Cree® LMH2 LED Module Design Guide

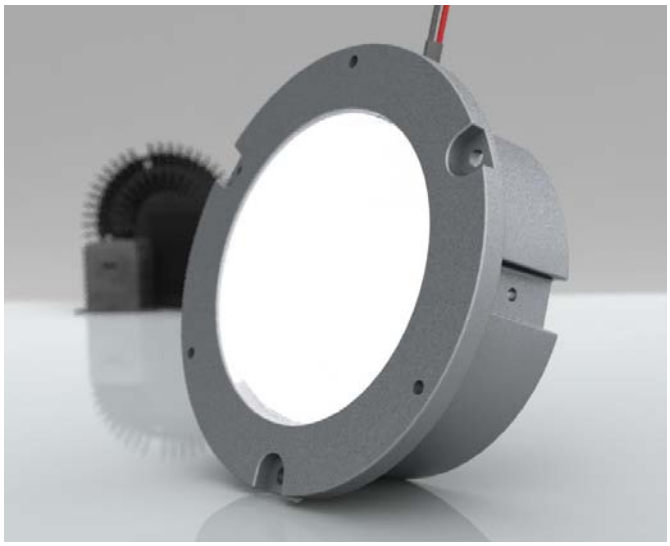


TABLE OF CONTENTS

Cree, Inc.
4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300

THANK YOU

Thank you for choosing to incorporate the LMH2 series of LED modules into your luminaire designs.

If you need assistance, Cree will support you with:

- Engineering assistance for product design and manufacturability.
- Thermal testing assistance for lifetime analysis.
- Thermal design assistance.

The LMH2 is a fully functioning module that delivers:

- TrueWhite® technology, a revolutionary way to generate white light with LEDs that delivers high efficiency with beautiful light characteristics and color accuracy while maintaining color consistency over the life of the product.
- Industry-leading efficacy at 80 lm/W, measured at steady state.
- Known and predictable correlated color temperature (CCT).
- L_{70} of 35,000 - 50,000 hours, depending on the case temperature (Tc).

Again, thank you, and we look forward to working with you.

ABOUT THIS DESIGN GUIDE

This design guide is intended to provide luminaire manufacturers an introduction to the LMH2 series of modules. This design guide also provides critical design guidelines for successfully integrating the LMH2 into your existing and new luminaire designs.

- For additional information please contact your Cree modules distributor or Cree sales representative as appropriate.
- For technical information and support visit us on the web at www.cree.com/led-components-and-modules/products/modules/non-integrated/lmh2 or e-mail us at modules_support@cree.com.
- All dimensions are in millimeters unless otherwise noted.
- 3-D models (.STEP files) for the LMH2 light sources, drivers and optional heat sink are available on the Cree website: www.cree.com/led-components-and-modules/products/modules/non-integrated/lmh2.

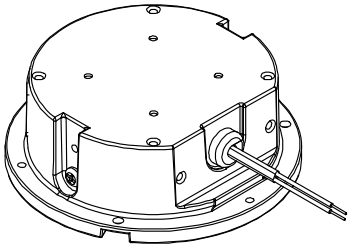
Note that failure to follow the design guidelines in this document may void the product warranty.

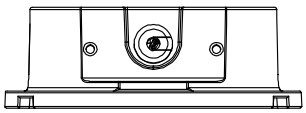
ABOUT THE LMH2 SERIES

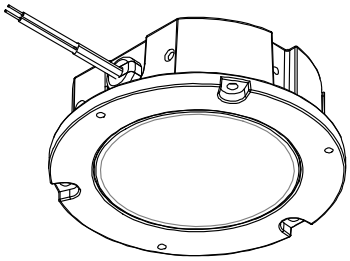
The LMH2 series of LED modules is engineered to allow lighting designers and luminaire manufacturers to quickly incorporate state-of-the-art LED technology into their luminaire designs. The LMH2 module is a complete LED lighting solution consisting of a light source and separate power supply. Cree's light source incorporates an internal thermal management system in a single, compact form factor. The LMH2 modules are designed to be used in residential and commercial lighting applications where high efficacy and color rendering index (CRI) values are important. LMH2 modules are available in 120 VAC 60 Hz, 230 VAC 50/60 Hz and 277 VAC 60 Hz versions. The table below shows the correspondence between the LMH2 light sources and the LMD125 and LMD300 drivers.

Light Source	Lumens	Driver
LMH2	850	LMD125
	1250	LMD125
	2000	LMD300
	3000	LMD300

LMH2 Light Source

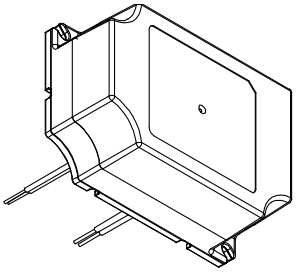




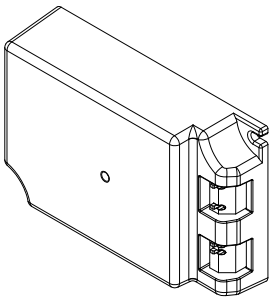


LMH2 Drivers

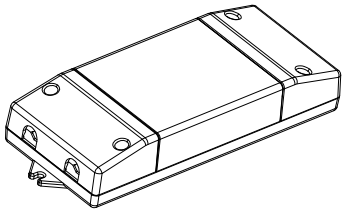
LMD125 120- and 277-V Driver for 850/1250-lm Light Sources



LMD125 230-V Driver for 850/1250-lm Light Sources

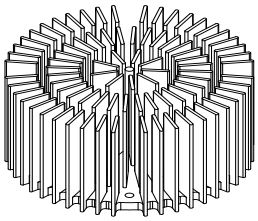


LMD300 230-V Driver for 2000/3000-lm Light Sources

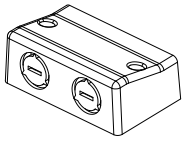


LMH2 Optional Components

Optional Heat Sink

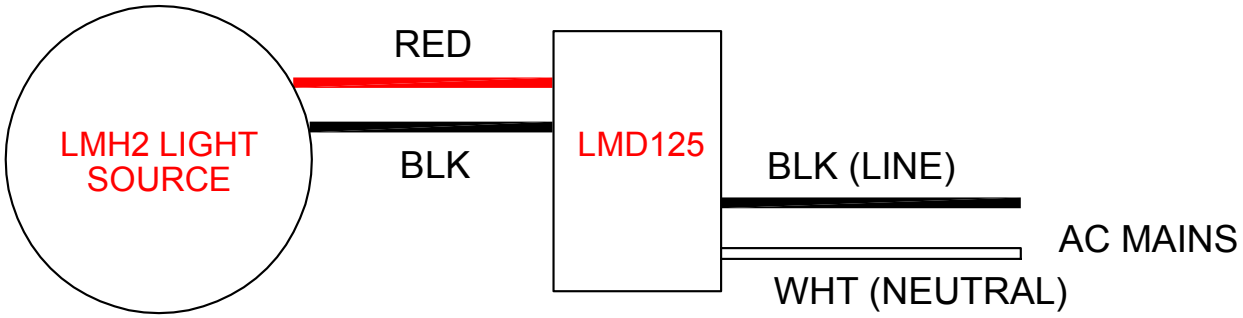


Optional Conduit Cover (for LMD300 DALI + Touch Driver)



ELECTRICAL DESIGN

The LMH2 modules are performance-optimized to operate with Cree's LMD125 or LMD300 LED power supplies. For the 120- and 277-V LMD125 power supplies, module operation is accomplished by connecting the AC mains to the two (2) lead wires (line and neutral) from the driver and connecting the driver output wires to the input leads on the Cree LMH2 light source as indicated in the wiring diagram and table below.



For the 230-V LMD125 and LMD300 LED power supplies, module operation is accomplished by connecting the AC mains to the appropriate terminal block pins.

Driver Connection	120 VAC 60 Hz	230 VAC 50/60 Hz	277 VAC 60 Hz
Neutral - input	White	N	White
Line - input	Black	L	Black
Positive - output	Red	+	Red
Negative - output	Black	-	Black

The module lead wires are 200 mm long, 18 AWG with the ends stripped 10 mm. The 120- and 277-V driver lead wires are 152.4 mm long, 18 AWG with the ends stripped 10 mm. The 230-V drivers have poke-in terminals.

> **Caution** - Do not connect the 850- and 1250-lm light sources to the LMD125 driver when power is applied, sometimes referred to as hot-plugging. Connecting the light source to an energized driver can damage the light source and will void the warranty.

Protective Earth Ground

The LMH2 module must be properly earth grounded. A secure electrical connection must be made between the cast housing or heat sink mounting screws and the luminaire's protective earth ground connection.

Electrostatic Discharge

No special electrostatic discharge (ESD) precautions are required for handling LMH2 modules in a production environment.

Power Requirements

Light Source	Driver Description	Driver Part Number	Input Voltage (VAC)	Frequency (Hz)	Input Current (mA)	Power Factor	Nominal Power (W)
850 lm	LMD125 120 VAC	LMD125-0018-C440-1010000	120	60	88	.97	10.5
	LMD125 230 VAC	LMD125-0018-C440-2010000	230	50/60	46	.90	10.5
	LMD125 277 VAC	LMD125-0017-C440-3000000	277	60	38	.92	10.5
1250 lm	LMD125 120 VAC	LMD125-0018-C440-1010000	120	60	130	.99	15.5
	LMD125 230 VAC	LMD125-0018-C440-2010000	230	50/60	67	.95	15.5
	LMD125 277 VAC	LMD125-0017-C440-3000000	277	60	55	.98	15.5
2000 lm	LMD300 230 VAC	LMD300-0040-C900-2020000	230	50/60	109	.92	25
3000 lm	LMD300 230 VAC	LMD300-0040-C900-2020000	230	50/60	157	.95	37.5

Wiring Strain Relief

LMH2 components must not be suspended directly by the leads. Though the wiring from the LMD125 driver and LMH2 light source is internally strain relieved, additional strain relief methods must be employed if the luminaire is to be suspended solely by the wiring, as in a pendant luminaire.

DIMMING

Dimming with LMD125 Driver

The LMH2 850- and 1250-lm light sources combined with the LMD125 120- and 230-V drivers work with standard leading- and trailing-edge dimming technologies to reduce light levels down to 5%.

Driver	Input Voltage	Dimming	Lowest Light Level
LMD125	120 V	Triac	5%
	230 V	Triac	5%
	277 V	None	-

Note - Most residential dimmers are designed to control 600 to 1000 watts of power with standard lighting technologies, i.e., incandescent and halogen. Because the LMH2 module has a much higher efficacy (lumens per watt) than standard lighting fixtures, it requires much less power. There may be some cases that require the use of more than one LMH2 module or lighting fixture on a single dimmer to achieve the minimum dimmer load. This depends heavily upon the particular dimmer used. Partial lists of compatible dimmers are provided below.

120-VAC Dimmer Compatibility

Manufacturer	Model/Series	Part Number	Type	Compatible with 1 LMH2	Compatible with 2 LMH2s
Cooper	Rotary	6020	IND	✓	✓
	Aspire	9530	IND	✓	✓
	Aspire	9534WS-K-L	IND/MLV		✓
	Aspire	9540WS	IND/MLV	✓	✓
	Devine	DI06P-V	IND	✓	✓
	Devine	DI10P	IND	✓	✓
	React	RI061-V	IND	✓	✓
	React	RI06P-LA	IND	✓	✓
	Skye	SI06P	IND/MLV	✓	✓
	Skye	SI061-V	IND	✓	✓
	Skye	SI10P	IND/MLV	✓	✓
	Trace	TI061-W	IND	✓	✓
Leviton	Trimitron	6602	IND	✓	✓
	Acenti	AT106-1LW	IND	✓	✓
	Illumatech	IPI06	IND	✓	✓
	Vizia	RP106	IND	✓	✓

Manufacturer	Model/Series	Part Number	Type	Compatible with 1 LMH2	Compatible with 2 LMH2s
Lutron	Ariadni	AY-600P	IND	✓	✓
	Ceana	CN-600P	IND	✓	✓
	Ceana	CNLV-V-600P	MLV	✓	✓
	Centurion	C-600	IND	✓	✓
	Decora	VPI06-1LW	IND	✓	✓
	Dial Dimmer	D-600	IND	✓	✓
	Diva	DV-600P	IND	✓	✓
	Diva	DV-10P	IND	✓	✓
	Diva	DVELV-300P	ELV	✓	✓
	Diva	DVF-103P	FLR	✓	✓
	Diva	DVLV-600P	MLV	✓	✓
	Diva	DVWCL-153DH	CFL/LED	✓	✓
	Glyder	GL-600H	IND/MLV	✓	✓
	Lumea	LG-603PG	IND	✓	✓
	Lyneo	LX-600PL	IND	✓	✓
	Maestro	MA-1000	IND	✓	✓
	Maestro	MALV-1000	MLV	✓	✓
	Maestro	MAW-600	IND	✓	✓
	Maestro	MRF-600M	IND		✓
	Nova	N-600	IND	✓	✓
	Nova	NLV-1503P	MLV	✓	✓
	Nova T	NTB-600	IND	✓	✓
	Nova T	NT-603P	IND	✓	✓
	Nova T	NTELV-600	ELV	✓	✓
	Skylark	S-600	IND	✓	✓
	Skylark	S-600P	IND	✓	✓
	Skylark	SELV-300P	ELV	✓	✓
	Skylark	SLV-600P	MLV	✓	✓
	Sureslide	6673-P	CFL	✓	✓
	Toggler	TG-600PH	IND	✓	✓
Pass and Seymour	Decorator	LS600	IND	✓	✓
Wattstopper	Miro	MCD267-W	UNI	✓	✓

CFL = Compact fluorescent dimmer
ELV = Electronic low-voltage dimmer
FLR = Fluorescent dimmer
IND = Incandescent dimmer
LED = Light emitting diode dimmer
MLV = Magnetic low-voltage dimmer
UNI = Universal dimmer

230-VAC Dimmer Compatibility

Manufacturer	Model/Series	Part Number	Type	Compatible with 1 LMH2	Compatible with 2 LMH2s
100 Million Beautiful Elec.	None	None	Leading edge	✓	✓
Berker	Drehdimmer	2830 10	Leading edge	✓	✓
Busch-Jaeger	2247 U	6512-0-0057	Leading edge	✓	✓
	2250 U	6515-0-0704	Leading edge	✓	✓
	6513 U-102	6513-0-0568	Trailing edge	✓	✓
	6517 U-101	6517-0-0016	Leading edge	✓	✓
Clipsal	E30 System	32E450LM	Leading edge	✓	✓
	E2000	E2031LPD600	Leading edge	✓	✓
	E30 System	E32V500/2K	Leading edge	✓	✓
	Vivace	KB31RD400	Leading edge	✓	✓
Feller	Drehdimmer	40383.BSE	Leading edge	✓	✓
	Drehdimmer	40600.RLC.BSE	UNI	✓	✓
	Drehdimmer	40683.BSE	Leading edge	✓	✓
Flexalite	None	FD630D	Leading edge	✓	✓
Fung Yip Electrical	IEC 60669-2-1	PT15625-2871	Leading edge	✓	✓
Futina	D1	None	Leading edge	✓	✓
Gira	Gluhlampen	0302 00 / I01	Leading edge	✓	✓
	System 2000	0305 00 / I04	UNI	✓	✓
	Gluhlampen	0306 00 / I00	Leading edge	✓	✓
	Tronic	0307 00 / I02	Trailing edge	✓	✓
	Gluhlampen	1181 00 / I02	Leading edge	✓	✓
	Niedervolt	2262 00 / I00	Leading edge	✓	✓
HPM	400T	050411/2/1A	Trailing edge	✓	✓
Jung	Gluhlampen	211 GDE	Leading edge	✓	✓
Key-Top	None	AL-18	Leading edge	✓	✓
	None	BP-81	Leading edge	✓	✓
KI	None	None	Leading edge	✓	✓
Legrand	Arteor	5740 08	UNI	✓	✓
	Arteor	5743 08	UNI	✓	✓
	PRO 21	7756 37	UNI	✓	✓
	PRO 21	7759 03	Trailing edge	✓	✓
Leviton	Trimatron	012-6602-220	Leading edge	✓	✓
	Excella	K52-BLE04-2LW	Trailing edge	✓	✓
	Manhattan	K02-BME04-2LW	Trailing edge	✓	✓
Lutron	Lyneo	LLSM-502	Leading edge	✓	✓
Mank	None	None	Leading edge	✓	✓
PDL	600	634M	Leading edge	✓	✓
Siemens	Gluhlampen	5TC8 256	Leading edge	✓	✓
	µ-Contact	5TGO752-1NC1	Leading edge	✓	✓
Super	None	BP-600	Leading edge	✓	✓

The presence of a dimmer in the above tables is not a guarantee or warranty of the compatibility of the LMH2 product family in any particular installation. The absence of a dimmer from the tables does not necessarily imply incompatibility. Please refer to the dimmer manufacturer's instructions for installation and further product information.

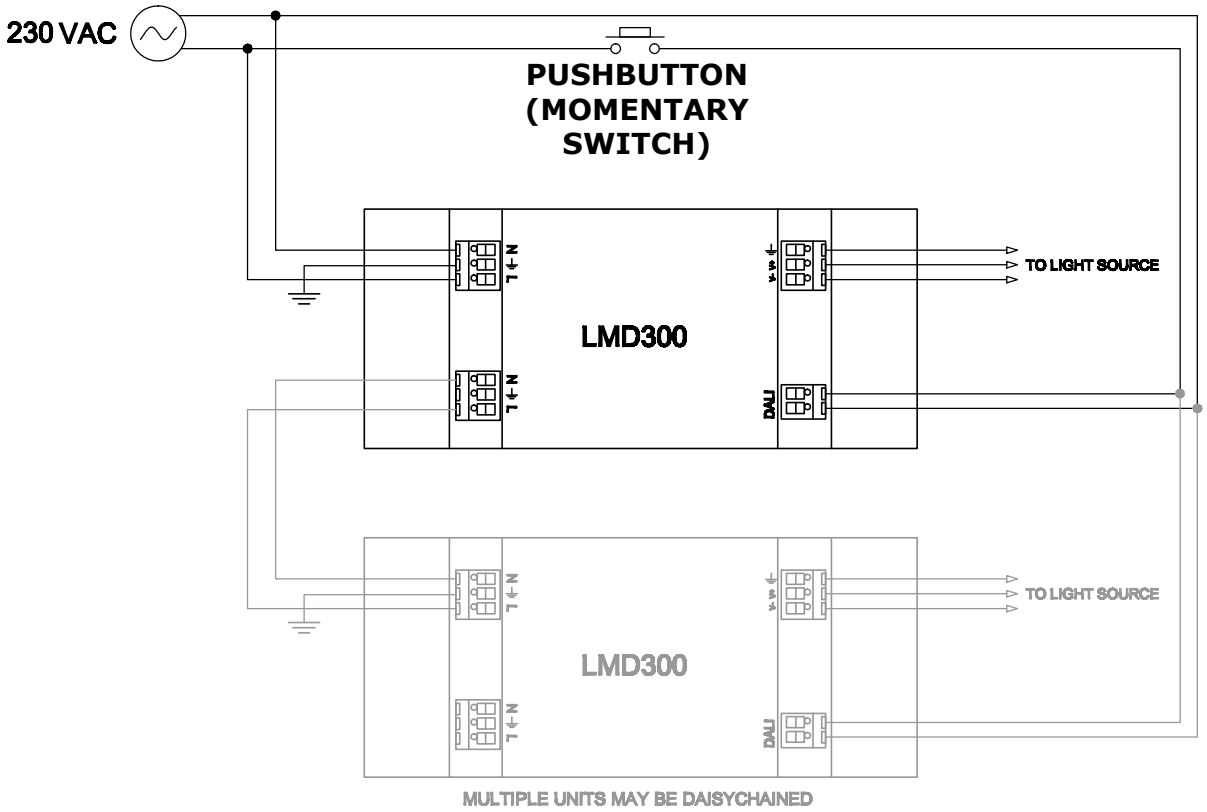
Dimming with LMD300 Driver

The LMH2 2000- and 3000-lm light sources combined with the LMD300 DALI + Touch power supply is a DALI-certified device for use with DALI-compliant dimmers.

Driver	Input Voltage	Dimming	Lowest Light Level
LMH300	230 V	DALI + Touch	10%

Setting Up the LMD300 Driver in Touch Control Mode

The LMD300 driver can be used in touch control mode in installations where DALI control is not desired. To set up touch control mode, wire the driver DALI terminals to 230 VAC mains power through a pushbutton (a momentary switch rated for 230 VAC and 0.5 A) as shown in the diagram below. Multiple LMH2 modules can be connected together to be controlled by the same pushbutton.



To activate touch control mode, turn on power to the LMH2 module without pressing the pushbutton, i.e., the switch is open. After one (1) second, the driver automatically enters touch control mode and the pushbutton can then be used to control the LMH2.

Touch Control Mode Operation

In touch control mode, a single pushbutton turns the LMH2 module on and off and changes its brightness. To turn the module on or off, press and release the pushbutton quickly (in less than 300 ms). When the module is on, change its brightness by pressing and holding the pushbutton. The brightness alternately increases or decreases each time the pushbutton is pressed and held. When the desired brightness is reached, release the pushbutton. The module will remain at this brightness level until the pushbutton is pressed and held again, even if it is turned off and back on.

Two methods can be used to quickly reach maximum and minimum brightness. For maximum brightness instantly, double-click the pushbutton when the LMH2 is on. Double-clicking means quickly pressing and releasing the pushbutton twice in succession (with less than 300 ms between presses). For minimum brightness, press and hold the pushbutton when the LMH2 is off. The LMH2 turns on at minimum brightness and increases in brightness until the pushbutton is released.

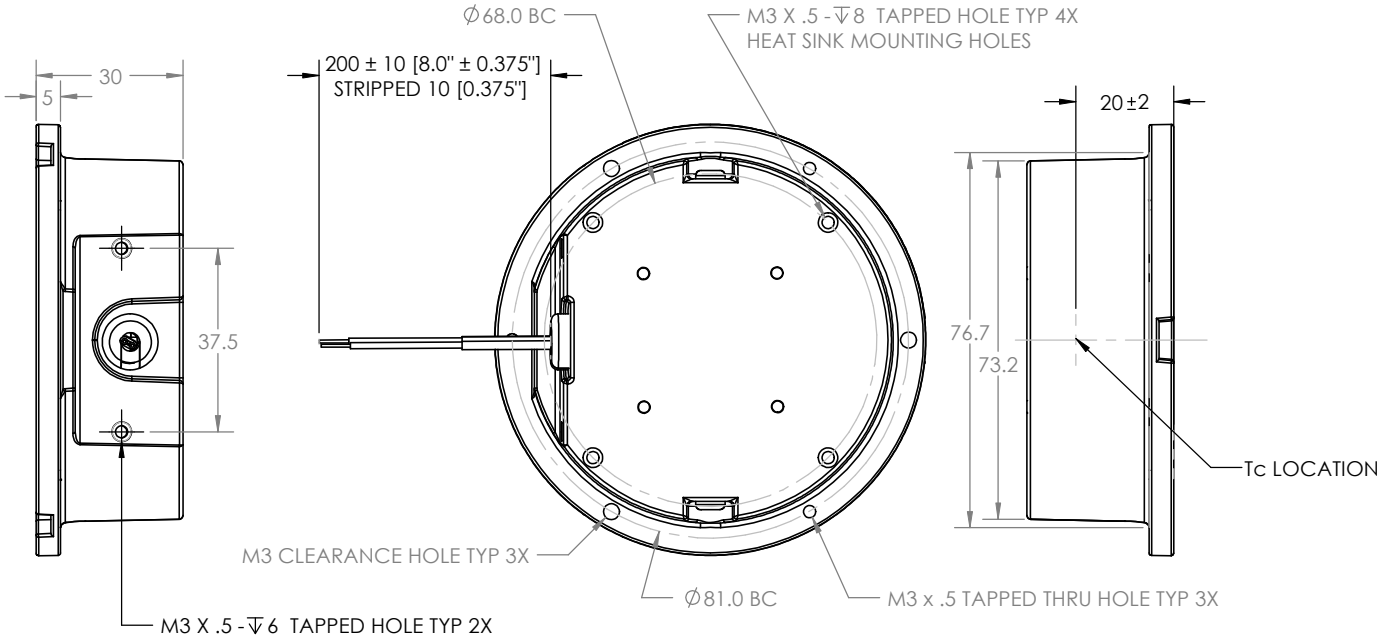
If multiple LMH2 modules are controlled by the same pushbutton, the modules can lose synchronization and not all perform the same action in response to the pushbutton. To synchronize all the modules connected to one pushbutton, press and hold the pushbutton for at least one (1)second and release it, then double-click the pushbutton. All connected modules will then be on at maximum brightness, regardless of their previous states.

MECHANICAL DESIGN

The compact form factor of the LMH2 allows the module to be easily incorporated into new and existing lighting designs.

Physical Characteristics of the LMH2

Physical Characteristic	Light Source	Heat Sink	LMD125 120- and 277-V Driver	LMD125 230-V Driver	LMD300 230-V Driver
Weight (g)	178	160	114	146	264
Maximum height (mm)	67.5	40	29.5	33	35
Maximum length (mm)	-	-	81	123	205
Maximum diameter/width (mm)	88.2	87.2	56	79	80
Lens diameter (mm)	60.3	-	-	-	
Lens aperture (mm)	58	-	-	-	



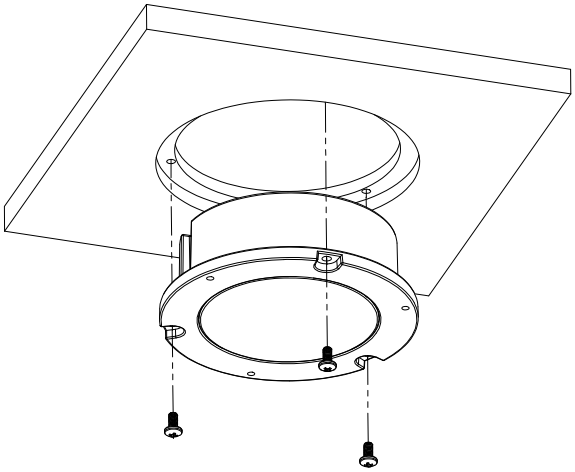
Note - The flange of the LMH2 has the same mechanical dimensions as in the LMR2 product line.

Mounting Options

The LMH2 module has been engineered for multiple mounting options, provided the thermal design guidelines are followed and the temperature at the Tc point remains below the specified maximum. (See the Thermal Design section for details.) There are four (4) options for properly securing the LMH2 module to the luminaire. For technical assistance in determining which option is best for a particular design, please contact the Cree Modules team directly at modules_support@cree.com.

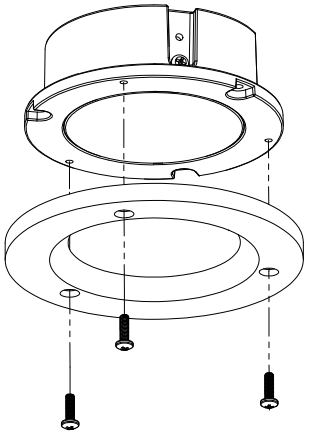
Option 1

Three (3) through-holes in the casting face are recessed in 3.5 mm by 9.5 mm slots. The holes provide clearance for M3 screws. The slots are 120° apart. The holes are on an 81-mm bolt circle and the slots are suitable for locking a keyed reflector or mounting your casting in place.



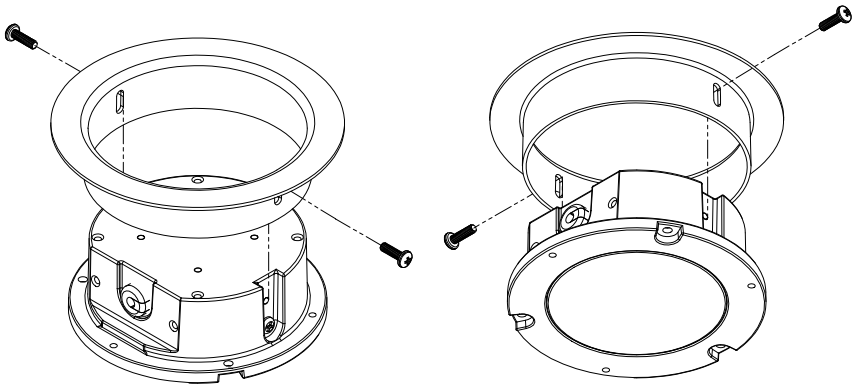
Option 2

Three (3) tapped M3-.5 holes are in the casting face. The holes are 120° apart, on an 81-mm bolt circle and the slots are suitable for mounting a cone flange.



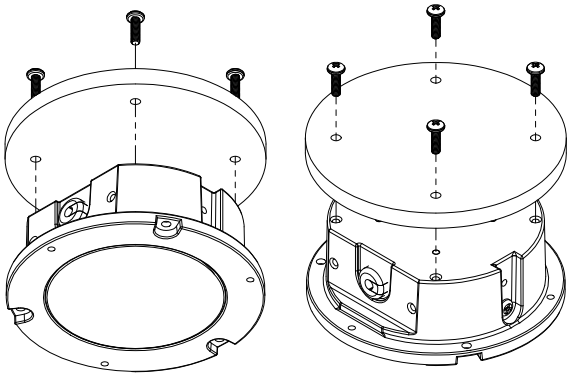
Option 3

Two (2) vertical slots are 180° apart in the side of the casting. Each slot has a minimum width of 8 mm and is recessed 3.9 mm into the casting with two (2) tapped M3-.5 mounting holes in each side. Each hole is 20.1 mm above the mounting face.



Option 4

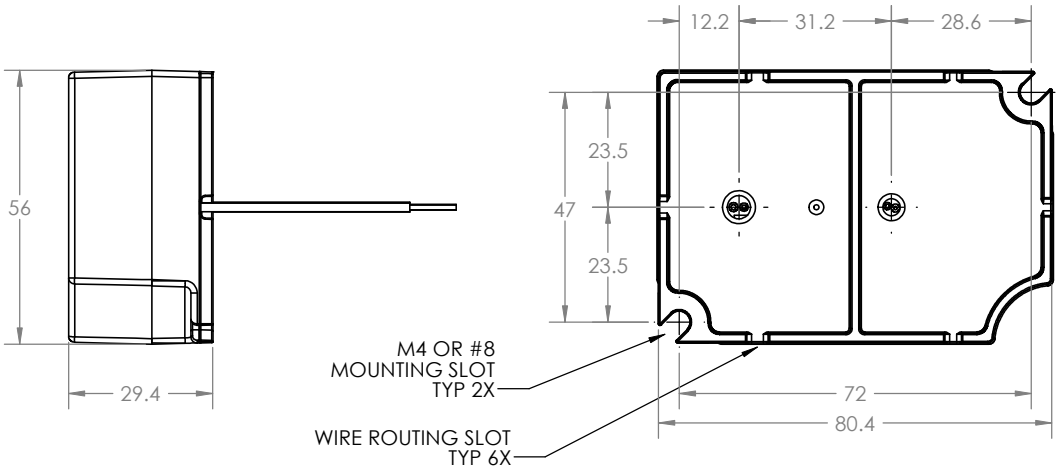
Four (4) tapped M3-.5 x 8 holes are in the upper casting face. The holes are 90° apart, on a 68-mm bolt circle and are suitable for mounting a cone to the module or the module to a plate or your custom heat sink.

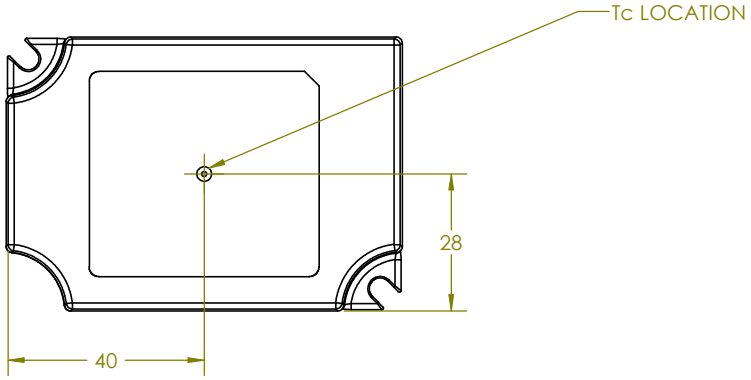


LMD125 Driver

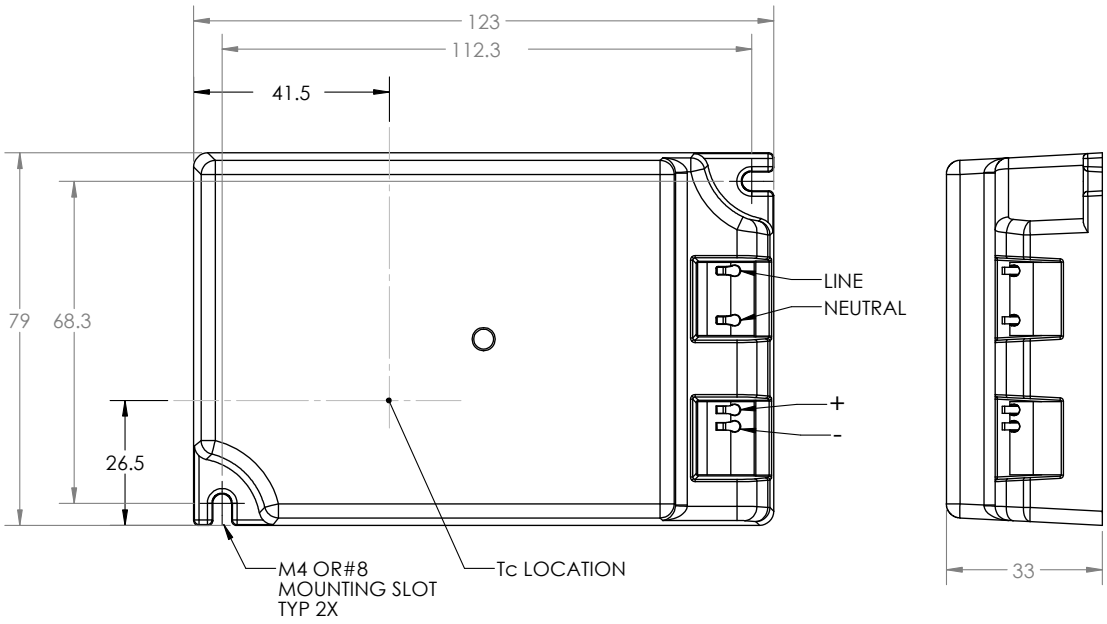
Cree's LMD125 LED drivers are designed for use with the LMH2 850- and 1250-lm light sources. The unique design of the LMD125 driver allows it to be mounted on an internal surface or mounted to a junction box cover. For the 120- and 277-V drivers, the leads can be routed through holes in a junction box cover and accessed in a standard junction box. When surface mounted, the LMD125 driver leads can be routed through the various wiring slots on each side.

LMH125 120- and 277-V Drivers





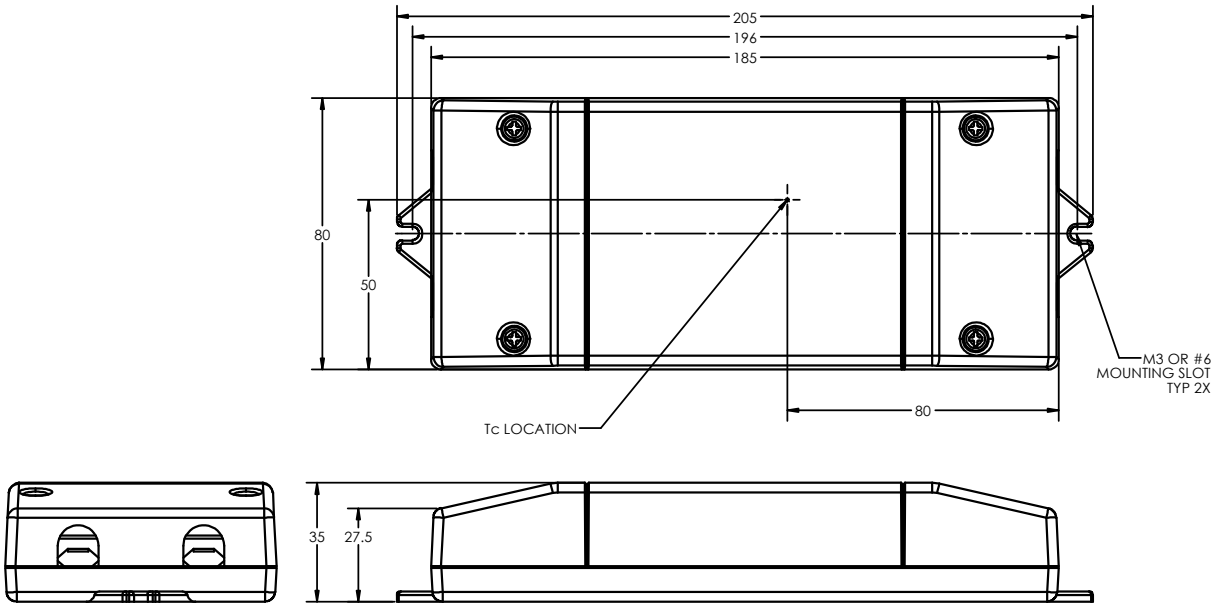
LMH125 230-V Driver



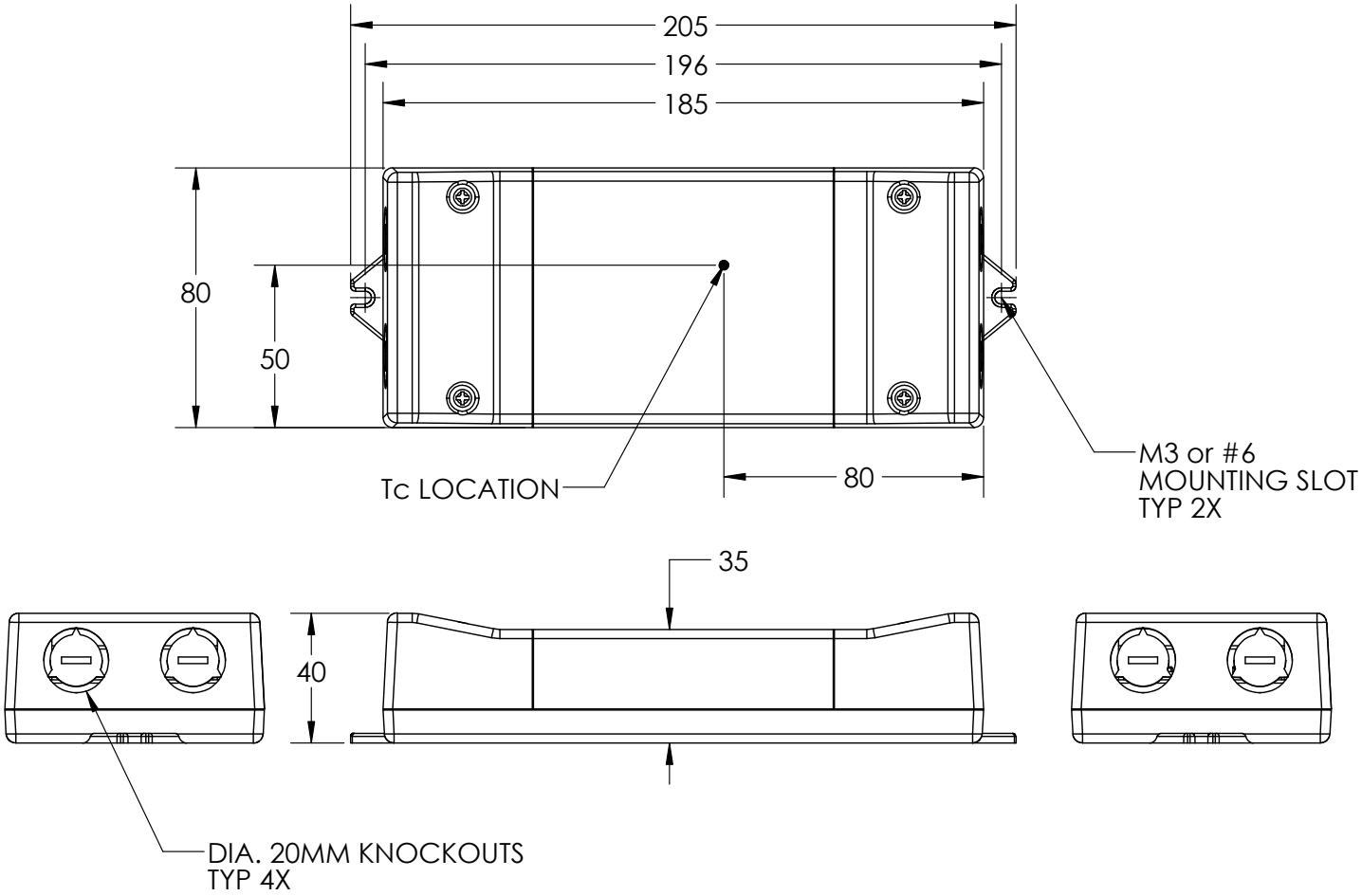
LMD300 Driver

Cree's LMD300 LED driver is designed for use with the LMH2 2000- and 3000-lm light sources.

The LMD300 driver is shown below with standard conduit covers.



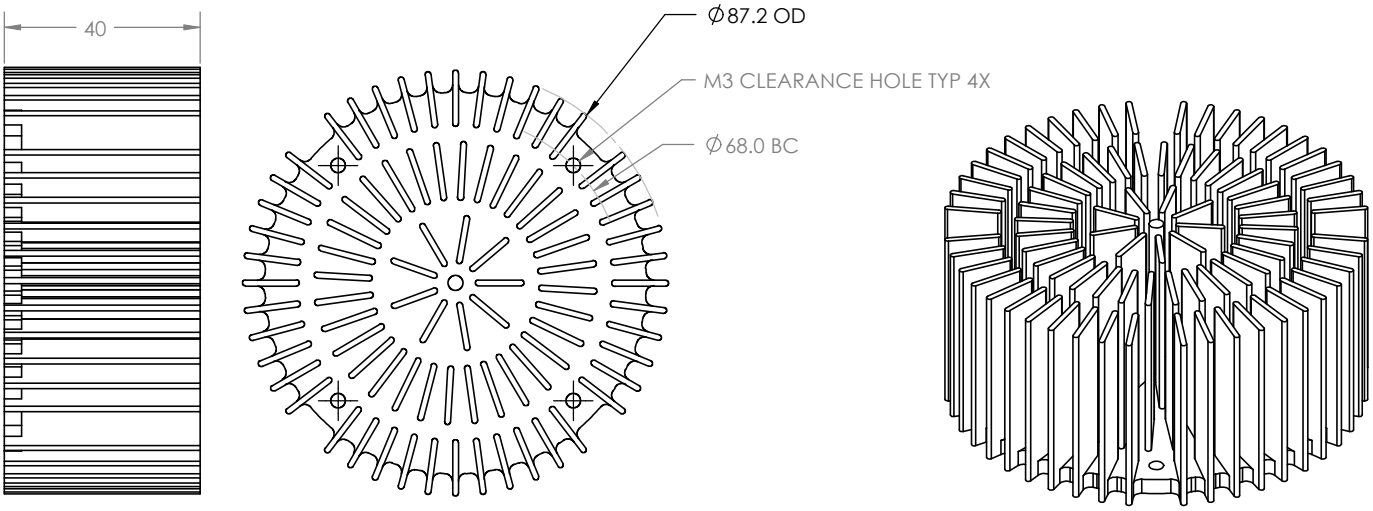
The LMD300 driver is shown below with the optional conduit covers for use in Asian markets.



Optional Heat Sink

A custom-designed heat sink (part number LMH020-HS00-0000-0000001) is available for use with all LMH2 light sources. This specific heat sink is not required for proper operation of the LMH2 module, however the heat sink available from Cree does provide a simple and cost-effective method for improving the thermal performance in various applications. The heat sink attaches to the upper casting face with four (4) M3x8 screws, which are included with the heat sink.

Proper operation of the heat sink requires it to be mounted to the module with four (4) screws at 90°. Failure to follow this hole pattern may result in uneven cooling of the module and unpredictable thermal performance.



THERMAL DESIGN

LMH2 modules are designed to perform in a variety of environments and their expected lifetimes are highly dependent on their operating temperature. The LMH2 is designed to transfer heat away from the LEDs through the housing. When designing a luminaire that incorporates the LMH2 module, careful consideration must be taken to ensure a sufficient thermal path to ambient is provided. Verification of a proper thermal path is done through the placement of a thermocouple at the specified Tc location. The LMH2 light source must not exceed 70 °C at the Tc point in thermal equilibrium to ensure proper performance and expected lifetime and to maintain warranty terms.

The optional heat sink can increase thermal performance in luminaire designs and help meet minimum expected lifetimes. A heat dissipation path is required; the LMH2 family of modules should not be operated for extended times without a properly tested heat dissipation path. Luminaire designs with a direct thermal path to ambient are desired and will provide the best results.

	Minimum	Typical	Maximum
Recommended operating temperature @ Tc (°C)	0	50	70

Over-Temperature Protection

The LMH2 light source contains over-temperature protection that shuts down the light source if the monitored temperature on the LED board exceeds safety limits. If this occurs, cycle the power to the module to resume operation. If the module shuts down, the thermal design of the luminaire should be reviewed.

Ambient Temperature Measurement

The ambient temperature of the test environment must be monitored and recorded with the required data during a temperature test. The preferred ambient temperature measurement apparatus is described in UL1598-2008 Rev January 11, 2010, Section 19.5. The intent of this requirement is to ensure that the temperature monitored does not fluctuate. The ambient temperature of the space must be 25 °C ± 5 °C. Note that bare thermocouple wires in open air is not an acceptable method of recording the ambient temperature.

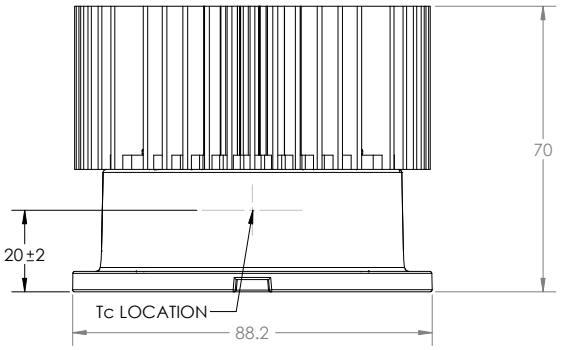
Thermocouple Attachment Method

Attach a thermocouple to the indicated Tc location. The attachment method described in UL1598-2008 Rev January 11, 2010, Section 19.7.4 is preferred; using silver-filled thermal epoxy is an acceptable alternative. Ensuring that the tip of the thermocouple properly contacts the module at the Tc location and that the attachment method does not add thermal resistance to the test is critical to correct and acceptable testing.

> **Note** - Quick-drying adhesives and other cyanoacrylate-based products are known to be destructive, over time, to the components and adhesives used in solid-state lighting products. The use of cyanoacrylate-based products is at the discretion of the testing organization. Cyanoacrylate adhesives should not be used in any luminaire design or for any long-term testing.

Tc Measurement Method

Once the thermocouple is properly attached at the Tc location, assemble the module into the luminaire. The luminaire must then be tested in its intended environment or that environment which will result in the highest recorded temperature. Take care during assembly to ensure that the thermocouple remains properly attached. Energize the luminaire and allow the assembly to reach thermal equilibrium. Thermal stabilization may require up to 7.5 hours, depending on the mechanical design. Once thermal equilibrium is achieved, record the room ambient and case temperatures. Acceptable test results require the ambient temperature to be between 20 °C and 30 °C (25 °C± 5 °C). Recorded variations above or below 25 °C must be added to or subtracted from the recorded temperatures. The table below can be used to determine the expected luminaire operating life.



Tc location is midway up the casting side and approximately 90° from the mounting slots.

Expected LMH2 Lifetime versus Temperature at Tc Point

Expected Operation Life (Hours)	Tc (°C) @ 25 °C Room Ambient			
	LMH2 Light Source	LMD125 120- and 277-V Driver	LMD125 230-V Driver	LMD300 230-V Driver
35,000	70	73	74	75
50,000	60	67	68	67

ENVIRONMENTAL DESIGN

The LMH2 module is suitable for damp locations and is rated IP-20. If the LMH2 module is to be used in an outdoor luminaire classified other than "suitable for damp location; covered ceilings," the luminaire manufacturer must ensure proper intrusion protection and appropriate regulatory-compliance testing.

OPTICAL DESIGN

The LMH2 module is supplied with a lens to provide a uniform light source. To maintain the warranty and for proper performance, the lens and reflector cone must not be altered or removed from the LMH2 module. A secondary optic is not required. If a secondary optic is used, the following trade-offs may occur:

- Reduced light output (luminous flux).
- Reduced efficacy (lumens/watt).
- Possible changes in color characteristics (CCT, CRI).

Photometry

IES (LM-63-2002) and the optical source model for the LMH2 module are available at www.cree.com/led-components-and-modules/products/modules/non-integrated/lmh2.

DESIGN EXAMPLES

The following section contains design proposals for luminaires that incorporate the LMH2 module. Please note the various attachment methods employed.

> **Note** - The examples depicted below are conceptual only. The inclusion of a concept in this group does not imply agency approval. The exclusion of any concept from this group should not be seen as a limitation. These examples are not proprietary or protected and may be reproduced wholly or in part as desired by a given luminaire manufacturer. Final agency approval(s) and confirmation of acceptable operating parameters is solely the responsibility of the luminaire manufacturer.

6”/8” Commercial Downlight

Pendant

SAFETY AND REGULATORY NOTES

Do not look directly into an LMH2 light source in operation! Eye injury can result. See LED Eye Safety at www.cree.com/~/media/Files/Cree/LED%20Components%20and%20Modules/XLamp/XLamp%20Application%20Notes/XLamp_EyeSafety.pdf.

Standard	LMH2 Light Source	LMD125 120 VAC 60 Hz Driver	LMD125 230 VAC 50/60 Hz Driver	LMD125 277 VAC 60 Hz Driver
Safety	UL/cUL recognized (UL8750) IEC 60598-1 (lens glow wire)	UL/cUL recognized (UL8750) Class 2 power supply UL – Damp rated 5VA flame rating	EN 61347-1 EN 61347-2-13 IP-20 CE SELV equivalent	UL/cUL recognized (UL8750) Class 2 power supply UL - Damp rated 5VA flame rating
Electromagnetic compatibility	EN 55015 IEC 61000-3-2 IEC 61000-3-3 IEC 61547 FCC 47 CFR Part 15 Class B/ ICES 03	FCC 47 CFR Part 15 Class B/ ICES 03	EN 55015 IEC 61000-3-2 IEC 61000-3-3 IEC 61547	FCC 47 CFR Part 15 Class A/ ICES 03
Regulatory (driver)		IEEE C.62.41-1991 Class A (surge) NEMA 410		IEEE C.62.41-1991 Class A (surge) NEMA 410
Environmental	RoHS	RoHS	RoHs	RoHs

Safety Certification

All LMH2 light sources are UL "Recognized" components. The Cree-supplied LMD125 120- and 277-V drivers are UL listed. The LMH2 850- and 1250-lm light sources and LMD125 230-V driver are CE qualified. Safety certification for the LMD300 230-V DALI + Touch driver is pending. Together, the LMH2 light source combined with the LMD125 or LMD300 driver are "suitable for damp locations; covered ceilings." The final luminaire design should go through safety certification as required, which is the responsibility of the luminaire manufacturer.

ENERGY STAR®

ENERGY STAR is a U.S. government-backed program that defines energy-efficiency standards for products. Qualification of the final luminaire design for ENERGY STAR certification is the responsibility of the luminaire manufacturer. The final luminaire must be submitted for testing to an independent, certified test facility. Cree can and will assist in the process by providing LM-80 component data for submission to ENERGY STAR.

Module Disposal

LMH2 modules should be disposed of properly at the end of their useful lifetime in accordance with local regulations. The LMH2 module is classified as "Electronic Equipment."