



July 27, 2009

LED HARD STRIP (Waterproof)

SPECIFICATION



US Patent Pending (US 61/079,042) / International patent

cULus listed  US LISTED E321933

RoHS Compliant  

World-class optoelectronic device manufacturing facility since 1969
25 million products manufactured daily
ISO14001 / ISO9001 / TS16949 Certified
White Licensed



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Introduction

VaOpto Light Emitting Diode (LED) Hard Strips Series saves energy and lasts a long life.

Environmentally Conscious

Energy efficient, lead free, and long lasting meaning fewer replacements.

Outstanding Energy Efficiency

Compare to standard light strips, VaOpto LED Hard Strips Series reduces energy consumption by 70%-80%.

Long Life = Labor Savings

Delivers at least 70% of initial light output after at least 50,000 hours.

Various Colors

Red/Amber/Yellow/Green/Blue/RGB

Cool White (5000-10000K)

Neutral White (3700-5000K)

Warm White (2600-3700K)

VO-HS-X-12T1/VO-X-24T1 where X may be: R, Y, G, B, CW, NW, or WW



Optical Parameters at Ta=77 °F (25 °C)

Part Number	Color	Size (mm)	PCB Size (mm)	Lumens (lm)	Wavelength	LED no. per strip	Segment Number	Viewing Angle
VO-HS-R-12T1	Red	1000x12x10	1000x10x1.0	300	624nm	60 LEDs	1	120
VO-HS-Y-12T1	Yellow	1000x12x10	1000x10x1.0	300	590nm	60 LEDs	1	120
VO-HS-G-12T1	Green	1000x12x10	1000x10x1.0	400	515nm	60 LEDs	1	120
VO-HS-B-12T1	Blue	1000x12x10	1000x10x1.0	200	470nm	60 LEDs	1	120
VO-HS-CW-12T1	Cool White	1000x12x10	1000x10x1.0	600	5000-10000K	60 LEDs	1	120
VO-HS-NW-12T1	Neutral White	1000x12x10	1000x10x1.0	550	3700-5000K	60 LEDs	1	120
VO-HS-WW-12T1	Warm White	1000x12x10	1000x10x1.0	500	2600-37000K	60 LEDs	1	120

Electrical Parameters

Parameters	Symbol	Values	Unit
Operating Voltage	Vopr	12 (+/-5%)	V
Power Dissipation Max.	PD	Red/Yellow	2.5
		Green /Blue/Cool White/Neutral White/Warm White	3.5
Operating Temperature	Topr	-30 - +85 (-22 - +185)	°C (°F)
Storage Temperature	Tstg	-30 - +85 (-22 - +185)	°C (°F)

Optical Parameters at Ta=77 °F (25 °C)

Part Number	Color	Size (mm)	PCB Size (mm)	Lumens (lm)	Wavelength	LED no. per strip	Segment Number	Viewing Angle
VO-HS-R-24T1	Red	1000x12x10	1000x10x1.0	300	624nm	60 LEDs	1	120
VO-HS-Y-24T1	Yellow	1000x12x10	1000x10x1.0	300	590nm	60 LEDs	1	120
VO-HS-G-24T1	Green	1000x12x10	1000x10x1.0	400	515nm	60 LEDs	1	120
VO-HS-B-24T1	Blue	1000x12x10	1000x10x1.0	200	470nm	60 LEDs	1	120
VO-HS-CW-24T1	Cool White	1000x12x10	1000x10x1.0	600	5000-10000K	60 LEDs	1	120
VO-HS-NW-24T1	Neutral White	1000x12x10	1000x10x1.0	550	3700-5000K	60 LEDs	1	120
VO-HS-WW-24T1	Warm White	1000x12x10	1000x10x1.0	500	2600-3700K	60 LEDs	1	120

Electrical Parameters

Parameters	Symbol	Values	Unit
Operating Voltage	Vopr	24 (+/-5%)	V
Power Dissipation Max.	PD	Red/Yellow	2.5
		Green /Blue/Cool White/Neutral White/Warm White	3.5
Operating Temperature	Topr	-30 - +85 (-22 - +185)	°C (°F)
Storage Temperature	Tstg	-30 - +85 (-22 - +185)	°C (°F)

Connection Between Two Strips



VO-HS-X-24T1-101 where X may be: R, Y, G, B, CW, NW, or WW**Features:**

- Display materials: light-emitting diode chip
- Available in red, green, blue, yellow, cool white, neutral white, and warm white
- Display unit: a period
- High-brightness, high efficiency; solid-state encapsulation, special thermal design, high, stable and reliable protective level; environmental protection and energy saving, safe power
- IP67 Standards
- Aluminum alloy casting

Applications:

- Path and contour marking
- Elegant interior decoration
- Backlighting for large sized ad-sign
- Signal lighting

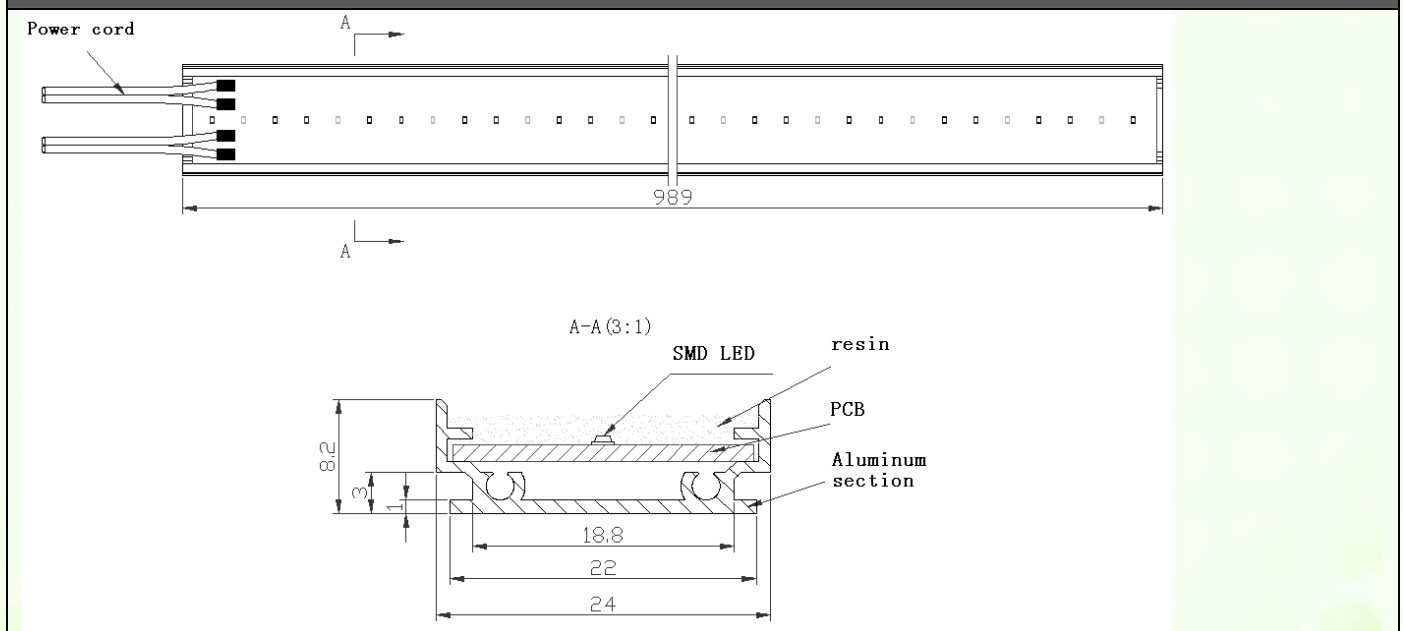
Optical Parameters at Ta=77 °F (25 °C)

Part Number	Color	Size (mm)	Lumens (lm)	Wavelength	LED no. per strip	Segment Number	Viewing Angle
VO-HS-R-24T1-101	Red	990x24x8	96	624nm	48 pcs of super flux LED	1	120
VO-HS-Y-24T1-101	Yellow	990x24x8	96	590nm	48 pcs of super flux LED	1	120
VO-HS-G-24T1-101	Green	990x24x8	96	515nm	48 pcs of super flux LED	1	120
VO-HS-B-24T1-101	Blue	990x24x8	40	470nm	48 pcs of super flux LED	1	120
VO-HS-CW-24T1-101	Cool White	990x24x8	96	5000-10000K	48 pcs of super flux LED	1	120
VO-HS-NW-24T1-101	Neutral White	990x24x8	80	3700-5000K	48 pcs of super flux LED	1	120
VO-HS-WW-24T1-101	Warm White	990x24x8	80	2600-3700K	48 pcs of super flux LED	1	120

Electrical Parameters

Parameters	Symbol	Values	Unit
Operating Voltage	Vopr	24 (+/-5%)	V
Forward Current	I _F	200	mA
Power Dissipation Max.	PD	4.8	W
Operating Temperature	Topr	-20 - +50 (-4 - +122)	°C (°F)
Storage Temperature	Tstg	-20 - +75 (-4 - +167)	°C (°F)

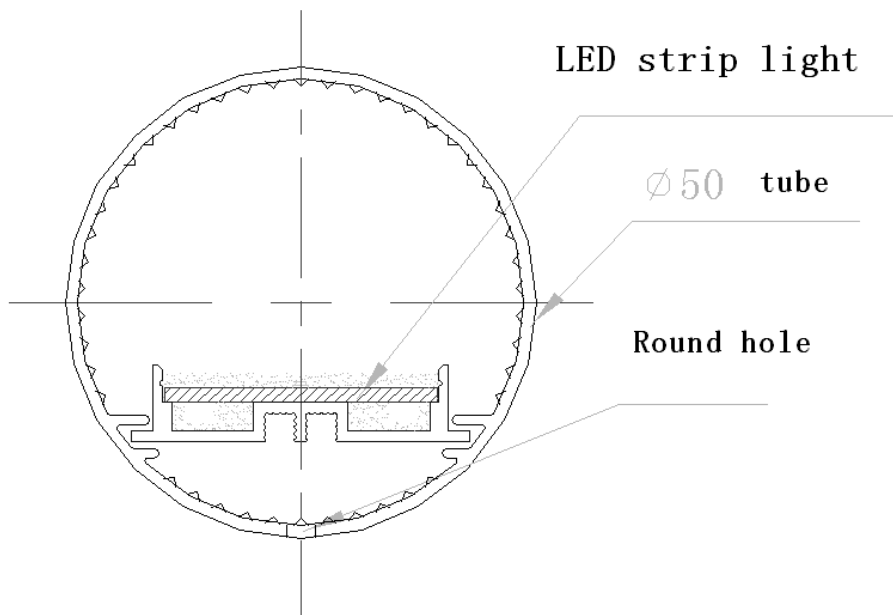
Outline Dimensions: (Unit: mm)



Connection Between Two Strips



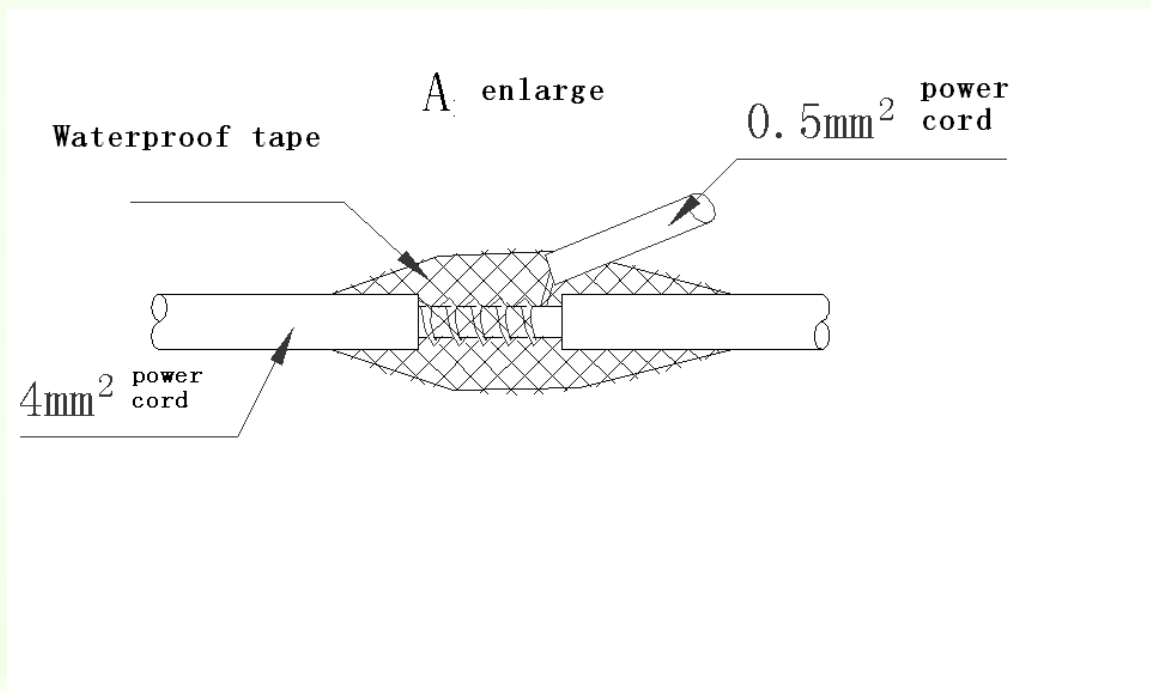
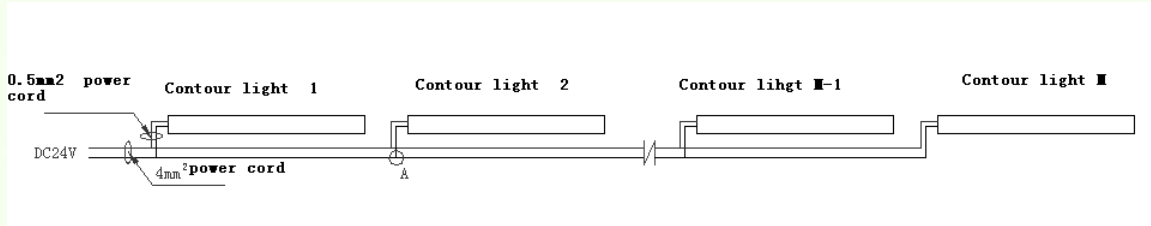
External Connection of Strip Light



This strip light source can be shaped into the outline of a tube with diameter of $\Phi 50$ to use.

Caution

1. For this strip light, the power cord overlap in the power bus. Power cord interface should be wrapped by waterproof adhesive plaster. The yellow power cord connects with +24 V; red, green, blue, black or white power cord connects with negative electrode.
2. 4mm² Power bus allows maximum connecting length of 30 m of the strip light.



VO-HS-X-24T1-301 where X may be: R, Y, G, B, CW, NW, or WW



Optical Parameters at Ta=77 °F (25 °C)

Part Number	Color	Size (mm)	Lumens (lm)	Wavelength	LED no. per strip	Segment Number	Viewing Angle
VO-HS-R-24T1-101	Red	990x24x8	96	624nm	48 pcs of TOP LED	1	120
VO-HS-Y-24T1-101	Yellow	990x24x8	96	590nm	48 pcs of TOP LED	1	120
VO-HS-G-24T1-101	Green	990x24x8	96	515nm	48 pcs of TOP LED	1	120
VO-HS-B-24T1-101	Blue	990x24x8	40	470nm	48 pcs of TOP LED	1	120
VO-HS-CW-24T1-101	Cool White	990x24x8	96	5000-10000K	48 pcs of TOP LED	1	120
VO-HS-NW-24T1-101	Neutral White	990x24x8	80	3700-5000K	48 pcs of TOP LED	1	120
VO-HS-WW-24T1-101	Warm White	990x24x8	80	2600-3700K	48 pcs of TOP LED	1	120

Electrical Parameters

Parameters	Symbol	Values	Unit
Operating Voltage	Vopr	24 (+/-5%)	V
Forward Current	I _F	200	mA
Power Dissipation Max.	PD	4.8	W
Operating Temperature	Topr	-20 - +50 (-4 - +122)	°C (°F)
Storage Temperature	Tstg	-20 - +75 (-4 - +167)	°C (°F)

Connection Between Two Strips



RGB Series



Features:

- Display materials: light-emitting diode chip
- High-brightness, high efficiency; solid-state encapsulation, special thermal design, high, stable and reliable protective level; environmental protection and energy saving, safe power
- IP67 Standards
- Aluminum alloy casting

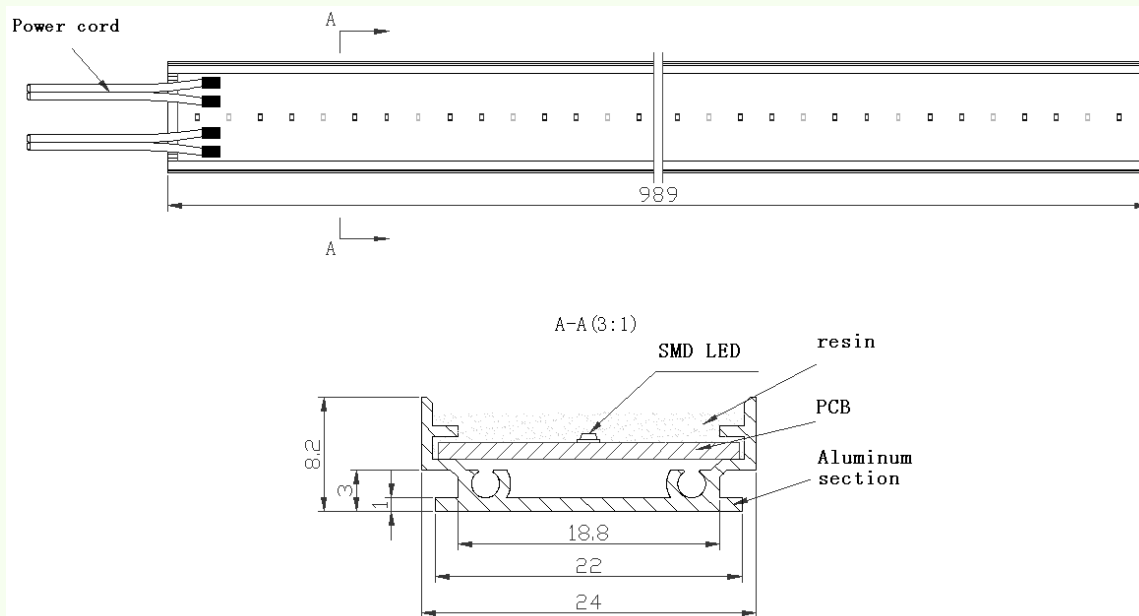
Applications:

- Path and contour marking
- Elegant interior decoration
- Backlighting for large sized ad-sign
- Signal lighting

Optical Parameters at Ta=77 °F (25 °C)

Part Number	Color	Size (mm)	Lumens (lm)	Input Voltage (VDC)	Power (w)	LED no. per strip	Segment Number	Viewing Angle
VO-HS-RGB-24T1-201	RGB	990x24x8.2	96	24	9.6	R:40 pcs G:40 pcs B:40 pcs	1	120
VO-HS-RGB-24T1-208	RGB	990x36x9	96	24	9.6	48 pcs of TOP LED	1	120
VO-HS-RGB-24T1-408	RGB	990x36x9	96	24	9.6	48 pcs of TOP LED	1	120
VO-HS-RGB-12T1-216	RGB	990x36x9	40	12	9.6	48 pcs of TOP LED	1	120
VO-HS-RGB-12T1-416	RGB	990x36x9	96	12	9.6	48 pcs of TOP LED	1	120

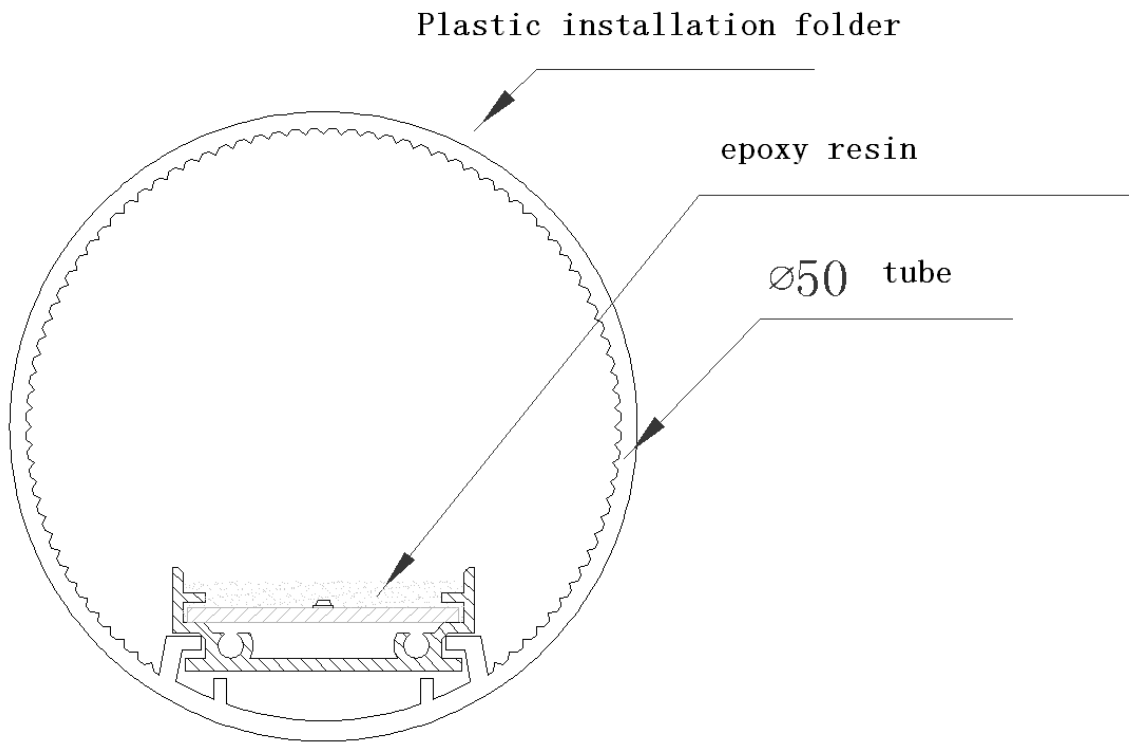
Outline Dimensions- VO-HS-RGB-24-T1-201: (Unit: mm)



Connection Between Two Strips



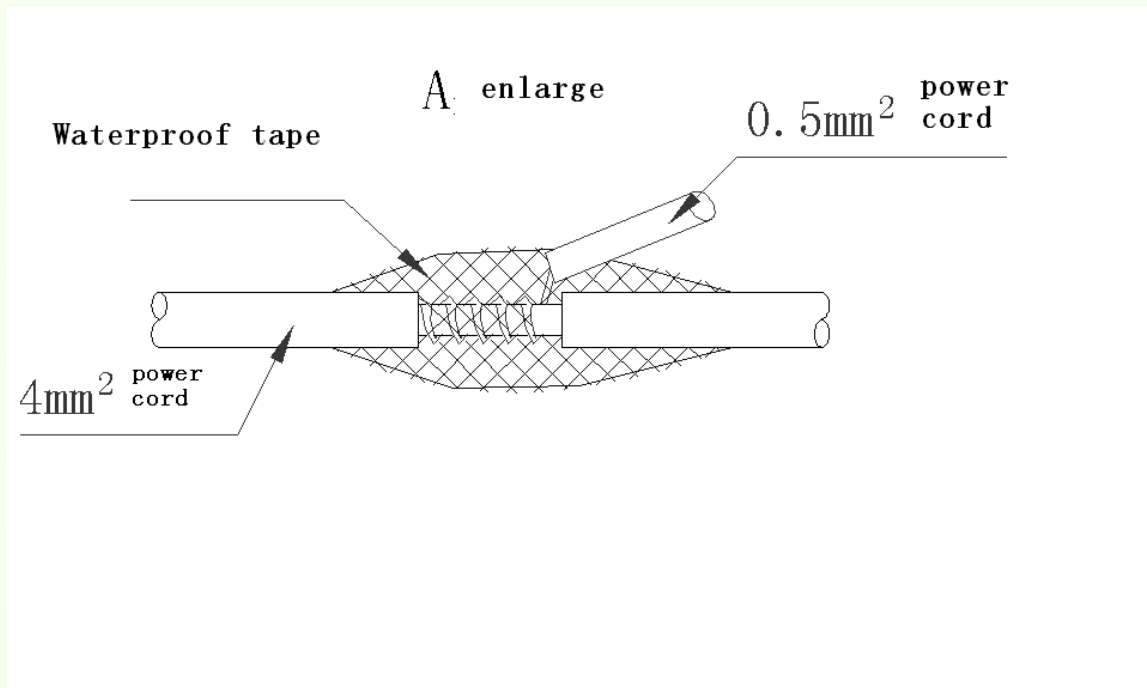
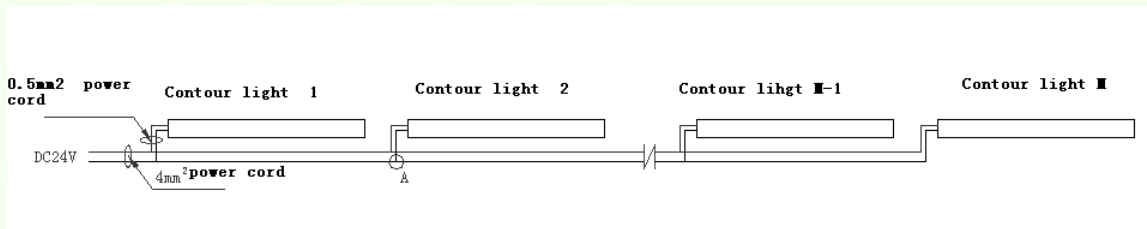
External Connection of Strip Light



This strip light source can be shaped into the outline of a tube with diameter of $\Phi 50$ to use.

Caution

1. For this strip light, the power cord overlap in the power bus. Power cord interface should be wrapped by waterproof adhesive plaster. The yellow power cord connects with +24 V; red, green, blue, black or white power cord connects with negative electrode.
2. 4mm² Power bus allows maximum connecting length of 30 m of the strip light.



General Precautions

- LEDs are static sensitive devices; precautions should be taken to ensure the LEDs are well protected from ESD during handling.
- ESD protection for GaP and AlGaAs based chips is still necessary even though the chips are safe in low static-electric discharge events.
- AllInGap, GaN and/or InGaN based chips are STATIC SENSITIVE devices and ESD protection must be taken into consideration in the initial design stages.
- Do not operate LEDs in reverse bias.

Warranty and Liability Information

- Three years limited warranty.
- The information contained herein is presented only as a guide for the applications of our products.
- No responsibility is assumed by VaOpto for any infringements of intellectual property or other infringements of the rights of third parties that may result from its use.
- VaOpto is committed to a process of continuous improvement of the quality and the features of its products and reserves the right to make changes that result in such improvements.
- VaOpto products are not intended for use in applications where extraordinarily high reliability is required to prevent the loss of human life or where failure could result in bodily injury.
- VaOpto limits the extent of our liability to the initial component cost and will, in the event of a failure, replace a failed component or refund the purchase price at VaOpto option.

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