



VMU048018BR8TWA-11

VMU048018BR9TWA-11

11" LINEAR BAR DC MODULE, 480mA MAX CURRENT, 6-CCT SELECTABLE

- 3-row LED Linear Bar for commercial and industrial applications
- 6-CCT on board selectable to reduce SKUs: 2700K-5000K
- Work with single channel output drivers
- CRI90 standard, CRI80 optional
- Suitable for open or fully enclosed luminaires
- For use in UL Class 2 lighting systems
- Meets UL8750 recognized
- RoHS compliant

General Specifications

	80CRI						90CRI					
	2700K	3000K	3500K	4000K	4500K	5000K	2700K	3000K	3500K	4000K	4500K	5000K
Input Current	210 mA (Nominal)						210 mA (Nominal)					
Nom. Input Voltage	33.4 VDC						33.4 VDC					
Nom. Input Power	7.0 W						7.0 W					
Nom. Lumen Output	1223 lm	1251 lm	1279 lm	1306 lm	1328 lm	1345 lm	1032 lm	1056 lm	1080 lm	1103 lm	1121 lm	1136 lm
Nom. Efficacy	174 lm/W	178 lm/W	182 lm/W	186 lm/W	189 lm/W	192 lm/W	147 lm/W	150 lm/W	154 lm/W	157 lm/W	160 lm/W	162 lm/W
Input Current	480 mA (Max.)						480 mA (Max.)					
Nom. Input Voltage	35.5 VDC						35.5 VDC					
Nom. Input Power	17.0 W						17.0 W					
Nom. Lumen Output	2675 lm	2737 lm	2798 lm	2857 lm	2904 lm	2943 lm	2258 lm	2310 lm	2362 lm	2411 lm	2451 lm	2483 lm
Nom. Efficacy	157 lm/W	161 lm/W	164 lm/W	168 lm/W	170 lm/W	173 lm/W	133 lm/W	136 lm/W	139 lm/W	142 lm/W	144 lm/W	146 lm/W

Beam Angle	120°
Color Rendering Index	CRI >=90 (Standard); CRI>=80 (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)	Safety: 105°C(221°F) L70(>60Khrs): 105°C(221°F) L90(45Khrs): 105°C(221°F)
Estimated Lumen Maintenance ^②	L70= >60,000 hours @ Tc max 105°C L90= 45,000 hours @ Tc max 105°C
Color Consistency	Binning per ANSI C78.377-2015 @ 25°C; Typ. 5 SDCM
Overall Size	11" L x 1.5" W x 0.24" H (279.4mm x 38.1mm x 6.1mm H)
PCB Material	FR4 1.6mm
LED Quantity	36pcs. 2700K + 36pcs. 5000K
Module Weight	0.093lbs. (42g)
Maximum Screw Installation Torque	25 inch - ounces
Connector Type / Quantity	4pcs single pin SMD connector - BJB, Wago or equivalent
Packaging: Master Carton	80pcs
Safety/Compliance	cULus (File # E351548) Suitable for UL Class 2 Lighting Systems RoHS Compliant Dry and Damp Location
Warranty	5 years @ Max. Tc from the date of manufacture

Tolerance for flux data is ±7%



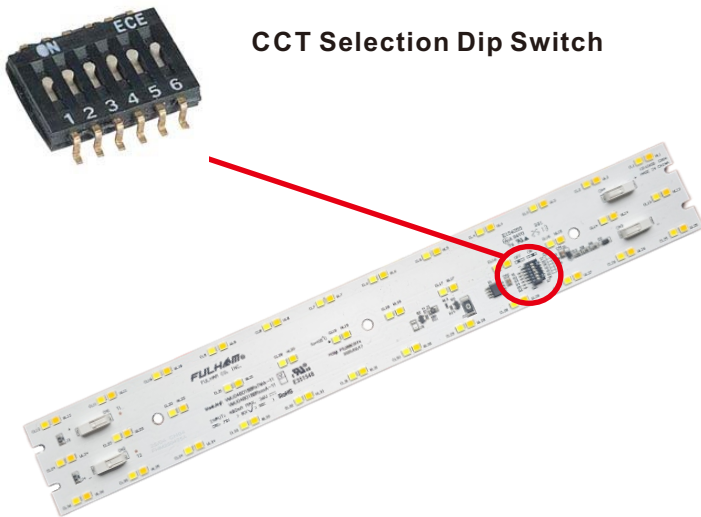
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CCT Selection Indication

1. The VividHorse DC Module is a dual-channel LED product, that allows for CCT selection via the dip switch on the PCB. Available CCTs include 2700K, 3000K, 3500K, 4000K, 4500K and 5000K.
2. A pre-set CCT will come from the factory. Check the product label or packaging to see the pre-set CCT level.
3. Change the dip switch position to “ON” (1~6) to set the desired CCT level.

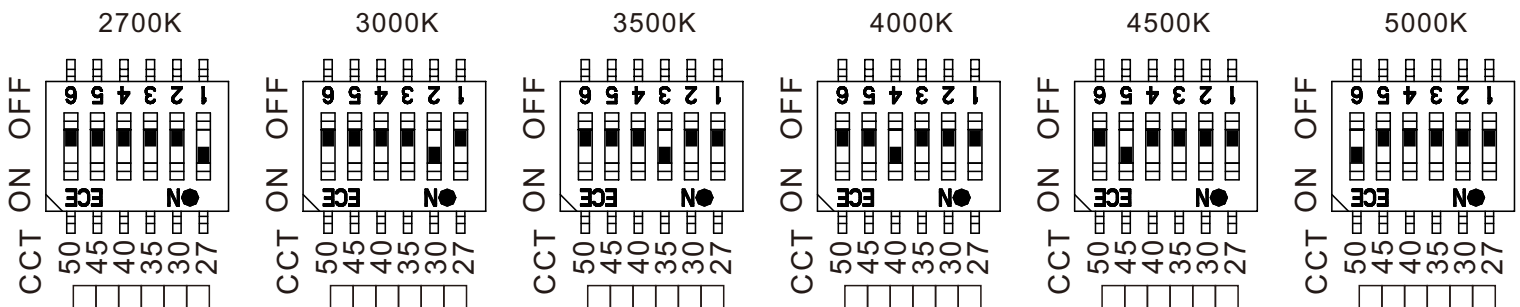
NOTE: ONLY keep one dip switch in the “ON” position, not doing so may result in an undesired CCT.



CCT Selection Dip Switch

CCT Indication Table

	1	2	3	4	5	6
2700K	ON	OFF	OFF	OFF	OFF	OFF
3000K	OFF	ON	OFF	OFF	OFF	OFF
3500K	OFF	OFF	ON	OFF	OFF	OFF
4000K	OFF	OFF	OFF	ON	OFF	OFF
4500K	OFF	OFF	OFF	OFF	ON	OFF
5000K	OFF	OFF	OFF	OFF	OFF	ON





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Electrical and Optical Specifications

2700K

LED Module Part Number	Number of LED	Input Current	Nom. Forward Voltage	Nom. Rated Power	Max. Fwd. Voltage	Max. Rated Power	Nom. Lum. Flux @2700K/80 CRI	Nom. Efficacy @2700K/80 CRI
VMU048018BR8TWA-11 (11")	36	60 mA	31.8 VDC	1.9 W	35 VDC	2 W	351 lm	184 lm/W
		90 mA	32.2 VDC	2.9 W	35 VDC	3 W	530 lm	183 lm/W
		120 mA	32.5 VDC	3.9 W	36 VDC	4 W	706 lm	181 lm/W
		150 mA	32.8 VDC	4.9 W	36 VDC	5 W	881 lm	179 lm/W
		180 mA	33.1 VDC	6.0 W	36 VDC	6 W	1053 lm	177 lm/W
		210 mA	33.4 VDC	7.0 W	37 VDC	8 W	1223 lm	174 lm/W
		240 mA	33.7 VDC	8.1 W	37 VDC	9 W	1391 lm	172 lm/W
		270 mA	33.9 VDC	9.2 W	37 VDC	10 W	1558 lm	170 lm/W
		300 mA	34.2 VDC	10.3 W	38 VDC	11 W	1722 lm	168 lm/W
		330 mA	34.4 VDC	11.4 W	38 VDC	13 W	1885 lm	166 lm/W
		360 mA	34.6 VDC	12.5 W	38 VDC	14 W	2046 lm	164 lm/W
		390 mA	34.9 VDC	13.6 W	38 VDC	15 W	2206 lm	162 lm/W
		420 mA	35.1 VDC	14.7 W	39 VDC	16 W	2364 lm	160 lm/W
		450 mA	35.3 VDC	15.9 W	39 VDC	18 W	2520 lm	159 lm/W
		480 mA*	35.5 VDC	17.0 W	39 VDC	19 W	2675 lm	157 lm/W

3000K

LED Module Part Number	Number of LED	Input Current	Nom. Forward Voltage	Nom. Rated Power	Max. Fwd. Voltage	Max. Rated Power	Nom. Lum. Flux @3000K/80 CRI	Nom. Efficacy @3000K/80 CRI
VMU048018BR8TWA-11 (11")	36	60 mA	31.8 VDC	1.9 W	35 VDC	2 W	359 lm	188 lm/W
		90 mA	32.2 VDC	2.9 W	35 VDC	3 W	542 lm	187 lm/W
		120 mA	32.5 VDC	3.9 W	36 VDC	4 W	723 lm	185 lm/W
		150 mA	32.8 VDC	4.9 W	36 VDC	5 W	901 lm	183 lm/W
		180 mA	33.1 VDC	6.0 W	36 VDC	6 W	1077 lm	181 lm/W
		210 mA	33.4 VDC	7.0 W	37 VDC	8 W	1251 lm	178 lm/W
		240 mA	33.7 VDC	8.1 W	37 VDC	9 W	1423 lm	176 lm/W
		270 mA	33.9 VDC	9.2 W	37 VDC	10 W	1594 lm	174 lm/W
		300 mA	34.2 VDC	10.3 W	38 VDC	11 W	1762 lm	172 lm/W
		330 mA	34.4 VDC	11.4 W	38 VDC	13 W	1928 lm	170 lm/W
		360 mA	34.6 VDC	12.5 W	38 VDC	14 W	2093 lm	168 lm/W
		390 mA	34.9 VDC	13.6 W	38 VDC	15 W	2256 lm	166 lm/W
		420 mA	35.1 VDC	14.7 W	39 VDC	16 W	2418 lm	164 lm/W
		450 mA	35.3 VDC	15.9 W	39 VDC	18 W	2578 lm	162 lm/W
		480 mA*	35.5 VDC	17.0 W	39 VDC	19 W	2737 lm	161 lm/W



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Electrical and Optical Specifications

3500K

LED Module Part Number	Number of LED	Input Current	Nom. Forward Voltage	Nom. Rated Power	Max. Fwd. Voltage	Max. Rated Power	Nom. Lum. Flux @3500K/80 CRI	Nom. Efficacy @3500K/80 CRI
VMU048018BR8TWA-11 (11")	36	60 mA	31.8 VDC	1.9 W	35 VDC	2 W	367 lm	193 lm/W
		90 mA	32.2 VDC	2.9 W	35 VDC	3 W	554 lm	192 lm/W
		120 mA	32.5 VDC	3.9 W	36 VDC	4 W	739 lm	189 lm/W
		150 mA	32.8 VDC	4.9 W	36 VDC	5 W	921 lm	187 lm/W
		180 mA	33.1 VDC	6.0 W	36 VDC	6 W	1101 lm	185 lm/W
		210 mA	33.4 VDC	7.0 W	37 VDC	8 W	1279 lm	182 lm/W
		240 mA	33.7 VDC	8.1 W	37 VDC	9 W	1455 lm	180 lm/W
		270 mA	33.9 VDC	9.2 W	37 VDC	10 W	1629 lm	178 lm/W
		300 mA	34.2 VDC	10.3 W	38 VDC	11 W	1801 lm	176 lm/W
		330 mA	34.4 VDC	11.4 W	38 VDC	13 W	1972 lm	174 lm/W
		360 mA	34.6 VDC	12.5 W	38 VDC	14 W	2140 lm	172 lm/W
		390 mA	34.9 VDC	13.6 W	38 VDC	15 W	2307 lm	170 lm/W
		420 mA	35.1 VDC	14.7 W	39 VDC	16 W	2472 lm	168 lm/W
		450 mA	35.3 VDC	15.9 W	39 VDC	18 W	2636 lm	166 lm/W
		480 mA*	35.5 VDC	17.0 W	39 VDC	19 W	2798 lm	164 lm/W

4000K

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
VMU048018BR8TWA-11 (11")	36	60 mA	31.8 VDC	1.9 W	35 VDC	2 W	375 lm	197 lm/W
		90 mA	32.2 VDC	2.9 W	35 VDC	3 W	566 lm	196 lm/W
		120 mA	32.5 VDC	3.9 W	36 VDC	4 W	754 lm	193 lm/W
		150 mA	32.8 VDC	4.9 W	36 VDC	5 W	941 lm	191 lm/W
		180 mA	33.1 VDC	6.0 W	36 VDC	6 W	1125 lm	189 lm/W
		210 mA	33.4 VDC	7.0 W	37 VDC	8 W	1306 lm	186 lm/W
		240 mA	33.7 VDC	8.1 W	37 VDC	9 W	1486 lm	184 lm/W
		270 mA	33.9 VDC	9.2 W	37 VDC	10 W	1664 lm	182 lm/W
		300 mA	34.2 VDC	10.3 W	38 VDC	11 W	1839 lm	179 lm/W
		330 mA	34.4 VDC	11.4 W	38 VDC	13 W	2013 lm	177 lm/W
		360 mA	34.6 VDC	12.5 W	38 VDC	14 W	2185 lm	175 lm/W
		390 mA	34.9 VDC	13.6 W	38 VDC	15 W	2356 lm	173 lm/W
		420 mA	35.1 VDC	14.7 W	39 VDC	16 W	2524 lm	171 lm/W
		450 mA	35.3 VDC	15.9 W	39 VDC	18 W	2691 lm	170 lm/W
		480 mA*	35.5 VDC	17.0 W	39 VDC	19 W	2857 lm	168 lm/W



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Electrical and Optical Specifications

4500K

LED Module Part Number	Number of LED	Input Current	Nom. Forward Voltage	Nom. Rated Power	Max. Fwd. Voltage	Max. Rated Power	Nom. Lum. Flux @4500K/80 CRI	Nom. Efficacy @4500K/80 CRI
VMU048018BR8TWA-11 (11")	36	60 mA	31.8 VDC	1.9 W	35 VDC	2 W	381 lm	200 lm/W
		90 mA	32.2 VDC	2.9 W	35 VDC	3 W	575 lm	199 lm/W
		120 mA	32.5 VDC	3.9 W	36 VDC	4 W	767 lm	197 lm/W
		150 mA	32.8 VDC	4.9 W	36 VDC	5 W	956 lm	194 lm/W
		180 mA	33.1 VDC	6.0 W	36 VDC	6 W	1143 lm	192 lm/W
		210 mA	33.4 VDC	7.0 W	37 VDC	8 W	1328 lm	189 lm/W
		240 mA	33.7 VDC	8.1 W	37 VDC	9 W	1510 lm	187 lm/W
		270 mA	33.9 VDC	9.2 W	37 VDC	10 W	1691 lm	185 lm/W
		300 mA	34.2 VDC	10.3 W	38 VDC	11 W	1870 lm	182 lm/W
		330 mA	34.4 VDC	11.4 W	38 VDC	13 W	2046 lm	180 lm/W
		360 mA	34.6 VDC	12.5 W	38 VDC	14 W	2221 lm	178 lm/W
		390 mA	34.9 VDC	13.6 W	38 VDC	15 W	2394 lm	176 lm/W
		420 mA	35.1 VDC	14.7 W	39 VDC	16 W	2566 lm	174 lm/W
		450 mA	35.3 VDC	15.9 W	39 VDC	18 W	2735 lm	172 lm/W
		480 mA*	35.5 VDC	17.0 W	39 VDC	19 W	2904 lm	170 lm/W

5000K

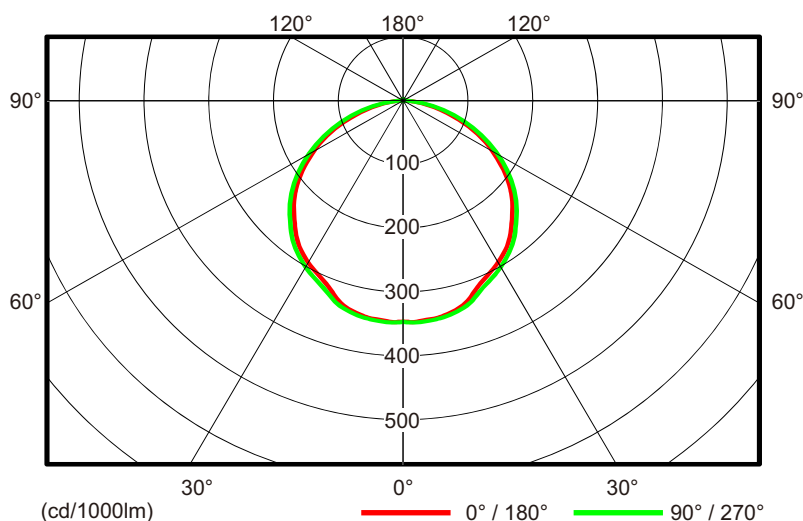
LED Module Part Number	Number of LED	Input Current	Nom. Forward Voltage	Nom. Rated Power	Max. Fwd. Voltage	Max. Rated Power	Nom. Lum. Flux @5000K/80 CRI	Nom. Efficacy @5000K/80 CRI
VMU048018BR8TWA-11 (11")	36	60 mA	31.8 VDC	1.9 W	35 VDC	2 W	386 lm	203 lm/W
		90 mA	32.2 VDC	2.9 W	35 VDC	3 W	583 lm	201 lm/W
		120 mA	32.5 VDC	3.9 W	36 VDC	4 W	777 lm	199 lm/W
		150 mA	32.8 VDC	4.9 W	36 VDC	5 W	969 lm	197 lm/W
		180 mA	33.1 VDC	6.0 W	36 VDC	6 W	1158 lm	194 lm/W
		210 mA	33.4 VDC	7.0 W	37 VDC	8 W	1345 lm	192 lm/W
		240 mA	33.7 VDC	8.1 W	37 VDC	9 W	1531 lm	189 lm/W
		270 mA	33.9 VDC	9.2 W	37 VDC	10 W	1713 lm	187 lm/W
		300 mA	34.2 VDC	10.3 W	38 VDC	11 W	1894 lm	185 lm/W
		330 mA	34.4 VDC	11.4 W	38 VDC	13 W	2074 lm	183 lm/W
		360 mA	34.6 VDC	12.5 W	38 VDC	14 W	2251 lm	181 lm/W
		390 mA	34.9 VDC	13.6 W	38 VDC	15 W	2426 lm	178 lm/W
		420 mA	35.1 VDC	14.7 W	39 VDC	16 W	2600 lm	177 lm/W
		450 mA	35.3 VDC	15.9 W	39 VDC	18 W	2772 lm	175 lm/W
		480 mA*	35.5 VDC	17.0 W	39 VDC	19 W	2943 lm	173 lm/W

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Light Distribution

Zone	Zone Flux	Zone Flux%	Sum Zone Flux	Sum Zone Flux%
0 ~ 10	76.4	3.2%	76.4	3.2%
10 ~ 20	219.7	9.1%	296.1	12.3%
20 ~ 30	337.1	14.0%	633.3	26.3%
30 ~ 40	413.1	17.1%	1046.4	43.4%
40 ~ 50	436.5	18.1%	1482.9	61.5%
50 ~ 60	401.3	16.6%	1884.2	78.1%
60 ~ 70	307.9	12.8%	2192.1	90.9%
70 ~ 80	170.6	7.1%	2362.6	98.0%
80 ~ 90	39.0	1.6%	2401.6	99.6%
90 ~ 180	9.6	0.4%	2411.2	100.0%



Luminous Flux De-Rating: CRI Multipliers

CRI 80(R9> 0)	1.000
CRI 90(R9>50)	0.844

NOTES:

- Performance data (pg. 3~5) is based on Tc mod = 25°C. See thermal de-rating chart (pg. 7) for higher temperature operation.
- Zone Flux and light distribution data (pg. 6) is based on nominal input current 210mA, 4000K sample, thermal stable.
- Tolerance for flux data is ±7%
- 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.
- Modules need to be operated at a current less than the max. current, below the Tc rating.



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Thermal Specifications

DC Module

Storage Temperature Range	-40 to 100°C / -40 to 212°F
Operating Ambient Temperature Range (ta)	-40 to 55°C / -40 to 140°F
Maximum Case Temperature (Tc)	Safety: 105°C(221°F) / L70(>60Khrs): 105°C(221°F) / L90(45Khrs): 105°C(221°F)

Thermal De-Rating

Module 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

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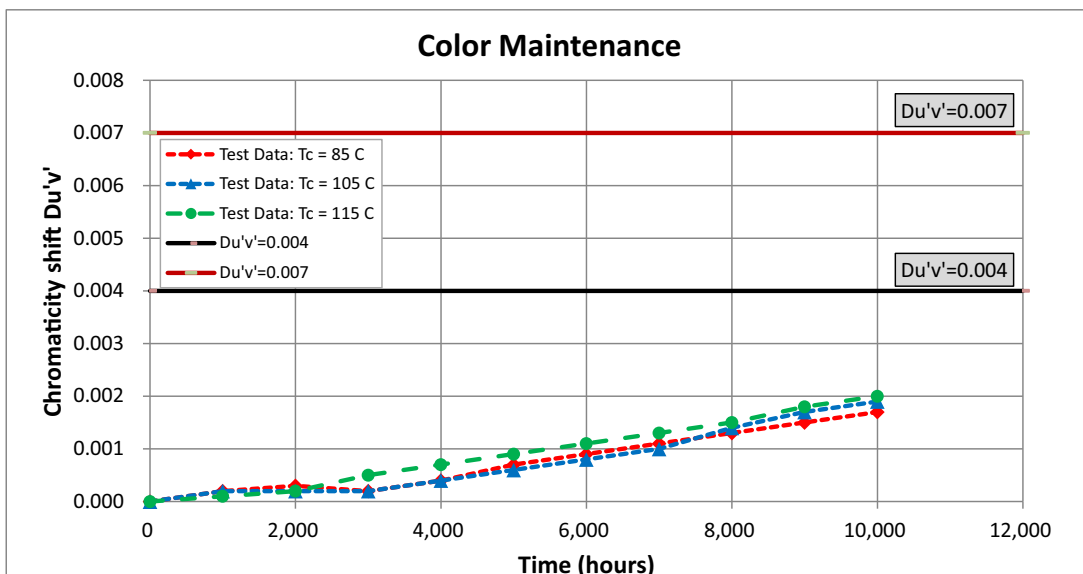
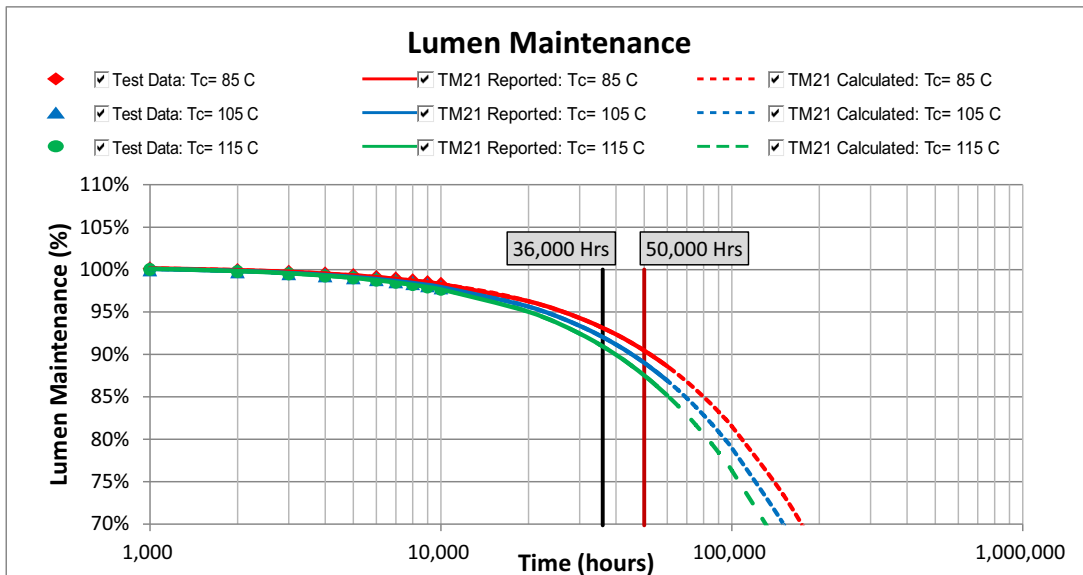
Certification Chart

Model	Classification
VMU048018BR8TWA-11	RoHS COMPLIANT
	RoHS COMPLIANT
	Suitable for UL Class 2 Lighting System

Energy Star™ TM-21 Calculator Data

Tc Module	Reported L70	Reported L90
85°C	>60,000 Hrs	52,000 Hrs
105°C	>60,000 Hrs	45,000 Hrs
115°C	>60,000 Hrs	40,000 Hrs
Tc Module	Calculated L70	Calculated L90
85°C	247,000 Hrs	52,000 Hrs
105°C	214,000 Hrs	45,000 Hrs
115°C	187,000 Hrs	40,000 Hrs

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



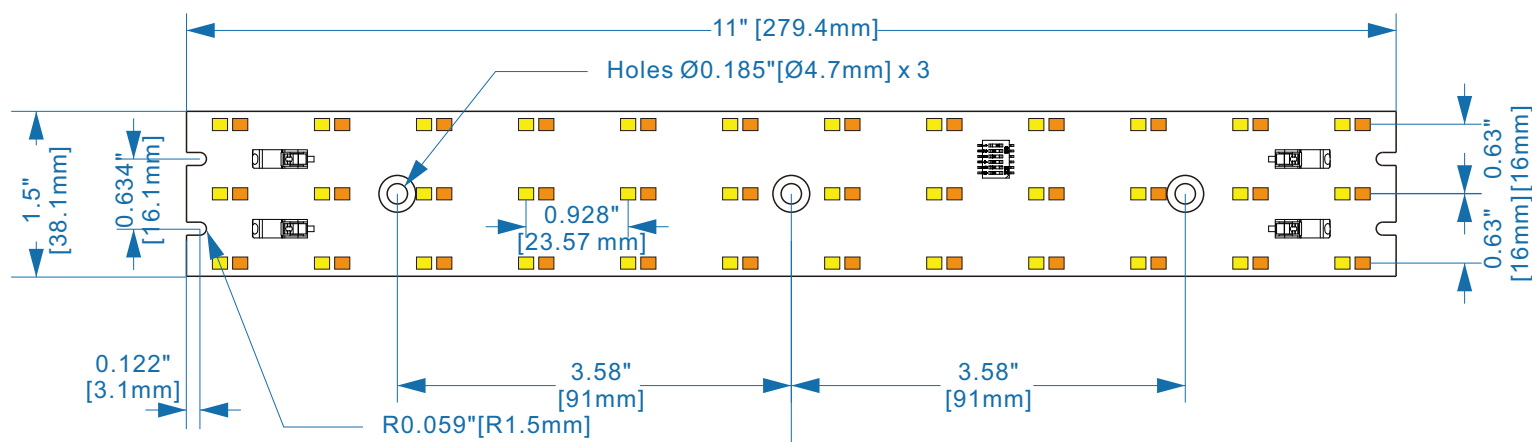
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Mechanical Drawings

11"L x 1.5"W x 0.24"H

[279.4mm x 38.1mm x 6.2mm]

Overall Dimensions	
Length	11" [279.4mm]
Width	1.5" [38.1mm]
Height	0.24" [6.1mm]
PCB Thickness	0.063" [1.6mm]



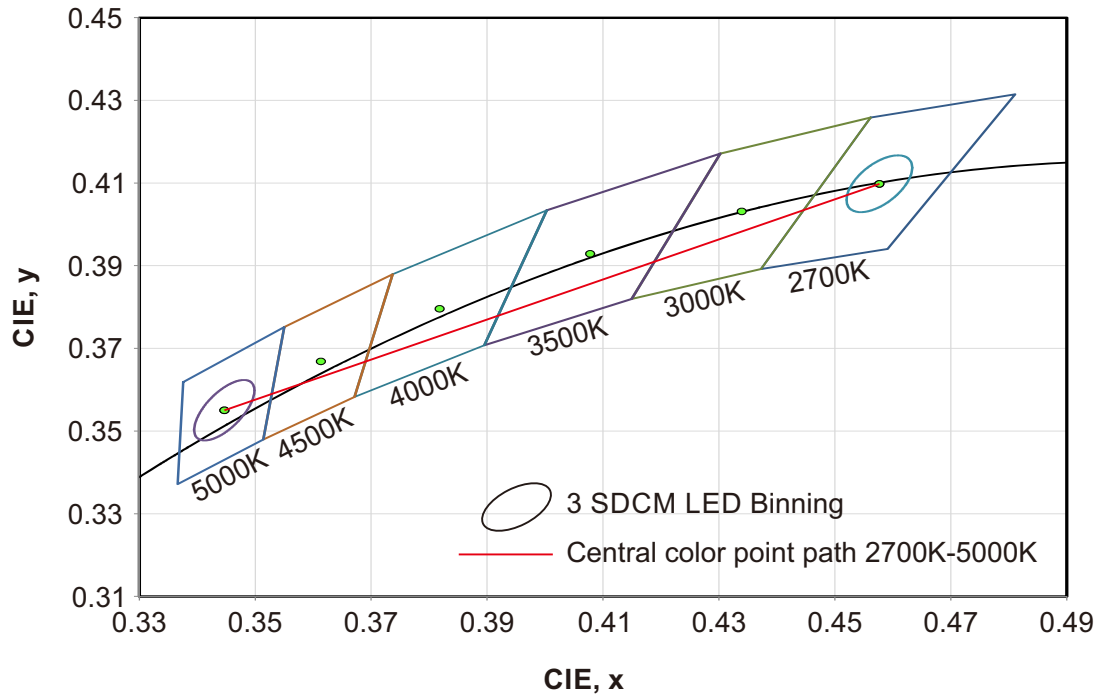
TOP VIEW

Screw Instructions:

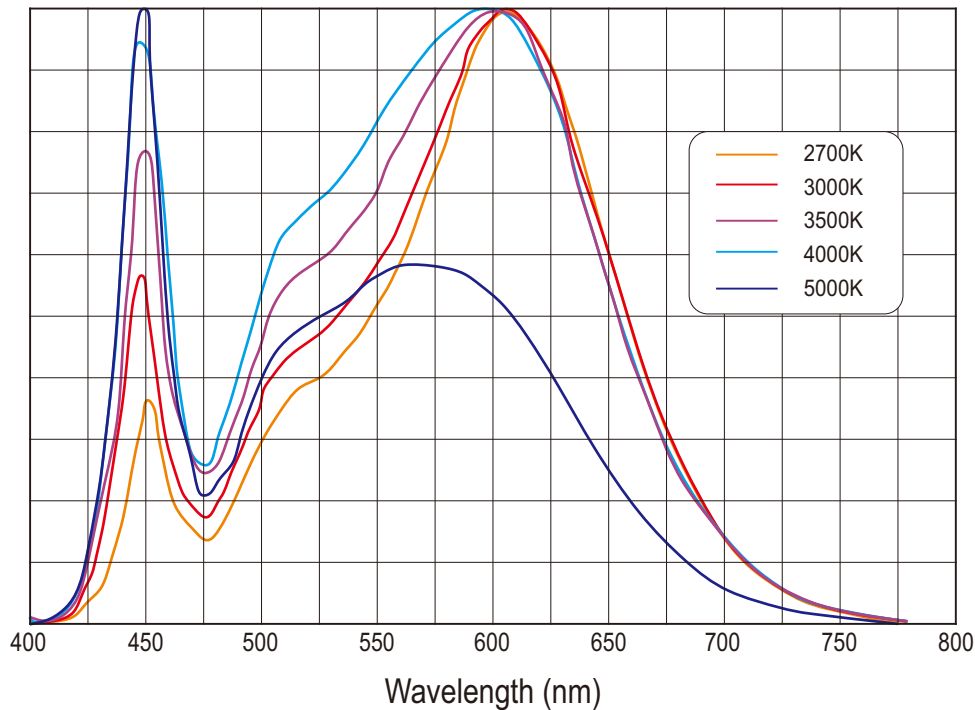
- Recommended Screws: 6#
- DO NOT use screws with metal head, if the screw head diameter is ≥ 0.295 " [7.5mm] and ≤ 0.433 " [11mm].
- DO NOT use any screws with head diameter > 0.433 " [11mm].

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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 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.



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Guidelines

Termination Notes

- Connector Type: BJB 46.131.1001 (1 pin push wire connector)
 - AWG: 24...18 solid wire
 - Strip length: 8mm / 0.315in
 - Connector Max amp. rating: 9 Amps.



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.
- 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

- 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.

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.



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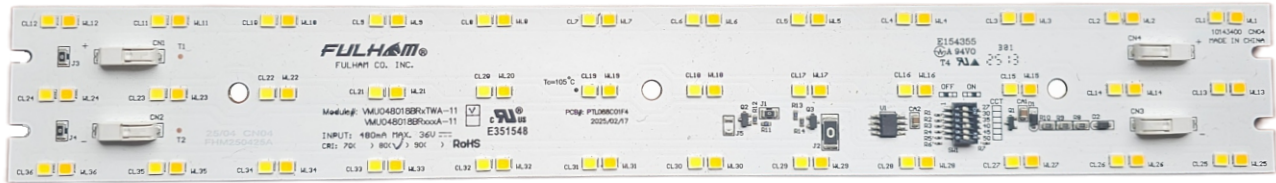
Part Number Matrix

V M U 048018BR9TWA-11

Product Line	Type	Control Type	Input Current	Typ. Power	Design	CRI	Color Temperature	Option	Length
V = VividHorse	M = Module (UL Class 2)	U = None	048 = 480mA Max.	018 = 18W	BR = Bar	8 = 80 9 = 90	⊙TW = 2700K-5000K Tunable White	A = Standard	11 = 11"

⊙ CRI90 option is standard; CRI80 option is made to order with MOQ and lead time.

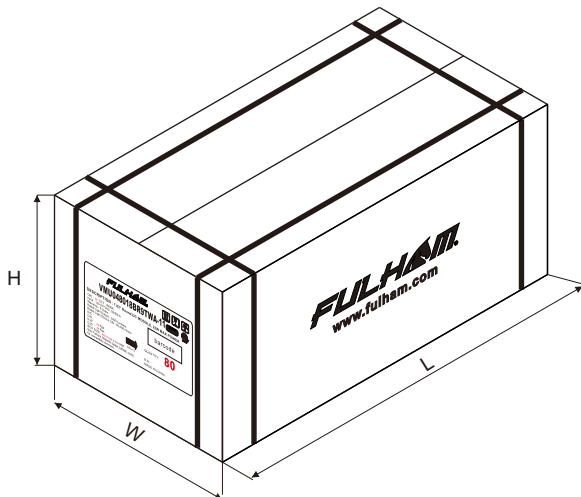
Product Image:



TOP VIEW

Packaging

Master Carton



OUTER DIMENSION		
L	W	H
12.60"(320mm)	9.84"(250mm)	9.76"(248mm)
Net Weight	Gross Weight	QUANTITY
7.44 lbs. (3.4 kg)	8.60 lbs. (3.9 kg)	80pcs.