



TMU240095CL8xxA



44" LINEARHO DC MODULE, 2400mA 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 ^①	32VDC	34.2VDC	35.6VDC
Input Current ^①	250mA	1400mA	2400mA
Input Power ^①	8.0W	47.9W	85.4W
Initial Lumens @4000K / 80CRI	1,622 lumens	8,640 lumens	13,610 lumens
Initial Lm/W @4000K / 80CRI	203 lm/W	180 lm/W	159 lm/W
Beam Angle	120°		
CRI	80CRI		
Storage Temperature Range	-40°C to 100°C / -40°F to 212°F		
Operating Ambient 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	44.1" x 1.73" x 0.39" (1120mm 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	180pcs.		
Module Weight	220g / 0.49lb.		
PCB Part Number	PTL006C01C3		
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 System 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. 4) for higher temperature operation.

^②TM-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
TMU240095CL8xxA	180	250mA	32.0V	8.0W	33V	8W	1622 lm	203 lm/W
		300mA	32.0V	9.6W	33V	10W	1944 lm	203 lm/W
		350mA	32.2V	11.3W	34V	12W	2230 lm	198 lm/W
		400mA	32.3V	12.9W	34V	13W	2584 lm	200 lm/W
		450mA	32.5V	14.6W	34V	15W	2900 lm	198 lm/W
		500mA	32.4V	16.2W	34V	17W	3220 lm	199 lm/W
		525mA	32.4V	17.0W	34V	18W	3389 lm	199 lm/W
		550mA	32.5V	17.9W	34V	19W	3537 lm	198 lm/W
		600mA	32.7V	19.6W	34V	21W	3851 lm	196 lm/W
		650mA	32.8V	21.3W	34V	22W	4165 lm	196 lm/W
		700mA	33.0V	23.1W	35V	24W	4480 lm	194 lm/W
		750mA	33.1V	24.8W	35V	26W	4787 lm	193 lm/W
		800mA	33.2V	26.6W	35V	28W	5095 lm	192 lm/W
		850mA	33.2V	28.2W	35V	30W	5404 lm	192 lm/W
		900mA	33.4V	30.1W	35V	32W	5705 lm	190 lm/W
		950mA	33.4V	31.7W	35V	34W	6013 lm	190 lm/W
		1000mA	33.5V	33.5W	35V	35W	6315 lm	189 lm/W
		1050mA	33.6V	35.3W	36V	37W	6605 lm	187 lm/W
		1100mA	33.6V	37.0W	36V	39W	6910 lm	187 lm/W
		1150mA	33.7V	38.8W	36V	41W	7206 lm	186 lm/W
1200mA	33.8V	40.6W	36V	43W	7498 lm	185 lm/W		
1250mA	33.9V	42.4W	36V	45W	7789 lm	184 lm/W		
1300mA	34.0V	44.2W	36V	47W	8076 lm	183 lm/W		
1350mA	34.1V	46.0W	36V	49W	8362 lm	182 lm/W		
1400mA	34.2V	47.9W	37V	52W	8640 lm	180 lm/W		
1450mA	34.2V	49.6W	37V	53W	8924 lm	180 lm/W		
1500mA	34.3V	51.4W	37V	55W	9201 lm	179 lm/W		
1550mA	34.4V	53.3W	37V	57W	9475 lm	178 lm/W		
1600mA	34.4V	55.1W	37V	59W	9747 lm	177 lm/W		
1650mA	34.5V	56.9W	37V	61W	10014 lm	176 lm/W		



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Electrical and Optical Specifications (Cont.)

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
TMU240095CL8xxA	180	1680mA	34.6V	58.1W	37V	63W	10170 lm	175 lm/W
		1700mA	34.6V	58.8W	37V	63W	10280 lm	175 lm/W
		1750mA	34.6V	60.6W	37V	66W	10540 lm	174 lm/W
		1800mA	34.8V	62.6W	38V	68W	10800 lm	172 lm/W
		1850mA	34.8V	64.4W	38V	70W	11053 lm	172 lm/W
		1900mA	34.9V	66.3W	38V	72W	11305 lm	171 lm/W
		1950mA	34.9V	68.1W	38V	74W	11554 lm	170 lm/W
		2000mA	35.0V	70.0W	38V	76W	11797 lm	169 lm/W
		2050mA	35.1V	71.9W	38V	78W	12038 lm	167 lm/W
		2100mA	35.2V	73.9W	39V	81W	12275 lm	166 lm/W
		2150mA	35.3V	75.8W	39V	83W	12506 lm	165 lm/W
		2200mA	35.3V	77.7W	39V	85W	12735 lm	164 lm/W
		2250mA	35.4V	79.6W	39V	87W	12960 lm	163 lm/W
		2300mA	35.5V	81.6W	39V	90W	13179 lm	162 lm/W
		2350mA	35.6V	83.6W	39V	92W	13396 lm	160 lm/W
2400mA*	35.6V	85.4W	39V	94W	13610 lm	159 lm/W		

Luminous Flux De-Rating: CCT and CRI Multipliers

	2700K	3000K	3500K	4000K	5000K	5700K	6500K
CRI 80(R9>0)	0.924	0.951	0.965	1.000	1.014	1.007	1.000
CRI 90(R9>50)	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)

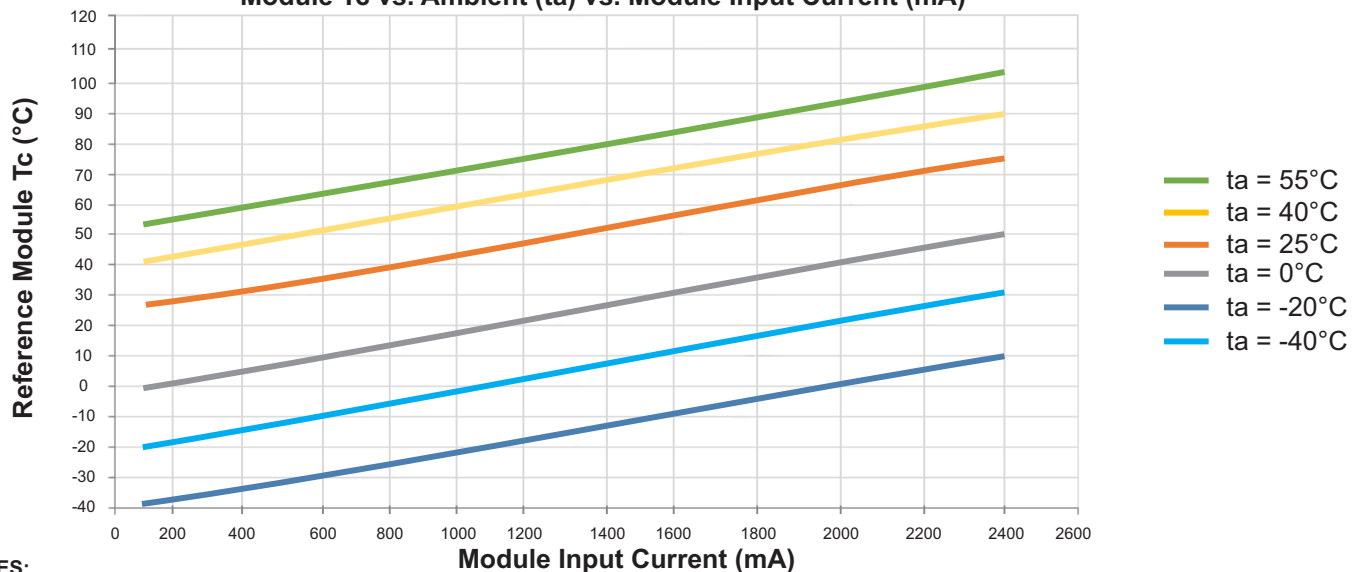


Thermal De-Rating:

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

Module Tc vs. Ambient (ta) vs. Module Input Current (mA)



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

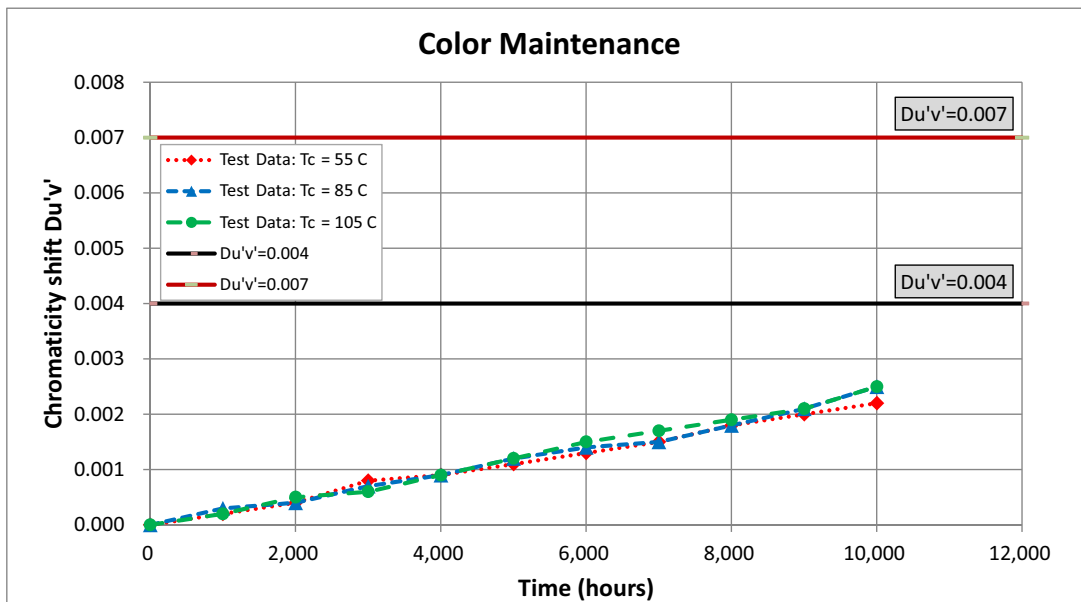
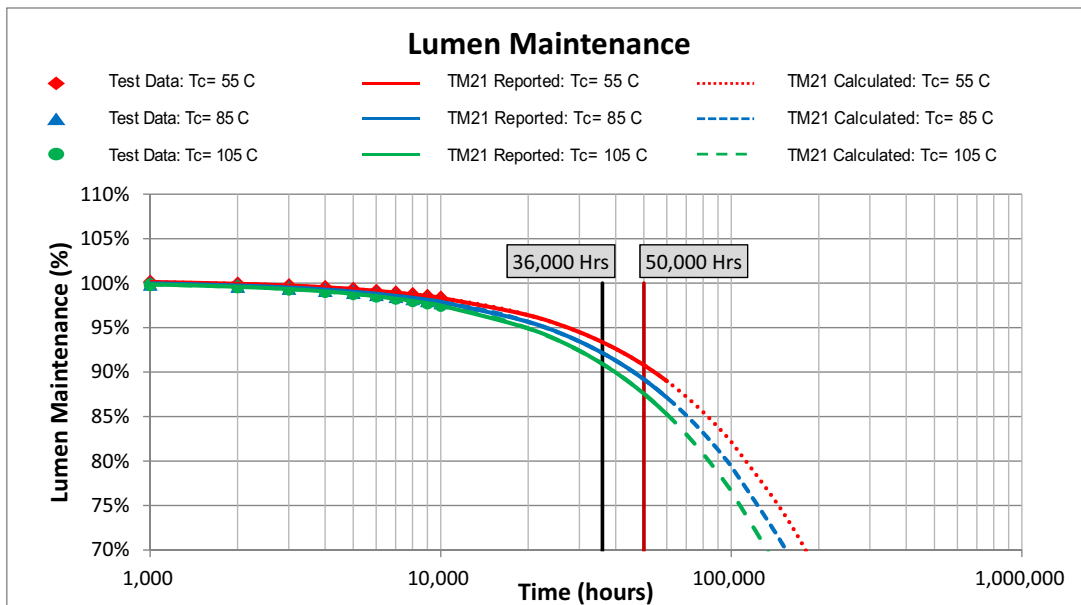
Classification	Model	TMU240095CL8xxA
		YES
		YES
		YES
Energy Efficiency Label (EEI-Label)		A++
Suitable for UL Class 2 Lighting System		YES

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



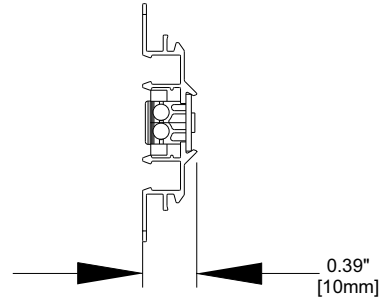


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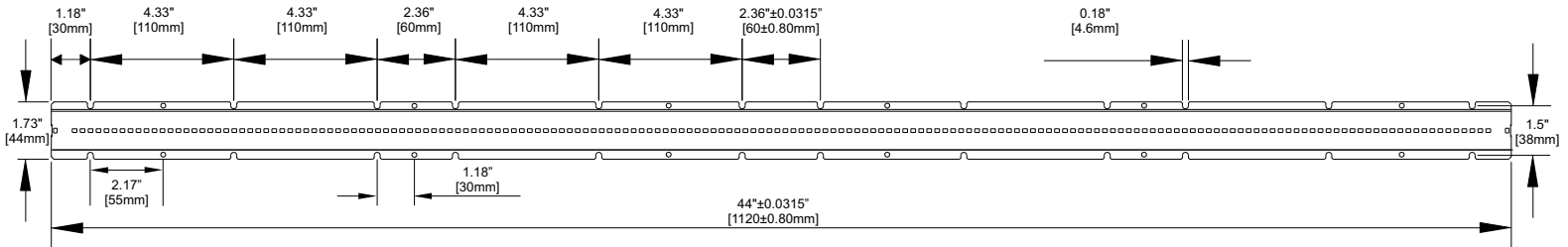
Mechanical Drawings

44"
[1120mm]

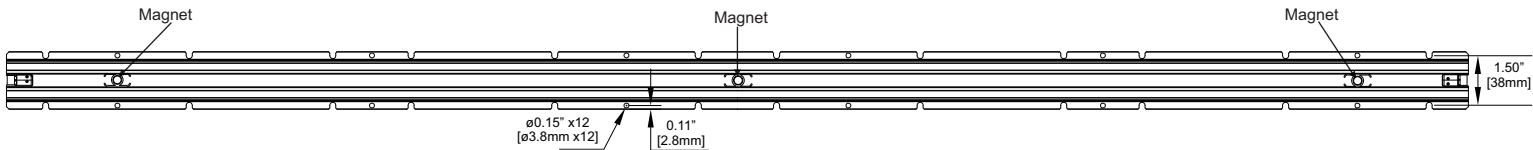


SIDE VIEW

Overall Dimensions	
Length	44" [1120mm]
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]



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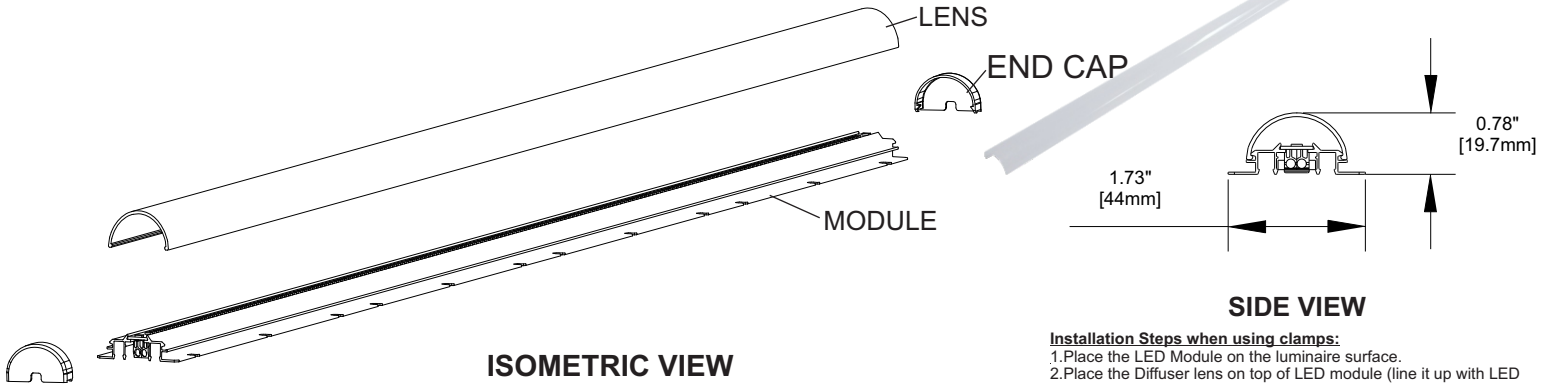


Accessories

44" Diffuser Lens

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

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

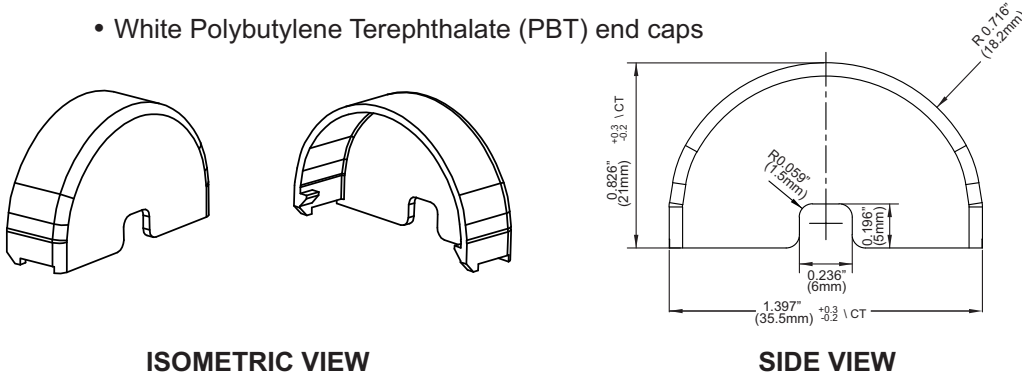


Installation Steps when using clamps:
 1. Place the LED Module on the luminaire surface.
 2. Place the Diffuser lens on top of LED module (line it up with LED module mounting edges).
 3. Push down to snap into place.

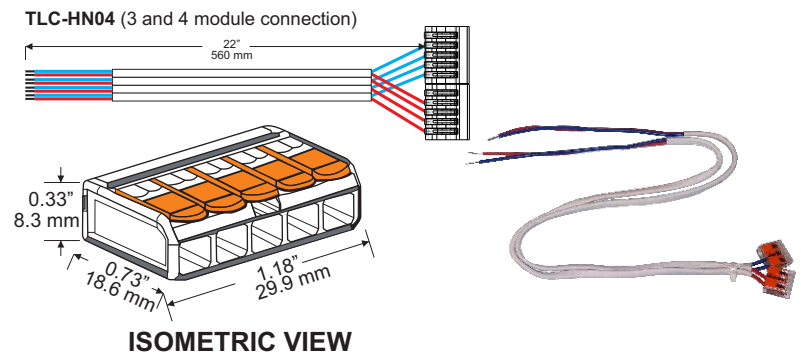
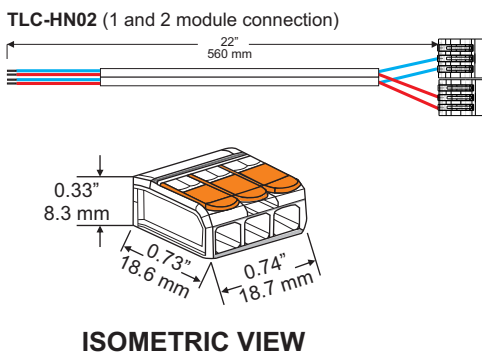
End Caps

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

- White Polybutylene Terephthalate (PBT) end caps

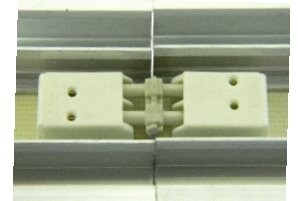


Harness



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 #9). If the current is higher than the rated max, it is recommended to use wiring diagram #3.

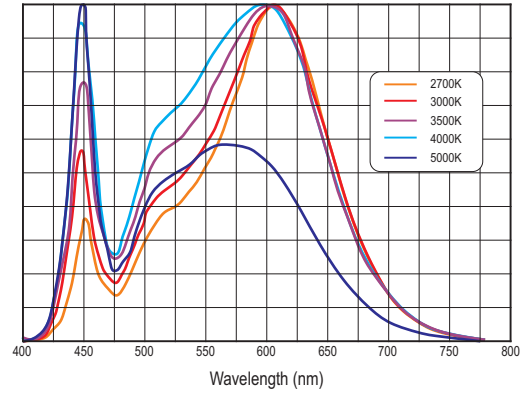
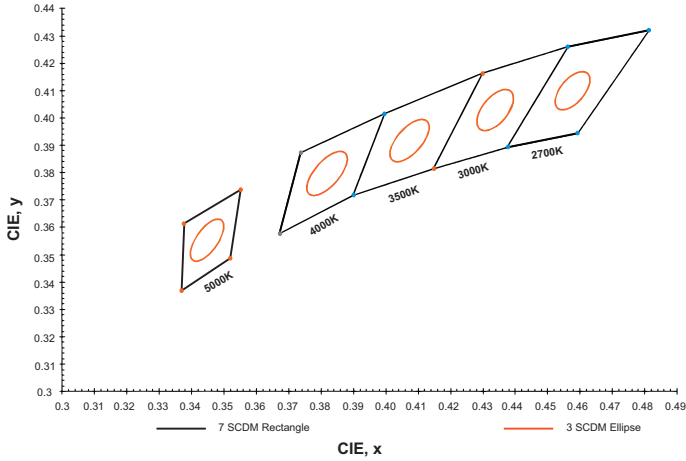


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Color and Binning

Optical Spectrum



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/TMU240095CL8xxA-2017-710-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.



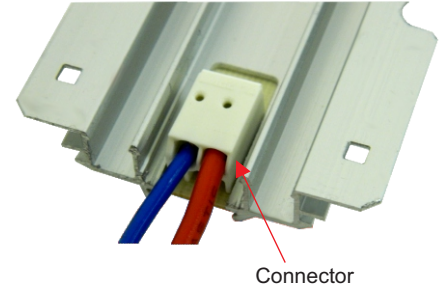
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Guidelines

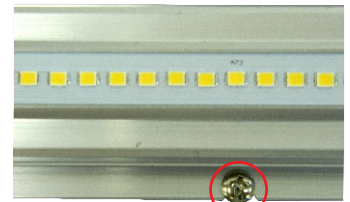
Termination Notes

- 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.



TMU240095CL8xxA



Part Number Matrix

T M U 240 095 C L 8 50 A

Type	Control Type	Input Current	Max. Power	Material	Shape	CRI	Color Temperature	Option
M = Module (UL Class 2)	U = None	240 = 2400mA Max..	095 = 95W	C = CEM3 + Conn	L=Linear	⊙8 = 80 9 = 90	27 = 2700K ⊙30 = 3000K ⊙35 = 3500K ⊙40 = 4000K ⊙50 = 5000K 57 = 5700K 65 = 6500K	A = Standard ⊙D = Conformal Coating (MTO)

- ⊙ Standard Product offering (All other options are made to order with MOQ and lead time)
- ⊙ See page #9 for Conformal Coating information. Made to order (MTO).

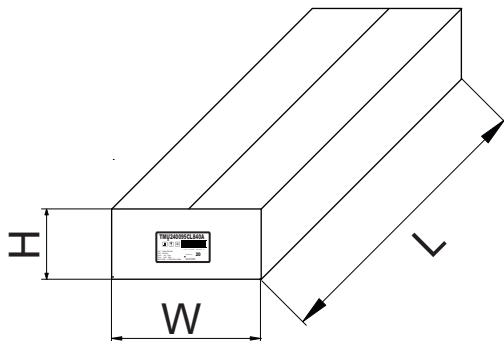
Product Image: LinearHO Module



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.