



# VMU096030CT8xA-46

## 46" CUTTABLE DC MODULE, 960mA MAX CURRENT

- For use in UL Class 2 lighting systems
- Constant current for maximum efficacy
- 46" length, cuttable at half 23"
- High lumen, high efficacy
- Suitable for DLC applications: L70>60,000hrs / L90=40,000hrs
- Meets UL8750 recognized
- RoHS compliant
- Ideal for linear architectural applications

### General Specifications

	46"	23"
LED Quantity	60 (10s6p)	30 (10s3p)
Input Voltage <sup>①</sup>	29.5VDC	29.5VDC
Input Current <sup>①</sup>	960mA Max.	480mA Max.
Input Power <sup>①</sup>	28.4W	14.2W
Initial Lumens @4000K / 80CRI <sup>①</sup>	4338 lumens	2169 lumens
Initial Lm/W @4000K / 80CRI <sup>①</sup>	153 lm/W	153 lm/W
Initial Lumens per foot @Max. Current <sup>①</sup>	1183 lm/ft	
Initial Lumens per string @Max. Current <sup>①</sup>	723 lm/string (10 LEDs)	
Beam Angle	120°	
CRI	80CRI (standard), 90CRI available	
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: 40,000Hrs	
Color Consistency	Binning per ANSI C78.377-2015 @ 25°C; 3 SDCM	
Overall Size	46" L x 0.72" W x 0.22" H (1168.4mm x 18.29mm x 5.6mm)	
PCB Material / Thermal Conductivity	FR-4, 1.6mm thickness, 1oz copper, 0.3W/mK	
Module Weight	80g / 0.176lb.	
PCB Part Number	PTL051C01F4	
Maximum Screw Installation Torque	25 inch - ounces	
Connector Type	BJB #46.131.1001.50 (single pole connector)	
Packaging: Master Carton	100pcs	
Thermal Feedback	Not Available	
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	

<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 Specification

### Full length - 46"

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
VMU096030CTxxxA-46 (46")	60	100 mA	26.3 VDC	2.6 W	29 VDC	3 W	542 lm	206 lm/W	148 lm/ft	90 lm/string
		150 mA	26.6 VDC	4.0 W	29 VDC	4 W	802 lm	201 lm/W	219 lm/ft	134 lm/string
		200 mA	26.9 VDC	5.4 W	30 VDC	6 W	1056 lm	196 lm/W	288 lm/ft	176 lm/string
		250 mA	27.1 VDC	6.8 W	30 VDC	8 W	1307 lm	193 lm/W	356 lm/ft	218 lm/string
		300 mA	27.3 VDC	8.2 W	30 VDC	9 W	1550 lm	189 lm/W	423 lm/ft	258 lm/string
		350 mA	27.5 VDC	9.6 W	30 VDC	11 W	1788 lm	185 lm/W	488 lm/ft	298 lm/string
		400 mA	27.7 VDC	11.1 W	31 VDC	12 W	2023 lm	182 lm/W	552 lm/ft	337 lm/string
		450 mA	27.9 VDC	12.6 W	31 VDC	14 W	2250 lm	179 lm/W	614 lm/ft	375 lm/string
		500 mA	28.1 VDC	14.1 W	31 VDC	16 W	2473 lm	176 lm/W	674 lm/ft	412 lm/string
		550 mA	28.3 VDC	15.6 W	31 VDC	17 W	2693 lm	173 lm/W	734 lm/ft	449 lm/string
		600 mA	28.4 VDC	17.1 W	31 VDC	19 W	2907 lm	170 lm/W	793 lm/ft	485 lm/string
		650 mA	28.6 VDC	18.6 W	31 VDC	20 W	3116 lm	168 lm/W	850 lm/ft	519 lm/string
		700 mA	28.8 VDC	20.1 W	32 VDC	22 W	3324 lm	165 lm/W	907 lm/ft	554 lm/string
		750 mA	28.9 VDC	21.7 W	32 VDC	24 W	3525 lm	162 lm/W	961 lm/ft	588 lm/string
		800 mA	29.1 VDC	23.3 W	32 VDC	26 W	3723 lm	160 lm/W	1015 lm/ft	621 lm/string
		850 mA	29.2 VDC	24.8 W	32 VDC	27 W	3918 lm	158 lm/W	1069 lm/ft	653 lm/string
900 mA	29.4 VDC	26.4 W	32 VDC	29 W	4112 lm	156 lm/W	1121 lm/ft	685 lm/string		
950 mA	29.5 VDC	28.0 W	32 VDC	30 W	4300 lm	153 lm/W	1173 lm/ft	717 lm/string		
960 mA*	29.5 VDC	28.4 W	32 VDC	31 W	4338 lm	153 lm/W	1183 lm/ft	723 lm/string		

### Half length - 23"

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
VMU096030CTxxxA-46 (23")	30	50 mA	26.3 VDC	1.3 W	29 VDC	1 W	271 lm	206 lm/W	148 lm/ft	90 lm/string
		100 mA	26.9 VDC	2.7 W	30 VDC	3 W	528 lm	196 lm/W	288 lm/ft	176 lm/string
		150 mA	27.3 VDC	4.1 W	30 VDC	5 W	775 lm	189 lm/W	423 lm/ft	258 lm/string
		200 mA	27.7 VDC	5.5 W	31 VDC	6 W	1012 lm	182 lm/W	552 lm/ft	337 lm/string
		250 mA	28.1 VDC	7.0 W	31 VDC	8 W	1237 lm	176 lm/W	674 lm/ft	412 lm/string
		300 mA	28.4 VDC	8.5 W	31 VDC	9 W	1454 lm	170 lm/W	793 lm/ft	485 lm/string
		350 mA	28.8 VDC	10.1 W	32 VDC	11 W	1662 lm	165 lm/W	907 lm/ft	554 lm/string
		400 mA	29.1 VDC	11.6 W	32 VDC	13 W	1862 lm	160 lm/W	1015 lm/ft	621 lm/string
		450 mA	29.4 VDC	13.2 W	32 VDC	14 W	2056 lm	156 lm/W	1121 lm/ft	685 lm/string
		480 mA*	29.5 VDC	14.2 W	32 VDC	15 W	2169 lm	153 lm/W	1183 lm/ft	723 lm/string

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

	2700K	3000K	3500K	4000K	5000K	5700K	6500K
CRI 80(R9>0)	0.921	0.950	0.965	1.000	1.015	1.007	1.000
CRI 90(R9>50)	0.780	0.800	0.815	0.844	0.857	0.850	0.844

### NOTES:

- Performance based on Tc mod = 25°C. See thermal de-rating chart (pg. 3) for higher temperature operation.
- Standard lumen output and efficacy is calculated for standard options. Reference CCT & CRI vs Luminous Flux chart for lumen ratio calculation. Lumen tolerance +/- 8%.
- Specifications are subject to change without notice.
- The LED DC Module can be configured with different LED chip quantities, series and parallel design configurations to meet a specific design requirement. Contact Fulham for further assistance.
- \* Indicates maximum rated current. Modules may be operated at a current less than or equal to this value, below the Tc rating.
- 70CRI is NOT available.

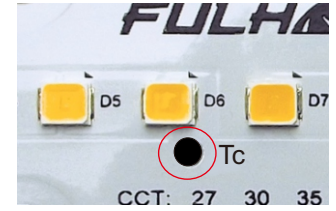


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## Thermal Specifications

### DC Module

Storage Temperature Range	-40 to 100°C / -40 to 212°F
Operating Ambient Temperature Range (ta)	-40 to 55°C / -40 to 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	0.991
35°C	0.996	0.981
40°C	0.994	0.972
45°C	0.991	0.962
50°C	0.989	0.953
55°C	0.987	0.943
60°C	0.985	0.934
65°C	0.983	0.924
70°C	0.981	0.915
75°C	0.978	0.905
80°C	0.976	0.896
85°C	0.974	0.886
90°C	0.972	0.877
95°C	0.970	0.867
100°C	0.967	0.858
105°C	0.965	0.848

## NOTES:

- 1) Thermal Derating may vary depending on the heat sink and the thermal interface.
- 2) Maximum case temperature is base on the LED LM80 values.



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## Certification Chart

Model	Classification
VMU096030CT8xxA-46	RoHS COMPLIANT
	cRU US
	Suitable for UL Class 2 Lighting System

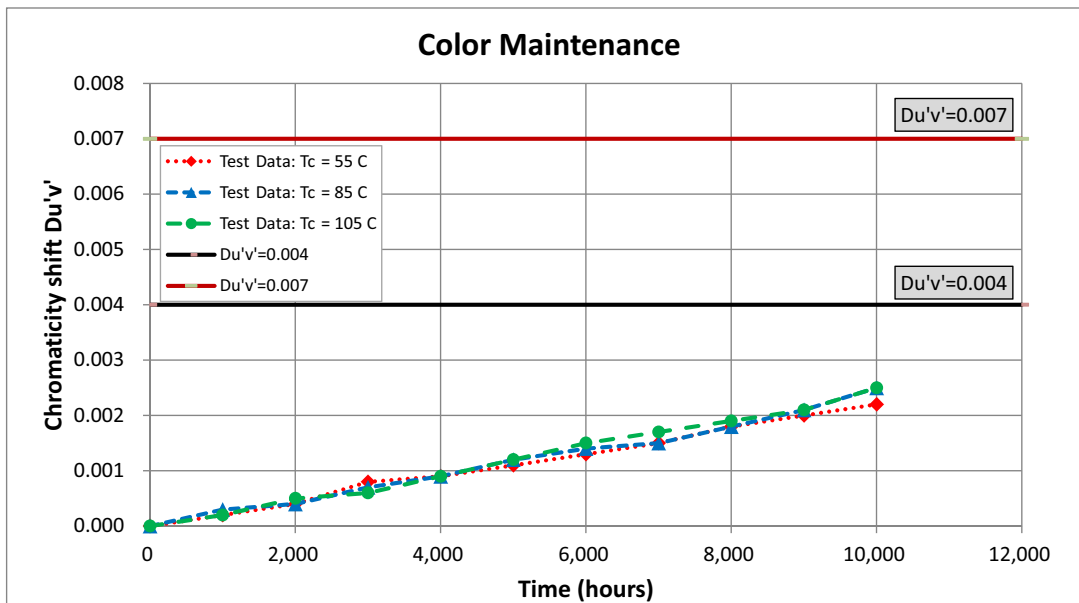
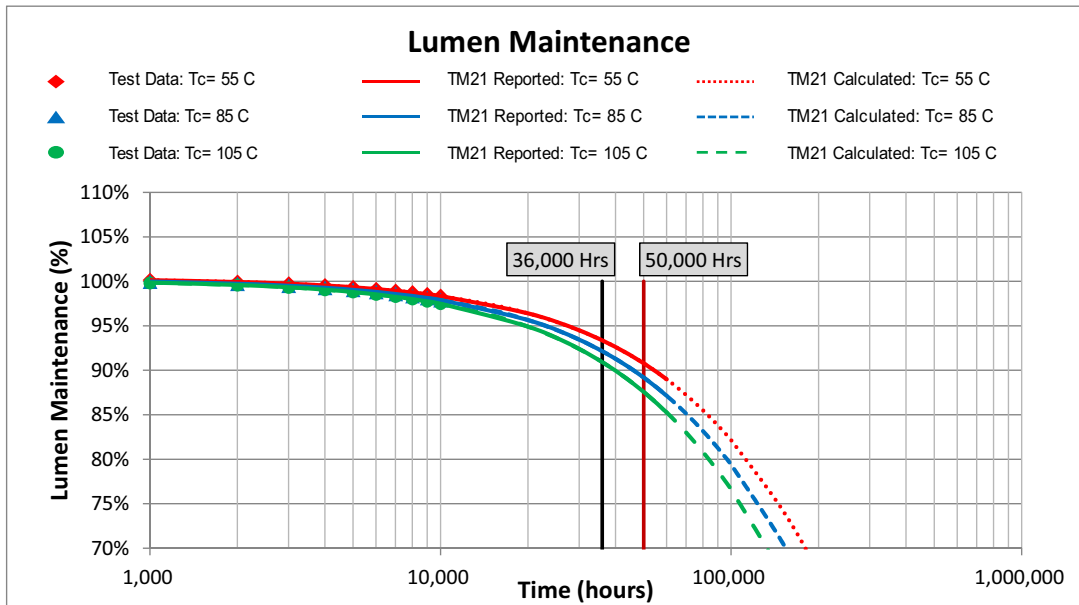
## Energy Star™ TM-21 Calculator Data

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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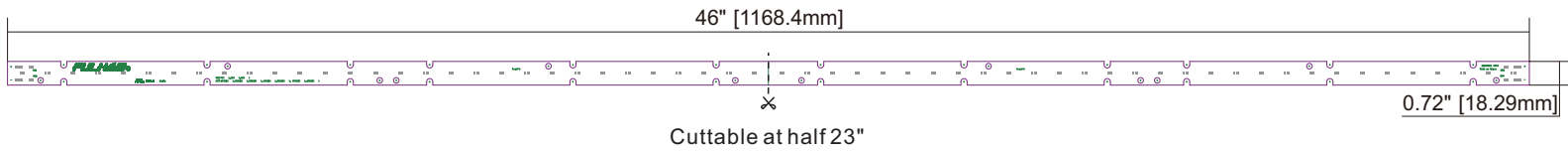
## Mechanical Drawings

**46"**

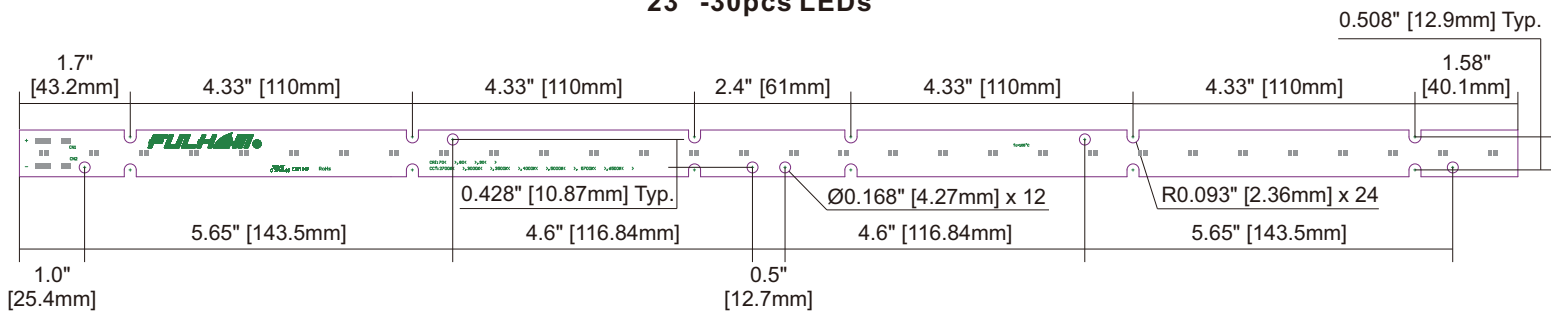
[1168.4mm]

Overall Dimensions	
Length	46" [1168.4mm]
Width	0.72" [18.29mm]
Height (with Connector)	0.22" [5.6mm]
PCB Thickness	0.063" [1.6mm]

### 46" -60pcs LEDs



### 23" -30pcs LEDs



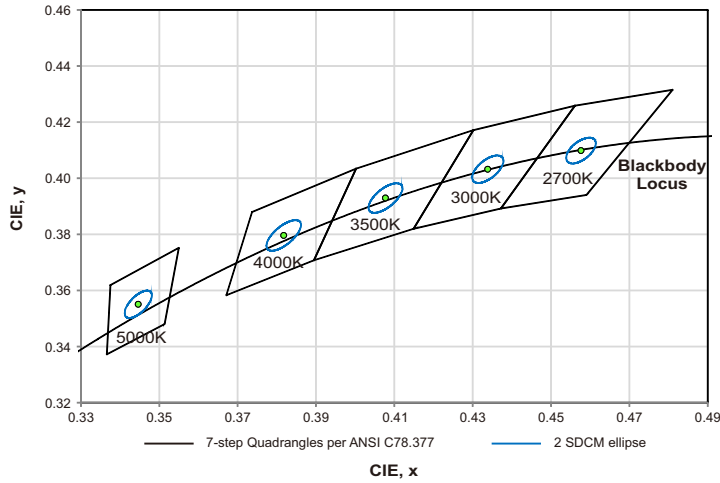
LED Pitch = 0.767" [19.47mm]

### TOP VIEW

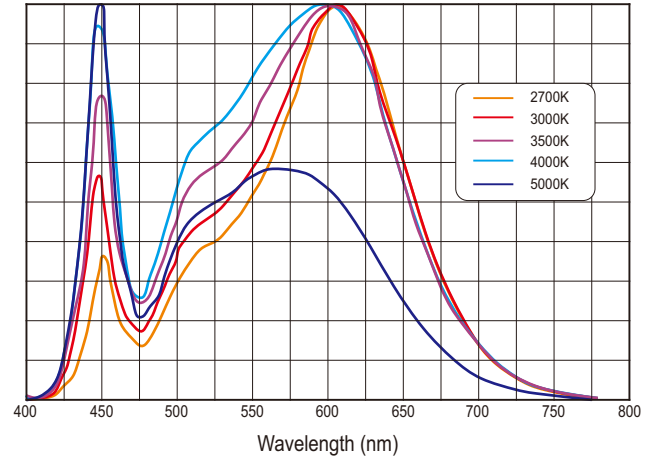


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## Color and Binning



## Optical Spectrum



## Compatible Fulham Drivers

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

- System Combination:
- 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.
- 5) Do not connect DC 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 the link above). If the current is higher than the rated max, it is recommended to use wiring diagram #3.



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## Guidelines

### Termination Notes

- Connector Type: BJB Single Pole SMD Terminal Block, Part #: 46.131.1001.50
- cURus, ENEC Rating: 9A/320V
- Use solid wire size 18 - 24 AWG, rated at a minimum 50V, minimum 105°C, and stripped to length 8 mm (0.315 inches).



### Fastening Notes

- If fastening by screw hole a recommended screw size: 4-40 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.
- 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>.
- HEYCO HEYClip Snap Rivets 19003 is recommended for fast and easy installation with clean and finish look.



Heyco Rivet 19003

For more detail information, please visit Heyco website: [https://www.heyco.com/Nylon\\_PVC\\_Hardware/product.cfm?product=Snap-Rivets](https://www.heyco.com/Nylon_PVC_Hardware/product.cfm?product=Snap-Rivets)

### Environmental Rating / Conformal Coating

- 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.
- Fulham's DC 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.



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## Part Number Matrix

# V M U 096 030 CT 8 X X A -46

Product Line	Type	Control Type	Input Current	Max. Power	Design	CRI	Color Temperature	Option	Length
V = Vizion	M = Module	U = None	096 = 960mA Max.	030 = 30W	CT=Cuttable	8 = 80CRI 9 = 90CRI	27 = 2700K 30 = 3000K 35 = 3500K 40 = 4000K 50 = 5000K 57 = 5700K 65 = 6500K	A = Standard	46 = 46"
	(UL Class 2)								

All CCT and CRI options are made to order with MOQ and lead time.

## Product Image:



Full Length - 46"

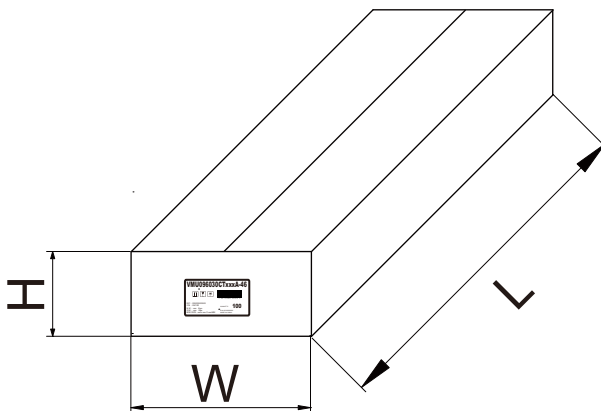


Half Length - 23"

## TOP VIEW

## Packaging

## Master Carton



OUTER DIMENSION		
L	W	H
47.44"(1205mm)	8.66"(220mm)	6.5"(165mm)
Net Weight	Gross Weight	QUANTITY
17.6 lbs. (7.98kg)	21.8 lbs. (9.89kg)	100pc.