

# ROSCO POWER SUPPLIES

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# MANUAL

## Introduction

Congratulations on your purchase of the Rosco Laboratories PSU-200 or PSU-400. These power supplies are intended to provide power and data to the majority of lighting accessories available on the market today. This includes, but is not limited to, color scrollers, gobo rotators, and I-Cue units. If you are unsure whether your particular accessories are compatible, please check the compatibility listing later in this manual or the updated list online at [www.rosco.com](http://www.rosco.com). Once RDM becomes a standard and RDM accessories become available, an upgrade will be available for both the PSU-200 and PSU-400 to support this as well.

Both the PSU-200 and PSU-400 units provide similar functionality in different packages and power capabilities. The PSU-200 is a 200W power supply that can be hung on a baton or set on a flat surface. The PSU-400 has two (2) 200W supplies, for a total of 400W, and is in a standard 19 rack-mount frame (2U height, 13 depth).

## Using the PSU

### Power Connection

The power to the PSU is connected to a fused male IEC receptacle mounted on the PSU. Input power can be 85-264VAC 47-63Hz or 120-370VDC. The standard fuse is a 5x20mm 6.3A / 250V Slo-Blo.

### Data and Accessory Connections

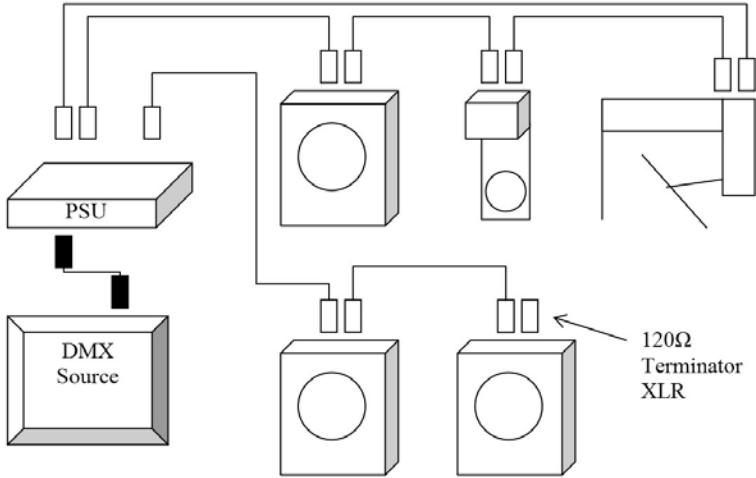
The common data input is standard DMX-512 through a male 5-pin XLR. A pass-through connection (all pins) is available on the female 5-pin XLR. The accessory connections are female 4-pin XLRs wired as: Pin 1 = Ground, Pin 2 = Data-, Pin 3 = Data+, Pin 4 = 24VDC. There are also accessory return connections, male 4-pin XLRs wired as: Pin 1 = Ground, Pins 2 & 3 = I20\_ termination, Pin 4 = 24VDC.

### Indicators & Controls

The front panel is identical on both the PSU-200 and PSU-400. The button controls termination of the incoming DMX signal. Termination is deactivated by pushing the button in, most easily done with a pen (it will be behind the panel when pushed in). The yellow LED next to the button indicates that termination is on. The blue LED indicates the presence of an RDM signal (when upgrade is installed). The green LED indicates the presence of an incoming DMX signal. The red LED indicates that power is on.

## System Layout

A typical system layout is shown below.



Note that both accessory chains are terminated. The top row of accessories is using the channel return (see below), which terminates the chain. The bottom row of accessories is using a separate terminator (made with a 4-pin XLR and 120 $\Omega$  resistor). This is recommended to maintain the integrity of the data in the chain.

The channel returns are provided for two reasons. First of all, they provide an easy way to terminate the accessory chain. Secondly, they will reduce voltage drops on long chains of accessories by providing a supply at both ends of the chain. Generally the voltage drop is cut roughly in half by using a channel return. This can nearly double your maximum cable run.

## Load Considerations

The load that the PSU can deliver to the accessories is limited and must be taken into account when setting up the system. To begin with, each accessory has a constant power consumption and a peak power consumption. The constant power consumption is generally when the accessory is plugged in, but not operating. The peak power consumption generally occurs when motors start or change directions. We advise using the peak power consumption when calculating the channel load on the power supply (this is the number given in the compatibility list). This should give a comfortable margin of safety regardless of the nature of the show.

On both PSUs, there are 4 channels (consisting of the marked channel and the corresponding return). Basically, the channel load is calculated by adding the power consumption of every accessory on the channel.

On the **PSU-200**, the sum of all four (4) channel loads should not exceed 200W.

On the **PSU-400**, the sum of channel loads from channels 1 & 2 should not exceed 200W. The sum of channel loads from channels 3 & 4 should not exceed 200W.

In either case, an even distribution of the load over all channels is recommended as it will minimize problems caused by voltage drops and long cable runs. Using cable with heavy-gauge power wires can also reduce problems.

If erratic behavior is noticed on a channel, try reducing the load on that channel and make sure that it is properly terminated.

An example system using the PSU-200:

The design calls for 20 Wybron Forerunners (10W each). Since this is a maximum load of 200W, it is compatible with the PSU-200. Ideally, there would be 5 on each channel (an even distribution of 40W per channel), but 10 on a channel, or even 20 on one channel would be acceptable as long as the cable run is relatively short.

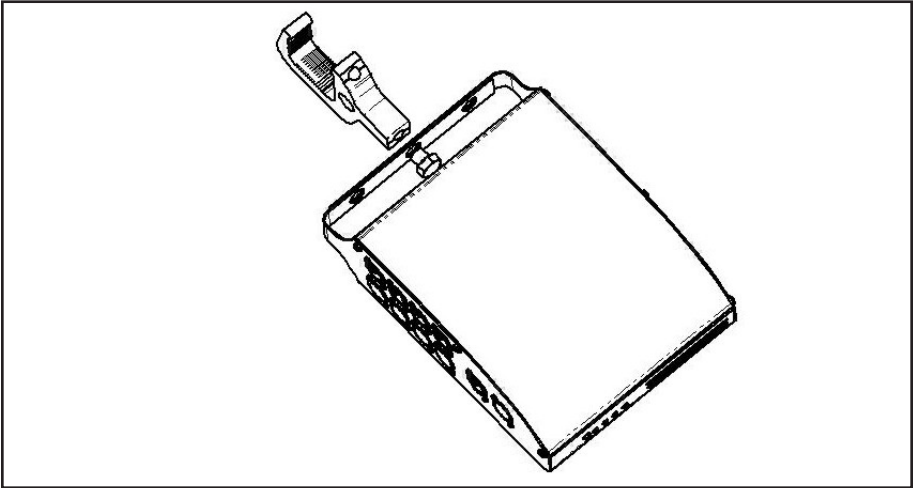
An example system using the PSU-400:

The design calls for 16 Rosco I-Cues (17W each) and 16 DHA Double Indexing Rotators (6W each). This is a total load of 368W, which is compatible with the PSU-400. However, this exceeds the 200W limit on channels 1 & 2 (or 3 & 4), so the load must be split between at least two channels. The ideal would be 4 of each accessory on each channel, which is 92W per channel and 184W per channel pair (under the 200W limit). Alternatively, there could be 8 of each accessory on channels 1 and 3, keeping the 184W per channel pair. Again, this is not recommended for long cable runs.

## Mounting and Installation

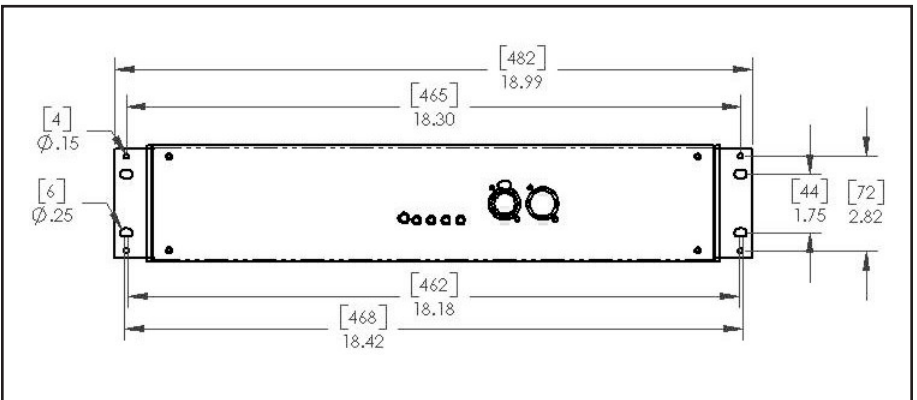
### PSU-200

The PSU-200 can be hung from any C-clamp or other mounting device that uses a 1/4" bolt. The three holes on the handle of the PSU are provided for this purpose. See the picture below for an example of this. The use of a safety cable is strongly recommended when hung overhead. Also make sure not to block the vents when mounted



### PSU-400

The PSU-400 can mount in any standard 19" rack by using the included rack ears (see detail below). Make sure not to block the vents on the rear of the unit when mounted.



## Compatibility List

The following units are compatible with either PSU and are given with their rated power consumption.

Product	Power Rating (Watts)
Rosco I-Cue	17
Rosco DMX Indexing Rotator	6
AC Lighting / Apollo Chroma Q Broadway	22
AC Lighting / Apollo Chroma Q M1,2,5,8	36
Apollo Roto-Q DMX	12
City Theatrical DMX Iris	8.5
DHA Gobo Carousel	18
DHA Twin DMX	12
Rainbow 6 , 8 , 12 Pro Colour Scroller	14
Rainbow 15 Pro Colour Scroller	29
GAM Indexable Twin Spin	14.4
GAM SX4 — 6 Gobo Tray	10.8
Wybron Forerunner	14
Wybron Lightwand	10

## Mechanical Specifications

### PSU-200

Size: 11.7 × 8.3 × 3.6 [297 × 211 × 92]

Weight: 5 lbs [2.3 kg]

### PSU-400

Size: (not including rack ears) 17.0 × 13.0 × 3.5 [433 × 329 × 89]

Weight: 15 lbs [6.8 kg]

## Electrical Specifications

### Common

Data Input (1x)

Male 5-Pin XLR

DMX Compatible Data (Pin 2 is -, Pin 3 is +)

120% Termination — Switch Selectable

Isolated Receiver

–15KV (HBM) / –8KV (IEC-1000-4-2 Contact) ESD Protected

Direct Pass-Through (All Pins) to Female 5-Pin XLR for Daisy Chaining

Data/Power Output (4x)

Female 4-Pin XLR

DMX Compatible Data (Pin 2 is -, Pin 3 is +)

120% Termination, Line Biased to Mark State

Earth Ground Referenced Transmitters

-15KV (HBM) / -8KV (IEC-1000-4-2 Contact) ESD Protected

24VDC Power (Pin 1 is Ground, Pin 4 is +)

Data/Power Return (4x)

Male 4-Pin XLR

120% Termination (Pins 2 and 3)

24VDC Power (Pin 1 is Ground, Pin 4 is +)

Line Connection

IEC 320 Grounded Inlet w/ Fuse (5x20mm, 6.3A / 250V Slo-Blo)

85-264VAC 47-63Hz / 120-370VDC

EMI Filter

Power Factor Correction

Internal Protection

Fan on Power Supply

Overtemp Protection on Power Supply (Auto Recovery)

Overload Protection on Power Supply (Auto Recovery)

Environmental

50C Maximum Ambient (Estimated Based on Component Limits)

## PSU-200

Line Connection

2.8A @ 115V, 1.4A @ 230V

Load Capabilities

200W (8.4A @ 24VDC) Combined on All Channels

## PSU-400

Line Connection

5.6A @ 115V, 2.8A @ 230V

Internal Protection

8CFM Fan (Vents on Rear)

Load Capabilities

200W (8.4A @ 24VDC) Combined on Channels 1&2

200W (8.4A @ 24VDC) Combined on Channels 3&4

## Warranty

Rosco Laboratories will provide a limited 1-yr warranty on parts and labor for the PSU-200 and PSU-400 units, but not for the lamp.



**[www.rosco.com](http://www.rosco.com)**

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