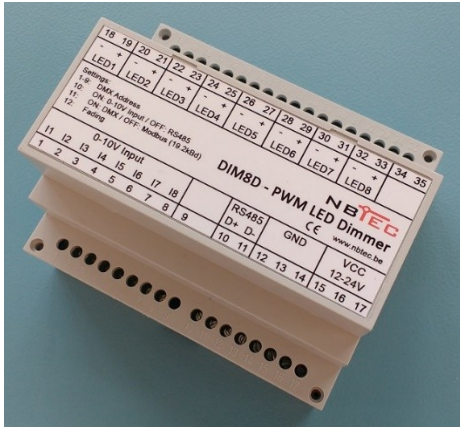# DIM8D – 8 Channel LED Dimmer

Info

The DIM8D dimmer can control up to 8 LED strips or spots (5A per channel). The brightness of each channel can be set using 0-10V inputs, DMX or Modbus RTU. The dimmer has a switchable "fading" function which ensures a smooth transition between brightness settings.

Connections (also present on dimmer)

The current rating of the power supply should at least be equal to 1.2 times the total current draw of the LED strips/spots.

Depending on the total current draw, more than one cable (for GND and VCC) should be connected between the power supply and the dimmer.
The following table shows the minimal amount of cables in function of the maximum current draw:

Max. Current	No. of cables
15A	1 x 2.5mm^2
30A	2 x 2.5mm^2
40A	3 x 2.5mm^2

Keep the cable length between the dimmer and power supply as short as possible

The voltage of the power supply must be equal to the rated voltage of the connected LED strips/spots. Only connect LED strips/spots to the dimmer which have the same rated voltage.

It is advisable to install a fuse in series with the input power cables rated 10% above the normal load current. No internal overcurrent protection is present.

Specifications

Power Supply	12-24V
Power usage	50mA (dimmer only)
PWM Outputs	8 x 5A (sinking)
Inputs	8 x 0-10V
	RS485
	• Packet
	• DMX512
	• Modbus RTU
CE Compliance	The DIM8D dimmer is CE compliant when installed in a shielded and earthed metal case.
Operating Temperature	-20 – 85°C
Size (LxWxH)	105x90x61mm

Setup

Setup is done using the dip-switch (SW2) found on the printed circuit board.
Function selection is done using DIP switch 10 and 11.

DIP-Switch	Function			
	0-10V	RS485 – Packet	RS485 – Modbus	RS485 – DMX
1 to 8	No function	Address (Binary)	Address (Binary)	Address (Binary)
9			ON: 9600 baud OFF: 19200 baud	
10	OFF	ON	OFF	ON
11	OFF	OFF	ON	ON
12	Fading	Fading	ON: Even parity OFF: No parity	Fading

The dimmer needs to be restarted when dip-switch changes are made for the changes to take effect.

0-10V Input

In 0-10V mode the dimmer channels will respond to the voltage applied to the analog inputs (I1 to I8).
0V corresponds to a PWM duty cycle of 0%, 10V to a duty cycle of 100%.
The inputs have to be driven from an active voltage source.

RS485

Packet

In Packet mode, the RS485 serial interface accepts readable RS485 packets,
The serial interfaces has the following configuration:

Serial speed	9600 baud
Start bits	1
Data bits	8
Parity	no parity
Stop bits	1
Handshaking	none

Packet format
dim1 ch0 255\n

- dim1:   Dimmer with address configured to 1

- ch0:   Channel 0 (the first channel, going up to 7) of the dimmer is to be set

- 255:   Brightness of the channel (0 to 255 for maximum brightness)

- \n: Newline

DMX

In DMX mode, the RS485 serial interface accepts DMX512 packets.
The dimmer channels will respond to the 8 slots (8-bit each) including and following the slot selected using the dip-switches (switch 1-9).
A slot value of 0 corresponds to a PWM duty cycle of 0%, 255 to a duty cycle of 100%.

Modbus

In Modbus mode the dimmer is configured as a Modbus slave, the RS485 serial interface will accept Modbus RTU packets. The serial interface has the following configuration:

Serial speed	Selectable (dip-switch 9) : ON: 9600 baud / OFF: 19200 baud
Start bits	1
Data bits	8
Parity	Selectable (dip-switch 12) : ON: even parity / OFF: no parity
Stop bits	1
Handshaking	none

The dimmer will respond to the following Modbus commands:

- Read Holding Registers (fc03)
- Preset Single Register (fc06)
- Preset Multiple Registers (fc16)

The Modbus slave address (1 to 247) is configured using the dip-switches (switch 1-8).
The duty cycle of the dimmer channels respond to register addresses 0 to 7.
Writing a value of 0 corresponds to a PWM duty cycle of 0%, 65535 to 100%.
Fading is configured through register 8 (0: Fading OFF, 1: Fading ON).

Termination Resistor

The dimmer contains an RS485 termination resistor which can be enabled by shorting jumper JP1.

Fading

Fading, when enabled, will provide for a smooth transistion between dimming levels.
In Modbus mode fading is configured through register 8 (0: Fading OFF, 1: Fading ON).