# RACKPACK II


## Operation Manual

THEATRELIGHT NZ

# RACKPACK II QUICK OPERATION

Start by pressing the Back key several times to get to Menu Level 0: the screen shows "**Theatrelight NZ**":

## SETTING AND LOCKING DMX START ADDRESS

The current DMX Start Channel is shown on the Menu Level 0 page. To change the start address:

1. **In Menu Level 0, press Menu twice to arrive at "DMX Start Address".**
2. **Press Up ▲ or Down ▼ to adjust the DMX address. Press Left ◀ or Right ▶ to adjust tens and hundreds.**
3. **Press Back twice: the screen shows "Changes saved to flash memory".**
4. **To lock the keypad, hold ◀ + ▶ + ▲ for 2 seconds. To unlock the keypad, hold ◀ + ▶ + ▼ for 8 seconds.**

## SETTING DMX FAIL MODE

To set the DMX Fail Mode to either "Fade to Black" or "Hold DMX levels" :

1. **In Menu Level 0, press Menu, press Down ▼ to select "Set Fail Mode", then press Menu.**
2. **Press Up ▲ or Down ▼ to select the mode, then press Right ▶ to set the mode On.**
3. **Press Back twice: the screen shows "Changes saved to flash memory".**

## SETTING DIMMER PARAMETERS

To set Test, Minimum, and Maximum levels, Non-Dim mode, or Softstart time for each dimmer:

1. **In Menu Level 0, press Menu, select "Change Menu/Setup", press Menu.**
2. **Select "Dimmers/setup", press Menu. Select the parameter to adjust (2 pages), press Menu.**
3. **Press Left ◀ or Right ▶ to select the dimmer, Up ▲ or Down ▼ to adjust the parameter.**
4. **Press Back four times: the screen shows "Changes saved to flash memory".**

## RESETTING DMX AND DIMMER PARAMETERS

1. **To reset all DMX and dimmer parameters:**
2. **In Menu Level 0, press Menu, select "Change Menu/Setup", press Menu.**
3. **Select "Dimmers/setup", press Menu. Select "Reset Dimmers + DMX" (on page 2).**
4. **Press Menu twice: the screen shows "Resetting all Dimmer and DMX parameters".**

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# RACKPACK II INTRODUCTION

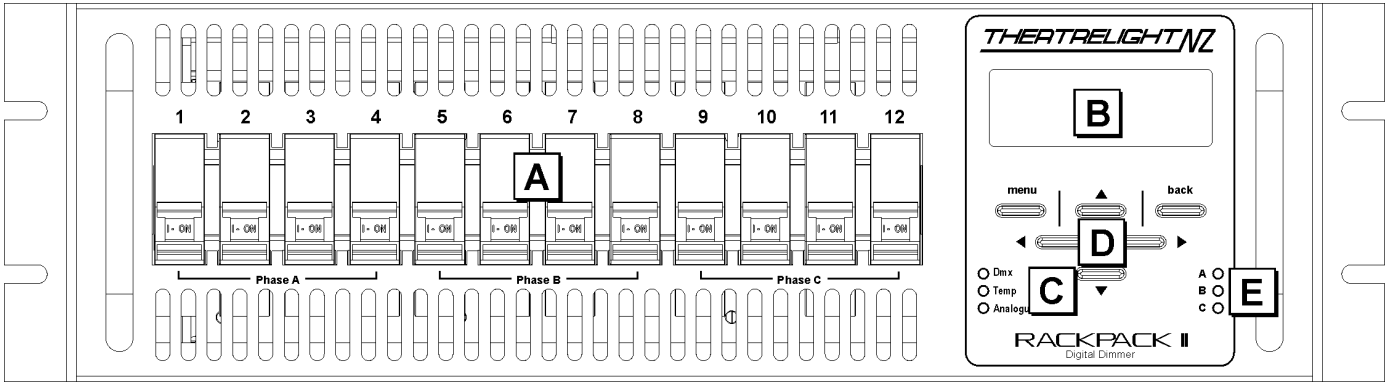
The Theatrelight RackPack II is a general purpose dimmer pack for use in Theatres, TV Studios, Concert halls or any venue requiring a simple reliable dimmer installation. Simple to set up and use, the RackPack II has a number of improvements over the the original trusted Theatrelight Rackpack.

The new design uses the latest microprocessor and components chosen for reliability and long MTBF (Mean Time Before Failure). The isolated DMX input presents only 1/10 th standard loading, reducing the possibility of DMX errors. Additionally, zero-crossover noise filters ensure correct triggering and immunity to mains interference even in the most adverse environment. The wide input voltage and frequency range afforded by Theatrelight's in house designed switch-mode power supply allows the RackPack II to work on any voltage from 90 volts AC to 265 Volts AC, making it suitable for use in any country. The RackPack is also fitted with analogue voltage control input for use with older control desks or custom control systems. The RackPack II is available in an economic 12 channel Triac model, and 12, 6, and 3 channel SCR versions in a variety of output socket configurations. Special socket versions can be made to order.

## RACKPACK II FEATURES

- **Simple and easy to use menu system with large 4 line, 20 character auto dimming LCD display**
- **Programmable DMX Start address and DMX Fail modes**
- **Decodes up to Channel 4096 for multiple DMX universe installations**
- **0 to +10 volt analogue input control per dimmer**
- **Individual Minimum, Maximum, and Test levels per dimmer**
- **Individual Soft-start Time and Non-Dim setting per dimmer.**
- **All dimmer parameters held in non-volatile flash memory**
- **Gold plated DMX-512 in and through connectors**
- **Variable speed cooling fan for low acoustic noise and long life**
- **Protection by Thermal/Magnetic circuit breakers**
- **Amorphous iron powder toroidal chokes for low EMI**
- **High immunity to Mains interference and low DMX signal**
- **Isolated, floating DMX input, 1/10 th standard RS-485 load**

## FRONT PANEL LEGEND




**A:** Thermal/Magnetic Circuit Breakers (MCBs) protect each dimmer in the event of a lamp failure or load short circuit.

**B:** 4 row x 20 character LCD display with large clear characters for easy readabilty.

**C:** The DMX LED shows the presence of DMX signal, and any errors. The TEMP LED shows the internal temperature, while the Analogue LED indicates the presence of a control voltage on any of the 0-10 volt analogue inputs.

**D:** Simple keyboard and easy to understand menu system allow quick setup of DMX Start Address, dimmer parameters, and other functions

**E:** A B C LEDs indicate presence of mains power on each phase

# RACKPACK II OVERVIEW

The following description provides an overview of the capabilities of the RackPack II.

## LCD DISPLAY

The 4 line, 20 character per line LCD display has white LED backlighting, giving excellent contrast and readability under all lighting conditions. The brightness of the display goes to full at the first key press, and reduces after 10 minutes

## KEYS

The RackPack is operated by a small keypad of 6 keys. The key operation is designed to be simple and to allow the operator fast and easy access to all dimmer functions. The Menu key steps down through the menu tree, while the Back key steps back. The keys Up ▲ , Down ▼ , Left ◀ , and Right ▶ are used for navigation, and to adjust values. In most menus the function of the key is indicated in the bottom line of the LCD, making for easy understanding. If a value is changed (such as the DMX Start Address), the new value (and the current menu level) will be saved automatically to flash memory after a timeout period of 10 minutes. Alternatively the new value can be saved immediately by pressing the Back key to return to the top menu. The keys may also be locked to prevent unauthorised operation.

## LEDS

Front panel LEDs are provided for display of DMX signal, over-temperature indication, presence of Analogue voltage input, and proper mains presence on Phases A B and C. All LEDs are initially turned on at power up, before assuming their correct status.

### DMX LED

The Green DMX LED is on continually On if DMX is enabled and the DMX signal is good. The LED flashes regularly if DMX is enabled but the DMX signal is disconnected. The DMX LED switches off or flashes irregularly if the DMX signal has errors, or if the DMX signal is wrongly phased. Disabling DMX sets the DMX LED off regardless of the state of the DMX signal.

### Analogue LED

The Amber Analogue LED indicates the presence of a control voltage on any of the 0-10 volt analogue inputs The sense level is set at 5%: levels at 5% or over set the LED on.

### Phase A B C LEDs

Green LEDs A B C indicate presence of mains power on each phase.

### Temperature LED

The Red temperature LED is normally off. In the event that the internal temperature of the RackPack reaches 50 degrees Centigrade, the LED starts blinking. The LED turns on fully when the temperature reaches 60 degrees. If the internal temperature reaches 70 degrees the RackPack forces a fade out over 7 seconds of all dimmer levels. The levels are faded in again over 7 seconds when the temperature drops below 70 degrees.

## COOLING

The RackPack II is cooled by a long life, low voltage, speed controlled fan. Fan speed is proportional to temperature- the fan starts at half speed at 35 degrees Centrigrade and increases to full speed at 45 degrees. The fan remains on for 10 minutes after load current has dropped to zero to prevent heat buildup in the case.

Air is blown into the RackPack II case from the left side, and the warmed air exhausted through slots in the front panel. This arrangement allows the operator to provide a cool filtered air supply under pressure into a rack cabinet so as to minimise the build-up of dust in the dimmer electronics.

## DMX CONTROL

DMX-512 control is commonly used in Theatre and TV for lighting control. One DMX line or “Universe” addresses a maximum of 512 dimmers. Each RackPack may be set to any start address in this range:

### DMX Start Address

The DMX Start Number for the pack may be set to any number between 1 and 4096. The start number means the DMX address which Dimmer 1 responds to. DMX addresses of the following dimmers are then set automatically: the address of Dimmer 2 to the DMX Start number plus 1, and so on. The DMX address number may be chosen to be any number between 1 and 4096 to ease the task of calculating dimmer numbers in multiple DMX universe systems- the RackPack automatically subtracts multiples of 512 from any number 513 and up. The RackPack is programmed to ignore all DMX packets except those using a value of zero for DMX Channel 0.

### DMX Disable

DMX control may be disabled by setting the DMX Start Address to zero. The RackPack then ignores all DMX control levels.

### DMX Fail Modes

The RackPack provides two options in case the DMX signal fails, or the DMX signal is turned off, as for example when the control panel is turned off at the end of a show. The options are

**Fade to blackout**- the dimmer levels are faded out over a time of 8 minutes

**Hold last DMX levels**- the last valid DMX levels are held until the next valid DMX input, or the pack is switched off

## ANALOGUE CONTROL

The dimmers of the RackPack II may also be controlled by a 0 to +10 volt signal for use with with older control panels or for Houselight control by faders, or for custom made controllers. The rear panel of the pack carries a 15 pin D connector, with a current limited (200mA) 12 volt supply where needed. The 12 volt supply can be used to power external faders in conjunction with a shunt voltage regulator. The input control voltage to the RackPack must be limited to 10.5 volts. The dimmers operate on a HTP basis (Highest Takes Precedence) that is each dimmer responds to the highest level of the Analogue and the DMX control levels.

### Analogue LED Indication

The Analogue LED is on continually if any signal over 0.5 volts (5%) is present on any of the Analogue inputs.

## DIMMER PARAMETERS

The dimmer channels in the RackPack have a number of parameters which may be set individually for each dimmer.

### Test and Set Dimmer levels

Normally each dimmer receives control from DMX or the Analogue inputs. However the Test/Set options allow each dimmer to be set to a level which overrides the input from both these sources. This override level can be set to any level between Off and Full. An "All" function allows all Test/Set levels to be faded up or down at the same time. Each dimmer can also be flashed instantly to Full. The "All" function may also be used with Flash, allowing all dimmers to be flashed to Full at the same time.

The Test functions are of use during set-up to help check lamps or wiring problems without the use of a control panel. The Set function is also useful where lights such as orchestra or working lights must be left on permanently.

### Minimum and Maximum Dimmer levels

Each dimmer may be set to its own minimum level, and its own maximum level. An "All" function allows either all minimum or all maximum levels to be set at the same time.

The minimum setting can be used to keep lamp filaments warm for fast response time, or for example to maintain lighting at a minimum level of illumination, a requirement often needed by orchestra lighting and working lights.

The maximum setting can be used for example to prolong lamp life, which is very sensitive to overvoltage conditions. For this reason, the maximum setting has higher priority than the minimum setting.

As both Minimum and Maximum levels may be set to anywhere from Off to Full, care needs to taken in setting the levels.

### Dimmer curves

Each dimmer may be set to Incandescent or Non-Dim. An "All" function allows all dimmer curves to be set at the same time. Other curves, or custom dimmer curves may be included by arrangement with Theatrelight.

The Incandescent dimmer curve is suitable for most theatre and TV applications using incandescent bulbs whether normal tungsten or tungsten halogen type. The curve is specially tailored to provide linear apparent light under these conditions.

The Non-Dim curve selection is for use with loads which must be switched on and off, such as motors, smoke machines, and other effects. Each dimmer using the Non-Dim curve switches on at 60%: any control level at this level or above will switch the dimmer to Full instantly. Once On, the dimmer will stay on until the control level goes below 40%. An "All" function allows all Non-Dim switch levels to be set at the same time. The Non-Dim facility may be combined with the Minimum and Maximum settings to switch the dimmer output between any two selected output voltages.

**Softstart Fade Times**

Each dimmer may be set to its own softstart fade time. An "All" function allows all softstart times to be set at the same time. A softstart fade up limits the inrush current into cold tungsten filament bulbs. This initial current may be as much as 12 times the normal working current of the filament: limiting this current greatly prolongs lamp life.

The softstart time for each dimmer can be set from 0 to 1 second in 100 millisecond steps. A shorter time gives a faster response; a longer time gives longer lamp life. For most stage lighting requirements, a time of 200 to 400 milliseconds (0.2 to 0.4 seconds) is suitable. The softstart time is applied after processing of Non-Dim switch levels. This allows limiting high starting currents during start-up of cap-start motors or other capacitive loads. If this facility is not required, then Non-Dim channels should have their softstart times set to zero. Note that an initial softstart time of 2 seconds is applied to all channels after the RackPack is powered on (excepting Non-Dim channels).

## DIMMER SETTINGS PRIORITY

The dimmer settings described above are processed in a fixed priority. A DMX level at a certain DMX address is processed and passed to the dimmer in the following order (of increasing priority):

**1/** The DMX control level and the Analogue control level for that dimmer are mixed on an HTP (Highest Takes Precedence) basis

**2/** If the Test/Set level for the dimmer is set between Off and Full (or flashed), the Test/Set level replaces the dimmer level. If no Test level is set for that dimmer, no change is made. All Test/Set levels are disabled after a Reset command.

**3/** If the dimmer is set to Non-Dim, the level will be switched to Full if over 60%, and switched off if under 40%. If Non-Dim is not selected for that dimmer, no change is made is made to the level.

**4/** If the Minimum setting for the dimmer is set above 0%, the dimmer level cannot be lower than that level. If the Minimum setting is zero for that dimmer, no change is made to the level. All Minimum settings are reset to zero by the Reset command.

**5/** If the Maximum setting for the dimmer is set below 100%, the dimmer level cannot be higher than that level. If the Maximum setting is Full for that dimmer, no change is made. Giving Minimum and Maximum a higher priority than Non-Dim permits switching between any two voltages to suit the application. All Maximum settings are reset to Full by the Reset command.

Note that the normal Incandescent curve is used to define any Minimum or Maximum voltage limits imposed on dimmers selected to Non-Dim, allowing the choice of a minimum and a maximum voltage to be set for such loads if required.

**6/** Finally, the fade up rate of the resulting level is limited by the Softstart Time programmed for the dimmer channel. If the Softstart time is set to zero for that dimmer, no change is made to the fade up rate. The Softstart time applies only to the Up fade rate- it does not affect the Down fade rate of the control level applied to any dimmer. All Softstart times are set to 300msec by the Reset command.

**7/** The phase On time for each dimmer is then calculated from the final dimmer level according to the Incandescent Dimmer Curve. All dimmer curves are set to Incandescent by the Reset command.

## LEVELS DISPLAY

The LCD screen may be set to read out either Input Control levels, or Final Dimmer Levels.

**Input Control levels**

When set to this mode the LCD screen displays the highest level of either the DMX level or the Analogue input voltage for each dimmer. These levels are not changed by any Test, Minimum or Maximum settings. The current internal temperature of the dimmer pack is shown at top right in degrees Centigrade.

**Final Dimmer Levels**

When set to this mode the screen shows the final dimmer level after processing through Test/Set, Non-Dim switching, Minimum and Maximum limiting, and Softstart fades. The current internal temperature of the dimmer pack is shown at top right in degrees Centigrade.

As the current menu level is saved in flash memory and restored after power-up, either of the levels menus may be set as a permanent display if required.

## RESETTING DMX AND DIMMER PARAMETERS

All DMX and Dimmer parameters may be reset to a default value. These default values are described in the next section.

## RACKPACK II PARAMETERS

The range and values after Reset of the different parameters of the RackPack II are described below.

| **DMX SETTINGS** | **Range** | **After Reset** | **Notes** |
|---|---|---|---|
| DMX Start Channel | Off, 1-4096 | 1 | Addresses over 512 have n*512 subtracted |
| | | | |
| **DMX FAIL MODES** | **Range** | **After Reset** | **Notes** |
| Fade to Black | On/Off | On | ( Mutually exclusive- 8 minute fade |
| Hold Last Levels | On/Off | Off | ( Mutually exclusive- levels reset at power up |
| | | | |
| **DIMMER SETTINGS** | **Range** | **After Reset** | **Notes** |
| Test/Set Levels | Disabled, 0-100% | Disabled | |
| Minimum Levels | 0-100% | 0% | |
| Maximum Levels | 0-100% | 100% | |
| Non-dim setup | In, ND | In | In = Incandescent, ND = Non-Dim |
| Soft Start Times | 0-1.0 second | 300 msec | Up time only (Down time always instant) |
| | | | |
| **KEY LOCK** | **Range** | **After Reset** | **Notes** |
| Key Lock | On/Off | Off | Only accessible in Menu Level 0 |

- **All dimmer parameters are held in permanent flash memory**

# RACKPACK II OPERATION

Before powering on, ensure that Mains and Load connections are connected correctly, and make sure the unit is properly earthed.

The examples below assume a start from the top menu level- pressing the Back key several times always goes to Menu Level 0: the screen shows "**Theatrelight NZ**", together with the model, number of channels, the software version, and the current DMX Start number. If the keys are locked, the LCD will show "Keys Locked".

## UNLOCKING THE KEYS

The keys may be unlocked as follows:

1. **To unlock the keypad, hold ◀ + ▶ + ▼ until the message "Keys Locked" disappears (about 8 seconds).**
2. **Release all keys: the screen shows "Changes saved to flash memory".**

## LOCKING THE KEYS

After changing any settings, you can disable the keys to prevent unauthorised changes as follows.

1. **Press the Back key several times to get Menu Level 0. This also saves the latest changes.**
2. **To lock the keypad, hold ◀ + ▶ + ▲ until the message "Keys Locked" appears (about 2 seconds).**
3. **Release all keys: the screen shows "Changes saved to flash memory".**

Ensure that Mains and Load connections are connected correctly, and make sure the unit is properly earthed.

## CONNECTING A DMX CABLE

The standard 5 pin XLR connector wiring using shielded twisted pair cable is as follows:

1. **Connect the shield to pin 1.**
2. **Connect the black wire to pin 2 (DMX -)**
3. **Connect the red wire to pin 3 (DMX +)**

The wiring must be correctly phased for proper operation, and the shield must be connected. You can link a large number of RackPack II dimmer packs together since each represents just 1/10 th of a standard RS-485 load. Do not use a star connection- connect all packs in a line for best signal. Remember to terminate the line with a 120 ohm resistor at the last pack.

## SETTING DMX START ADDRESS

The current DMX Start Channel is shown on the Menu Level 0 page. To change the start address:

1. **In Menu Level 0, press Menu twice to arrive at "DMX Start Address".**
2. **Press Up ▲ or Down ▼ to adjust the DMX address. (Left ◀ or Right ▶ adjusts tens and hundreds).**
3. **Press Back twice: the screen shows "Changes saved to flash memory".**

## SETTING DMX FAIL MODE

To set the DMX Fail Mode to either "Fade to Black" or "Hold DMX levels" :

1. **In Menu Level 0, press Menu, press Down ▼ to select "Set Fail Mode", then press Menu.**
2. **Press Up ▲ or Down ▼ to select the mode, then press Right ▶ to set the mode On.**
3. **Press Back twice: the screen shows "Changes saved to flash memory".**

## SETTING DIMMER TEST/SET LEVELS

Test/Set levels take over control from any input DMX or Analogue level. To set Test/Set levels for each dimmer:

1. **In Menu Level 0, press Menu, select "Change Menu/Setup", press Menu.**
2. **Select "Dimmers/setup", press Menu. Select "Test/set dimmers", press Menu.**
3. **Press Left ◀ or Right ▶ to select the dimmer, Up ▲ or Down ▼ to adjust the level.**
4. **Press 'All" (Left key) with Up ▲ or Down ▼ to adjust all test levels.**
5. **Press "Flash" (Menu key) to flash the dimmer if required to identify the channel.**
6. **Press 'All" (Left key) with "Flash" (Menu key) to flash all dimmers.**
7. **Press Back four times: the screen shows "Changes saved to flash memory".**

## SETTING DIMMER MINIMUM LEVELS

To set Minimum levels for each dimmer:

1. **In Menu Level 0, press Menu, select "Change Menu/Setup", press Menu.**
2. **Select "Dimmers/setup", press Menu. Select "Min level setup", press Menu.**
3. **Press Left ◀ or Right ▶ to select the dimmer, Up ▲ or Down ▼ to adjust the level.**
4. **Press 'All" (Left key) with Up ▲ or Down ▼ to adjust all levels.**

5. **Press "Flash" (Menu key) to flash the dimmer if required to identify the channel.**
6. **Press 'All" (Left key) with "Flash" (Menu key) to flash all dimmers.**
7. **Press Back four times: the screen shows "Changes saved to flash memory".**

## SETTING DIMMER MAXIMUM LEVELS

To set Maximum levels for each dimmer:

1. **In Menu Level 0, press Menu, select "Change Menu/Setup", press Menu.**
2. **Select "Dimmers/setup", press Menu. Select "Max level setup", press Menu.**
3. **Press Left ◀ or Right ▶ to select the dimmer, Up▲ or Down▼ to adjust the level.**
4. **Press 'All" (Left key) with Up▲ or Down▼ to adjust all levels.**
5. **Press "Flash" (Menu key) to flash the dimmer if required to identify the channel.**
6. **Press 'All" (Left key) with "Flash" (Menu key) to flash all dimmers.**
7. **Press Back four times: the screen shows "Changes saved to flash memory".**

## SETTING NON-DIM SELECTION

To set Non-dim selection for each dimmer:

1. **In Menu Level 0, press Menu, select "Change Menu/Setup", press Menu.**
2. **Select "Dimmers/setup", press Menu. Select "Non-dim setup" (on page 2), press Menu.**
3. **Press Left ◀ or Right ▶ to select the dimmer, Up▲ or Down▼ to set ND for Non-Dim.**
4. **Press 'All" (Left key) with Up▲ or Down▼ to adjust all dimmers.**
5. **Press "Flash" (Menu key) to flash the dimmer if required to identify the channel**
6. **Press 'All" (Left key) with "Flash" (Menu key) to flash all dimmers**
7. **Press Back four times: the screen shows "Changes saved to flash memory".**

## SETTING SOFT-START TIMES

To set Soft-start times for each dimmer:

1. **In Menu Level 0, press Menu, select "Change Menu/Setup", press Menu.**
2. **Select "Dimmers/setup", press Menu. Select "Soft-start setup" (on page 2), press Menu.**
3. **Press Left ◀ or Right ▶ to select the dimmer, Up ▲ or Down ▼ to adjust the level.**
4. **Press 'All" (Left key) with Up ▲ or Down ▼ to adjust all times.**
5. **Press "Flash" (Menu key) to flash the dimmer if required to identify the channel.**
6. **Press 'All" (Left key) with "Flash" (Menu key) to flash all dimmers.**
7. **Press Back four times: the screen shows "Changes saved to flash memory".**

## RESETTING DMX AND DIMMER PARAMETERS

To reset all DMX and dimmer parameters:

1. **In Menu Level 0, press Menu, select "Change Menu/Setup", press Menu.**
2. **Select "Dimmers/setup", press Menu. Select "Reset Dimmers + DMX" (on page 2).**
3. **Press Menu: the screen asks for confirmation: press "OK" (the Menu key).**
4. **The screen shows "Resetting all Dimmer and DMX parameters", then restarts the dimmer pack.**

- Note that any changes made to DMX or Dimmer parameters, or current menu level will be saved automatically 10 minutes after the last key press.

## MAINTENANCE

To keep your RackPack working well take note of these points:

- Keep the dimmer pack in a clean air environment: dust is detrimental to electronic insulation and fan life.
- Ventilate dimmer cabinets and dimmer rooms adequately: heat is detrimental to electronic components.
- Use a damp cloth to keep the dimmer pack clean. Do not use solvents, or solvent based pens.
- Touring dimmer packs should travel in a sturdy road case with adequate protection from dust and vibration.
- Use rear support plates on each dimmer pack when touring.
- Take care that all power connections are firmly screwed down when operating the dimmer pack.
- Ensure the dimmer packs are properly earthed to a low impedance earth system.
- Use DMX splitters/reconditioners to ensure a clean DMX signal.
- Terminate the last pack in the DMX line with a 120 ohm resistor for reliable operation.

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## SPECIFICATIONS

**CONSTRUCTION**

Epoxy powder coat over zinc plated steel case. Legend silk-screened in solvent and abrasion resistant two pot epoxy ink.

**FORM**

3u high, 19 inch rack wide, with removable mounting wings. Rear support wings are available for touring cabinets

**ELECTRONICS**

Flash microprocessor with internal EEPROM for long life storage of all parameters. Digitally controlled SCRs or Triacs, depending on model. The internal Switch Mode power supply is rated at 90 vac to 265 vac, 45 to 65 hertz, and uses long-life 105 degree rated capacitors for long life.

**LCD DISPLAY**

4 line, 20 charater display, STN Blue or Green (depending on model) with auto-dimming superbright white LED backlight.

**PUSH BUTTONS**

“Alps” brand computer keys with custom moulded keycaps.

**MCBs**

6KA rated MCBs provide full overload and shortcircuit protection of power devices.

**FILTERING**

Iron powder toroidal chokes for linear current rise and minimum EMI. Theatrelight can provide filtering to customer standard on request.

**COOLING**

Long life low voltage speed controlled fan. Fan speed is proportional to temperature.

**DMX CONNECTION**

USITT DMX-512 1990 Digital multiplex system requiring twin twisted shielded cable approved for RS-422/485 of up to 600 metres. Dimmer refresh rate is every 22 milliseconds. Each RackPack presents $1/10^{th}$ normal RS-485 unit load, allowing reliable DMX operation.

**DMX SPLITTERS**

DMX-512 splitters can be supplied by Theatrelight for larger installations. The splitter re-shapes and buffers the received DMX and drives a number of isolated floating DMX transmitters. Splitters may be cascaded. Theatrelight DMX Splitters are available in either 19 inch, 1 U rack mounting configuration, or as a standalone portable version.

**POWER SUPPLY**

Input: 90 to 265 volts AC, 1, 2 or 3 phase and Neutral, 45 to 65 Hz. Power consumption at no load is less than 5 watts. Reliable operation of SCR dimmer packs requires a low impedance power supply.

**EXTERNAL CONNECTIONS**

Output: 12 channel Triac and SCR versions, and 6 and 3 channel SCR versions, available in various current ratings

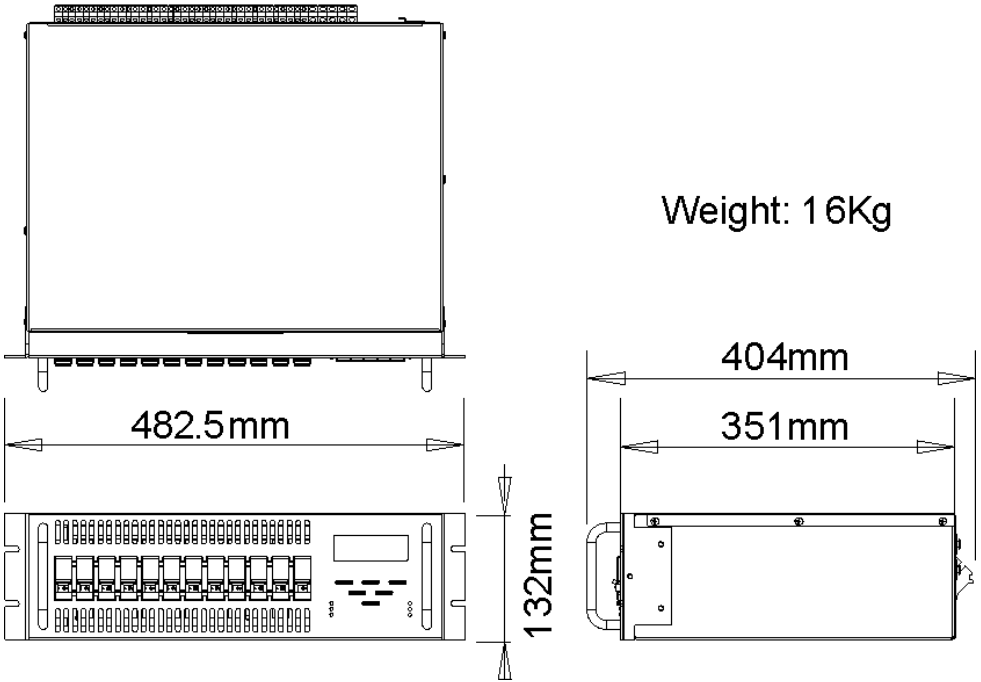
Terminations: Moving cage terminals, or cable input with socket outputs depending on model and destination country

DMX Control Input: DMX-512 via gold plated 5 Pin XLR In/Thru connectors

Analogue Control Input: 0 to +10volts DC into a DB-15 connector mounted on the rear panel. A 12 volt 200mamp supply is provided for powering faders.

Diagnostic socket: Front panel socket for programming and diagnostic purposes (Theatrelight technicians only.

## DIMENSIONS



## GLOSSARY OF THEATRE LIGHTING TERMS

| | |
|---|---|
| ADD MODE | Mode in which pressing a channel Flash key adds the channel to the other lighting. |
| ANALOGUE | A smooth changing voltage (as opposed to digital) |
| BLACKOUT | All lights out on stage. |
| BLIND | Not showing on stage. |
| BO | Blackout; all lights out on stage. |
| BPM | Beats per minute: applied to music rhythms. |
| CHANNEL | One of the controlled output lines from a lighting desk; or a dimmer channel. |
| CHASE | A repetitive pattern of lighting changes. |
| CROSS-FADE | A smooth change from one lighting state to another. |
| CUE | An action or time event which results in new lighting on stage; the lighting state following the cue |
| DBO | Dead Black-out: no light on stage. |
| DIMMER | A power controller which changes the brilliance of lights connected to it. |
| DIPLESS | Applied to a cross-fade where a dimmer up at the same level on both the new and the old lighting states does not change level during the cross-fade. |
| DMX-512 | A method of transmitting dimmer levels digitally over a two wire cable. (Digital MultipleX, 512 dimmers) |
| EEPROM | Electrically Erasable Programmable Read Only Memory: otherwise know as Flash Memory. |
| EMI | Electro-Magnetic Interference. Electrical noise. |
| ERASE | To clear and reset the memory. |
| FADER | A slider control. |
| FADE TIME | The time taken to complete a fade from full off to full on. |
| FLASH KEY | Any key which flashes a channel or scene to Full. Sometimes called Bump keys (USA). |
| GRAND MASTER | A master fader which controls the final output levels of a lighting desk. |
| HTP | Highest Takes Precedence: the highest command level is used as the controlling level |

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| KILL | Turn off a light. |
| KILL MODE | Mode in which pressing a Flash key turns off all other lighting. Sometimes called Solo or Swap mode. |
| LCD | Liquid Crystal Display |
| LED | Light Emitting Diode. |
| LEVEL | The brightness of a channel or dimmer as a number from 0 (off), to 10 (full on), or from 0% to 100%. |
| LTP | Latest Takes Precedence: the latest command level is used as the controlling level |
| MASTER | A fader which has overall control of a number of levels or some other major function. |
| MCB | Miniature Circuit Breaker- a re-settable current protection device. |
| MIMIC DISPLAY | A display often using Light Emitting Diodes (LEDs). |
| NON-DIM | A dimmer set to Non-dim acts like a switch: on or off |
| PRESET | A row of faders representing all the channels in a scene; to set up faders in advance of a cue. |
| PREVIEW | To view a set of recorded levels without showing on stage. |
| SCENE | A recording which stores a single set of all channel levels. |
| SCENEMASTER | A master fader which controls the playback of a scene of recorded levels. |
| SCR | Silicon Controlled Rectifier. A unidirectional power swtich used in dimmers |
| SEQUENCE | A repetitive pattern of lighting changes. |
| SHOW | A performance. In Theatrelight control panels, a Scenemaster which stores a sequence of cues. |
| SOFTSTART | A minimum fade up time programmed into a dimmer to enhance lamp life. |
| SOLO MODE | Another name for Kill mode. |
| SNAP FADE | An instant change from one lighting state to another. |
| STEP | To change from one scene or cue to another. Also, one scene of a Show or Chase. |
| TRIAC | A bidirectional power switch. Dimmers using triacs should be used with care on inductive loads. |
| USITT | United States Institute of Theatre Technicians. Arbiters of the DMX-512 standard. |

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