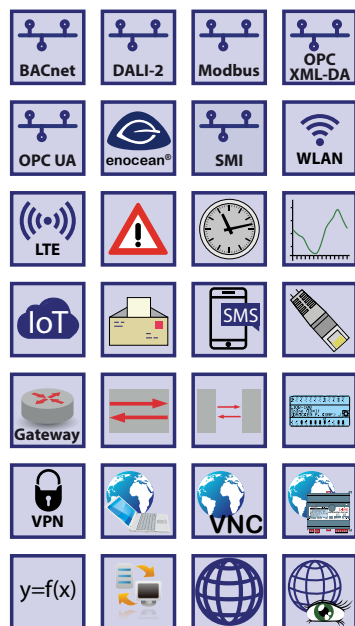
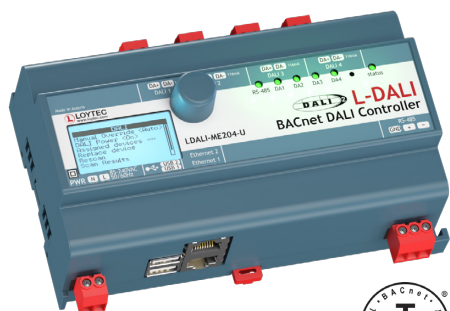


BACnet/DALI Controller

LDALI-ME201-U, LDALI-ME204-U

Datasheet #89021224

- ✓ BACnet
- ✓ DALI
- CEA-709
- ✓ OPC
- ✓ Modbus



L-DALI Controllers are multifunctional devices combining constant light control, sunblind control and gateway functions between DALI (Digital Addressable Lighting Interface) and BACnet or Modbus systems. With Alarming, Scheduling, Trending and e-mail notification (AST™) the L-DALI Controller is a perfect solution for DALI lighting systems and for a smooth DALI integration into BACnet or Modbus networks.

DALI Network Interface

L-DALI Controllers act as a DALI-Master in the DALI network and can interact with DALI-2 multi-sensors and buttons in Multi-Master mode. The LDALI-ME204-U device is equipped with 4 independent DALI channels. The LDALI-ME201-U device is equipped with 1 DALI channel. Up to 64 DALI or DALI-2 based luminaires per DALI channel can be controlled individually or via 16 groups. All luminaires are monitored for lamp or ballast defect. In addition up to 64 DALI-2 input devices are supported per DALI channel. Each input device can be equipped with push buttons, sliders, occupancy and light sensors.

Built-In DALI Bus Power Supply

All L-DALI models come with a built-in DALI bus power supply. The LDALI-ME201-U can supply its DALI channel with a guaranteed supply current of 230 mA, the LDALI-ME204-U can supply 116 mA per channel. In case of the LDALI-ME204-U an external DALI bus power supply can be added to top up the supply current to 232 mA. External power supplies are available for up to four DALI channels. The internal DALI bus power can be switched on and off via web interface or LCD UI. Thanks to the switching power supply, these devices can handle input voltages from 85 – 240 V AC, 50 / 60 Hz.

BACnet Connectivity

The L-DALI Controllers feature connectivity in BACnet networks via BACnet/IP, BACnet/SC or BACnet MS/TP. They also provide data exchange through Global Connections and support comprehensive AST™ functionality (Alarming, Scheduling, and Trending). Full L-WEB integration is supported as well. The L-DALI Controllers are equipped with two Ethernet ports including a built-in Ethernet switch.

IoT Integration

The IoT function (Node.js) allows connecting the system to almost any cloud service, either for uploading historical data to analytics services, telemetry using MQTT, delivering alarm messages to alarm processing services or operating parts of the control system over a cloud service (e.g., scheduling based on Web calendars or booking systems). Processing Internet information such as weather data in forecast-based control is also possible. Finally, the JavaScript kernel also allows implementing serial protocols to non-standard equipment in primary plant control.

Local Operation and Override

The L-DALI Controllers come with a built-in backlit display (128x64) and a jog dial for local operation and override. Using the local operation, maintenance tasks (DALI device replacement, burn-in mode, etc.) can be executed without the need of any software tool.

Constant Light Control

The integrated Constant Light Controller works with DALI and with BACnet devices. It supports various lighting control strategies, presence and lux level based. Several parameters can be used to configure the Constant Light Controller for almost any use case.

Sunblind Control with Constant Light Control Interaction

The integrated Sunblind Controller application allows intelligent controlling of

LDALI-ME201-U, LDALI-ME204-U

blinds connected via SMI (requires LSMI-804). It offers effective sun and anti-glare protection through active slat control and slat adjustment according to the sun position. Energy efficiency is ensured by linking room occupancy with sun protection. If a room is unoccupied, the L-DALI Controller opens or closes the sunblinds depending on the thermal requirements. This allows for instance to use the heat of the sun for heating in winter while in summer, the heat from the sun is reduced by the closed blinds to reduce the cooling load.

Optionally, the sunblind and light control applications of a room or an area can be linked together. As both applications control the light available in the room this holistic approach assures maximum comfort and energy efficiency.

In addition to the constant light and sunblind control, any mathematical calculation and function or logical operation (Boolean algebra) can be created on the device and process all available data points.

Device Configuration via Tool or Web Interface

The device configuration, commissioning, and parameterization is done either with the configuration tool software or via the integrated web server.

EnOcean, OPC and Modbus

EnOcean sensors and buttons can be integrated via the optional L-ENO EnOcean interface. To use the L-DALI with an existing SCADA solution all run-time values and parameters can be accessed via BACnet, OPC (XML/DA and UA) and Modbus TCP. With a LIC-MOD5 license up to 5 devices (e.g. L-STAT) can be connected via Modbus RTU (RS-485). 5, 10 or 15 devices can be connected via Modbus RTU (RS-485), the actual number of supported devices is dependent on the activated licenses (LIC-MOD5, LIC-MOD10 or both).

Advanced DALI Functions

- **DALI Sensors**

The L-DALI Controllers support the integration of DALI-2 multi-sensors for presence detection and light level recognition. In addition to the LOYTEC DALI-2 multi-sensors, DALI-2 sensors of many well-known manufacturers can be used. For asset tracking in office buildings with the LOYTEC multi-sensors (LDALI-MS2-BT / LDALI-MS4-BT), a LIC-ASSET license is required.

- **DALI Buttons**

For manual operation, DALI-2 push button couplers, like the LDALI-BM2, DALI-2 operation panels and IR remote controls can be integrated into the system. Their functionality can be configured individually. In addition to controlling lighting via DALI (dimming, scene recall, etc.) and sunblinds via SMI (up, down, etc.), button press events can be propagated in the building network, triggering other, non-lighting related building automation functions. Support of feedback feature for pushbutton instances according to IEC 62386-332 is provided.

- **DALI Relay Modules**

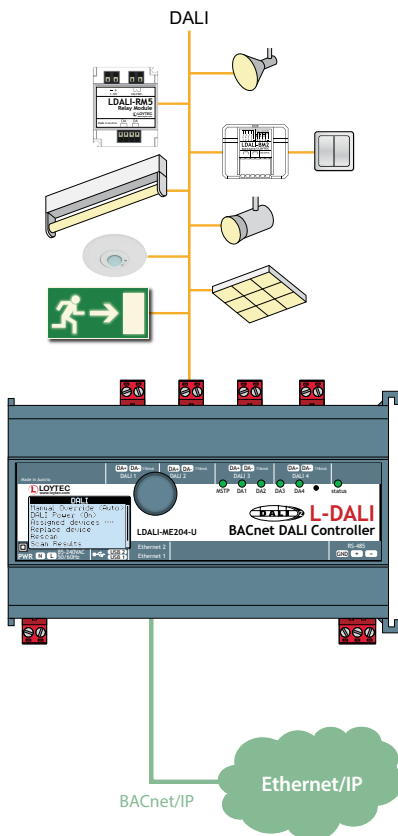
Standard loads in the power grid can be controlled via DALI using DALI relay modules, like the LDALI-RM5, LDALI-RM6 and LDALI-RM8.

- **DALI Color Control**

The L-DALI allows controlling DALI luminaires with color control functionality (DT8). Both, tunable white (Tc) and full RGB color control (RGBWAF and xy-coordinate) are supported. Light color can either be changed automatically, via manual operation (e.g. buttons) or via the network.

- **Auto Burn-In for Fluorescent Lamps**

Fluorescent lamps must be operated about 100 hours with 100 % brightness before they may be dimmed. This burn-in process is monitored by L-DALI for



LDALI-ME201-U, LDALI-ME204-U

each lamp. After 100 hours burn-in time, the lamp's constant light control is enabled.

- **Automatic Test of Emergency Lighting Systems**

In DALI emergency lighting systems based on IEC 62386-202, L-DALI can be used for testing the system. The results can be logged.

- **Collection of Important Operational Parameters**

For maximum transparency in the lighting system, L-DALI can record the operating hours of each lamp and also the energy consumption (calculated).

- **DALI Device Replacement made easy**

Defective DALI ballasts can easily be replaced directly on the L-DALI Controller (LCD and jog dial) or via the web interface. No software tool is necessary.

Smooth DALI Integration into BACnet and Modbus Networks

The L-DALI Controller maps information from the DALI network to BACnet objects or Modbus registers that are used to control DALI ballasts or to display operating states.

BACnet Interface

The following BACnet server objects are supported:

- Analog Output objects to control DALI ballasts, groups, and channels
- Multi-State Output objects for scene control of DALI groups and channels
- Analog Input objects providing feedback from DALI ballast, groups, and channels
- Analog Input objects providing status information from DALI groups and channels
- Accumulator objects providing estimated energy usage of DALI groups and channels
- Multi-State Output objects to issue commands (start/stop emergency test or burn-in, change color temperature, etc.) to DALI ballasts, groups and channels
- Analog Input objects providing battery status of emergency ballasts, groups
- Analog Input objects providing lux level information from supported DALI sensors (LDALI-MS2: additionally humidity and temperature information is provided)
- Binary Input objects providing occupancy information from supported DALI sensors
- Loop objects providing constant light controller functionality
- Binary Input objects providing button information from supported DALI buttons
- Various objects to control sunblinds

All data points are available on the web server in a tree structure and can be displayed and set via a web browser.

Features

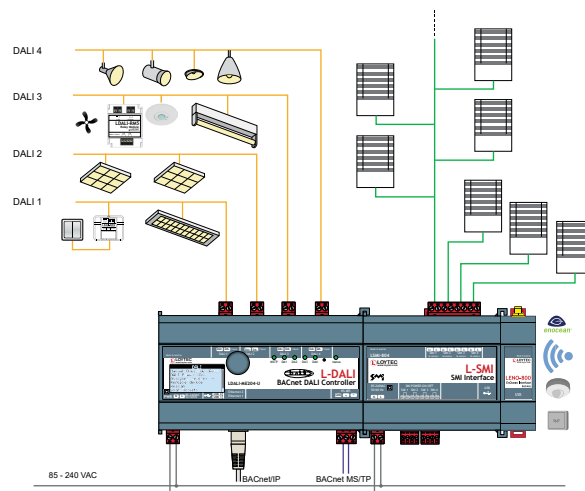
- DALI integration into BACnet networks
- Supports up to 64 DALI ballasts and 16 DALI groups per DALI channel
- Supports up to 64 input devices overall per channel
- Up to 16 DALI sensors per DALI channel are supported
- Up to 64 DALI button modules per DALI channel are supported
- Integrated DALI bus power supply
- Manual operation using the jog dial and local access to information about device status and data points in clear text and symbols
- 128x64 graphic display with backlight
- Built-in web server for device configuration
- Test and assignment of DALI devices on the web interface
- Replacement of DALI devices without additional software tools via LCD and jog dial
- Supports the control of standard loads in the power grid via LDALI-RM5, LDALI-RM6 or LDALI-RM8 Relay Modules
- Integrated Constant Light Controller
- Integrated Sunblind Controller
- Supports DALI-2 devices (drivers and input devices)
- DALI-2 certified (compliant with IEC 62386-101 and IEC 62386-103)
- Support DALI color control (DT8 tunable white & full color control)
- Supports lamp burn-in mode
- Supports periodic testing of DALI emergency lights

LDALI-ME201-U, LDALI-ME204-U

- Integrated DALI Protocol Analyzer
- Compliant with ANSI/ASHRAE 135-2012 and ISO 16484-5:2012 standard
- Supports BACnet/IP, BACnet/SC or BACnet MS/TP
- BACnet Client Function (Write Property, Read Property, COV Subscription)
- B-BC (BACnet Building Controller) functionality, BTL certified
- Alarming, Scheduling, and Trending (AST™) locally or embedded in L-WEB (building management)
- Node.js support for easy IoT integration (e.g. Google calendar, MQTT, Alexa & friends, multimedia equipment,...)
- Event-driven e-mail notification
- Supports Local and Global Connections
- Stores customized graphical pages
- Visualization of customized graphical pages through LWEB-900 (Building Management), LWEB-803 (Monitoring and Control), or LWEB-802 (Web Browser)
- Stores user-defined project documentation
- Dual Ethernet/IP interface
- Built-in OPC XML-DA and OPC UA server
- Modbus TCP (Master or Slave)
- Supports SMI (Standard Motor Interface) through LSMI-804
- Connection to EnOcean wireless devices via LENO-80x Interface
- Supports WLAN through LWLAN-800 Interface
- Supports LTE through LTE-800 Interface
- Supports RS-232 through LRS232-802 Interface
- Modbus RTU/ASCII for 5 devices (LIC-MOD5 required), 10 devices (LIC-MOD10 required) or 15 devices (LIC-MOD5 and LIC-MOD10 required)
- Configurable Bluetooth beacons and services: indoor navigation, asset tracking (requires LIC-ASSET license) and access to LWEB-900 room control solution

Specifications

Type	LDALI-ME201-U	LDALI-ME204-U
Dimensions (mm)	159 x 100 x 75 (L x W x H), DIM035	
Installation	DIN rail mounting following DIN 43880, top hat rail EN 50022	
Power supply	85-240 V AC, 50/60 Hz, typ. 9W (4W + 5W DALI)	85-240 V AC, 50/60 Hz, typ. 14W (4W + 4 x 2.5W DALI)
Operating conditions	0 °C to 40 °C, 10 – 90 % RH, noncondensing, degree of protection: IP40, IP20 (terminals)	
DALI channels	1	4
Integrated DALI bus power supply (per channel)	16 VDC 230 mA guaranteed supply current*** 250 mA max. supply current	16 VDC 116 mA guaranteed supply current*** 125 mA max. supply current
Certificates	DALI-2	DALI-2
Interfaces	2 x Ethernet (100Base-T): OPC XML-DA, OPC UA, BACnet/IP*, BACnet/SC*, Modbus TCP, HTTP, FTP, SSH, HTTPS, Firewall, VNC, SNMP 1 x RS-485 (ANSI TIA/EIA-485): BACnet MS/TP* or Modbus RTU/ASCII (Master or Slave)** 2 x USB-A: WLAN (needs LWLAN-800), EnOcean (needs LENO-80x), SMI (needs LSMI-804), LTE (needs LTE-800) * Either BACnet/IP, BACnet/SC or BACnet MS/TP ** Requires LIC-MOD5/LIC-MOD10 software license	
Tools	L-INX Configurator and configuration via web interface	



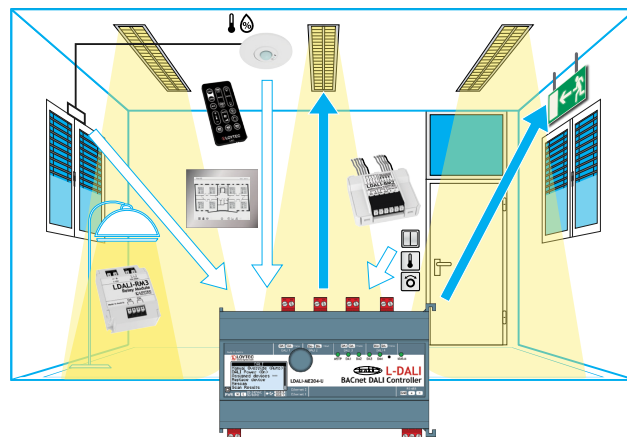
***With high DALI traffic (e.g. during DALI-scan) increased current consumption may occur depending on the devices connected. Therefore, according to IEC62386-101 it is recommended to take an additional current of at least 20% for dynamic processes into account in system design.

BACnet/DALI Controller

LDALI-ME201-U, LDALI-ME204-U

Resource limits			
DALI ballasts per DALI channel	64	BACnet server objects	1 000 per channel
DALI groups per DALI channel	16	BACnet client mappings	1 000
DALI sensors per DALI channel	16	BACnet scheduler objects	100
DALI button modules per DALI channel	64	BACnet calendar objects	25
Scene control	16 scenes per DALI group	BACnet notification classes	32
Math objects	100	Trend logs	512 (13 000 000 entries, ≈ 200 MB)
Alarm logs	10	Data points in trend log	1 000
OPC data points	10 000	E-mail templates	100
Connections (Local/Global)	2 000 / 250	Modbus data points	2 000
SMI devices (per channel)	16	Number of EnOcean devices	100
SMI devices (maximum)	64	EnOcean data points	1 000
Number of L-WEB clients	32 (simultaneously)		

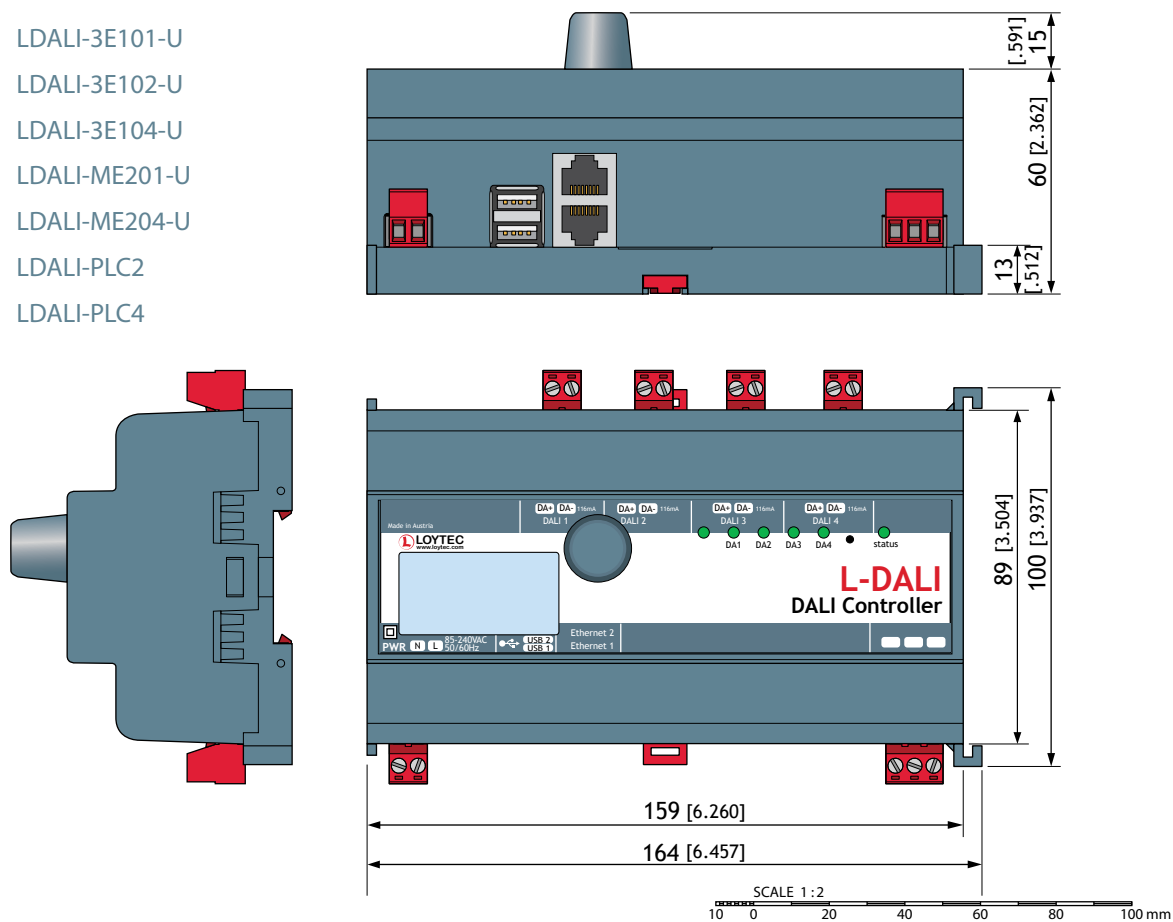
Order number	Product description
LDALI-ME201-U	BACnet/DALI Controller, 1 DALI channel, integrated DALI power supply
LDALI-ME204-U	BACnet/DALI Controller, 4 DALI channels, integrated DALI power supply
LIC-ASSET	Add-on Software License to activate asset tracking (for LDALI-ME20x-U, LDALI-3E10x-U, LDALI-PLCx, LROC-400, LROC-401, LIOB-AIR20, LIOB-591)
LIC-MOD5	Add-on license to enable 5 Modbus devices
LIC-MOD10	Add-on license to enable 10 Modbus devices
LDALI-PWR2-U	DALI power supply unit for 2 DALI channels
LDALI-PWR4-U	DALI power supply unit for 4 DALI channels
LDALI-MS2	DALI-2 multi-sensor (presence detection, illuminance sensor, IR receiver, temperature sensor,
LDALI-MS2-BT	DALI multi-sensor (presence detection, illuminance sensor, IR receiver, temperature sensor, humidity sensor, 3 digital inputs, Bluetooth), up to 12 m mounting height
LDALI-MS4-BT	DALI multi-sensor (presence detection, illuminance sensor, IR receiver, temperature sensor, humidity sensor, 3 digital inputs, Bluetooth, flat lense), up to 5 m mounting height
LDALI-BM2	Quadruple DALI pushbutton coupler
LDALI-RM5	DALI Relay Module 10 A, Analog Interface 1 – 10 V
LDALI-RM6	DALI Relay Module 10 A, Analog Interface 1 – 10 V, "spud-mount"
LDALI-RM8	DALI Relay Module, 8-channel
LENO-800	EnOcean Interface 868 MHz Europe
LENO-801	EnOcean Interface 902 MHz USA/Canada
LENO-802	EnOcean Interface 928 MHz Japan
LWLAN-800	Wireless LAN Interface IEEE 802.11 bgn
LSMI-804	Standard Motor Interface for 64 motors, 4 SMI channels via USB
LTE-800	LTE Interface
LRS232-802	USB to 2 x RS-232 Interface



Dimensions of the devices in mm and [inch]

DIM035

- LDALI-3E101-U
- LDALI-3E102-U
- LDALI-3E104-U
- LDALI-ME201-U
- LDALI-ME204-U
- LDALI-PLC2
- LDALI-PLC4



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