

# Cree® LED Module LMH6 with Cree TrueWhite® Technology

## Data Sheet

Cree LED Modules provide a simple solution for lighting designers and manufacturers to adopt best-in-class LED lighting from Cree. The LMH series continues Cree's history of innovation in LEDs for lighting applications and provides a comprehensive solution including patented Cree TrueWhite Technology to achieve an industry-leading combination of light quality and efficacy. This versatile LED lighting module allows design flexibility with the beautiful color and efficacy of Cree TrueWhite Technology.

A comprehensive design guide and solid-model STEP files are available through the Cree Module sales team. This data sheet is intended to introduce you to the features and benefits of the LMH6 module. The design guide and solid model must be referenced for the thermal, mechanical and optical requirements of a successful LMH6 product design.

## FEATURES

- Cree TrueWhite Technology
- 2000 & 2900 lm @ 3000-K & 4000-K CCT
- DALI or 1–10-V dimming to 5% of rated light output
- Comprehensive solution with driver electronics, optics and thermals
- Snap-lock tabs for easy trim mounting
- Designed to last at least 50,000 hours at  $L_{70}$
- Cree IES LM-80 data in support of U.S. DOE ENERGY STAR® qualification
- The LMH6 (230-V) complies with multiple international standards
- Integral splice compartment
- Both Asian and European Union wire access plates supplied

The Cree LED Module LMH6 with Cree TrueWhite Technology is the ideal choice for commercial lighting applications where high CRI, luminous flux and efficacy are required, such as restaurants, retail and hospitality lighting.

Cree TrueWhite technology:

- A better way to generate white light that utilizes a patented mixture of unsaturated yellow and saturated red LEDs.
- Proprietary optical system utilizes a unique combination of reflective and refractive optical components to achieve a uniform, comfortable appearance. Pixelation and direct view of LEDs is eliminated.
- Technology benefit – high CRI and efficacy allows customers to avoid making tradeoffs between energy efficiency and light quality as compared to other lighting alternatives.
- Marketing benefit – Cree logo on lens enables brand marketing value on final design.

DALI Features

- DALI (Digital Addressable Lighting Interface) dimming
- DALI device type 1 (IEC 62386 Part 102) for the AC/DC power supply (DALI version 2006)
- Onboard thermal management

## Characteristics

The following table provides several base order codes for the Cree LED Module LMH6, as well as a description of the order-code nomenclature.

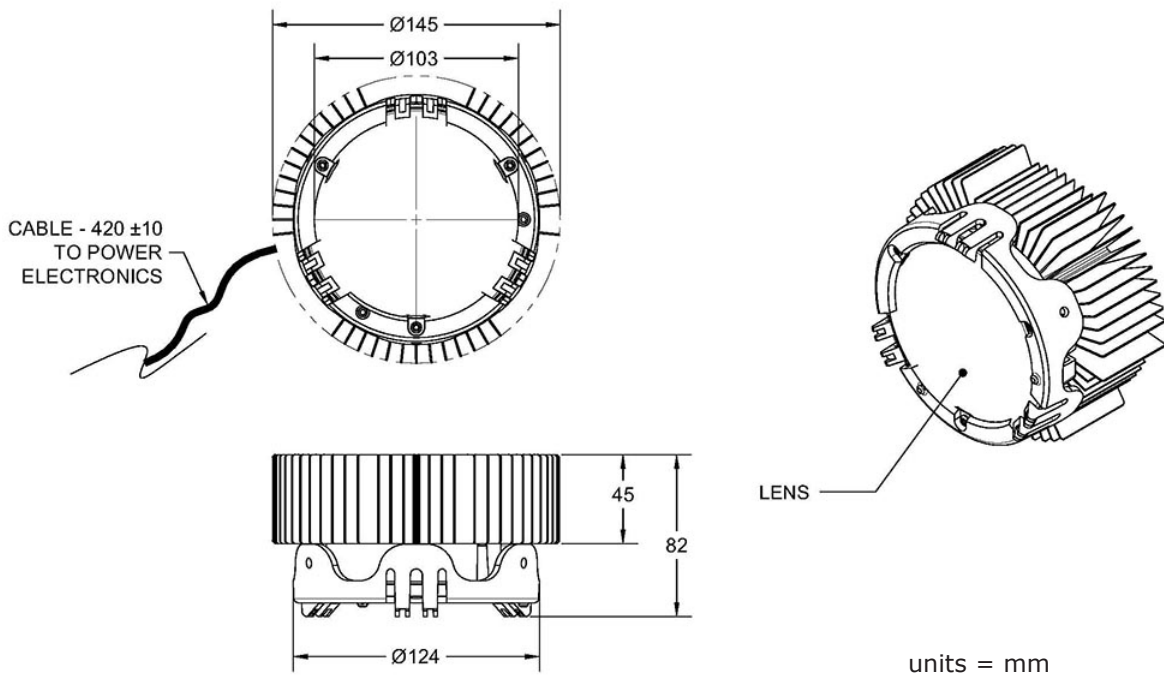
CCT (K)*	Nominal Luminous Flux (lm)	CRI	Input Power (W)	Input Voltage (V)/Freq (Hz)**	Power Factor	Dimming	Order Code
4000	2000	>90	27	230/50	>.90	DALI	LMH060-2000-40F9-20200TW
4000	2900	>90	37	230/50	>.90	DALI	LMH060-2900-40F9-20200TW
3000	2000	>90	27	230/50	>.90	DALI	LMH060-2000-30F9-20200TW
3000	2900	>90	37	230/50	>.90	DALI	LMH060-2900-30F9-20200TW
4000	2000	>90	27	230/50	>.90	1-10 V	LMH060-2000-40F9-20300TW
4000	2900	>90	37	230/50	>.90	1-10 V	LMH060-2900-40F9-20300TW
3000	2000	>90	27	230/50	>.90	1-10 V	LMH060-2000-30F9-20300TW
3000	2900	>90	37	230/50	>.90	1-10 V	LMH060-2900-30F9-20300TW

\* Refer to section below on chromaticity for more details

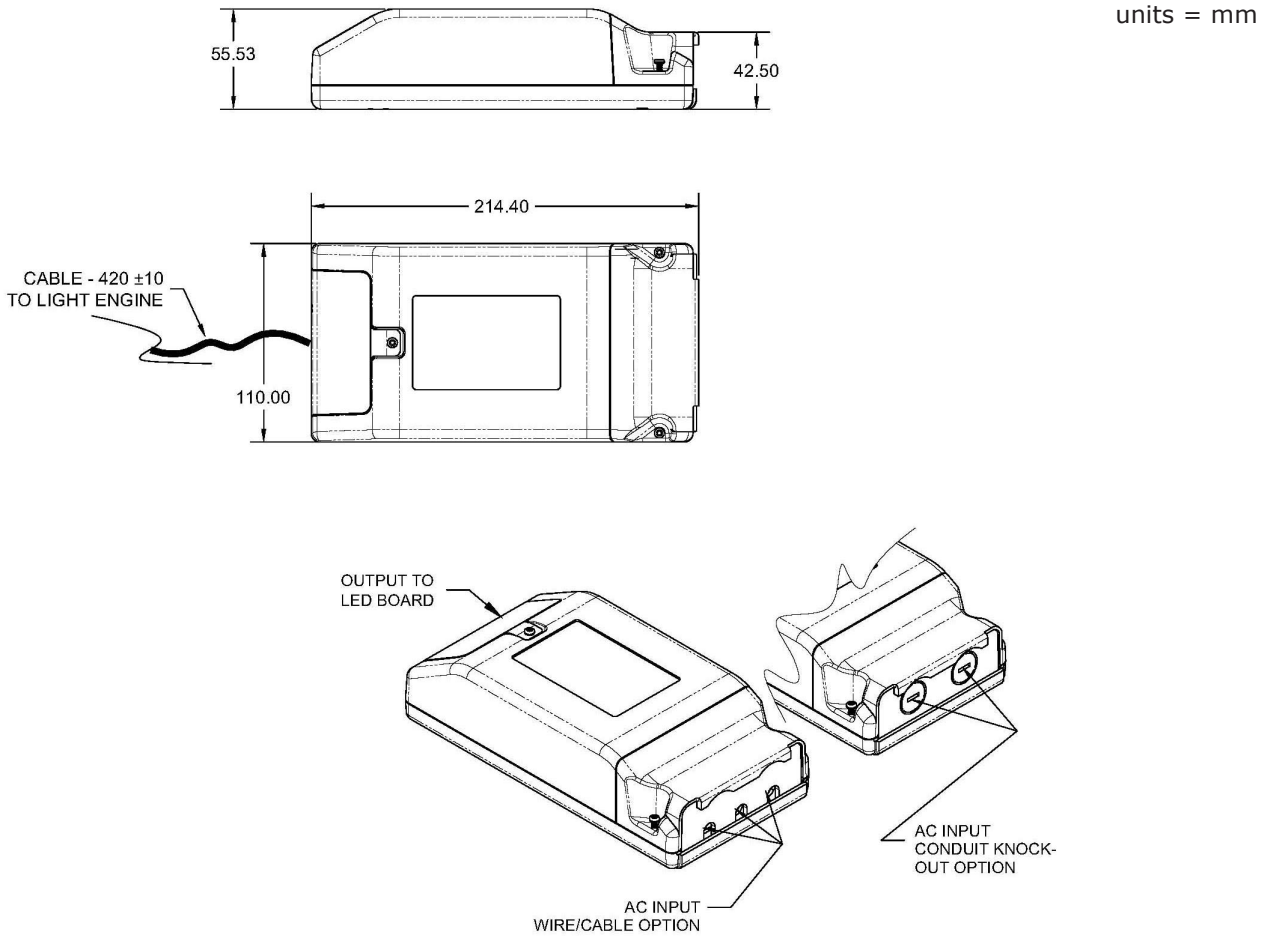
\*\* Input range is 220-240 V / 50-60 Hz

Note: Cree maintains a tolerance of +/- 7% on flux and power measurements

## Form Factor - Light Engine



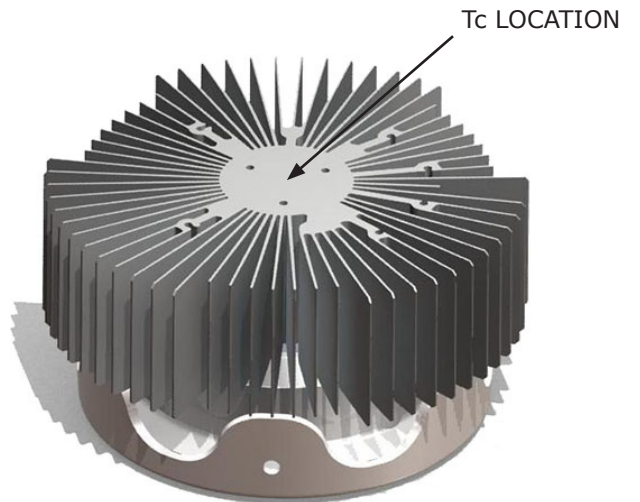
## Form Factor - Power Supply



## Thermal Management Guidelines

Acceptable ambient starting and operating temperatures of the Cree LED Module LMH6 are between 0°C and 40°C. (The lifetime and performance estimates described in this document require that the T<sub>c</sub> limit stated in this Thermal Management Guidelines section is adhered to and only the modifications described in this document are implemented.)

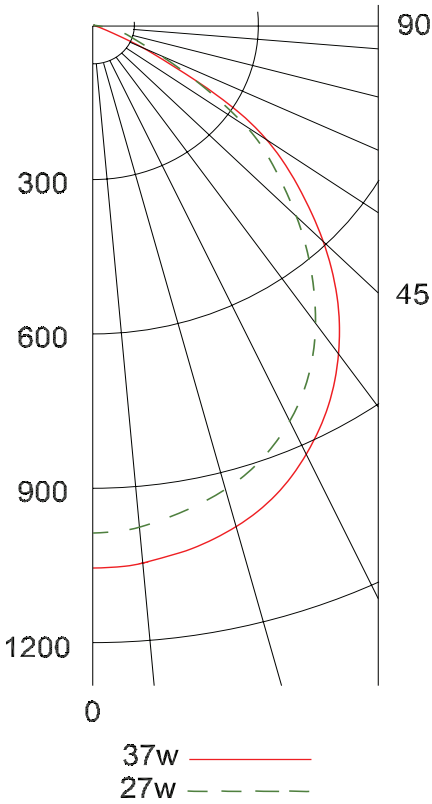
The Cree LED Module LMH6 is designed to perform in a variety of non-IC environments; however, the LED module lifetime is highly dependent upon the T<sub>c</sub> (case temperature). To achieve lifetime and performance estimates and to maintain the warranty, the final design cannot exceed 70°C at thermal equilibrium, based on the T<sub>c</sub> point (shown in the figure on the right) where the thermocouple is placed and tested in situ.





## Photometry

The following photometry results are design values. Absolute photometric testing at independent testing labs can be expected to vary by  $\pm 7\%$ .



**Candela Table**

Angle	LMH060-2900	LMH060-2000
0	1266	987
5	1261	979
15	1220	933
25	1119	847
35	950	704
45	783	520
55	488	333
65	242	127
75	74	55
85	7	3
90	1	1

**Zonal Lumens Summary  
LMH060-2900**

Zone	Lumens	%Lamp	%Fixt
0-30	979	-	34
0-40	1572	-	54
0-60	2574	-	88
0-90	2916	-	100
0-180	2916	-	100

**Zonal Lumens Summary  
LMH060-2000**

Zone	Lumens	%Lamp	%Fixt
0-30	745	-	35
0-40	1184	-	57
0-60	1885	-	90
0-90	2074	-	100
0-180	2074	-	100



## Chromaticity

Secondary optics added to the module will reduce the light output and could also alter the color characteristics of the final luminaire design. The Cree LED Module LMH6 provides high color consistency around the specified color temperature. Individual LEDs are tested and matched in order to meet the designed chromaticity specification, which is defined by the following bounding coordinates.

Color Temp Code	CCT (K)	Ccx	Ccy
40F	4000	0.3722	0.3739
		0.3822	0.3706
		0.3915	0.3857
		0.3813	0.3892
35F	3500	0.3974	0.3858
		0.4074	0.3823
		0.4174	0.3979
		0.4073	0.4016
30F	3000	0.4236	0.3969
		0.4334	0.3932
		0.4442	0.4093
		0.4342	0.4131
27F	2700	0.4473	0.4037
		0.4569	0.4000
		0.4684	0.4164
		0.4586	0.4203

## Order Codes

