Users manual **LEDdriver12-R1**

Firmware V1.3(01-10-01-2014)
Please, read this manual carefully before using the LEDdriver12

Theater technisch lab

LEDdriver12 is a DMX512 steered 12-fold dimmer pack for flicker free dimming of led-panels, led-downlights, led-strips etc. This device (plus a DC-voltage supply) replaces the more or less dimmable common drivers/adapters, needed to connect led light sources on mains.
LEDdriver12 gives you the possibility to dim led light sources like led-panels, led-downlights etc. with the same quality as is possible for standard halogen lamps by use of a triacdimmer. With LEDdriver12 you get an absolute flicker free led lighting. It is the best choice for TV-studios, film-studios, film halls, theater halls etc. The lighting system is buildup by one or more LEDdriver12, an equal amount DC-power supplies, DMX-controller and the led light sources.
On one LEDdriver12 you can only connect led light sources with the same nominal working voltage. The output voltage of the DC-power supply must match with this led voltage. For example led down-lights working on 32V need a power supply of about 36V. For the highest efficiency you have to adjust the output voltage of the power supply to the lowest value at which you get the maximum luminous efficiency of the down-light.

LEDdriver12 controls the light intensity of the connected led light source by controlling the current flowing through the leds from zero up till a certain maximum value at which the maximum light intensity will be produced.
For each channel of LEDdriver12 you can set the maximum output current from 0,1[A] up till 3,6[A.] Which value has to be set depends on the led light source and the number connected on that channel. For example four 24[W] downlights with a working voltage of 32[V] need a maximal current setting of (4x24W)/32V=3.0A for that channel on which these down-lights are connected on.

To get a higher drive capacity it is possible to connect two or more outputs in parallel; tie the numbered outputs together with <u>short</u> wires on the WAGO male output connector. This connection will be the negative side of the parallel output, for the positive side you can take one of the connector pins designated with "+". Note: for the concerning channels the same <u>control-curve</u> must be set and the channels must be driven with the same <u>DMX input.</u>

To prevent differences in light intensity for the led lights connected on the same output, the wiring from each light must have roughly the same lenght. This rule is not really critical. You get the best results by starting with 2x1,5mm2 leading to a star point on which the led lights are connected with wires of roughly the same length.

In case the DC power supply is placed near LEDdriver12 (round 0.5[m]), a 2x2,5mm2 connection cable is sufficed in case of a supply power of 600[W] or less. This is important towards excessive voltage drops in the connection cable. This stays always an important point of interest in case of low voltage systems. The resistance of a copper cable is 0.035[Ohm.mm2/m]. So this leads to a resistance of 0.023[Ohm/m], 0.014[Ohm/m], 0.00875[Ohm/m] and 0.006[Ohm/m] for respectively a connection cable (two wires) of 1.5[mm2], 2.5[mm2], 4[mm2] and 6[mm2].

To optimize power saving and to prevent excessive heat production in the LEDdriver12 you have to adjust the output voltage of the DC-power supply downwards to that value at which you still have the maximum light intensity at 100% drive.
Theater Technisch Lab delivers DC-power supplies from MEAN-WELL with a warranty period of 5 years . The output voltage of these power supplies is adjustable between +/- 10% of the nominal value. Note that most high power DC-power supplies have a blower inside. The noise levels of these blowers are not negligible.

Operating instructions

All the controls are located at the front panel of the LEDdriver12

Changing the DMX address
Push button [SELECT digit]. The decimal point of the first digit starts to blink meaning this digit can be changed by pushing the buttons [<<] or [>>]. If you push [SELECT digit] more than ones, you can select any digit. Push [STORE settings] to store changes you have made permanently in memory => the blinking decimal dot disappears.

Changing the control Curve

Push on [SET]. The display shows X:01, with X=1,2,...9. These numbers represent a particular curve; 1=NON-DIM, 2=LINEAR and 3 up till 9 =LED light sources. The latter curves only differ from each other in the DMX value at which the LED light source starts burning. The number after the double dot represents the channel number. Push [SELECT digit] to select the curve number or the digits of the channel number. The blinking dot indicates which one you have selected to change. With the scroll buttons [<<] and [>>] you can change the digit. Changes made have to be permanently stored in memory by pushing [STORE settings]. After that the DMX address will be displayed again. You can give each channel the same curve as channel 1 at once. Push [SET]. The display shows, for example: 2:01. Select with [SELECT digit] the curve number. Change this with [>>] in symbol A (it follows the last curve number). Push [STORE settings]. Now you have selected for each channel curve 2.

Setting the same DMX address for all channels.

Push twice on button [SET]. The display shows A=y or A=n. 'n' means all channels have a different DMX address (factory setting), 'y' means all channels have the same DMX address. This will be indicated by a dot right above in the display. With button [<<] or [>>] a particular setting can be changed. Push on [STORE settings] to store the setting.

Setting hold last DMX data or not at lost of DMX signal.

Push three times on button [SET]. The display shows H=y or H=n. 'y' means DMX data will be hold at lost of signal (factory setting), 'n' means 'output will be faded to zeros at lost of signal'. With button [<<] & [>>] the setting can be changed. Push on [STORE settings] to store the setting.
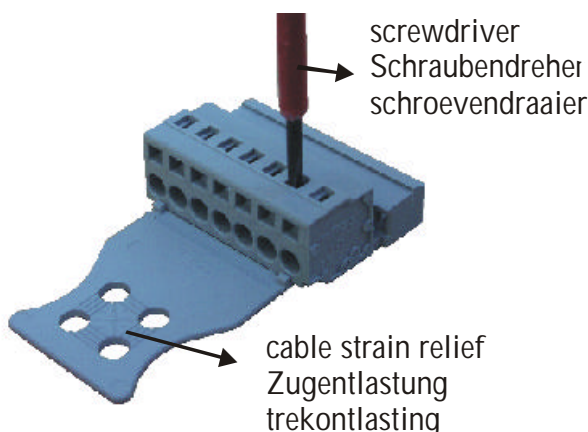
Setting the maximum output current for a channel.

Keep button [SET] pressed for a while till the green led is on. The display shows channel number 01. Pressing again on [SET] the display shows the maximum current value set for channel 01. For example 0.8A (factory setting). This can be changed by pressing button [<<] or [>>] and [SELECT digit]. By pressing again on [SET] the channel number will be displayed again. By changing this with the buttons [<<], [>>] and [SELECT digit] you can set the maximum current value for each channel as explained for channel 01.Push on [STORE settings] to store the setting.

Notes:

- The output is on three times an 8-pole female WAGO connectors; LEDdriver12 will be delivered inclusive three 8-pole WAGO male connectors. The power inlet is a 4-pole male WAGO connector (42[A]); LEDdriver12 comes with a 4-pole female WAGO connector to connect the power supply.
- The supply voltage may lay in the range of 12V,....,60V. Theater Technisch Lab can also supply the right MEAN-WELL switched mode power supply.
- The dimensions of LEDdriver12 are 145x235x43mm, weight 1.2[kg].
- Optional you can order two wall straps for wall mounting purposes.
- DMX-in and -through is on 5-pole XLR male and female respectively. In case DMX-through is not used it must be terminated by a 120[Ohm] metal film resistor (Do NOT use a wire wound resistor) .
- Each output is internally protected again short circuit and overload. In case of overheating of a channel the output of the corresponding channel goes on and off.
- At power-on the firmware version will shown on the display for a little while.

The picture below shows how to open the WAGO spring cage connection with a screwdriver:

screwdriver
Schraubendreher
schroevendraaier

cable strain relief
Zugentlastung
trekontlasting

Open cage clamp by pushing the screwdriver.