BP100

FEATURES

Measure
   Illuminance
   Luminous Intensity
   Luminous Flux
   Chromaticity

**Fully Integrated with
Photometrica Software**

APPLICATIONS

LEDs
Directional Lighting

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A compact accessory for intensity beam pattern measurements of small lamps.

When using Westboro's Photometrica® software, users can perform a menu-driven, geometrical and photometric calibration process. 2-D measurements can report the intensity of the test lamp in polar (θ, φ) or Cartesian (θH,θV) coordinates. Other computations include illuminance and luminous flux. Chromaticity coordinates and spectral prop-erties are also measured when using an imaging colorimeter or hyperspectral imager.

Without extending the rails or increasing the screen size, the BP100 is well suited to measuring the beam patterns of lamps up to 25 mm in diameter and at wide angles. Somewhat larger lamps may be accomodated by a configuration with enlarged mechanics. Large lamps (e.g. automotive head-lamps) are best measured in reflection mode on a wide, diffusely reflecting wall. Photometrica software supports intensity measurements in reflection mode as well.

The highly configurable BP100 system includes all beam pattern measurement components except for the imaging photometer / colorimeter and a gauge for measuring distance.
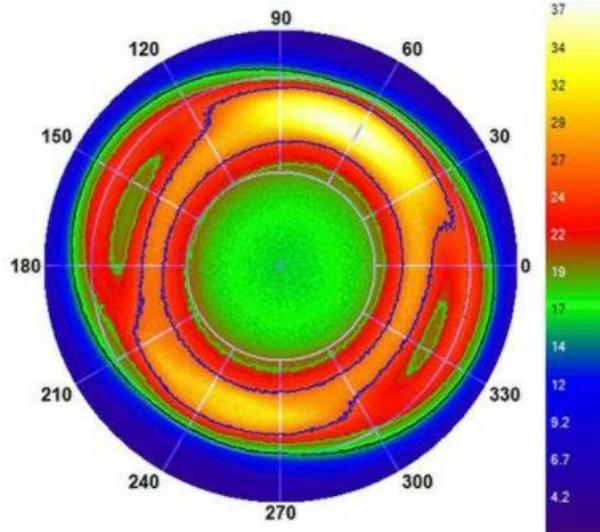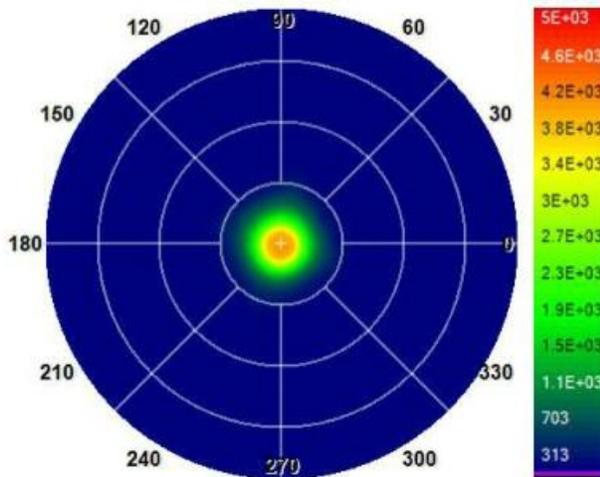
A flashlight beam pattern is linear-pseudocolor mapped. Isoline contours are drawn at 15, 20 and 25 cd. Θ grid lines are at 5° intervals.
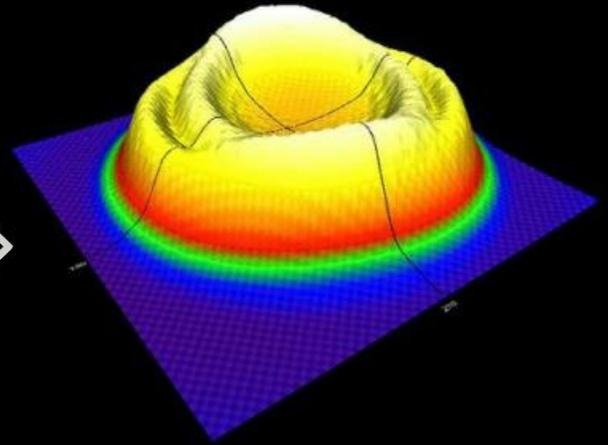
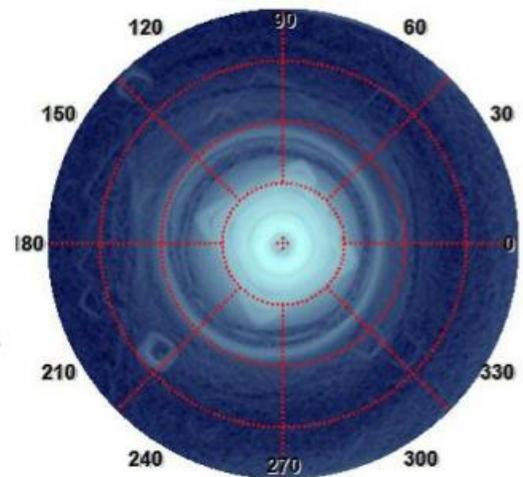A surface plot of a flashlight beam in θH, θV space.

High current, 25 mm LED lamp / reflector assembly with clear lens, log-pseudocolor mapped. Θ grid lines are at 10° intervals.
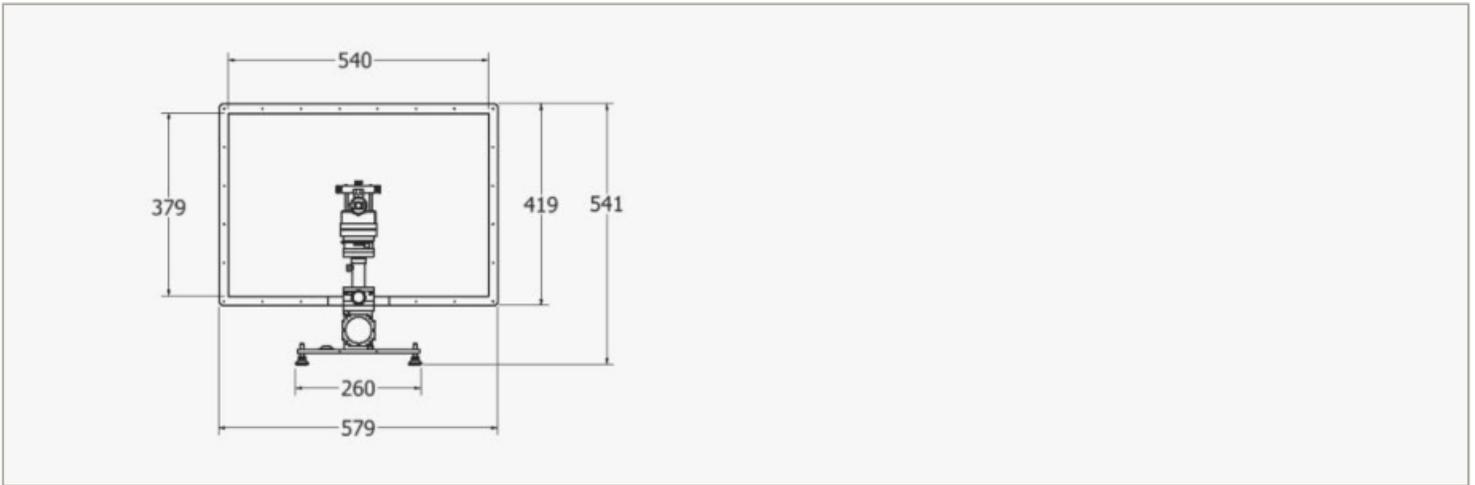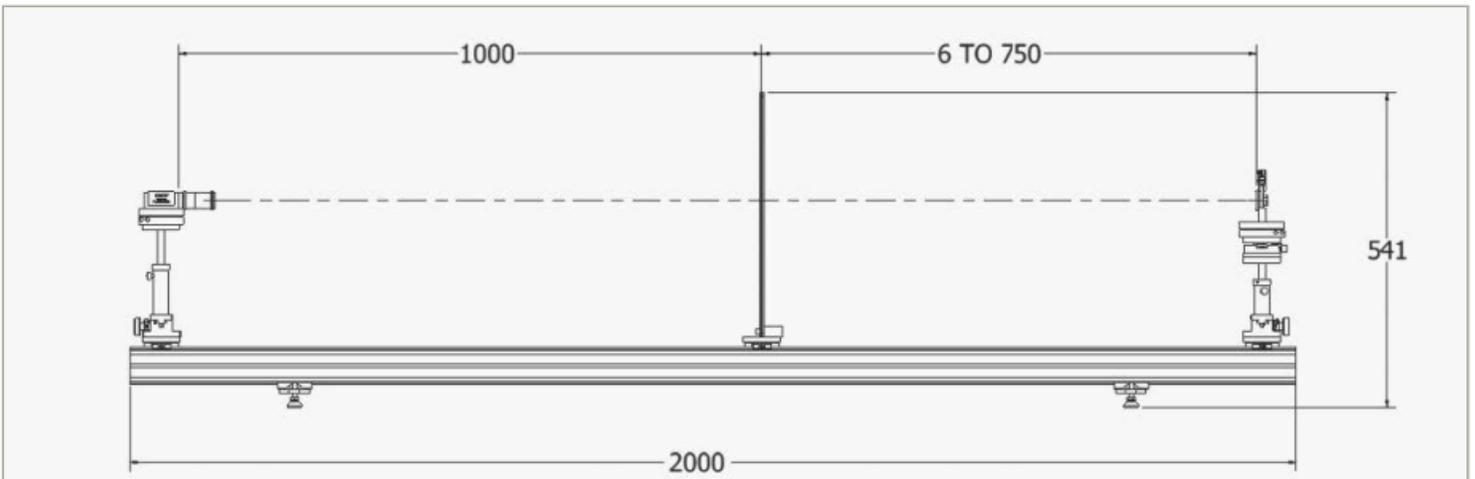
$$\frac{d^2 I}{d\theta d\phi}$$

Gradient (derivative) filtered image of the measurement on left. Note the clear rendering of the LED chip and other physical details of the LED lighting package that are preserved in the beampattern.
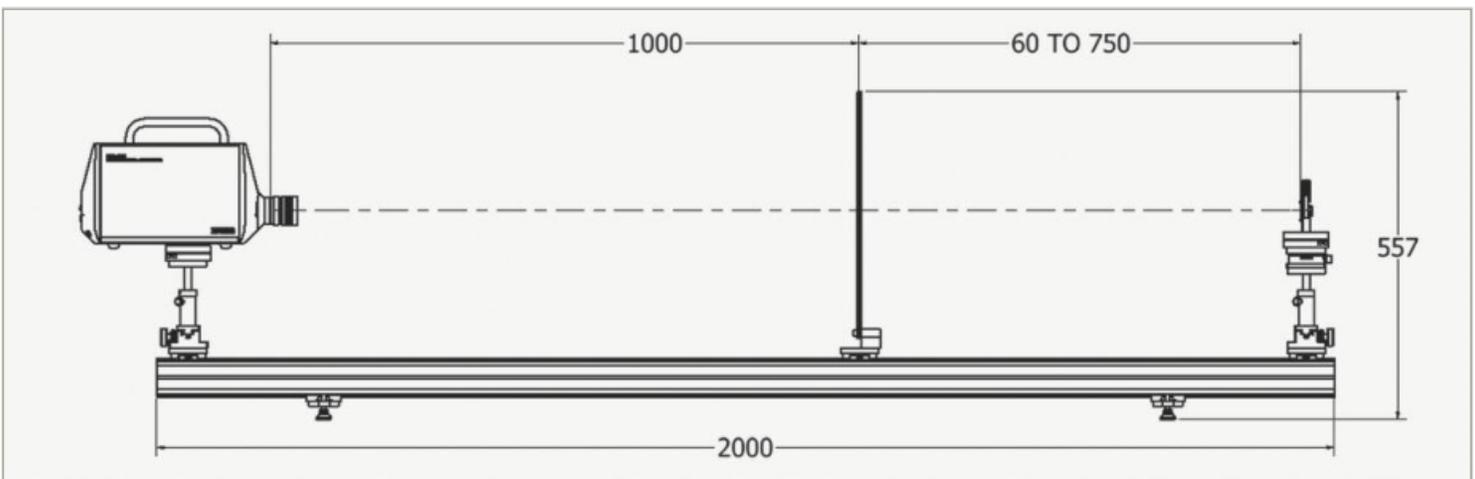
Dimensional drawing of BP100, end view. Dimensions are in mm.

Dimensional drawing of BP100 side view with P501 imaging photometer. Dimensions are in mm.

Dimensional drawing of BP100 side view with WP214 colorimeter. Dimensions are in mm.

ADVANTAGES OF THE IMAGING METHOD

Goniometers are the traditional way to measure lamp properties as a function of angle of emission. These systems are usually expensive and dedicated for one specific measurement.

The BP100 system in contrast can:
• be assembled and disassembled in minutes;
• obtain high resolution measurements;
• acquire 2D high dynamic range images in seconds;
• share the imager for other measurements in the lab.

CHOICE OF IMAGERS

The BP100 works with a range of imagers from Westboro Photonics. Choose the WP6 Series imaging colorimeter for intensity and color distribution data; or a Smart Series USB3 CMOS photometer if color is not required.
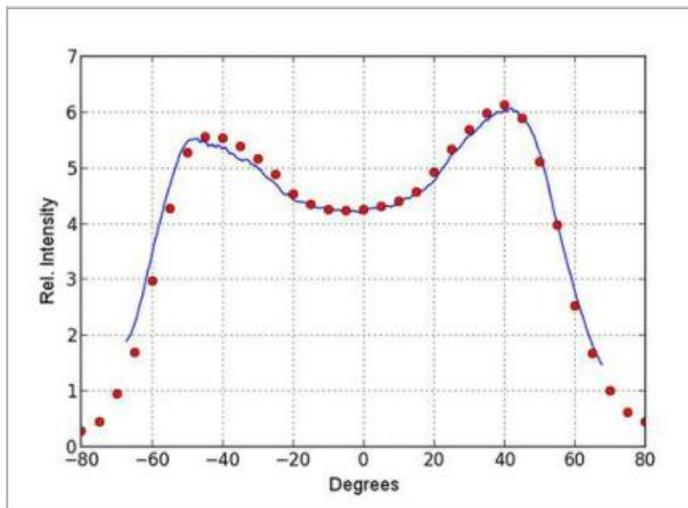
The angular intensity profile of a bat-wing LED is plotted past 60° using the BP100 (blue line) and a goniometer / luxmeter.

SPECIFICATIONS [1, 2]

Basic measurements	Luminous Intensity, Illuminance, Luminous Flux
Units	cd, lux, lumens
Resolution	2.3 to 12.3 megapixels
Data interval	<0.3 degrees
Luminous Intensity	0.1 to 300,000 cd
Illuminance Lamp-to-	0.2 to 750,000 lux
screen distance range	60 - 750 mm
Lamp max. beam angle	28° to 144° (full angle)
Imager-to-screen distance range	1000 mm
Weight	6 kg
Instrument mounting	Standard 1/4"-20
Max. lamp size (L x W x H)	≤ 30 mm
Screen size (W x H)	50 x 38 cm

[1] Based upon the P230U 2.3 megapixel, USB3 CMOS imaging photometer, and greater than 10:1 S:N
[2] At a photometer to screen separation of 600 mm.

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