



VMU096045CT8xxB-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 | 90 (15s6p) | 45 (15s3p) |
| Input Voltage ^① | 44.4VDC | 44.4VDC |
| Input Current ^① | 960mA Max. | 480mA Max. |
| Input Power ^① | 42.6W | 21.3W |
| Initial Lumens @4000K / 80CRI ^① | 7452 lumens | 3726 lumens |
| Initial Lm/W @4000K / 80CRI ^① | 175 lm/W | 175 lm/W |
| Initial Lumens per foot @Max. Current ^① | 1944 lm/ft | |
| Initial Lumens per string @Max. Current ^① | 1242 lm/string (15 LEDs) | |
| Beam Angle | 120° | |
| CRI | 80CRI standard, 90CRI available | |
| Storage Temperature Range | -40°C to +70°C / -40°F to +158°F | |
| Operating Temperature Range (ta) | -40°C to +55°C / -40°F to +131°F | |
| Maximum Case Temperature (Tc) ^② | L70: Tc max 105°C, L90: Tc max 105°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 | 46" L x 0.72" W x 0.17" H (1168.4mm x 18.2mm x 4.3mm) | |
| PCB Material / Thermal Conductivity | FR4-PCB 1.6mm, 1oz Copper, 0.3W/mK | |
| LED Quantity | 90pcs. | |
| Module Weight | 78g / 0.17lb | |
| PCB Part Number | VMU096045CT8xxB-46 | |
| Maximum Screw Installation Torque | 25 inch - ounces | |
| Connector Type | BJB Mini-Flex 1 pin connector, PN#: 46.131.1001.50 | |
| Packaging: Master Carton | 100pcs. | |
| 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 | |

^①Nominal ratings. Performance based on Tc mod = 25°C. See thermal de-rating chart (pg. 3) for higher temperature operation

^②TM-21 Reported Numbers



VMU096045CT8xxB-46

Electrical and Optical Specifications

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 |
|--------------------------|---------------|---------------|----------------------|------------------|-------------------|------------------|------------------------------|-----------------------------|--------------------------------------|--|
| VMU096045CTxxxB-46 (46") | 90 | 150 mA | 40.0 V | 6.0 W | 43 V | 6 W | 1228 lm | 205 lm/W | 320 lm/ft | 205 lm/string |
| | | 200 mA | 40.3 V | 8.1 W | 43 V | 9 W | 1641 lm | 203 lm/W | 428 lm/ft | 273 lm/string |
| | | 250 mA | 40.7 V | 10.2 W | 44 V | 11 W | 2049 lm | 201 lm/W | 535 lm/ft | 342 lm/string |
| | | 300 mA | 41.0 V | 12.3 W | 44 V | 13 W | 2453 lm | 199 lm/W | 640 lm/ft | 409 lm/string |
| | | 350 mA | 41.4 V | 14.5 W | 44 V | 15 W | 2854 lm | 197 lm/W | 744 lm/ft | 476 lm/string |
| | | 400 mA | 41.7 V | 16.7 W | 45 V | 18 W | 3250 lm | 195 lm/W | 848 lm/ft | 542 lm/string |
| | | 450 mA | 41.9 V | 18.9 W | 45 V | 20 W | 3642 lm | 193 lm/W | 950 lm/ft | 607 lm/string |
| | | 500 mA | 42.2 V | 21.1 W | 45 V | 23 W | 4031 lm | 191 lm/W | 1052 lm/ft | 672 lm/string |
| | | 550 mA | 42.5 V | 23.4 W | 45 V | 25 W | 4416 lm | 189 lm/W | 1152 lm/ft | 736 lm/string |
| | | 600 mA | 42.7 V | 25.6 W | 46 V | 28 W | 4798 lm | 187 lm/W | 1252 lm/ft | 800 lm/string |
| | | 650 mA | 43.0 V | 27.9 W | 46 V | 30 W | 5176 lm | 185 lm/W | 1350 lm/ft | 863 lm/string |
| | | 700 mA | 43.2 V | 30.2 W | 46 V | 32 W | 5551 lm | 184 lm/W | 1448 lm/ft | 925 lm/string |
| | | 750 mA | 43.4 V | 32.6 W | 46 V | 35 W | 5923 lm | 182 lm/W | 1545 lm/ft | 987 lm/string |
| | | 800 mA | 43.7 V | 34.9 W | 47 V | 38 W | 6291 lm | 180 lm/W | 1641 lm/ft | 1049 lm/string |
| | | 850 mA | 43.9 V | 37.3 W | 47 V | 40 W | 6657 lm | 178 lm/W | 1737 lm/ft | 1110 lm/string |
| 900 mA | 44.1 V | 39.7 W | 47 V | 42 W | 7020 lm | 177 lm/W | 1831 lm/ft | 1170 lm/string | | |
| 960 mA* | 44.4 V | 42.6 W | 47 V | 45 W | 7452 lm | 175 lm/W | 1944 lm/ft | 1242 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 |
|--------------------------|---------------|---------------|----------------------|------------------|-------------------|------------------|------------------------------|-----------------------------|--------------------------------------|--|
| VMU096045CTxxxB-46 (23") | 45 | 100 mA | 40.3 V | 4.0 W | 43 V | 4 W | 820 lm | 203 lm/W | 428 lm/ft | 273 lm/string |
| | | 150 mA | 41.0 V | 6.2 W | 44 V | 7 W | 1227 lm | 199 lm/W | 640 lm/ft | 409 lm/string |
| | | 200 mA | 41.7 V | 8.3 W | 45 V | 9 W | 1625 lm | 195 lm/W | 848 lm/ft | 542 lm/string |
| | | 250 mA | 42.2 V | 10.6 W | 45 V | 11 W | 2015 lm | 191 lm/W | 1052 lm/ft | 672 lm/string |
| | | 300 mA | 42.7 V | 12.8 W | 46 V | 14 W | 2399 lm | 187 lm/W | 1252 lm/ft | 800 lm/string |
| | | 350 mA | 43.2 V | 15.1 W | 46 V | 16 W | 2775 lm | 184 lm/W | 1448 lm/ft | 925 lm/string |
| | | 400 mA | 43.7 V | 17.5 W | 47 V | 19 W | 3146 lm | 180 lm/W | 1641 lm/ft | 1049 lm/string |
| | | 450 mA | 44.1 V | 19.8 W | 47 V | 21 W | 3510 lm | 177 lm/W | 1831 lm/ft | 1170 lm/string |
| | | 480 mA* | 44.4 V | 21.3 W | 47 V | 23 W | 3726 lm | 175 lm/W | 1944 lm/ft | 1242 lm/string |

Luminous Flux De-Rating: CCT and CRI Multipliers

| | 2700K | 3000K | 3500K | 4000K | 5000K | 5700K | 6500K |
|---------------|-------|-------|-------|-------|-------|-------|-------|
| CRI 80(R9> 0) | 0.929 | 0.955 | 0.968 | 1.000 | 1.013 | 1.006 | 1.000 |
| CRI 90(R9>50) | 0.776 | 0.801 | 0.821 | 0.863 | 0.869 | 0.865 | 0.863 |

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 configured 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.



VMU096045CT8xxB-46



Thermal Specifications

| | |
|--|---|
| Storage Temperature Range | -40 to +70°C / -40 to +158°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 | 0.997 | 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 |

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.



VMU096045CT8xxB-46



Certification Chart

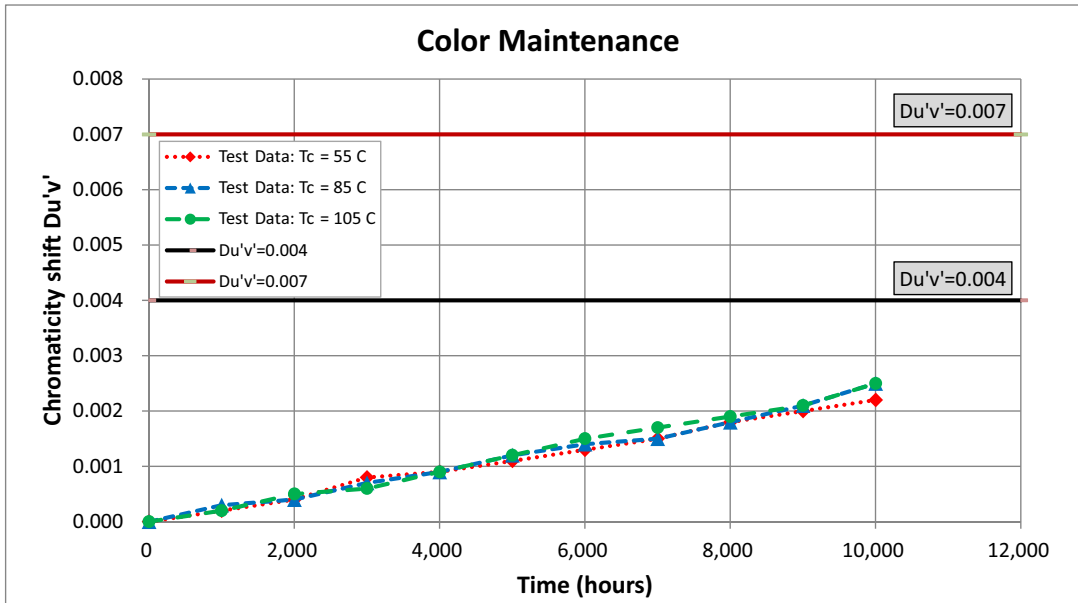
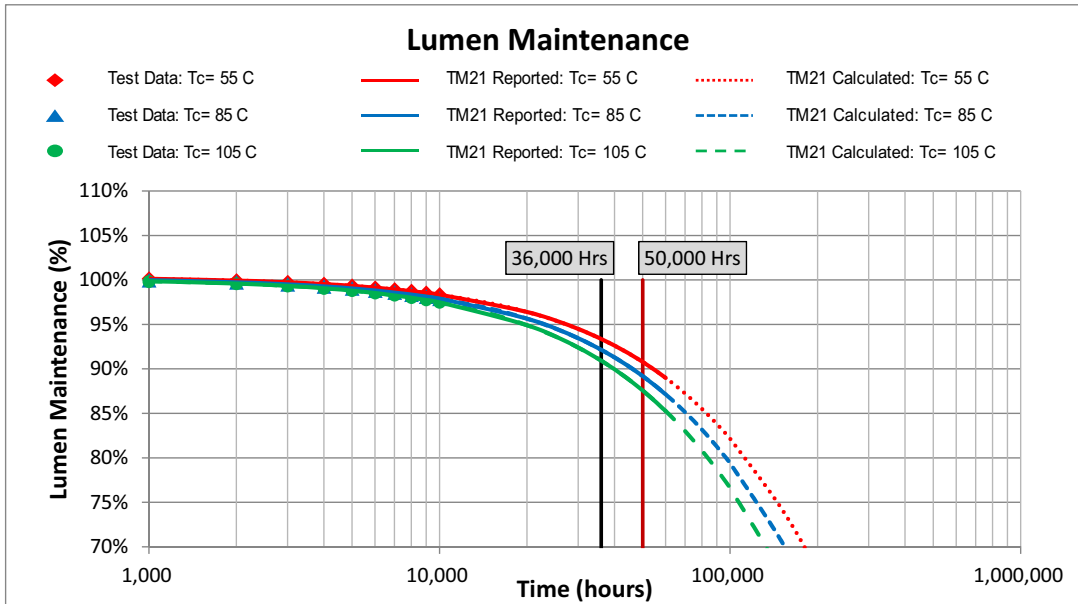
| Classification | Model | VMU096045CT8xxB-46 |
|---|-------|--------------------|
| | | YES |
| | | YES |
| Suitable for UL Class 2 Lighting System | | YES |

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





VMU096045CT8xxB-46

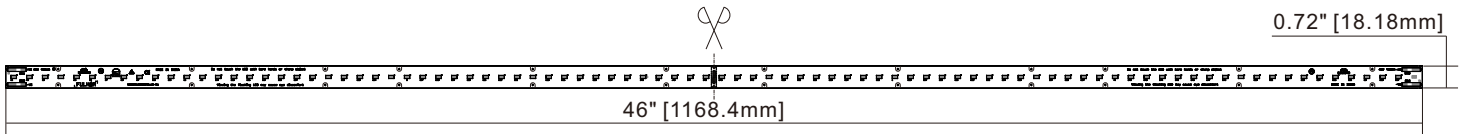
Mechanical Drawings

46"

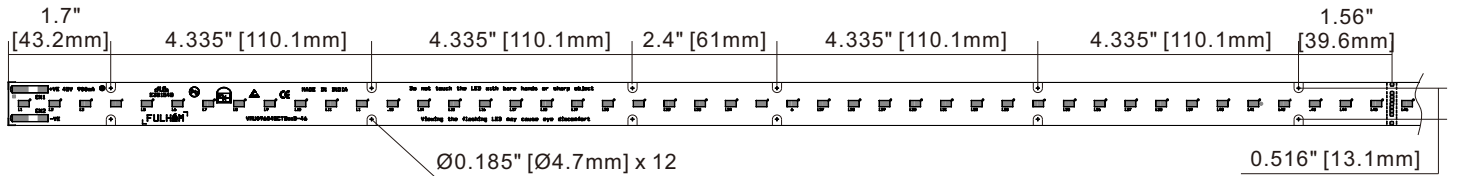
[1168.4mm]

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

Cuttable at half 23"



Dimension - Full Board 46"



Dimension - Half Board 23"

LED Pitch = 0.511" [12.98mm]



VMU096045CT8xxB-46

Guidelines

Termination Notes

- Connector Type: BJB Single Pole SMD Terminal Block, Part #: 46.131.1001.50
- cURus, ENEC Rating: 3A/320V
- Use solid wire size 24 – 20 AWG, rated at a minimum 50V, minimum 105°C, and stripped to length 7 mm (0.276 inches).



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.
- 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 is recommended for fast and easy installation with clean and finish look. For more detail information, please visit Heyco website: https://www.heyco.com/Nylon_PVC_Hardware/product.cfm?product=Snap-Rivets



Heyco Rivet 9035

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.

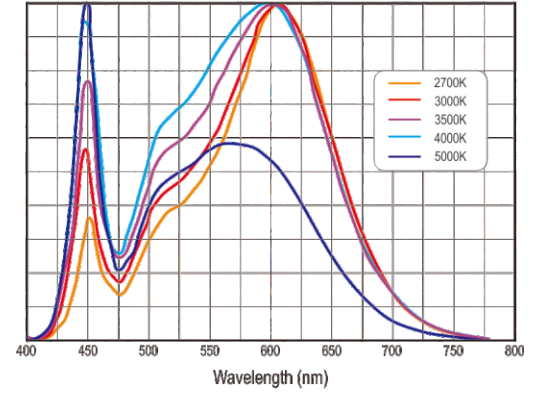
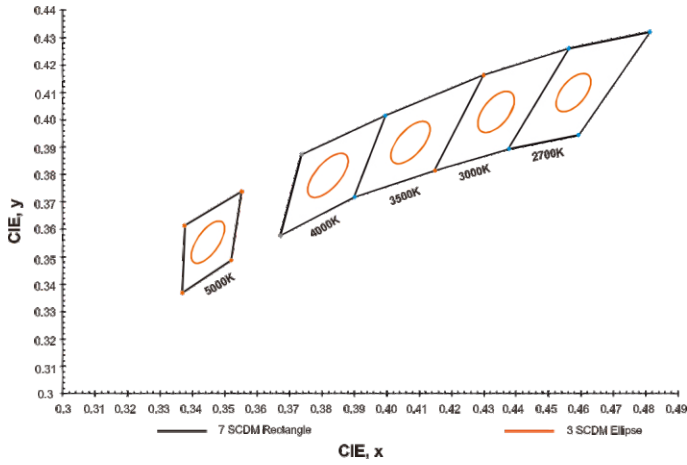


VMU096045CT8xxB-46



Color and Binning

Optical Spectrum



Compatible Fulham Drivers

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

- 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, Typ. 3 SDCM, Max 5 SDCM.
- 3) The Optical Spectrum values vary depending on product type and color rank.
- 4) Driver not included.
- 5) Do not connect 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.



VMU096045CT8xxB-46



Part Number Matrix

V M U 096 045 CT 8 xx B-46

| Product Line | Type | Control Type | Max. Input Current | Max. Power | Design | CRI | Color Temperature | Option | Option |
|--------------|----------------------------|--------------|--------------------|------------|---------------|------------------|--|--------------|----------|
| V = Vizion | M = Module (UL Class 2) | U = None | 096 = 960mA | 045 = 45W | CT = Cuttable | 8 = 80 9 = 90 | 27 = 2700K 30 = 3000K 35 = 3500K 40 = 4000K 50 = 5000K 57 = 5700K 65 = 6500K | B = Standard | 46 = 46" |

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

Product Image:

VMU096045CT8xxB-46 46" module

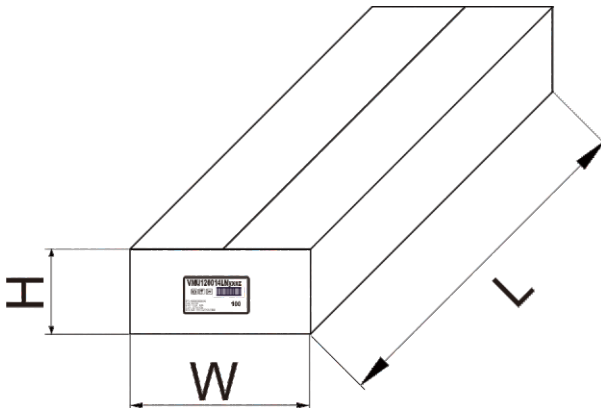


Cuttable area



Packaging

Master Carton



| OUTER DIMENSION | | |
|------------------------|----------------------|--------------|
| L | W | H |
| 47.24"(1200mm) | 7.09"(180mm) | 4.72"(120mm) |
| Net Weight | Gross Weight | QUANTITY |
| 17.10lbs. (7.76 kg) | 21.63lbs. (9.8kg) | 100pc. |