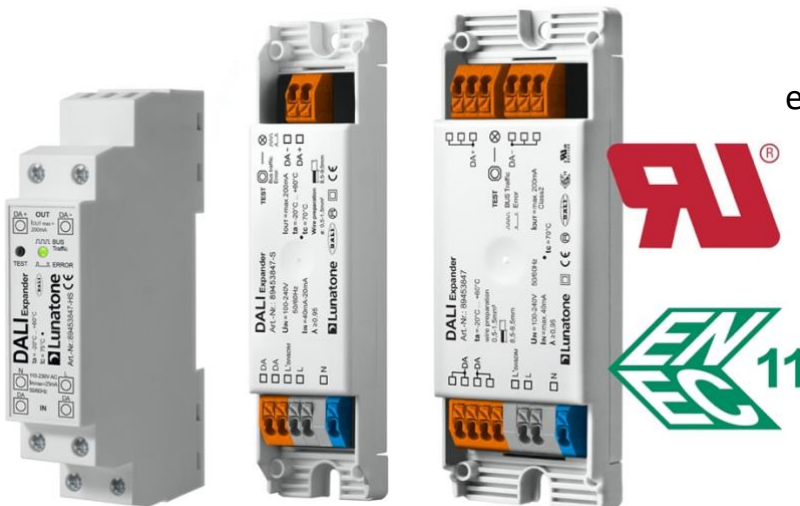# Lunatone

DALI Expander

Datasheet

DALI System Extension

device for simple DALI circuit
expansion with integrated Bus
power supply

Art. Nr. 89453847
Art. Nr. 89453847-S
Art. Nr. 89453847-HS

DALI Expander DALI System Extension

Overview

- Device for simple DALI circuit expansion
- Control of several DALI-devices via one DALI-address
- For the superordinate DALI circuit the DALI expander acts as a DALI EVG (DALI IN) with a single address
- Output (DALI OUT) with DALI power supply (200mA) for the supply of DALI EVG's and DALI control modules
- Forwarding commands received at the input (DALI IN) to the output (DALI OUT) broadcast

- Alternative control options of the DALI-output circuit via Switch&Dim-input (Broadcast)
- Galvanic separation between DALI-circuits
- Available for dinrail mouning (for integration in protection class II devices) or as independent control gear (for remote ceiling or integration in luminaires)

Specification, Characteristics

type	DALI Expander		
article number	89453847	89453847-S	89453847-HS

input: L, N

input type	supply, mains- voltage	
marking terminals	L, N	
input voltage range	100Vac … 240Vac	110Vac … 230Vac
max. input supply current	40mA (@120Vac), 20mA (@240Vac)	
input supply frequency	50Hz / 60Hz	
max. power consumption	5,3W	
startup time	250ms	

input: DA, DA

input type	DALI control input
marking terminals	DA, DA
input voltage range	9,5V … 22,5V
max. current consumption DALI	2mA

input: L', N

input type	SwitchDim - control input	-
marking terminals	L', N	-
input voltage range	230Vac	-
input supply frequency	50Hz/60Hz	-

control impulse length min.	40ms	-
control impulse length long press	500ms	-

output: DA+, DA-

output type	DALI supply
marking terminals	DA+, DA-
input voltage range	12Vdc … 20,5Vdc
guaranteed DALI supply current	200mA
open circuit proof	yes
short circuit proof	yes

insulation data:

impulse voltage category	II
pollution degree	2
rated insulation voltage	250V
insulation DALI-output (DA+,DA-) / supply (L,N) DALI-input / DALI output(DA+, DA-) DALI-input / supply (L,N)	reinforced isolation
insulation test voltage DALI-output/mains	3000Vac

environmental conditions:

storing and transportation temperature	-20°C … +75°C
operational ambient temperature	-20°C … +60°C
rel. humidity, none condensing	15% … 90%

general data:

dimensions (l x w x h)	120mm x 41mm x 22mm	120mm x 30mm x 22mm	98mm x 17,5mm x 56mm
mounting	remote ceiling integration in class II devices		dinrail integration in class II devices
rated max. temperature tc	70°C		75°C
expected life time @tc	50.000 h		
protection class	II in intended use		
protection degree housing	IP40		IP40
protection degree terminals	IP20		IP20

terminals:

connection type	spring terminal connector	screw connector
wire size solid core	0,5 … 1,5 mm^2 (AWG20 … AWG16)	0,5 … 2,5 mm^2 (AWG20 … AWG14)
Wire size stranded wired	0,5 … 1,5 mm^2 (AWG20 … AWG16)	0,5 … 2,5 mm^2 (AWG20 … AWG14)
wire size using wire end ferrule	0,25 … 1 mm^2	0,25 … 1,5 mm^2
stripping length	8,5 … 9,5mm / 0,33 … 0,37inch	7 mm / 0,27 inch
locking torque	-	0,5Nm
release of wire	push button	open screw
standards:		
DALI	EN 62386-101	

EMC	EN 61547 EN 50015 / IEC CISPR15		
safety	EN 61347-2-11 EN 61347-1		
markings	ENEC-11, cURus, CE	CE	CE
UL file number	E501360	-	-
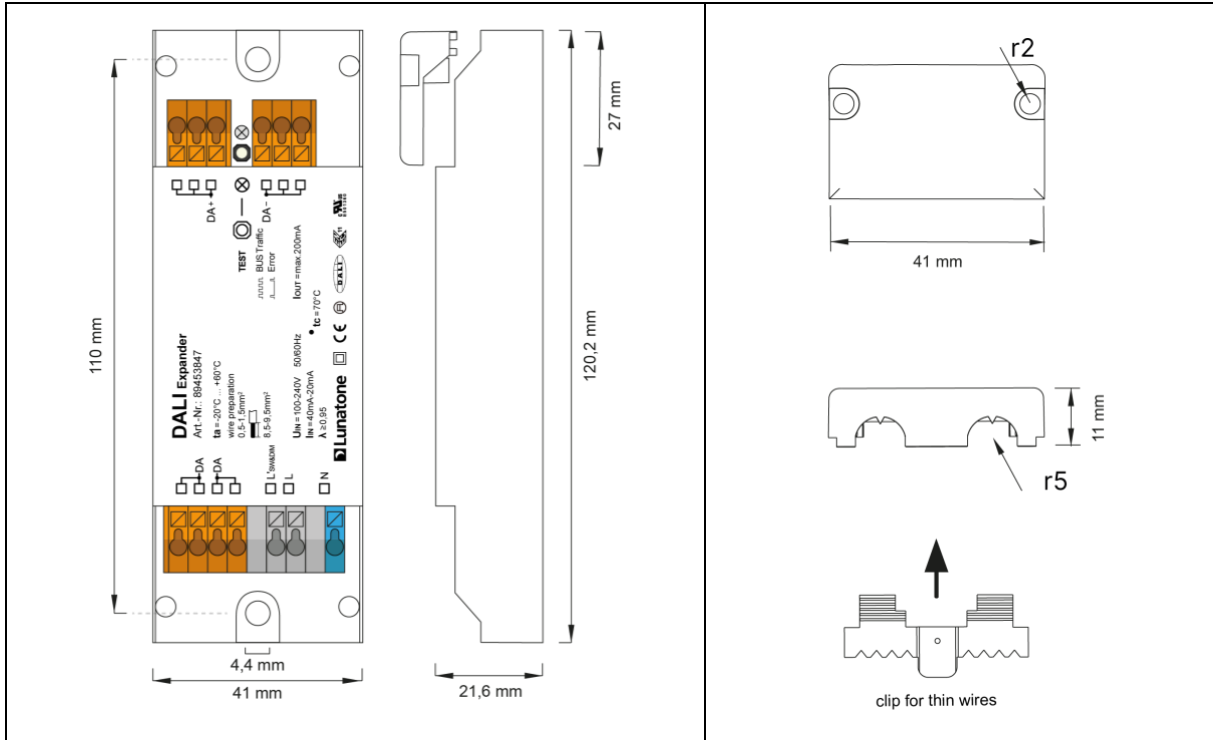
dimensions DALI Expander Art.Nr.: 89453847	standard strain relief cover for 120x41x22mm
dimensions DALI Expander (S-type) Art.Nr.: 89453847-S	standard strain relief cover for 120x30x22mm
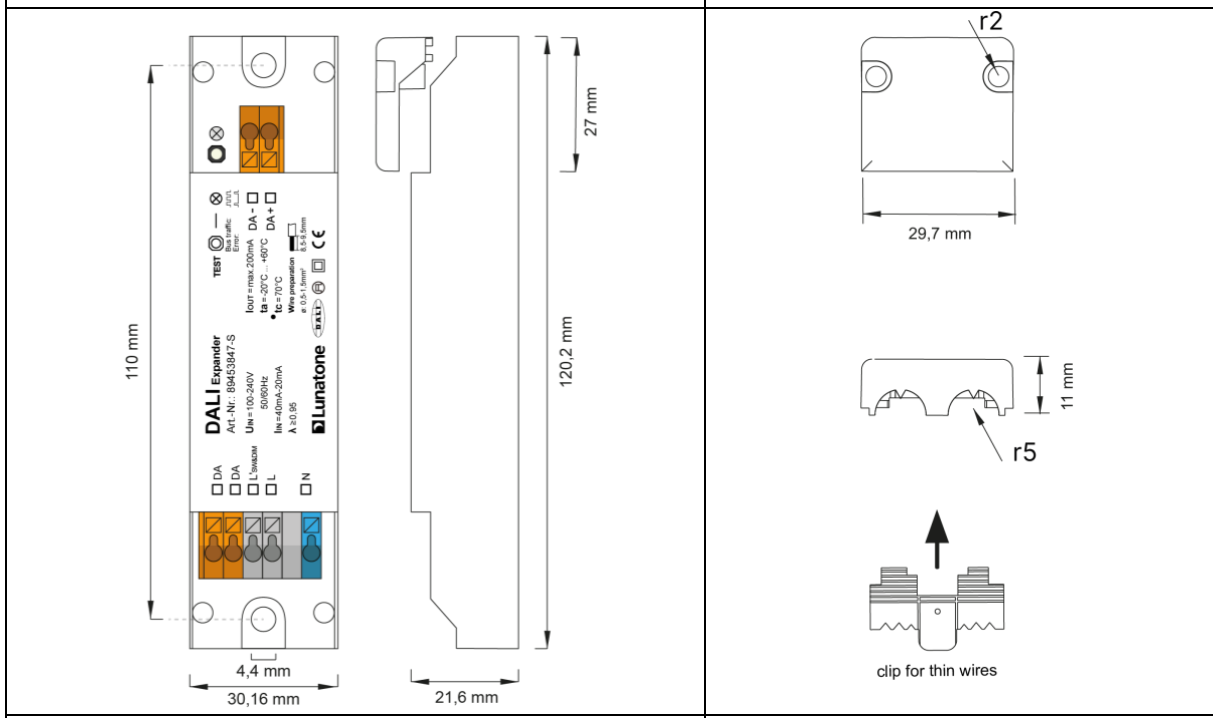
| dimensions DALI-Expander (HS-type) 89453847-HS | connection terminals DALI-Expander (HS-Type) 89453847-HS |

Installation

- The DALI Expander is intended for remote installation in the ceiling or in an enclosure, ensure proper cable relief for installation in protection class II devices

- The DALI Expander (HS-type) is suited for dinrail mounting, ensure protection against electric shock by an appropriate enclosure

- Wiring as fixed installation in a dry and clean environment

- Installation only by qualified person when no voltage is applied

- Attend regulations regarding electrical installations of national authorities

- connect power supply terminals L and N to mains voltage

- the polarity of the output voltage is marked on the housing (DA+, DA-)

- The DALI-line may be installed within the same cable or as single conductors within the same tube as mains supply

- The DALI-line must not be connected to the mains or other extra low voltage systems

- DALI-line wiring with standard low voltage installation material

- Wiring topology of the DALI-line: Line, Tree, Star

- Wiring check by pressing the test button: the led is flashing and all luminaires connected to the DALI system will be controlled by a test sequence (on, off, dimming). To quit the test mode press the test button again.

- Connect only one wire on each terminal, if twin ferrules are used take care to the maximum wire size

👉 **HINT**: The DALI-signal is not classified as SELV circuit. Therefore the standards for installation in low voltage system apply.
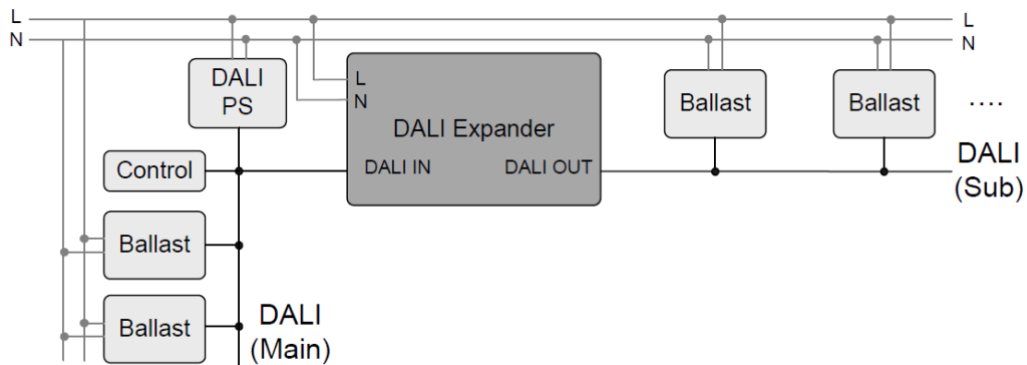
👉 The voltage drop on the DALI-line shall not exceed 2V.

- Don´t use standard DC power supplies on the DALI-line, since they do not meet the requirements for DALI communication

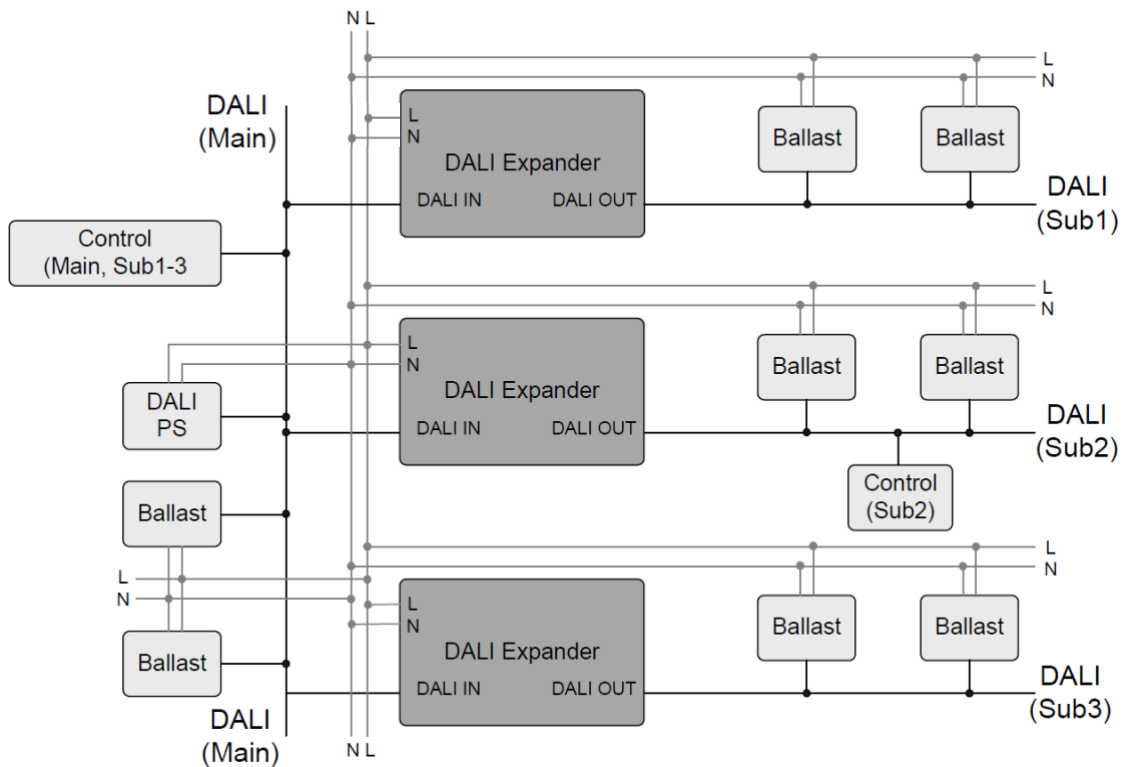👉 **HINT**: an improper DALI power supply can cause damage on DALI devices!

Expansion of a DALI circuit (Main) with a DALI subordinate circuit (all control commands sent to the DALI Expander are sent Broadcast to the DALI sub-circuit.)

Expansion of a DALI circuit (Main) with multiple broadcast controllable DALI sub-circuits. The additional control module in DALI (Sub2) enables the specific control of the sub-circuit.
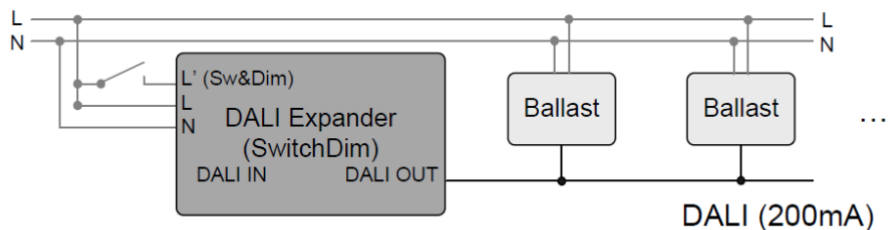
Control of DALI-ballasts via SwDim (DALI-Expander only)

Commissioning

- The DALI Expander is ready for use

- Make sure that the guaranteed supply current exceeds the current consumption of all bus devices

- The SwitchDim input and DALI-Broadcast commands can be used to control the device immediately

- After assigning an address with the help of the DALI-Cockpit - scene values, groups and other settings can be configured

- Status-LED:
  - flashing 5Hz, 50% on: test mode
  - flashing 2Hz, 5% on : error
 - flashing 2Hz, 90% on: activity

Function

With the DALI-Expander the number of DALI control gear can be extended. On the input the DALI-Expander represents one device (DALI IN) by its address and can be handled like a DALI-ballast. All commands received by the device are forwarded broadcast to the sub circuit (DALI OUT). Hence control gear connected to DALI OUT can be controlled via the DALI address of the expander. The power supply for the DALI sub circuit is provided by the expander itself (200mA). For command forwarding there are no device type specific restrictions. Up from firmware version 1.3 even the DALI-2 command "Goto Last Active Level" is supported.

The test button can be used to start and stop a test sequence for testing the DALI subline.

Up from firmware version 1.4 a system failure on the input results in a system failure on the output. The power supply of the subline can be reactivated by pressing the test button.

However, this behaviour has been changed in version 1.8. From then on the behaviour on the DALI output in case of a system failure can be configured:
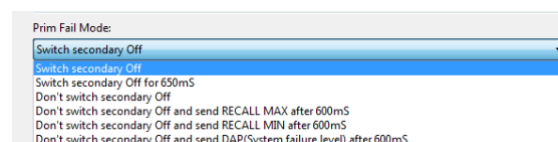
If SwitchDim operation is detected, the bus supply is always switched on.

In firmware version 1.9 and higher DAP commands can repeated with a defined period (default=5s). This feature ensures that after a phase fault and voltage return the luminaires return to the desired light level and do not keep staying at the power-on level.

A LAMP FAILURE of the DALI sub circuit can be queried as well (supported by firmware version 1.2 and higher). Because of the standardized DALI-Timing the answer from the sub-circuit cannot be sent immediately to the host. The answer sent to the host from the
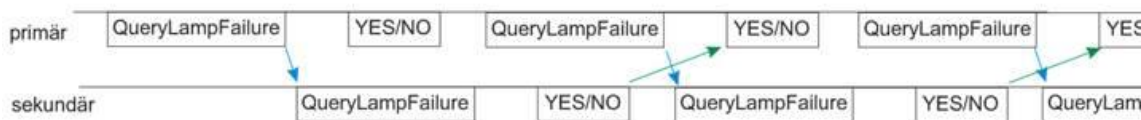
expander always is the answer from the last query. Hence the query command has to be sent twice.

DALI commands:
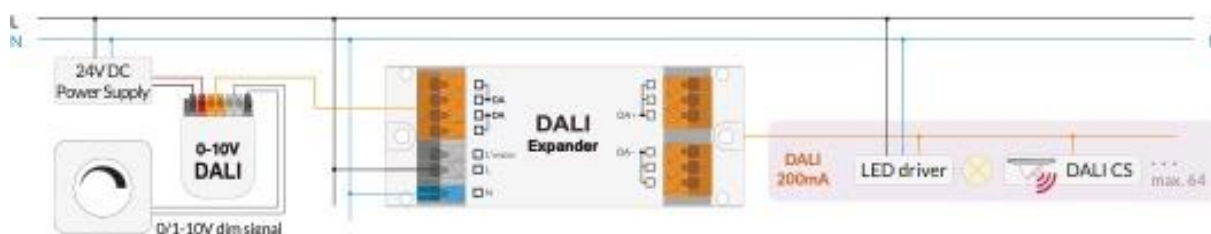
Query Actual Level (=255 on Lamp Failure)

Query Status (Bit[1]=1 on Lamp Failure)

Query LampFailure (answer = YES on LampFailure)

DALI-Timing: Query Lamp Failure

Application Example

Control of 64 DAL luminares with a 0-10V control device and a 0-10V to DALI converter (ArtNr: 86458352)

Purchase Information

Art.Nr. 89453847: DALI Expander with integrated bus power supply, remote ceiling

Art.Nr. 89453847-S: DALI Expander with integrated bus power supply, remote ceiling, narrow housing shape for luminaires or rail installation

Art.Nr. 89453847-HS: DALI Expander with integrated bus power supply, din rail

Additional Information and Equipment

Lunatone datasheets, manuals and software
http://www.lunatone.com/en/downloads-a-z/

 Lunatone DALI products
http://www.lunatone.com/en

Contact

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Disclaimer

Subject to change. Information provided without guarantee.
The datasheet refers to the current delivery.

The function in installations with other devices must be tested
for compatibility in advance.