



VMU064025LP8xxA



11" LP-LINEARHO DC MODULE, 640mA MAX CURRENT

- Low Profile design, no magnets
- Direct mount to luminaire housing
- Superior thermal performance than standard LinearHO
- Higher aluminum material density
- Extruded Aluminum material for thermal management
- High lumen, high efficacy
- Accessories: Diffused lens compatible
- For use in UL Class 2 lighting systems
- Suitable for DLC applications: L70 >60,000hrs/L90 40,000hrs
- Meets UL8750 recognized
- RoHS compliant
- The module is supplied by short circuit proof SELV controlgear

General Specifications

	Min.	Typical	Max.
Input Voltage ^①	32VDC	34VDC	35.6VDC
Input Current ^①	75mA	350mA	640mA
Input Power ^①	2.4W	11.9W	22.8W
Initial Lumens @4000K / 80CRI	526 lumens	2,347 lumens	3,919 lumens
Initial Lm/W	219 lm/W	197 lm/W	172 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 (Ts=110°C) / L90: Tc max 105°C (Ts=110°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	10.94" L x 1.26" W x 0.29" H (278mm x 32mm x 7.4mm)		
PCB Material / Thermal Conductivity	MCPCB (Aluminum Clad)/ 1.5W / mK		
Extruded Material / Finish	Aluminum/surface treatment with Anodic Oxidation		
LED Quantity	48pcs.		
Module Weight	68.04 / 0.15lb		
PCB Part Number	PTL023C01M1		
Maximum Screw Installation Torque	25 inch - ounces		
Connector Type	WAGO #2060-452 / 998-404 (2 pin connector)		
Packaging: Master Carton	20pcs.		
Thermal Feedback	Not Available		
Safety/Compliance	cURus (File # E351548) Suitable for UL Class 2 Lighting Systems RoHS Compliant Dry and Damp Location CE (IEC 62031: 2008. AMD1: 2012, AMD2: 2014) SELV		
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



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Part Number Matrix

V M U 064 025 LP 8 XX A

Product Line V = Vizion	Type M = Module (UL Class 2)	Control Type U = None	Input Current 048 = 480mA	Max. Power 025 = 25W	Design LP=Low Profile	CRI Ⓢ 8 = 80 9 = 90	Color Temperature 27 = 2700K Ⓢ 30 = 3000K Ⓢ 35 = 3500K Ⓢ 40 = 4000K Ⓢ 50 = 5000K 57 = 5700K 65 = 6500K	Option A = Standard Ⓢ D = Conformal Coating (MTO)
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Electrical and Optical Specifications

LP-LinearHO Module Part Number	Number of LED	Input Current	Nom. Forward Voltage (VDC)	Nom. Rated Power	Max. Fwd. Voltage	Max. Rated Power	Nom. Lum. Flux @4000K/80 CRI	Nom. Efficacy @4000K/80 CRI
VMU064025LP8xxA	48	75mA	32.0V	2.4W	35V	3W	526 lm	219 lm/W
		100mA	32.0V	3.2W	35V	4W	698 lm	218 lm/W
		125mA	32.8V	4.1W	36V	5W	872 lm	213 lm/W
		150mA	32.7V	4.9W	36V	5W	1041 lm	212 lm/W
		175mA	33.1V	5.8W	36V	6W	1212 lm	209 lm/W
		200mA	33.0V	6.6W	36V	7W	1379 lm	209 lm/W
		225mA	33.3V	7.5W	37V	8W	1547 lm	206 lm/W
		250mA	33.6V	8.4W	37V	9W	1710 lm	204 lm/W
		275mA	33.8V	9.3W	37V	10W	1874 lm	201 lm/W
		300mA	33.7V	10.1W	37V	11W	2033 lm	201 lm/W
		325mA	33.8V	11.0W	37V	12W	2192 lm	199 lm/W
		350mA	34.0V	11.9W	37V	13W	2347 lm	197 lm/W
		375mA	34.1V	12.8W	38V	14W	2501 lm	195 lm/W
		400mA	34.3V	13.7W	38V	15W	2650 lm	193 lm/W
		425mA	34.6V	14.7W	38V	16W	2798 lm	190 lm/W
		450mA	34.7V	15.6W	38V	17W	2942 lm	189 lm/W
		475mA	34.7V	16.5W	38V	18W	3083 lm	187 lm/W
		500mA	34.8V	17.4W	38V	19W	3219 lm	185 lm/W
		525mA	35.0V	18.4W	39V	20W	3354 lm	182 lm/W
		550mA	35.1V	19.3W	39V	21W	3484 lm	181 lm/W
575mA	35.3V	20.3W	39V	22W	3612 lm	178 lm/W		
600mA	35.3V	21.2W	39V	23W	3732 lm	176 lm/W		
625mA	35.5V	22.2W	39V	24W	3851 lm	173 lm/W		
640mA*	35.6V	22.8W	39V	25W	3919 lm	172 lm/W		

Luminous Flux De-Rating: CCT and CRI Multipliers

	2700K	3000K	3500K	4000K	5000K	5700K	6500K
CRI 80(R9>0)	0.92	0.95	0.97	1.00	1.01	1.01	1.00
CRI 90(R9>50)	0.77	0.84	0.83	0.85	0.86	0.86	0.85

NOTES:

- Performance based on Tc mod = 25°C. See thermal de-rating chart (pg. 3) for higher temperature operation
- Standard lumen output and efficacy is calculated for standard options. Reference CCT & CRI vs Luminous Flux chart for lumen ratio calculation.
- Specifications are subject to change without notice.
- The LED DC Module can be configure with different LED chip quantities, series and parallel design configurations to meet a specific design requirement. Contact Fulham for further assistance.
- * Indicates maximum rated current. Modules may be operated at a current less than or equal to this value, below the Tc rating.
- 70CRI is NOT available.
- Ⓢ Standard Product offering (All other options are made to order with MOQ and lead time)
- Ⓢ See page #7 for Conformal Coating information. Made to order (MTO).

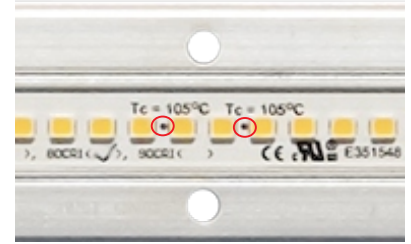


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Thermal Specifications

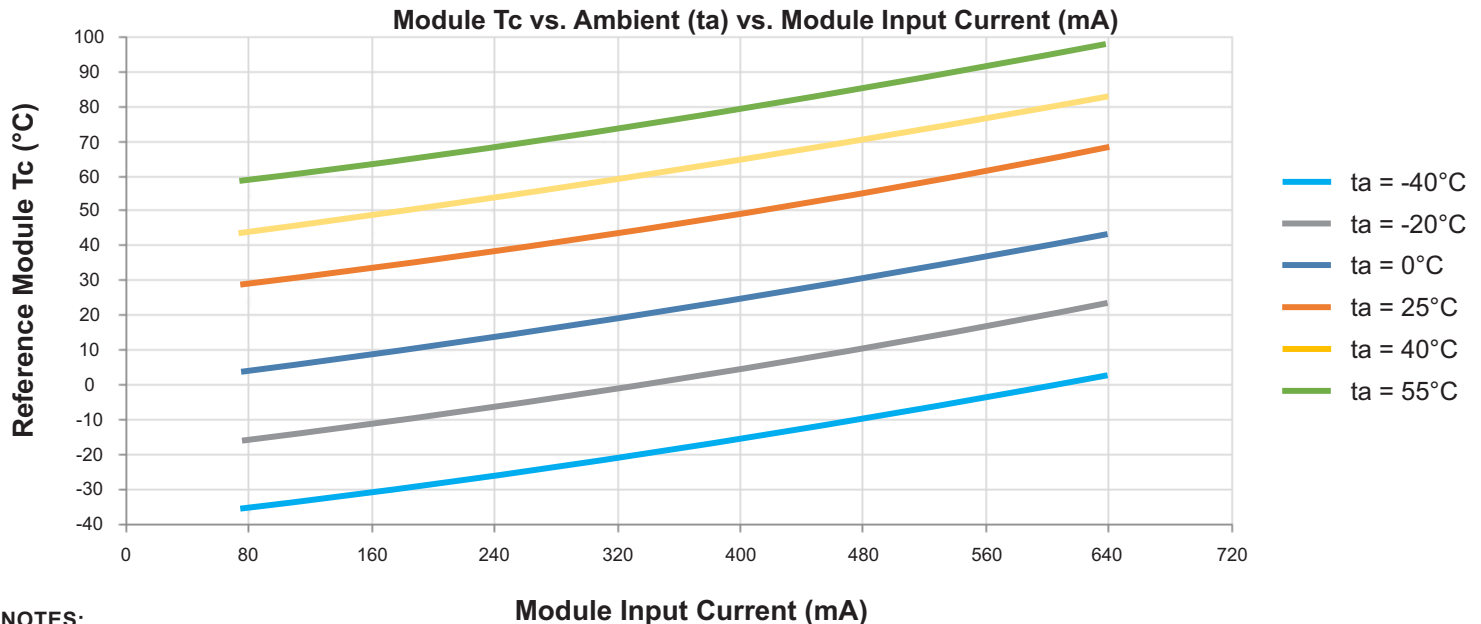
	LP-LinearHO DC Module
Storage Temperature Range	-40 to +100°C / -40 to +212°F
Operating Ambient Temperature Range (ta)	-40 to 55°C / -40 to 131°F
Maximum Case Temperature	L70 = 105°C (221°F) / L90 = 105°C (221°F)



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	1.000	0.991
35°C	0.997	0.982
40°C	0.993	0.973
45°C	0.993	0.964
50°C	0.990	0.953
55°C	0.987	0.944
60°C	0.987	0.935
65°C	0.984	0.926
70°C	0.984	0.917
75°C	0.980	0.908
80°C	0.977	0.899
85°C	0.977	0.889
90°C	0.974	0.880
95°C	0.970	0.862
100°C	0.967	0.853



NOTES:

1) Chart "Module Tc vs. Ambient (ta) vs. Module Input Current (mA)" for reference only in an open ambient. The performance with in a luminaire will vary depending on the size and material of luminaire.



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Certification Chart

Classification	Model	VMU064025LP8xxA
		YES
		YES
		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

Product Image: LP-LinearHO Module



TOP VIEW



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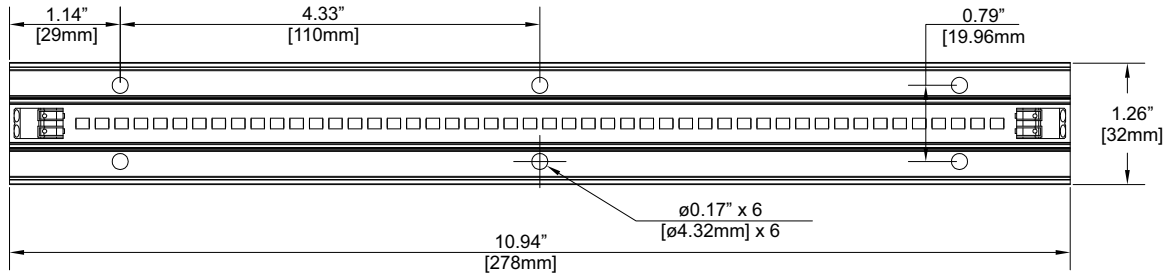


Mechanical Drawings

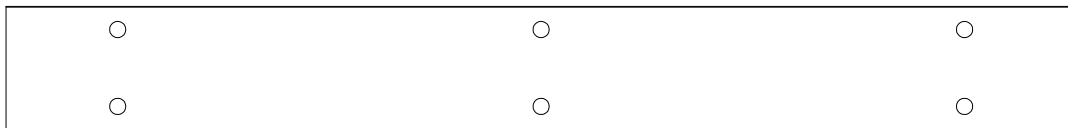
(Scale 1:3)

11"
[278mm]

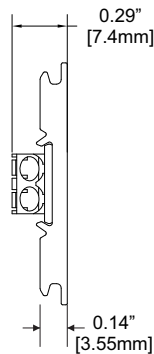
Overall Dimensions	
Length	10.94" [278mm]
Width	1.26" [32mm]
Height	0.29" [7.4mm]



TOP VIEW



BOTTOM VIEW



SIDE VIEW



VMU064025LP8xxA



Accessories

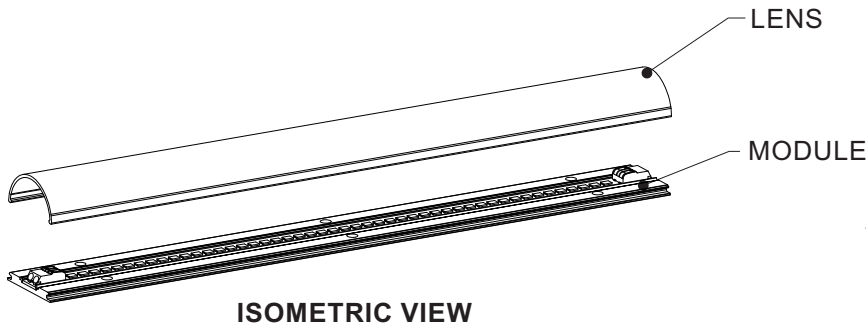
11" Diffuser Lens

Fulham Part Number: 11": TLE-OPT-120-003

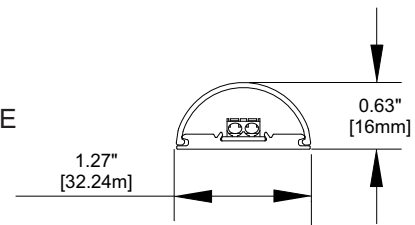
- White polycarbonate diffuser lens - 82% transmissivity at nominally rated currents.



TLE-OPT-120-003
(Diffused Lens)



ISOMETRIC VIEW

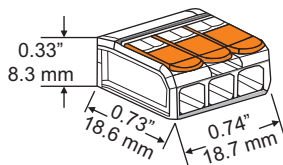
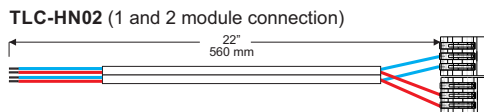


SIDE VIEW

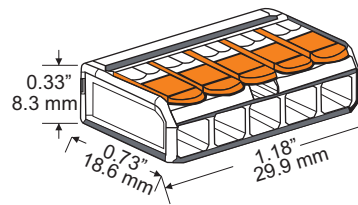
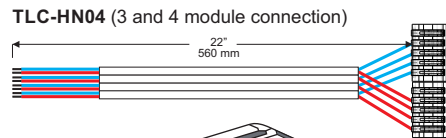
Installation Steps when using clamps:

1. Place the LED Module on the luminaire surface.
2. Place the Diffuser lens on top of LED module (line it up with LED module mounting edges).
3. Push down to snap into place.

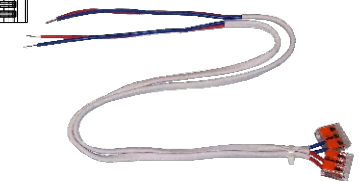
Harness



ISOMETRIC VIEW



ISOMETRIC VIEW



Interconnects

- Interconnect Type: WAGO Double pins to interconnect Modules (#2060-952/028-000)
- Approvals: cURus, UL 1977, and RoHS Compliant



NOTES:

- 1) Interconnects are NOT sold by Fulham.
- 2) Do not connect LinearHO Modules in parallel (end to end) if the current exceeds the maximum module rated current. This type of wiring would cause the pass-through current on the first module to exceed the rated current. This setup is in reference to wiring diagram #2 per Fulham's wiring diagram (see link on page #8). If the current is higher than the rated max, it is recommended to use wiring diagram #3.

Top View

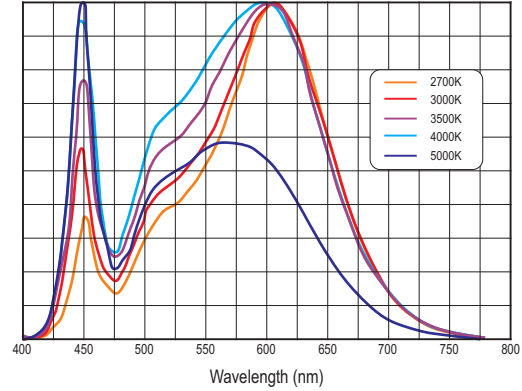
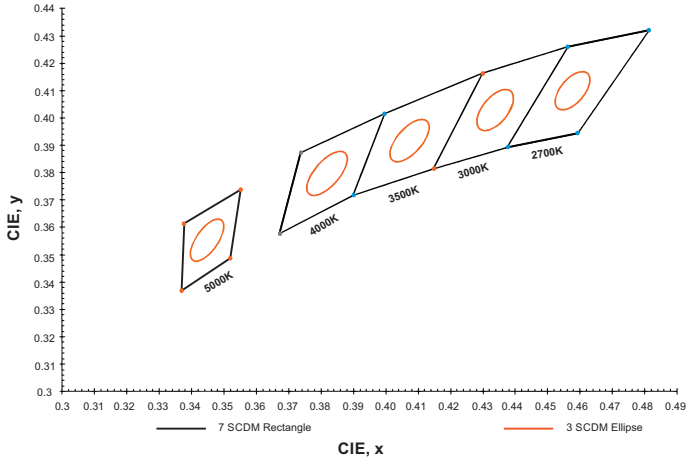


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Color and Binning

Optical Spectrum



Compatible Fulham Drivers

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

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

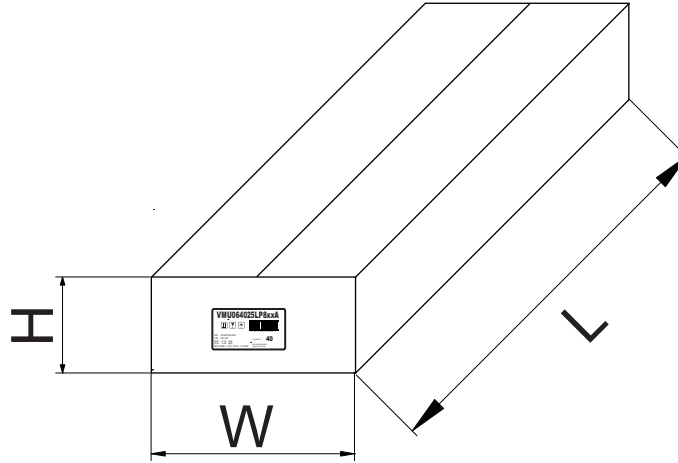
NOTES:

- 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.
- 5) Do not connect LinearHO Modules in parallel (end to end) if the current exceeds the maximum module rated current. This type of wiring would cause the pass-through current on the first module to exceed the rated current. This setup is in reference to wiring diagram #2 per Fulham's wiring diagram (see the link above). If the current is higher than the rated max, it is recommended to use wiring diagram #3.



Packaging

Master Carton



OUTER DIMENSION		
L	W	H
12.20"(310mm)	10.63"(270mm)	4.33"(110mm)
Net Weight	Gross Weight	QUANTITY
6.0 lbs. (2.72kg)	7.49 lbs. (3.40kg)	40pc.



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Guidelines

Termination Notes

- Connector Type: WAGO #2060-452 / 998-404 (2 pin push wire connector)
 - AWG: 24...18 solid wire
 - Strip length: 7...9mm / 0.28...0.35in
 - Connector Max amp. rating: 9 Amps.

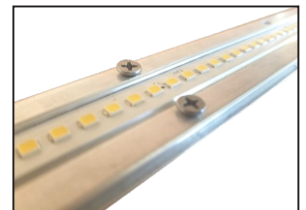


Connector

For more detail information, please visit Wago's website: <http://www.wago.com/infomaterial/pdf/51300133.pdf>

Fastening Notes

- If fastening by screw hole a recommended screw size: 6-20 x 5/8" 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 9035 is recommended for fast and easy installation with clean and finish look. For more detail information, please visit Heyco website: https://www.heyco.com/Nylon_PVC_Hardware/product.cfm?product=Snap-Rivets



Heyco Rivet 9035

Environmental Rating / Conformal Coating

- The DC LP-LinearHO 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 LP-LinearHO 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 LP-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.