Users manual **LEDdriver16-R1**

Theater technisch lab

Firmware V1.0(1-06-2015)
Please, read this manual carefully before using the LEDdriver16

LEDdriver16 is a DMX512 steered 16-fold dimmer pack for flicker free dimming of led-panels, led-downlights, led-strips etc. This device (plus a DC-voltage supply) replaces the common "dimmable" mains drivers/adapters and a phase control dimmer.
LEDdriver16 gives you the possibility to dim led light sources like led-panels, led-downlights etc. with the same quality as possible for standard halogen lamps by use of a triac-dimmer. With LEDdriver16 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 built up by one or more LEDdriver16, an equal amount DC-power supplies, DMX-controller and the led light sources.

LEDdriver16 can be supplied by one- or by two power-supplies with equal or different output voltages. In the latter case channel 1,..,8 will be supplied by a power-supplies and channel 9,..,16 will be supplied by the other one. The output voltage of a power-supply must match the nominal working voltage of the led lights For example led down-lights working on 32V need a power supply of about 36V. To optimize power saving and to prevent excessive heat production in the LEDdriver16 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. High power DC-power supplies can be delivered with or without a blower inside. Note that the noise levels of types with a blower inside is not negligible.

LEDdriver16 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 LEDdriver16 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] down-lights with a working voltage of 32[V] need a maximal current setting of 4x(24W/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 length. 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 LEDdriver16 (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].

Operating instructions
All the controls are located at the front panel of the LEDdriver16
Changing the DMX address
The DMX address is displayed on a three digit led-display.
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.
Setting the same DMX address for all channels.
By pressing button [press a while to SET] a while the indication dot 'DMX address same for all channels' in the right upper corner of the display can be set ON or OFF. If the dot is ON all channels have the same DMX address as channel-1.

Changing the control Curve
Push on [SET curve], the adjacent yellow signal led will glow. The display shows X:01, with X=1,2,....,9 representing a particular curve; 1=NON-DIM, 2=LINEAR and 3,...,9=LED. Curves 3,4,...9 differ from each other only by the DMX steering level at which the led light starts glowing; the higher the curve number the lower the starting level. The number after the double dot on the display 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.
By pressing button [press a while to SET] a while, before pressing [STORE settings], you can set for all channels the **same curve** as is set for channel-1. This will be stored in memory and after that the DMX address will be displayed.

Setting hold last DMX data or not at lost of DMX signal.
By pressing button [hold last DMX data] you can set the adjacent yellow led ON or OFF. If this led is ON the DMX data will be hold at lost of DMX signal. If the led is OFF the channel outputs will be faded to zero at lost of DMX signal. This setting will be automatically stored in memory.
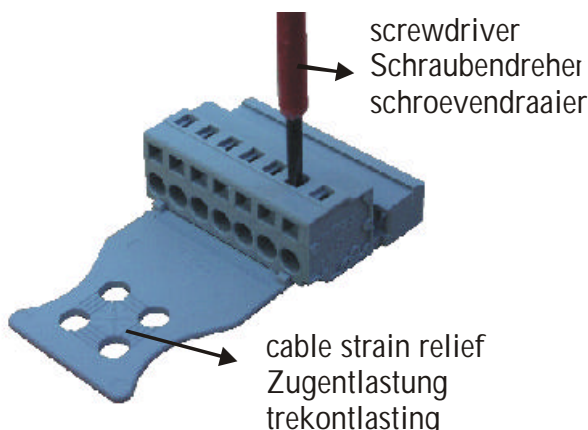
Setting the maximum output current for a channel.
Push on [SET max. output current]. The display shows channel number 01. Pressing again on [SET max..........] the display shows the maximum current value set for channel 01. For example 0.8A (factory setting). This can be changed by pressing button [<<] or [>>] and [SELECT digit]. By pressing again on [SET max............] 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.
By pressing button [press a while to SET] a while, before pressing [STORE settings], you can set for all channels the **same maximal current** as is set for channel-1. This will be stored in memory and after that the DMX address will be displayed.

Notes:
- The outputs are on four 8-pole female WAGO connectors; outlet-1, for example, is wired [+,1,+,2,+,3,+,4]. The power inlet is a 4-pole male WAGO connector (42[A]); it is wired [+,-,-,+]. If only one power supply will be used both '+' pins on the inlet connector must be connected with the '+' of the power supply. LEDdriver16 comes with a 4-pole female WAGO connector and four 8-pole WAGO male connectors.
- 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 LEDdriver16 are 145x417x43mm, weight 2.00[kg].
- Optional you can order two **wall straps** for wall mounting purposes or two **19-inch** mounting straps.
- 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.