



## Power Supply Units (PSU)

### General:

No matter if fixed installation or touring business – complex lighting systems always require best reliability together with relatively easy operation and maintenance features. In order to be able to solve eventually occurring problems not only fast but also most efficiently, it is important to know which component of the system fulfils which purpose.

This fact has been taken into consideration during the design and development of Rainbow Colour Changers. And this is why we find the entire “intelligence” where we first expect it to be: within the Colour Changers themselves, but not in the power supply unit. Consequently the DMX-addressing, the selection of channels, etc... is done right on the Colour Changer itself.

The external power supply unit (PSU) combines the DMX signal with the internal 24 V DC of the Colour Changer. These power/control signals are available on the female XLR4 outputs.

### Different versions:

In order to meet your individual demands, we offer two different PSU-versions:

1. the **MICRO PSU** with 1 output is able to run up to 6 Colour Changers
2. the **MAXI PSU** with 4 outputs can run up to 24 units

### The maximum number of Colour Changers per output is restricted:

PSU	max. no. of units (altogether)	max. no. of 6", 8", 12" per output	max. no. of 15", 8-Lite per output
Micro	6	6	3
Maxi	24	12	6

### Power Supply:

The Micro PSU as well as the Maxi PSU are connected with the mains via CEE22 connection. The necessary operating voltage of the Colour Changers (24 V) is guaranteed by the opto-isolated, overload-protected power supply.

The Micro PSU adjusts itself automatically to the operating voltage from 85 to 260 Volt.

The Maxi PSU is available as 110 V and 230 V version.

### DMX Input /Output:

The control signal (DMX) is fed through the XLR5pol. male socket. The DMX output is a “feed through” output, which means that the DMX signal will be daisy-chained and will also be available on the output in case of a power failure. Rainbow PSUs are designed to put minimum strain on the DMX signal.



## Termination:

If the Rainbow PSU is the last unit in line (of DMX cabling), the DMX signal must be terminated. Therefore you will find a termination switch on the unit.

If the termination switch is set to ON, the Micro PSU indicates this by the yellow LED and the MAXI PSU by the flashing red LED.

## Output / Return sockets:

In order to protect the main DMX signal against negative influences caused by defective cabling, etc..., it is galvanically separated from the Colour Changer outputs via opto-isolated coupling inside the PSU.

The outputs to the scrollers are designed as XLR4pol. sockets, which are connected with the XLR4pol. male socket of the first Colour Changer in line via Rainbow Power/Data cables. Further scrollers are connected from the XLR4pol. female socket of the first Colour Changer in line to the second one, etc...

In order to improve current feeding and DMX transmission, we always recommend to connect a so-called return cable from the last scroller on each output back to the PSU return socket (XLR4pol. male). This way the supply voltage will be led back again to the Colour Changer – in parallel to the output. Via an internal termination resistor the loop cabling is automatically terminated when connecting the return cable.

## Protection:

Each PSU output is internally protected.

The fuse on the PCB inside the **Micro PSU** is able to put itself back.

Inside the **Maxi PSU** you will find so-called "Pico Fuses", which are located within the cable from the PCB to the output sockets.

These fuses protect the PCB against damages, which might be caused by incorrectly assigned or defective scroller cables.

The mains fuse of the **Micro PSU** is inside the unit and has got a value of 3,15 A (slow blow).

The mains fuse of the **Maxi PSU** is situated next to the CEE 22 input socket and has got a value of 4 A (slow blow).

## Pin assignment:

### DMX 512 (1990) XLR 5pol.

Pin 1: Ground (Screen)  
Pin 2: Data -  
Pin 3: Data +

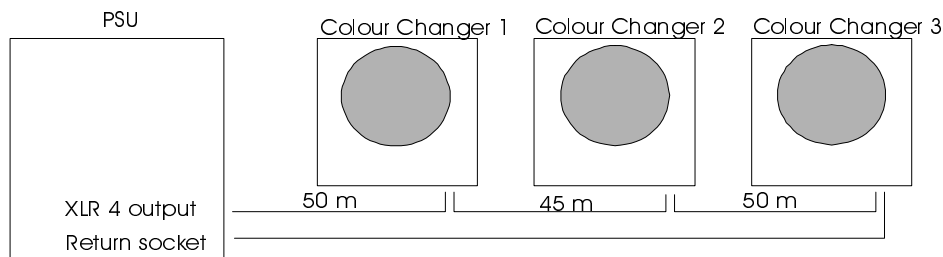
### Colour Changer signal cable XLR4pol.

Pin 1: 0 V ; Ground  
Pin 2: Data-  
Pin 3: Data +  
Pin 4: 24 V +

## Power/Data cable:

In order to guarantee a reliable operation, we strongly recommend the use of our Rainbow Power/Data cable. This XLR4 pole cable contains two lines á 0,38 sqmm for the transmission of the DMX signals, as well as two lines á 2,08 sqmm for the supply voltage of the Colour Changers. The high cross-section of the live wired lines considerably increases the maximum cable length, which you can use within the system. In order to ensure a reliable operation, you should not use more than 300 m total cable length (theoretical figure) per output. Please note that you have to differentiate between the theoretical cable length and the actually usable cable length.

## Example:



1. Actually usable cable length: 145 m (see systemdrawing)
2. Theoretical cable length: 290 m (please see calculation chart below):

Colour Changer no. 1	=	50 m	=	50 m
Colour Changer no. 2	=	50 m + 45 m	=	95 m
Colour Changer no. 3	=	50 m + 45 m + 50 m	=	145 m

**Total theoretical cable length in this drawing = 290 m**

(You have to add the total cable length between each Colour Changer and the PSU in order to calculate the theoretical figure.)

## Control-displays:

The **Maxi PSU** has 2 control LEDs, which are situated on the same side as the sockets:

The **red LED shining permanent** indicates that the 24 V DC supply is OK.

When the "termination"-switch is activated, the **red LED is flashing**.

The **green LED** indicates that a DMX signal is present at the XLR5pol. input.

The **Micro PSU** has three LEDs:

The **yellow LED** indicates that the "termination"-switch is activated.

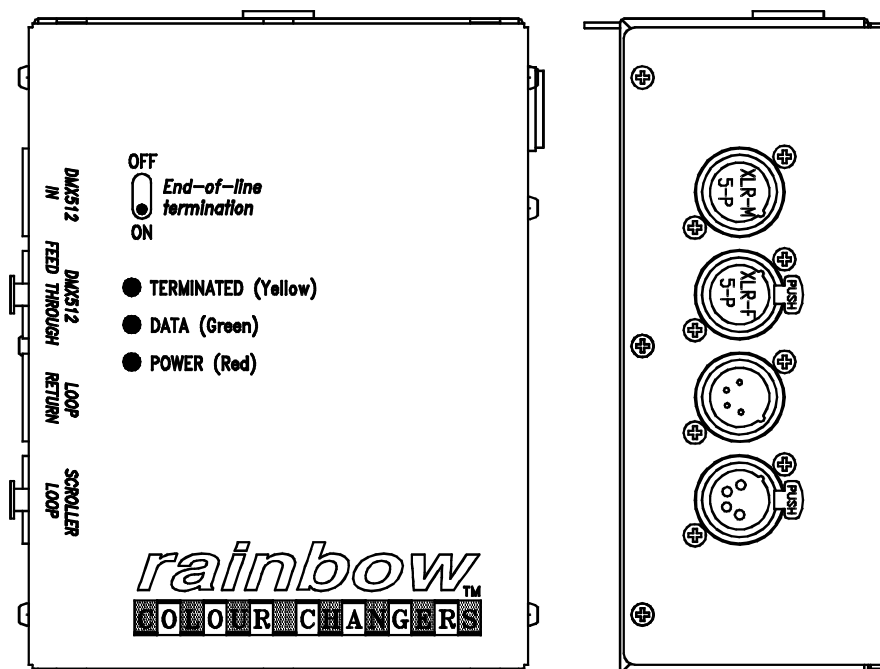
The **red LED** shows, if the 24 V DC supply is OK.

The **green LED** indicates that a DMX signal is present at the XLR5pol. input.

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COLOUR CHANGERS

## Specification Micro PSU:



Technical data Micro PSU	RCC141
Height	178 mm / 7"
Width	143 mm / 5.6"
Depth	72 mm / 2.8"
Weight	1.37 kg / 3 lbs
Connectors – Out to scrollers	XLR - 4 pin - F
Connectors – Return from scrollers	XLR - 4 pin - M
Connector – DMX512 input	XLR - 5 pin - M
Connector – DMX512 output	XLR - 5 pin - F
Opto-isolated DMX512 input, low load	Yes
Switch for termination of the DMX512 input	Yes
Connector - Mains	IEC (CEE 22)
Mains input 85-264 volt AC	standard
Fuse, $\varnothing$ 5x20 mm, slow, ceramic	T3.15 amps
Max. number of units (altogether)	6 x 6", 8", 12" PRO or 3 x 15", 8-Lite PRO
Max. number of scrollers per output	6 x 6", 8", 12" PRO or 3 x 15", 8-Lite PRO
CE approval	EMC, LVD

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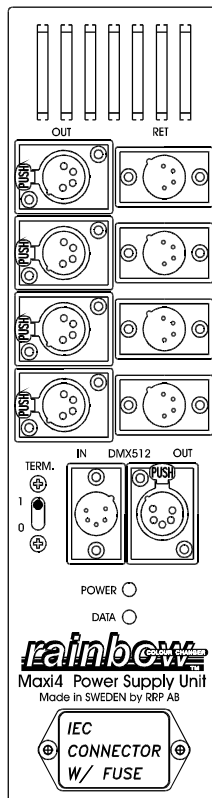
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## COLOUR CHANGERS

### Specification Maxi PSU:



Technical data Maxi PSU	RCC125E/U
Height	293 mm / 11.5"
Width	82 mm / 3.25"
Depth	250 mm / 9.9"
Weight	3.3 kg / 7.3 lbs
Connectors – Out to scrollers	XLR - 4 pin - F
Connectors – Return from scrollers	XLR - 4 pin - M
Connector – DMX512 input	XLR - 5 pin - M
Connector – DMX512 output	XLR - 5 pin - F
Opto-isolated DMX512 input, low load	Yes
Switch for termination of the DMX512 input	Yes
Mains input, E= Europe version, U= US version	IEC (CEE 22)
Mains input: E=230 Volt AC (accepts 170-264 volt AC)	230 volt version (standard)
Mains input: U=115 Volt AC (accepts 85-132 volt AC)	110 volt version
Fuse, Ø6.3x32 mm, slow, ceramic	4 amps
Max. number of units (altogether)	24 x 6", 8", 12" PRO or 12 x 15", 8-Lite PRO
Max. number of scrollers per output	12 x 6", 8", 12" PRO or 6 x 15", 8-Lite PRO
CE approval	EMC, LVD

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