

# SpecBright™

## LED Spot Lights



### Extremely bright focused LED illumination for long and short distances

ProPhotonix SpecBright™ LED Spot lights offer several times the brightness of conventional through-hole or surface mount LED based illuminators. This is achieved through the use of 4 high-brightness chip-on-board LEDs in an area smaller than a conventional LED would occupy. These are placed in a package designed for superior thermal management. This allows the LEDs to be driven to their potential, safely, for the longest possible lifetime and stability. For optimum performance the light is focused in a narrowly divergent beam by molded TIR lens optics to generate extremely bright spots from very short to very long working distances.

These units are ideal for OEMs, system integrators and end users who require extremely compact and long lasting illumination sources for their high performance applications. Custom-engineered LED solutions are also available on request.



### Key Features

- Extremely bright, compact and reliable
- Chip-on-board technology
- Seamless integration and mounting
- UV, visible and near-IR

### Applications

- Night vision
- Machine vision
- Microscopy
- Security ID
- Life sciences

### Accessories

- Power supplies
- Current mode drivers
- Heat sinks
- Strobe drivers

### Options

- UV, visible, near-IR and white
- CW or pulsed mode

## Spectral Characteristics

Colour	UV(395)	Blue	Red	IR	IR	White
Peak wavelength (nm)	395 ± 10	470 ± 10	630 ± 10	740 ± 10	870 ± 10	6700k
Spectral width FWHM (nm)	15	30	16	27	46	NA

## Illumination Characteristics<sup>1,2,3</sup>

SF1	UV (395)	Blue (470)	Red (630)	IR (740)	IR (870)	White
Nominal beam cone angle (FWHM)	±5.2	±3.4	±5.3	±5.3	±5.3	±5.1
FWHM at 50mm (mm)	24	22	24	24	24	24
Typical irradiance at 50 mm (W/m <sup>2</sup> )	524	2315	1219	573	707	853
Typical illuminance at 50 mm (kLux)	NA	218	251	NA	NA	311
FWHM at 200mm (mm)	51	48	52	52	52	51
Typical irradiance at 200 mm (W/m <sup>2</sup> )	83	370	194	91	113	136
Typical illuminance at 200 mm (kLux)	NA	35	40	NA	NA	50

SD1 (Light Diffuser)	UV (395)	Blue (470)	Red (630)	IR (740)	IR (870)	White
Nominal beam cone angle (FWHM)	±6.2	±4.2	±6.6	±6.4	±6.6	±6.2
FWHM at 50mm (mm)	25	22	25	25	25	25
Typical irradiance at 50 mm (W/m <sup>2</sup> )	513	2085	1192	548	632	743
Typical illuminance at 50 mm (kLux)	NA	197	245	NA	NA	271
FWHM at 200mm (mm)	59	52	60	59	60	59
Typical irradiance at 200 mm (W/m <sup>2</sup> )	76	310	177	81	94	110
Typical illuminance at 200 mm (kLux)	NA	29	36	NA	NA	40

SD2 (Medium diffuser)	UV (395)	Blue (470)	Red (630)	IR (740)	IR (870)	White
Nominal beam cone angle (FWHM)	±10.4	±10	±11.1	±10.6	±10.9	±10.7
FWHM at 50mm (mm)	24	26	29	28	28	27
Typical irradiance at 50 mm (W/m <sup>2</sup> )	328	1145	762	366	442	472
Typical illuminance at 50 mm (kLux)	NA	108	157	NA	NA	172
FWHM at 200mm (mm)	73	78	88	84	86	82
Typical irradiance at 200 mm (W/m <sup>2</sup> )	33	115	76	36	43	47
Typical illuminance at 200 mm (kLux)	NA	29	36	NA	NA	40

## Electrical Characteristics, Lifetime & Environment<sup>4,5</sup>

	UV (395)	Blue (470)	Red (630)	IR (740)	IR (870)	White
Current mode (code "I")						
Maximum operating current (mA)	400	400	400	400	400	240
Mean time before failure (MTBF)	60,000	60,000	60,000	60,000	60,000	60,000

1 Irradiance and illuminance of blue, white, UV and IR units, for working distances other than that shown above, may be computed with reference to the Intensity vs Working Distance plot provided for the Red Spotlight. Values computed in this manner are valid within ± 5%

2 Linewidths (FWHM) of blue, white, UV and IR units, for working distances other than that shown above, may be computed by extrapolating linearly from the provided values.

3 Irradiance and illuminance are measured at the centre of the illumination field, in continuous wave mode at maximum operating current (current mode)

4 This product is not 24 V compatible and can only be operated in current mode.

5 Case temperature should not exceed 45°C. Please consult ProPhotonix for details on lifetime measurements.

## Illumination Characteristics

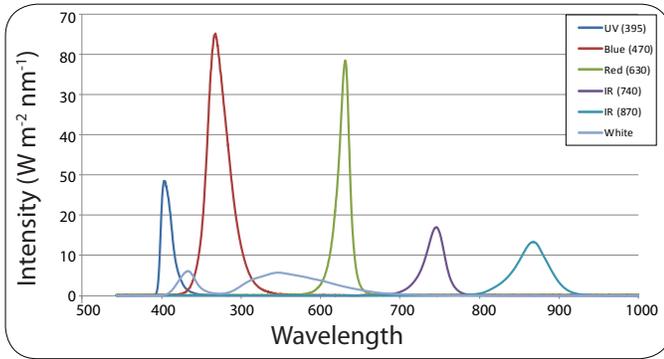


Figure 1 - Spectrum of available wavelengths for our LED spotlight series. Note: Intensity  $Wm^{-2}nm^{-1}$  is based on SF1 unit at a working distance of 50mm

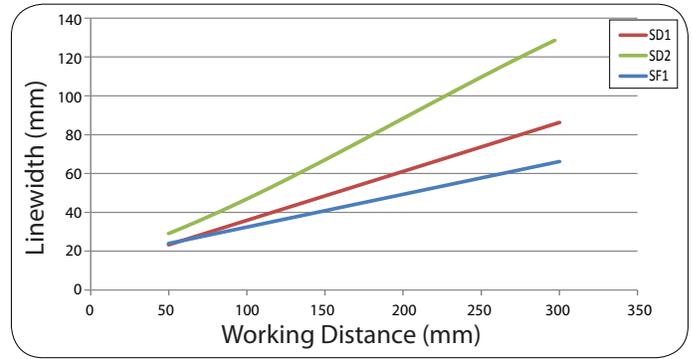


Figure 2 - Diameter of field of illumination vs. working distance for all wavelengths.

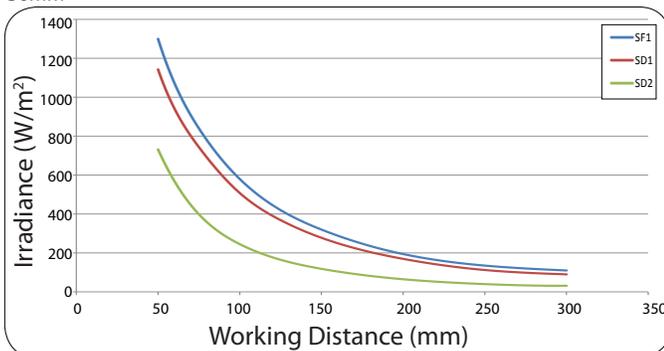


Figure 3 - Irradiance vs. working distance for SF1-630, SD1-630 and SD2-630 measured at maximum operating current (current mode). For other wavelengths use ratio or irradiance of desired colour to red from Illumination Characteristics table on previous page

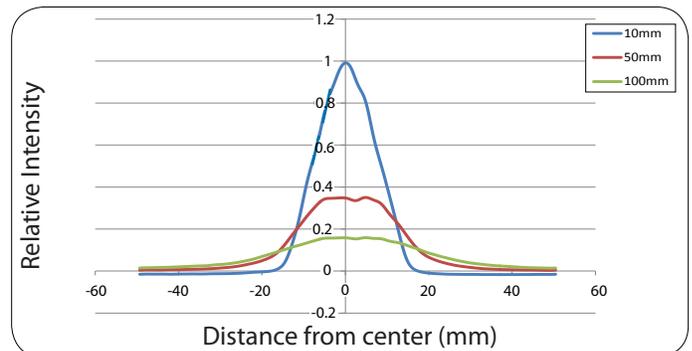


Figure 4 - Intensity profile for SD1 (Light diffuser). Working distances (WD) of 50, 100, and 150 mm.

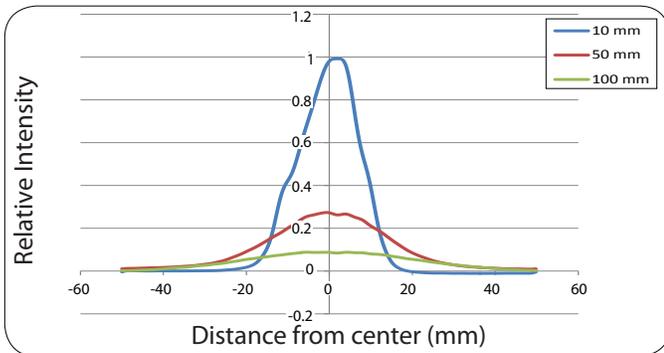


Figure 5 - Intensity profile for SD2 (Medium diffuser)

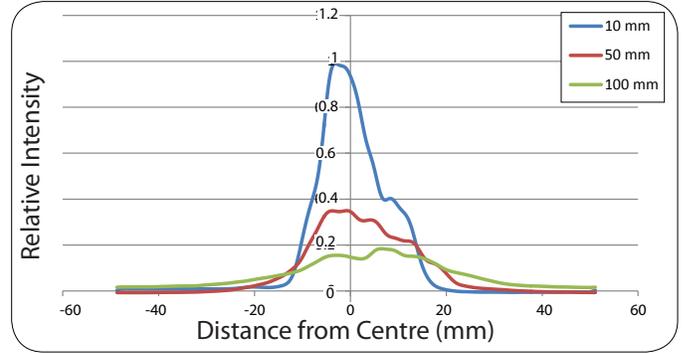


Figure 6 - Intensity profile for SF1  
Note: All measurements were made in continuous (CW) mode.

## Product Numbers

Product Code	Frontlight/ Diffuser	Series	Wavelength	Current Source	Without or with Heat Sink	Connector or Flying Leads	Cable Length (in cm)
S	F	1	395	I	X or H	F	100 (standard)
	D (Diffuser)	2	470				
			630				
			740				
			870				
			000 (White)				

Example: SF1-870-IXF100. Refer to website for complete part number matrix. Please contact us for other wavelengths.

## Connectors / Flying Leads

- Flying leads are standard for current source (I) modules.

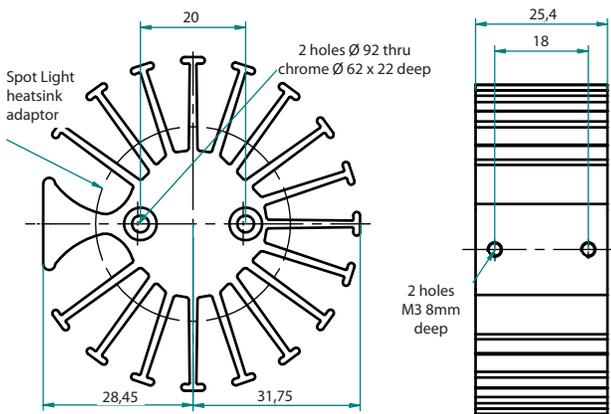
## Power Supplies

We offer both universal AC-mains to 24VDC power (2W/500mA) adaptors and standard industrial 24VDC (240W/10A) switching power supplies (P/N PSU-24V-240W). The power adaptors are offered with connectors (P/N PTS400-24C) for easy connection or as flying leads (P/N PTS400-24F) for use with the CMP or application specific connections. Interchangeable plugs are included for use in any country.

## Heat Sinks

Ensure the housing temperature does not exceed 45°C. Heat sinking is highly recommended when LED lights are used at or near full power in continuous, high duty cycle, or long pulse width applications. ProPhotonix offers optimized heat sinks for use with our lights.

### Heat Sink

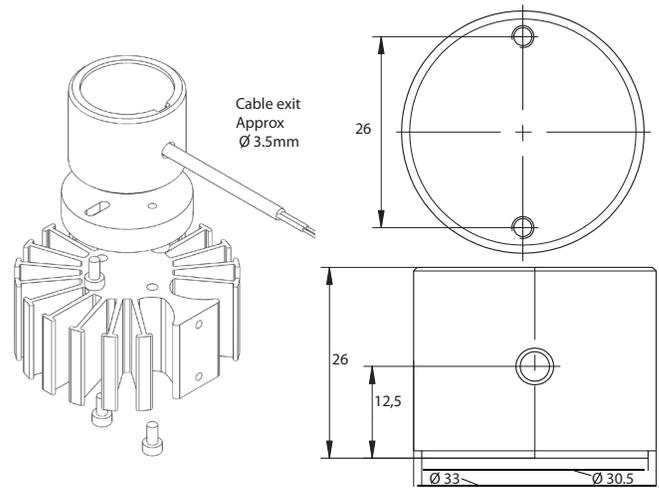


## Controllers & Strobe Drivers

The Current Mode Power (CMP) controller drives SpecBright™ LED Illuminators, both constant current and 24VDC configured options. The CMP is a compact, DIN rail mountable controller requiring only 24VDC input (500-mA min) for easy integration. It features both manual intensity control—via a potentiometer—and remote control via analog inputs for intensity adjustment and a TTL input for fast, repeatable non-overdriven on/off/strobe control.

The SpecBright™ CMS-M2-10A series of LED Controllers and strobe drivers provides precise deterministic LED control for continuous, intermittent, and highly overdriven strobing applications. These are multi independent channel controllers with flexible power input requirements and current outputs in 5-mA increments up to several Amps continuous and up to 20 Amps pulsed. They feature push button manual control or communication via Ethernet or RS-232 for sophisticated integration needs. For high speed applications where motion must be stopped, over-driving LEDs can produce as many as 10-20x the light output for a short pulse time—generally 1 msec or less—and small duty cycles—generally 10% or less. Overdriving is performed at your own risk. Please enquire for assistance.

### Dimensional Diagrams



Note: Heat sink adaptor is included with Heat sink

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