



VMU240090LN8xxA-12



12" DC MODULE, 2400mA MAX CURRENT

- For use in UL Class 2 lighting systems
- Constant current for maximum efficacy
- 12" length
- High lumen, high efficacy
- Suitable for DLC applications: L70>60,000hrs / L90=40,000hrs
- Meets UL8750 recognized
- RoHS compliant
- Ideal for linear high output applications

General Specifications

LED Quantity	180 (12s15p)
Input Current ^①	2400mA Max.
Input Voltage @ Max. Current ^①	35.7VDC
Input Power @ Max. Current ^①	85.7W
Initial Lumens @ Max. Current /4000K / 80CRI	13,721 lumens
Initial Lm/W @ Max. Current /4000K / 80CRI	160 lm/W
Beam Angle	120°
CRI	80CRI (standard), 90CRI available
Storage Temperature Range	-40°C to 100°C / -40°F to 212°F
Operating Temperature Range (ta)	-40°C to 55°C / -40°F to 131°F
Maximum Case Temperature (Tc)	L70: Tc max 105°C / L90: Tc max 105°C
Estimated Lumen Maintenance ^②	L70: >60,000Hrs / L90: 40,000Hrs
Color Consistency	Binning per ANSI C78.377-2015 @ 25°C; 3 SDCM
Overall Size	12.19" L x 0.92" W x 0.063" H (310mm x 23.4mm x 1.6mm)
PCB Material / Thermal Conductivity	MCPCB, 1.0mm thickness, 1oz copper, 1.0W/mK
Module Weight	TBD g / TBDlb
PCB Part Number	PTL068C01M1
Maximum Screw Installation Torque	25 inch - ounces
Connector Type	N/A
Packaging: Master Carton	TBD
Thermal Feedback	Not Available
Safety/Compliance	cURus (File # E351548) Suitable for UL Class 2 Lighting Systems RoHS Compliant Dry and Damp Location
Energy Efficiency Label (EEI-Label)	A++
Warranty	5 years @ Max. Tc from the date of manufacture

^①Nominal ratings. Performance based on Tc mod = 25°C. See thermal de-rating chart (pg. 3) for higher temperature operation

^②TM-21 Reported Numbers

VMU240090LN8xxA-12



Electrical and Optical Specifications

LED Module Part Number	Number of LED	Input Current	Nom. Forward Voltage	Nom. Rated Power	Max. Fwd. Voltage	Max. Rated Power	Nom. Lum. Flux @4000K/80 CRI	Nom. Efficacy @4000K/80 CRI
VMU240090LN8xxA-11	180	300 mA	31.3 V	9.4 W	34 V	10 W	1907 lm	203 lm/W
		400 mA	31.6 V	12.6 W	34 V	14 W	2535 lm	200 lm/W
		500 mA	31.9 V	15.9 W	34 V	17 W	3155 lm	198 lm/W
		600 mA	32.2 V	19.3 W	34 V	20 W	3769 lm	195 lm/W
		700 mA	32.4 V	22.7 W	35 V	25 W	4375 lm	193 lm/W
		800 mA	32.6 V	26.1 W	35 V	28 W	4974 lm	191 lm/W
		900 mA	32.9 V	29.6 W	35 V	32 W	5566 lm	188 lm/W
		1000 mA	33.1 V	33.1 W	35 V	35 W	6152 lm	186 lm/W
		1100 mA	33.3 V	36.6 W	36 V	40 W	6731 lm	184 lm/W
		1200 mA	33.5 V	40.2 W	36 V	43 W	7303 lm	182 lm/W
		1300 mA	33.7 V	43.8 W	36 V	47 W	7869 lm	180 lm/W
		1400 mA	33.9 V	47.4 W	36 V	50 W	8429 lm	178 lm/W
		1500 mA	34.0 V	51.1 W	36 V	54 W	8983 lm	176 lm/W
		1600 mA	34.2 V	54.8 W	37 V	59 W	9531 lm	174 lm/W
		1700 mA	34.4 V	58.5 W	37 V	63 W	10074 lm	172 lm/W
		1800 mA	34.6 V	62.3 W	37 V	67 W	10610 lm	170 lm/W
		1900 mA	34.8 V	66.1 W	37 V	70 W	11142 lm	169 lm/W
		2000 mA	34.9 V	69.9 W	37 V	74 W	11668 lm	167 lm/W
		2100 mA	35.1 V	73.8 W	38 V	80 W	12188 lm	165 lm/W
		2200 mA	35.3 V	77.7 W	38 V	84 W	12704 lm	164 lm/W
		2300 mA	35.5 V	81.6 W	38 V	87 W	13215 lm	162 lm/W
		2400 mA*	35.7 V	85.7 W	38 V	91 W	13721 lm	160 lm/W

Luminous Flux De-Rating: CCT and CRI Multipliers

	2700K	3000K	3500K	4000K	5000K	5700K	6500K
CRI 80(R9>0)	0.929	0.955	0.968	1.000	1.013	1.006	1.000
CRI 90(R9>50)	0.776	0.801	0.821	0.863	0.869	0.865	0.863

NOTES:

- 1) Performance based on Tc mod = 25°C. See thermal de-rating chart (pg. 3) for higher temperature operation
- 2) Standard lumen output and efficacy is calculated for standard options. Reference CCT & CRI vs Luminous Flux chart for lumen ratio calculation.
- 3) Specifications are subject to change without notice.
- 4) The LED DC Module can be configured with different LED chip quantities, series and parallel design configurations to meet a specific design requirement. Contact Fulham for further assistance.
- 5) * Indicates maximum rated current. Modules may be operated at a current less than or equal to this value, below the Tc rating.
- 6) 70CRI is NOT available.

VMU240090LN8xxA-12



Thermal Specifications

Linear DC Module

Storage Temperature Range	-40 to +100°C / -40 to +212°F
Operating Ambient Temperature Range (ta)	-40 to +55°C / -40 to +131°F
Maximum Case Temperature (Tc)	L70 = 105°C (221°F) / L90 = 105°C (221°F)

Thermal De-Rating

Tc vs. Luminous Flux vs. Forward Voltage

Module Case Temperature (Tc)	Total Vf Multiplier	Luminous Flux Multiplier
25°C	1.000	1.000
30°C	0.998	0.991
35°C	0.997	0.983
40°C	0.995	0.974
45°C	0.993	0.966
50°C	0.991	0.957
55°C	0.990	0.949
60°C	0.988	0.940
65°C	0.986	0.932
70°C	0.985	0.923
75°C	0.983	0.915
80°C	0.981	0.906
85°C	0.980	0.898
90°C	0.978	0.890
95°C	0.976	0.881
100°C	0.974	0.873
105°C	0.973	0.864

VMU240090LN8xxA-12



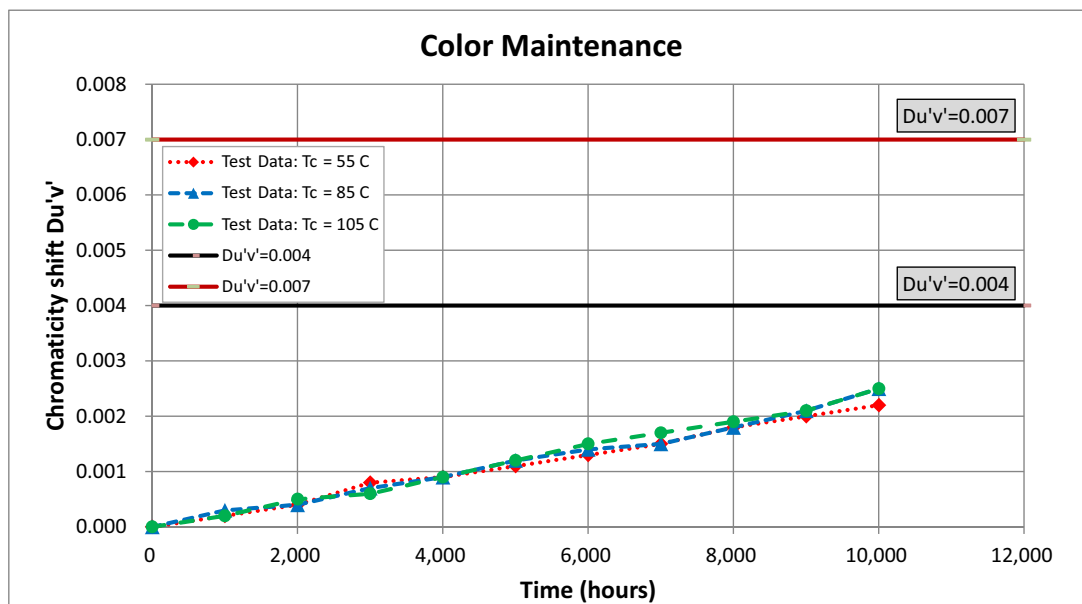
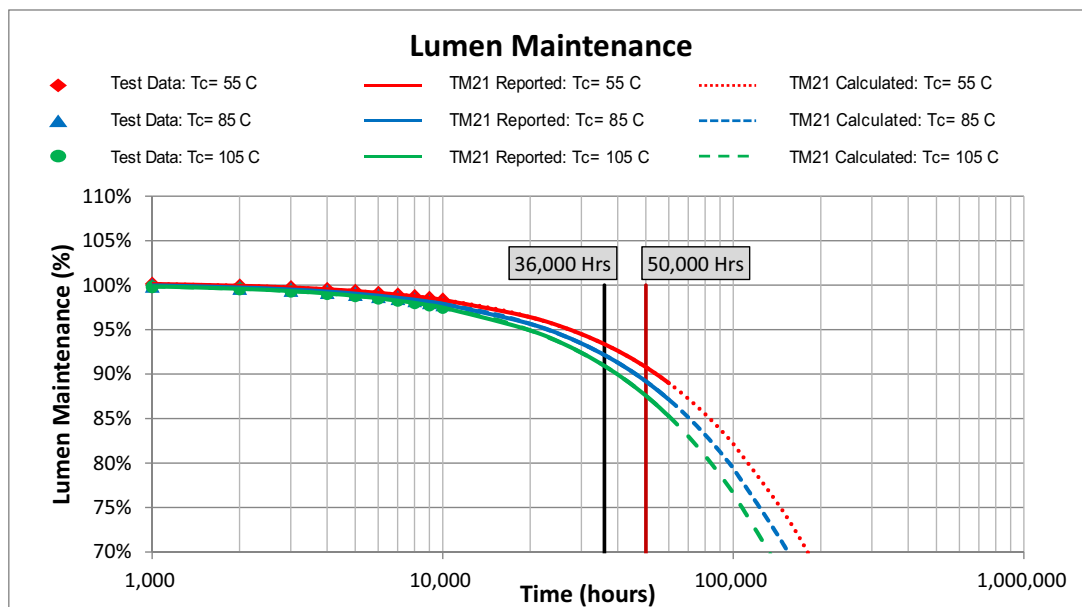
Certification Chart

Classification	Model
	VMU240090LN8xxA-12
RoHS COMPLIANT	YES
cUL US	YES
Energy Efficiency Label (EEI-Label)	A++
Suitable for UL Class 2 Lighting System	YES

Energy Star™ TM-21 Calculator Data

Tc Module	Reported L70	Reported L90
55°C	>60,000 Hrs	54,000 Hrs
85°C	>60,000 Hrs	46,000 Hrs
105°C	>60,000 Hrs	40,000 Hrs
Tc Module	Calculated L70	Calculated L90
55°C	180,000 Hrs	54,000 Hrs
85°C	154,000 Hrs	46,000 Hrs
105°C	133,000 Hrs	40,000 Hrs

LED Lumen & Color Maintenance Data per LM-80 Report and TM-21 Calculator

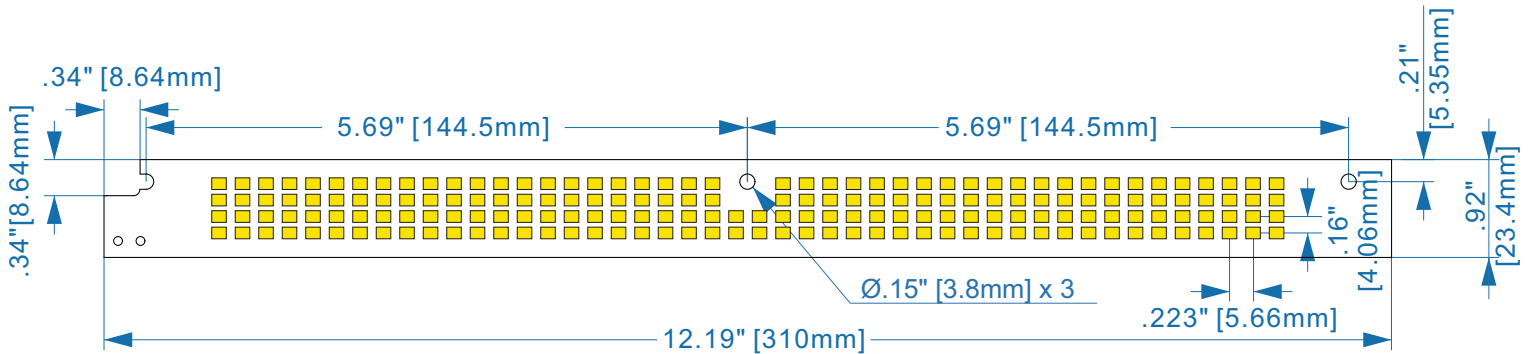


Mechanical Drawings

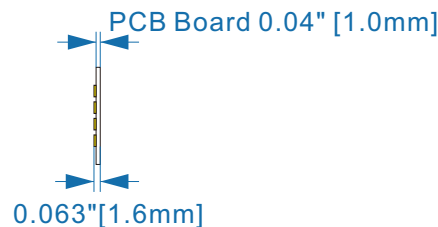
12.19"

[310mm]

Overall Dimensions	
Length	12.19" [310mm]
Width	0.92" [23.4mm]
Height (without wires)	0.063" [1.6mm]
PCB Thickness	0.04" [1.0mm]



TOP VIEW

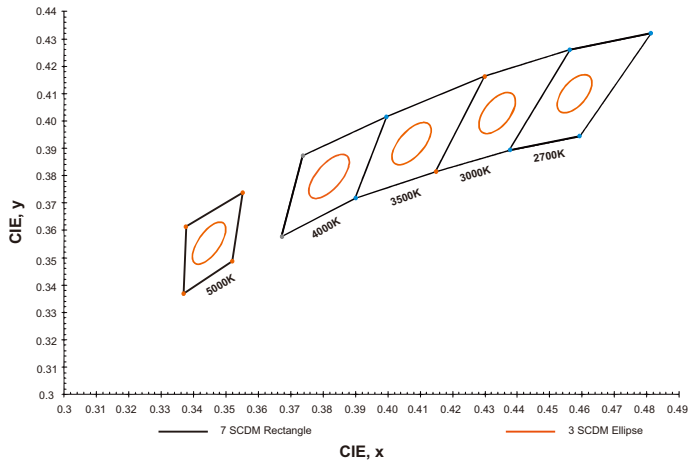


SIDE VIEW

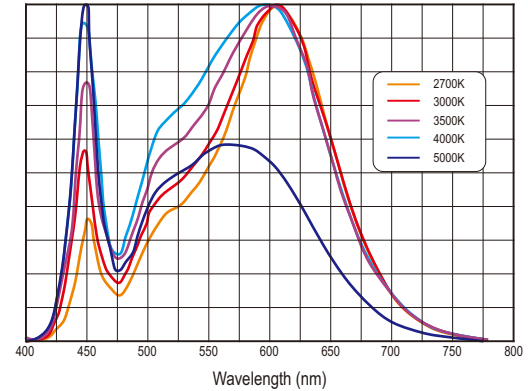
VMU240090LN8xxA-12



Color and Binning



Optical Spectrum



Compatible Fulham Drivers

(Please use the links below for a complete list of compatible Fulham drivers and wiring diagrams)

- Linear DC System Combination:
- Fulham's Wiring Diagrams: <https://cdn.fulham.com/PDFs/SpecSheets/DC-Modules-Wiring-Diagrams.pdf>
- Compatible with Fulham Hotspot EM Systems.

NOTES:

- 1) The Color and Binning and Optical Spectrum charts are for reference only. For more detailed info, contact factory.
- 2) Reference Samsung Chromaticity Diagram for Color and Binning. Binning per ANSI C78.377-2015 @ 25°C; 3 SDCM.
- 3) The Optical Spectrum values vary depending on product type and color rank.
- 4) Driver not included.

VMU240090LN8xxA-12



Guidelines

Fastening Notes

- If fastening by screw hole a recommended screw size: 6#-32 flat head drilling screws. Use all available screw holes to ensure good contact between back side of module and mounting surface. Refer to max specified torque for installation.
- If fastening using double-sided tape, start with clean, oil-free and dust-free surface. Peel backing and place LED module on mounting surface. Firmly press down on the module to ensure good adherence. Follow the double-side tape manufacturer's installation instructions.
- BJB P2F (Push-to-Fix) fixing elements for PCBs can be used to fasten LED modules to mounting surface. Reference BJB's website for ordering information and specific model to use:
<http://www.bjb.com/index.php?pid=376706&lid=10>.
- HEYCO HEYClip Snap Rivets 9047 is recommended for fast and easy installation with clean and finish look.



Heyco Rivet 9047

For more detail information, please visit Heyco website: https://www.heyco.com/Nylon_PVC_Hardware/product.cfm?product=Snap-Rivets

Double Side Tape Option

- Module with part number ended with "T", VMU140050LNxxxT-12, is provided with 3M™ VHB™ 4941F double side tape on the back.
- The 3M™ tape is made with acrylic foam which is viscoelastic in nature. It is UL746C recognized and with 0.045" (1.1mm) in thickness, 1/2" (12.7mm) in width.
- For more detail information and instructions, please visit 3M™ website: https://www.3m.com/3M/en_US/company-us/all-3m-products/~3M-VHB-Tape-4941/?N=5002385+3293242237&preselect=3293786499&rt=rud

Environmental Rating / Conformal Coating

- The DC Modules have been evaluated for use in dry or damp locations only. If used in wet locations, acceptability and the need for additional evaluation shall be determined in the end product.
- Fulham's DC modules are available with conformal coating; made to order with MOQ and lead time will apply. The conformal coating is a silicone based material which is double sprayed on the module only (LEDs and PCB). Conformal coating is recommended for the following applications: near ocean where salt is present, constant moisture, refrigeration, continuously high humidity, or outdoor applications. An IP rating of IP64 or IP65 is achieved when the conformal coating is used, but other factors should be considered. Fulham still recommends the luminaire also meet an IP64/65 rating.

Electrostatic Sensitive Product (ESD)

- Fulham LED products should be handled with proper measures to protect against any potential ESD damage.
- When servicing, personnel should be ground and direct contact with LED should be avoided.

Thermal Management

- Proper thermal management should be employed to ensure life and reliability of product. Max Tc of module should not be exceeded.
- Use of thermal grease, paste, pad, or other material interface is highly recommended.

Polarity Notes

- DC Modules are polarity sensitive.
- Ensure that "positive" from LED Driver is connected to "positive" of LED modules and that "negative" from LED Driver is connected to "negative" of LED modules.
- Polarities of modules are marked with "+" for positive and "-" for negative.

VMU240090LN8xxA-12



Part Number Matrix

V M U 240 090 LN 8 X X A -12

Product Line	Type	Control Type	Input Current	Max. Power	Design	CRI	Color Temperature	Option	Length
V = Vizion	M = Module	U = None	240 = 2400mA Max. (UL Class 2)	090 = 90W	LN=Linear	8 = 80CRI 9 = 90CRI	27 = 2700K 30 = 3000K 35 = 3500K 40 = 4000K 50 = 5000K 57 = 5700K 65 = 6500K	A = Standard	12 = 12"

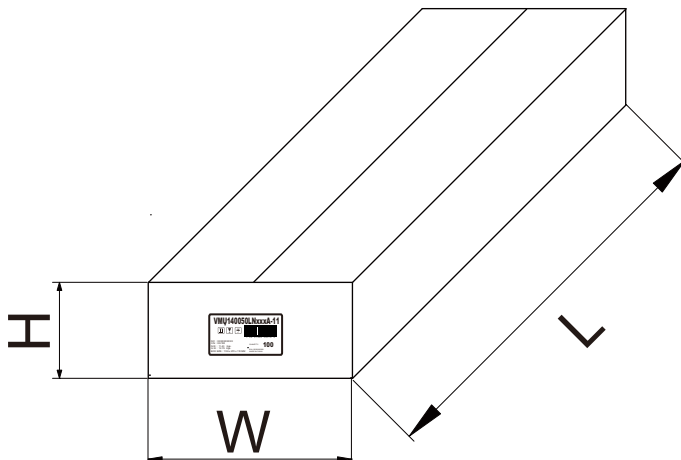
All CCT, CRI options are made to order with MOQ and lead time

Product Image:

TOP VIEW

Packaging

Master Carton



OUTER DIMENSION		
L	W	H
47.5"(1205mm)	8.66"(220mm)	6.50"(165mm)
Net Weight	Gross Weight	QUANTITY
15.4 lbs. (7.0kg)	19.4 lbs. (8.8kg)	100pc.