



# TMU125050CL8xxA



## 22" LINEARHO DC MODULE, 1250mA MAX CURRENT

- Extruded Aluminum material for thermal management
- Magnets pre-mounted, for ease of installation
- High lumen, high efficacy
- Accessories: Diffused lens and End-Caps available
- 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 <sup>①</sup>	32VDC	34.1VDC	35.5VDC
Input Current <sup>①</sup>	150mA	700mA	1250mA
Input Power <sup>①</sup>	4.8W	23.9W	44.4W
Initial Lumens @4000K / 80CRI	972 lumens	4,350 lumens	7,130 lumens
Initial Lm/W @4000K / 80CRI	203 lm/W	182 lm/W	161 lm/W
Beam Angle	120°		
CRI	80CRI		
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 <sup>②</sup>	L70: >60,000Hrs / L90: 40,000Hrs		
Color Consistency	Binning per ANSI C78.377-2015 @ 25°C; 3 SDCM		
Overall Size	22" x 1.73" x 0.39" (560mm x 44mm x 10mm)		
PCB Material / Thermal Conductivity	CEM3 (CCP-308) High Thermal Conductive/ 1.5W/mK		
Extruded Material / Finish	Aluminum/surface treatment with Anodic Oxidation		
LED Quantity	96pcs.		
Module Weight	110g / 0.24lb.		
PCB Part Number	PTL004C01C3		
Magnets Quantity / Magnetic Force	2 / 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)	A++		
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. 3) for higher temperature operation.

<sup>②</sup>TM-21 Reported Numbers



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## Electrical and Optical Specifications

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
TMU125050CL8xxA	96	150mA	32.0V	4.8W	34V	5W	972 lm	203 lm/W
		175mA	32.0V	5.6W	34V	6W	1114 lm	202 lm/W
		200mA	32.0V	6.4W	34V	7W	1293 lm	201 lm/W
		250mA	32.4V	8.1W	35V	9W	1612 lm	199 lm/W
		300mA	32.7V	9.8W	35V	11W	1928 lm	197 lm/W
		350mA	32.9V	11.5W	35V	12W	2245 lm	195 lm/W
		400mA	33.0V	13.2W	35V	14W	2553 lm	193 lm/W
		450mA	33.1V	14.9W	35V	16W	2840 lm	191 lm/W
		500mA	33.4V	16.7W	35V	18W	3166 lm	189 lm/W
		525mA	33.6V	17.7W	35V	18W	3322 lm	188 lm/W
		550mA	33.6V	18.5W	35V	20W	3467 lm	188 lm/W
		600mA	33.7V	20.2W	35V	22W	3765 lm	186 lm/W
		650mA	33.8V	22.0W	36V	24W	4057 lm	183 lm/W
		700mA	34.1V	23.9W	36V	26W	4350 lm	182 lm/W
		750mA	34.1V	25.6W	36V	28W	4629 lm	180 lm/W
		800mA	34.3V	27.4W	37V	30W	4905 lm	179 lm/W
		850mA	34.5V	29.3W	37V	32W	5180 lm	177 lm/W
		900mA	34.6V	31.1W	38V	34W	5470 lm	176 lm/W
		950mA	34.7V	33.0W	38V	36W	5708 lm	173 lm/W
		1000mA	34.8V	34.8W	38V	38W	5963 lm	171 lm/W
1050mA	35.0V	36.8W	38V	40W	6210 lm	169 lm/W		
1100mA	35.1V	38.6W	38V	42W	6452 lm	167 lm/W		
1150mA	35.2V	40.5W	38V	44W	6686 lm	165 lm/W		
1200mA	35.4V	42.5W	38V	47W	6912 lm	162 lm/W		
1250mA*	35.5V	44.4W	38V	49W	7130 lm	161 lm/W		

## Luminous Flux De-Rating: CCT and CRI Multipliers

	2700K	3000K	3500K	4000K	5000K	5700K	6500K
<b>CRI 80(R9&gt; 0)</b>	0.924	0.951	0.965	1.000	1.014	1.007	1.000
<b>CRI 90(R9&gt;50)</b>	0.774	0.836	0.829	0.850	0.864	0.864	0.850

### 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 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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## Thermal Specifications

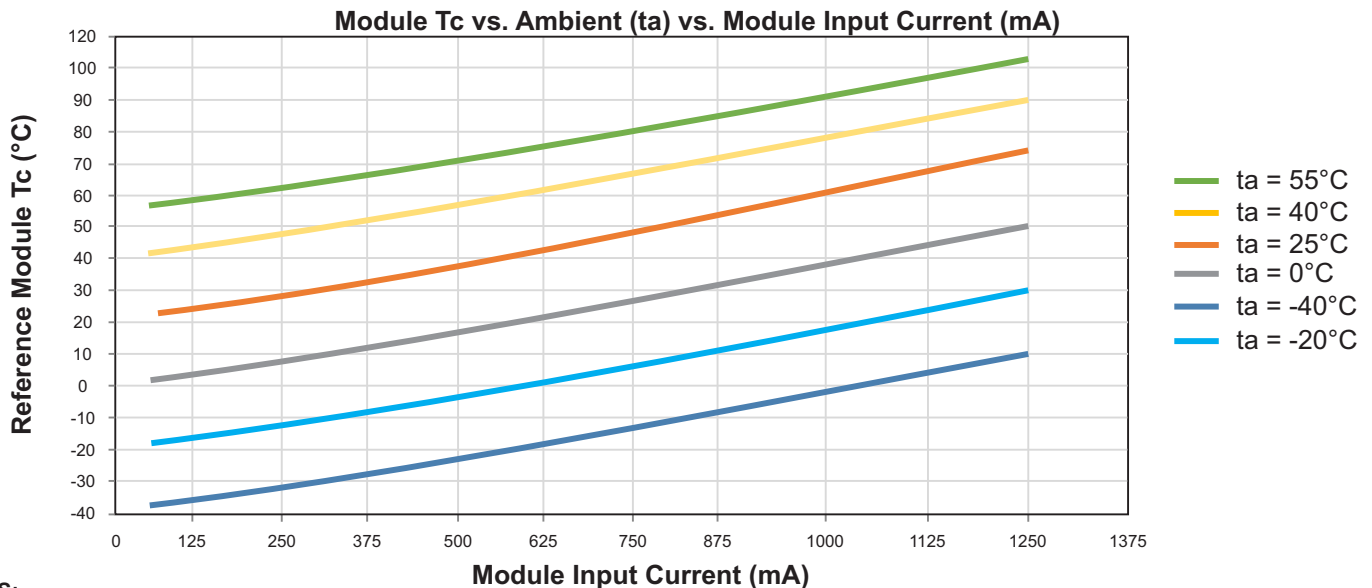
	LinearHO Module
Storage Temperature Range	-40 to +100°C / -40 to +212°F
Operating Ambient Temperature Range (ta)	-40 to 55°C / -40 to 131°F
Maximum Case Temperature (Tc)	L70 = 105°C (221°F) / L90 = 105°C (221°F)



## 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	0.992
35°C	0.997	0.983
40°C	0.995	0.975
45°C	0.993	0.966
50°C	0.992	0.958
55°C	0.990	0.949
60°C	0.988	0.941
65°C	0.986	0.932
70°C	0.985	0.924
75°C	0.983	0.915
80°C	0.981	0.907
85°C	0.980	0.899
90°C	0.978	0.890
95°C	0.976	0.882
100°C	0.975	0.873
105°C	0.973	0.865



### 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.



# TMU125050CL8xxA



## Certification Chart

Classification	Model	TMU125050CL8xxA
		YES
		YES
		YES
Energy Efficiency Label (EEI-Label)		A++
Suitable for UL Class 2 Lighting System		YES

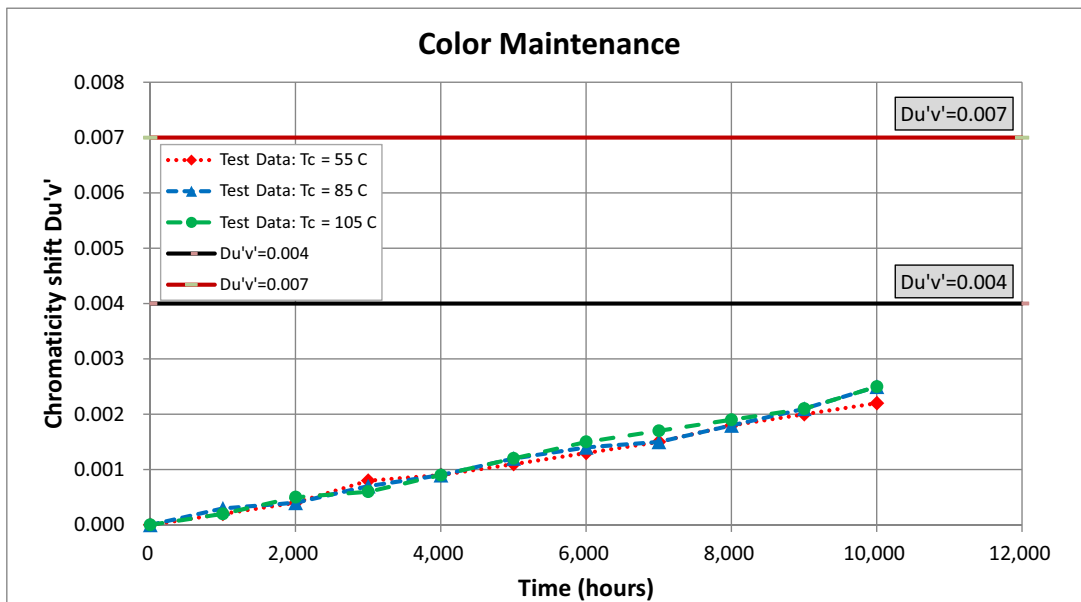
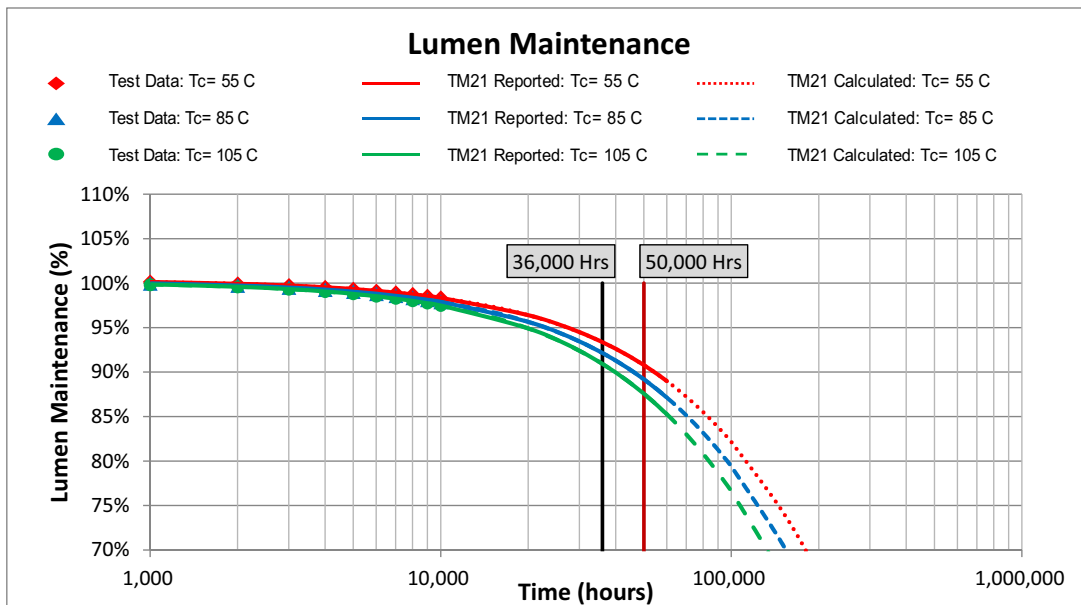
## Energy Star™ TM-21 Calculator Data

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

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



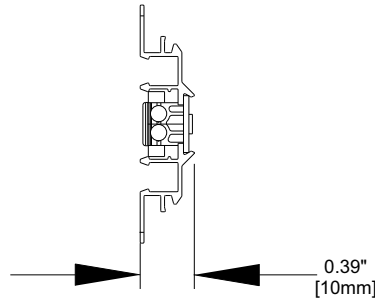


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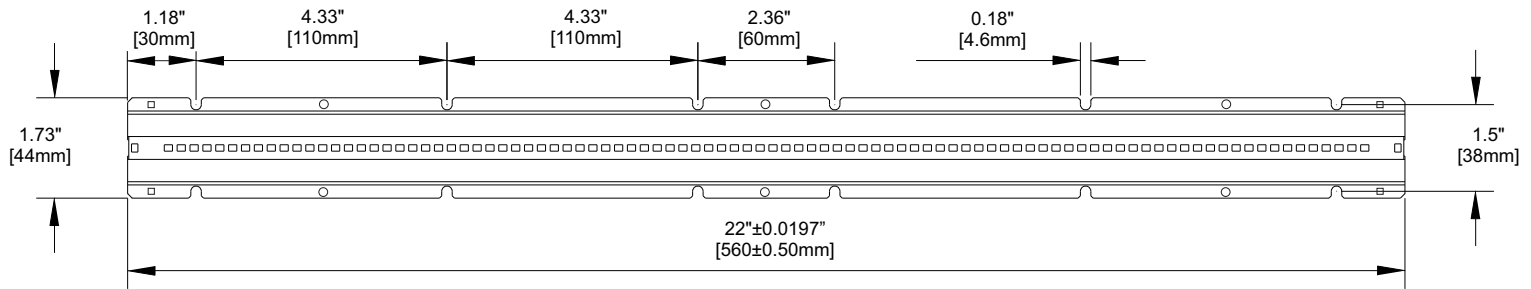
## Mechanical Drawings

**22"**  
[560mm]

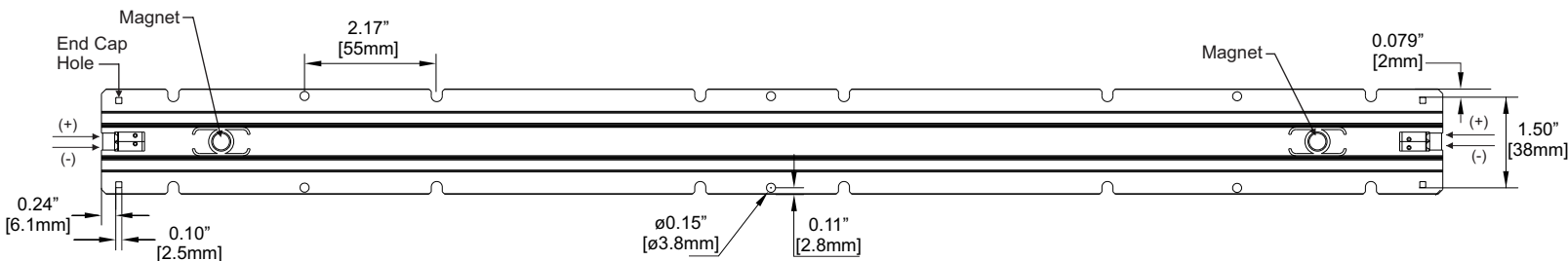


**SIDE VIEW**

Overall Dimensions	
Length	22" [560mm]
Width	1.73" [44mm]
Height	0.39" [10mm]



**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]



# TMU125050CL8xxA

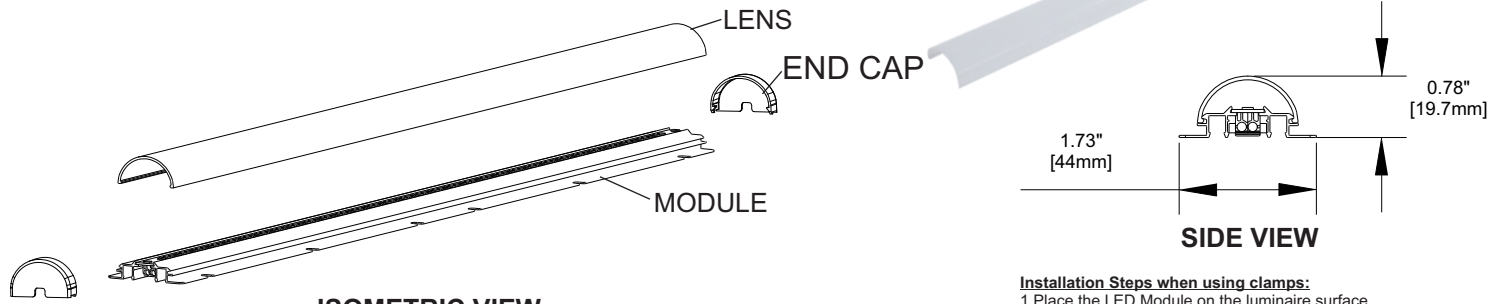


## Accessories

### 22" Diffuser Lens

Fulham Part Number: **22": TLE-OPT-120-004**

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

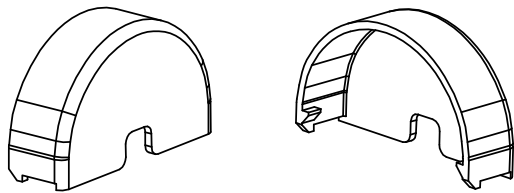


**Installation Steps when using clamps:**  
 1. Place the LED Module on the luminaire surface.  
 2. Place the Diffuser lens on top of LED module (line it up with LED module mounting edges).  
 3. Push down to snap into place.

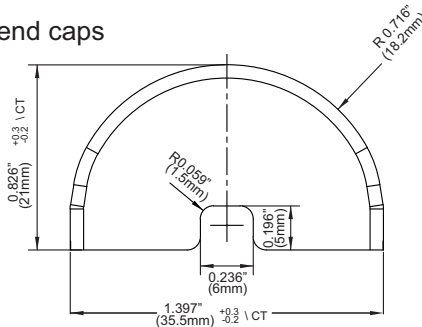
## End Caps

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

- White Polybutylene Terephthalate (PBT) end caps



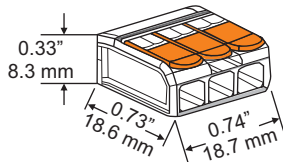
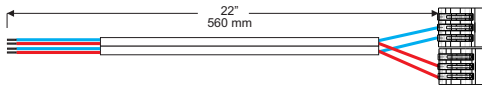
ISOMETRIC VIEW



SIDE VIEW

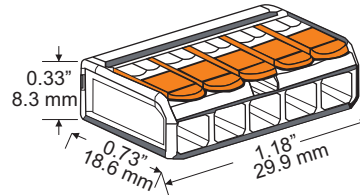
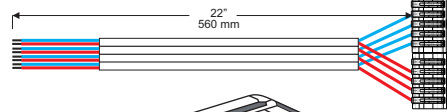
## Harness

TLC-HN02 (1 and 2 module connection)

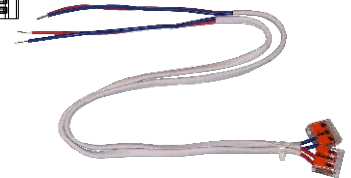


ISOMETRIC VIEW

TLC-HN04 (3 and 4 module connection)

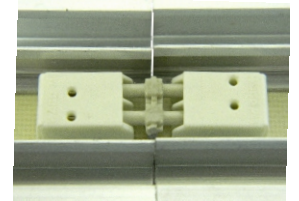


ISOMETRIC VIEW



## 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.

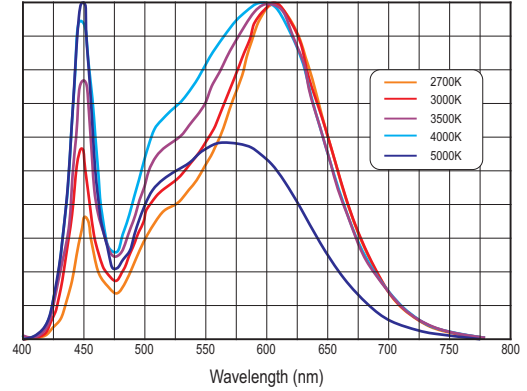
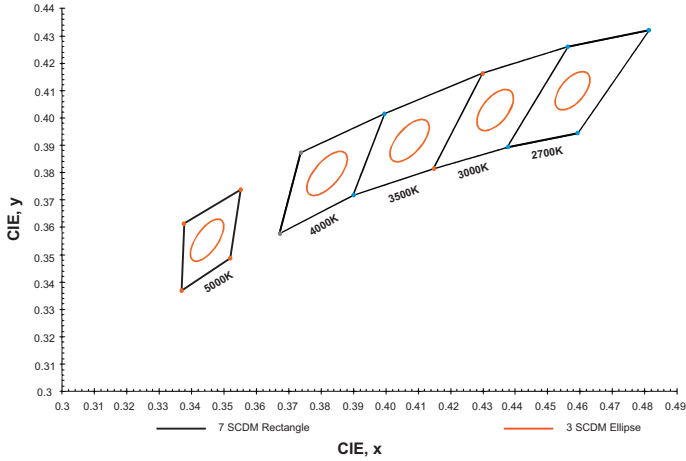


# TMU125050CL8xxA



## Color and Binning

## Optical Spectrum



## Compatible Fulham Drivers

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

- LinearHO System Combination: <https://www.fulham.com/PDFs/SpecSheets/TMU125050CL8xxA-2017-708-System-Combination.pdf>
- 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.





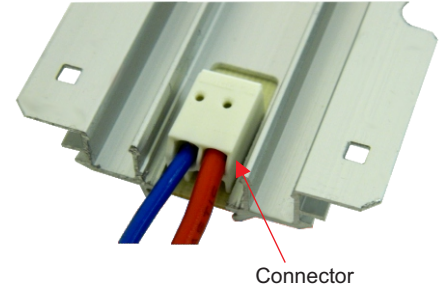
# TMU125050CL8xxA



## Guidelines

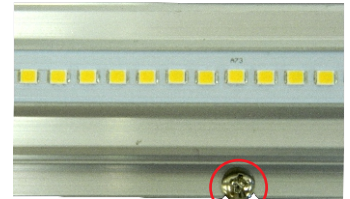
### Termination Notes

- 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.





TMU125050CL8xxA



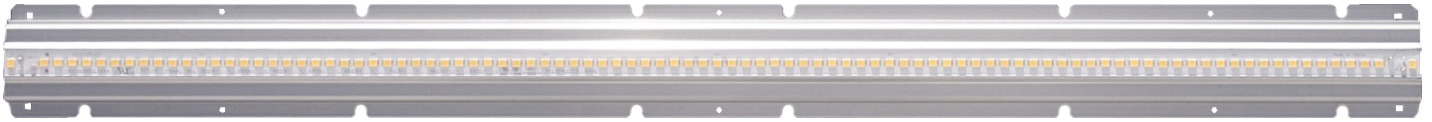
Part Number Matrix

**T M U 125 050 C L 8 X X A**

Type	Control Type	Input Current	Max. Power	Material	Shape	CRI	Color Temperature	Option
M = Module (UL Class 2)	U = None	125 = 1250mA Max.	050 = 50W	C = CEM3 + Conn	L=Linear	③ 8 = 80 9 = 90	27 = 2700K ③ 30 = 3000K ③ 35 = 3500K ③ 40 = 4000K ③ 50 = 5000K 57 = 5700K 65 = 6500K	A = Standard ③ D = Conformal Coating (MTO)

③ Standard Product offering (All other options are made to order with MOQ and lead time)  
 ④ See page #8 for Conformal Coating information. Made to order (MTO).

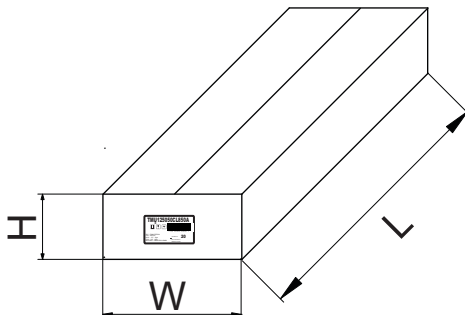
Product Image: LinearHO Module



TOP VIEW

Packaging

Master Carton



OUTER DIMENSION		
L	W	H
23.43"(595mm)	10.63"(270mm)	4.33"(110mm)
Net Weight	Gross Weight	QUANTITY
5.51 lbs. (2.5kg)	7.71 lbs. (3.5kg)	20pc.