

# AMPHI-NEON STRIP

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## Marine Liner Light

**Tachai Industrial Co., Ltd.**

大才企業股份有限公司

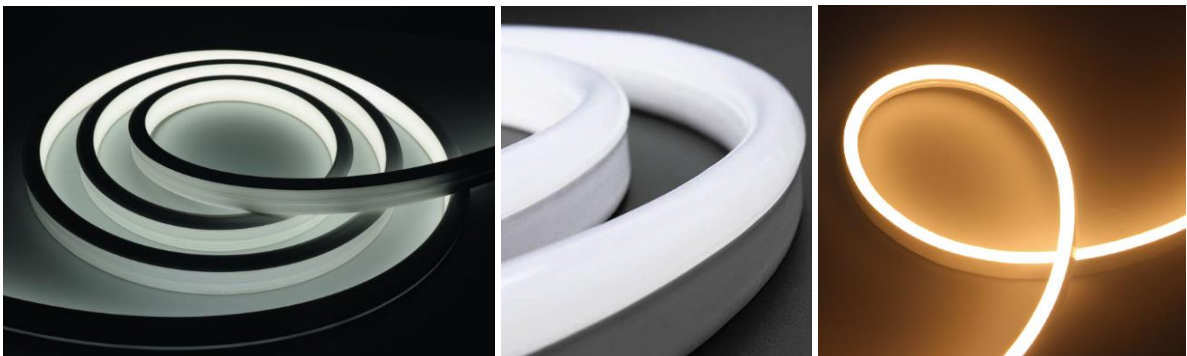
[www.tachai.com.tw](http://www.tachai.com.tw)

[sales@tachai.com.tw](mailto:sales@tachai.com.tw)

# AMPHI-NEON STRIP

## Features and Functions

- ✓ High light transmittance: high light transmittance up to 90%, meet the requirements of high lumens output, and it's not only used for decoration but also lighting.
- ✓ Good protective performance: the neon strip main body and standard outlet end cap can be used in an IP67 real environment, and also pass the laboratory IP68 test.
- ✓ Good flexibility: reliable structure with good flexibility, adopting solid silicone, customized internal optical structure, and external mold. The neon strips can be bent and twisted for various fixtures and space with resistances to tear and draw, surely, it's not easy to get damaged and deformed in applications.
- ✓ Outstanding weather resistance: storing in the width range temperature between  $-50^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$ , it can maintain the normal-soft state, without embrittlement, deformation, softening, and aging. When operating under  $-20^{\circ}\text{C}$  to  $+45^{\circ}\text{C}$ . it can work as perfectly as expected.
- ✓ Corrosion resistance: the silicone can resist corrosion of normal salt, alkali, and acid, then suitable for special environments such as beaches, yachts, chemical industries, petroleum, mines, and laboratories.
- ✓ Resistance to UV: the extrusion silicone can be used in outdoor environments for long-term exposure to direct sunlight, with no yellowing and aging over 5 years.
- ✓ Flame-retardant and environment friendly: it's environmentally and non-toxic with a high ignition point, non-flammable in needle-flame burning, and without irritating toxic gases volatilizing (unlike PVC) which is more reliable.
- ✓ High thermal conductivity: the silicone thermal conductivity is  $0.27\text{W/MK}$ , better than the PVC's  $0.14\text{W/MK}$ . We assure this strip lives longer with effective heat dissipation.
- ✓ High substitutability: it can achieve various emitting color such as warm white, natural white, cool white, R/G/B and digital toning, and also replace the neon tube, guardrail type strip, and so on for signage lighting, architectural lighting, and landscape lighting.



## AMPHI-NEON STRIP – HOLLOW SERIES

### TLDNS1212HPXXX-24 SERIES (12x12mm)



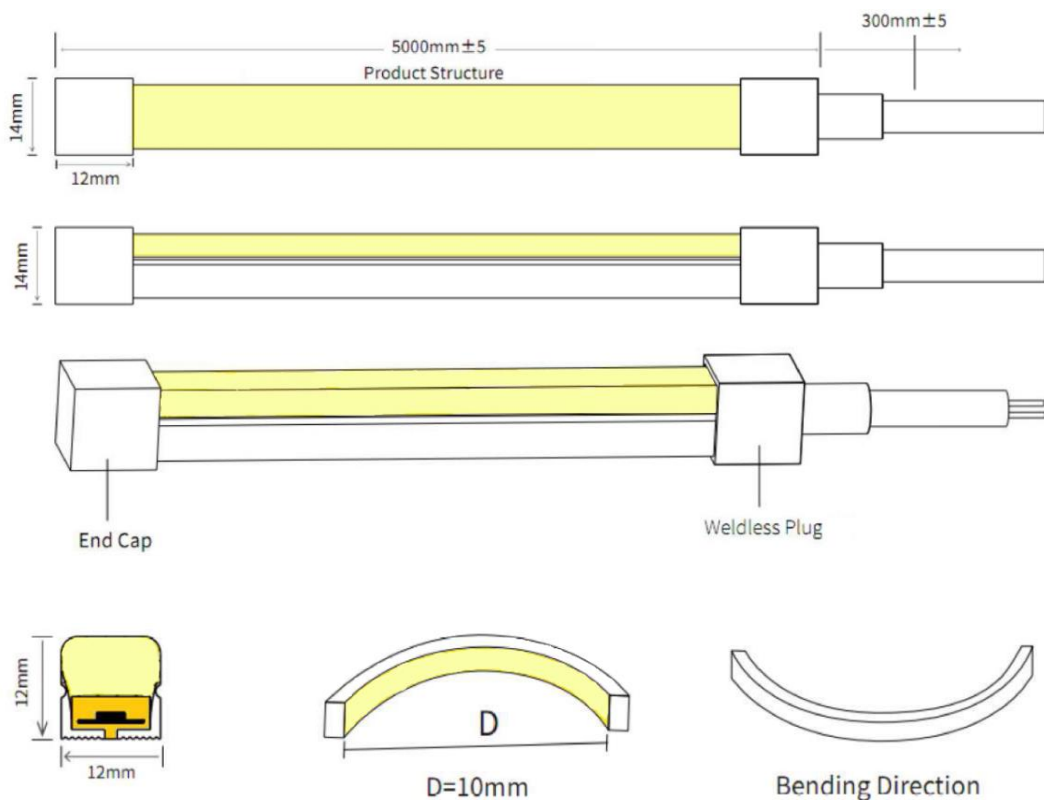
#### Absolute Maximum Rating at 25°C

Parameters	Absolute Maximum Rating
Working Voltage	24VDC
Rated power per meter	12W / 14W per meter
LEDs per meter	144 LEDs /meter
Lumen per meter	587 LM (4000K) /meter
Standard Continuous Length	10 meters
Waterproof Rating	IP 68
Storage Temperature	-40 ~ +65 °C
Operating Temperature	-40 ~ +45 °C
Min. Cutting Unit and Length	1 LED, 0.69 cm
Weight	210g /meter

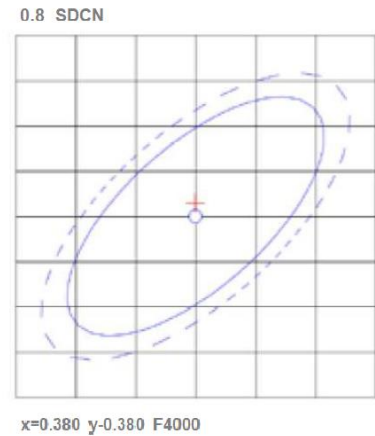
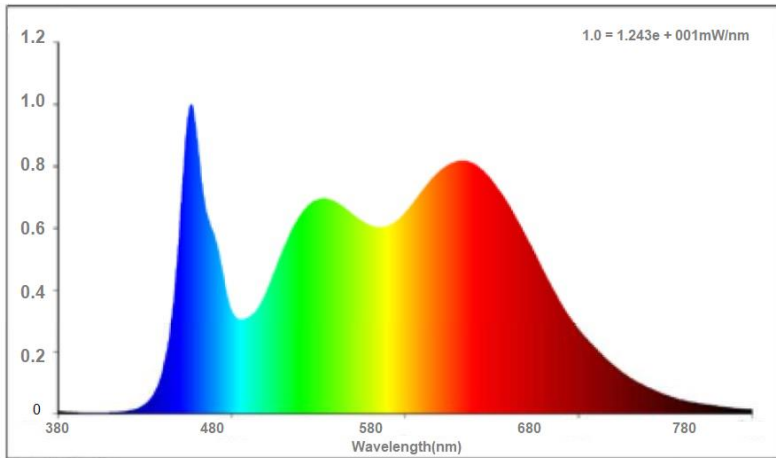
Item No.	Color	Rated Power
TLDNS1212HPLR1-24	RED 615-625nm	12W
TLDNS1212HPLG1-24	GREEN 515~525nm	12W

TLDNS1212HPLB1-24	BLUE 460-475nm	12W
TLDNS1212HPLW1-24	WARM WHITE 2700K	12W
TLDNS1212HPLW2-24	WARM WHITE 3000K	12W
TLDNS1212HPLW3-24	WARM WHITE 3500K	12W
TLDNS1212HPLW4-24	NATURAL WHITE 4000K	12W
TLDNS1212HPLW5-24	NATURAL WHITE 5000K	12W
TLDNS1212HPLW6-24	COOL WHITE 6500K	12W
TLDNS1212HPNR1-24	RED 615-625nm	14W
TLDNS1212HPNG1-24	GREEN 515~525nm	14W
TLDNS1212HPNB1-24	BLUE 460-475nm	14W
TLDNS1212HPNW1-24	WARM WHITE 2700K	14W
TLDNS1212HPNW2-24	WARM WHITE 3000K	14W
TLDNS1212HPNW3-24	WARM WHITE 3500K	14W
TLDNS1212HPNW4-24	NATURAL WHITE 4000K	14W
TLDNS1212HPNW5-24	NATURAL WHITE 5000K	14W
TLDNS1212HPNW6-24	COOL WHITE 6500K	14W

### Package Dimensions (unit: mm)



## Spectrum Chart

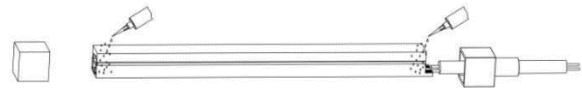


## Installation Steps

### Step 1: Soldering



### Step 2: Glue



### Step 3: Fix the front cap



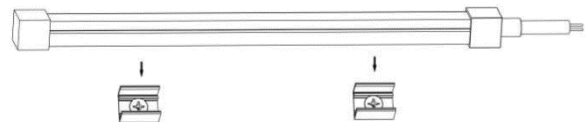
### Step 4: Finished Article



### Step 5: Fix the accessory



### Step 6: put strip into profile



### Step 7: Finished Article



### Note:

1. The positive and negative marked on FPCB.
2. Using silicone glue to enhance waterproof rate.
3. Make sure power cut off when installation.

## AMPHI-NEON STRIP – SOLID SERIES

### TLDNS1616HPPXX-24 SERIES (16x16mm)

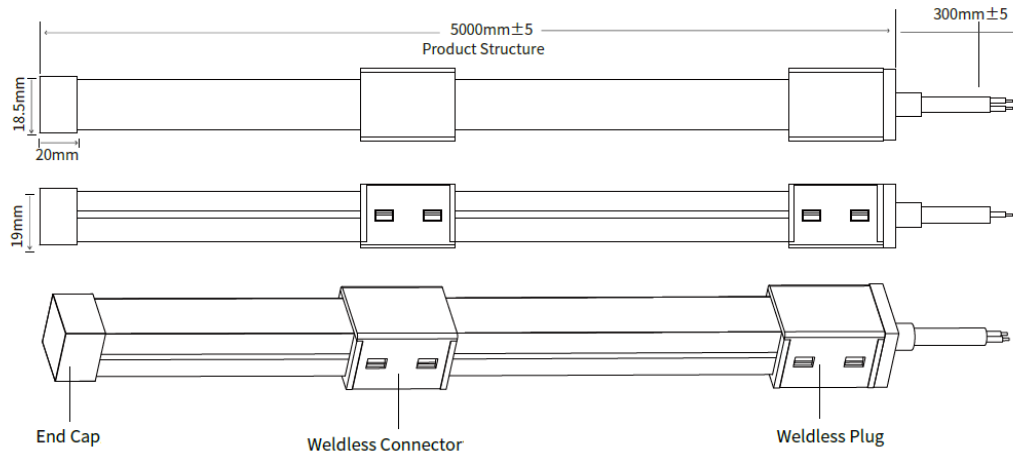


#### Absolute Maximum Rating at 25°C

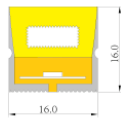
Parameters	Absolute Maximum Rating
Working Voltage	24VDC
Rated power per meter	15W /meter
LEDs per meter	168 LEDs /meter
Lumen per watt	36 LM (4000k) /W
Standard Continuous Length	10 meters
Waterproof Rating	IP 68
Storage Temperature	-40 ~ +65 °C
Operating Temperature	-40 ~ +45 °C
Min. Cutting Unit and Length	1 LED, 6mm
Weight	265.2g /meter

Item No.	Color	Rated Power
TLDNS1616HPPW2-24	WARM WHITE 3000K	15W
TLDNS1616HPPW4-24	NATURAL WHITE 4000K	15W
TLDNS1616HPPW5-24	NATURAL WHITE 5000K	15W

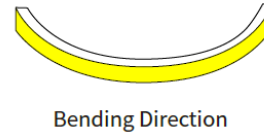
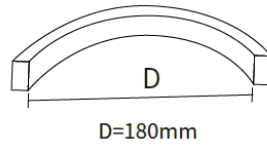
## Package Dimensions (unit: mm)



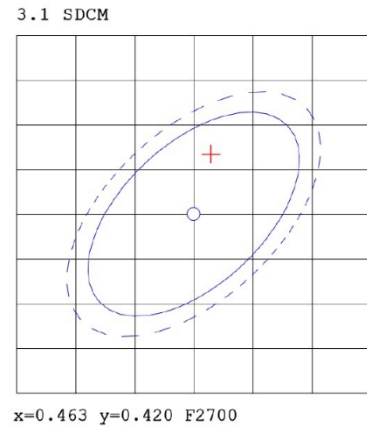
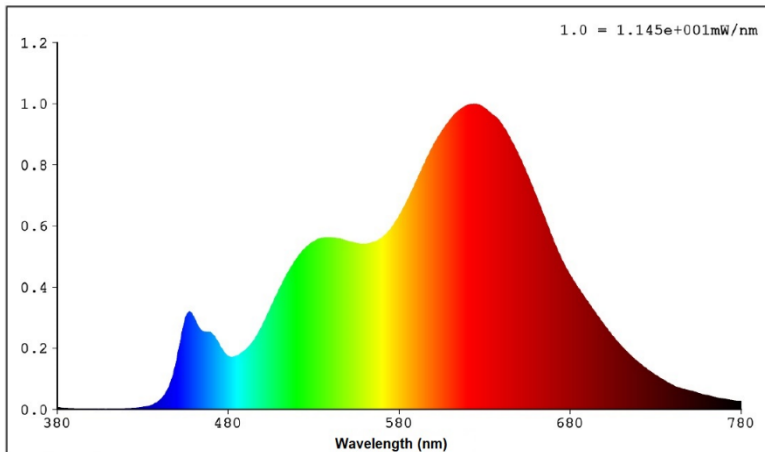
• Section diagram



• Bending diameter

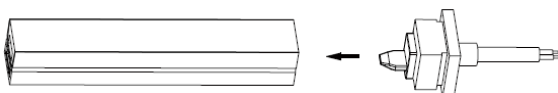


## Spectrum Chart

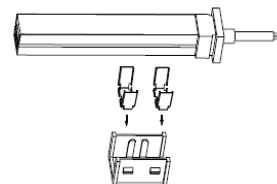


## Installation Steps

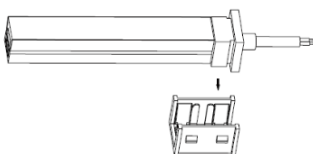
**Step 1: Insert the two pins of power cable into the strip**



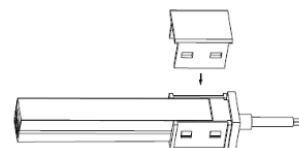
**Step 2: Connection pins**

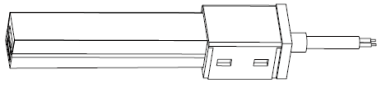
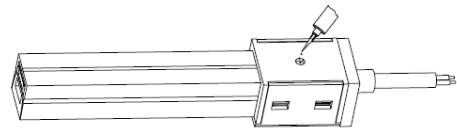
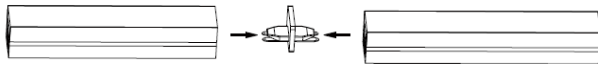
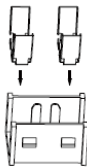
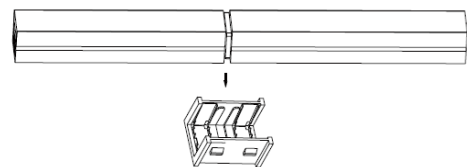
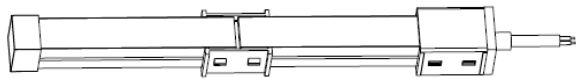
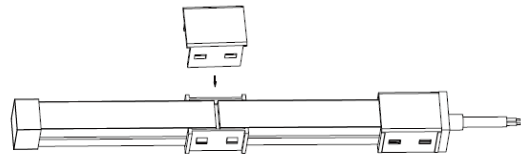
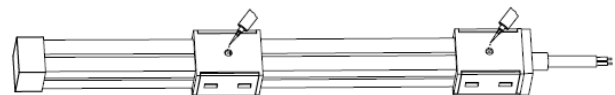
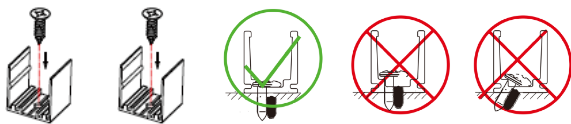
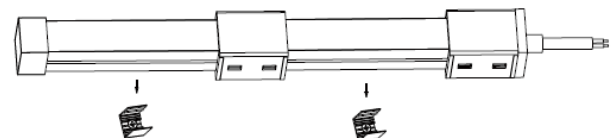


**Step 3: fix in the connector**



**Step 4: Make sure connector cover locked tightly**



**Step 5: Finish****Step 6: block hold with glue****Step 7: Put the strip into the weldless middle connector****Step 8: Finished product****Step 9: Fix the metal connection pins****Step 10: Put the strip in the connector****Step 11: Fix the strip with middle connector****Step 12: Lock the middle connector****Step 13: make sure connector cover locked tightly****Step 14: block hold with glue again****Step 15: Screw the clips****Step 16: Fix the strip with clips****Step 17: Final installation****Note:**

- 1 The positive and negative marked on FPCB.
- 2 Using silicone glue to enhance waterproof rate.
- 3 Make sure power cut off when installation.



# AMPHI-NEON STRIP – ARC/SOLID SERIES

## TLDNS1022HPXXX-24 SERIES (10x22mm)



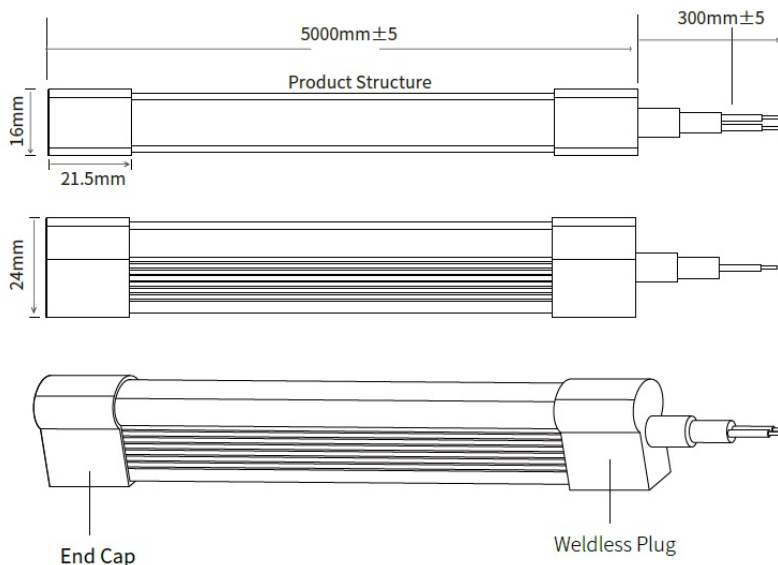
### Absolute Maximum Rating at 25°C

Parameters	Absolute Maximum Rating
Working Voltage	24VDC
Rated power per meter	8W / 12W per meter
LEDs per meter	120 LEDs /meter
Lumen per watt	35 LM (4000k) /W
Standard Continuous Length	10 meters
Waterproof Rating	IP 68
Storage Temperature	-40 ~ +65 °C
Operating Temperature	-40 ~ +45 °C
Min. Cutting Unit and Length	6 LEDs, 50mm
Weight	280g /meter

Item No.	Color	Rated Power
TLDNS1022HPhR1-24	RED 615-625nm	8W
TLDNS1022HPhG1-24	GREEN 515~525nm	8W
TLDNS1022HPhB1-24	BLUE 460-475nm	8W

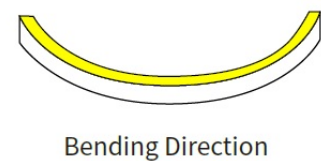
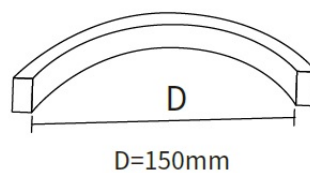
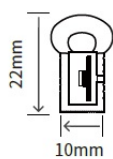
TLDNS1022HPHW1-24	WARM WHITE 2700K	8W
TLDNS1022HPHW2-24	WARM WHITE 3000K	8W
TLDNS1022HPHW4-24	NATURAL WHITE 4000K	8W
TLDNS1022HPHW5-24	NATURAL WHITE 5000K	8W
TLDNS1022HPLR1-24	RED 615-625nm	12W
TLDNS1022HPLG1-24	GREEN 515~525nm	12W
TLDNS1022HPLB1-24	BLUE 460-475nm	12W
TLDNS1022HPLW1-24	WARM WHITE 2700K	12W
TLDNS1022HPLW2-24	WARM WHITE 3000K	12W
TLDNS1022HPLW4-24	NATURAL WHITE 4000K	12W
TLDNS1022HPLW5-24	NATURAL WHITE 5000K	12W

## Package Dimensions (unit: mm)

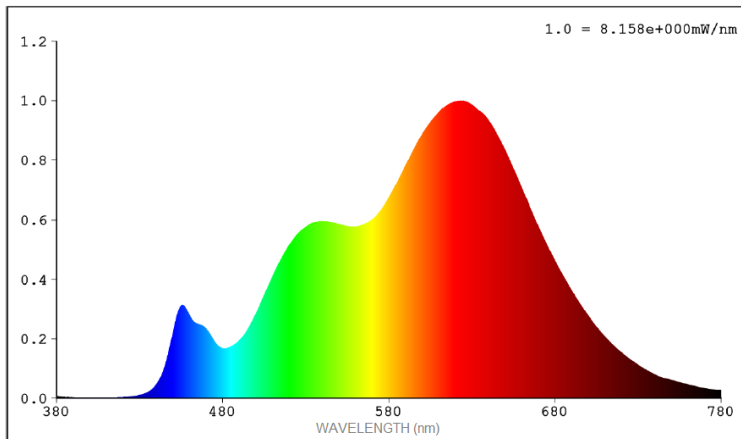


• Section diagram

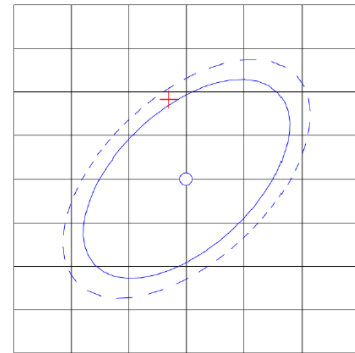
• Bending diameter



## Spectrum Chart



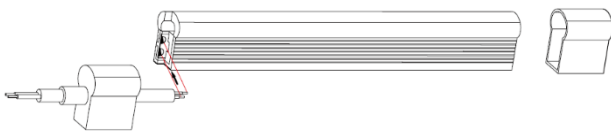
5.3 SDCM



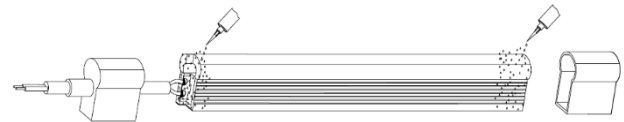
x=0.463 y=0.420 F2700

## Installation Steps

### Step 1: Soldering



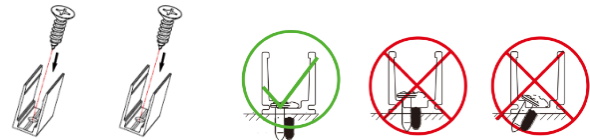
### Step 2: Glue



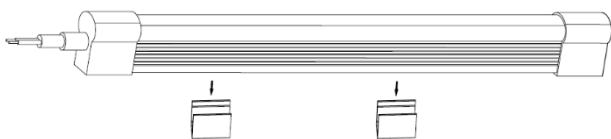
### Step 3: Fix the front cap



### Step 4: Screw the clips



### Step 5: put strip into profile



### Step 6: Finished article

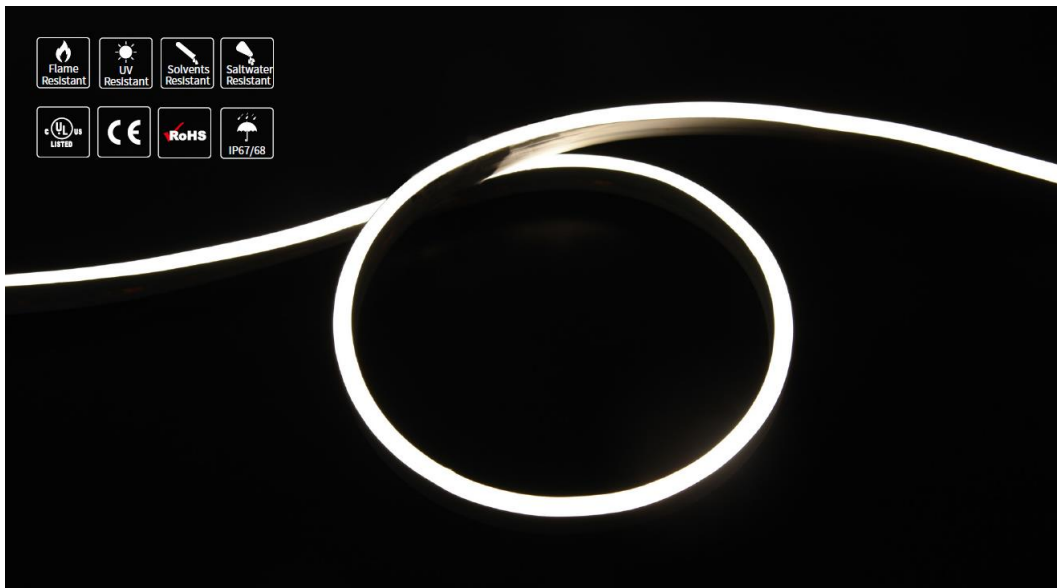


#### Note:

1. The positive and negative marked on FPCB.
2. Using silicone glue to enhance waterproof rate.
3. Make sure power cut off when installation.

# AMPHI-NEON STRIP – SLIM SOLID SERIES

## TLDNS1220HPXXX-24 SERIES (12x20mm)



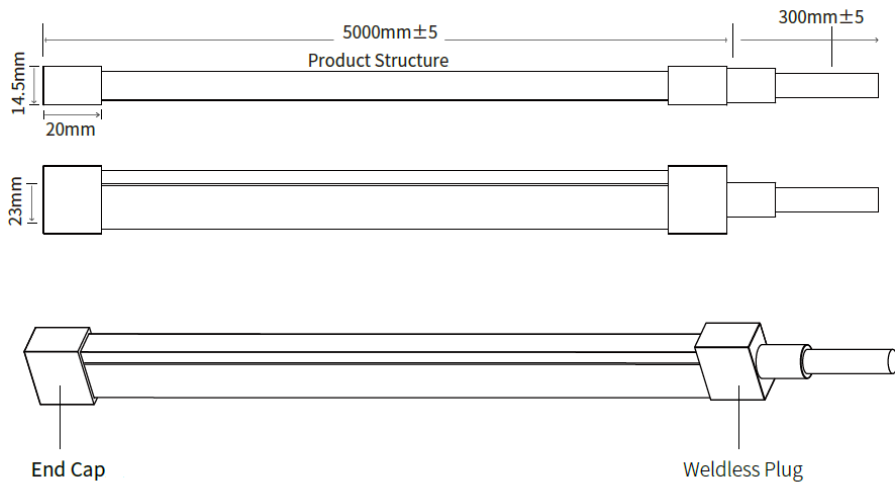
### Absolute Maximum Rating at 25°C

Parameters	Absolute Maximum Rating
Working Voltage	24VDC
Rated power per meter	8W / 12W per meter
LEDs per meter	120 LEDs /meter
Lumen per watt	28 LM (4000k) /W
Standard Continuous Length	10 meters
Waterproof Rating	IP 67
Storage Temperature	-40 ~ +65 °C
Operating Temperature	-40 ~ +50 °C
Min. Cutting Unit and Length	6 LEDs, 50mm
Weight	280.6g /meter

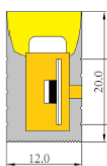
Item No.	Color	Rated Power
TLDNS1220HPHR1-24	RED 615-625nm	8W
TLDNS1220HPHG1-24	GREEN 515~525nm	8W
TLDNS1220HPHB1-24	BLUE 460-475nm	8W

TLDNS1220HPHW1-24	WARM WHITE 2700K	8W
TLDNS1220HPHW2-24	WARM WHITE 3000K	8W
TLDNS1220HPHW4-24	NATURAL WHITE 4000K	8W
TLDNS1220HPHW5-24	NATURAL WHITE 5000K	8W
TLDNS1220HPHZZ-24	RGB	8W
TLDNS1220HPLR1-24	RED 615-625nm	12W
TLDNS1220HPLG1-24	GREEN 515~525nm	12W
TLDNS1220HPLB1-24	BLUE 460-475nm	12W
TLDNS1220HPLW1-24	WARM WHITE 2700K	12W
TLDNS1220HPLW2-24	WARM WHITE 3000K	12W
TLDNS1220HPLW4-24	NATURAL WHITE 4000K	12W
TLDNS1220HPLW5-24	NATURAL WHITE 5000K	12W
TLDNS1220HPLZZ-24	RGB	12W

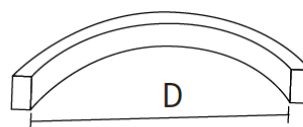
## Package Dimensions (unit: mm)



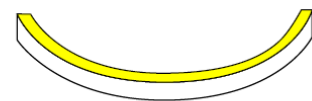
- Section diagram



- Bending diameter

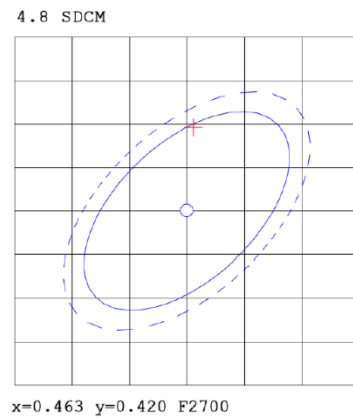
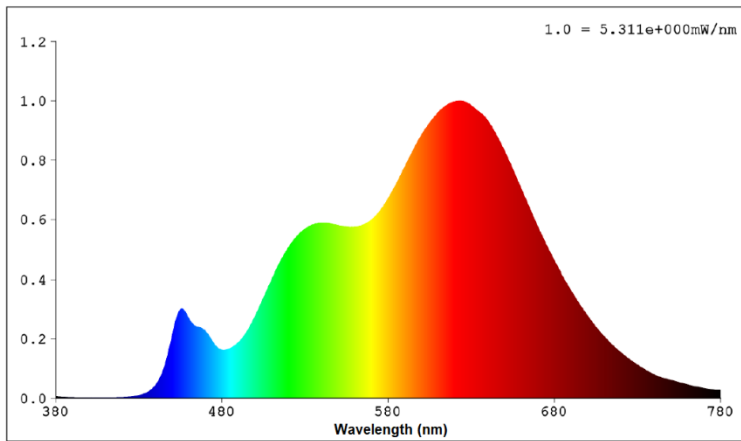


D=150mm



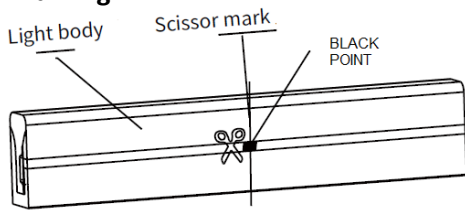
Bending Direction

## Spectrum Chart

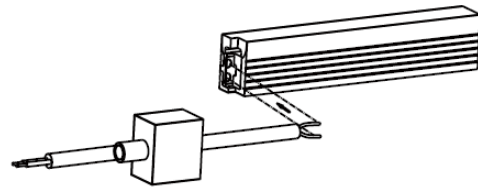


## Installation Steps

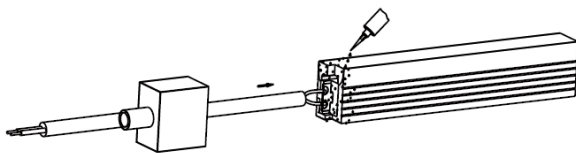
### Step 1: Marking



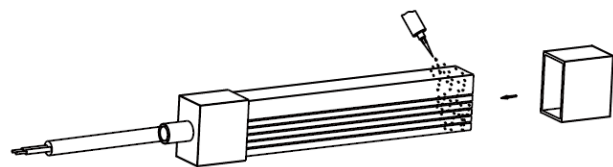
### Step 2: Soldering



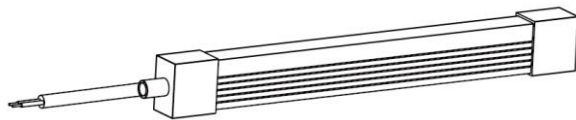
### Step 3: Glue and fix the front cap



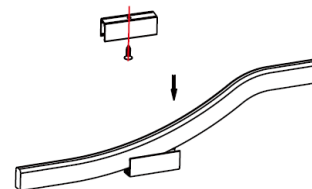
### Step 4: Fix the another cap



### Step 5: Finished article



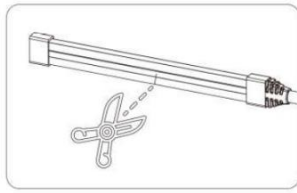
### Step 6: put strip into profile



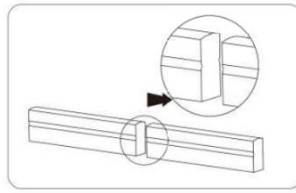
### Note:

1. The positive and negative marked on FPCB.
2. Using silicone glue to enhance waterproof rate.
3. Make sure power cut off when installation.

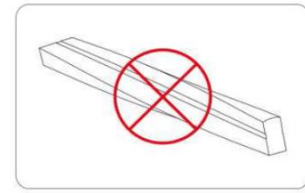
## Warning Signs



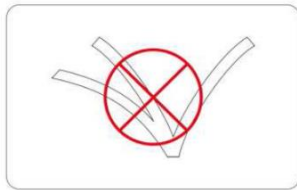
Cutting mark



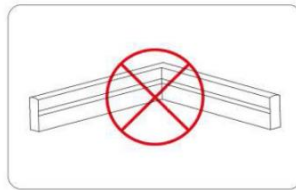
Keep well-cut



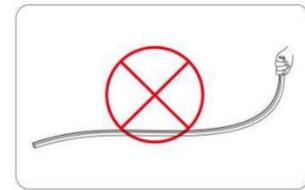
No twisting use



Prohibit repeated bending



Prohibit bending at right angle



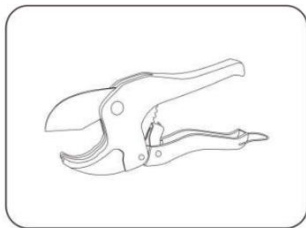
Prohibit to swing and drag while installing

### Note:

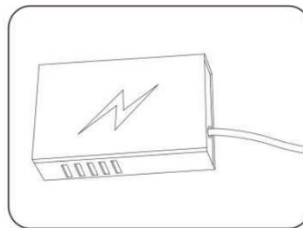
1. Cutting marks are printed on FPCB.
2. Make sure to cut the strip correctly.
3. Note the instructions before installation.

## Installation Methods

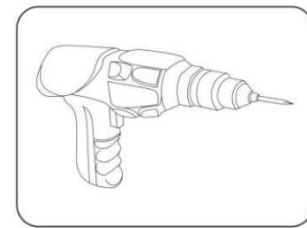
### 1. Installation information



Cutting tool



Power Adapter



Electric screwdriver

### 2. Installation precautions

(2-1) Before installation, please check whether the product parameters are consistent with the requirements (item no., specification) or label.

(2-2) The voltage, current and power adaptor to be used must be consistent this product.

(2-3) Please make correct wiring according to the wiring diagram (connect the load first and then the power supply or power transmission). Pay attention to avoid short circuit during operation.

(2-4) The positive and negative between strips and power adapter must be correctly connected, otherwise the strip is not workable.

(2-5) The wiring terminal must be well-handled with effective waterproof and anti-corrosion treatment.

### 3. Common trouble shooting and settle methods

(3-1) Forbid to disassemble the strip and sharp objects keep away from the surface of the strips.

(3-2) Stay power off when install.

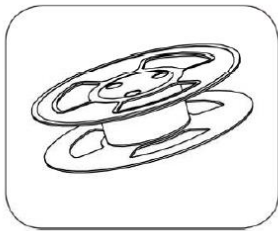
(3-3) Chemical solvent is not allowed.

(3-4) Ensure that the power cable can match the workload the strip to avoid adverse consequences caused by overheating.

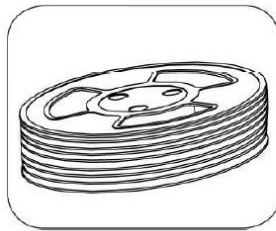
(3-5) Before power supply, please confirm whether the power supply voltage meets the requirements and whether the line is installed correctly.

(3-6) Installation, repair and maintenance must be operated by professionals.

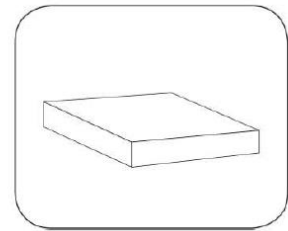
### Packing information



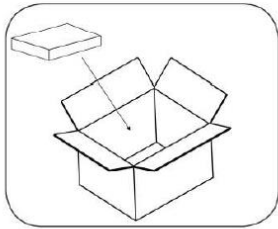
Reel



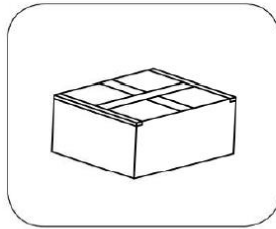
Wrap the strips on the reels after well checked



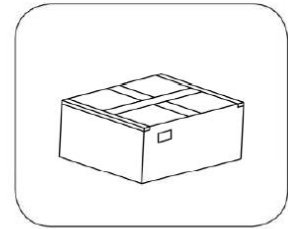
Put the reel into inner box



Put the inner boxes into out carton



Seal the out carton



Labeling based on request

#### Note:

1. Box size: inner box 265\*265\*100mm, out carton 285\*285\*225mm.
2. 10 meters a reel, 2 reels a box.
3. Customized package is available.



## Reliability Test

Item		Test standard	Testing Environment	Result Judgment	Testing Result
Optical Parameter Test	Integrating Sphere Test	GB/T 24824-2009 IEC LM-79-08 GB/T 24908-2014	Ta: 25±1°C RH: ≤65%	Subject to the actual report	PASS
	Light Distribution Test	GB/T 24824-2009 GB/T 24908-2014 GB/T 9468-2008 IEC Im79	Ta: 25±1°C RH: ≤65%	Subject to the actual report	PASS
	Long Time Continuous Aging Test	GB/T 33721 IES LM84&IES TM28	Ta: 40±2°C RH: ≤65%	1000h, Luminous flux maintenance up to 93%	PASS
	Low temperature storage test	GB/T 2424.5-2006	Ta: 25±1°C RH: ≤65%	-40°C Storage 168H, (GB/T 9468-2008) Luminous flux maintenance up to 90%	PASS
	High temperature storage test	GB/T 2424.5-2006	Ta: 25±1°C RH: ≤65%	85°C Storage 168h (, GB/T 9468-2008) Luminous Flux Maintenance up to 90%	PASS
Electrical Safety Test	Withstand Voltage Test	GB 7000.1 IEC 60598-1 UL2108 UL1598	Ta: 25±1°C RH: ≤65%	The low-voltage should pass the withstand voltage test upto 500V. The high-voltage should pass the withstand voltage test upto 3000V. The test lasts for 60s. There is no LED bead or trace phenomenon during the test. After the test, the led strip can work normally.	PASS
Temperature Test	Temperature rise test	GB 7000.1 IEC 60598-1 UL2108 UL1598	Ta: 25±3°C RH: ≤65% Pressure: 86Kpa-106Kpa	The test time is 3-4 hours, the temperature change within one hour is not more than 1 degree, the temperature of test lamp foot, lamp plate and shell is less than <75 degrees, and the relevant temperature rise results of special materials are defined according to the material specifications	PASS
	High temperature and humidity test	UL1598&UL2388 IEC60598-1 IEC60598-2-21	Ta: 25±3°C RH: 30-75%.	Working state: steady state operation under rated electrical stress conditions, power supply: 15 seconds on, 15 seconds off; Temperature and humidity: temperature 70 °C, relative humidity 85%; Test time: 264 H	PASS
	High and low temperature test	GB/T 2423.22-2012	Ta: 25±3°C RH: 30-75%.	At minus -40-65 °C, light the lamp for low temperature test for 30 minutes, high temperature test for 60 minutes, and test for 10 cycles. The label of the sample shall be free from cracking, curling or falling off, and the sample shall be free from obvious damage. The change of the measured luminous flux relative to the initial luminous flux shall not exceed 10%.	PASS
Current impulse test	Switch On & Off	GB/T 33721	Ta: 25±3°C RH: 30-75%.	1. 30S Switch On, 30S Switch off. Test 1000 cycles 2. the product shall be free of abnormal phenomena such as damage and light failure. 3. the luminous flux of integrating sphere test shall be kept above 95%.	PASS
	Cold & Thermal Test	GB/T 2423.22-2002	Ta 25±3°C RH: ≤65% Pressure: 86Kpa-106Kpa	Without lighting, -40-85 degrees (cycle test: 20 times outdoors, 10 times indoors), 1.36w-13.6w for 2h, w ≥ 13.6 for 4H	PASS
Use environment test	Heat resistance test	UL94	Ta: 25±3°C RH: 30-75%	According to UL94 standard	PASS
	UV exposure test	ASTMG154 ISO4892-3	Ta: 25±3°C RH: 30-75%.	1.38 w/m at 60 °C <sup>2</sup> No yellowing after 96 hours of UV irradiation (UVA@340nm)	PASS
	Salt spray test	GB/T 2423.17-2008 EC60068-2-11	Ta: 25±5°C RH: ≤65% Air pressure 86 kpa-10686 kpa Salt concentration: 5%, ph:6.5-7.2, (laboratory temperature: 35 °C, saturated air barrel temperature: 47 °C,	1. check the sample appearance before and after the test (no crack / discoloration / damage) 2. remove the corrosive substances on the surface. The appearance of the product is not corroded. The distribution of pitting corrosion, cracks and bubbles does not affect the normal function of the product (protection) 3. the PCB pad is not corroded and there is no copper rust or little copper.	PASS

			spray pressure: 1kg/cm <sup>2</sup> Spray volume 1-2 ml/cm <sup>2</sup> /h	4. the luminous flux of integrating sphere test shall be kept above 95%.	
	Salt spray test	GB/T 2423.17-2008 EC60068-2-11	Ta: 25±5°C RH: ≤65% Air pressure 86 kpa- 10686 kpa Salt concentration: 5%, ph:6.5-7.2, (laboratory temperature: 35 °C, saturated air barrel temperature: 47 °C, spray pressure: 1kg/cm <sup>2</sup> ) Spray volume 1-2 ml/cm <sup>2</sup> /h	1. check the sample appearance before and after the test (no crack / discoloration / damage) 2. remove the corrosive substances on the surface. The appearance of the product is not corroded. The distribution of pitting corrosion, cracks and bubbles does not affect the normal function of the product (protection) 3. the PCB pad is not corroded and there is no copper rust or little copper. 4. the luminous flux of integrating sphere test shall be kept above 95%.	PASS
	Waterproof test	GB 4208-2008 GB 7000.1-2015 IEC60529	Ta: 25±3°C RH: 30-75%	The waterproof test shall test the product IP level according to the strip standard. After the test is completed, the LED strip shall not be flooded, and the strip shall not have dead light or flicker.	PASS
Physical test	IK Testing	IEC 62262	Ta: 25±3°C RH: 30-75%	Impact the surface of strip without bead, dead lamp and other damage	PASS
	Twist test		Ta: 25±3°C RH: 30-75%	Twist 360 °in 2 turns (positive 720 °, negative 720 °), 1000 cycles and no damaged LEDs	PASS
	Bending Test	UL2388	Ta: 25±3°C RH: 30-75%	180 degrees, positive bending 90 degrees, reverse bending 90 degrees, test frequency 10 cycles per minute, bending 500 times: 1. power on and check that all LEDs can be lit without dead light or flashing. 2. power off and check that the LED, resistance and welding tin point are free of cracks and damages.	PASS
	Swing test	1. from the spliced 1m lamp strip, cut the 0.5m lamp strip sample with the middle strip welded, and fix both ends on the fixed seat of the test equipment. 2. parameter setting: set the speed to 60 rpm (60 times / min) and test 1000 times.	Ta: 25±3°C RH: 30-75%	Power on and check that all LEDs can be lit without dead lights or flashes. After power off inspection, the LED, resistance and welding tin point are free of cracks and damages.	PASS
	Tensile Strength test	IEC 60598	Ta: 25±3°C RH: 30-75%	Test the tensile force of wire rod on PCB welding points and between PCBs: 1. condition setting: straighten the product to be tested, apply the tension at the test speed of 60mm/ min, and keep it for 30s when the tension is 30n. 2. the test tension shall not be less than 4 times the net weight of the product. 3. the solder joint between wire rod and PCB shall not fall off or open welding. 4. the butt welding points between PCBs shall not fall off or open welding.	PASS
	Dropping Test	Gb/t 4857.5-1992 packaging -- drop test method for transport packages	Ta: 25±3°C RH: 30-75%	One corner, three edges and six sides shall be tested: Cargo weight: free fall height: 1-20.99 lb (0.45-9.52kg) 38in (0.965m) 21-40.99 lb (9.53-18.59kg) 32in (0.813m) 41-60.99 lb (18.62-27.66kg) 24in (0.61m) 61-100 lb (27.67-45.36kg) 24in (0.61m) The product shall be free from damage, and the package shall still be able to properly protect the product without obvious deformation, cracking	PASS
	Transport vibration	GB 7000.1, GB 4208-2008 GB/T 2423.10	Ta: 25±3°C RH: 30-75%	More than 750 cycles, the product shall be free from damage, and the packaging shall still be able to properly protect the product without obvious deformation, cracking or damage.	PASS