Excalibur DELTA

12 x 10A Dimmer

Operating Instructions

As of 10/03

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1 General Information

1.1 Product description

The Excalibur DELTA Delta is a professional dimmer for use onstage and in the studio, spezial constructed for wiring on delta power supply systems. It comprises 12 individually controllable channels, each of which can be loaded with 2300 watts of resistive or inductive load in continuous operation.

The load currents are controlled via phase angle. Complex interference suppression through LC filters (suppression coils) ensures trouble-free operation. The 12 channels are secured by duplex line circuit breakers. The unit can be controlled either via a digital (DMX 512) or via an analog (0 - 10V DC) control signal.

The steel housing comes as a 19“ / 3U high slide-in case. All display indicators and operating elements are located on the front side of the unit. All cable connections are located at the back of the unit.
In addition, the following technical features ensure safe and reliable operation:

- three independent mains / control sets (one per phase)
- active phase-independent cooling (DC ventilating fan with two-stage, temperature-dependent rotation speed)
- temperature indicator with protective disconnect
- excess temperature display
- overvoltage indicator with protective disconnect
- mains fault indicator
- undervoltage operation up to 30% under rated voltage
- soft start after switching on and restarting following protective disconnect
- channel-specific LED indicators for fuse failure, load identification, and control input
- further indicators via illuminated diplay
- all settings menu-driven via 1 data wheel and 4 buttons
- test function for each channel
- adjustable lamp preheat
- adjustable output limiter
- 4 different dimmer curves can be set
- channel patching (control addresses can be assigned freely to any dimmer channel)
- “stand alone“ operation (without control desk; various presets, i.e., memories, such as chaser sequences can be set)
- DMX-failure presets can be programmed
- supply voltage for lighting control desk
- LED indicator for DMX control signal

1.2 Safety

The following safety instructions and technical data are necessary for trouble-free functioning of the unit as well as for the prevention of injury / damage to people and objects. For this reason, all safety and technical requirements must be followed without exception. Failure to do so exempts the manufacturer from any and all liability for both the unit's warranty and any resulting damages.

These instructions are considered an integral part of the Excalibur Dimmer, and should be kept with it at all times.

- **Caution**! When in operation, dangerous contact voltage is present at the load outputs, even if the channels are not currently in use and appear to be "off".

- Before opening the unit, it must be disconnected and removed entirely from the mains supply (pull out the plug, disconnect mains supply line).

- Protection Class I: Only insert unit's plug into socket with protective plug reception with protective earthing conductor. Operate the unit **ONLY** with protective plug reception! The power supply cross sections must be adapted to the preceding line circuit breaker.

- Connections to a mains supply line (permanent connection) as well as repair and maintenance work to, on, and within the unit may carried out only by qualified electrotechnical specialists.

- International protection IP 20 (NOT rain-, drip-, or splash-proof!)

- Unit's venting slot and air-outlet ports should never be covered or blocked, and must be cleaned whenever dirt, dust, or the like builds up! Do not use any fluids or sprays to clean, however; a very slightly damp soft cloth is best.

- When the unit is installed in closed racks or cases, there must be sufficient ventilation present for operation of the unit.

- Never insert any bodily parts or other objects throught the housing openings into the unit!

- In case of malfunction, the unit must be removed immediately and entirely from the power supply, and may not be operated again until qualified electrotechnical specialists have undertaken repairs.

- The unit may be operated from any position.

1.3 Technical data

Power supply:	230 V / 50 - 60 Hz three-phase operation mains delta-connected
Power consumption:	12x 2300 VA (with max load) 50 VA (no load)
Mains Connection:	1 Meter H07RN-F 4G6² with plug 4-pin CEE 400 V / 32 A by version A
Signal (digital):	DMX 512, 12 channels USITT DMX-512/1990 resp. DIN DMX 56930
- Input	XLR 5-pin, male
- Output	XLR 5-pin, female, direct connected with input
Signal (analog):	0 to +10 V/DC voltage area internally adjustable Input impedance: 10 kohm per channel
- Input	Sub-D 15 pin
Interference suppression (main / control)	EMC One-phase filtering (sink current 0,2mA per Phase)
Interference suppresion (power)	LC filters (suppression coils, radio-interference-suppression capacitors) Noise suppression better than N (VDE 0875) phase ramp time >300 msec (2,3 kW Load, 90° phase-angle control)
Max ambient temperature:	t_a = 40°C
Housing:	19" / height: 3 U, depth: 430 mm
Weight:	20 kg

Design and technical details subject to change.

2 Operation

2.1 Installation

The Excalibur Delta Dimmer is meant to be installed in 19“ rack or flightcases. At the front of the dimmer are four drill holes for fastening with M6 screws. For stationary operation, this is sufficient. For mobile use, please mount the dimmer on slide bars as well. A minimum of 480 mm is required for installation depth, including cables and plugs.

If more than one dimmer are to be installed in a rack or flightcase, be sure to maintain a space of 1U high (44 mm) between the units to avoid heat coupling. In order to provide sufficient cooling in a closed case, there should be an air-intake port of at least 50 cm^2 per dimmer (e.g. one ventilation aperture 1U high).

2.2 Electrical connections (mains)

Version A - with output connectors and mains-supply lead incl. three-phase plug:

Mains circuit connection via CEE three-phase 32A 4-pin connector.

Socapex or compatible connectors (e.g., ICP) are required for **connecting the load cables**.

Cables for this purpose should be suitable for mobile units: flexible, multiwire nonmetallic sheathed cables (e.g., H05VV5-F 14 G 2,5). The cross section of the individual wires may not be less than 1.5mm^2, and when cables are longer, not less than 2.5mm^2. Per channel, one wire is required as channel live and one as channel return conductor. For the protective conductor connection, one wire per load cable is sufficient.

At the back of the dimmer are two 19-pin output sockets (Socapex), each for 6 channels.

Pinning of the load-output plug sockets:

Housing / external-contact surfaces - protective earthing conductor PE

PIN 1 = Live channel 1 (7) L1	PIN 2 = Return channel 1 (7) L2
PIN 3 = Live channel 2 (8) L2	PIN 4 = Return channel 2 (8) L3
PIN 5 = Live channel 3 (9) L3	PIN 6 = Return channel 3 (9) L1
PIN 7 = Live channel 4 (10) L1	PIN 8 = Return channel 4 (10) L2
PIN 9 = Live channel 5 (11) L2	PIN 10 = Return channel 5 (11) L3
PIN 11 = Live channel 6 (12) L3	PIN 12 = Return channel 6 (12) L1

PINS 13 – 18 = PE (green / yellow)

Version B - hard wired (without output connectors and mains-supply lead):

Main circuit connection via pre-fuse of maximum 40A per phase. For connection to the mains, use a non metallic sheathed cable of 4 x 10mm^2 with 40A cable protection (e.g., H07RN-F 4G16); for stationary installations, solid cable may be used (e.g., NYM-J4x10). Connection within the dimmer is at the terminal block for mains input.

Pinning of mains-input terminals:

PE (green/yellow) = Protective earthing conductor (green/yellow)
L3 = Phase L3 (blue)
L2 = Phase L2 (brown)
L1 = Phase L1 (black)

Connect the **load cables** within the dimmer on the protective-earthing-conductor and return-conductor bus bars and on the terminals of the opto pcbs. The same conditions apply for the type of load as in dimmer version A. For stationary installations, solid non metallic sheathed cables can be used here as well.

The load cables' protective earthing conductors should be attached to the green bus bar using wire terminal sleeves. The lives for channels 1 – 6 should be connected to the pcb OPTO 1 – 6 , the lives for channels 7 – 12 on the pcb OPTO 7 – 12. The corresponding terminals are marked on the pcbs using lamp symbols (x in o) and channel numbers (CH1 – CH12). The terminals can be opened by pressing the white lever (a small screwdriver is helpful here). Pull relief for the cables take place via the screw connections at the back. The returns for channels should be connected to the gray terminal board (1 – 12 from left to right).

2.3 Electrical connections (controls)

Analog control input :

For connecting an analog control cable, there is a 15-pin sub-D connector (analog input 0 – 10V) at the back of the dimmer. This requires a 15-pin sub-D cable plug with locking mechanism (UNC-40 thread).

Pinning of the sub-D connector:
Pin 1...12 = channel 1...12
Pin 13 = + 20V power supply for lighting control desk (unregulated, max 500 mA)
Pin 14 = not connected
Pin 15 = Ground (GND)

For the control cable, we recommend an unscreened multiwire flexible sheathed cable (e.g., LIYY 14 x 0.14). With long cable lengths and small wire cross sections, voltage drop must be taken into consideration. The dimmer channels cannot be fully powered up if the maximum value of the analog control signal is under 9.5 volts. One can compensate for possible voltage drop due to the supply line within the dimmer on the control pcb with the trimming potentiometer RAMP MAX.
Smaller lighting control desks which do not have their own power supply can be supplied via the control cable.
The power source is protected with a fine-wire miniature fuse (500mA/T). The fuse holder (output fuse 20V DC) is located underneath the sub-D connector. To change the fuse, the sealing cap must be removed using a suitable screwdriver (bayonet seal: push the cap inward against spring pressure, turn a quarter rotation counterclockwise, and yield to spring pressure).

DMX control input:

The DMX control cable is connected via a 5-pin XLR built-in plug located at the back of the dimmer.

Pinning of the input (*DMX 512 Input*) XLR built-in plug:
Pin 1 = Ground (GND)
Pin 2 = DATA -
Pin 3 = DATA +
Pin 4 = not connected
Pin 5 = not connected

Pinning of the output (*DMX 512 Output*) XLR built-in plug:
Pin 1 = Ground (GND)
Pin 2 = DATA -
Pin 3 = DATA +
Pin 4 = not connected
Pin 5 = not connected

A double-wire, screened non metallic sheathed cable (e.g., microphone cord MY 206 NF) should be used for the DMX control signal, with the cable's screening laid bilaterally in PIN 1's plugs. This carries the ground current. Connecting the ground to the plug housing is forbidden.

The dimmer's DMX input and output are parallel (signals are fed through). In order to ensure trouble-free signal transmission, a terminating resistance of 120 ohms must be

connected between DATA+ and DATA– (XLR plug without cable, solder resistance between PIN 2 and PIN 3) to the end of the DMX line (last DMX output).

2.4 Starting the unit

The unit does not have an internal mains switch. The dimmer is turned on when mains-voltage is switched on. Mains indicators are located on the front. Three LEDs (power in/over volt., L1, L2, L3) indicate in green whether the voltages for the three phases are being carried; overvoltage, e.g. due to a mains-connections defect, is indicated in red).

Safety information:
The mains indicators for L1, L2, L3 are not direct voltage displays! If the electronics fuses are triggered at the back of the dimmer due to a defect, the mains displays can no longer indicate the carried voltages.

The dimmer's 12 channels are ready to operate when the line circuit breakers at the front of the unit are switched on (when the black operating levers are pointing up).

The dimmer channels are assigned to the three phases as follows:

L1 to L2 = channel 1, 4, 7, 10
L2 to L3 = channel 2, 5, 8, 11
L3 to L1 = channel 3, 6, 9, 12

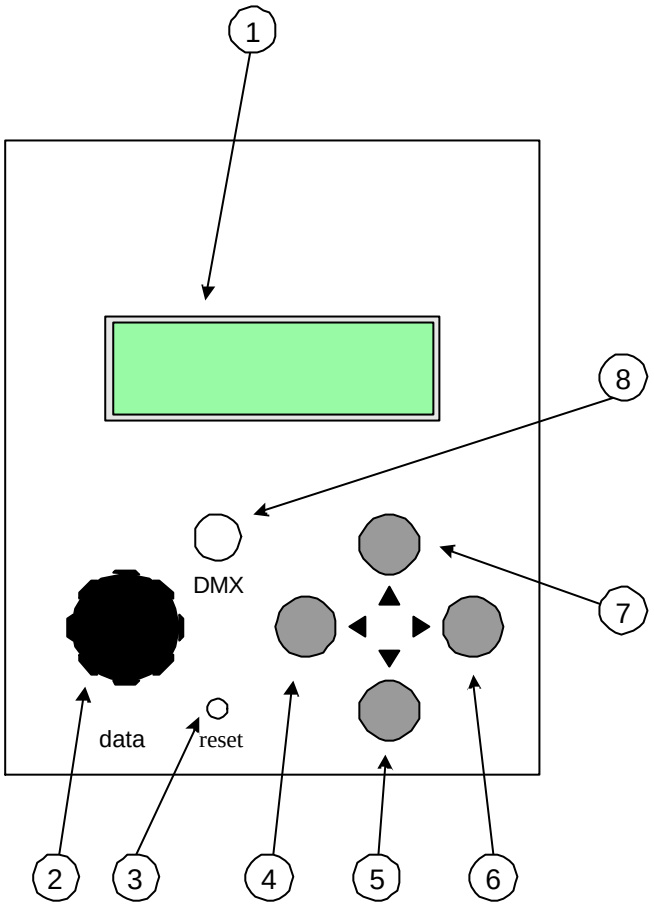
2.5 Channel indicator

Each dimmer channel has a multicolored ***control indicator (status / fuse failure / load check)*** located above each line circuit breaker. "Fuse failure" is indicated in red.
The control input is shown in green and the intensity of the LED increases with the level of the control signal.

2.6 Checking the load outputs

Via the button (***load check***) located in the middle of the dimmer's front face, the load output can be checked as to whether a load (e.g., a lamp) is present. Once the button is pressed, the channels' **control indicators** (***status / fuse failure / load check***) indicate in orange whether a load is connected to the respective output. If the output is not occupied or one of the lamps is defective, the indicator does not light up. This control display is independent of the control input. (Note: Channels activated in excess of 80% are set down to 80% when the button is pressed).

2.7 Dimmer settings and indicators via the illuminated display



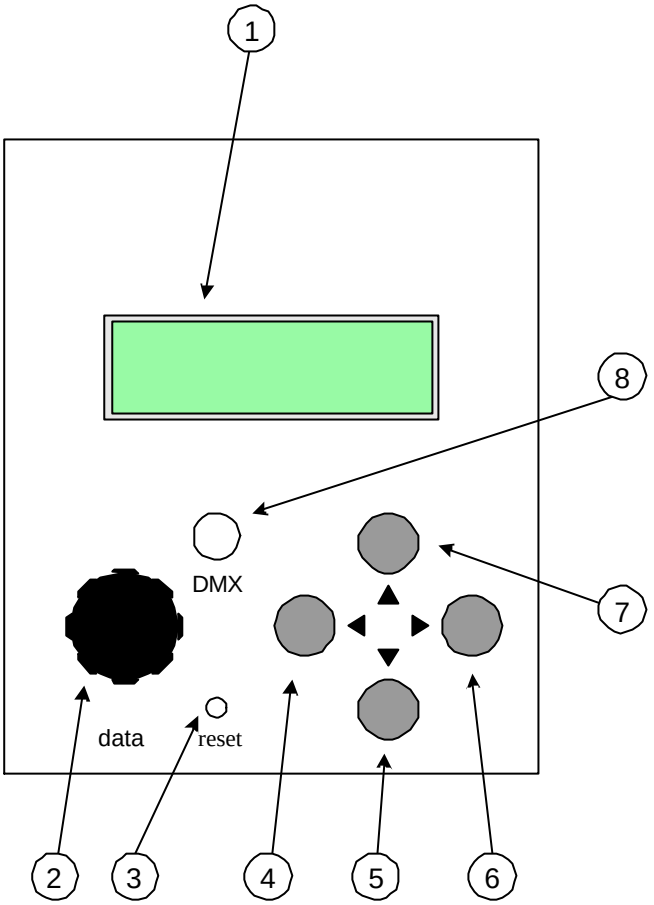
1. 2 x 16 symbol illuminated display
The dimmer's setting are indicated on this display.

2. Data Wheel
Using the data wheel, the blinking characters and figures indicated on the display can be changed. In additon, there is an integrated turbo-recognition. It recognizes fast and slow turning.

3. RESET button
By pressing with a pointed object (e.g., a ballpoint pen), a confirmation request appears on the display. The blinking character can be changed with the data wheel.

Y : The default values are loaded after pressing the upper button [π]
N : The reset procedure is interrupted after pressing the upper button [π]

4. Left button [τ]
For using the display menu. When pressed, you leave the current menu window and go to the menu window to the left.



5. Lower button [θ]
For using the display menu. When pressed, you leave the current menu window and go to the menu window below. In test mode, the lower button [θ] serves to turn on and off the dimmer outputs.

6. Right button [υ]
For using the display menu. When pressed, you leave the current menu window and go to the menu window to the right.

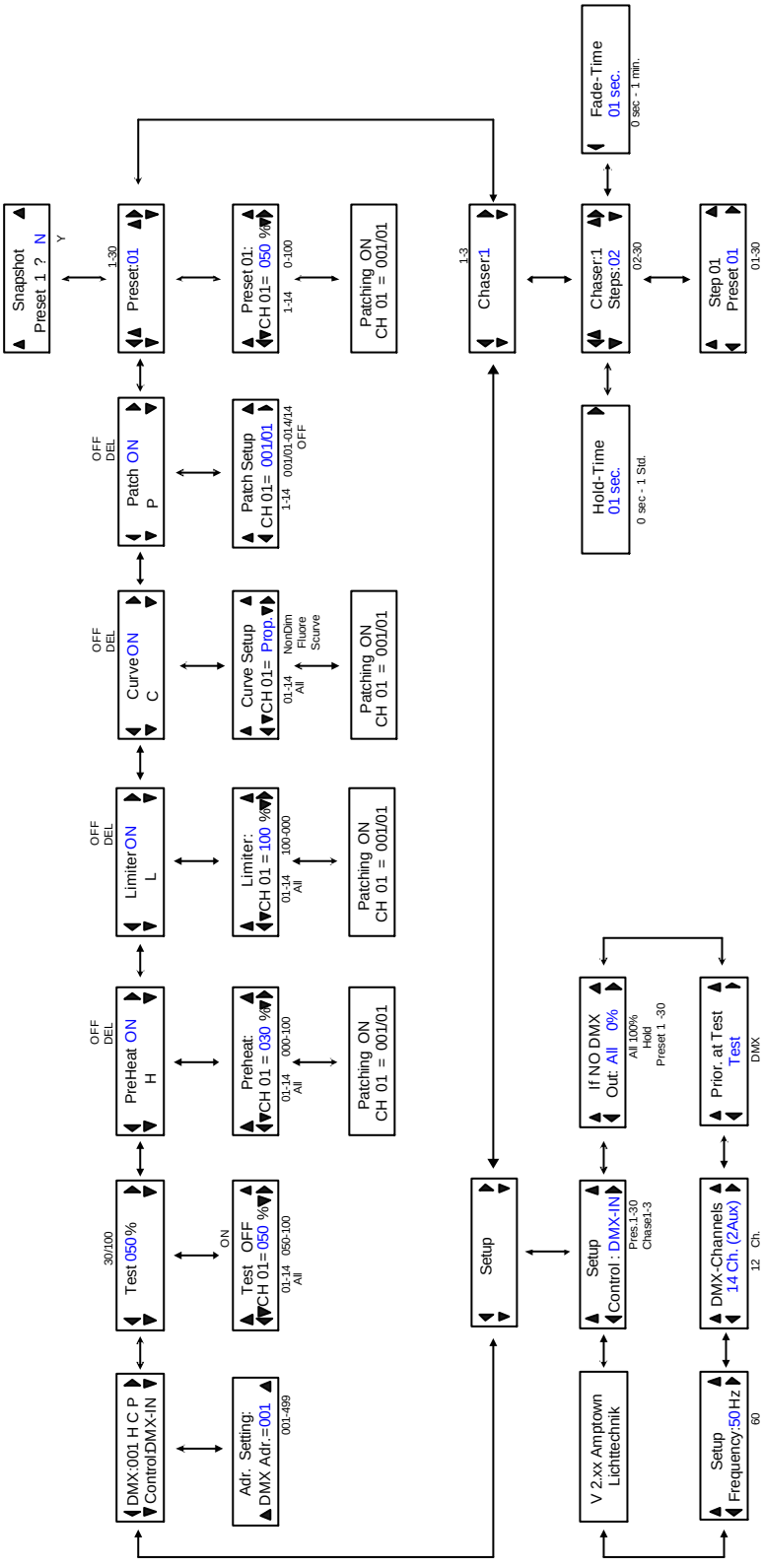
7. Upper button [π]
For using the display menu. When pressed, you leave the current menu window and go to the menu window above. The previously changed display settings are the stored.

8. LED: DMX

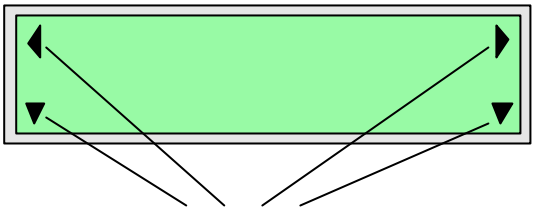
Green:	DMX signal present and switched to dimmer output
Yellow:	DMX signal present **but not** switched to dimmer output
Blinking red:	no DMX signal / defective DMX signal

2.7.1 The display menu tree

The display menu tree gives you an overview of all menu levels.



Every menu contains arrows on the left- and right-hand side. These indicate whether menus can be selected to the left [τ], right [υ], upper [π], or lower [θ]. These arrows provide easy orientation within the menu tree.



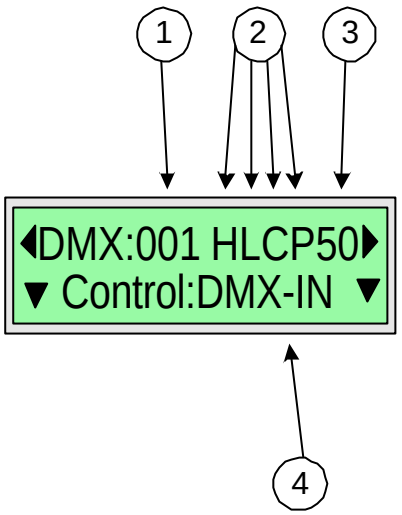
Arrows for orientation

All characters and figures that are blinking on the display can be changed by turning the data wheel. In order to tell which values have been stored in the dimmer, the characters and figures blink in various manners. The value that has been stored in the dimmer is shown alternating with a dark background. If the set value is not the on stored, a light background will be displayed in alternation.

If you are not in the main control menu and no entries are made via data wheel or the four buttons within 30 seconds, you will revert to the main control menu. This function is activated in all menus except in test mode.

The main control menu

Here you can see the most important dimmer settings at a glance.



1. **DMX start address display**
   Shows the DMX start address that has been set.

2. **Preheat, Curve and Patch display**
   Shows if Pre**H**eat, **L**imiter, **C**urve or **P**atch function is turned on or off.

   H : Pre**H**eat turned on
   L : **L**imiter turned On
   C : **C**urve turned on
   P : **P**atch turned on

3. **Dimmer operating frequenz**
   Shows the current operating frequenz.

   50 : The operating frequenz is 50 Hertz
   60 : The operating frequenz is 60 Hertz

4. **Control indicator**
   Shows which data control dimmer outputs.

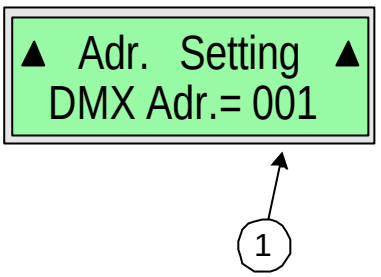
   DMX-IN : DMX512 data controls dimmer output

   Pres01-Pres30 : The corresponding programmed preset controls dimmer output

   Chaser1-3 : The corresponding programmed chaser controls dimmer output

2.7.2 Setting the DMX start address

In order to set the DMX start address, the lower button [θ] in the **main control menu** must be pressed. The **DMX address menu** is then displayed.



1. DMX start address

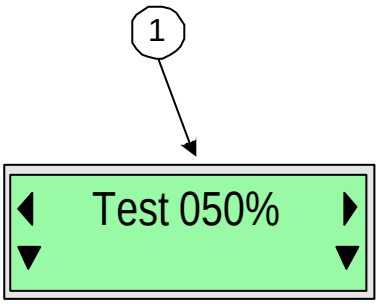
Shows the current DMX start address. When the figures are blinking, the start address can be changed by turning the data wheel. When in use with 12 channels, the start address can be set within a range of 001 – 501 (when in use with 14 channels, from 001 – 499).

When the dimmer is turned on for the first time, the DMX start address is set at 001 (Default).

Once the setting has been completed, you can leave the DMX address menu by pressing the upper button and returning to the main control menu. The settings just made will be stored.

2.7.3 Testing the channels

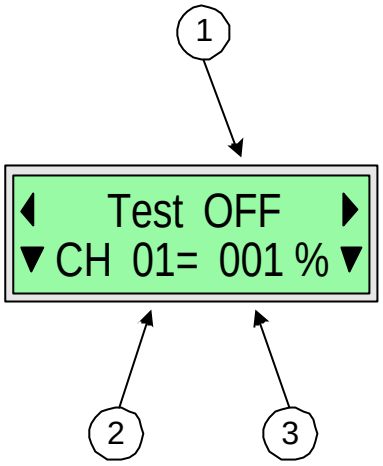
To test or perform lighting settings, the dimmer channels can be turned on or off via the test function, separately from the menu. To select the test menu, the right button [υ] must be pressed once in the main control menu.



1. Test value

Shows the current test value in %. When the figures are blinking, the test value can be changed by turning the data wheel. The test value can be set for the values 30%, 50%, or 100%.

By pressing the lower button [θ], you jump into **test mode** and the set **test value** is stored.



1. **ON/OFF display**
   Shows whether the selected dimmer channel is on or off.

   ON : The selected dimmer channel is on.
   OFF : The selected dimmer channel is off.

   The dimmer channel can be turned on or off by pressing the lower button [θ].

2. **Dimmer channel display**
   Shows the current dimmer channel. By pressing the left or right buttons, the other dimmer channels can be selected. Between channel 1 and 12 resp. 14 is the **ALL**-Modus. In **ALL**-Modus all channels are choose simultaneously.

   Right button [υ] : The dimmer channel is increased by 1.
   Left button [τ] : The dimmer channel is decreased by 1.

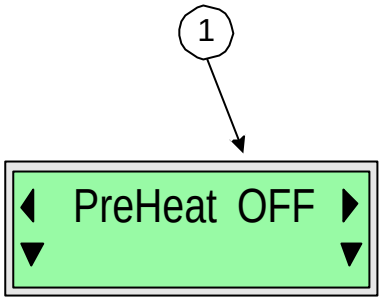
3. **Dimmer channel output value**
   Shows the current **test value** in %. When the figures are blinking, the **test value** can be more finely tuned by turning the data wheel.

   The test value can be set for values from 0% to 100%.

Once the setting have been completed, you can leave the **test mode** by pressing the upper button [π] and returning to the **test menu**. The settings are stored.

2.7.4 Preheat

Preheating the lamps reduces the input surge current and prolongs the lamp's life time. As a rule, it is set so that the channel control LEDs already light up green even through the lamp itself still isn't visibly illuminated.



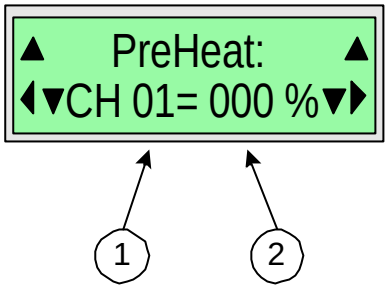
1. **Lamp preheat ON/OFF display**
   Shows whether the lamp preheat is on or off. When the characters are blinking, the settings can be changed by turning the data wheel.

   OFF : Lamp preheat is off. The settings immediately affect the dimmer output (Default).

   ON : Lamp preheat is on. The settings immediately affect the dimmer output. In addition, an ***H*** is displayed in the current menu and in the main control menu.

   DEL : Lamp preheat settings can be deleted by pressing the lower button [θ] and confirming this choice.

By pressing the *lower button* [θ] when ***ON*** or ***OFF*** is blinking, you jump into the lamp preheat setup menu.



1. **Dimmer channel display**
   Shows the current dimmer channel. By pressing the left [τ] or right [υ] button, the other dimmer channels can be selected.

   Right button [υ] : The dimmer channel is increased by 1

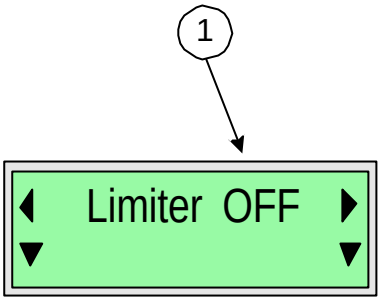
   Left button [τ] : The dimmer channel is decreased by 1

2. **Dimmer channel output value**
   Shows the current preheat value in %. When the figures are blinking, the preheat value can be set from 0% to 100% by turning the data wheel. Between channel 1 and 12 resp. 14 is the **ALL**-Modus. In **ALL**-Modus all channels are choose simultaneously.

Once the settings have been completed, you can leave the **preheat setup menu** by pressing the upper button [π] and returning to the **preheat control menu**. The settings made are stored.

2.7.5 Limiter

With the limiter function each channel can be limited from 100% to 0%. If all channels are setting at 100%, all channels are unlimited. If all channels are setting at 0%, all channels are full limited.



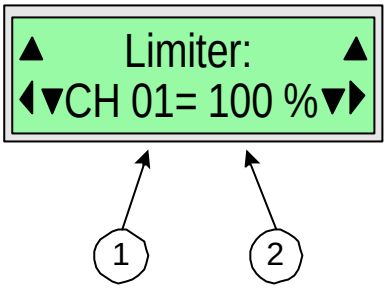
1. **Limiter ON/OFF display**
   Shows whether the output limiter is on or off. When the characters are blinking, the settings can be changed by turning the data wheel.

   OFF : The output limiter is off. The settings immediately affect the dimmer output (Default).

   ON : The output limiter is off. The settings immediately affect the dimmer output. In addition, an ***L*** is displayed in the current menu and in the main control menu.

   DEL : Output limiter settings can be deleted by pressing the lower button [θ] and confirming this choice.

By pressing the *lower button* [θ] when ***ON*** or ***OFF*** is blinking, you jump into the limiter setup menu.



1. **Dimmer channel display**
   Shows the current dimmer channel. By pressing the left [τ] or right [υ] button, the other dimmer channels can be selected.

   Right button [υ] : The dimmer channel is increased by 1

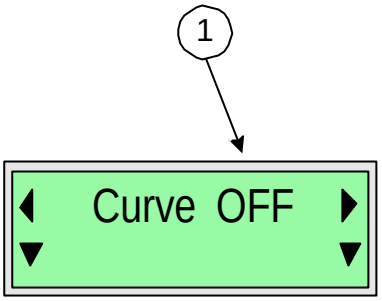
   Left button [τ] : The dimmer channel is decreased by 1

2. **Dimmer channel output value**
   Shows the current limiter value in %. When the figures are blinking, the limiter value can be set from 0% to 100% by turning the data wheel. Between channel 1 and 12 resp. 14 is the **ALL**-Modus. In **ALL**-Modus all channels are choose simultaneously.

Once the settings have been completed, you can leave the **preheat setup menu** by pressing the upper button [π] and returning to the **preheat control menu**. The settings made are stored.

2.7.6 Curves

In order to adjust the individual dimmer channels to fit various loads (e.g., lamps, fog machines, fluorescent lamps etc.), four different output curves can be set.



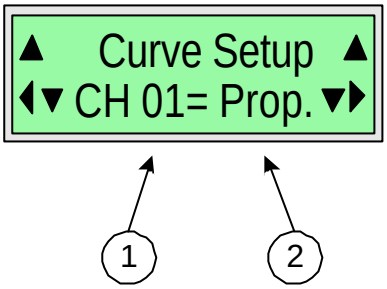
1. **Curves ON/OFF display**
   Shows whether a curve is selected. When the characters are blinking, the settings can be changed by turning the data wheel.

   OFF : Curve output is off. The input values are carried over 1:1 to the dimmer output. The settings immediately affect the dimmer output (Default).

   ON : Curve output is on. The settings immediately affect the dimmer output. In addition, a ***C*** is displayed in the current menu and in the main control Menu.

   DEL : Curve output settings can be deleted by pressing the lower button [θ] and confirming this choice.

By pressing the lower button [θ] when ***ON*** or ***OFF*** is blinking, you jump into the **curve setup menu**.



1. Dimmer channel display

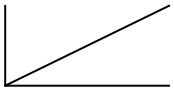
Shows the current dimmer channel. By pressing the left [τ] or right [υ] button, the other dimmer channels can be selected. Between channel 1 and 12 resp. 14 is the **ALL**-Modus. In **ALL**-Modus all channels are choose simultaneously.

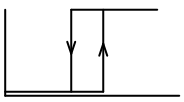
Right button [υ] : The dimmer channel is increased by 1

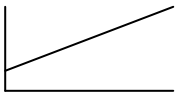
Left button [τ] : The dimmer channel is decreased by 1

2. Curve type display

Shows the current curve for the selected dimmer channel. When the figures are blinking, the curve can be set to various curves by turning the data wheel:

Prop. :  The proportion between input and output is linear 1:1 (Default).

NonDim :  Output goes on at 34% or more control input and off at 25% or less.

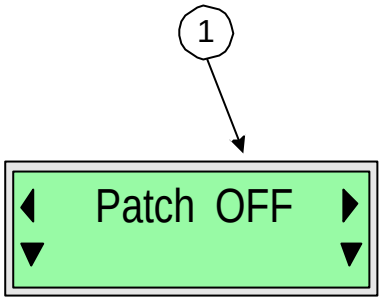
Fluore :  Output runs linear from 40% up to 100% in proportion to the control input (0% - 100%).

S-curve :  Compensates the nonlinearity caused by phase-angle control. This result in an optically linear output.

Once the settings have been completed, you can leave the **curve setup menu** by pressing the *upper button* and returning to the **curves control menu**. The settings made are stored.

2.7.7 Patching

With this feature, the DMX512 signal transmitted from the light console can be assigned to any dimmer channel desired. All 12 or 14 DMX data (beginning with the DMX start address) can be assigned to any dimmer channel. Thus the dimmer can be optimally adapted to the light mixing console (e.g., a 12-channel mixing console).



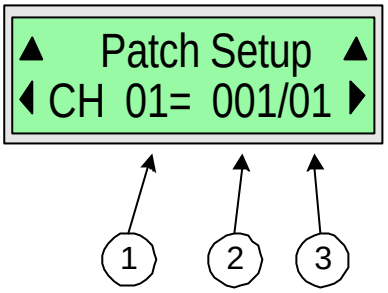
1. Patch ON/OFF display
Shows whether the patching is on or off. When the characters are blinking, the settings can be changed by turning the data wheel.

OFF : Patching is off. Without set patching, the input values are carried over 1:1 to the dimmer output. The settings immediately affect the dimmer output (Default).

ON : Patching is on. The settings immediately affect the dimmer output. In addition, a ***P*** is displaed in the current menu and in the main control menu.

DEL : Patching settings can be deleted by pressing the *lower button* [θ] and confirming this choice.

By pressing the lower button [θ] when ***ON*** or ***OFF*** is blinking, you jump into the **patch setup menu**.



1. **Dimmer channel display**
   Shows the current dimmer channel. By pressing the left or right button, the other dimmer channels can be selected.

   Right button [υ] : The dimmer channel is increased by 1

   Left button [τ] : The dimmer channel is decreased by 1

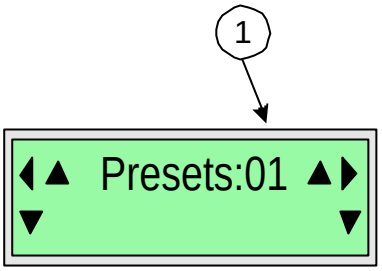
2. **DMX512 channel display**
   Shows the DMX512 channel number. When the figures are blinking, the DMX512 channel can be changed by turning the data wheel. In addition, the selected dimmer channel can be switched off via the *OFF* setting.

3. **Input channel display**
   Shows thwe input channel number. When the figures are blinking, the input channel can be changed by turning the data wheel. In addition, the selected dimmer channel can be switched off via teh OFF setting.

Once the setting have been completed, you can leave the **patching setup menu** by pressing the upper button and returning to the **patching control menu**. The settings made are stored.

2.7.8 Presets

Presets are for static lighting. Up to 30 presets can be programmed. These 30 presets can also be used in chaser mode.

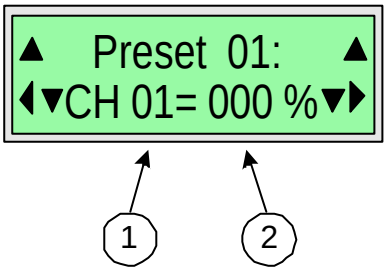


1. **Preset number**
   Shows the current preset number. When the figures are blinking, the setting can be changed by turning the data wheel. Preset number settings range from 1 – 30.

By pressing the lower button [θ], you jump into the selected **preset setup**.

By pressing the upper button [π] and confirming this choice, it is possible to obtain a so-called snapshot from the input signal (light mixing consoles). The light-mixing-console data are thus stored in the selected preset. This allows for simple programming of the individual presets via light mixing console.

Y : The input signal is copied into the selected preset.
: Interrupts snapshot function and returns to the preset control window.



1. **Dimmer channel display**
   Shows the current dimmer channel. By pressing the left or right button, the other dimmer channels can be selected.

   Right button [υ] : The dimmer channel is increased by 1
   Left button [τ] : The dimmer channel is decreased by 1

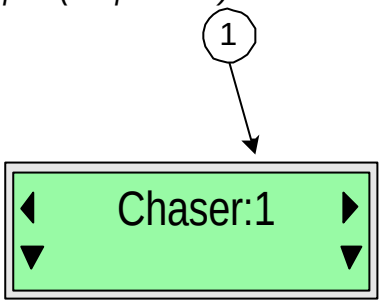
2. **Dimmer channel output value**
   Shows the current preset value in %. When the figures are blinking, the preset value can be set from 0% to 100% by turning the data wheel.

Once the settings have been completed, you can leave the **preset setup menu** by pressing the upper button [π] and returning to the **preset control menu**. The settings made are stored.

2.7.9 Chaser programming

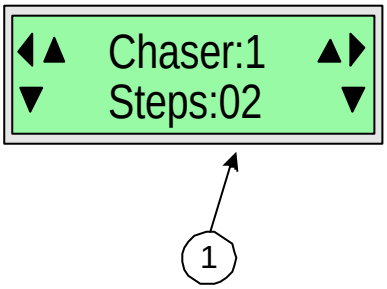
Chaser programming was developed for "stand–alone" operation. With this feature, the selected presets can be composed into a chaser sequence with up to a maximum of 30 steps. The fade time and hold time are responsible for the chaser's temporal behavior. The fade time determines the fading phase. The hold time determines how long the value should be held following the fade.

Notice: *The Chaser function is only activated when Dip switch 2 is turned on on the DMX LCD pcb (chapter 5.2)!*



1. **Chaser number**
   Shows the number chaser number. When the figures are blinking, the settings can be changed by turning the data wheel. Chaser number settings range from 1 – 3.

By pressing the lower button [θ], you jump into the selected **chaser setup**.



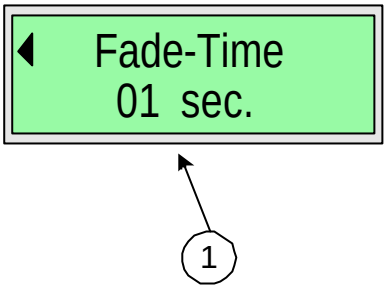
1. **Display of maximum chaser steps**
   Shows the number of steps for the current chaser. When the characters are blinking, the settings can be changed by turning the data wheel. Step number settings range from 2 – 30.

   By pressing the left [τ] or right [υ] button, **time settings** can be selected.

   Right button [υ]: The fade-time menu is displayed
   Left button [τ]: The hold-time menu is diplayed
   Lower button [θ]: Menu for assigning the individual stepps to any preset

Once the settings have been completed, you can leave the **chaser setup menu** by pressing the upper button [π] and returning to the **chaser control menu**. The settings made are stored.

Fade-time setup menu

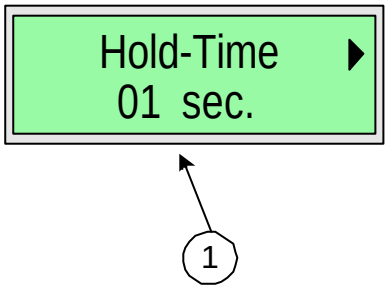


1. **Fade time**
   Shows the current fade time. When the characters are blinking, the fade time can be changed by turning the data wheel. Fade time settings range from 0.1 seconds – 1 minute (Default = 1 sec.).

Notice: The fade time can be separately changed for chaser 1, chaser 2, and chaser 3.

By pressing the left button [τ], the selected time is stored and you leave the **fade-time setup menu**.

Hold-time setup menu

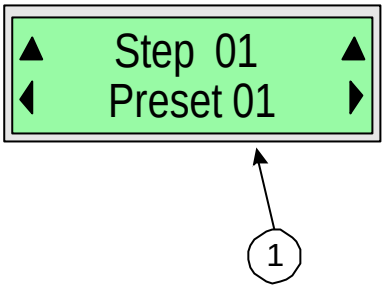


1. **Hold time**
   Shows the current hold time. When the characters are blinking, the hold time can be set from *0.1 seconds* to *1 hour* by turning the data wheel (Default = 1 sec.).

Notice: The hold time can be separately changed for chaser 1, chaser 2 and chaser 3.

By pressing the *left button* [τ], the selected time is stored an you leave the **hold-time setup menu**.

Assigning chaser Steps to the presets



1. **Preset number**
   Shows the current preset to which the step displayed above is to be assigned. By pressing the *left* [τ] or *right* [υ] *button*, the other steps can be selected.

   Right button [υ] : The step assigned is increased by 1

   Left-button [υ] : The step assigned is decreased by 1

   When the preset number is blinking, it can be changed by turning the data wheel. This can be set from *1* to *30*.

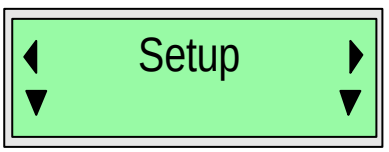
   Once the settings have been completed, you can leave the **chaser assignment menu** by pressing the *upper button* [π] and returning to the **chaser setup menu**. The settings made are stored.

2.7.10 User-defined setup

User-defined setup allows you to determine the dimmer's basic settings via the setup menu window.

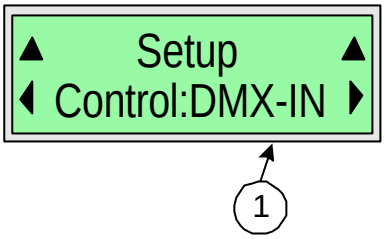
The following settings are possible in this main menu:

- Dimmer output signal
- Dimmer DMX-failure output
- Test priority
- Number of dimmer channels
- Dimmer operation frequency 50/60Hz
- Dimmer software version



By pressing the *lower button* [θ], you leave the **setup main menu** and jump to the **setup setting menu**.

Setting the dimmer output signal

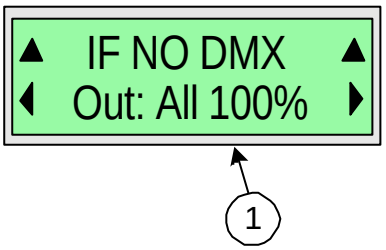


1. **Dimmer output control display**
   Shows the current dimmer output signal. When the characters are blinking, the dimmer output signal can be changed by turning the data wheel.

   DMX-IN : The dimmer output signal is the DMX512 signal. The DMX signal immediately affects the output (default).
   Pres01-Pres30 : The dimmer output signal is the selected preset. All 30 selected presets can be switched to the dimmer output. When the signal is selected, it immediately affects the dimmer output.
   Chase1-Chase3 : The dimmer output signal is the programmed Chaser1, 2, or 3. **(only possible when chaser mode is activated!!).**
   C1, C2, C3 : The dimmer output signal are the chaser1, 2, and 3. They are running one after another.

By pressing the *left* [τ] or *right* [υ] button, you jump to the other setup settings.

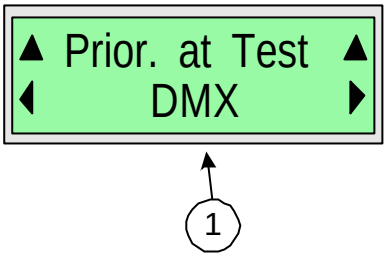
Press right button [υ] **once:** **setting the dimmer's DMX-failure output**



1. **DMX-failure output**
   Shows which output signal should be switched to the dimmer output channels 1 second after possible failure of the DMX signal. When the characters are blinking, the dimmer DMX-failure preset can be changed by turning the data wheel.

   All 0% : All dimmer channels are switched to 0% (Default).
   All 100% : All dimmer channels are switched to 100 %.
   Hold : The last channel data are held.
   Preset 01-30 : The dimmer output signal is the selected preset. All 30 set presets can be switched to the dimmer output.
   Chase1-Chase3 : The dimmer output signal is the programmed Chaser1, 2, or 3. **(only possible when chaser mode is activated!!).**
   C1, C2, C3 : The dimmer output signal are the chaser1, 2, and 3. They are running one after another.

Press right button twice [υ],[υ]**:** **setting test priority**

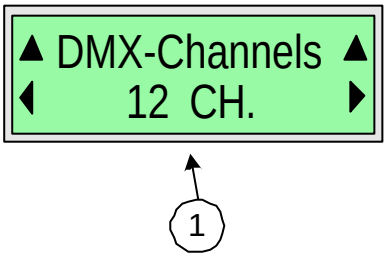


1. Dimmer test priority
Shows the current dimmer test priority. When the characters are blinking, the dimmer test priority can be changed by turning the data wheel.

DMX : DMX has priority in test mode. When the characters are blinking, the dimmer test priority can be changed by turning the data wheel.

Test : Testing has priority in test mode. That means that the DMX512 signal present is switched off and the test values are output to the dimmer (Default).

Press right button three times [υ],[υ],[υ]**:** **Setting number of dimmer channels**

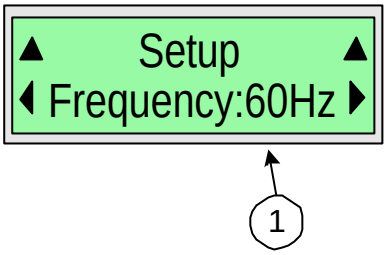


1. Number of dimmer channels
Shows the current number of dimmer channels. When the figures are blinking, the number of dimmer channels can be changed by turning the data wheel.

12 CH. : Setting for 12-channel dimmer operation (Default).

14 CH.(2Aux) : During 14-channel dimmer operation, the 12 dimmer channels plus the 2 auxiliary channels are in operation.

Press right button four times [υ],[υ],[υ],[υ]**:** **operating frequency**



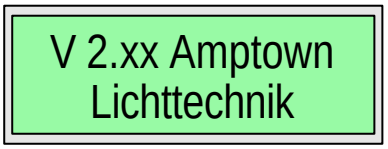
1. **Dimmer operation frequency**
   Shows the current operating frequency of the dimmer. When the figures are blinking, the number of dimmer channels can be changed by turning the data wheel.

   50 Hz : Setting the operating frequency at 50 Hertz (Default).

   60 Hz : Setting the operating frequency at 60 Hertz.

By pressing the *upper button* [π], you leave the **setting setup menu** and return to the **setup main menu**. The settings made are stored.

Press right button five times [υ],[υ],[υ],[υ],[υ]**:** **Software window**



Shows the current software-version of the dimmer.

By pressing the *upper button* [π], you leave the **setting setup menu** and return to the **setup main menu**. The settings made are stored.

3 Breakdown in operation (defect indication and remedy)

3.1 Mains failure

In case of a **mains failure** (e,g., unit fuses are triggered), the mains displays located at the front of the unit (**power in / over volt. L1, L2, L3**) go out.

Remedy: Disconnect the unit. Check fuses, possible fault-current circuit breaker, and master switch.
Check unit for defects (e.g., short circuit). Correct the fault. When the dimmer is turned on again, the controlled channels will be **soft-started**.

3.2 Power-supply defects

In case of faulty power supply (e.g., phase has been mistaken for neutral conductor or neutral conductor is missing), overvoltages of 400 V can effectively occur. The unit has an **overvoltage protective disconnect** that sets the channel control at 0% if there are voltages of over 260 V at the phases against the neutral conductor and that shows the overvoltage in red on the corresponding mains indicators (***power in / over volt. L1, L2, L3***).

Remedy: Disconnect the unit and check the power supply. Here, too, there is a soft start once the unit is turned on again.

3.3 Faulty DMX control signal

In case of faulty or missing DMX signal, the DMX control display blinks in red.

Remedy: Check the DMX connections and DMX signal.

3.4 Triggering of the dimmer line circuit breakers

In case of a defect in one of the loads connected to the dimmer (e.g., short circuit), the line circuit breaker of the corresponding dimmer channel is triggered. This is indicated in red by the channel's **control LED**.

Remedy: Set the channel control for the affected channel at 0% and switch on the line circuit breaker. Set channel control at 100%. If triggered again, disconnect the unit and check the equipment.

3.5 Excess temperature

If the dimmer is being operated at full load with high ambient temperatures present, the unit ventilating fan can switch to a higher speed in order to increase active cooling. In case of insufficient ventilation for the unit (e.g., incorrect installation,inadmissible ambient temperature, defective ventilating fan, unit overload), the dimmer's thermal protective circuit can switch off channels from the control side. This indicated in red by the **excess temperature display (high temp.)** located at the front of the dimmer.

Remedy: Leave unit running (unless ventilating fan is defective) and improve ventilation. Once a permissible operating temperature has been reached, the dimmer will soft-start the channels again.

4 Declaration of conformity

Manufacturer: Amptown Lichttechnik GmbH
Wandsbeker Str. 26
D-22179 Hamburg

Germany

Product-name: ControLite

Type of Product: Excalibur DELTA 12Kanal, 10A, Dimmer

We declare that the products listed above meet the electromagnetic compatibility requirements of the European Commission Directive and comply with the requirements of the Directive by meeting the following standards:

Safety: EN 60950

EMC: EN 55103-1
EN 55103-2
EN 50081-1
EN 50082-1

Hamburg, 28.03.02´

5 Appendix

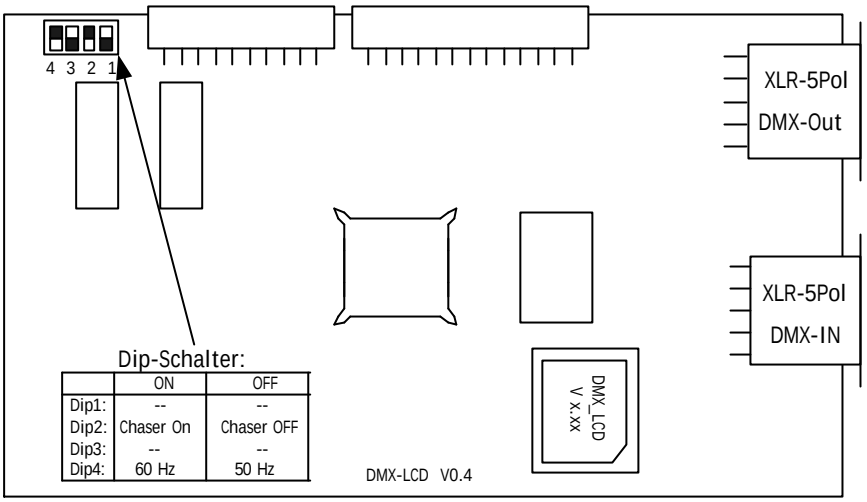
5.1 DMX table

Table for dimmer channel values shown on the display

Channeldisplay		
in %	in decimal	in hexadecimal
1	2	02
2	5	05
3	7	07
4	10	0A
5	12	0C
6	15	0F
7	17	11
8	20	14
9	22	16
10	25	19
11	28	1C
12	30	1E
13	33	21
14	35	23
15	38	26
16	40	28
17	43	2B
18	45	2D
19	48	30
20	51	33
21	53	35
22	56	38
23	58	3A
24	61	3D
25	63	3F
26	66	42
27	68	44
28	71	47
29	73	49
30	76	4C
31	79	4F
32	81	51
33	84	54
34	86	56
35	89	59
36	91	5B
37	94	5E
38	96	60
39	99	63
40	102	66
41	104	68
42	107	6B
43	109	6D
44	112	70
45	114	72
46	117	75
47	119	77
48	122	7A
49	124	7C
50	127	7F

Channeldisplay		
in %	in decimal	in hexadecimal
51	130	82
52	132	84
53	135	87
54	137	89
55	140	8C
56	142	8E
57	145	91
58	147	93
59	150	96
60	153	99
61	155	9B
62	158	9E
63	160	A0
64	163	A3
65	165	A5
66	168	A8
67	170	AA
68	173	AD
69	175	AF
70	178	B2
71	181	B5
72	183	B7
73	186	BA
74	188	BC
75	191	BF
76	193	C1
77	196	C4
78	198	C6
79	201	C9
80	204	CC
81	206	CE
82	209	D1
83	211	D3
84	214	D6
85	216	D8
86	219	DB
87	221	DD
88	224	E0
89	226	E2
90	229	E5
91	232	E8
92	234	EA
93	237	ED
94	239	EF
95	242	F2
96	244	F4
97	247	F7
98	249	F9
99	252	FC
100	255	FF

5.2 DMX pcb



	ON	OFF
Dip1:	--	--
Dip2:	Chaser On	Chaser OFF
Dip3:	--	--
Dip4:	60 Hz	50 Hz