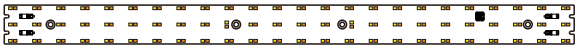


VMU096036BR8TWA-22
VMU096036BR9TWA-22

22” LINEAR BAR DC MODULE, 960mA MAX CURRENT, 6-CCT SELECTABLE

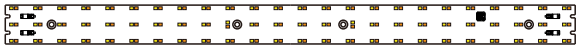
- 3-row LED Linear Bar for commercial and industrial applications
- 6-CCT on board selectable to reduce SKUs: 2700K-5000K
- Work with single channel output drivers
- CRI90 standard, CRI80 optional
- Suitable for open or fully enclosed luminaires
- For use in UL Class 2 lighting systems
- Meets UL8750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

General Specifications

	80CRI						90CRI					
	2700K	**3000K**	**3500K**	**4000K**	**4500K**	**5000K**	**2700K**	**3000K**	**3500K**	**4000K**	**4500K**	**5000K**
Input Current	420 mA (Nominal)						420 mA (Nominal)					
Nom. Input Voltage	33.4 VDC						33.4 VDC					
Nom. Input Power	14.0 W						14.0 W					
Nom. Lumen Output	2446 lm	2503 lm	2559 lm	2613 lm	2655 lm	2691 lm	2065 lm	2112 lm	2160 lm	2205 lm	2241 lm	2271 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	960 mA (Max.)						960 mA (Max.)					
Nom. Input Voltage	35.5 VDC						35.5 VDC					
Nom. Input Power	34.1 W						34.1 W					
Nom. Lumen Output	5350 lm	5473 lm	5596 lm	5714 lm	5807 lm	5885 lm	4515 lm	4619 lm	4723 lm	4822 lm	4901 lm	4967 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	22" L x 1.5" W x 0.24” H (558.8mm x 38.1mm x 6.1mm H)
PCB Material	FR4 1.6mm
LED Quantity	72pcs. 2700K + 72pcs. 5000K
Module Weight	TBD
Maximum Screw Installation Torque	25 inch - ounces
Connector Type / Quantity	4pcs single pin SMD connector - BJB, Wago or equivalent
Packaging: Master Carton	TBD
Safety/Compliance	cURus (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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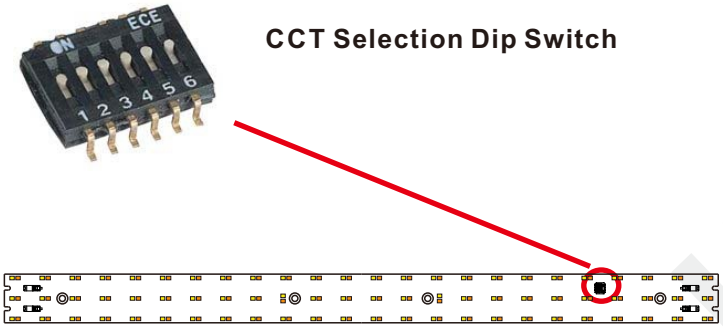
RoHS COMPLIANT

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.

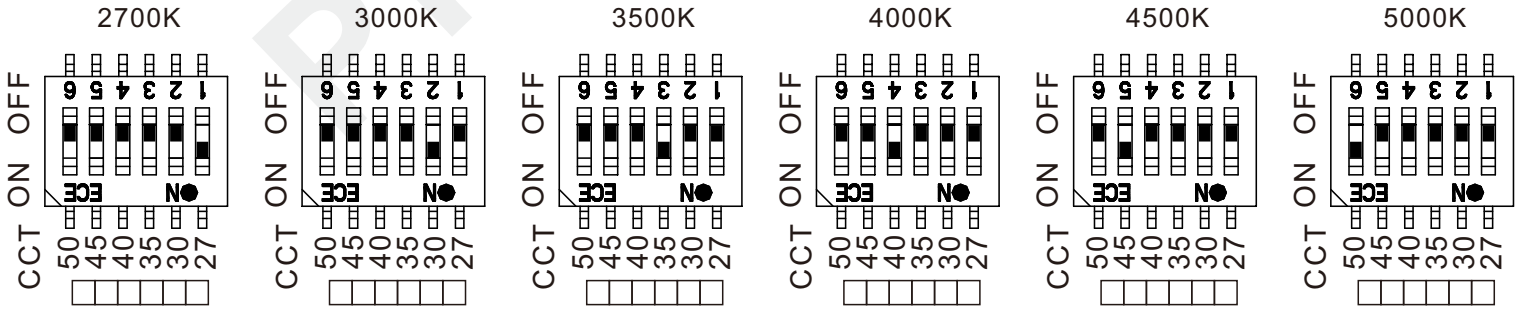
NOTE: ONLY keep one dip switch in the “ON” position, not doing so may result in an undesired CCT.

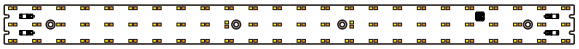


CCT Selection Dip Switch

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**





VMU096036BR8TWA-22
VMU096036BR9TWA-22

RoHS COMPLIANT

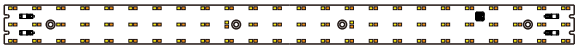
Electrical and Optical Specifications

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
VMU096036BR8TWA-22 (22")	72	120 mA	31.8 VDC	3.8 W	35 VDC	4 W	703 lm	184 lm/W
		180 mA	32.2 VDC	5.8 W	35 VDC	6 W	1060 lm	183 lm/W
		240 mA	32.5 VDC	7.8 W	36 VDC	9 W	1413 lm	181 lm/W
		300 mA	32.8 VDC	9.8 W	36 VDC	11 W	1761 lm	179 lm/W
		360 mA	33.1 VDC	11.9 W	36 VDC	13 W	2106 lm	177 lm/W
		420 mA	33.4 VDC	14.0 W	37 VDC	16 W	2446 lm	174 lm/W
		480 mA	33.7 VDC	16.2 W	37 VDC	18 W	2783 lm	172 lm/W
		540 mA	33.9 VDC	18.3 W	37 VDC	20 W	3115 lm	170 lm/W
		600 mA	34.2 VDC	20.5 W	38 VDC	23 W	3444 lm	168 lm/W
		660 mA	34.4 VDC	22.7 W	38 VDC	25 W	3770 lm	166 lm/W
		720 mA	34.6 VDC	24.9 W	38 VDC	27 W	4092 lm	164 lm/W
		780 mA	34.9 VDC	27.2 W	38 VDC	30 W	4411 lm	162 lm/W
		840 mA	35.1 VDC	29.5 W	39 VDC	33 W	4727 lm	160 lm/W
		900 mA	35.3 VDC	31.8 W	39 VDC	35 W	5040 lm	159 lm/W
		960 mA*	35.5 VDC	34.1 W	39 VDC	37 W	5350 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
VMU096036BR8TWA-22 (22")	72	120 mA	31.8 VDC	3.8 W	35 VDC	4 W	719 lm	188 lm/W
		180 mA	32.2 VDC	5.8 W	35 VDC	6 W	1084 lm	187 lm/W
		240 mA	32.5 VDC	7.8 W	36 VDC	9 W	1445 lm	185 lm/W
		300 mA	32.8 VDC	9.8 W	36 VDC	11 W	1802 lm	183 lm/W
		360 mA	33.1 VDC	11.9 W	36 VDC	13 W	2154 lm	181 lm/W
		420 mA	33.4 VDC	14.0 W	37 VDC	16 W	2503 lm	178 lm/W
		480 mA	33.7 VDC	16.2 W	37 VDC	18 W	2847 lm	176 lm/W
		540 mA	33.9 VDC	18.3 W	37 VDC	20 W	3187 lm	174 lm/W
		600 mA	34.2 VDC	20.5 W	38 VDC	23 W	3524 lm	172 lm/W
		660 mA	34.4 VDC	22.7 W	38 VDC	25 W	3857 lm	170 lm/W
		720 mA	34.6 VDC	24.9 W	38 VDC	27 W	4186 lm	168 lm/W
		780 mA	34.9 VDC	27.2 W	38 VDC	30 W	4513 lm	166 lm/W
		840 mA	35.1 VDC	29.5 W	39 VDC	33 W	4836 lm	164 lm/W
		900 mA	35.3 VDC	31.8 W	39 VDC	35 W	5156 lm	162 lm/W
		960 mA*	35.5 VDC	34.1 W	39 VDC	37 W	5473 lm	161 lm/W



VMU096036BR8TWA-22
VMU096036BR9TWA-22

RoHS COMPLIANT

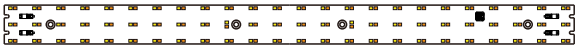
Electrical and Optical Specifications

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
VMU096036BR8TWA-22 (22")	72	120 mA	31.8 VDC	3.8 W	35 VDC	4 W	735 lm	193 lm/W
		180 mA	32.2 VDC	5.8 W	35 VDC	6 W	1109 lm	192 lm/W
		240 mA	32.5 VDC	7.8 W	36 VDC	9 W	1478 lm	189 lm/W
		300 mA	32.8 VDC	9.8 W	36 VDC	11 W	1842 lm	187 lm/W
		360 mA	33.1 VDC	11.9 W	36 VDC	13 W	2203 lm	185 lm/W
		420 mA	33.4 VDC	14.0 W	37 VDC	16 W	2559 lm	182 lm/W
		480 mA	33.7 VDC	16.2 W	37 VDC	18 W	2911 lm	180 lm/W
		540 mA	33.9 VDC	18.3 W	37 VDC	20 W	3259 lm	178 lm/W
		600 mA	34.2 VDC	20.5 W	38 VDC	23 W	3603 lm	176 lm/W
		660 mA	34.4 VDC	22.7 W	38 VDC	25 W	3943 lm	174 lm/W
		720 mA	34.6 VDC	24.9 W	38 VDC	27 W	4280 lm	172 lm/W
		780 mA	34.9 VDC	27.2 W	38 VDC	30 W	4614 lm	170 lm/W
		840 mA	35.1 VDC	29.5 W	39 VDC	33 W	4945 lm	168 lm/W
		900 mA	35.3 VDC	31.8 W	39 VDC	35 W	5272 lm	166 lm/W
		960 mA*	35.5 VDC	34.1 W	39 VDC	37 W	5596 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
VMU096036BR8TWA-22 (22")	72	120 mA	31.8 VDC	3.8 W	35 VDC	4 W	750 lm	197 lm/W
		180 mA	32.2 VDC	5.8 W	35 VDC	6 W	1132 lm	196 lm/W
		240 mA	32.5 VDC	7.8 W	36 VDC	9 W	1509 lm	193 lm/W
		300 mA	32.8 VDC	9.8 W	36 VDC	11 W	1881 lm	191 lm/W
		360 mA	33.1 VDC	11.9 W	36 VDC	13 W	2249 lm	189 lm/W
		420 mA	33.4 VDC	14.0 W	37 VDC	16 W	2613 lm	186 lm/W
		480 mA	33.7 VDC	16.2 W	37 VDC	18 W	2972 lm	184 lm/W
		540 mA	33.9 VDC	18.3 W	37 VDC	20 W	3327 lm	182 lm/W
		600 mA	34.2 VDC	20.5 W	38 VDC	23 W	3679 lm	179 lm/W
		660 mA	34.4 VDC	22.7 W	38 VDC	25 W	4026 lm	177 lm/W
		720 mA	34.6 VDC	24.9 W	38 VDC	27 W	4371 lm	175 lm/W
		780 mA	34.9 VDC	27.2 W	38 VDC	30 W	4711 lm	173 lm/W
		840 mA	35.1 VDC	29.5 W	39 VDC	33 W	5049 lm	171 lm/W
		900 mA	35.3 VDC	31.8 W	39 VDC	35 W	5383 lm	170 lm/W
		960 mA*	35.5 VDC	34.1 W	39 VDC	37 W	5714 lm	168 lm/W



VMU096036BR8TWA-22
VMU096036BR9TWA-22

RoHS COMPLIANT

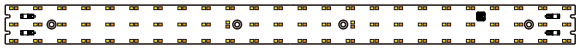
Electrical and Optical Specifications

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
VMU096036BR8TWA-22 (22")	72	120 mA	31.8 VDC	3.8 W	35 VDC	4 W	763 lm	200 lm/W
		180 mA	32.2 VDC	5.8 W	35 VDC	6 W	1151 lm	199 lm/W
		240 mA	32.5 VDC	7.8 W	36 VDC	9 W	1534 lm	197 lm/W
		300 mA	32.8 VDC	9.8 W	36 VDC	11 W	1912 lm	194 lm/W
		360 mA	33.1 VDC	11.9 W	36 VDC	13 W	2286 lm	192 lm/W
		420 mA	33.4 VDC	14.0 W	37 VDC	16 W	2655 lm	189 lm/W
		480 mA	33.7 VDC	16.2 W	37 VDC	18 W	3021 lm	187 lm/W
		540 mA	33.9 VDC	18.3 W	37 VDC	20 W	3382 lm	185 lm/W
		600 mA	34.2 VDC	20.5 W	38 VDC	23 W	3739 lm	182 lm/W
		660 mA	34.4 VDC	22.7 W	38 VDC	25 W	4092 lm	180 lm/W
		720 mA	34.6 VDC	24.9 W	38 VDC	27 W	4442 lm	178 lm/W
		780 mA	34.9 VDC	27.2 W	38 VDC	30 W	4788 lm	176 lm/W
		840 mA	35.1 VDC	29.5 W	39 VDC	33 W	5131 lm	174 lm/W
		900 mA	35.3 VDC	31.8 W	39 VDC	35 W	5471 lm	172 lm/W
		960 mA*	35.5 VDC	34.1 W	39 VDC	37 W	5807 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
VMU096036BR8TWA-22 (22")	72	120 mA	31.8 VDC	3.8 W	35 VDC	4 W	773 lm	203 lm/W
		180 mA	32.2 VDC	5.8 W	35 VDC	6 W	1166 lm	201 lm/W
		240 mA	32.5 VDC	7.8 W	36 VDC	9 W	1554 lm	199 lm/W
		300 mA	32.8 VDC	9.8 W	36 VDC	11 W	1938 lm	197 lm/W
		360 mA	33.1 VDC	11.9 W	36 VDC	13 W	2316 lm	194 lm/W
		420 mA	33.4 VDC	14.0 W	37 VDC	16 W	2691 lm	192 lm/W
		480 mA	33.7 VDC	16.2 W	37 VDC	18 W	3061 lm	189 lm/W
		540 mA	33.9 VDC	18.3 W	37 VDC	20 W	3427 lm	187 lm/W
		600 mA	34.2 VDC	20.5 W	38 VDC	23 W	3789 lm	185 lm/W
		660 mA	34.4 VDC	22.7 W	38 VDC	25 W	4147 lm	183 lm/W
		720 mA	34.6 VDC	24.9 W	38 VDC	27 W	4501 lm	181 lm/W
		780 mA	34.9 VDC	27.2 W	38 VDC	30 W	4852 lm	178 lm/W
		840 mA	35.1 VDC	29.5 W	39 VDC	33 W	5200 lm	177 lm/W
		900 mA	35.3 VDC	31.8 W	39 VDC	35 W	5544 lm	175 lm/W
		960 mA*	35.5 VDC	34.1 W	39 VDC	37 W	5885 lm	173 lm/W



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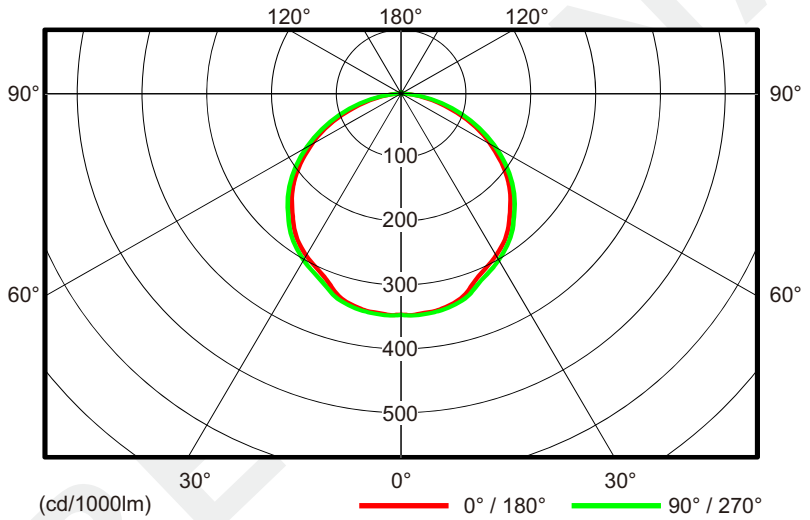
RoHS COMPLIANT

Light Distribution

Zone	Zone Flux	Zone Flux%	Sum Zone Flux	Sum Zone Flux%
0 ~ 10	83.2	3.3%	83.2	3.3%
10 ~ 20	239.9	9.5%	323.1	12.7%
20 ~ 30	358.0	14.1%	681.1	26.9%
30 ~ 40	439.8	17.4%	1120.9	44.2%
40 ~ 50	463.2	18.3%	1584.1	62.5%
50 ~ 60	415.1	16.4%	1999.2	78.9%
60 ~ 70	308.6	12.2%	2307.8	91.1%
70 ~ 80	167.7	6.6%	2475.5	97.7%
80 ~ 90	44.4	1.8%	2519.9	99.4%
90 ~ 180	14.7	0.6%	2534.6	100.0%

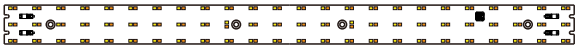


Luminous Flux De-Rating: CRI Multipliers

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

NOTES:

1) Performance data (pg. 3~5) is based on Tc mod = 25°C. See thermal de-rating chart (pg. 7) for higher temperature operation.
2) Zone Flux and light distribution data (pg. 6) is based on nominal input current 420mA, 4000K sample, thermal stable.
3) Tolerance for flux data is ±7%
4) Specifications are subject to change without notice.
5) 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.
6) Modules need to be operated at a current less than the max. current, below the Tc rating.



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c UL us RoHS COMPLIANT

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(>54Khrs): 105°C(221°F) / L90(40Khrs): 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
25ºC	1.000	1.000
30ºC	0.998	0.991
35ºC	0.997	0.983
40ºC	0.995	0.974
45ºC	0.993	0.966
50ºC	0.991	0.957
55ºC	0.990	0.949
60ºC	0.988	0.940
65ºC	0.986	0.932
70ºC	0.985	0.923
75ºC	0.983	0.915
80ºC	0.981	0.906
85ºC	0.980	0.898
90ºC	0.978	0.890
95ºC	0.976	0.881
100ºC	0.974	0.873
105ºC	0.973	0.864

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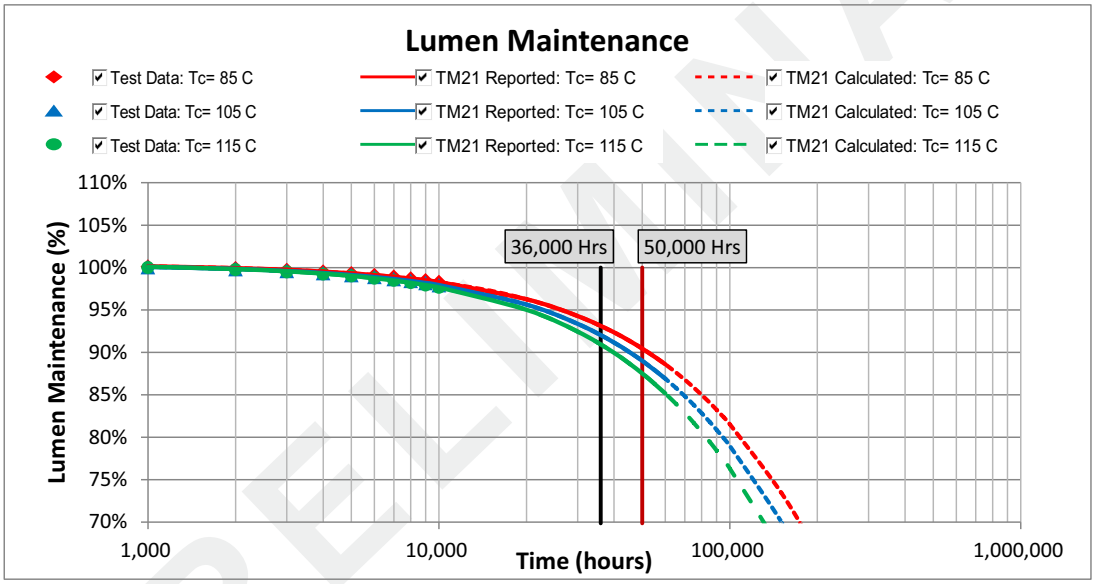
Certification Chart

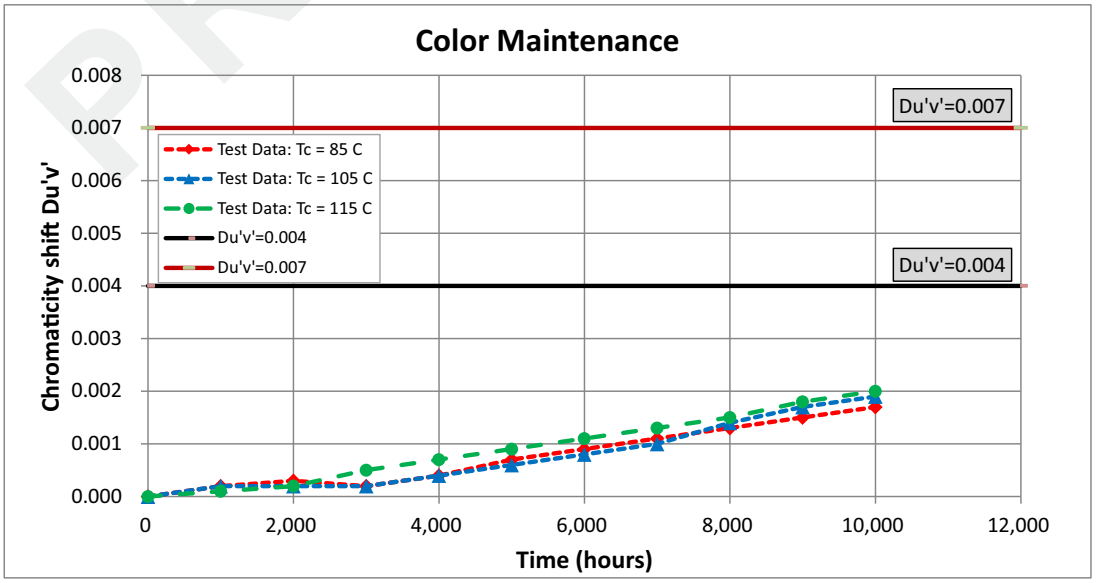
Classification \ Model	VMU096036BR8TWA-22
RoHS COMPLIANT	YES
c UL us	YES
Suitable for UL Class 2 Lighting System	YES

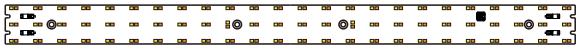
Energy Star™ TM-21 Calculator Data

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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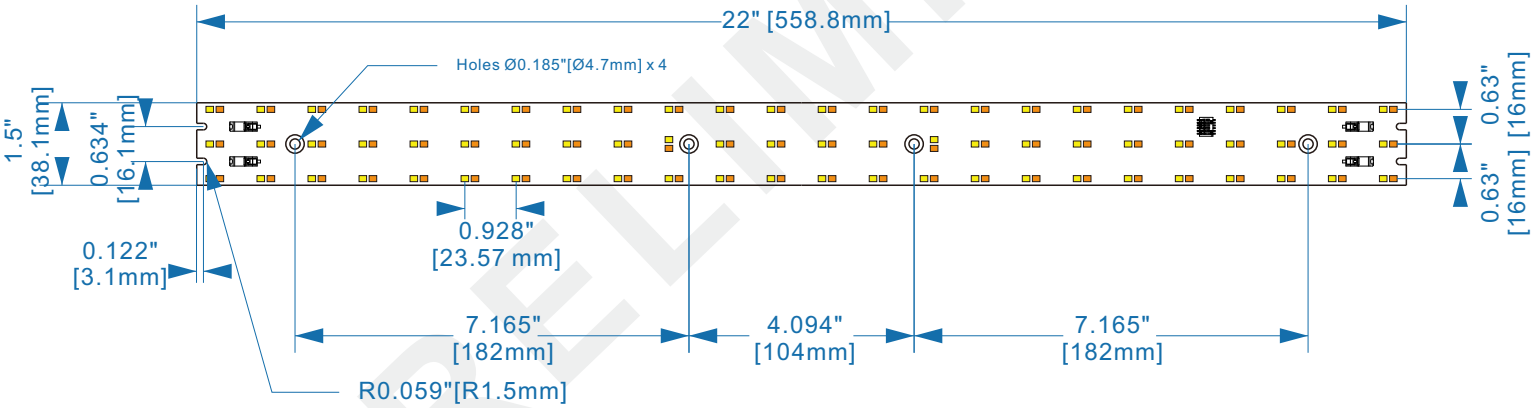
RoHS COMPLIANT

Mechanical Drawings

22"L x 1.5"W x 0.24"H

[558.8mm x 38.1mm x 6.2mm]

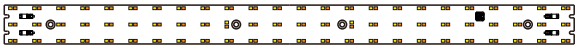
Overall Dimensions	
Length	22” [558.8mm]
Width	1.5” [38.1mm]
Height	0.24” [6.1mm]
PCB Thickness	0.063” [1.6mm]



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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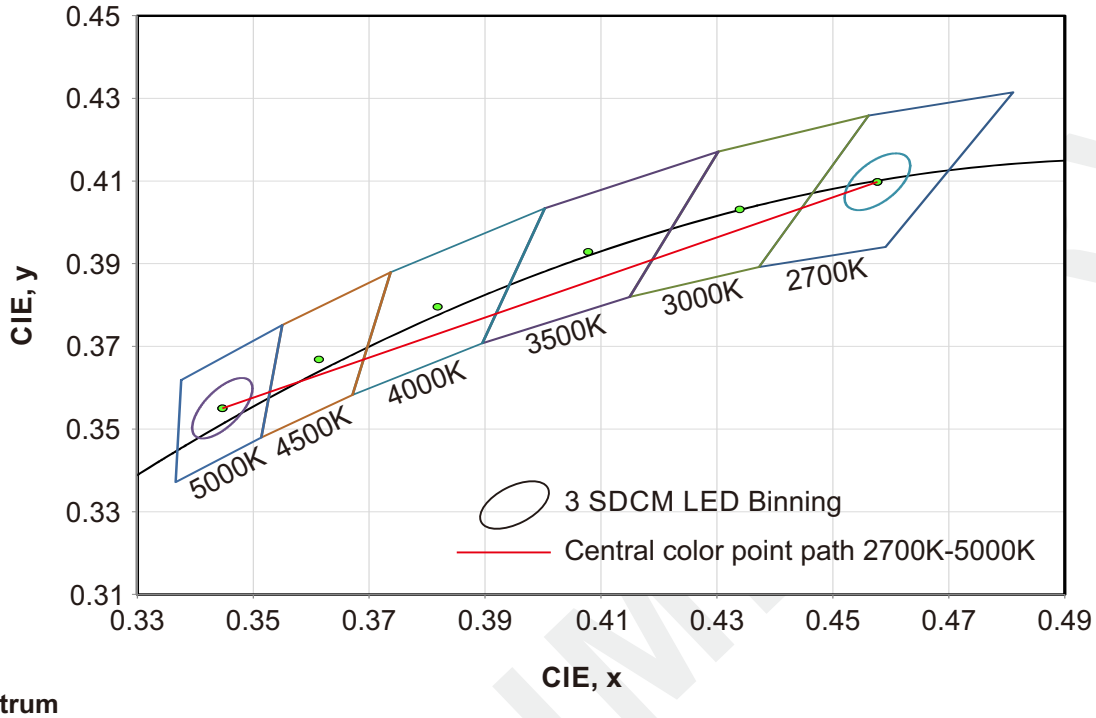
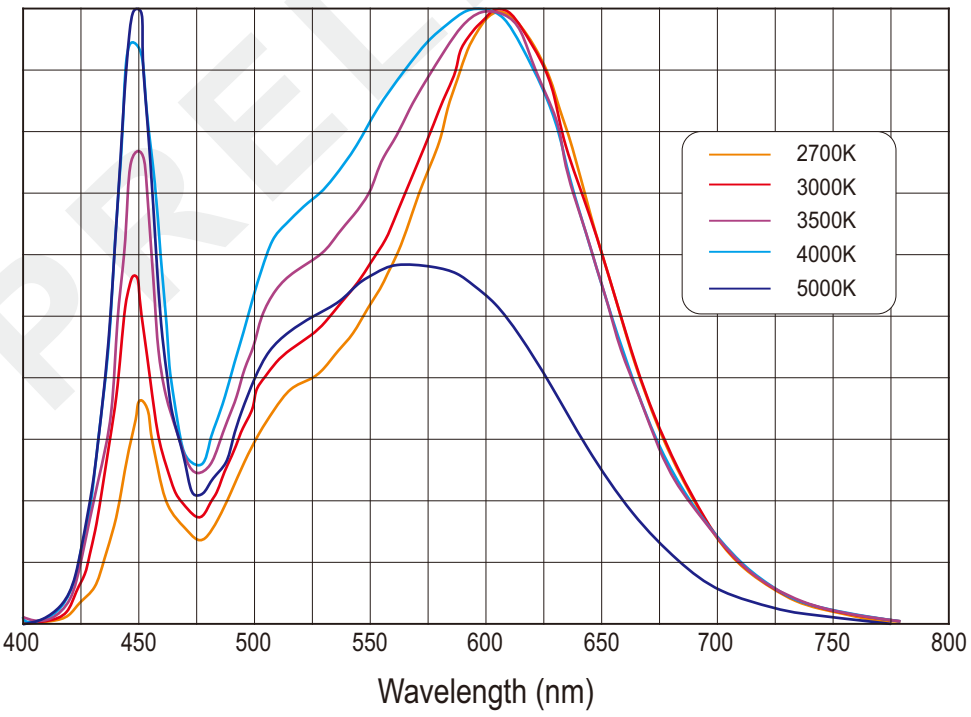
c UL us RoHS COMPLIANT

Color and Binning

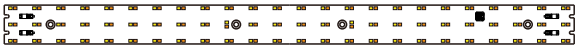


Optical Spectrum



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)

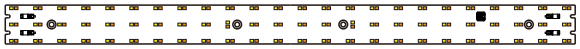
- Fulham LED products should be handled with proper measures to protect against any potential ESD damage.
- When servicing, personnel should be ground and direct contact with LED should be avoided.

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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VMU096036BR9TWA-22

RoHS COMPLIANT

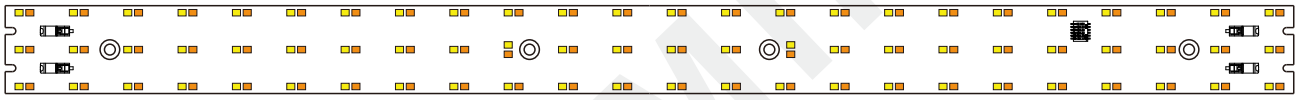
Part Number Matrix

V	M	U	096	036	BR	9	TW	A	-22

Product Line	Type	Control Type	Input Current	Typ. Power	Design	CRI	Color Temperature	Option	Length
V = VividHorse	**M** = Module (UL Class 2)	**U** = None	**096** = 960mA Max.	**036** = 36W	**BR** = Bar	**8** = 80 ③ **9** = 90	**TW** = 2700K-5000K Tunable White	**A** = Standard	**22** = 22"

③ CRI90 option is standard; CRI80 option is made to order with MOQ and lead time.

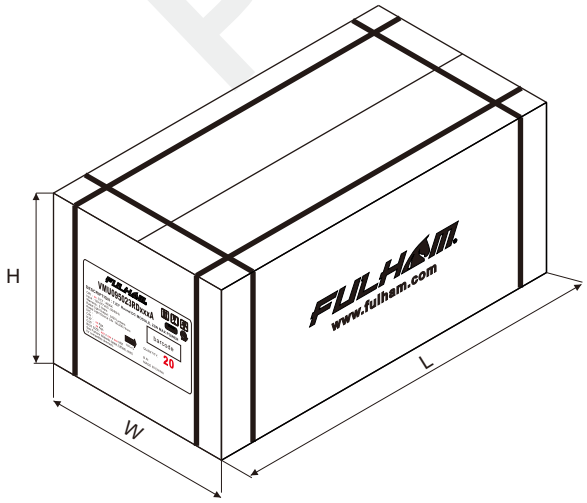
Product Image:



TOP VIEW

Packaging

Master Carton



OUTER DIMENSION		
L	W	H
11.14”(283mm)	11.14”(283mm)	9.76”(248mm)
Net Weight	Gross Weight	QUANTITY
2.74 lbs. (1.24 kg)	7.28 lbs. (3.3 kg)	20pcs.