest mode.

In this mode the lamp is intentionally off when it is powered from the battery.

Refer to the specification IEC 62386-202 for the complete details on the rest mode.

8.1.1.4.20 EMERGENCY INHIBIT (72)

For the “Self-contained emergency lighting (device type 1)” only, starts the inhibit mode.

In this mode the lamp is powered from the mains power supply but it is also prevented for 15 minutes from going into the emergency mode when an event of mains power failure occurs.

Refer to the specification IEC 62386-202 for the complete details on the inhibit mode.

8.1.1.4.21 EMERGENCY RESET INHIBIT (73)

For the “Self-contained emergency lighting (device type 1)” only, cancels the inhibit timer.

Refer to the specification IEC 62386-202 for the complete details on the inhibit mode.

8.1.1.4.22 EMERGENCY RESET FUNCTION TEST DONE FLAG (74)

For the “Self-contained emergency lighting (device type 1)” only, resets the function test done flag.

Refer to the specification IEC 62386-202 for the complete details on this command.

8.1.1.4.23 EMERGENCY RESET DURATION TEST DONE FLAG (75)

For the “Self-contained emergency lighting (device type 1)” only, resets the duration test done flag.

Refer to the specification IEC 62386-202 for the complete details on this command.

8.1.1.4.24 EMERGENCY START IDENTIFICATION (76)

For the “Self-contained emergency lighting (device type 1)” only, starts the identification.

Refer to the specification IEC 62386-202 for the complete details on this command.

8.1.1.4.25 GROUP ADD (77-92)

Allow sending the DALI command “**ADD TO GROUP**” to the associated lamp, group or channel (broadcast).

8.1.1.4.26 GROUP REMOVE (93-108)

Allow sending the DALI command “**REMOVE FROM GROUP**” to the associated lamp, group or channel (broadcast).

8.1.1.4.27 MANUAL OVERRIDE AUTO (109)

Releases the manual override and returns the associated lamp, group or channel to automatic control.

8.1.1.4.28 MANUAL OVERRIDE ON (110)

Holds the associated lamp, group or channel on until the override is released.

8.1.1.4.29 MANUAL OVERRIDE OFF (111)

Holds the associated lamp, group or channel off until the override is released.

8.1.1.5 Status_Flags

This property indicates the general “reliability” of the object.

8.1.1.6 Reliability

This property indicates whether the operation of the Present_Value or the operation of the object is reliable. The values are as follows:

- NO_FAULT_DETECTED (0) - No fault has been detected.

8.1.1.7 Out_Of_Service

It is an indication of whether or not the object is in service.

8.1.1.8 Manual_Override

The current Manual Override state of the associated lamp, group or channel. The state is changed by writing the MANUAL OVERRIDE commands to the Present_Value.

Name	Value	Description
Auto	0	No override, the target is under automatic control.
On	1	The target is held on until the override is released.
Off	2	The target is held off until the override is released.

9 BACnet Interface - Analog Input Object - Light Sensor

9.1 Analog Input Object - Light Sensor

To obtain the light sensors' illuminance level, use the Analog Input objects.

9.1.1 Light Sensor

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	REAL	W
Description	28	CharacterString	R
Device_Type	31	CharacterString	R
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Reliability	103	BACnetReliability	R
Out_Of_Service	81	BOOLEAN	W
Units	117	BACnetEngineeringUnits	R
Min_Pres_Value	69	REAL	R
Max_Pres_Value	65	REAL	W
COV_Increment	22	REAL	W
Light_Hystereris	564	Unsigned	W
Light_Hystereris_Minimum	565	Unsigned	W
Light_Raw_Value	570	REAL	R
Light_Calibration_Measured_Value	571	REAL	R
Light_Calibration_Sensor_Value	572	REAL	R
Device_Serial_Number	573	OCTET STRING	R

9.1.1.1 Object_Identifier

The object instance number is represented as TCLK.

- “T” is the type of object as follows, 5 for DALI sensors.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “LL” represents for sensor objects, numbers 00-31.

9.1.1.2 *Object_Name*

The name of the light sensor.

9.1.1.3 *Object_Type*

ANALOG_INPUT (0).

9.1.1.4 *Present_Value*

The current illuminance level.

9.1.1.5 *Description*

A description of the light sensor.

9.1.1.6 *Device_Type*

A text description of the physical DALI device connected to the analog input. For light sensor objects, it is “**DALI sensor**”.

9.1.1.7 *Status_Flags*

This property indicates the general “reliability” of an analog input object.

9.1.1.8 *Reliability*

This property indicates whether the operation of the DALI sensor is reliable. The values are as follows:

- NO_FAULT_DETECTED (0) - No fault has been detected.
- NO_SENSOR (1) - No physical device is connected to the input object.
- COMMUNICATION_FAILURE (12) - DALI device is offline.
- UNRELIABLE_OTHER (7) - A DALI error has been reported by the DALI sensor.

9.1.1.9 *Out_Of_Service*

It indicates whether the physical device that the object represents is in service.

9.1.1.10 *Units*

The unit for the Present_Value is luxes.

9.1.1.11 *Min_Pres_Value*

The minimum value is always zero (0). It represents the lowest value for the property Present_Value.

9.1.1.12 *Max_Pres_Value*

The maximum value is always infinity. It represents the highest value for the property Present_Value.

9.1.1.13 COV_Increment

This property specifies the minimum change of the Present_Value that issues a COVNotification.

9.1.1.14 Light_Hystereris

This is a percentage of the current sensor internal illuminance level.

The valid values are from 0 to 25 percent.

9.1.1.15 Light_Hystereris_Minimum

The minimum hysteresis.

The valid values are from 0 to 255.

9.1.1.16 Light_Raw_Value

The uncalibrated light sensor reading before applying any calibration calculations.

9.1.1.17 Light_Calibration_Measured_Value

The value measured by an external lux meter, used for calibrating the light sensor.

9.1.1.18 Light_Calibration_Sensor_Value

The light sensor reading value used as a reference point during the calibration process.

9.1.1.19 Device_Serial_Number

The DALI serial number of the input device.

10 BACnet Interface - Binary Input Object - Occupancy Sensors

10.1 Binary Input Object - Occupancy Sensors

To obtain the occupancy state, use the Binary Input objects.

10.1.1 Occupancy Sensor

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	Enumerated	W
Description	28	CharacterString	R
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Reliability	103	BACnetReliability	R
Inactive_Text	46	CharacterString	R
Active_Text	4	CharacterString	R
Occupancy_Hold_Time	563	Unsigned	W
Allowed_Command	904	Enumerated	W
Buttons_States	905	Unsigned32	R
Buttons_Allowed_Command	927	Enumerated	W
Light_Hysterisis	564	Unsigned	W
Light_Hysterisis_Minimum	565	Unsigned	W
Light_Raw_Value	570	REAL	R
Light_Calibration_Measured_Value	571	REAL	R
Light_Calibration_Sensor_Value	572	REAL	R
Device_Serial_Number	573	OCTET STRING	R

10.1.1.1 Object_Identifier

The object instance number is represented as TCLL.

- “T” is the type of object as follows, 5 for DALI sensors.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “LL” represents for sensor objects, numbers 00-31.

10.1.1.2 Object_Name

The name of the occupancy sensor.

10.1.1.3 Object_Type

BINARY_INPUT (3).

10.1.1.4 Present_Value

The current occupancy state.

10.1.1.5 Inactive_Text

“Unoccupied”.

10.1.1.6 Active_Text

“Occupied”.

10.1.1.7 Occupancy_Hold_Time

Hold time in seconds for the sensor.

Valid values are between 1 and 2 540 seconds (42.3 minutes) with an interval of 10 seconds.

10.1.1.8 Allowed_Command

Indicates whether the occupancy state of this object is used or not by the Room Light Control.

At the startup, the value is *OFF_ON_ALLOWED*.

Name	Value	Description
OFF_ON_DISALLOWED	0	Both Unoccupied and Occupied states are unused.
OFF_ALLOWED	1	Only Unoccupied state is used.
ON_ALLOWED	2	Only Occupied state is used.
OFF_ON_ALLOWED	3	Both Unoccupied and Occupied states are used.

10.1.1.9 Buttons_States

Indicates the state of the buttons instances of the associated DALI input device. Each button instance state is represented by a bit in this 32-bit unsigned value.

For example, if only the instance 2 is pressed the value is 4.

For button instance configured as **Push-button**, the bit value toggle each time that the button is short pressed.

For button instance configured as **Switch**, the bit value is 1 when the button is pressed and 0 when the button is released.

10.1.1.10 Buttons_Allowed_Command

Indicates whether the button instances of the associated DALI input device can generate commands.

At the startup, the value is *OFF_ON_ALLOWED*.

Name	Value	Description
OFF_ON_DISALLOWED	0	Both <i>Off</i> and <i>On</i> commands are disabled.
OFF_ALLOWED	1	Only <i>Off</i> commands are enabled.
ON_ALLOWED	2	Only <i>On</i> commands are used.
OFF_ON_ALLOWED	3	Both <i>Off</i> and <i>On</i> commands are enabled.

Off commands are the commands *Direct Value* with a value of 0, *Off* and *Off / Down*. As well as the toggle commands *On / Off* and *Last Level / Off* when the command to generate is Off.

On commands are the commands *Direct Value* with a value greater than 0, *Max Level*, *Max Level / Up*, *Min Level*, *Min Level / Down*, *Recall Scene*, *Recall Scene / Up* and *Recall Scene / Down*. As well as the toggle commands *On / Off* and *Last Level / Off* when the command to generate is not Off.

[10.1.1.11 Light_Hystereris](#)

The Light_Hystereris of the associated Analog Input object.

[10.1.1.12 Light_Hystereris_Minimum](#)

The Light_Hystereris_Minimum of the associated Analog Input object.

[10.1.1.13 Light_Raw_Value](#)

The Light_Raw_Value of the associated Analog Input object.

[10.1.1.14 Light_Calibration_Measured_Value](#)

The Light_Calibration_Measured_Value of the associated Analog Input object.

[10.1.1.15 Light_Calibration_Sensor_Value](#)

The Light_Calibration_Sensor_Value of the associated Analog Input object.

[10.1.1.16 Device_Serial_Number](#)

The DALI serial number of the input device.

11 BACnet Interface - Binary Input Object - Buttons

11.1 Binary Input Object - Buttons

To obtain the button state of each individual button instance, use the Binary Input objects.

11.1.1 Button

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	Enumerated	W
Description	28	CharacterString	R
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Reliability	103	BACnetReliability	R
Inactive_Text	46	CharacterString	R
Active_Text	4	CharacterString	R
Buttons_Allowed_Command	927	Enumerated	W
Device_Serial_Number	573	OCTET STRING	R

11.1.1.1 Object_Identifier

The object instance number is represented as 3CLLI.

- “3” the prefix is the number 3.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “LL” represents the DALI input device, numbers 00-31.
- “II” represents the button instance number, numbers 00-31.

11.1.1.2 Object_Name

The name of the button.

11.1.1.3 Object_Type

BINARY_INPUT (3).

11.1.1.4 *Present_Value*

The current button state.

For button instance configured as **Push-button**, the value toggle each time that the button is short pressed.

For button instance configured as **Switch**, the value is ACTIVE when the button is pressed and INACTIVE when the button is released.

11.1.1.5 *Inactive_Text*

"Inactive".

11.1.1.6 *Active_Text*

"Active".

11.1.1.7 *Buttons_Allowed_Command*

Indicates whether the button instances of the associated DALI input device can generate commands. At the startup, the value is OFF_ON_ALLOWED.

Name	Value	Description
OFF_ON_DISALLOWED	0	Both <i>Off</i> and <i>On</i> commands are disabled.
OFF_ALLOWED	1	Only <i>Off</i> commands are enabled.
ON_ALLOWED	2	Only <i>On</i> commands are used.
OFF_ON_ALLOWED	3	Both <i>Off</i> and <i>On</i> commands are enabled.

Off commands are the commands *Direct Value* with a value of 0, *Off* and *Off / Down*. As well as the toggle commands *On / Off* and *Last Level / Off* when the command to generate is Off.

On commands are the commands *Direct Value* with a value greater than 0, *Max Level*, *Max Level / Up*, *Min Level*, *Min Level / Down*, *Recall Scene*, *Recall Scene / Up* and *Recall Scene / Down*. As well as the toggle commands *On / Off* and *Last Level / Off* when the command to generate is not Off.

11.1.1.8 *Device_Serial_Number*

The DALI serial number of the input device.

12 BACnet Interface - Multi-State Input Object - Scene Feedback of Group and Channel

12.1 Multi-State Input Object - Scene Feedback of Group and Channel

To obtain the latest DALI scenes for the groups and channels, use Multi-State Input objects.

12.1.1 Group and Channel

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	Unsigned	W
Description	28	CharacterString	R
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Out_Of_Service	81	BOOLEAN	W
Number_Of_States	74	Unsigned	R
State_Text	110	BACnetARRAY[N]of CharacterString	R

12.1.1.1 Object_Identifier

The object instance number is the same as the associated Analog Output object and is also represented as TCLL.

- “T” is the type of object as follows, 1 for DALI groups and 2 for DALI channels.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “LL” represents for group objects, numbers 0-15 and for channel objects, number 00.

12.1.1.2 Object_Name

The **Object_Name** of the associated Analog Output object of the Group or Channel ending with “Scene Feedback”.

12.1.1.3 Object_Type

MULTISTATE_INPUT (13).

12.1.1.4 Present_Value

The Present_Value represents the latest scene recalling. The available values are described below.

NO COMMAND: - Values 1 for the initial value.

GO TO SCENE: - Values 2 to 17 for the DALI command “**GO TO SCENE**” to the associated group or channel (broadcast).

12.1.1.5 Description

The **Description** of the associated Analog Output object of the Group or Channel ending with “Scene Feedback”.

12.1.1.6 Status_Flags

This property indicates the general “reliability” of the object.

12.1.1.7 Out_Of_Service

It is an indication of whether or not the object is in service.

13 BACnet Interface - Loop Object - Room Light Control

13.1 Loop Object - Room Light Control

To control the Room Light Control, use Loop objects. Visualise the states and configure the parameters with these objects.

13.1.1 Room Light Control

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	REAL	R
Description	28	CharacterString	R
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Reliability	103	BACnetReliability	R
Out_Of_Service	81	BOOLEAN	W
Output_Units	117	BACnetEngineeringUnits	R
Manipulated_Variable_Reference	60	BACnetObjectPropertyReference	R
Controlled_Variable_Reference	19	BACnetObjectPropertyReference	R
Controlled_Variable_Value	21	REAL	R
Controlled_Variable_Units	20	BACnetEngineeringUnits	R
Setpoint_Reference	109	BACnetSetpointReference	R
Setpoint	108	REAL	R
Action	2	BACnetAction	R
Priority_For_Writing	88	Unsigned(1..16)	W
Occupancy_Variable_Reference	537	BACnetObjectPropertyReference	R
Occupancy_Variable_Value	538	BOOLEAN	R
Mode	539	Unsigned	W
Hold_Time	540	Unsigned	W
Ignore_Time	541	Unsigned	W
Occupied_Level	542	REAL	W
Unoccupied_Level	543	REAL	W
Step_Value	544	REAL	W

Property Identifier	Property ID	Property Datatype	Conformance Code
Lamp_2_Offset	550	REAL	W
Lamp_2_Limit	551	REAL	W
Override	560	REAL	R
Auto_Mode	561	BACnetBinaryPV	R
Occupancy_State	562	BACnetBinaryPV	R
Manipulated_Variable_Value	574	REAL	R
Controlled_Variable_Value	575	REAL	R
Command	900	Unsigned	W
Setpoint_Occupied	901	REAL	W
Setpoint_Unoccupied	902	REAL	W
Deadband_Setpoint	903	REAL	W
Warning_Time	907	Unsigned	W
Warning_Command_Command	908	Unsigned	W
Warning_Command_Value	909	Unsigned	W
Occupied_Command_Command	910	Unsigned	W
Occupied_Command_Value	911	Unsigned	W
Unoccupied_Command_Command	912	Unsigned	W
Unoccupied_Command_Value	913	Unsigned	W
Minimum_Intensity	914	REAL	W
Maximum_Intensity	915	REAL	W
Daylight_Harvesting_Active	916	Unsigned	R
Occupied_Mode	917	Unsigned	W
Override_Timeout	918	Unsigned	W
Demand_Response_Value	919	REAL	W

Property Identifier	Property ID	Property Datatype	Conformance Code
Demand_Response_State	920	Unsigned	R
Occupied_Mode_Command_Enable	921	Unsigned	W
Override_Only_On_Exact_Output	931	Unsigned	W
Linked_Occupancy_Target_RLC_1	948	Unsigned	W
Linked_Occupancy_Target_RLC_2	949	Unsigned	W
Linked_Occupancy_Target_RLC_3	950	Unsigned	W
Linked_Occupancy_Target_RLC_4	951	Unsigned	W
Linked_Occupancy_Target_RLC_Mode_Mask	952	Unsigned	W
Profile_Occupied_Mode	954	Unsigned	W
Profile_Occupied_Mode_Name	955	CharacterString	R
Profile_Unoccupied_Mode	956	Unsigned	W
Profile_Unoccupied_Mode_Name	957	CharacterString	R
External_Occupancy_Timeout	958	Unsigned	W
External_Occupancy_1	959	Unsigned	W
External_Occupancy_2	960	Unsigned	W
External_Occupancy_3	961	Unsigned	W
External_Occupancy_4	962	Unsigned	W
External_Warning_Hold_1	963	Unsigned	W

Property Identifier	Property ID	Property Datatype	Conformance Code
External_Warning_Hold_2	964	Unsigned	W
External_Warning_Hold_3	965	Unsigned	W
External_Warning_Hold_4	966	Unsigned	W
External_Light_Level	999	REAL	W
Circadian_Active	9000	BACnetBinaryPV	R
Dynamic_Color_Recipe_Graph	9001	Unsigned	W
Dynamic_Color_Recipe_Graph_Name	9002	CharacterString	R
Dynamic_Color_Recipe_Graph_Enabled	9003	BACnetBinaryPV	W
Circadian_Point_1_Brightness	9010	REAL	W
Circadian_Point_2_Brightness	9011	REAL	W
Circadian_Point_3_Brightness	9012	REAL	W
Circadian_Point_4_Brightness	9013	REAL	W
Circadian_Point_5_Brightness	9014	REAL	W
Circadian_Point_6_Brightness	9015	REAL	W
Circadian_Point_7_Brightness	9016	REAL	W
Circadian_Point_8_Brightness	9017	REAL	W
Circadian_Point_1_Kelvin	9020	REAL	W
Circadian_Point_2_Kelvin	9021	REAL	W
Circadian_Point_3_Kelvin	9022	REAL	W

Property Identifier	Property ID	Property Datatype	Conformance Code
Circadian_Point_4_K elvin	9023	REAL	W
Circadian_Point_5_K elvin	9024	REAL	W
Circadian_Point_6_K elvin	9025	REAL	W
Circadian_Point_7_K elvin	9026	REAL	W
Circadian_Point_8_K elvin	9027	REAL	W

13.1.1.1 *Object_Identifier*

The object instance number is represented as CRR.

- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “RR” represents the Room Light Control, numbers 00-15.

13.1.1.2 *Object_Name*

The name of the Room Light Control.

13.1.1.3 *Object_Type*

LOOP (12).

13.1.1.4 *Present_Value*

The light intensity in percentages for the Room Light Control.

13.1.1.5 *Description*

A description of the Room Light Control.

13.1.1.6 *Status_Flags*

This property indicates the general “reliability” of a loop object.

13.1.1.7 *Reliability*

This property indicates whether the operation of the Room Light Control is reliable. The values are as follows:

- NO_FAULT_DETECTED (0) - No fault has been detected.
- OPEN_LOOP (4) - The value of the light sensor does not changes when the Room Light Control output changes.
- COMMUNICATION_FAILURE (12) - The sensors or output devices are offline.
- UNRELIABLE_OTHER (7) - Another error has been reported.

13.1.1.8 Out_Of_Service

It indicates whether the algorithm that the object represents is in service.

13.1.1.9 Output_Units

The unit for the Present_Value is percent.

13.1.1.10 Manipulated_Variable_Reference

The output (Present_Value) of the control loop is written to the object and property designated by this property.

13.1.1.11 Controlled_Variable_Reference

It indicates the object and property of the light sensor.

13.1.1.12 Controlled_Variable_Value

The current value of the light sensor.

13.1.1.13 Setpoint_Reference

It indicates the object and property of the setpoint. It is always empty, indicating that the setpoint is contained in the Setpoint property.

13.1.1.14 Setpoint

The value of the current setpoint in lux.

13.1.1.15 Action

The action is DIRECT (0).

13.1.1.16 Priority_For_Writing

This property provides a priority to be used to write to the Manipulated_Variable_Reference that is controlled by this loop.

Valid values are between 1 and 16.

13.1.1.17 Occupancy_Variable_Reference

It indicates the object and property of the occupancy sensor.

13.1.1.18 Occupancy_Variable_Value

The current value of the occupancy sensor.

13.1.1.19 Mode

The current mode of the Room Light Control.

Name	Value	Description
Disabled	0	The Room Light Control is disabled
Enabled	1	The Room Light Control is enabled

[13.1.1.20 Hold_Time](#)

The hold time in seconds used for the occupancy state. The occupancy state remains in the occupied state for the hold time when the value of Occupancy_Variable_Value changes to be unoccupied.

Valid values are between 0 and 2 400 seconds (40 minutes) with an interval of 10 seconds.

[13.1.1.21 Ignore_Time](#)

The ignore time in seconds used for the occupancy state. Once the occupancy state changes to unoccupied the ignore time is used to temporarily ignore the occupied change of the Occupancy_Variable_Value.

Valid values are between 0 and 2 400 seconds (40 minutes) with an interval of 10 seconds.

[13.1.1.22 Occupied_Level](#)

The output light intensity when entering the occupied state.

[13.1.1.23 Unoccupied_Level](#)

The output light intensity when entering the unoccupied state.

[13.1.1.24 Step_Value](#)

The maximum value in percent that the Room Light Control can change its output per second, during constant light control.

Valid values are between 0 and 100 % with an interval of 0.5 %.

[13.1.1.25 Lamp_2_Offset](#)

The offset between the primary and the secondary output.

Valid values are between 0 and 100 % with an interval of 0.5 %.

[13.1.1.26 Lamp_2_Limit](#)

The value where the secondary output becomes the same as the primary output.

Valid values are between 0 and 100 % with an interval of 0.5 %.

[13.1.1.27 Override](#)

The value of the output override in percent (0 - 100%). When the value is NaN the override is disabled.

[13.1.1.28 Auto_Mode](#)

Inactive (0): The Room Light Control is currently overridden or is disabled.

Active (1): The Room Light Control is not currently overridden and is active.

13.1.1.29 Occupancy_State

Indicates the current occupancy state of the Room Light Control.

Inactive (0): The occupancy state is unoccupied.

Active (1): The occupancy state is occupied.

13.1.1.30 Manipulated_Variable_Value

The value of the manipulated variable, used internally to track a value for Manipulated_Variable_Reference.

13.1.1.31 Controlled_Variable_Value

The value of the controlled variable, used internally to track a value for Controlled_Variable_Reference.

13.1.1.32 Command

Allows to execute commands on the Room Light Control.

13.1.1.32.1 NO COMMAND (1)

No command is executed.

13.1.1.32.2 START DEMAND RESPONSE (2)

Starts the demand response (power limit).

13.1.1.32.3 STOP DEMAND RESPONSE (3)

Stops the demand response (power limit).

13.1.1.32.4 START DAYLIGHT HARVESTING (4)

Starts the daylight harvesting.

13.1.1.32.5 STOP DAYLIGHT HARVESTING (5)

Stops the daylight harvesting.

13.1.1.32.6 START OVERRIDE (6)

Starts the override.

13.1.1.32.7 STOP OVERRIDE (7)

Stops the override.

13.1.1.32.8 ENABLE (8)

Enable the Room Light Control.

13.1.1.32.9 DISABLE (9)

Disable the Room Light Control.

13.1.1.32.10 OCCUPIED MODE COMMAND ENABLE NO COMMAND (10)

Disables occupied mode related command execution.

13.1.1.32.11 OCCUPIED MODE COMMAND ENABLE UNOCCUPIED COMMAND (11)

Allows only the unoccupied command execution.

13.1.1.32.12 OCCUPIED MODE COMMAND ENABLE OCCUPIED COMMAND (12)

Allows only the occupied command execution.

13.1.1.32.13 OCCUPIED MODE COMMAND ENABLE ALL COMMAND (13)

Allows occupied and unoccupied command execution.

13.1.1.32.14 OCCUPIED MODE COMMAND ENABLE WARNING COMMAND (14)

Allows only the warning command execution.

13.1.1.32.15 OCCUPIED MODE COMMAND ENABLE ALL COMMAND WARNING (15)

Allows occupied command and warning command execution.

13.1.1.32.16 OCCUPIED MODE UNOCCUPIED (16)

Sets the occupied mode to unoccupied.

13.1.1.32.17 OCCUPIED MODE OCCUPIED (17)

Sets the occupied mode to occupied.

13.1.1.32.18 OCCUPIED MODE UNOCCUPIED UNOCCUPIED COMMAND (18)

Sets the occupied mode to unoccupied and executes the unoccupied command.

13.1.1.32.19 OCCUPIED MODE OCCUPIED OCCUPIED COMMAND (19)

Sets the occupied mode to occupied and executes the occupied command.

13.1.1.32.20 OCCUPIED MODE UNOCCUPIED NO COMMAND (20)

Sets the occupied mode to unoccupied without executing occupied mode commands.

13.1.1.32.21 OCCUPIED MODE OCCUPIED NO COMMAND (21)

Sets the occupied mode to occupied without executing occupied mode commands.

13.1.1.32.22 OCCUPIED MODE UNOCCUPIED WARNING COMMAND (22)

Sets the occupied mode to unoccupied and executes the warning command.

13.1.1.32.23 START TEST MODE (23)

Starts test mode.

13.1.1.32.24 STOP TEST MODE (24)

Stops test mode.

13.1.1.32.25 OCCUPANCY SENSORS ENABLE (25)

Enables occupancy sensors.

13.1.1.32.26 OCCUPANCY SENSORS DISABLE (26)

Disables occupancy sensors.

13.1.1.32.27 OCCUPANCY SENSORS DISABLE UNOCCUPIED (27)

Disables occupancy sensors with unoccupied behavior.

13.1.1.32.28 OCCUPANCY SENSORS DISABLE OCCUPIED (28)

Disables occupancy sensors with occupied behavior.

13.1.1.32.29 START CIRCADIAN (29)

Starts circadian rhythm control.

13.1.1.32.30 STOP CIRCADIAN (30)

Stops circadian rhythm control.

13.1.1.33 *Setpoint_Occupied*

The setpoint of desired light illuminance of the room when the occupancy state is occupied.

Valid values are between 0 and 65 534 lux with an interval of 1 lux.

13.1.1.34 *Setpoint_Unoccupied*

The setpoint of desired light illuminance of the room when the occupancy state is unoccupied. It is also possible to use a relative setpoint to the Setpoint_Occupied, for this a negative is used that will represent a percentage to reduce from the Setpoint_Occupied.

Valid values are between 0 and 65 534 lux with an interval of 1 lux. When relative setpoint is used the valid values are between -100 and 0 % with an interval of 1 %.

13.1.1.35 *Deadband_Setpoint*

The dead band in lux used by the current setpoint.

Valid values are between 0 and 65 534 lux with an interval of 1 lux.

13.1.1.36 *Warning_Time*

The warning time in seconds used for the occupancy state. The Warning_Command is executed before the Unoccupied_Command which is executed after the Warning_Time, when the value of Occupancy_Variable_Value changes to be unoccupied.

Valid values are between 0 and 2 400 seconds (40 minutes) with an interval of 10 seconds.

13.1.1.37 *Warning_Command_Command, Occupied_Command_Command and Unoccupied_Command_Command*

Name	Value	Description
Disabled	0	The command is disabled.
Direct Value	1	Direct light value.
Max Level	2	Recall Max Level.
Off	3	Off.
Min Level	4	Recall Min Level.
Recall Scene	5	Recall Scene.
Start Daylight Harvesting	6	Start the Room Light Control daylight harvesting.
Stop Daylight Harvesting	7	Stop the Room Light Control daylight harvesting.
Relinquish	8	Relinquish the priority.
Commanders	9	Execute commanders logic.
Start Circadian	10	Start circadian rhythm control.
Stop Circadian	11	Stop circadian rhythm control.
Blink Warning	12	The lights blink off briefly and return to their previous level. Intended for the Warning Command.

13.1.1.38 *Warning_Command_Value, Occupied_Command_Value and Unoccupied_Command_Value*

Name	Value Range	Unit
Disabled	0	
Direct Value	0 - 100	Percent
Max Level		
Off		
Min Level		
Recall Scene	0 - 15	Scene number
Start Daylight Harvesting		
Stop Daylight Harvesting		
Relinquish		
Commanders	0 - 255	Vendor specific
Start Circadian		
Stop Circadian		
Blink Warning		

[13.1.1.39 Minimum_Intensity](#)

Minimum intensity of the Room Light Control output.

Valid values are between 0 and 100 % with an interval of 0.5 %.

[13.1.1.40 Maximum_Intensity](#)

Maximum intensity of the Room Light Control output.

Valid values are between 0 and 100 % with an interval of 0.5 %.

[13.1.1.41 Daylight_Harvesting_Active](#)

This property indicates whether the daylight harvesting control is currently active or not.

Name	Value	Description
Inactive	0	The daylight harvesting control is currently inactive.
Active	1	The daylight harvesting control is currently active.

[13.1.1.42 Occupied_Mode](#)

The current occupancy mode.

Unoccupied (0): The Room Light Control is unoccupied.

Occupied (1): The Room Light Control is occupied.

[13.1.1.43 Override_Timeout](#)

The override timeout in seconds. The override remains active for this period.

Valid values are between 0 and 72 000 seconds (20 hours) with an interval of 300 seconds. When the value is zero, this functionality is disabled.

Override is automatically initiated when the output of a Room Light Control is modified from another source than the Room Light Control itself. For example, this allows a DALI button or a BACnet group command to temporarily override the output.

While the override timeout is active, Daylight Harvesting is suspended. When the override timeout ends, daylight harvesting is un-suspended and if it is in unoccupied state, the Warning and the Unoccupied commands are executed.

13.1.1.44 Demand_Response_Value

The demand response allows limiting the illuminance of the room. A negative value reduces the illuminance of the room by this value in percentages. A positive value increases the illuminance of the room by this value in percentages. When daylight harvesting is active, the setpoint is decreased or increased by this value in percentages.

Valid values are between -100 and 100 percent with an interval of 1 percent.

13.1.1.45 Demand_Response_State

The current state of the demand response.

Inactive (0): The demand response is inactive.

Active (1): The demand response is active.

13.1.1.46 Occupied_Mode_Command_Enable

It allows enabling and disabling the execution of the occupancy command when Occupied_Mode is modified.

Name	Value	Description
NO_COMMAND	0	No command is executed.
UNOCCUPIED_COMMAND	1	Only unoccupied command is executed.
OCCUPIED_COMMAND	2	Only occupied command is executed.
ALL	3	Both Unoccupied and Occupied commands are executed.
WARNING_COMMAND	4	Only warning command is executed.
ALL_COMMAND_WARNING	5	Occupied and warning commands are executed.

13.1.1.47 *Override_Only_On_Exact_Output*

When disabled (0), any command that reaches an output of the Room Light Control starts the Override Time, including commands that reach the output only through lamps shared with other groups. When enabled (1), the Override Time starts only for commands sent directly to a configured output; commands from other groups sharing the same lamps only stop the daylight harvesting. It is disabled by default.

Value	Description
0	Disabled. Any command reaching an output, including through shared lamps, starts the Override Time.
1	Enabled. Only commands sent directly to a configured output start the Override Time.

13.1.1.48 *Linked_Occupancy_Target_RLC_1, Linked_Occupancy_Target_RLC_2, Linked_Occupancy_Target_RLC_3 and Linked_Occupancy_Target_RLC_4*

Linked Occupancy lets this Room Light Control hold up to four other Room Light Controls while its own occupancy state is occupied. Each property selects one target Room Light Control.

Value	Description
0	No link.
1 - 64	The target Room Light Control number. Up to 64 on the DALION-4 model and up to 16 on the DALION-1 model.

A Room Light Control cannot link to itself; such a value is rejected.

13.1.1.49 *Linked_Occupancy_Target_RLC_Mode_Mask*

Selects how each linked target is held. The mask has one bit per linked target. A target whose bit is cleared is held in Warning Hold; a target whose bit is set is held in the Occupied state.

Linked target	Value to add to the mask
Linked_Occupancy_Target_RLC_1	1
Linked_Occupancy_Target_RLC_2	2
Linked_Occupancy_Target_RLC_3	4
Linked_Occupancy_Target_RLC_4	8

For example, a mask of 5 (1 + 4) holds the first and third targets in the Occupied state, while the second and fourth are held in Warning Hold. A mask of 0 holds all targets in Warning Hold.

13.1.1.50 Profile_Occupied_Mode and Profile_Unoccupied_Mode

A Room Light Control Profile is a shared, named set of behaviour parameters (occupancy commands, hold, ignore and warning times, and daylight harvesting settings) that a Room Light Control can follow instead of its own parameters. Up to 32 profiles are shared by all Room Light Controls.

A Room Light Control can follow one profile while its Occupied Mode is occupied (Profile_Occupied_Mode) and another while it is unoccupied (Profile_Unoccupied_Mode).

Value	Description
0	Profile_Occupied_Mode: no profile, the Room Light Control uses its own parameters. Profile_Unoccupied_Mode: use the same profile as Profile_Occupied_Mode.
1 - 32	The profile number.

13.1.1.51 Profile_Occupied_Mode_Name and Profile_Unoccupied_Mode_Name

The name of the profile assigned by Profile_Occupied_Mode and Profile_Unoccupied_Mode respectively. The value is an empty string when no profile is assigned.

13.1.1.52 External_Occupancy_Timeout

The auto-expiry timeout, in minutes, for the External_Occupancy and External_Warning_Hold slots. A writer must re-assert its slot within this time or the slot clears itself.

When the value is zero, the timeout is disabled and the slots stay set until cleared.

13.1.1.53 External_Occupancy_1, External_Occupancy_2, External_Occupancy_3 and External_Occupancy_4

Four external occupancy writer slots allow external systems to report occupancy to the Room Light Control over BACnet. Each external system owns one slot, so slots do not overwrite one another.

Value	Description
0	The slot does not report occupancy.
1	The slot reports occupancy.

The Room Light Control is held occupied while any slot is set.

13.1.1.54 External_Warning_Hold_1, External_Warning_Hold_2, External_Warning_Hold_3 and External_Warning_Hold_4

Four external warning-hold writer slots allow external systems to hold the Room Light Control over BACnet. Each external system owns one slot, so slots do not overwrite one another.

Value	Description
0	The slot does not hold.
1	The slot holds the Room Light Control.

The Room Light Control stays held while any slot is set.

13.1.1.55 External_Light_Level

The Room Light Control light level in lux, written over BACnet for daylight harvesting instead of using a DALI light sensor. While set, the value overrides the light sensors.

The value expires with the External_Occupancy_Timeout, where a writer must re-write the value within the timeout or it clears itself. When the timeout is zero, the value stays set until cleared.

Valid values are between 0 and 65 534 lux. Writing a negative value clears the external light level, and the DALI light sensors apply again. The property reads -1.0 when no external light level is set.

13.1.1.56 Circadian_Active

Indicates whether circadian rhythm control is currently active for the Room Light Control.

Inactive (0): Circadian rhythm control is not active.

Active (1): Circadian rhythm control is active.

13.1.1.57 Dynamic_Color_Recipe_Graph

Selects the Dynamic Color Recipe graph followed by the Room Light Control.

Value	Description
0	No graph.
1 - 16	The Dynamic Color Recipe graph number. Up to 16 on the DALION-4 model and up to 4 on the DALION-1 model.

13.1.1.58 Dynamic_Color_Recipe_Graph_Name

The name of the graph selected by Dynamic_Color_Recipe_Graph. The value is an empty string when no graph is assigned.

13.1.1.59 Dynamic_Color_Recipe_Graph_Enabled

Enables or disables the graph selected by Dynamic_Color_Recipe_Graph. Because the enabled state belongs to the graph, this affects every Room Light Control that uses the same graph.

Inactive (0): The graph is disabled.

Active (1): The graph is enabled.

Writing this property is refused when no graph is assigned to the Room Light Control.

13.1.1.60 Circadian_Point_1_Brightness to Circadian_Point_8_Brightness

Read or write the brightness of the eight support points of the graph selected by Dynamic_Color_Recipe_Graph. Because the support points belong to the graph, writing them affects every Room Light Control that uses the same graph.

The value is a percentage from 0 to 100, in steps of 0.5 %.

A masked (unused) support point reads as NaN. The property also reads as NaN when no graph is assigned to the Room Light Control. Writing NaN or a negative value masks the support point.

Writing a value greater than 100 is refused. Writing is refused when no graph is assigned to the Room Light Control.

13.1.1.61 Circadian_Point_1_Kelvin to Circadian_Point_8_Kelvin

Read or write the color temperature, in Kelvin, of the eight support points of the graph selected by Dynamic_Color_Recipe_Graph. Because the support points belong to the graph, writing them affects every Room Light Control that uses the same graph.

A masked (unused) support point reads as NaN. The property also reads as NaN when no graph is assigned to the Room Light Control, or when the graph is not a color temperature graph. Writing NaN or a negative value masks the support point.

Writing is refused when the value maps outside the valid color temperature range, when the graph is not a color temperature graph, or when no graph is assigned to the Room Light Control.

The Circadian_Active, Dynamic_Color_Recipe_Graph, Dynamic_Color_Recipe_Graph_Name, Dynamic_Color_Recipe_Graph_Enabled, Circadian_Point_1_Brightness to Circadian_Point_8_Brightness and Circadian_Point_1_Kelvin to Circadian_Point_8_Kelvin properties are available only when circadian rhythm support is enabled.

14 Analog Value - Lamp, Group, and Channel

14.1 Analog Value - Lamp, Group, and Channel

Some lamp, group and channel parameters are also available via these objects. Those values are also available via the proprietary properties of the associated Analog Output object.

14.1.1 Lamp, Group, Channel

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	REAL	R
Description	28	CharacterString	R
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Reliability	103	BACnetReliability	R
Out_Of_Service	81	BOOLEAN	W
Units	117	BACnetEngineeringUnits	R
Min_Pres_Value	69	REAL	R
Max_Pres_Value	65	REAL	R
Resolution	106	REAL	R

14.1.1.1 Object_Identifier

The object instance number is represented as 1TCLLI.

- “1” the prefix is the number 1.
- “T” is the type of object as follows, 0 for DALI lamps, 1 for DALI groups and 2 for DALI channels.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “LL” represents for lamp objects, numbers 00-63, for group objects, numbers 00-15 and for channel objects, number 00.
- “II” represents the parameter, numbers 00-99.

Number	Name
00	Colour_Temp
01	Colour_XYC_X
02	Colour_XYC_Y
03	Colour_TC_TC

14.1.1.2 *Object_Name*

The name of the parameter with the name of the Analog Output as a prefix.

14.1.1.3 *Object_Type*

ANALOG VALUE (2).

14.1.1.4 *Present_Value*

The value of the parameter.

14.1.1.4.1 *Colour_Temp*

The colour temperature in Kelvin (K).

Same value as the property Colour_Temp of the associated Analog Output object.

14.1.1.4.2 *Colour_XYC_X*

The x-coordinate for xy-Coordinate.

Same value as the property Colour_XYC_X of the associated Analog Output object.

14.1.1.4.3 *Colour_XYC_Y*

The y-coordinate for xy-Coordinate.

Same value as the property Colour_XYC_Y of the associated Analog Output object.

14.1.1.4.4 *Colour_TC_TC*

The colour temperature in 1 Mirek.

Same value as the property Colour_TC_TC of the associated Analog Output object.

14.1.1.5 *Description*

A description of the object.

14.1.1.6 *Status_Flags*

This property indicates the general “reliability” of the object.

14.1.1.7 *Reliability*

This property indicates whether the operation of the object is reliable. The values are as follows:

- NO_FAULT_DETECTED (0) - No fault has been detected.

14.1.1.8 Out_Of_Service

It indicates whether the algorithm that the object represents is in service.

14.1.1.9 Units, Min_Pres_Value, Max_Pres_Value, Resolution

The Units, Min_Pres_Value, Max_Pres_Value and Resolution for the Present_Value.

Name	Units	Min_Pres_Value	Max_Pres_Value	Resolution
Colour_Temp	degrees-kelvin	15.26	1000000	REAL EPSILON
Colour_XYC_X	no-units	0	65534	1
Colour_XYC_Y	no-units	0	65534	1
Colour_TC_TC	no-units	1	65534	1

For Colour_Temp the Min_Pres_Value and Max_Pres_Value represent the Physical Warmest and Physical Coolest of the assigned lamp.

15 BACnet Interface - Analog Value - Input Device

15.1 Analog Value - Input Device

Some DALI input device parameters are also available via these objects. Those values are also available via the proprietary properties of the associated Binary Input object.

15.1.1 Input Device

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	REAL	R
Description	28	CharacterString	R
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Reliability	103	BACnetReliability	R
Out_Of_Service	81	BOOLEAN	W
Units	117	BACnetEngineeringUnits	R
Min_Pres_Value	69	REAL	R
Max_Pres_Value	65	REAL	R
Resolution	106	REAL	R

15.1.1.1 Object_Identifier

The object instance number is represented as 5CLLII.

- “5” the prefix is the number 5.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “LL” represents the DALI input device, numbers 00-31.
- “II” represents the parameter, numbers 00-99.

Number	Name
00	Allowed_Command
01	Buttons_Allowed_Command
02	Occupancy_Hold_Time
03	Light_Hystereris
04	Light_Hystereris_Minimum
05	Light_Raw_Value
06	Light_Calibration_Measured_Value
07	Light_Calibration_Sensor_Value

15.1.1.2 *Object_Name*

The name of the parameter with the name of the Binary Input as a prefix.

15.1.1.3 *Object_Type*

ANALOG VALUE (2).

15.1.1.4 *Present_Value*

The value of the parameter.

15.1.1.4.1 *Allowed_Command*

Same value as the property Allowed_Command of the associated Binary Input object.

15.1.1.4.2 *Buttons_Allowed_Command*

Same value as the property Buttons_Allowed_Command of the associated Binary Input object.

15.1.1.4.3 *Occupancy_Hold_Time*

Same value as the property Occupancy_Hold_Time of the associated Binary Input object.

15.1.1.4.4 *Light_Hystereris*

Same value as the property Light_Hystereris of the associated Binary Input object.

15.1.1.4.5 *Light_Hystereris_Minimum*

Same value as the property Light_Hystereris_Minimum of the associated Binary Input object.

15.1.1.4.6 *Light_Raw_Value*

Same value as the property Light_Raw_Value of the associated Binary Input object.

15.1.1.4.7 *Light_Calibration_Measured_Value*

Same value as the property Light_Calibration_Measured_Value of the associated Binary Input object.

15.1.1.4.8 *Light_Calibration_Sensor_Value*

Same value as the property Light_Calibration_Sensor_Value of the associated Binary Input object.

15.1.1.5 Description

A description of the object.

15.1.1.6 Status_Flags

This property indicates the general “reliability” of the object.

15.1.1.7 Reliability

This property indicates whether the operation of the object is reliable. The values are as follows:

- NO_FAULT_DETECTED (0) - No fault has been detected.

15.1.1.8 Out_Of_Service

It indicates whether the algorithm that the object represents is in service.

15.1.1.9 Units, Min_Pres_Value, Max_Pres_Value, Resolution

The Units, Min_Pres_Value, Max_Pres_Value and Resolution for the Present_Value.

Name	Units	Min_Pres_Value	Max_Pres_Value	Resolution
Allowed_Command	no-units	0	3	1
Buttons_Allowed_Command	no-units	0	3	1
Occupancy_Hold_Time	seconds	1	2540	1
Light_Hystereris	percent	0	25	1
Light_Hystereris_Minimum	no-units	0	255	1
Light_Raw_Value	no-units	0		1
Light_Calibration_Measured_Value	luxes	0		1
Light_Calibration_Sensor_Value	no-units	0		1

16 BACnet Interface - Analog Value - Room Light Control

16.1 Analog Value - Room Light Control

Some Room Light Control parameters are also available via these objects. Those values are also available via the proprietary properties of the associated Loop object.

16.1.1 Room Light Control

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	REAL	R
Description	28	CharacterString	R
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Reliability	103	BACnetReliability	R
Out_Of_Service	81	BOOLEAN	W
Units	117	BACnetEngineeringUnits	R
Min_Pres_Value	69	REAL	R
Max_Pres_Value	65	REAL	R
Resolution	106	REAL	R

16.1.1.1 Object_Identifier

The object instance number is represented as 9CRRIL.

- “9” the prefix is the number 9.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “RR” represents the Room Light Control, numbers 00-15.
- “IL” represents the parameter, numbers 00-99.

Number	Name
00	Value
01	Controlled_Variable_Value
02	Setpoint
03	Hold_Time
04	Ignore_Time
05	Occupied_Level
06	Unoccupied_Level
07	Step_Value
08	Lamp_2_Offset
09	Lamp_2_Limit
10	Override
11	Setpoint_Occupied
12	Setpoint_Unoccupied
13	Deadband_Setpoint
14	Warning_Time
15	Warning_Command_Value
16	Occupied_Command_Value
17	Unoccupied_Command_Value
18	Minimum_Intensity
19	Maximum_Intensity
20	Override_Timeout
21	Demand_Response_Value

16.1.1.2 *Object_Name*

The name of the parameter with the name of the Room Light Control as a prefix.

16.1.1.3 *Object_Type*

ANALOG VALUE (2).

16.1.1.4 *Present_Value*

The value of the parameter.

16.1.1.4.1 *Value*

The light intensity in percentages for the Room Light Control.

Same value as the property Present_Value of the associated Loop object.

16.1.1.4.2 [Controlled_Variable_Value](#)

The current value of the light sensor.

Same value as the property `Controlled_Variable_Value` of the associated Loop object.

16.1.1.4.3 [Setpoint](#)

The value of the current setpoint in lux.

Same value as the property `Setpoint` of the associated Loop object.

16.1.1.4.4 [Hold_Time](#)

The hold time in seconds used for the occupancy state. The occupancy state remains in the occupied state for the hold time when the value of `Occupancy_Variable_Value` changes to be unoccupied.

Valid values are between 0 and 2 400 seconds (40 minutes) with an interval of 10 seconds.

Same value as the property `Hold_Time` of the associated Loop object.

16.1.1.4.5 [Ignore_Time](#)

The ignore time in seconds used for the occupancy state. Once the occupancy state changes to unoccupied the ignore time is used to temporarily ignore the occupied change of the `Occupancy_Variable_Value`.

Valid values are between 0 and 2 400 seconds (40 minutes) with an interval of 10 seconds.

Same value as the property `Ignore_Time` of the associated Loop object.

16.1.1.4.6 [Occupied_Level](#)

The output light intensity when entering the occupied state.

Same value as the property `Occupied_Level` of the associated Loop object.

16.1.1.4.7 [Unoccupied_Level](#)

The output light intensity when entering the unoccupied state.

Same value as the property `Unoccupied_Level` of the associated Loop object.

16.1.1.4.8 [Step_Value](#)

The maximum value in percent that the Room Light Control can change its output per second, during constant light control.

Valid values are between 0 and 100 % with an interval of 0.5 %.

Same value as the property `Step_Value` of the associated Loop object.

16.1.1.4.9 [Lamp_2_Offset](#)

The offset between the primary and the secondary output.

Valid values are between 0 and 100 % with an interval of 0.5 %.

Same value as the property Lamp_2_Offset of the associated Loop object.

[16.1.1.4.10Lamp_2_Limit](#)

The value where the secondary output becomes the same as the primary output.

Valid values are between 0 and 100 % with an interval of 0.5 %.

Same value as the property Lamp_2_Limit of the associated Loop object.

[16.1.1.4.11Override](#)

The value of the output override in percent (0 - 100%). When the value is NaN the override is disabled.

Same value as the property Override of the associated Loop object.

[16.1.1.4.12Setpoint_Occupied](#)

The setpoint of desired light illuminance of the room when the occupancy state is occupied.

Valid values are between 0 and 65 534 lux with an interval of 1 lux.

Same value as the property Setpoint_Occupied of the associated Loop object.

[16.1.1.4.13Setpoint_Unoccupied](#)

The setpoint of desired light illuminance of the room when the occupancy state is unoccupied. It is also possible to use a relative setpoint to the Setpoint_Occupied, for this a negative is used that will represent a percentage to reduce from the Setpoint_Occupied.

Valid values are between 0 and 65 534 lux with an interval of 1 lux. When relative setpoint is used the valid values are between -100 and 0 % with an interval of 1 %.

Same value as the property Setpoint_Unoccupied of the associated Loop object.

[16.1.1.4.14Deadband_Setpoint](#)

The dead band in lux used by the current setpoint.

Valid values are between 0 and 65 534 lux with an interval of 1 lux.

Same value as the property Deadband_Setpoint of the associated Loop object.

[16.1.1.4.15Warning_Time](#)

The warning time in seconds used for the occupancy state. The Warning_Command is executed before the Unoccupied_Command which is executed after the Warning_Time, when the value of Occupancy_Variable_Value changes to be unoccupied.

Valid values are between 0 and 2 400 seconds (40 minutes) with an interval of 10 seconds.

Same value as the property Warning_Time of the associated Loop object.

16.1.1.4.16Warning_Command_Value, Occupied_Command_Value, Unoccupied_Command_Value

Name	Value Range	Unit
Disabled	0	
Direct Value	0 - 100	Percent
Max Level		
Off		
Min Level		
Recall Scene	0 - 15	Scene number
Start Daylight Harvesting		
Stop Daylight Harvesting		
Relinquish		

Same value as the property Warning_Command_Value, Occupied_Command_Value or Unoccupied_Command_Value of the associated Loop object.

16.1.1.4.17Minimum_Intensity

Minimum intensity of the Room Light Control output.

Valid values are between 0 and 100 % with an interval of 0.5 %.

Same value as the property Minimum_Intensity of the associated Loop object.

16.1.1.4.18Maximum_Intensity

Maximum intensity of the Room Light Control output.

Valid values are between 0 and 100 % with an interval of 0.5 %.

Same value as the property Maximum_Intensity of the associated Loop object.

16.1.1.4.19Override_Timeout

The override timeout in seconds used when unoccupied. The override remains active for this time, before returning to the unoccupied state.

Valid values are between 0 and 72 000 seconds (20 hours) with an interval of 300 seconds.

Same value as the property Override_Timeout of the associated Loop object.

16.1.1.4.20Demand_Response_Value

The demand response allows limiting the illuminance of the room. A negative value reduces the illuminance of the room by this value in percentages. A positive value increases the illuminance of the room by this value in percentages. When daylight harvesting is active, the setpoint is decreased or increased by this value in percentages.

Valid values are between -100 and 100 percent with an interval of 1 percent.

Same value as the property Demand_Response_Value of the associated Loop object.

16.1.1.5 Description

A description of the object.

16.1.1.6 Status_Flags

This property indicates the general “reliability” of the object.

16.1.1.7 Reliability

This property indicates whether the operation of the object is reliable. The values are as follows:

- NO_FAULT_DETECTED (0) - No fault has been detected.

16.1.1.8 Out_Of_Service

It indicates whether the algorithm that the object represents is in service.

16.1.1.9 Units, Min_Pres_Value, Max_Pres_Value, Resolution

The Units, Min_Pres_Value, Max_Pres_Value and Resolution for the Present_Value.

Name	Units	Min_Pres_Value	Max_Pres_Value	Resolution
Value	no-units	0	REAL MAXIMUM	REAL EPSILON
Controlled_Variable_Value	no-units	0	REAL MAXIMUM	REAL EPSILON
Setpoint	no-units	0	REAL MAXIMUM	REAL EPSILON
Hold_Time	seconds	0	2400	10
Ignore_Time	seconds	0	2400	10
Occupied_Level	no-units	0	REAL MAXIMUM	REAL EPSILON
Unoccupied_Level	no-units	0	REAL MAXIMUM	REAL EPSILON
Step_Value	percent	0	100	0.5
Lamp_2_Offset	percent	0	100	0.5
Lamp_2_Limit	percent	0	100	0.5
Override	percent	0	1	REAL EPSILON
Setpoint_Occupied	luxes	0	65534	1
Setpoint_Unoccupied	no-units	-100	65534	1
Deadband_Setpoint	luxes	0	65534	1
Warning_Time	seconds	0	2400	10
Warning_Command_Value	no-units	0	255	1
Occupied_Command_Value	no-units	0	255	1
Unoccupied_Command_Value	no-units	0	255	1
Minimum_Intensity	percent	0	100	0.5
Maximum_Intensity	percent	0	100	0.5
Override_Timeout	seconds	0	72000	300
Demand_Response_Value	percent	-100	100	1

17 BACnet Interface - Multi-State Value Object - Value of Lamp, Group and Channel

17.1 Multi-State Value Object - Value of Lamp, Group and Channel

Some Lamps, Groups and Channels parameters are also available via these objects. Those values are also available via the properties values of the associated Analog Output object.

As Multi-State Value Present_Value starts at one (1), see the Present Value section since the values of this object may be different from the associated property values of the Analog Output object.

17.1.1 Lamp, Group and Channel

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	Unsigned	W
Description	28	CharacterString	W
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Out_Of_Service	81	BOOLEAN	R
Number_Of_States	74	Unsigned	R
State_Text	110	BACnetARRAY[N]of CharacterString	R

17.1.1.1 Object_Identifier

The object instance number is represented as TCLLII.

- “T” is the type of object as follows, 0 for DALI lamps, 1 for DALI groups and 2 for DALI channels.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “LL” represents for lamp objects, numbers 00-63, for group objects, numbers 00-15 and for channel objects, number 00.
- “II” represents the parameter, numbers 00-99.

Number	Name
00	Reliability

17.1.1.2 *Object_Name*

The name of the parameter with the name of the associated Analog Output object as a prefix.

17.1.1.3 *Object_Type*

MULTISTATE_VALUE (19).

17.1.1.4 *Present_Value*

The value of the parameter.

17.1.1.4.1 *Reliability*

The current reliability of the associated lamp, group or channel.

Represents the value of the property Reliability of the associated Analog Output object.

Name	Value	Description
NO_FAULT_DETECTED	1	No fault has been detected
NO_OUTPUT	7	No DALI device is connected to the output object
UNRELIABLE_OTHER	8	An error has been reported by the DALI lamp
COMMUNICATION_FAILURE	13	DALI device is offline

17.1.1.5 *Description*

Description of the associated Analog Output object.

Writing this value updates the associated Analog Output object name.

18 BACnet Interface - Multi-State Value Object - Room Light Control

18.1 Multi-State Value Object - Room Light Control

Some Room Light Control parameters are also available via these objects. Those values are also available via the values of the associated Loop object.

As Multi-State Value Present_Value starts at one (1), see the Present Value section since the values of this object may be different from the associated property values of the Loop object.

18.1.1 Room Light Control

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	Unsigned	W
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Out_Of_Service	81	BOOLEAN	W
Number_Of_States	74	Unsigned	R
State_Text	110	BACnetARRAY[N]of CharacterString	R

18.1.1.1 Object_Identifier

The object instance number is represented as 9CRRIL.

- “9” the prefix is the number 9.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “RR” represents the Room Light Control, numbers 00-15.
- “IL” represents the parameter, numbers 00-99.

Number	Name
00	Mode
01	Auto_Mode
02	Occupancy_State
03	Command
04	Warning_Command_Command
05	Occupied_Command_Command
06	Unoccupied_Command_Command
07	Daylight_Harvesting_Active
08	Occupied_Mode
09	Demand_Response_State
10	Occupied_Mode_Command_Enable

18.1.1.2 Object_Name

The name of the parameter with the name of the Room Light Control as a prefix.

18.1.1.3 Object_Type

MULTISTATE_VALUE (19).

18.1.1.4 Present_Value

The value of the parameter.

18.1.1.4.1 Mode

The current mode of the Room Light Control.

Represents the value of the property Mode of the associated Loop object.

Name	Value	Description
Disabled	1	The Room Light Control is disabled
Enabled	2	The Room Light Control is enabled

18.1.1.5 Auto_Mode

Represents the value of the property Auto_Mode of the associated Loop object.

Inactive (1): The Room Light Control is currently overridden or is disabled.

Active (2): The Room Light Control is not currently overridden and is active.

18.1.1.6 Occupancy_State

Indicates the current occupancy state of the Room Light Control.

Represents the value of the property Occupancy_State of the associated Loop object.

Inactive (1): The occupancy state is unoccupied.

Active (2): The occupancy state is occupied.

18.1.1.7 Command

Allows to execute commands on the Room Light Control.

Represents the value of the property Command of the associated Loop object.

18.1.1.7.1 NO COMMAND (1)

No command is executed.

18.1.1.7.2 START DEMAND RESPONSE (2)

Starts the demand response.

18.1.1.7.3 STOP DEMAND RESPONSE (3)

Stops the demand response.

18.1.1.7.4 START DAYLIGHT HARVESTING (4)

Starts the daylight harvesting.

18.1.1.7.5 STOP DAYLIGHT HARVESTING (5)

Stops the daylight harvesting.

18.1.1.7.6 START OVERRIDE (6)

Starts the override.

18.1.1.7.7 STOP OVERRIDE (7)

Stops the override.

18.1.1.7.8 ENABLE (8)

Enables the Room Light Control.

18.1.1.7.9 DISABLE (9)

Disables the Room Light Control.

18.1.1.8 Warning_Command_Command, Occupied_Command_Command and Unoccupied_Command_Command

Represents the value of the properties Warning_Command_Command, Occupied_Command_Command and Unoccupied_Command_Command of the associated Loop object.

Name	Value	Description
Disabled	1	The command is disabled.
Direct Value	2	Direct light value.
Max Level	3	Recall Max Level.
Off	4	Off.
Min Level	5	Recall Min Level.
Recall Scene	6	Recall Scene.
Start Daylight Harvesting	7	Start the Room Light Control daylight harvesting.
Stop Daylight Harvesting	8	Stop the Room Light Control daylight harvesting.
Relinquish	9	Relinquish the priority.

18.1.1.9 Daylight_Harvesting_Active

This property indicates whether the daylight harvesting control is currently active or not.

Represents the value of the property Daylight_Harvesting_Active of the associated Loop object.

Name	Value	Description
Inactive	1	The daylight harvesting control is currently inactive.
Active	2	The daylight harvesting control is currently active.

18.1.1.10 Occupied_Mode

The current occupancy mode.

Represents the value of the property Occupied_Mode of the associated Loop object.

Unoccupied (1): The Room Light Control is unoccupied.

Occupied (2): The Room Light Control is occupied.

18.1.1.11 Demand_Response_State

The current state of the demand response.

Represents the value of the property Demand_Response_State of the associated Loop object.

Inactive (1): The demand response is inactive.

Active (2): The demand response is active.

18.1.1.12 Occupied_Mode_Command_Enable

It allows enabling and disabling the execution of the occupancy command when Occupied_Mode is modified.

Represents the value of the property Occupied_Mode_Command_Enable of the associated Loop object.

Name	Value	Description
NO_COMMAND	1	No command is executed.
UNOCCUPIED_COMMAND	2	Only unoccupied command is executed.
OCCUPIED_COMMAND	3	Only occupied command is executed.
ALL	4	Both Unoccupied and Occupied commands are executed.

[18.1.1.13 Status_Flags](#)

This property indicates the general “reliability” of the object.

[18.1.1.14 Reliability](#)

This property indicates whether the operation of the Present_Value or the operation of the object is reliable. The values are as follows:

- NO_FAULT_DETECTED (0) - No fault has been detected.

[18.1.1.15 Out_Of_Service](#)

It indicates whether the algorithm that the object represents is in service.

19 BACnet Interface - Multi-State Value Object - Commander

19.1 Multi-State Value Object - Commander

Some Commander parameters are also available via these objects.

19.1.1 Commander

List of available properties for these objects.

Property Identifier	Property ID	Property Datatype	Conformance Code
Object_Identifier	75	BACnetObjectIdentifier	R
Object_Name	77	CharacterString	R
Object_Type	79	BACnetObjectType	R
Present_Value	85	Unsigned	W
Status_Flags	111	BACnetStatusFlags	R
Event_State	36	BACnetEventState	R
Out_Of_Service	81	BOOLEAN	W
Number_Of_States	74	Unsigned	R
State_Text	110	BACnetARRAY[N]of CharacterString	R

19.1.1.1 Object_Identifier

The object instance number is represented as 7CCCI.

- “7” the prefix is the number 7.
- “C” represents the DALI channel number, 0, 1, 2, or 3.
- “CC” represents the Commander, numbers 00-15.
- “II” represents the parameter, numbers 00-99.

Number	Name
00	Command

19.1.1.2 Object_Name

The name of the parameter with the name of the Commander as a prefix.

19.1.1.3 Object_Type

MULTISTATE_VALUE (19).

19.1.1.4 Present_Value

The value of the parameter.

19.1.1.4.1 *Command*

Allows to execute commands on the Commander.

19.1.1.4.1.1 NO COMMAND (1)

No command is executed.

19.1.1.4.1.2 START (2)

Starts the Commander.

19.1.1.4.1.3 STOP (3)

Stops the Commander.

19.1.1.5 *Status_Flags*

This property indicates the general “reliability” of the object.

19.1.1.6 *Reliability*

This property indicates whether the operation of the Present_Value or the operation of the object is reliable. The values are as follows:

- NO_FAULT_DETECTED (0) - No fault has been detected.

19.1.1.7 *Out_Of_Service*

It indicates whether the algorithm that the object represents is in service.

20 BACnet Interface - ReinitializeDevice Service

20.1 ReinitializeDevice Service

The password corresponds to the factory default IP network hostname.

The following Reinitialized State of Device are supported: COLDSTART, WARMSTART, and ACTIVATE_CHANGES.

21 BACnet Interface - DeviceCommunicationControl Service

21.1 DeviceCommunicationControl Service

The password corresponds to the factory default IP network hostname.

22 BACnet PICS Bottom

BACnet Data Link Layer Options:

- ☒ BACnet IP, (Annex J)
- ☒ BACnet IP, (Annex J), Foreign Device

Device Address Binding:

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.) ☐ Yes ☒ No

Networking Options:

Not available.

Character Sets Supported:

- ☒ ISO 10646 (UTF-8/ANSI X3.4)

Gateway Options:

This product allows bidirectional communication between DALI devices (Digital Addressable Lighting Interface, IEC 62386) and BACnet systems.