Technical Data / Instruction Manual

LED-04B-ANA-DMX

Article no. 80028304

Analog LED dimmer

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Directory of Content

1. Notes on documentation

These instructions are intended for qualified personnel who are familiar with the assembly, installation and operation of the ISYGLT system. It is essential that you read these operating instructions through before commissioning and keep them accessible for further use.
SEEBACHER cannot accept any liability for damage or malfunctions resulting from failure to observe these instructions.

1.1. Retention of documents

These instructions and all other applicable documents are part of the product. They must be handed over to the device operator. The operator will store the documents so that they can be made available if necessary.

1.2. Symbols used

Observe the following safety and other instructions in the manual:

 Handling instruction
The hand indicates that you should carry out an act.

 Danger!
Immediate danger to life!

 Attention!
General notes, useful information and special features

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2. Safety instructions

Observe the following general safety instructions when installing and commissioning the device:

Assembly and installation of the ISYGLT module may only be carried out by a qualified electrician. Other activities in connection with the ISYGLT module, such as assembly and installation of system components with tested standard plug connections, as well as operation and configuration of the ISYGLT module may only be carried out by trained staff.

Observe the electrical installation regulations of the country in which the device is installed and operated as well as its national accident prevention regulations. In addition, observe internal company regulations (work, operating and safety regulations).

Before working on the ISYGLT module system, it must be disconnected from the power supply and secured against being switched on again. After completion of the assembly, installation and maintenance work, an electrical check must be carried out! Check all protective conductor connections and the voltages at all connection plugs as well as at each individual module slot.

2.1. Intended usage

The module is exclusively suitable for regulation (control) in connection with ISYGLT system components. Any other use is not intended. The limit values stated in the technical data must not be exceeded under any circumstances. This applies in particular to the permissible ambient temperature range and the permissible IP protection type. For applications with a higher required IP protection type, the ISYGLT module must be installed in a housing or a cabinet with a higher IP protection type.

2.2. Predictable mishandling

The module must not be used in the following cases in particular:

- explosive area

When operating in explosive areas, sparking can lead to deflagration, fire or explosions.

2.3. Safe handling

This module corresponds to the state of the art and the recognised safety regulations. Each device is tested for function and safety before delivery.

Only operate this module in perfect condition in accordance with the operating instructions, the applicable regulations and directives of the country in which the device is installed and operated, and the applicable safety and accident prevention regulations.

This product is for lighting purposes only and may

- only be operated in conjunction with a suitable low-voltage power supply unit
- must only be connected in accordance with protection class III (three)
- only be operated permanently mounted on a suitable base (DIN rail mounting on DIN rail, switch cabinet)
- only be operated on normal or non-flammable surfaces
- only be operated in dry, i.e. not in damp or dirt-prone rooms or in areas with high humidity
- are not exposed to strong mechanical stresses or heavy soiling

Extreme environmental conditions impair the function of the product.

In addition to these safety instructions, you must also observe the special safety instructions listed in the individual chapters for the individual acts.

2.4. Qualification of staff

Assembly, commissioning, operation, maintenance, decommissioning and disposal may only be carried out by qualified staff. Work on electrical parts may only be carried out by a trained electrician in accordance with the applicable regulations and directives. Other activities in connection with the ISYGLT module, such as assembly and installation of system components with tested standard plug connections, as well as operation and configuration of the ISYGLT module may only be carried out by trained staff.

2.5. Changes to the product

Unauthorized modifications to the ISYGLT module which are not described in this or the other applicable instructions can lead to malfunctions and are prohibited for safety reasons.

2.6. Use of spare parts and additional equipment

The module may be damaged if unsuitable spare parts and additional equipment are used. Only use original spare parts and additional equipment from the manufacturer.

2.7. Liability notes

SEEBACHER accepts no liability or warranty whatsoever for damage and consequential damage caused by non-compliance with the technical regulations, instructions and recommendations. SEEBACHER shall not be liable for any costs or damage incurred by the user or third parties as a result of the use of this equipment, in particular improper use of the equipment, misuse or malfunction of the connection, malfunction of the equipment or connected devices.

SEEBACHER accepts no liability for printing errors.

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3. Warranty

We provide warranty within the framework of the statutory provisions. These are limited to the intended use of the module and refer to the repair or replacement of the ISYGLT module. Please send the device with an attached error description to our company address given below.

4. Declaration of Conformity

The valid declaration of conformity for the module can be requested from us free of charge by stating type and article no. as follows:
By phone: +49(0)8041/77776
By fax: +49(0)8041/77772
By mail: info@seebacher.de

5. Service address

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6. Maintenance / Care / Disposal

The product is maintenance-free. It is sufficient from time to time to remove any dust deposits. This may only be done in a power-free state.

Disposal (European Union)
Do not dispose of product in household waste! Products with this symbol

must be disposed of according to the EU directive WEEE 2012/19/EU on waste electrical and electronic equipment at the local collection points for waste electrical and electronic equipment!

7. Storage

The product must be stored in a dry place, protected from dirt and mechanical stress. After damp or dirty storage, the product may only be operated after a condition check by an authorised electrician.

8. Assembly

(Only by certified electrician!)
Mount the product only when it is in a power-free state!
Switch off the power supply, check that there is no voltage, secure against being switched on again!

Only use suitable equipment (power supplies and LEDs that meet the electrical requirements of the device; low voltage or SELV)!

Check that there are no loose parts in the product. If this is the case and the presence of such parts is not explicitly described, do not install or commission the product.
Only use suitable cables and fixing screws.

Assembly site
- The product can be installed in any position in a casing to be determined by the electrician (DIN rail mounting, switch cabinet). Observe maximum ambient temperature!
- LEDs react sensitively to high temperatures! Before installation, consider the temperature to be expected at the operating location.
- Keep sufficient distance from flammable materials.

Assembly steps
(Read completely before assembly!)
- Mount the device in a suitable casing.
- Make the electrical connections according to the wiring diagram.
- Configure the DIP switches according to your requirements.
- Ensure that the LEDs are connected with the correct polarity.
- Only after a complete connection and a visual test by a qualified electrician, the system may be put under voltage. Otherwise there is a danger of destruction of the LEDs!

9. Product description

The non-PWM LED dimmer was developed for absolutely flicker and flicker-free dimming of constant current controlled LEDs or LED lights. It dims absolutely without pulse width modulation and is a purely linear dimmer. It is possible to perfectly control the brightness of the LEDs between 0% and 100% with a dimming resolution of 16 bit (internal resolution in ISYGLT mode). The LED dimmer can be set from speed calculation to absolute time calculation by parameterisation per channel. All imaginable control tasks can be easily implemented: from individual light dimming to use for complex lighting and colour scenarios.

Depending on the configuration and LED type, this dimmer can control LEDs with a total output of 300W (4x 75W).

Recommended areas of application are all areas where healthy lighting is important, as the effects of conventional PWM dimming have not been fully investigated, but are considered by experts to be of health concern. PWM is used as standard in all existing LED dimmers, including the DALI and KNX/EIB standards. Therefore, the use of non-PWM dimming is particularly recommended in areas where people stay longer or where high demands are placed on lighting quality:
- Planetarium
- Theatres
- Museum, gallery, exhibition
- Clinic and nursing home
- Office and other workplaces
- School and educational institution
- Hotel and conference room
- Shopping centre and shop

The LED dimmer can optionally be operated on the ISYGLT BUS or DMX512 BUS.

The following functions can be carried out independently by the LED dimmer:
- Calculation of rise times from 0.5 seconds to 12 hours
- Colour-true dimming by specifying the colour over the entire brightness range
- Color temperature control (color mixing) for 2 areas with 1x cold white and 1x warm white each
- Independent movement from current ACTUAL values to preset SET values at a preset speed (optional in preset time)
- Feedback „Setpoint reached“ after execution of time functions
- Stop function during the execution of time functions
- OVERSAMPLING error correction: With the so-called „OVERSAMPLING“, the module automatically corrects the jumps in dimming values caused by the cycle times of the BUS system. For this purpose, the dimming values between the BUS cycles are transformed back into the resolution of 16 bits by linearisation. This avoids, for example, flickering when dimmers are controlled. During programming, OVERSAMPLING is referred to as the SOFT function.
- Execution of flashing functions
- Adaptation to different LED modules
- Calculation of defined and definable curves
- Calculate the min and max settings per channel to use the full 16-bit width
- Complex emergency operation function

Inputs / Outputs
- 4 outputs, with constant current from 250mA to 1550mA per channel factory-adjustable
- 1 emergency operating input

Design
- plastic housing light grey, snap-on on 35mm DIN rail 6 HP

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Function displays

Please note that a temperature sensor can be connected to this dimmer. The red LED has different function displays depending on whether the temperature sensor has been activated or not.

Case 1 - without temperature sensor (parameter setting)

		LED state	Meaning
●	1 x LED (red)	Off	No operating voltage
		On	Operating voltage, no error
		Blinking	Indicates a parameter error
●	1 x LED (yellow)	Off	Error BUS wiring
		On	Error BUS communication (address not detected)
		Blinking	Interference-free data transmission via the BUS line
●	4 x LED (green)	Blinking	Indicates the control of the outputs (LED blinks until the desired final value is reached)

Case 2 - with temperature sensor (parameter setting)

		LED state	Meaning
●	1 x LED (red)	Off	Overtemperature and LED dimmer switch-off
		On	Sensor ok and temperature ok
		normal blinking	No sensor connected
		slow blinking	Overtemperature, LED dimmer regulates back
		fast blinking	Overtemperature, shortly before switch-off
●	1 x LED (yellow)	Off	Error BUS wiring
		On	Error BUS communication (address not detected)
		blinking	Interference-free data transmission via the BUS line
●	4 x LED (green)	blinking	Indicates the control of the outputs (LED blinks until the desired final value is reached)

Connections

- 2 connections for DMX
- 1 connection digital temperature sensor (TF-L, TF-E, TF-A)
- 1 connection for external voltage supply LED
- 1 connection for emergency operating input
- 4 connection anodes (+) Power-LED
- 4 connection cathodes (-) Power-LED

Parameterisation with ProgrammDesigner

In the ISYGLT ProgrammDesigner there are various parameterisation possibilities:

- Operating modes:
  - 4 single channels
  - RGB + 1 single channel, Red, Green, Blue and an independent single channel
  - RGBW, Red, Green, Blue and White
  - Colour temperature control (daylight simulation)
  - Online function switching via special time constant on channel 2
- Setting of various dimming curves
- Minimum and maximum values

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DIP switches
ISYGLT BUS operating

Switch	Function	Description
DIP 1	Protocol 1	OFF
DIP 2	Protocol 2	OFF
DIP 3	Reserve	OFF
DIP 4	Reserve	OFF
DIP 5	Reserve	OFF
DIP 6	Address bit 7	Module address (highest bit)
DIP 7	Address bit 6	Module address
DIP 8	Address bit 5	Module address
DIP 9	Address bit 4	Module address
DIP 10	Address bit 3	Module address
DIP 11	Address bit 2	Module address
DIP 12	Address bit 1	Module address (lowest bit)

DIP switches
DMX512 operating

DMX operation with delay (oversampling of 8-bit to 16-bit values)
Default 50ms, adjustable by parameterisation from 10ms to 1s, as well as „Soft“.

DMX 8-bit = DIP 1 = ON, DIP 2 = OFF
DMX 16-bit = DIP 1 = ON, DIP 2 = ON

Switch	Function	Description
DIP 1	Protocol 1	ON
DIP 2	Protocol 2	OFF
DIP 3	Channel setup	OFF = 4 different (sequential) DMX addresses, ON = all outputs at 1 DMX address
DIP 4	Address bit 9	DMX start address (highest bit)
DIP 5	Address bit 8	DMX start address
DIP 6	Address bit 7	DMX start address
DIP 7	Address bit 6	DMX start address
DIP 8	Address bit 5	DMX start address
DIP 9	Address bit 4	DMX start address
DIP 10	Address bit 3	DMX start address
DIP 11	Address bit 2	DMX start address
DIP 12	Address bit 1	DMX start address (lowest bit)

Example for DMX address setting

	DIP switches	Output
Address 0	xxx000000000	Switch on manually to the value „Emergency operation“ (default 100%)
Address 1	xxx000000001	DMX channel 1, 2, 3 and 4
Address 10	xxx000001010	DMX channel 10, 11, 12 and 13
Address 127	xxx001111111	DMX channel 127, 128, 129 and 130
Address 509	xxx111111101	DMX channel 509, 510, 511 and 512

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10. Technical data

Type designation	LED-04B-ANA-DMX
Article no.	80028304
Operating voltage	24V to 56V DC for the supply of the LEDs depending on the type
Emergency operating input	24V to 56V DC
LED forward voltage	12V to 54V (depending on the voltage drop of the line); the LED forward voltage including the voltage drop of the line must be 2V lower than the supply voltage!
Mains fuse	max. 16A at Umax 56V DC
Current consumption	max. 1550mA per LED circuit
Outputs	4 x constant current, separately adjustable in the factory with 250mA to 1550mA each for power LEDs (please specify the desired current value for each circuit when ordering)
Power loss	idle: 0.162W / channel, full load and worst conditions: 2.5W / channel
BUS control	ISYGLT / DMX512 8/16-bit (further on request)
Line length power supply to LED dimmer	max. 20m (for cross-section calculation of the line, observe max. permissible voltage drop)
Line length LED dimmer up to the last LED	max. 50m
Dimming resolution	16-bit
Subnet (RS-485)	max. 5.6V limitation by Z-diodes
Dimensions	WxHxD 106x90x59mm DIN rail-mounting (6 HP)
Weight	250g
Connection	screw terminals 2.5mm²
Operating temperature	-10°C to +45°C
Storage temperature	-25°C to +70°C
Humidity	0...85 % r. h. non-condensing
Protection class	IP 20
CE mark	yes

10.1. Pin assignment

D+	Not assigned
D+	Not assigned
D-	Not assigned
D-	Not assigned

A	Subnet (BUS A, RS-485) ISYGLT or DMX
B	Subnet (BUS B, RS-485) ISYGLT or DMX
GND	GND RS-485
T+	Temperature sensor +
T-	Temperature sensor -
U-	Operating voltage input - for LED dimmer
U+	Operating voltage input + for LED dimmer

E	Input for emergency operation - (U+ switched)
L1+	+ for LED channel 1
L1-	- for LED channel 1
L2+	+ for LED channel 2
L2-	- for LED channel 2
L3+	+ for LED channel 3
L3-	- for LED channel 3
L4+	+ for LED channel 4
L4-	- for LED channel 4

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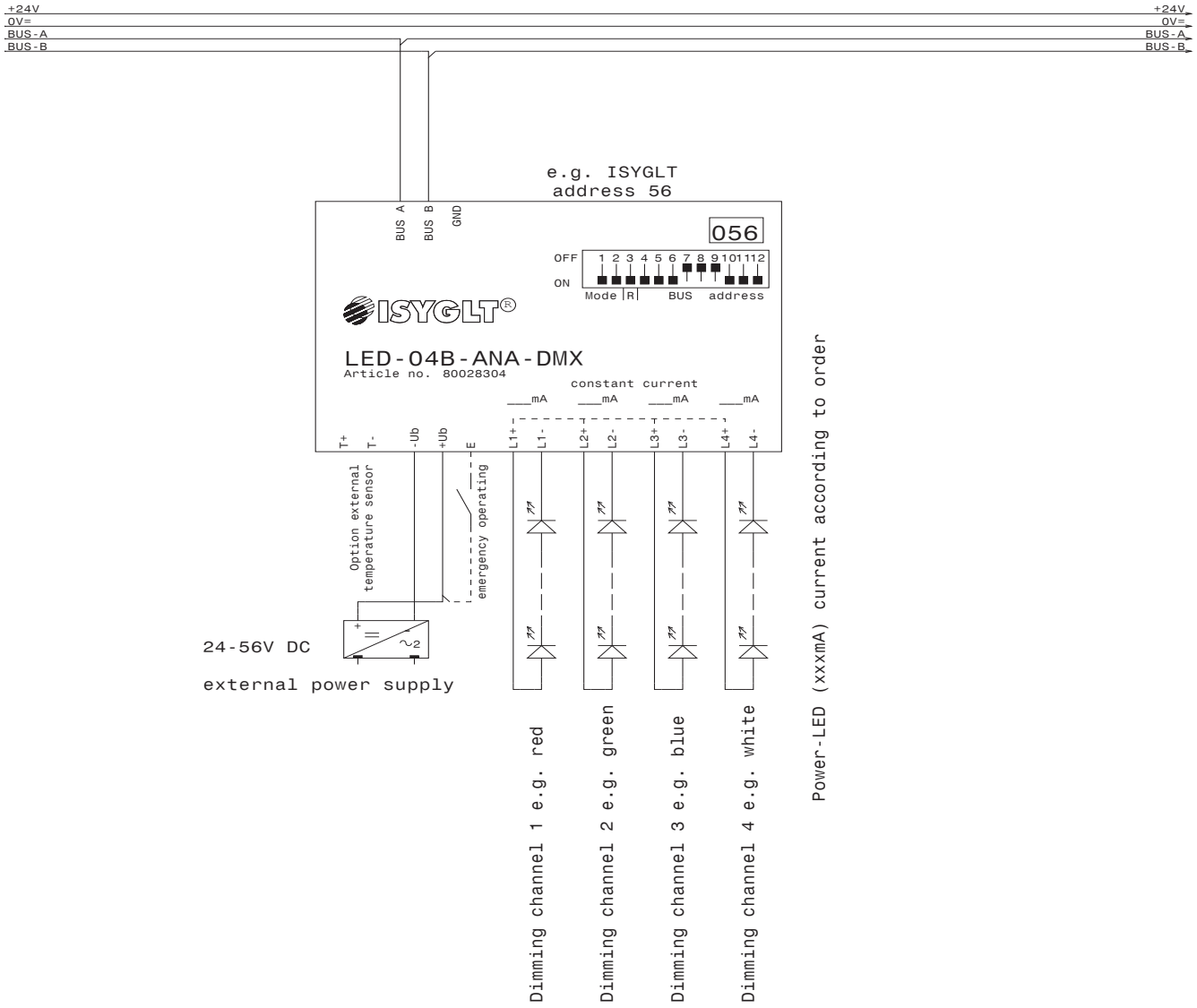
11. Wiring diagram

ISYGLT operating



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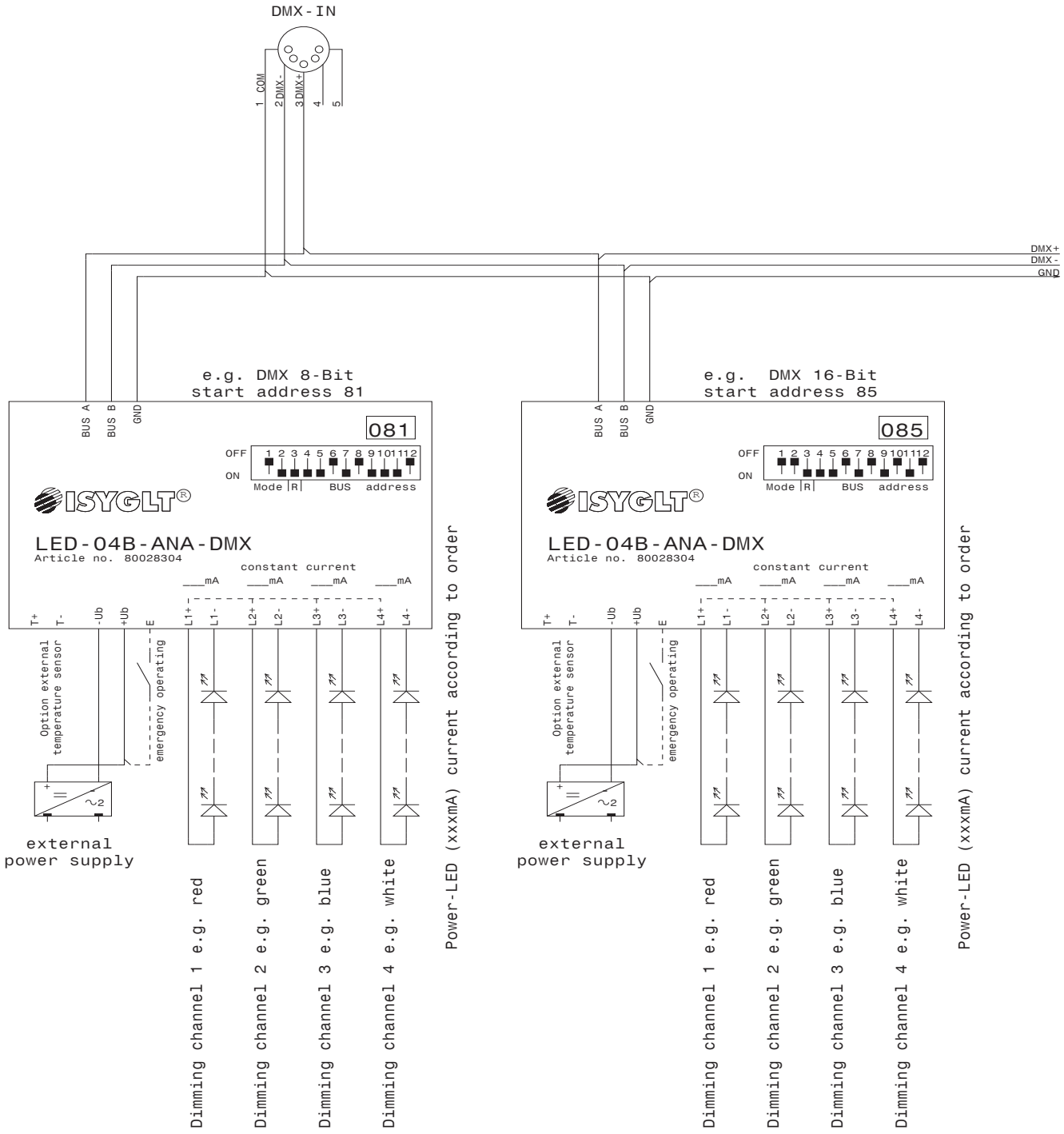
DMX operating



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