

# Radio Dimmer and LED Light



# Table of Contents

1. Description
2. Operation
3. LED Lamp Color Correction
4. LED Spectral Characteristics
5. Specifications

## 1.0 Description

**The Radio Dimmer and LED Eye-Lights** combines a brilliant 25W LED array with a wireless dimmer. The dimmer can be controlled by the **FI + Z Hand Unit, Radio Micro Force**, or **Focus/Iris** wireless units. The high efficiency of the lamps gives them enough punch for exterior or bright interior use. Most importantly, their color temperature remains nearly constant, without flicker, over 5 stops of intensity change. A perfect light for Steadicam® or other mobile applications.

Two versions of the LED Lamps are available:

Model	Typical Color Temperature	Maximum Current	Typical Voltage
5012	5500°K (5000~7000°K)	2.4A	12.6V
5013	4300°K (3600~5000°K)	1.2A	25.2V

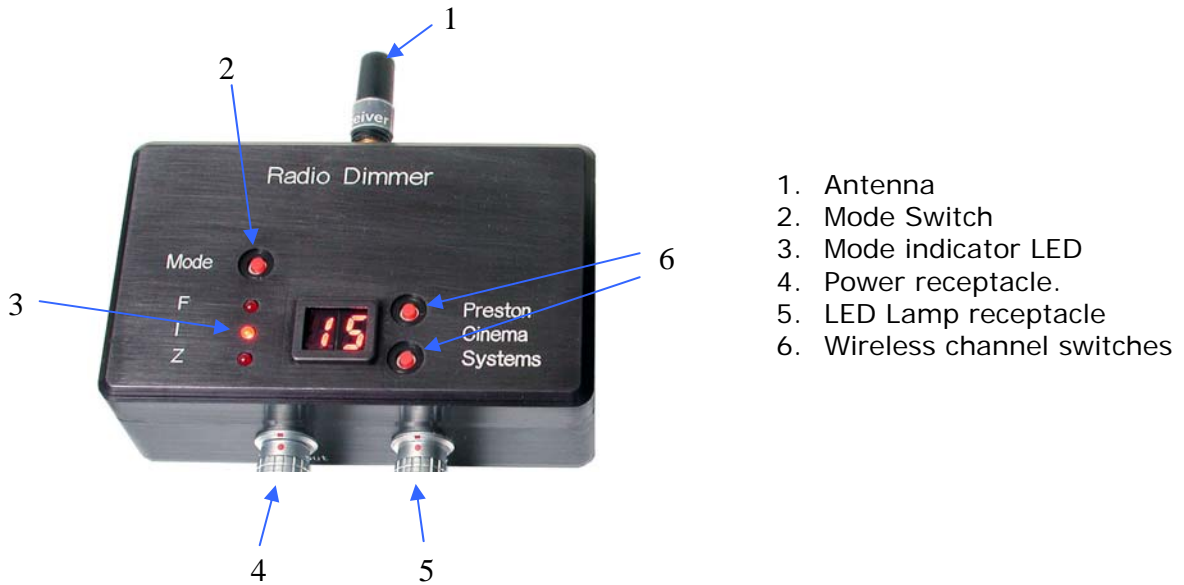
Model 5012 is intended for Daylight use and 5013 for Tungsten. Both units incorporate efficient holographic diffusion filters. Additional filters are provided with each lamp to more closely match their color temperature to either Daylight (5600°K) or Tungsten (3200°K).

The LED Lamps contain programming resistors to identify the lamp type and limit the lamp current to safe values. The Dimmer contains protection circuitry that shuts off operation in the event of over-current or over voltage. To insure reliable operation, make sure that the power source is capable of supplying the required current and voltage levels as given in the Specification section 5.0 of this document.

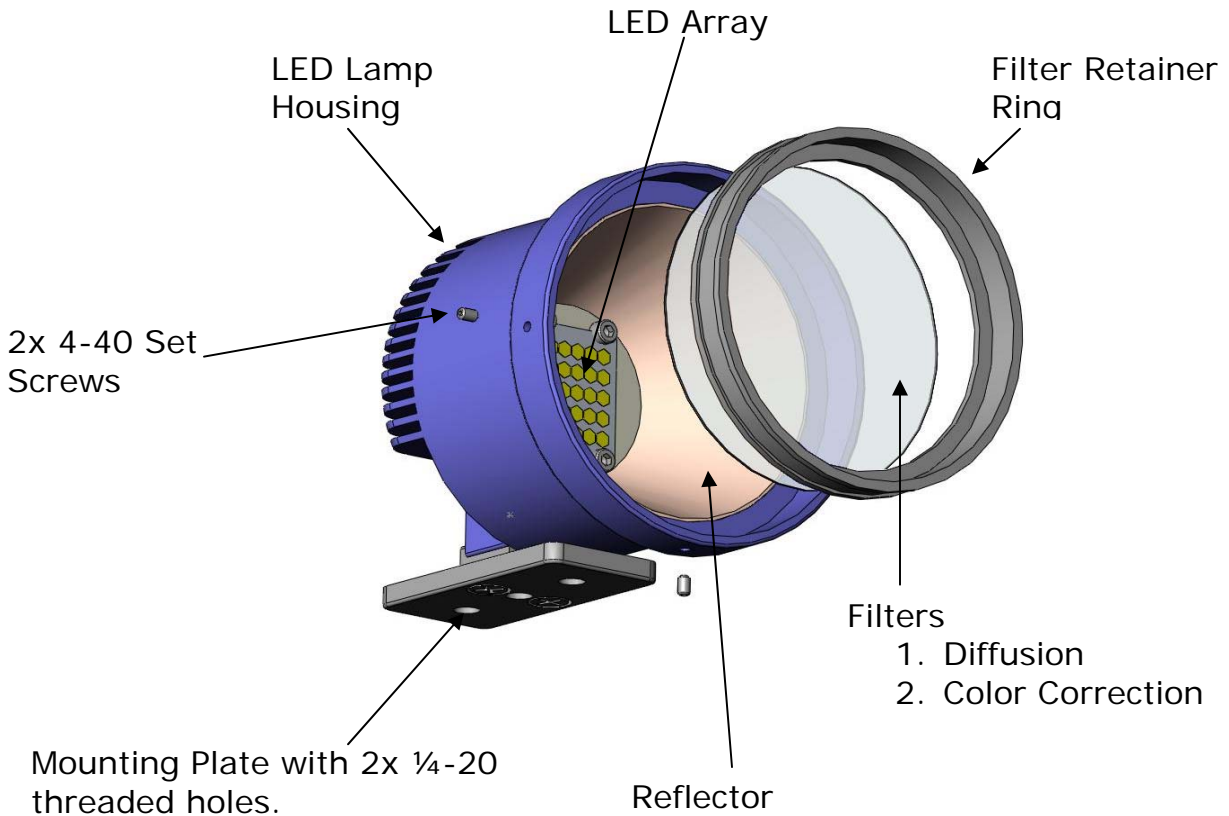
## 2.0 Operation

- A. Camera Connections and Mounting
  - a. Secure the Radio Dimmer to the Matte Box Support Rods using the Mounting Bracket (p/n 4342). The jaw opening is adjusted to accommodate different rod sizes by turning the free half of the bracket as shown in the picture above.

- b. Apply power to the Radio Dimmer either directly from the camera, Pro Steadicam, or from a separate battery. See the complete list of cables in Section 4 of this document.
- B. Lamp Mounting.
  - a. Mount the lamp using the ¼-20 threaded hole.
  - b. Connect the LED Lamp to the Dimmer using cable 5014.
- C. Dimmer Set-Up.
  - a. Apply power to the Radio Dimmer either directly from the camera, Pro Steadicam, or from a separate battery. See the complete list of available cables in Section 4 of this document.
  - b. Using the Channel Selection push-buttons, choose a radio channel to match that of the Hand Control unit (Hand UnitII, hand Unit 2, Focus-Iris unit, or Radio Micro Force unit.
  - c. Use the Mode switch to select which channel of the Hand control will control the dimmer. The Hand Unit2, and Hand Unit 3 with a Micro Force can control any of the three channels, The Focus-Iris unit controls either focus or iris, and the Radio Micro Force controls only the zoom.
- D. Light Level Control. The response of the Dimmer to control signals from the Hand Units is approximately **logarithmic**. The full range of the Focus, Iris, or Zoom channels has been divided equally into 5 f-stops.



**Radio Dimmer**



## LED Lamp

### 3.0 LED Lamp Color Correction.

The LED Lamps are provided with color correction filters to match their output to either daylight (5600°K) or Tungsten (3200°K). Since the user may wish to alter the color balance to suite a specific film stock or digital camera, the procedure for selecting the filters is presented in this section.

The diffusion and color correction filters are held in place by the retaining ring as shown in the figure above. To remove or change the filters, loosen the 2x 4-40 set screws and slide out the retaining ring and filters.

Conventional color temperature meters (i.e. Minolta IIIf) are designed to work with light sources having smooth spectral emission characteristics. (See section 4.0 for examples) The color temperature of "white" LED devices have prominent emission peaks and cannot be accurately measured with these meters. The use of a digital camera in combination with Photoshop software is recommended to determine the best filtration.

In addition to a digital camera with accurate white balance calibration, you will need:

1. A calibrated "White Card".
2. A set of reference gel filters. A book of 8 x 15 cm swatches is sold by Rosco, p/n SBLUX0305.
3. A computer with Photoshop installed.

The procedure for determining the required filters is:

1. Set the color balance of the still camera to match that of the desired lamp output – 5600°K, 3200°K.
2. Check the color balance of the camera by photographing the white card illuminated by a source whose color temperature matches the setting of the camera.
3. Photograph the white card as illuminated by the LED Lamp. Transfer the image files (reference and LED illumination) to the computer. Open the files in Photoshop.
4. Place the Photoshop cursor on the white card image and note the R, G, and B components. The goal is to choose filters that result in the R, G, and B values being as nearly equal as possible. The examples shown in the following figures illustrate the process for a Warm White LED lamp.



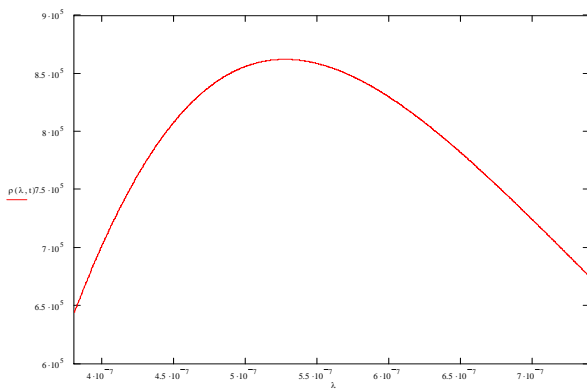
Unfiltered LED



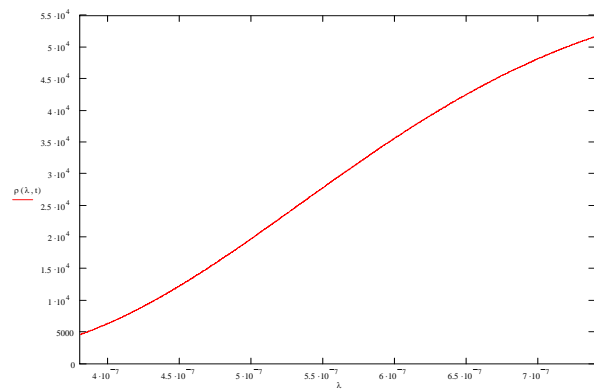
LED with Rosco #16 Light Amber

#### 4.0 LED Spectral Characteristics

Two of the most common light sources used in cinematography, tungsten lamps and sunlight have spectra that vary smoothly with wavelength as the following figures illustrate:

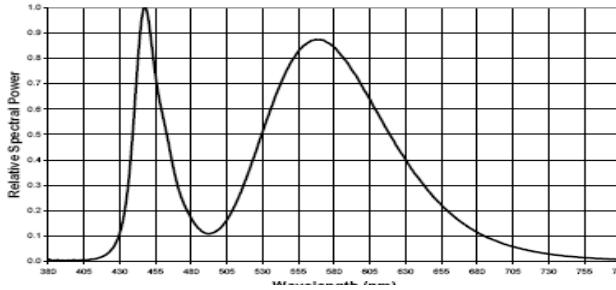


Power spectrum for sunlight 5600°K

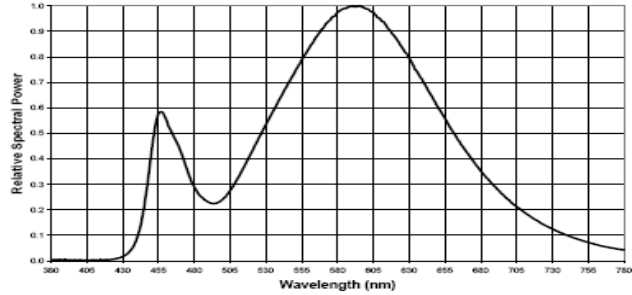


Power spectrum for incandescent light sources at 3200K

The corresponding spectral outputs for Daylight and Warm White LED lamps are shown in the following figures:



Daylight LED



Warm White LED

White LED's simulate daylight by combining a blue LED emitting at 430nm with phosphors converting some of the 430nm emission to 550nm (yellow-green). The Warm white LED lamp has additional red LED's added to the array. The result is that the power spectrum for the Warm White LED shows more power in the red (longer wavelengths) than the corresponding spectrum for the Daylight LED unit.

## 5.0 Specifications

**Weights:** Dimmer Module 11.1 oz (300g)  
Lamp 12.8 oz (350g)

**Power requirements:** Voltage: 12 -30 VDC  
Max Current: 2.5A @ 12V input. 1.25A @ 24V input

### Electrical Connections:

Connector Type: LEMO Receptacle type ECG1B303

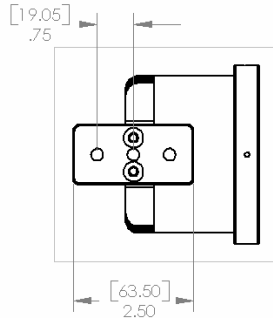
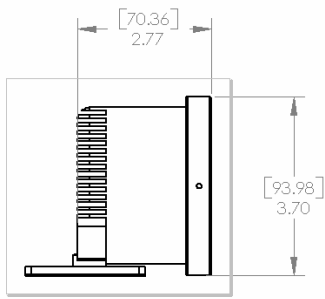
Pin-Out:

1. Gnd
2. +V
3. Rid

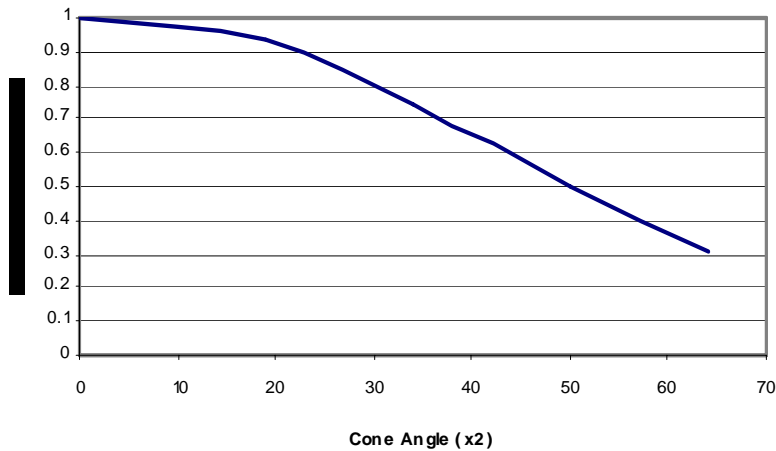
Resistor Rid provides lamp identification for the Radio Dimmer (pn 5010). It is connected between LEMO pins 1 and 3.

Model	Rid value
5012	2.32K
5013	4.53K

Product Number	Description
5010	Radio Dimmer with Clamp Bracket for matte box rods and LED Light (choose 5012 or 5013), cable 5014, and power cable (choose 5020 or 5021)
5011	Radio Dimmer with Clamp Bracket
5012	LED Light (daylight)
5013	LED Light (warm white)
5014	LED Light to Dimmer Cable
5015	Dimmer to Kino Flo Ballast
5020	Power Cable (XLR3 Panavision Polarity)
5021	Power Cable (XLR3 Arri Polarity)
5022	Pro Power Cable for Dimmer
5023	24V Power Cable Arri 3-pin Fischer
5024	24V Power Cable for PV cameras, 2- pin LEMO
5025	Radio Dimmer Clamp (spare)



Mechanical Dimensions



Light Distribution vs Angle

**Photometric Data:** Maximum Illuminance (3m on axis): 7fc (690lux)

**Preston Cinema Systems • 1659 Eleventh Street • Santa Monica CA 90404**

tel 310-453-1852 fax 310-453-5672 [www.prestoncinema.com](http://www.prestoncinema.com)