LED

DALI-PWM converter
for LED module applications with PWM input

Performance characteristics

- Twin channel control output for dimmable LED modules
- Individual or tandem control outputs
- Control outputs invertible
- 5 V SELV control outputs (open collector)
- Control input DALI or PUSH-Dim
- Addressable DALI input
- Suitable for DC voltage operation and use in emergency lighting systems
- PUSH-Dim: dimming and switching via push button with/without memory function
- Dimming range 1...100 % luminous flux
- 500 Hz PWM signal (no power transfer)
- High design flexibility due to very flat, compact housing
- Simple installation via plug-in terminals with buttons and standard M4 mounting holes
- Compliance with international work and safety standards, electromagnetic compatibility and interference resistance
- Switch-off of connected LED modules and ECG via integrated relais in case of stand-by operation for reduced power losses

Note:
To optimize EMC performance the mains wiring must be routed at a distance to the wire of PWM.

Model

Version	Order no.
LS-600LS-01/220-240/DALI	10091745

Usable for

- ASTARES dimmable modules
- All dimmable LED modules operated with constant voltage

Targeted lighting applications

- Office & education
- Public buildings
- Industry
- Shop

Markings

10 EMV DALI 110 CE SELV equiv. push

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Technical data

Mains voltage supply	
Rated voltage range	220 V – 240 V
Max. admissible voltage range (continuous)	198 V – 264 V
Frequency	0/ 50 ... 60 Hz
Battery operation	
Voltage range for continuous operation	198 VDC – 278 VDC
Lowest limiting value for temporary operation	176 VDC
Ambient temperature	0... + 65 °C
Case temperature	max. + 70 °C
Switching output	max.600 VA
Stand-by output of system	≤ 0.5 W
Dimming range	1...100 % luminous flux
Dimming frequency	500 Hz
Resolution	14 bit
Cable length	max. 1.50 m
PWM voltage	5 V (open collektor)
PWM current	2 mA
Safety class	I
Protection rating	IP 20
Control input	DALI or PUSH-Dim-function
Output	2 x PWM- Signal (SELV) open collector
Approval mark	ENEC (Safety und Performance) EMV
Dimensions	130 mm x 30 mm x 21 mm (l x b x h) Lm = 123 mm
Terminals	for solid or stranded wire
Type	90°-connector with push button
Wire cross section	0.2 mm² – 1.5 mm² solid wire
Wire cross section	0.25 mm – 1 mm² stranded wire
Wire stripping length	9 mm - 10 mm

Admissible temperatures

Nominal service life	Extended service life
50.000 h (operation at t_c = 75 °0)	100.000 h (operation at t_c = 60 °C)

Operation mode

DIP switch		
DIP 1	ON	Addressing mode
DIP 1	OFF	Broadcast mode
DIP 2	ON	Normal mode (PWM low = OFF)
DIP 2	OFF	Inverse mode (PWM high = OFF)
DIP 3	ON	nc
DIP 3	OFF	nc

Short description

The converter differentiates between the following operating modes:

Control input open

- Both PWM outputs are at 100 %

DALI

- If at any time DALI voltage is applied to the control input, the converter switches to DALI operation. The PWM outputs according to DALI control device can be controlled individually or in tandem.
- In DALI operation, two operating modes are differentiated between:
  Broadcast operation DIP 1 = OFF (works setting)
  In broadcast operation the same signal is output at both PWM outputs.
  Addressing operation DIP 1 = ON
  This operating mode enables each of the PWM outputs to be addressed via an individual DALI address. The type of addressing depends on the DALI control device.

PUSH – Dim

- If at any time mains voltage is applied via a push button to the control input, the converter switches to PUSH-Dim operation. Both PWM outputs are always controlled in tandem.

If switching is implemented via a PUSH-Dim or DALI command (both PWM outputs), the mains voltage at L´ is switched off with a delay time of 10 s.

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Push-Dim operation

Press button	without memory function (default)		with memory function (default)	
	before	after	before	after
Press button	OFF (Power)	100%	OFF (Power)	Dim level before switching off
Press button briefly	OFF (Stand-by)	Dim level before switching off	OFF (Stand-by)	Dim level before switching off
Press button briefly	ON	OFF (Stand-by)	ON	OFF
Press button longer	OFF (Power)	100% dim ▼	OFF (Power)	Dimming level / dimming direction inverse
Press button longer	OFF (Stand-by)	Dimming level / dimming direction inverse	OFF (Stand-by)	Dimming level / dimming direction inverse
Press button longer	100%	dim ▼	100%	dim ▼
Press button longer	ON ▼	dim ▲	ON ▼	dim ▲
Press button longer	ON ▲	dim ▼	ON ▲	dim ▼

Description of the PUSH-Dim function

Setting of the memory function
As a precondition the converter must be supplied with mains voltage. The switching state of lighting (ON or OFF) is insignificant.

Activating the memory function
- Press and hold the push button.
- After 10 s the complete lighting goes to 100% of its luminous flux.
- After a further 10 s the lighting dims to a minimum (1 %).
- Release the push button in a time frame of < 5 s.
- As confirmation, the lighting is at 1%.
- Memory function is active.

Deactivating the memory function
- Press and hold the push button.
- After 10 s the complete lighting goes to 100% of its luminous flux.
- After a further 10 s the lighting dims to a minimum (1 %).
- Release the push button in a time frame of > 5 s.
- As confirmation, the lighting is at 100 %.
- Memory function is deactivated

Synchronisation of the PUSH-Dim interface
- Press and hold the push button.
- After 10 s the complete lighting goes to 100% of its luminous flux.
- Release the push button and all connected converters are synchronised.

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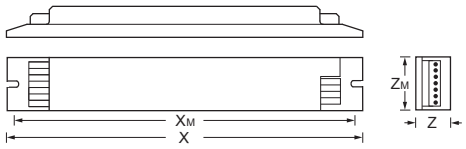
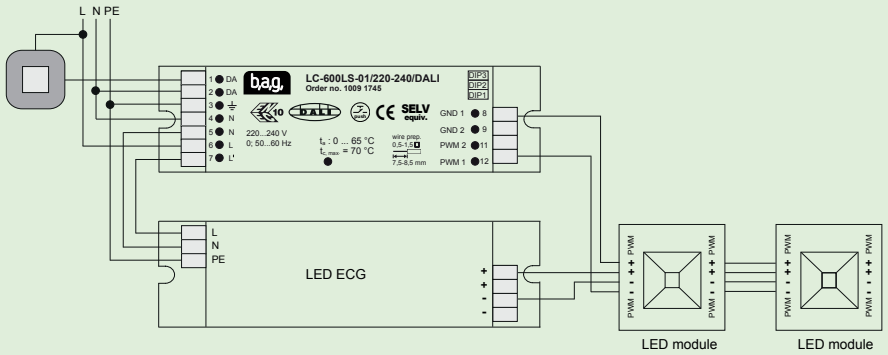
Dimensions

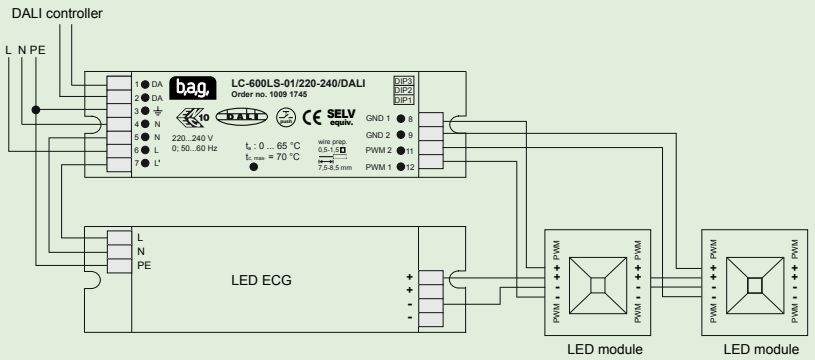


X	X_M	Z	Z_M	Gewicht	VPE
mm	mm	mm	mm	g	Stk.
130	123	30	21	90	1

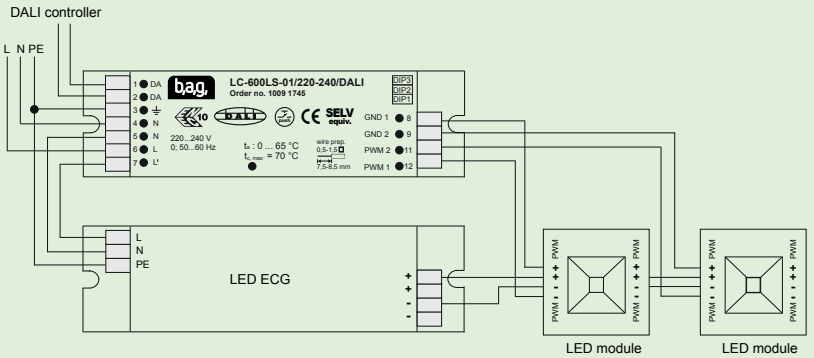
Wiring diagrams



Push Dim



DALI broadcast mode



DALI adressing mode

Conformance with regulations

EN 61 347-1	General and safety requirements
EN 61347-2-11	Particular requirements for miscellaneous electronic circuits
EN 61547	Equipment for general lighting purposes EMC immunity requirements
EN 55 015	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN 62386-102	Digital addressable lighting interface – Part 102: General requirements – Control gear
Environmental tests for mechanical capacity:	
IEC 60 068-2-6	Test Fc: vibrations (sinusoidal)
IEC 60 068-2-27	Test Ea: shock and bump
IEC 60 068-2-29	TTest Eb: shock and bump
Quality management certified according to ISO 9001	