Technical Data / Instruction Manual

LED-02E-PM-DMX16-3000

Article no. 80028390

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 conjunction 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 intended for lighting purposes only and may
- only be operated in conjunction with a suitable low-voltage power supply unit.
- only be connected in accordance with protection class III (three).
- only be operated permanently mounted on a stable, flat and suitable base (installation box, luminaire, 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.
- not be 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 (installation box, luminaire, 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 LED dimmer was developed for controlling LED luminaires with constant voltage. Furthermore, it can be used to control LED strips/ tiles with a voltage-controlled DIM interface. This makes it possible to control the brightness of the LEDs between 0 and 100% absolutely flicker-free with a dimming resolution of 16 bit (internal resolution for DMX operation). The LED dimmer can optionally be operated on the ISYGLT BUS or DMX-512 BUS.

The following functions can be performed independently by the LED Dimmer:

- Calculation of rise times from 0.5 seconds to 12 hours
- Fidelity colour dimming by specifying the colour over the entire brightness range
- Colour temperature control (colour mixing) for 2 zones with 1x cold white and 1x warm white each
- Independent movement from current ACTUAL values to preset SETPOINT values at a preset speed (optionally at a preset time)
- Feedback „Setpoint reached“ after execution of time functions
- Stop function during 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 bit by linearisation. This prevents, for example, flickering when controlling dimmers. During programming, the OVERSAMPLING is referred to as the SOFT function.
- Execution of blinking functions
- Adaptation to various LED modules
- Calculation of defined and definable curves
- Calculation of the Min and Max settings per channel to use the full 16 bit width
- Complex emergency mode function

Function DMX 16 bit

This dimmer was developed for a high DMX dimming resolution. The 16 bit dimming divides the dimming into 65535 steps. A master controller can be activated or deactivated for the two LED dimming outputs via parameter setup (default is „active“).

The channels are then assigned as follows (Example: DMX start address 1):

Designation	H-Byte	L-Byte
Dimming channel 1	1	2
Dimming channel 2	3	4
Master	5	6

Voltage supply

- 10-24V DC
- Dielectric strength of the electronics up to 33V DC max.
- Current consumption max. 50mA without load

Inputs / Outputs

- 2 outputs „-“dimming for LED 10V, 12V or 24V with max. 3A
- RS485 interface galvanically isolated for DMX-512, max. 128 participants per BUS segment when using these dimmers

Function display

- 1 red LED indicates operating voltage, flashing means no or faulty parameters
- 1 yellow LED indicates BUS communication by flashing
- 1 green LED indicates the output status (ON, if at least 1 channel is switched on)

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Design
• Plastic housing for installation in a lamp or a separate housing

Connections
• 1 connection for the operating voltage (Ub, 0V)
• 2 connections RS485 for ISYGLT or DMX BUS
• 1 connection (+) anode of LEDs (voltage-controlled)
• 2 connections (-) cathode of LEDs (voltage-controlled)

DIP switch
• DMX-512 operation (1990)
DMX operation with delay (oversampling of the 8 bit to 16 bit values). Default 50ms, adjustable by parameterisation from 10ms to 1s, as well as „Soft“.
The DIP switch is used to set the start address of the 2 consecutive 16 bit dimming channels and the subsequent 16 bit master channel.

Switch	Function	Description
DIP 1	Protocol 1	ON = DMX-512 protocol
DIP 2	Address bit 9	DMX start address (highest bit)
DIP 3	Address bit 8	DMX start address
DIP 4	Address bit 7	DMX start address
DIP 5	Address bit 6	DMX start address
DIP 6	Address bit 5	DMX start address
DIP 7	Address bit 4	DMX start address
DIP 8	Address bit 3	DMX start address
DIP 9	Address bit 2	DMX start address
DIP 10	Address bit 1	DMX start address (lowest bit)

• ISYGLT operation

Switch	Function	Description
DIP 1	Protocol 1	OFF = ISYGLT
DIP 2	Manual On	Emergency operation (default: 100%)
DIP 3	Reserve	OFF
DIP 4	Address bit 7	Module address (highest bit)
DIP 5	Address bit 6	Module address
DIP 6	Address bit 5	Module address
DIP 7	Address bit 4	Module address
DIP 8	Address bit 3	Module address
DIP 9	Address bit 2	Module address
DIP 10	Address bit 1	Module address (lowest bit)

Example for DMX address setting

	DIP switch	Output
Address 0	000000000	Emergency operation (100%)
Address 1	000000001	Start address 1
Address 10	000001010	Start address 10
Address 127	001111111	Start address 127

Parameterisation
In the ISYGLT ProgramDesigner there are various parameterisation possibilities:
• Operating modes:
  - 2 individual channels
  - 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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10. Technical data

Type designation	LED-02E-PM-DMX16-3000
Article no.	80028390
Operating voltage	10V to 24V DC impulse-proof for Power-LEDs
Current consumption	max. 50mA without LED load
Output power	2 circuits with max. 24V each / 3.0A / max. 72W per channel NPN switching (- control), back-up fuse max. 16A
BUS control	ISYGLT / DMX-512
Cable length power supply to LED dimmer	max. 20m (observe max. permissible voltage drop for cable cross-section calculation)
Cable length LED dimmer to last LED	max. 50m (observe max. permissible voltage drop for cable cross-section calculation)
Dimming resolution	16 bit
Mounting	Lamp installation
DMX BUS (RS-485)	Galvanically isolated from supply + LED, max. 6V limitation by suppressor diodes
Dimensions	LxWxH 140x35x27mm
Weight	60g
Connection	Screw terminals for external voltage supply, LED and BUS max. 1.5mm²
Max. ambient temperature	+50°C
Storage temperature	-25°C to +70°C
Humidity	0-85% r.h. non-condensing
Protection class	IP10 when not installed
CE mark	Yes

10.1. Pin assignment

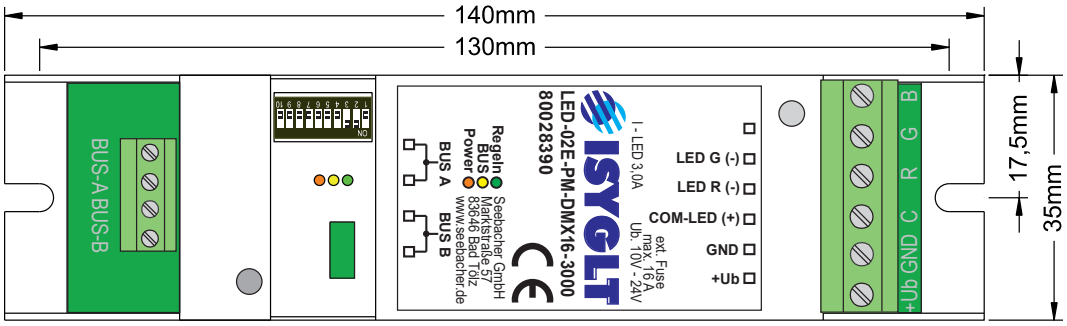
Screw terminals operating voltage / BUS

A	(BUS A, RS-485)
A	(BUS A, RS-485)
B	(BUS B, RS-485)
B	(BUS B, RS-485)

Screw terminals LED connections

	Not connected
LED G (-)	Cathode (-) for LEDs channel 2
LED R (-)	Cathode (-) for LEDs channel 1
COM-LED (+)	Common anode (+) of LEDs
GND	Voltage input - for LED power supply
+Ub	Voltage input + for LED power supply

View



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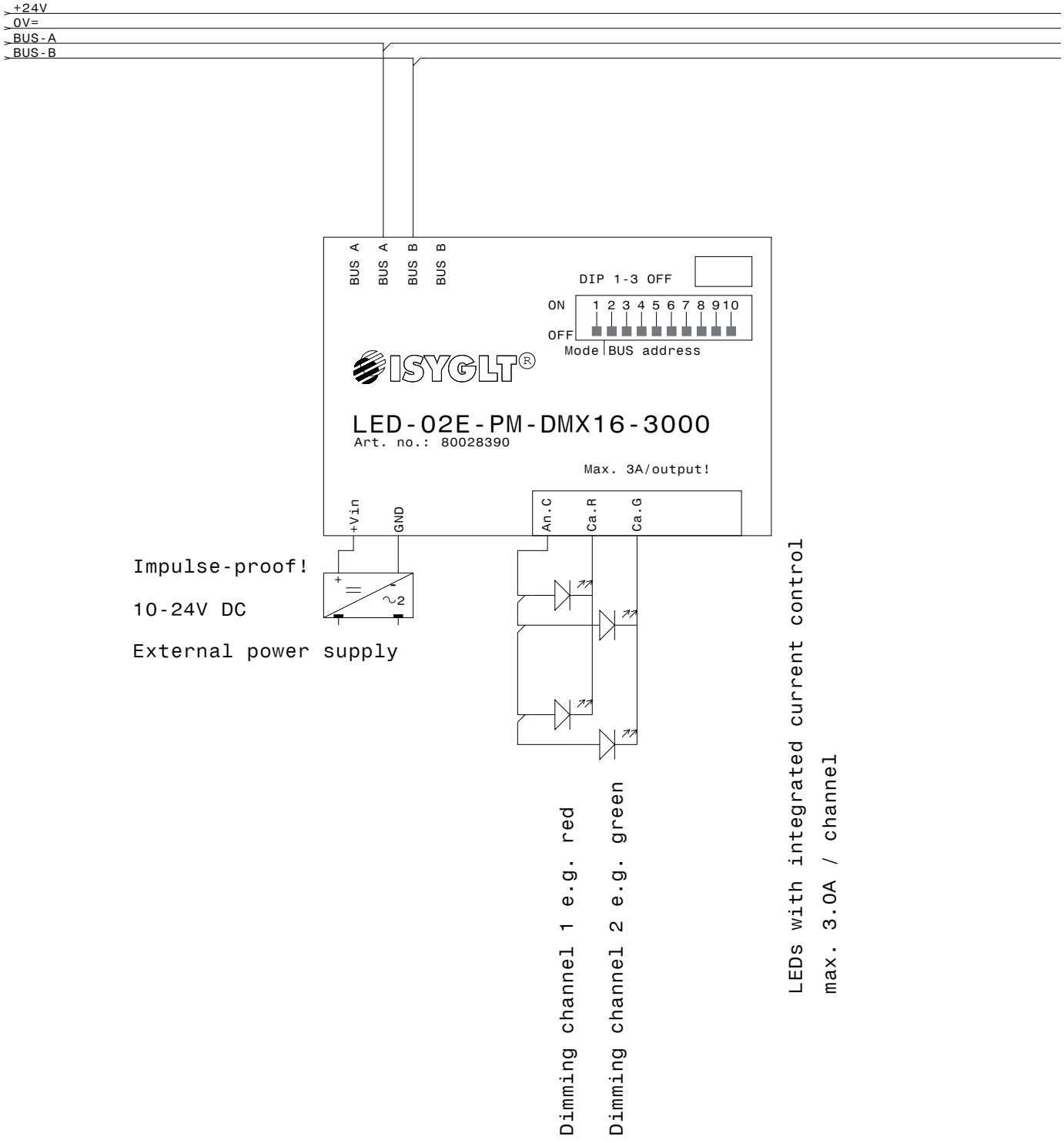
11. Wiring diagram

ISYGLT operation



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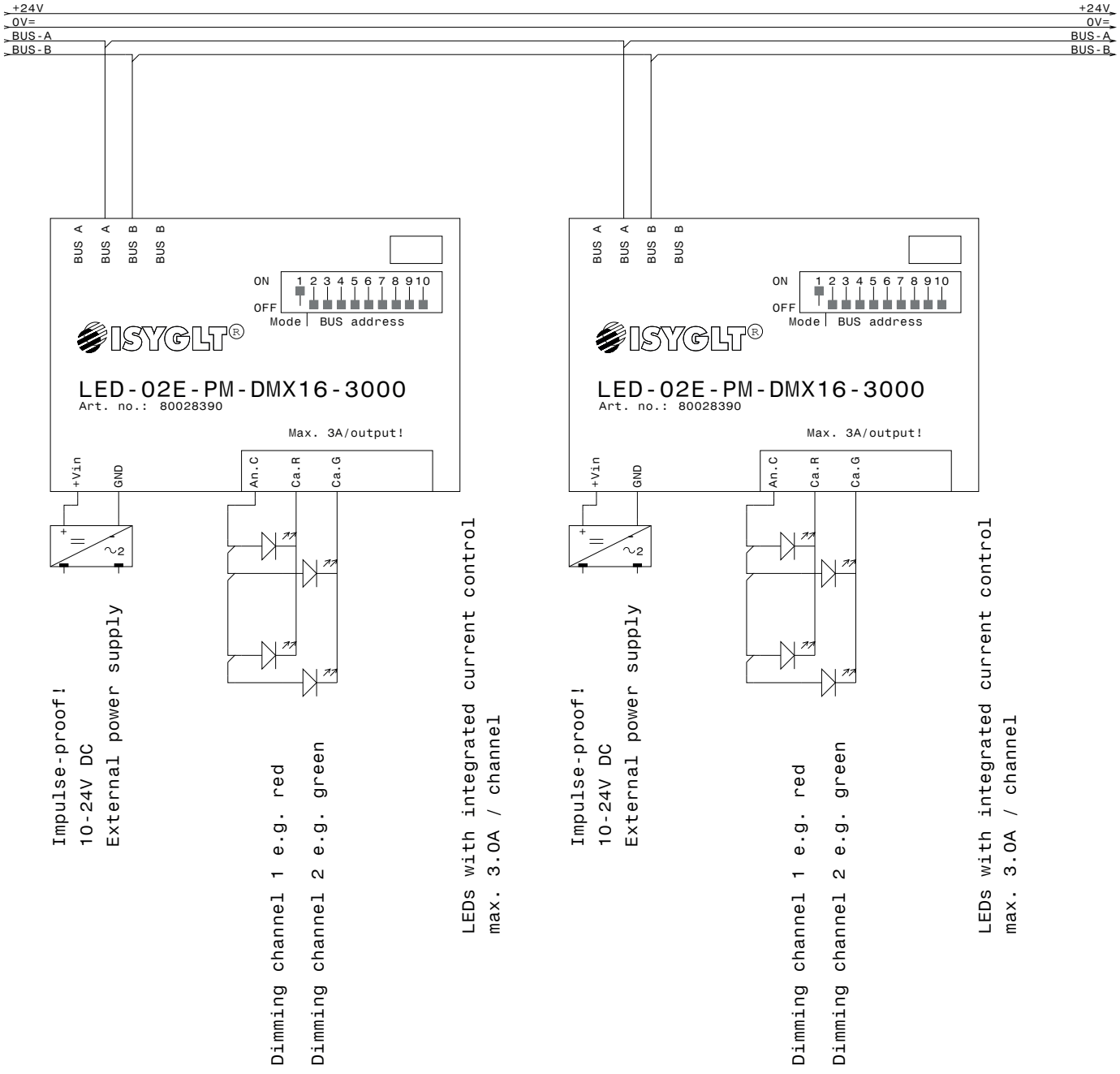
DMX-512 operation



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