

DigiLED DALI CA

WU-ST-004-DigiLED-DALI CA (Ref-No.: 186138)



A New Lighting Experience

1 Introduction

1.1 Product Description

DigiLED DALI CA is designed to enable individual colour control of LED modules used in the 24 V CA assembly system. The digital interface is manufactured in accordance with Appendix E of IEC 60929 and is thus suitable for connection to DALI control units.

DALI (Digital Addressable Lighting Interface) is the standard for digital operating device interfaces.

The cross-platform DALI standard ensures the exchangeability of operating units made by different manufacturers and is specified in Appendix E of the ballast standard IEC 60929. The DigiLED DALI CA system control unit forms part of the 24 V CA LED assembly system and enables colour and light control of High-and/or Low Power RGB(W) LED assembly modules that are constructed according to the "Common-Anode (CA)" principle. A detailed description of the DALI standard can be found in the DALI manual which can be downloaded free of charge from the ZVEI website (www.zvei.org).

2 Description of Functions

2.1 Functional Characteristics

Thanks to the software integrated in DigiLED DALI CA, DALI commands are used to generate the four PWM signals (RGBW) needed to control LED modules in a 24 V CA system. The four PWM control signals must be assigned to the respective DALI addresses.

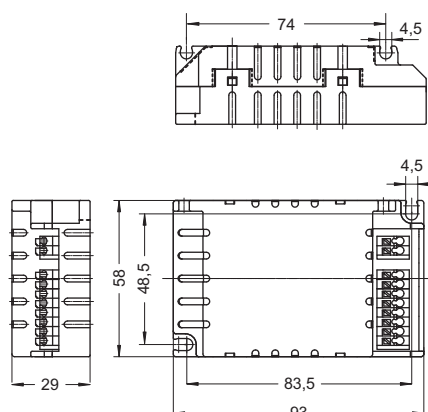
After starting up a DALI system featuring DigiLED DALI CA (including address assignment, lamp assignment, grouping, scene adjustment), the unit must be disconnected from the mains for approx. 5 seconds and then reconnected again. DigiLED DALI CA recognises the break in voltage and saves current settings. Further details can be found in the manual of the respective DALI control unit.

Technical Characteristics:

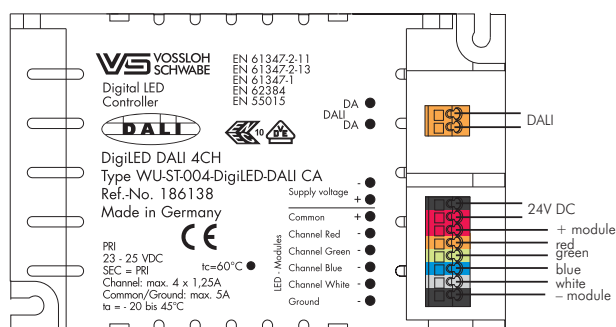
- A SELV-equivalent DALI interface to connect DALI-compatible control units. Polarity insensitive.
- Four PWM outputs (RGBW)
- Control signal range: 0 %... 100 %
- Output current monitor per channel:
In accordance with the DALI standard, an "error message" is generated for the affected channel should the maximum current be exceeded.
- Input current monitor:
In accordance with the DALI standard, an "error message" is generated should the DigiLED DALI CA supply voltage exceed or fall short of the permissible value.
- Short circuit and overload protection per channel: automatic restart (repeatedly until the fault has been rectified).
- DALI operating parameters (e.g. lighting level after switching the unit on) can be saved any number of times.

3 Technical Specifications

Operating voltage	23 to 25 V DC
Current draw	5.0 A max. (see table 4.2)
Fuse	T 6.3 A; safety fuse
Connection	8-pin push-in terminal for operating voltage and integrated LED modules of the 24V CA system (see table of 4.2)
Ambient temperature	-20 to +45 °C
tc point	max. 60 °C
Humidity	Degree of protection IP20
Casing	Plastic, PC white
Dimensions (LxWxH)	95 mm x 60 mm x 30 mm
Weight	62 g



4 Terminal Connections



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4.1 DALI Terminal

Terminal	Function	Recommended Lead	Product
DA* ●	Connection for DALI signal	Standard installation material	DALI control unit
DA* ●	Connection for DALI signal		

* Polarity insensitive

4.2 Terminal Strip for 24 V and Module Connections

Pole	Colour Coding	Max. Current Carrying Capacity	Function	Recommended Lead	Connection
1	● Black	5 A	Supply line for optional 24 V converter (GND)	Standard two-strand supply lead (0.25–1.5 mm ²)	24 V DC converter
2	● Red	5 A	Supply line for optional 24 V converter (+24 V)		
3	● Red	5 A	Supply line for LED assembly modules (+24 V)	High Power feed in cable (Ref. No. 535900)	LED assembly modules or module groups for 24 V CA systems or
4	● Orange	1.25 A	PWM signal line for channel 1 / red		
5	● Green	1.25 A	PWM signal line for channel 2 / green	Standard six-strand lead (e.g.: LIYY 6X0.75 mm ²)	PCB distributor or slave board for 24 V CA systems
6	● Blue	1.25 A	PWM signal line for channel 3 / blue		
7	● Grey	1.25 A	PWM signal line for channel 4 / white		
8	● Black	5 A	Supply line for LED assembly modules (GND)		

5 DigiLED DALI CA Connections

5.1 Input

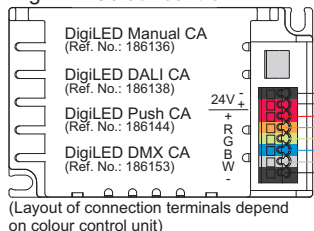
- DigiLED DALI CA is connected with the DALI control signal via the two DA terminals.
Polarity insensitive.
- Voltage supply: DigiLED DALI CA is supplied with 24 V DC via terminals 1 and 2.

5.2 Output

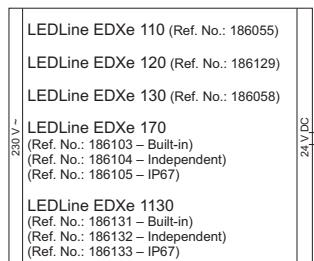
5.2.1 Connection of HighPower 24V RGB(W) LED Assembly Modules

- a) The feed in cable (Ref. No. 535900) must be used to connect a HighPower 24 V RGB(W) LED assembly module. For direct connection, use terminals 3 to 8 of DigiLED DALI CA. Correct polarity (colour coding) must be ensure in accordance with Table 4.2.

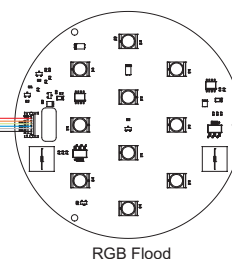
DigiLED Colour control



Converter LEDLine EDX



High Power Feed in
Ref. No. 535900



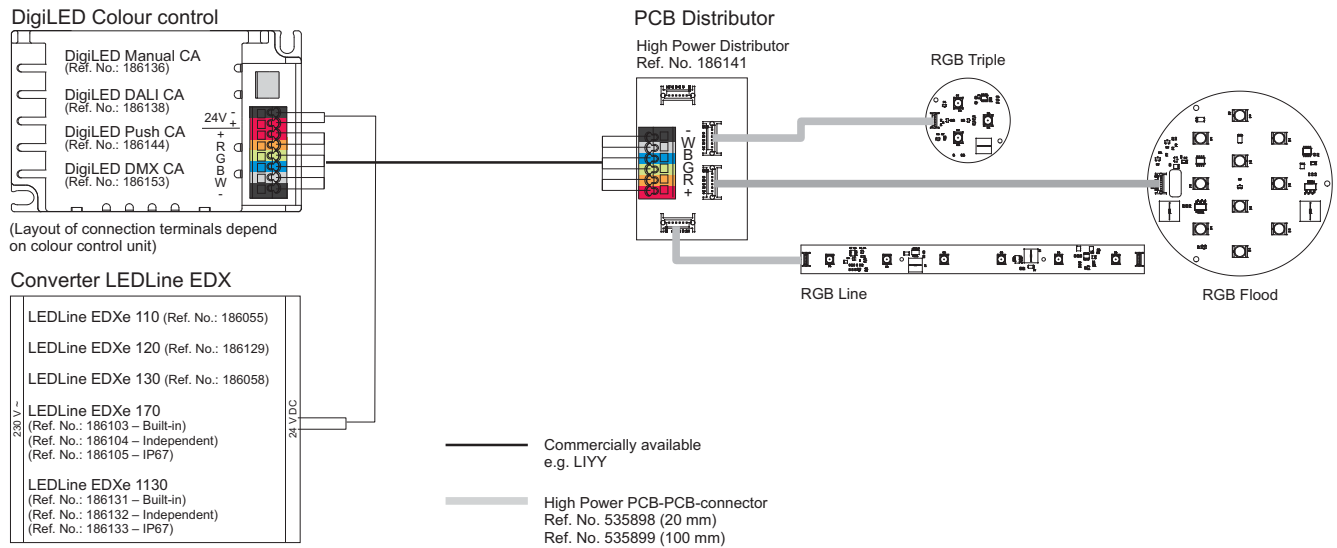
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b) To connect several HighPower 24 V RGB(W) LED assembly modules, the PCB distributor (186141) must be connected to DigiLED DALI CA using a standard six-strand lead (LIYY 6X0.75 mm²).

Correct polarity (colour coding) must be ensured in accordance with Table 4.2. LED assembly modules are connected to the PCB distributor using flatband cables (Ref. No. 535898 or 535899).



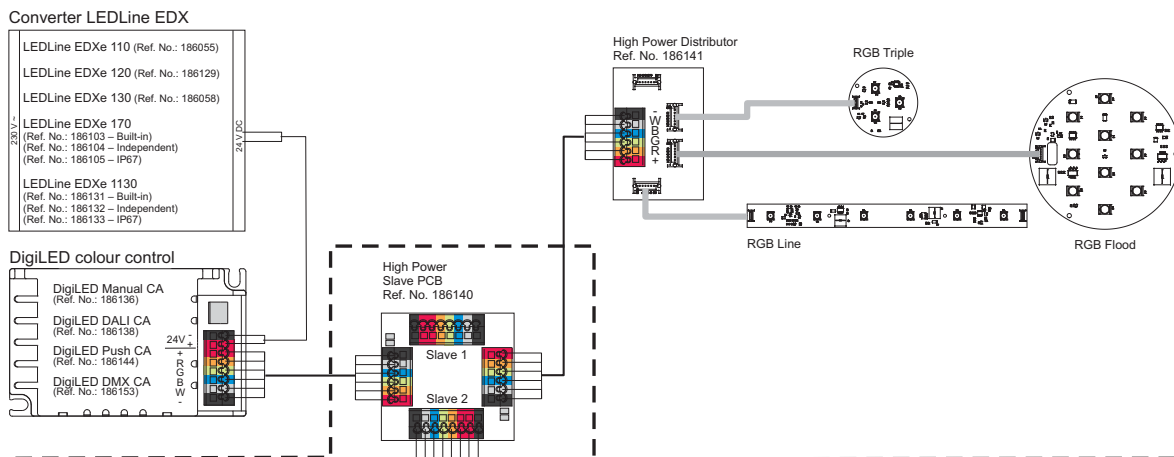
The maximum number of connected LED assembly modules is limited by the power rating of the converter and by the max. current load of the outputs in accordance with Table 4.2. The power and current draw values of the connected LED assembly modules as well as connection cable and PCB distributor data can be found in the respective data sheets at www.vsoptoelectronic.com.

The maximum power rating for a DigiLED DALI CA unit totals 120 W.

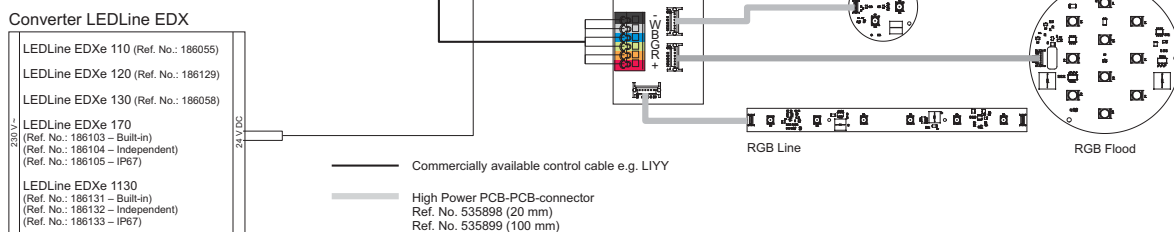
c) System performance can be extended beyond 120 W using slave boards to feed in additional power.

Functional descriptions and terminal connections for slave boards can be found in the respective data sheets at www.vsoptoelectronic.com.

Voltage Supply by first Converter



System Expansion by High Power Slave PCB and additional Converter



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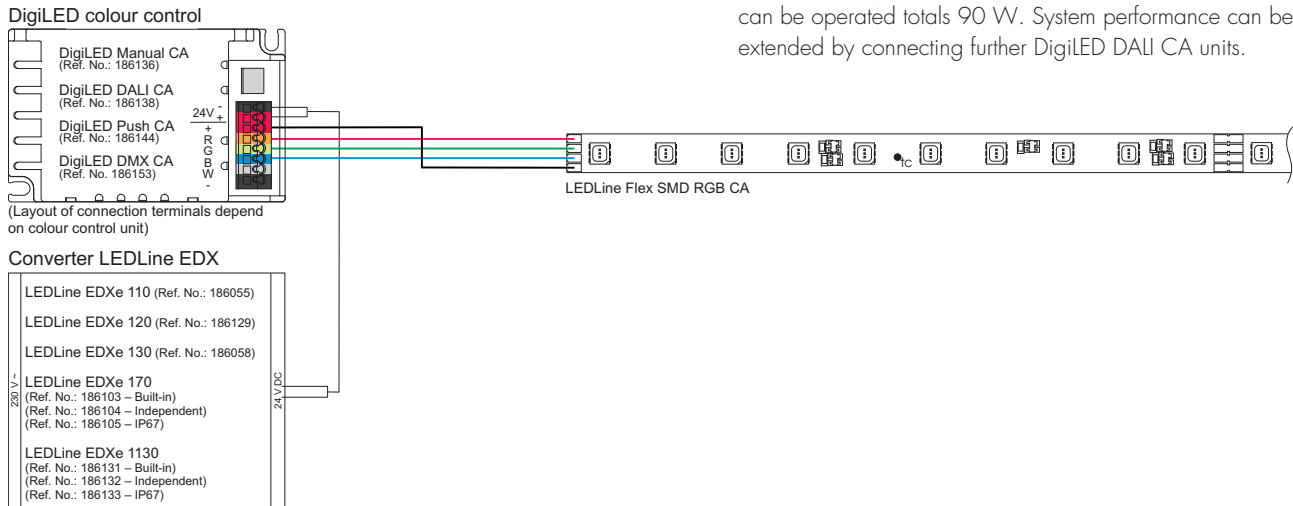


5.2.2 Connection of LowPower Assembly Modules

LowPower 24 V RGB CA LED assembly modules with four connection elements (+RGB) can be directly connected to DigiLED DALI CA via poles 3 (+), 4 (red channel), 5 (green channel) and 6 (blue channel) under observation of the permissible power rating. Compliance with the colour coding (polarity) detailed in Table 4.2 must be ensured.

The maximum number of connected LowPower LED assembly modules is limited by the power rating of the connected converter and the maximum current load of pole 4, 5 and 6 (sum: 90 W) in accordance with Table 4.2. The power and current draw values of the connected LED assembly modules can be found at www.vs-optoelectronic.com.

The maximum power rating with which a DigiLED DALI CA unit can be operated totals 90 W. System performance can be extended by connecting further DigiLED DALI CA units.



6 Notes on Installation and Safe Operation

6.1 Installation

Installation must be carried out under observation of the relevant regulations and standards. The components of the 24 V CA system are designed for operation within a casing or luminaire. Installation must be carried out in a voltage-free state (i.e. disconnection from the mains). The following advice must be observed; non-observance can result in the destruction of the components, fire and/or other hazards:

- DigiLED DALI CA is exclusively designed for operating 24 V Common Anode LED modules.
- The load range of the connected 24 V converter must be observed.
- The maximum output currents specified in Table 4.2 must not be exceeded.
- The temperature measured at the tc point must not exceed the specified limit ($t_{cmax.} = 60^{\circ}\text{C}$) during operation.

6.2 Assembly

- Installation any way up
- Installation only in dry rooms or luminaires, box casings or similar. If DigiLED DALI CA is to be installed outdoors or in a damp location, a casing of a suitable protection class (IP) must be used.
- Attach using 4 mm screws
- Ensure solid and even surface for unit to rest on

7 Standards

7.1 Applied Standards

EN 61347-1
Lamp controlgear – Part 1: General requirements and tests (IEC 61347-1:2000);
German Version EN 61347-1:2001
EN 61347-2-11
Lamp controlgear – Part 2-11: Particular requirements for miscellaneous electronic circuits used with luminaires (IEC 61347-2-11:2001);
German Version EN 61347-2-11:2001
EN 55015
Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

7.2 Standards to adhere

EN 61347-2-13
Lamp controlgear – Part 2-13: Particular requirements for D.C. or A.C. supplied electronic controlgear for LED modules
EN 62384
D.C. or A.C. supplied electronic control gear for LED modules – Performance requirements