

Users Manual **FLATpack R3**

Software-release V2.0

Please read this manual carefully before you use the dimmer.



FLATpack is a DMX512 controlled 16-fold dimmer pack that functions on a single phase 230[V].

The nominal load for each channel is 300[W]; the maximum total pack load is 3700[W]. The maximal load you can connect on a channel depends on the characteristics of the load; in case of 300W halogen lamps you have to pre-heat to reduce the inrush current. In case of capacitive loads like led lamps and electronic transformers you can only reduce the inrush current by reduce the load.

This dimmer is based on IGBT's instead of TRIAC's. Because of that it was possible to create a short circuit proof dimmer pack; there are no internal fuses for each channel. By selecting a control curve you can choose between leading or trailing edge phase control or a mix of these. A result of the latter option and a control resolution of 11-bits makes it possible to dim some on leds based light sources. **It is also possible to tie some outputs to gather (parallel) to get a higher output power.** An explanation you will find at the end of this manual.

FLATpack is extreme compact and light weight. The dimension are 416x140x47[mm], its weight is 1,75[kg]. With the optional 19-inch bracket set you can get a 19-inch housing with a 2HE build-in height. Also optional are wall-stand-off straps for fasten the dimmer on a wall.

On the topside *FLATpack* has a blower. This blower is controlled electronically and it has a step-free speed-adjustment. The temperature of each channel will be monitored; in case of over temperature the related channel will be dimmed down till the temperature is going down under a certain trip point. Over temperature will be display by the three digit led display.

The mains connection is a standard 16[A] Euro-net entrance. There are four outlets; 4x 8-pole female WAGO-connector(4x 'dimmed phase' and 4x 'neutral'). *FLATpack* comes with an 16[A] female Euro-connector and four male 8-pole WAGO connectors; 4x dimmed phase and 4x neutral. **In an outgoing cable with one neutral wire, this wire must be connected on all neutral connector pins.** These four male connectors are equipped with clamp-connections and a strain relief. At the end of this manual you can see more detail of this connector.

About control curves and the type of load.

For each channel you can select 9 control curves, numbered from 1 till 9. On the front of the dimmer you will find a table in which these numbers are assigned to a particular control curve. Here is the same table with an explanation of these curves:

- 1= 'non-dim': at a DMX-value of 50% the channel output will be switched ON or OFF with some hysteresis. Meant for non-dimmable loads.
- 2= 'linear': the output is proportional to the DMX-input. Used for halogen and standard filament lamps.
- 3= 'halogen lamps': mostly called S-curve, used to get a more uniform control of halogen lamps.
- 4= 'electronic trafo': used to get a uniform control of 12V halogen lamps with an electronic transformer.
- 5= 'inductive loads': used for low voltage lamps with a ring-core transformer. This is the only case of leading edge phase control. **More general this dimmer cannot handle high inductive loads, see also the remarks below.**
- 6= '230V led lamps': curve for 230V AC led-lamps with build-in convertor. For example ACLAIM.
- 7= '230V led lamps': special trimmed for Philips dimmable Master Glow LEDbulb, 230V AC.
- 8= '230V led lamps': curve for 230V AC cluster led-lamps or led-tube
- 9= 'ACRICHE leds': curve for controlling 230V AC ACRICHE leds.

The factory setting is 'linear'

Caution

230V Led lamps based on high power leds are mainly not dimmable because of the internal electronics.

12V AC led lamps based on high power leds are dimmable if they are connected on a dimmable electronic transformer.

The power-factor of a led lamp is not 1; the current that will be flow does not follow the voltage pattern. In general the current will be have a peaked shape. Because of that, the maximal power for a channel is reduced by a factor 0.6.

If you do not select the right curve or connect to many led lamps on a channel the led lamps will flicker.

Operating instructions

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. Changes you have made, have to be permanently stored in memory by pushing [STORE settings] => the blinking decimal dot disappears.

Changing the control Curve

Push on [SET control curve]. The display shows X:01, X=1,2,.....9. These numbers represent a particular curve. This is explained above and in a table on the front side of the pack. The number after the double dot represents the dimmer 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 you have made have to be permanently stored in memory by pushing [STORE]. After that the DMX address will be displayed again.

You can give each channel the same curve as channel 1 at once. Push [SET control curve]. 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 now [STORE settings]. Now you have selected for each channel curve 2.

Turn on/off Pre-HEATING

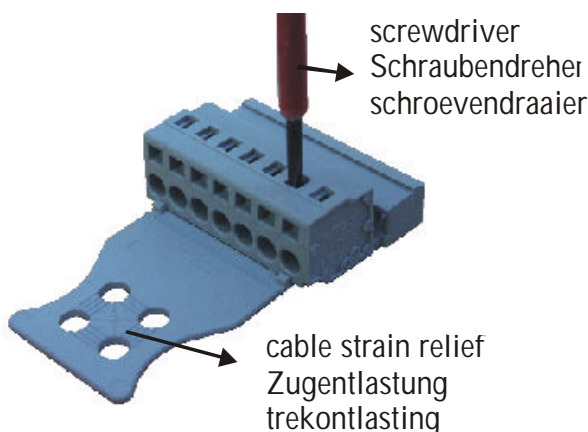
Push [SET control curve]. The display shows for example 2:01. Select with [SELECT digit] the curve-number. Change this number with [>>] in the symbol P (it follows the last curve number and the symbol A). Push [STORE settings]. Now you have set a pre-heating of 8% for all the dimmer channels. In case pre-heating was already set ON, pre-heating is now set OFF. The right upper display dot indicates the pre-heating setting.

Remarks

- **In an outgoing cable with one neutral wire, this wire must be connected on all neutral connector pins to avoid overload of the internal tracks on the printed circuit board.**
- **The maximum total load of the dimmer pack is 3700W. Place the dimmer in a well-ventilated environment. The maximum environment temperature should not be higher than 32 degrees Celsius. Make sure that there is an open space of at least 30[mm] height above the blower.**
- Each output is internal electronic protected against overload, short-circuit and over temperature. Over temperature can be caused by repeatedly tripping of the over voltage protection. This is mostly in case of high inductive loads and/or a wrong selected control curve. Examples are conventional transformers, electric motors or long cables on a reel. In case of over temperature the led <over temperature> starts to blink and the display shows the number of the corresponding dimmer channel. The output drive shall be dimmed down. Check the control curve setting for that channel and the inductivity of the load.
- Internally the pack is global fused with a ceramic fuse of 16A fast. Caution, if you need to replace this fuse be sure the pack is disconnect from mains power. If so, you can remove the upper shell.
- At power-on, the software version is shown on the display. At the same time the micro-controller checks the blower function by starting the blower at half speed. In case the blower malfunctions, the display shows the text 'FAN'. The dimmer pack won't start. If you cannot detect the cause of this malfunction at first sight, you have to connect your local supplier or the factory.
- If you need a higher output power you can tie several outputs together. For example for 1200W you have to connect 4 outputs together. **On the control desk you have to patch the corresponding DMX-channels to the same control channel. Be sure that for these dimmer channels the same control curve is selected.**

The Neutral on the output connectors are internally tied together.

How to open WAGO clamps with a screwdriver



Put a small screwdriver perpendicular on the connector (see photo) and push the down warts inside the connector, the cage clamp will open.

**FIRST DISCONNECT THE MAINS, BEFORE YOU OPEN THE DIMMER: DANGEROUS TO LIFE !!!
INSTALLATION AND REPARATION BY QUALIFIED PROFESSIONALS.**