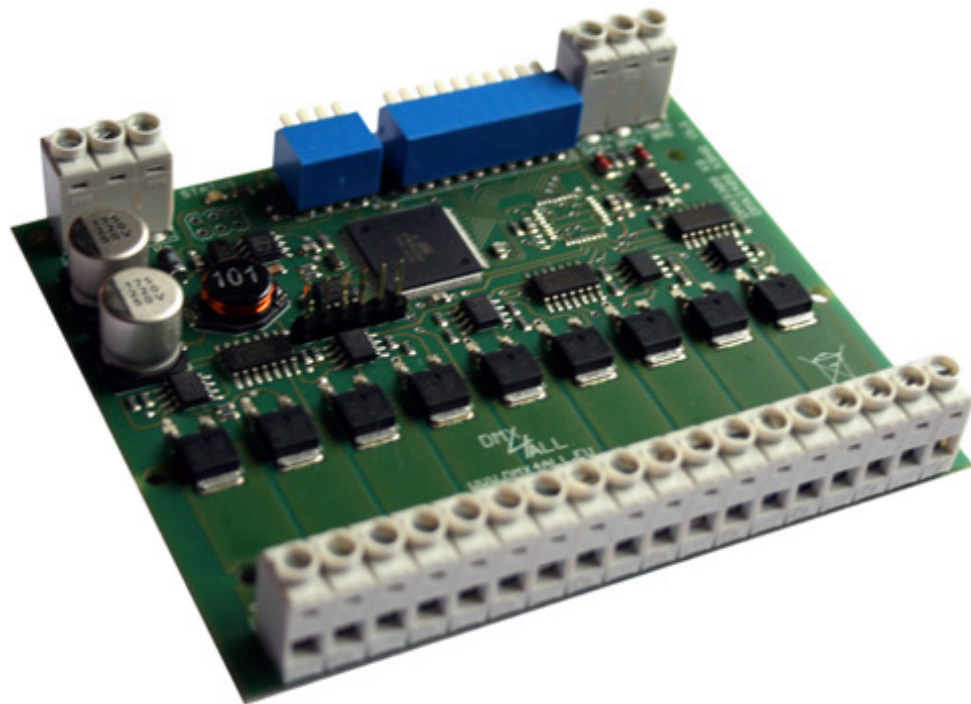# DMX-LED-DIMMER X9 HR

## 9x 16 BIT PWM per 10A

User Manual

DMX ®

4ALL

Description

The **DMX-LED-Dimmer X9 HR** is especially designed for controlling RGB LED-Stripes. It has 9 High-Resolution PWM-Outputs (3xRGB) independently controllable via DMX.

A global master dimmer (all outputs) or a master dimmer per RGB-group can be activated. The global master dimmer can be determined permanent as system-master dimmer to DMX-address 1.
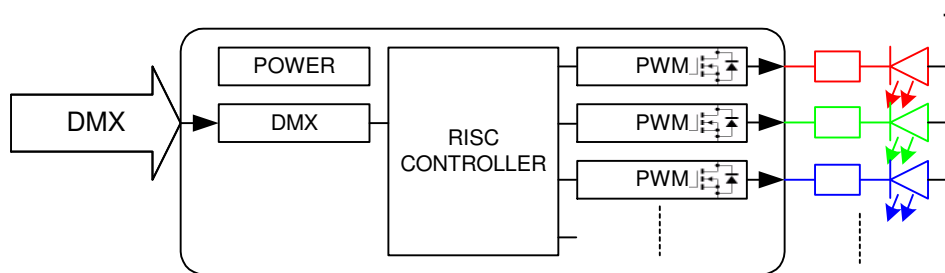
Energy Saving Design:
By modern switch mode technology less heat will be generated and thus the energy consumption will be reduced.

Technical Data

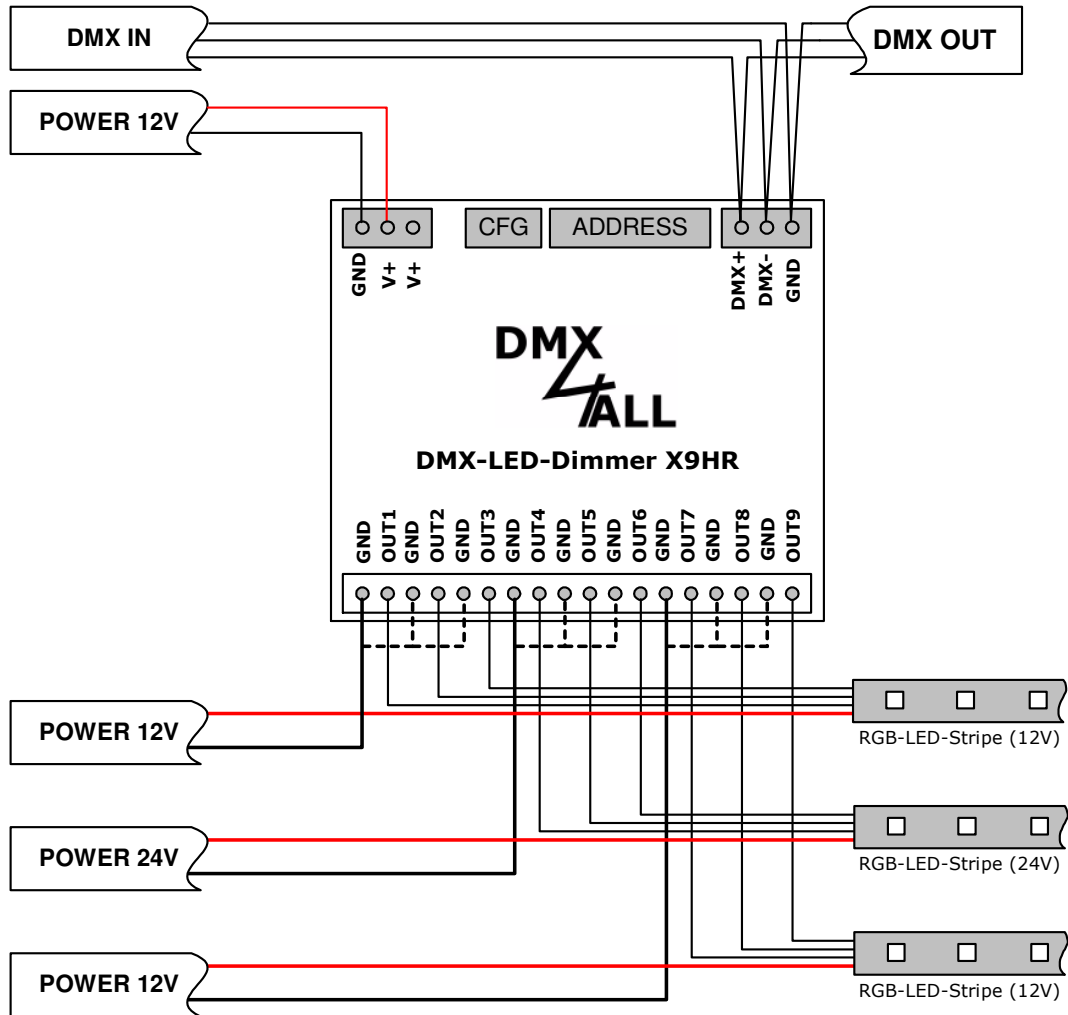|	
Power supply:	7-24V DC / 100mA without load
LED voltage:	7-24V DC (no AC voltage !)
DMX:	9 channels with 8Bit-controlling and LookUp-table 18 channels with 16Bit-controlling + optional master-dimmer-channels
DMX-Fail:	Hold / Off / On
Output:	9 PWM-signal with 16Bit-resolution common supply voltage
Output current:	max. 10A each output, Together 90A with all GND connections (direct from PSU)
Output power:	9x 120W (12V) / 9x 240W (24V)
PWM-frequency:	244 Hz / 2kHz / 4kHz

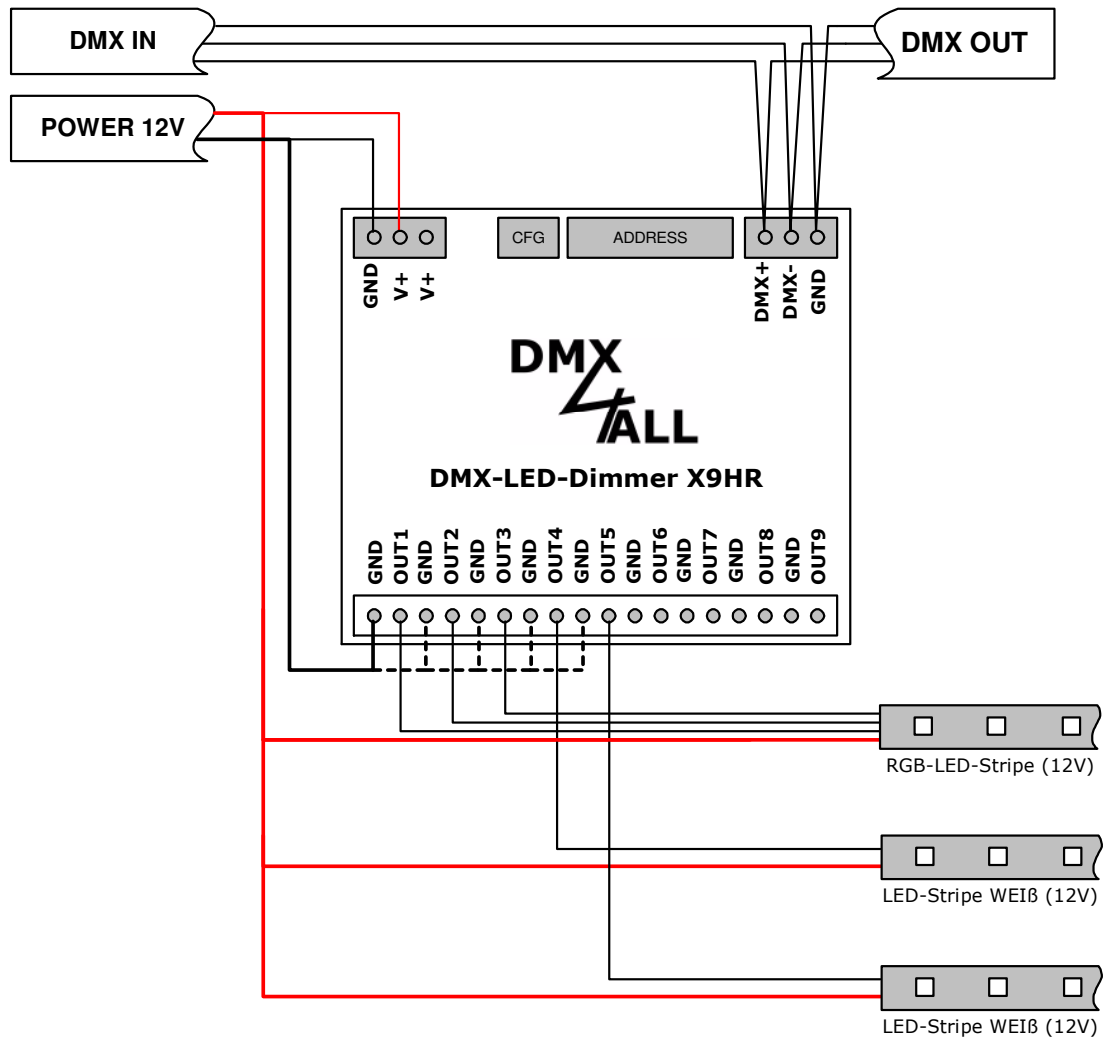**Dimensions:** 99 x 82 mm

Connection with one power supply
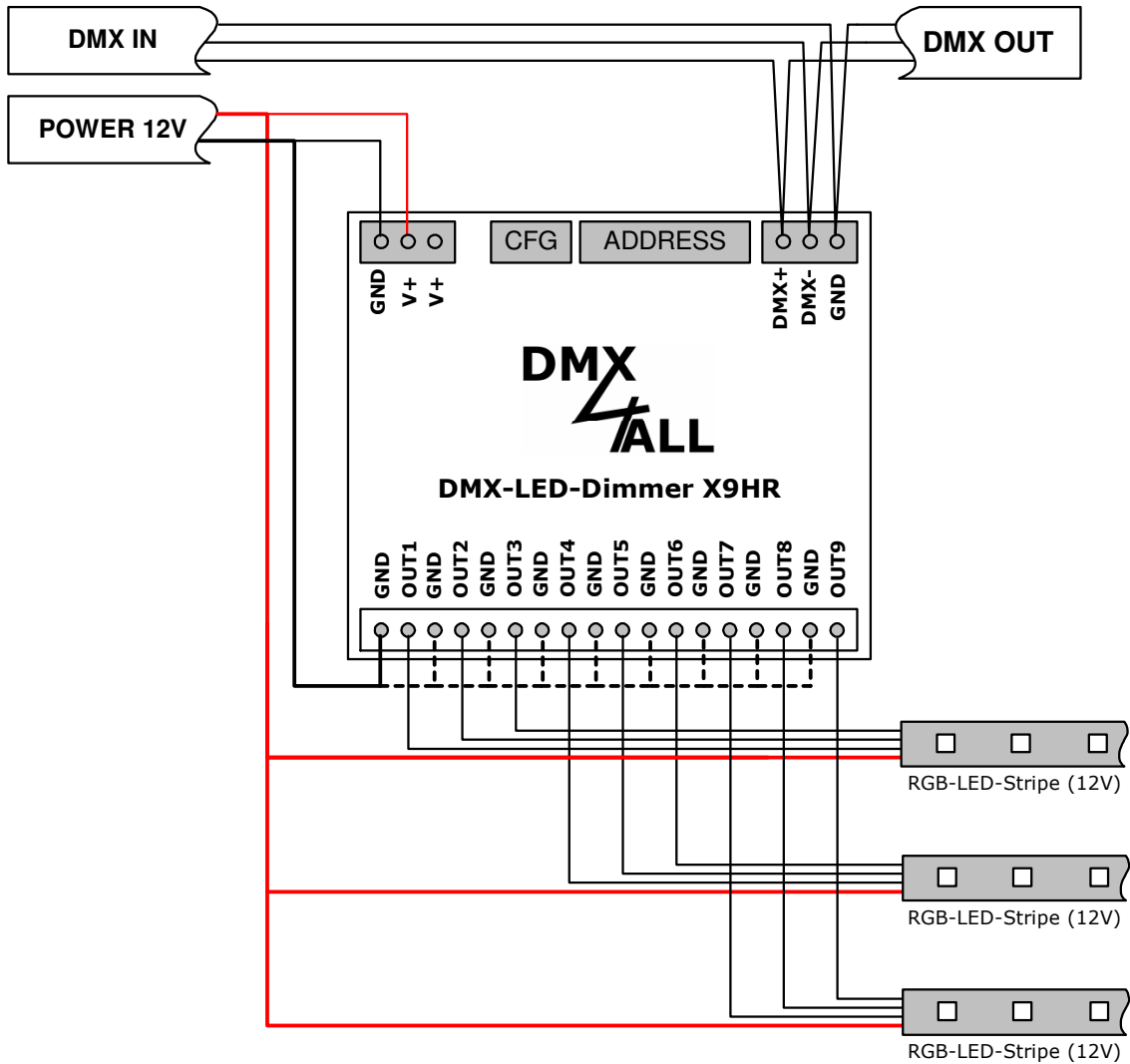
Must be connected direct
from the power supply.
Depends on the current for
the LED-Stripes.

Connection with several power supplies

DMX IN

DMX OUT

POWER 12V

CFG   ADDRESS

GND V+ V+

DMX+ DMX- GND

DMX LED-Dimmer X9HR

GND OUT1 GND OUT2 GND OUT3 GND OUT4 GND OUT5 GND OUT6 GND OUT7 GND OUT8 GND OUT9

POWER 12V

RGB-LED-Stripe (12V)

POWER 24V

RGB-LED-Stripe (24V)

POWER 12V

RGB-LED-Stripe (12V)

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Must be connected direct
from the power supply.
Depends on the current for
the LED-Stripes.

Connection with single color and multi color stripes
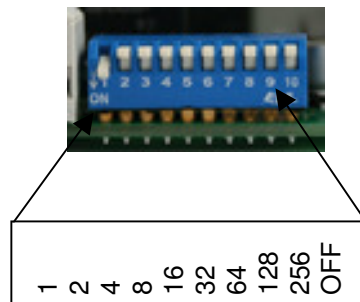

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Must be connected direct
from the power supply.
Depends on the current for
the LED-Stripes.

DMX-Addressing

The starting address is adjustable with the switches 1 to up 9.

Switch 1 has the valecy 2^0 (=1), switch 2 the valency 2^1 (=2) etc. until switch 9 has the valency 2^8 (=256). In total the switches showing ON correlate with the starting address.

LED-Display-Codes

The integrated LED is a multifunctional-display.

During the normal DMX-operation the LED flashes permanent. In this case the device is working.

Furthermore the LED shows the events. In this case the LED lights in short pitches and than turns into the off mode for a longer period. The number of flashing impulses corresponds with the event number:

Error Status	Error	Description
1	No DMX	There is no DMX-Signal reaching the dimmer
2	Address error	Check if a valid DMX starting address is adjusted at the DIP-switch
3	DMX-signal error	An invalid DMX input signal is detected, invert the signal line by changing switch 2 and 3 or use a twisted pair wire.

DMX-Fail option

from 06/2013 (Version 2)

The DMX-LED-Dimmer X9 can hold the last value, switch on or switch off the LED outputs on DMX fail.
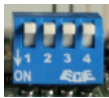
This DMX-Fail option is selectable with the Jumper.
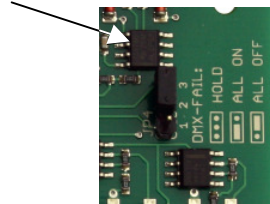
Setting the operation mode

The **DMX-LED-Dimmer X9 HR** has 2 operation modes adjustable via the configuration switch 4:

Switch 4 OFF: Controlling the outputs via one DMX-channel

In this operation mode each output has a LookUp table.
This displays the outputs 16Bit-resolution for the available 256 values of the DMX-channels. The LookUp tables are linear programmable ex ante and freely programmable.

### Switch 4 ON: Controlling the outputs via two DMX-channels

Each output has a 16Bit resolution. For a direct calling via DMX, 2 DMX-channels are used per output. The 2. DMX-channel is for the subtle settings.

Configurating the LookUp-Table

The **DMX-LED-Dimmer X9 HR** has one LookUp table per output. The received DMX-channel has values from 0 up to 255. However the DMX-LED-Dimmer X9 HR output driver provides 65536 steps (16 Bit) which will be assigned to the DMX-values.
So it's possible to effect with small steps little brightness changings in the lower brightness range. However in the upper brightness range it's possible to program bigger steps.

To define the LooUp table please use the program DMX-LED-Dimmer PC-Control from V2.1. For every output exists a table with the DMX-values from 0-255 and the corresponding output valus. A graphically presentation of the table represents the output charateristics:
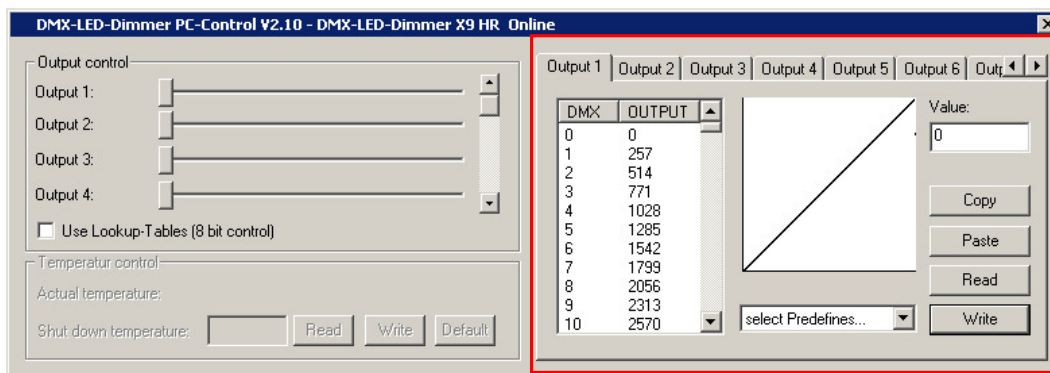
For transferring the table into the **DMX-LED-Dimmer X9 HR** a PC-connection cable and a USB-connection from the PC is necessary. Please connect the cable and the PC one another and the CTRL-connection from the **DMX-LED-Dimmer X9 HR** as shown in the right picture.
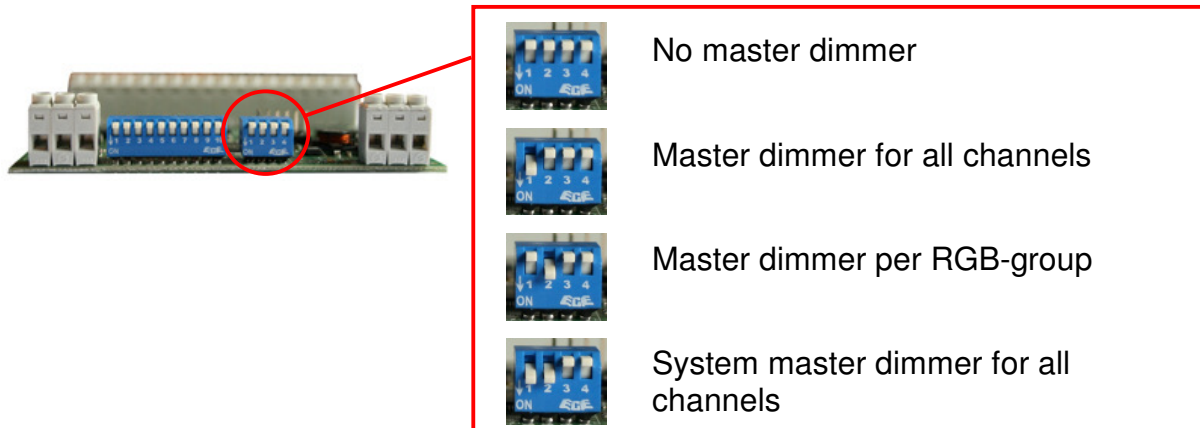

Now, start the software DMX-LED-Dimmer PC-Control.

Select *Write* to transfer the table from the displayed output.
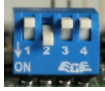
Software-Reset

A RESET for the LookUp table of the **DMX-LED-Dimmer X9 HR** will be executed by adjusting switch 1 until 10 on ON and than turning on the supply voltage. During the reset the LED flashes with the event code 4. This will take some time so wait until the event code 4 is not displayed.

DMX-Master-Dimmer

The **DMX-LED-Dimmer X9 HR** has several master dimmer. These will be activated as follows:

	No master dimmer
	Master dimmer for all channels
	Master dimmer per RGB-group
	System master dimmer for all channels

Master dimmer for all channels

The DMX-channel which is adjusted as starting address will be used as master dimmer for all 9 outputs. The DMX-addresses assignment is as follows:

Starting address

Master	OUT 1 (R1)	OUT 2 (G1)	OUT 3 (B1)	OUT 4 (R2)		OUT 9 (B4)

Starting address

Master	OUT 1 (R1)	OUT 1 (fine)	OUT 2 (G1)	OUT 2 (fine)	OUT 3 (B1)	OUT 3 (fine)	OUT 4 (R2)	OUT 4 (fine)		OUT 9 (B4)	OUT 9 (fine)

Master dimmer per RGB-group

Per RGB-group one master dimmer is used. The DMX-addresses assigment is as follows:

Starting address

Master 1	OUT 1 (R1)	OUT 2 (G1)	OUT 3 (B1)	Master 2	OUT 4 (R2)		OUT 9 (B4)

Starting address

Master 1	OUT 1 (R1)	OUT 1 (fine)	OUT 2 (G1)	OUT 2 (fine)	OUT 3 (B1)	OUT 3 (fine)	Master 2	OUT 4 (R2)	OUT 4 (fine)		OUT 9 (B4)	OUT 9 (fine)

System-master dimmer for all channels

The value for the master dimmer corresponds with the DMX-channel 1 which is used as master dimmer for all 9 outputs. The DMX-starting address represents the DMX-channel on which begins the DMX-values for the outputs. The DMX-addresses assignment is as follows:

Channel 1   Starting address

| Master	OUT 1 (R1)	OUT 2 (G1)	OUT 3 (B1)	OUT 4 (R2)		OUT 9 (B4)

Channel 1   Starting

Master	OUT 1 (R1)	OUT 1 (fine)	OUT 2 (G1)	OUT 2 (fine)	OUT 3 (B1)	OUT 3 (fine)	OUT 4 (R2)	OUT 4 (fine)		OUT 9 (B4)	OUT 9 (fine)

High Frequency Mode

(from FW V1.1)

The **DMX-LED-Dimmer X9 HR** has a High Frequency Mode. This mode is optimized for using in correlation with video recording e.g. in the TV-studio.

This will be activated as follows:

High Frequency Mode 2kHz

High Frequency Mode 4kHz
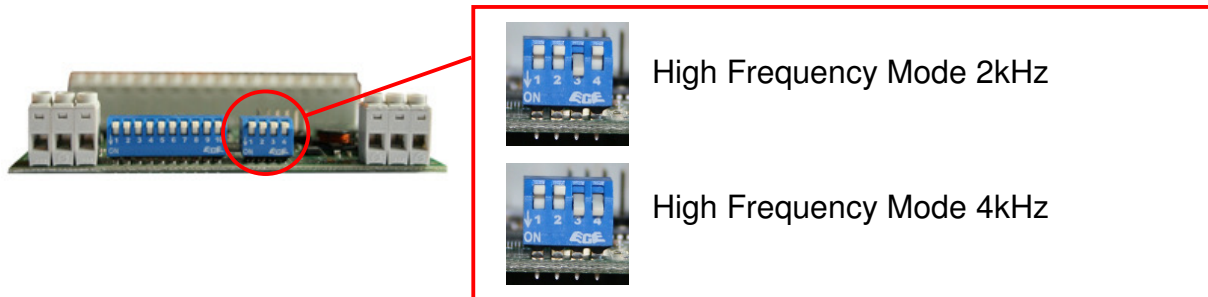
In this mode a DMX-channel (256 steps) will be used for the brightness settings. The master dimmer options are combinable.

In this mode is a fixed LookUp table used which can't be changed.

Equipment

DIN-rail housing 1050

LED-Dimmer Configuration cable

CE-conformity

This assembly (board) is controlled by a microprocessor and uses high frequency (8MHz). To get the characteristics of the assembly in relation to the CE-conformity, an installation in a compact metal casing is necessary.

Risk-Notes

You purchased a technical product. Conformable to the best available technology the following risks should not excluded:

Failure risk: The device can drop out partially or completely at any time without warning. To reduce the probability of a failure a redundant system structure is necessary.

Initiation risk: For the installation of the board, the board must be connected and adjusted to foreign components according to the device paperwork. This work can only be done by qualified personnel, which read the full device paperwork and understand it.

Operating risk: The Change or the operation under special conditions of the installed systems/components could as well as hidden defects cause to breakdown within the running time.

Misusage risk: Any nonstandard use could cause incalculable risks and is not allowed.

Warning: It is not allowed to use the device in an operation, where the safety of persons depend on this device.

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