



# TMU240095CL84050H



## 44" 2-CCT SELECTABLE LINEARHO DC MODULE, 2400mA MAX CURRENT

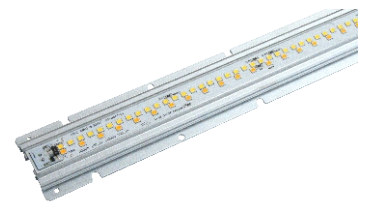
- 4000K/5000K 2-CCT Selectable
- Extruded Aluminum material for thermal management
- Magnets pre-mounted, for ease of installation
- High lumen, high efficacy, suitable for DLC 6.0
- Accessories: Diffused lens and End-Caps available
- For use in UL Class 2 lighting systems
- Suitable for DLC applications: L70>60,000hrs / L90>60,000hrs
- Meets UL8750 recognized
- RoHS compliant
- The module is supplied by short circuit proof SELV controlgear

### General Specifications

	4000K/80CRI	4000K/80CRI	5000K/80CRI	5000K/80CRI
Input Voltage <sup>①</sup>	33.3VDC	34.7VDC	34.2VDC	36.0VDC
Input Current <sup>①</sup>	1400mA	2400mA(Max.)	1400mA	2400mA(Max.)
Input Power <sup>①</sup>	46.7W	83.3W	47.8W	86.5W
Initial Lumens @4000K / 80CRI	8,998 lumens	15,227 lumens	9,274 lumens	15,483 lumens
Initial Lm/W @4000K / 80CRI	193 lm/W	183 lm/W	194 lm/W	179 lm/W
Beam Angle	120°			
CRI	80CRI Standard; 90CRI Optional			
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 <sup>②</sup>	L70: >60,000Hrs / L90: >60,000Hrs			
Color Consistency	Binning per ANSI C78.377-2015 @ 25°C; 3 SDCM Typ.; 6 SDCM Max.			
Overall Size	44" x 1.73" x 0.52" (1120mm x 44mm x 13.2mm)			
PCB Material / Thermal Conductivity	MCPCB 1.0W/mK			
Extruded Material / Finish	Aluminum/surface treatment with Anodic Oxidation			
LED Quantity	180pcs CW + 96pcs WW			
Module Weight	220g / 0.48lb.			
PCB Part Number	PTL098C01M1			
Magnets Quantity / Magnetic Force	3 / 2N (.45lbf) per magnet			
Maximum Screw Installation Torque	25 inch - ounces			
Connector Type	WAGO #744-392 (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)	C			
Warranty	5 years @ Max. Tc from the date of manufacture			

<sup>①</sup>Nominal ratings. Performance based on Tc mod = 25°C. See thermal de-rating chart (pg. 5) for higher temperature operation.

<sup>②</sup>TM-21 Reported Numbers



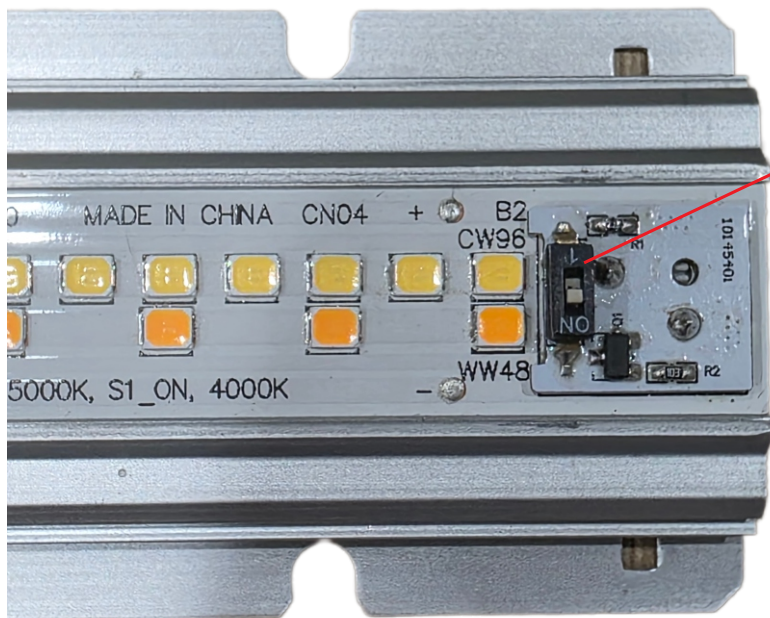
# TMU240095CL84050H



## CCT Selection Indication

1. The VividHorse LinearHO DC Module is a dual-channel LED product that allows for CCT selection via a dip switch on the PCB. Available CCTs include 4000K and 5000K.
2. A pre-set CCT will come from the factory. Check the product label or packaging to see the pre-set level.
3. Change the CCT dip switch to set the desired CCT level.

**NOTE: This is a Field Adjustable Color Temperature (FACT) product that enables the user to make adjustments to the Correlated Color Temperature (CCT) at the time of installation. Field adjustable parameters are not intended to be changed in the normal course of luminaire operation.**



CCT SWITCH

S1_ON	S1_OFF
4000K	5000K



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## Electrical and Optical Specifications

### 4000K CCT

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	Nom. Lum. Flux per foot @4000K/80CRI	Nom. Lum. Flux per string @4000K/80CRI
TMU240095CL84050H (44")	180+96	200 mA	31.2 V	6.2 W	33 V	7 W	1262 lm	202 lm/W	344 lm/ft	84 lm/string
		300 mA	31.4 V	9.4 W	34 V	10 W	1915 lm	203 lm/W	522 lm/ft	128 lm/string
		400 mA	31.6 V	12.6 W	34 V	14 W	2567 lm	203 lm/W	700 lm/ft	171 lm/string
		500 mA	31.8 V	15.9 W	34 V	17 W	3218 lm	202 lm/W	878 lm/ft	215 lm/string
		600 mA	32.0 V	19.2 W	34 V	20 W	3867 lm	202 lm/W	1055 lm/ft	258 lm/string
		700 mA	32.2 V	22.5 W	34 V	24 W	4515 lm	200 lm/W	1231 lm/ft	301 lm/string
		800 mA	32.3 V	25.9 W	35 V	28 W	5160 lm	199 lm/W	1407 lm/ft	344 lm/string
		900 mA	32.5 V	29.3 W	35 V	32 W	5805 lm	198 lm/W	1583 lm/ft	387 lm/string
		1000 mA	32.7 V	32.7 W	35 V	35 W	6447 lm	197 lm/W	1758 lm/ft	430 lm/string
		1100 mA	32.9 V	36.1 W	35 V	39 W	7087 lm	196 lm/W	1933 lm/ft	472 lm/string
		1200 mA	33.0 V	39.6 W	35 V	42 W	7726 lm	195 lm/W	2107 lm/ft	515 lm/string
		1300 mA	33.2 V	43.1 W	36 V	47 W	8363 lm	194 lm/W	2281 lm/ft	558 lm/string
		1400 mA	33.3 V	46.7 W	36 V	50 W	8998 lm	193 lm/W	2454 lm/ft	600 lm/string
		1500 mA	33.5 V	50.2 W	36 V	54 W	9631 lm	192 lm/W	2627 lm/ft	642 lm/string
		1600 mA	33.6 V	53.8 W	36 V	58 W	10261 lm	191 lm/W	2799 lm/ft	684 lm/string
		1700 mA	33.8 V	57.4 W	36 V	61 W	10890 lm	190 lm/W	2970 lm/ft	726 lm/string
		1800 mA	33.9 V	61.1 W	36 V	65 W	11516 lm	189 lm/W	3141 lm/ft	768 lm/string
		1900 mA	34.1 V	64.7 W	36 V	68 W	12141 lm	188 lm/W	3311 lm/ft	809 lm/string
2000 mA	34.2 V	68.4 W	37 V	74 W	12763 lm	187 lm/W	3481 lm/ft	851 lm/string		
2100 mA	34.3 V	72.1 W	37 V	78 W	13382 lm	186 lm/W	3650 lm/ft	892 lm/string		
2200 mA	34.5 V	75.8 W	37 V	81 W	14000 lm	185 lm/W	3818 lm/ft	933 lm/string		
2300 mA	34.6 V	79.6 W	37 V	85 W	14614 lm	184 lm/W	3986 lm/ft	974 lm/string		
2400 mA*	34.7 V	83.3 W	37 V	89 W	15227 lm	183 lm/W	4153 lm/ft	1015 lm/string		

### Luminous Flux De-Rating: CRI Multipliers

CRI 80(R9> 0)	1.00
CRI 90(R9>50)	0.85

#### NOTES:

- 1) Performance based on Tc mod = 25°C. See thermal de-rating chart (pg. 5) 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 configure 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.



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## Electrical and Optical Specifications

### 5000K CCT

LED Module Part Number	Number of LED	Input Current	Nom. Forward Voltage	Nom. Rated Power	Max. Fwd. Voltage	Max. Rated Power	Nom. Lum. Flux @5000K/80 CRI	Nom. Efficacy @5000K/80 CRI	Nom. Lum. Flux per foot @5000K/80CRI	Nom. Lum. Flux per string @5000K/80CRI
TMU240095CL84050H (44")	180+96	200 mA	31.4 V	6.3 W	34 V	7 W	1329 lm	212 lm/W	362 lm/ft	89 lm/string
		300 mA	31.7 V	9.5 W	34 V	10 W	2007 lm	211 lm/W	547 lm/ft	134 lm/string
		400 mA	31.9 V	12.8 W	34 V	14 W	2682 lm	210 lm/W	731 lm/ft	179 lm/string
		500 mA	32.2 V	16.1 W	34 V	17 W	3355 lm	208 lm/W	915 lm/ft	224 lm/string
		600 mA	32.5 V	19.5 W	35 V	21 W	4025 lm	207 lm/W	1098 lm/ft	268 lm/string
		700 mA	32.7 V	22.9 W	35 V	25 W	4692 lm	205 lm/W	1280 lm/ft	313 lm/string
		800 mA	32.9 V	26.3 W	35 V	28 W	5357 lm	203 lm/W	1461 lm/ft	357 lm/string
		900 mA	33.2 V	29.8 W	35 V	32 W	6018 lm	202 lm/W	1641 lm/ft	401 lm/string
		1000 mA	33.4 V	33.4 W	36 V	36 W	6676 lm	200 lm/W	1821 lm/ft	445 lm/string
		1100 mA	33.6 V	36.9 W	36 V	40 W	7331 lm	198 lm/W	1999 lm/ft	489 lm/string
		1200 mA	33.8 V	40.5 W	36 V	43 W	7982 lm	197 lm/W	2177 lm/ft	532 lm/string
		1300 mA	34.0 V	44.2 W	36 V	47 W	8630 lm	195 lm/W	2354 lm/ft	575 lm/string
		1400 mA	34.2 V	47.8 W	37 V	52 W	9274 lm	194 lm/W	2529 lm/ft	618 lm/string
		1500 mA	34.4 V	51.5 W	37 V	56 W	9914 lm	192 lm/W	2704 lm/ft	661 lm/string
		1600 mA	34.5 V	55.3 W	37 V	59 W	10551 lm	191 lm/W	2877 lm/ft	703 lm/string
		1700 mA	34.7 V	59.0 W	37 V	63 W	11183 lm	189 lm/W	3050 lm/ft	746 lm/string
		1800 mA	34.9 V	62.8 W	37 V	67 W	11811 lm	188 lm/W	3221 lm/ft	787 lm/string
		1900 mA	35.1 V	66.7 W	38 V	72 W	12435 lm	187 lm/W	3391 lm/ft	829 lm/string
		2000 mA	35.3 V	70.5 W	38 V	76 W	13054 lm	185 lm/W	3560 lm/ft	870 lm/string
		2100 mA	35.5 V	74.4 W	38 V	80 W	13668 lm	184 lm/W	3728 lm/ft	911 lm/string
2200 mA	35.6 V	78.4 W	38 V	84 W	14278 lm	182 lm/W	3894 lm/ft	952 lm/string		
2300 mA	35.8 V	82.4 W	38 V	87 W	14883 lm	181 lm/W	4059 lm/ft	992 lm/string		
2400 mA*	36.0 V	86.5 W	39 V	94 W	15483 lm	179 lm/W	4223 lm/ft	1032 lm/string		

### Luminous Flux De-Rating: CRI Multipliers

CRI 80(R9> 0)	1.00
CRI 90(R9>50)	0.85

#### NOTES:

- 1) Performance based on Tc mod = 25°C. See thermal de-rating chart (pg. 5) 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.
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- 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.



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## Thermal Specifications

### LinearHO 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	0.995
35°C	0.996	0.990
40°C	0.994	0.985
45°C	0.992	0.979
50°C	0.990	0.974
55°C	0.988	0.968
60°C	0.986	0.962
65°C	0.985	0.956
70°C	0.983	0.950
75°C	0.981	0.944
80°C	0.979	0.938
85°C	0.977	0.931
90°C	0.975	0.925
95°C	0.974	0.918
100°C	0.972	0.911
105°C	0.970	0.904



# TMU240095CL84050H



## Certification Chart

Classification	Model	TMU240095CL8xxH
		YES
		YES
		YES
Energy Efficiency Label (EEI-Label)		C
Suitable for UL Class 2 Lighting System		YES

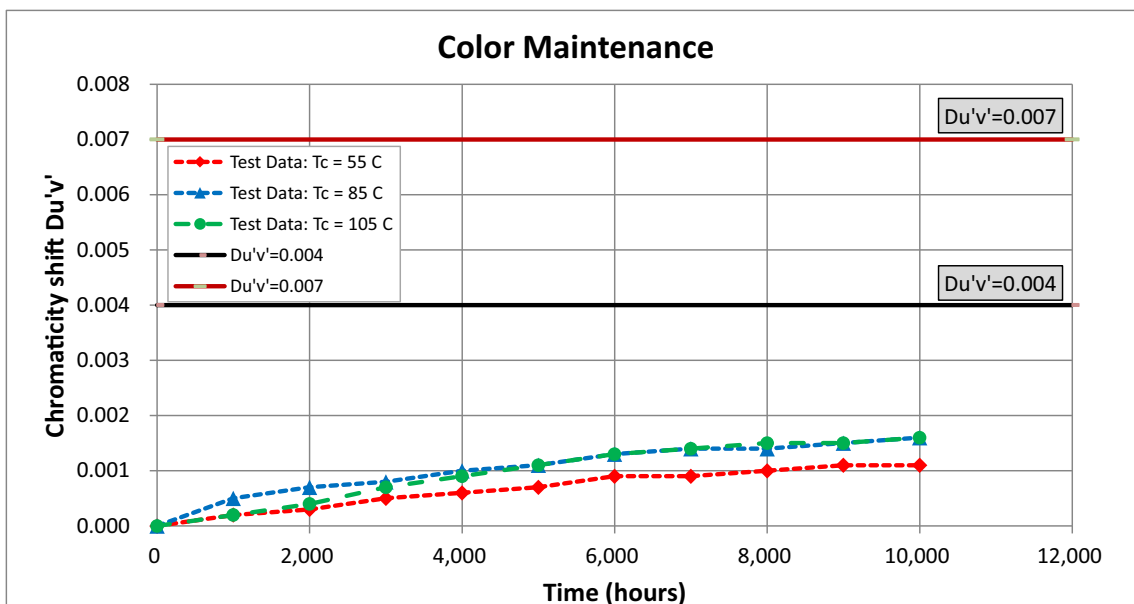
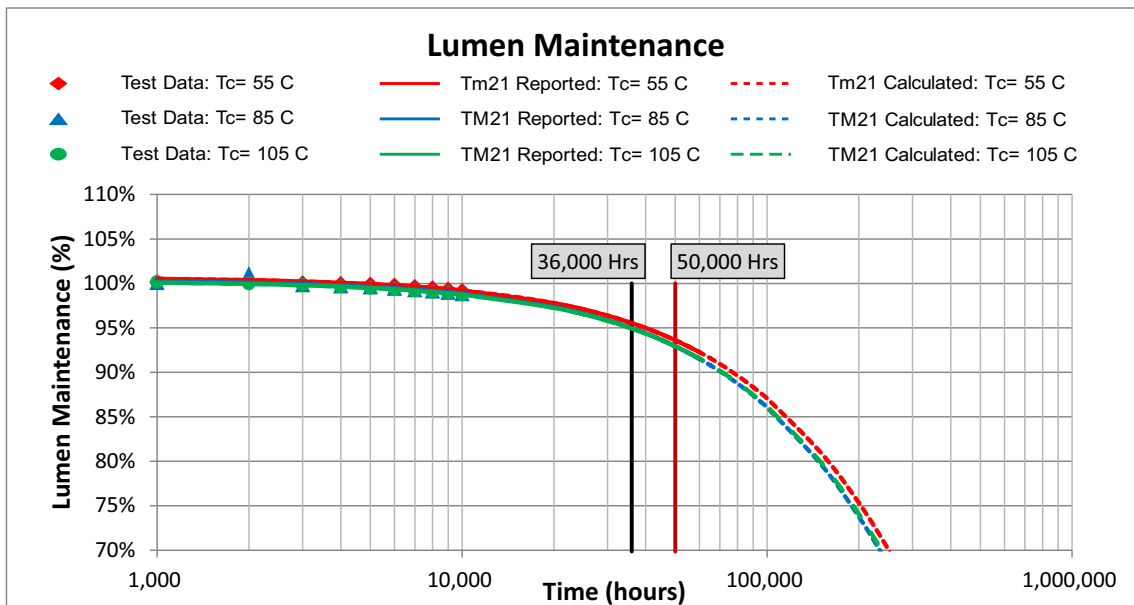
## Energy Star™ TM-21 Calculator Data

Tc Module	Reported L70	Reported L90
55°C	>60,000 Hrs	>60,000 Hrs
85°C	>60,000 Hrs	>60,000 Hrs
105°C	>60,000 Hrs	>60,000 Hrs

Tc Module	Calculated L70	Calculated L90
55°C	250,000 Hrs	77,000 Hrs
85°C	234,000 Hrs	70,000 Hrs
105°C	237,000 Hrs	71,000 Hrs

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



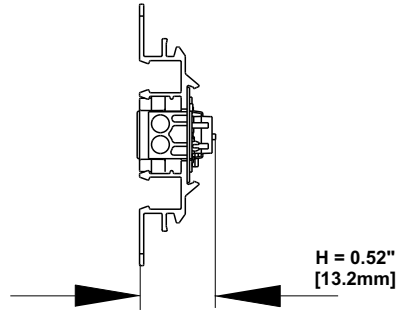


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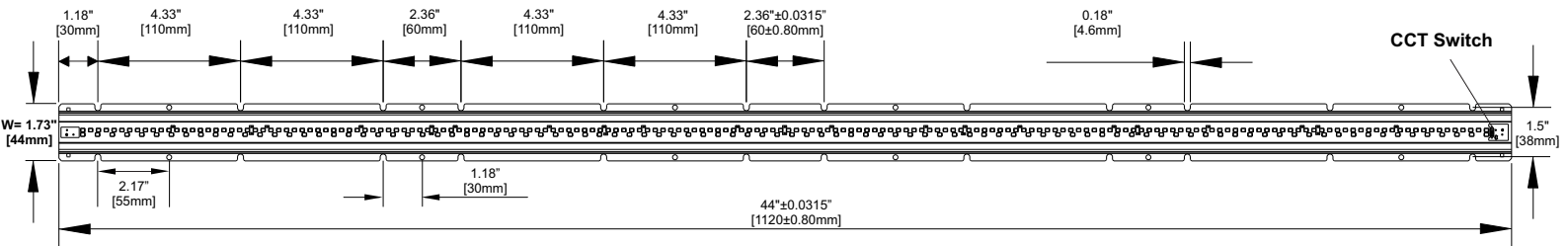
## Mechanical Drawings

**44"**  
[1120mm]

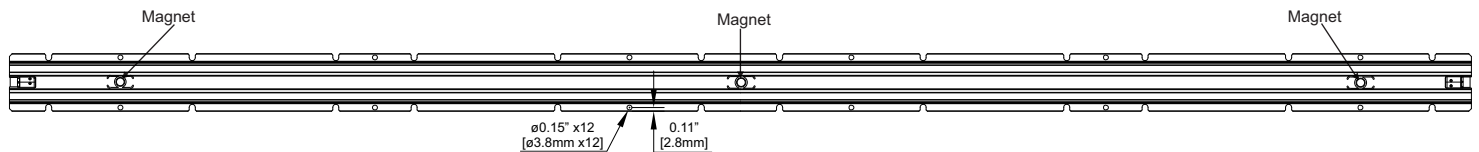


**SIDE VIEW**

Overall Dimensions	
Length	44" [1120mm]
Width	1.73" [44mm]
Height	0.52" [13.2mm]



**TOP VIEW**



**BOTTOM VIEW**

**Unmarked General Tolerance**

- <4" [100mm]: ±0.0138" [±0.35mm]
- 4"~11.8" [100~300mm]: ±0.0197" [±0.5mm]
- >11.8" [300mm]: ±0.0236" [±0.6mm]
- HOLES: ±0.002" [±0.05mm]



# TMU240095CL84050H

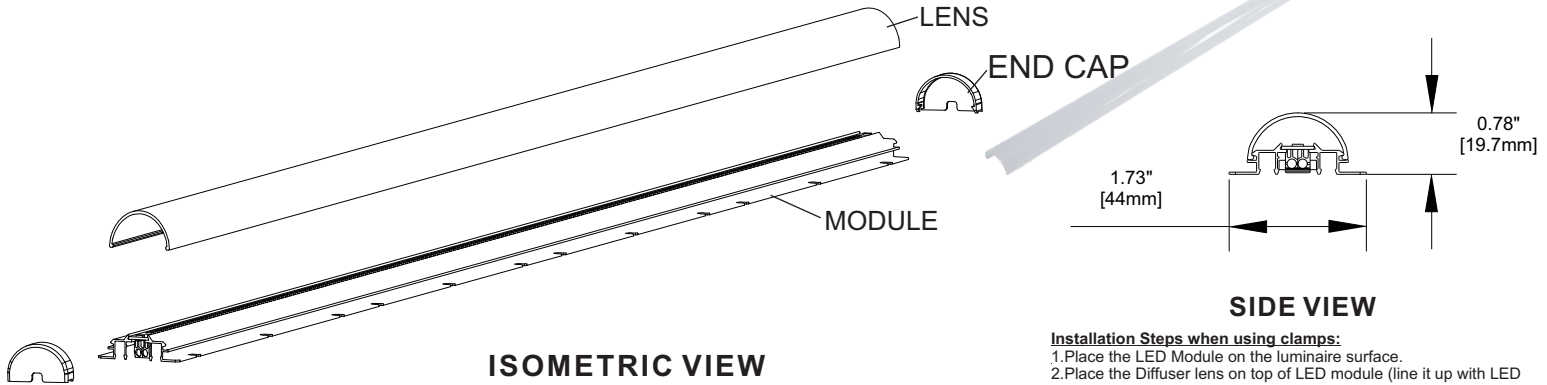


## Accessories

### 44" Diffuser Lens

Fulham Part Number: **TLE-OPT-120-013**

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

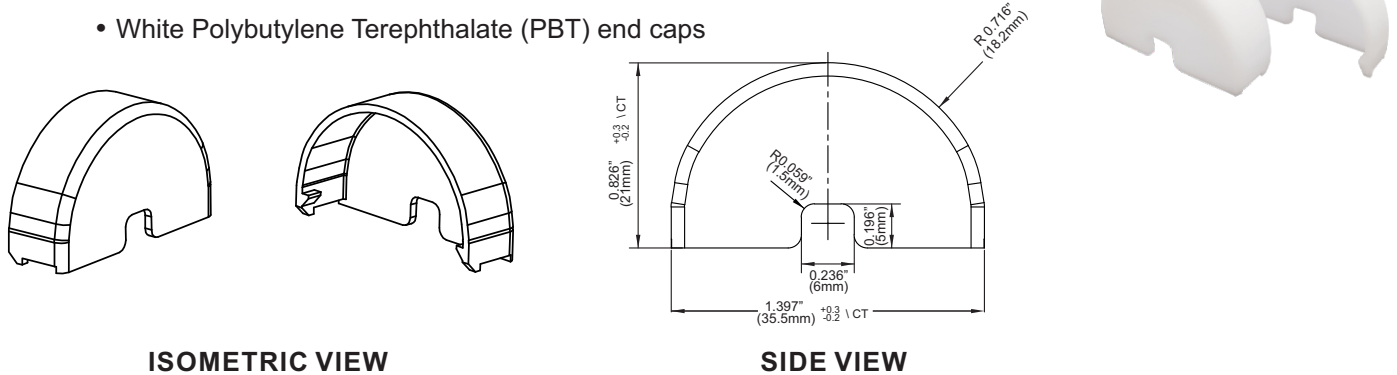


**Installation Steps when using clamps:**  
 1. Place the LED Module on the luminaire surface.  
 2. Place the Diffuser lens on top of LED module (line it up with LED module mounting edges).  
 3. Push down to snap into place.

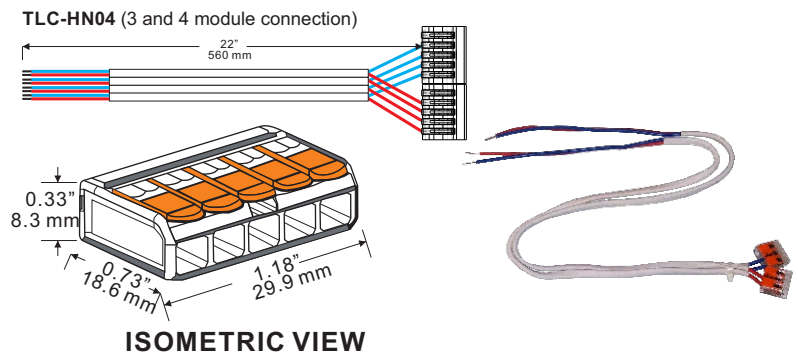
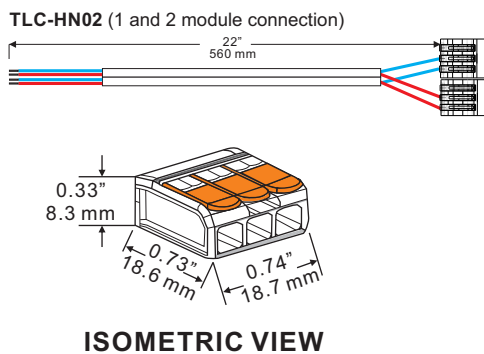
## End Caps

Fulham Part Number: **TLE-OPT-120-020**

- White Polybutylene Terephthalate (PBT) end caps

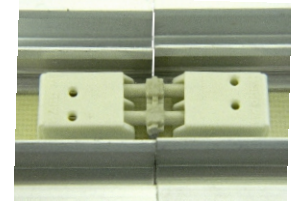


## Harness



## Interconnects

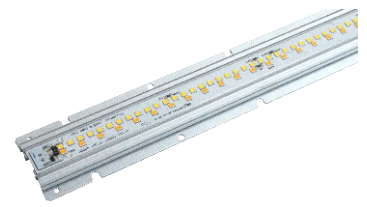
- Interconnect Type: WAGO Double pins to interconnect Modules (#2060-952/028-000)
- Approvals: cURus, UL 1977, and RoHS Compliant



**BOTTOM VIEW**

### 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.

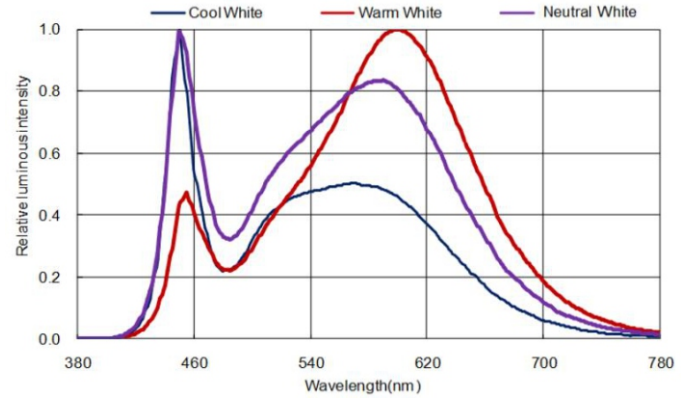
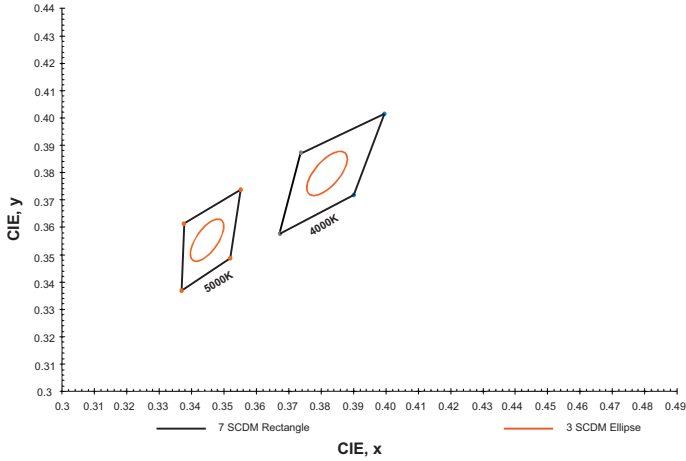


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## Color and Binning

## Optical Spectrum



### NOTES:

- 1) The Color and Binning and Optical Spectrum charts are for reference only. For more detailed info, contact factory.
- 2) Reference Seoul 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.



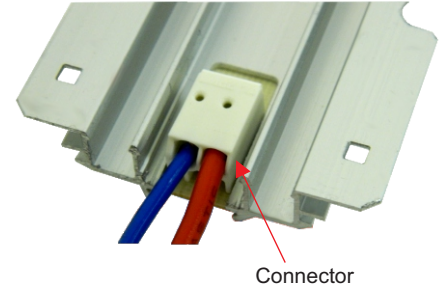
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## Guidelines

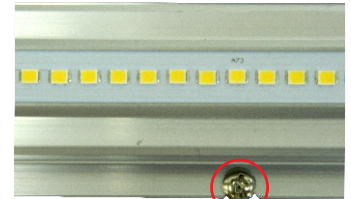
### Termination Notes

- Connector Type: WAGO #744-392 (2 pin push wire connector)
  - AWG: 20...16 solid wire
  - Strip length: 8...9mm / 0.31...0.35in
  - Connector Max amp. rating: 6 Amps.



### Fastening Notes

- If fastening by screw hole, use any screw with diameter less than 0.185 in (4.7mm). Use all available screw holes to ensure good contact between back side of module and mounting surface. Refer to max specified torque for installation. Suggested screw sizes: #6 or M4 Pan Head screw.
- 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>.



### Environmental Rating / Conformal Coating

- The DC 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 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)

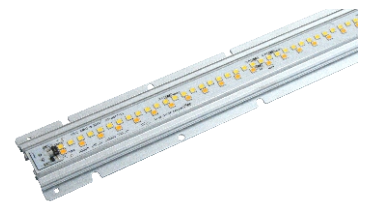
- Fulham LED products should be handled with proper measures to protect against any potential ESD damage.
- When servicing, personnel should be ground and direct contact with LED should be avoided.

### 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 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.



# TMU240095CL84050H



## Part Number Matrix

# T M U 240 095 CL 84050 H

<b>Type</b> M = Module (UL Class 2)	<b>Control Type</b> U = None	<b>Input Current</b> 240 = 2400mA Max.	<b>Max. Power</b> 095 = 95W	<b>Shape</b> CL=Linear	<b>CRI</b> ⊙8 = 80 9 = 90	<b>Color Temperature</b> 4050 = 4000K/5000K selectable	<b>Option</b> H = High Efficacy ⊙K = Conformal Coating (MTO)
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⊙Standard Product offering (All other options are made to order with MOQ and lead time)  
 ⊙See page #10 for Conformal Coating information. Made to order (MTO).

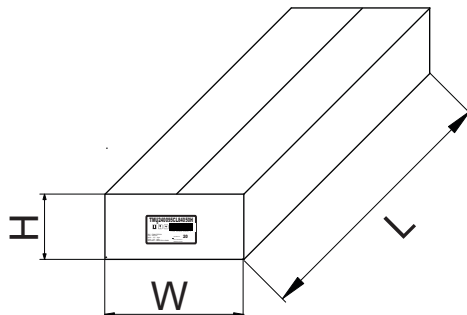
## Product Image: LinearHO Module



TOP VIEW

## Packaging

### Master Carton



OUTER DIMENSION		
L	W	H
45.47"(1155mm)	10.63"(270mm)	4.33"(110mm)
Net Weight	Gross Weight	QUANTITY
10.58 lbs. (4.8kg)	13.34 lbs. (6.05kg)	20pc.