Date: June 30, 2020
Vendor Name: LOYTEC electronics GmbH
Product Name: L-DALI BACnet DALI Controller
Product Model Number: LDALI-ME201-U/LDALI-ME204-U/LDALI-ME204/LDALI-E201-U, LDALI-PLC2/PLC4
Applications Software Version: V7
Firmware Revision: 7.2
BACnet Protocol Revision: 135-2016 (1.15)

Product Description:

This product implements a DALI-BACnet gateway. It allows mapping of up to four DALI channels, that is, 4 x 64 DALI devices to BACnet objects. It provides Analog Output objects to control each DALI device as well as Analog Output objects to control DALI groups and channels. Further, Multi-State Output objects are used to map DALI scenes. Analog Input objects provide the feedback value for DALI devices, groups and channels as well as group and channel status information. Additional Analog Input objects and Binary Input objects provide lux level and occupancy information from DALI sensors. Loop objects provide constant light controller functionality. The device also implements BACnet Schedule, Calendar, Trend Log, and Notification Class objects. The product is equipped with a BACnet/IP and – depending on the product model – a BACnet MS/TP communication interface. The LDALI-PLC2/PLC4 models have 2 or 4 DALI channels and add a programmable logic kernel that is engineered by L-STUDIO.

BACnet Standardized Device Profile (Annex L):

BACnet Building Controller (B-BC)

BACnet Interoperability Building Blocks Supported (Annex K):

Data Sharing – ReadProperty-A (DS-RP-A)
Data Sharing – ReadProperty-B (DS-RP-B)
Data Sharing – ReadPropertyMultiple-A (DS-RPM-A)
Data Sharing – ReadPropertyMultiple-B (DS-RPM-B)
Data Sharing – WriteProperty-A (DS-WP-A)
Data Sharing – WriteProperty-B (DS-WP-B)
Data Sharing – WritePropertyMultiple-B (DS-WPM-B)
Data Sharing – COV-A (DS-COV-A)
Data Sharing – COV-B (DS-COV-B)
Data Sharing – COVP-A (DS-COVP-A)
Data Sharing – COVP-B (DS-COVP-B)
Data Sharing – COV Unsolicited-B (DS-COVU-B)
Alarm and Event – Notification Internal-B (AE-N-I-B)
Alarm and Event – ACK-B (AE-ACK-B)
Alarm and Event – Alarm Summary-B (AE-ASUM-B)
Alarm and Event – Alarm Enrollment Summary-B (AE-ESUM-B)
Alarm and Event – Alarm Information-B (AE-INFO-B)
Alarm and Event Management – Configurable Recipient Lists-B (AE-CRL-B)
Scheduling – Internal-B (SCHED-I-B)
Scheduling – External-B (SCHED-E-B)
Trending – Viewing and Modifying Trends Internal-B (T-VMT-I-B)
Trending – Viewing and Modifying Trends External-B (T-VMT-E-B)
Trending – Automated Trend Retrieval-B (T-ATR-B)
Device Management – DynamicDeviceBinding-A (DM-DDB-A)
Device Management – DynamicDeviceBinding-B (DM-DDB-B)
Device Management – DynamicObjectBinding-B (DM-DOB-B)
Device Management – TimeSynchronization-A (DM-TS-A)
Device Management – TimeSynchronization-B (DM-TS-B)
Device Management – UTCTimeSynchronization-A (DM-UTC-A)
Device Management – UTCTimeSynchronization-B (DM-UTC-B)

Device Management – Automatic Time Synchronization-A (DM-ATS-A)
Device Management – DeviceCommunicationControl-B (DM-DCC-B)
Device Management – ReinitializeDevice-B (DM-RD-B)
Device Management – Backup and Restore (DM-BR-B)
Device Management – List Manipulation-B (DM-LM-B)
Device Management – Restart A (DM-R-A)
Device Management – Restart B (DM-R-B)
Device Management – Object Creation and Deletion-B (DM-OCD-B)
Network Management – Foreign Device Registration-A (NM-FDR-A)

Segmentation Capability:

Segmented requests supported, window size: 4
Segmented responses supported, window size: 4

Standard Object Types Supported:

For all the objects below the following apply if not stated otherwise:
   1) Does not support the CreateObject and DeleteObject service
   2) Properties Object_Name, Description support up to 64 characters
   3) Includes the required properties as specified for the object class
   4) All commandable objects support the Priority_Array and Relinquish_Default with 16 freely usable priorities
   5) All analog, binary, multi-state objects support COV subscriptions
   6) No additional writeable properties exist
   7) No proprietary properties exist
   8) No range restrictions exist

Device Object

List of optional properties supported:
Location, Description, Max_Segments_Accepted, APDU_Segment_Timeout, Max_Master[1],
Active_COV_Subscriptions, Configuration_Files, Last_Restore_Time, Backup_Failure_Timeout, Local_Time,
Local_Date, UTC_Offset, Daylight_Saving_Status, Last_Restart_Reason, Time_Of_Device_Restart,
Restart_Notification_Recipients, Time_Synchronization_Recipients, UTC_Time_Synchronization_Recipients,
Time_Synchronization_Interval, Align_Intervals, Interval_Offset, Backup_Preparation_Time,
Restore_Preparation_Time, Restore_Completion_Time, Backup_And_Restore_State

Analog Input

List of optional properties supported:
Description, Device_Type, Reliability, Resolution, Min_Pres_Value, Max_Pres_Value, COV_Increment, Time_Delay[2],
Notification_Class[2], Low_Limit[2], High_Limit[2], Deadband[2], Limit_Enable[2], Event_Enable[2], Acked_Transitions[2],
Notify_Type[2], Event_Time_Stamps[2], Event_Message_Texts[2], Event_Detection_Enable[2], Profile_Name

List of all properties that are writable where not otherwise required by this standard:
Description

List of proprietary properties:

Device_Failure (529)	BIT STRING R	Only present if the object maps to a DALI channel status. One bit for each ballast on the channel (64 bit). Bit is 1 if ballast reports a failure.
Ballast_Failure (530)	BIT STRING R	Only present if the object maps to a DALI channel status. One bit for each ballast on the channel (64 bit). Bit is 1 if ballast reports a ballast failure.

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[1] If device is operated with BACnet MS/TP enabled.
[2] Only for objects mapping to DALI group and channel status and to DALI lux level sensors.

Lamp_Failure (531)	BIT STRING	R	Only present if the object maps to a DALI channel status. One bit for each ballast on the channel (64 bit). Bit is 1 if ballast reports a lamp failure.
Battery_Failure (532)	BIT STRING	R	Only present if the object maps to a DALI channel status. One bit for each ballast on the channel (64 bit). Bit is 1 if ballast reports a battery failure (emergency lights only).
Function_Test_Failure (533)	BIT STRING	R	Only present if the object maps to a DALI channel status. One bit for each ballast on the channel (64 bit). Bit is 1 if ballast reports a function test failure (emergency lights only).
Duration_Test_Failure (534)	BIT STRING	R	Only present if the object maps to a DALI channel status. One bit for each ballast on the channel (64 bit). Bit is 1 if ballast reports a duration test failure (emergency lights only).
Lux_2 (557)	REAL		Only present if the object maps to a DALI sensor. Second light level value reported by the sensor.
Bus_Power (563)	BACnetBinaryPV		Only present if the object maps to a DALI channel status. Active if the internal bus power is active for the channel and inactive if not.
Bus_Power_Failure (564)	BACnetBinaryPV		Only present if the object maps to a DALI channel status. Active if a DALI bus power failure was detected on the channel or inactive if the DALI bus power is present.
Bus_Power_Overload (565)	BACnetBinaryPV		Only present if the object maps to a DALI channel status. Active if the internal DALI bus power failed due to an overload or inactive if the internal DALI bus power is either disabled/not present or working properly.

Analog Output

List of optional properties supported:
Description, Device_Type, Reliability, Resolution, Min_Pres_Value, Max_Pres_Value, COV_Increment, Time_Delay, Notification_Class, Low_Limit, High_Limit, Deadband, Limit_Enable, Event_Enable, Acked_Transitions, Notify_Type, Event_Time_Stamps, Event_Message_Texts, Event_Detection_Enable, Profile_Name

List of all properties that are writable where not otherwise required by this standard:
Description, Max_Pres_Value[3]

List of proprietary properties:

Power_On_Level (512)	REAL	W	Present value of lighting outputs after power on of lighting output. Only present if the object maps to a DALI device.
System_Failure_Level (513)	REAL	W	Present value of lighting outputs if lighting outputs loose communication with L-DALI. Only present if the object maps to a DALI device.
Fade_Time (514)	REAL	W	Amount of time in seconds over which changes to the actual value of the lighting output shall occur ("fading"). Only present if the object maps to a DALI device.
Ramp_Rate (515)	REAL	W	Rate in percent per seconds at which changes to the actual value of the lighting output shall occur ("ramping"). Only present if the object maps to a DALI device.
Min_Level (516)	REAL	W	Minimum possible on-dim-level. Only present if the object maps to a DALI device.
Groups (517)	BIT STRING	W	Group membership information (16 bit, one bit per group). Only present if the object maps to a DALI device.
Nominal_Power (518)	REAL	W	Nominal power of the DALI ballast, 0 for auto detect. Only present if the object maps to a DALI device.
Burn_In_Time (519)	Unsigned	W	Lamp butn-in time. Only present if the object maps to a DALI channel.
Dim_Mode (520)	Unsigned	W	Either 0 for "fading" or 1 for "ramping".

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[3] Only for objects mapping to a DALI device.

On_Delay_Time (521)	Unsigned	W	On delay time in seconds.
Off_Delay_Time (522)	Unsigned	W	Off delay time in seconds.
Warn_Delay (523)	Unsigned	W	Off-warning time in seconds.
Auto_Off_Time (524)	Unsigned	W	Auto-off time in seconds
Auto_Off_Mode (526)	Unsigned	W	"Disable break/restart" (0), "Enable break" (1), "Enable restart" (2), "Enable break/restart" (3)
Elapsed_Active_Time (527)	Unsigned	W	Accumulated time in seconds, which the corresponding DALI lamp was switched on. For groups or channels this gives the maximum time of all lamps in the group/channel. When writing 0 to this property the value is reset. For groups and channels the value for all lamps in the group/channel are reset.
Time_Of_Active_ Time_Reset (528)	DateTime	R	Time and date the Elapsed_Active_Time was last reset.
Colour_Temp (567)	Real	W	Control the color temperature of luminaires with tunable white support

List of any property value range restrictions:

Present_Value:	0 and Min_Level to Max_Pres_Value for objects mapping to a DALI device
Min_Level:	0.1 to Max_Pres_Value
Max_Pres_Value:	Min_Pres_Value to 100
Fade_Time:	0 to 90.51 s
Ramp_Rate:	2.795 to 357.796
Power_On_Level:	0 to 100 (or NaN for "mask")
System_Failure_Level:	0 to 100 (or NaN for "mask")
Dim_Mode:	0 or 1

Binary Input

List of optional properties supported:
Description, Device_Type, Reliability, Polarity, Active_Text, Inactive_Text, Change_Of_State_Time, Change_Of_State_Count, Time_Of_State_Count_Reset, Elapsed_Active_Time, Time_of_Active_Time_Reset, Profile_Name

List of all properties that are writable where not otherwise required by this standard:
Description, Active_Text, Inactive_Text

List of proprietary properties:

Debounce (535)	Unsigned	W	Debouncing time in seconds.
Unoccupied_Delay (536)	Unsigned	W	Occupancy hold time in seconds.
Heartbeat (558)	Unsigned	W	Maximum period of time that expires before the object automatically updates its *Present_Value*.

Accumulator

List of optional properties supported:
Description, Device_Type, Reliability, Value_Change_Time, Value_Before_Change, Value_Set, Pulse_Rate, Time_Delay, Notification_Class, Low_Limit, High_Limit, Limit_Enable, Event_Enable, Acked_Transitions, Notify_Type, Event_Time_Stamps, Event_Message_Texts, Event_Detection_Enable, Profile_Name

List of all properties that are writable where not otherwise required by this standard:
Description

List of proprietary properties:

Debounce (535)	Unsigned	W	Debouncing time in seconds.
Unoccupied_Delay (536)	Unsigned	W	Occupancy hold time in seconds.

List of any property value range restrictions:
None.

Loop

List of optional properties supported:
Description, Reliability, COV_Increment, Profile_Name

List of all properties that are writable where not otherwise required by this standard:
Description

List of proprietary properties:

Occupancy_Variable_Reference (537)	ObjPropRef	W	Specifies the object and property used to set the Occupancy_Variable property (538) of the Loop object.
Occupancy_Variable (538)	Unsigned	W	Occupancy input for constant light controller. 0 for unoccupied, 1 for occupied.
Mode (539)	Unsigned	W	Constant light controller mode: "disabled" (0), "regulator" (1), "control" (2), "DALI" (3), "presence" (4), "regulator w/o occupancy" (5), "control w/o occupancy" (6), "manual on/auto off" (7)
Hold_Time (540)	Unsigned	W	Occupancy hold time in seconds.
Ignore_Time (541)	Unsigned	W	Occupancy ignore time after switching off in seconds.
Occupied_Level (542)	REAL	W	Output level in presence mode, occupied state.
Unoccupied_Level (543)	REAL	W	Output level in presence mode, unoccupied state.
Step_Value (544)	REAL	W	Step value for the constant light controller algorithm in percent.
On_Hysteresis (545)	REAL	W	Constant light controller algorithm hysteresis for switching lights on in percent.
Off_Hysteresis (546)	REAL	W	Constant light controller algorithm hysteresis for switching lights off in percent.
Off_Delay (547)	Unsigned	W	Constant light controller off delay in seconds.
On_Delay (548)	Unsigned	W	Constant light controller on delay in seconds.
Lamp_2_Offset (550)	REAL	W	Maximum offset between the output for the primary light band and the secondary light band.
Lamp_2_Limit (551)	REAL	W	Dim level at which the output for the secondary light band becomes identical to the primary output.
Override (560)	REAL	W	Can be used to manually override the constant light controller.
Auto_Mode (561)	REAL	W	Current state of the constant light controller.
Occupancy_State (562)	REAL	W	Occupancy state calculated by the constant light controller.
Lux_Upper_Limit (566)	REAL	W	Upper lux limit for light controller with linked sunblind controller in museum mode.
Sblnd_Hyst (568)	REAL	W	Hysteresis for linked sunblind controller in museum mode.

Multi-State Output

List of optional properties supported:
Description, Device_Type, Reliability, State_Text, Event_Message_Texts, Event_Detection_Enable, Profile_Name

List of all properties that are writable where not otherwise required by this standard:
Description, State_Text

Notification Class Object, Schedule Object, Calendar Object

Supports the CreateObject and DeleteObject service.
List of optional properties supported (as applies):
Description, Weekly_Schedule, Exception_Schedule

Event Enrollment Object

Supports the CreateObject and DeleteObject service.
List of optional properties supported (as applies):
Description, Event_Message_Texts, Profile_Name

Trend Log Object

Supports the CreateObject and DeleteObject service.
List of optional properties supported:
Description, Start_Time, Stop_Time, Log_DeviceObjectProperty, Log_Interval, COV_Resubscription_Interval, Client_COV_Increment, Align_Intervals, Interval_Offset, Trigger, Notification_Threshold, Records_Since_Notification, Last_Notify_Record, Notification_Class, Event_Enable, Acked_Transitions, Notify_Type, Event_Time_Stamps, Event_Message_Texts, Event_Detection_Enable, Reliability

File Object

List of optional properties supported:
Description, Record_Count, Profile_Name

Object limit: 1 File object. This object is used for configuration backup and restore.

Data Link Layer Options:

☑ BACnet IP, (Annex J)
☑ BACnet IP, (Annex J), Foreign Device
☐ ISO 8802-3, Ethernet (Clause 7)
☑ MS/TP master (Clause 9), baud rate(s): 9600, 19200, 38400, 76800, 115200
☐ MS/TP slave (Clause 9), baud rate(s):
☐ Point-To-Point, EIA 232 (Clause 10), baud rate(s):
☐ Point-To-Point, modem, (Clause 10), baud rate(s):
☐ LonTalk, (Clause 11), medium:

Device Address Binding:

Static device address binding is supported.

Networking Options:

☐ Router, Clause 6
☐ Annex H, BACnet Tunneling Router over IP
☐ BACnet/IP Broadcast Management Device (BBMD)
☐ Registrations by Foreign Devices

Character Sets Supported:

The device is configurable for one of the following character sets at a time. It does not support them simultaneously.

☑ ANSI X3.4/UTF-8   ☐ IBM™/Microsoft™ DBCS   ☑ ISO 8859-1
☑ ISO 10646 (UCS-2)   ☐ ISO 10646 (UCS-4)   ☐ JIS C 6226

If this product is a communication gateway, describe the non-BACnet equipment/network(s) that the gateway supports:

The L-DALI provides BACnet/DALI gateway functionality. DALI is a protocol defined in IEC 62386. Its main field of application is the lighting industry.

Additional Information and Contact:

Further Information, a detailed User Manual and firmware updates can be obtained from our website *http://www.loytec.com*.

For information and technical support please contact us at the following address:

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