GREEN LED LIGHTING SOLUTIONS

LED Neon FLEX



Version 1.6

VIVID

# WAVE

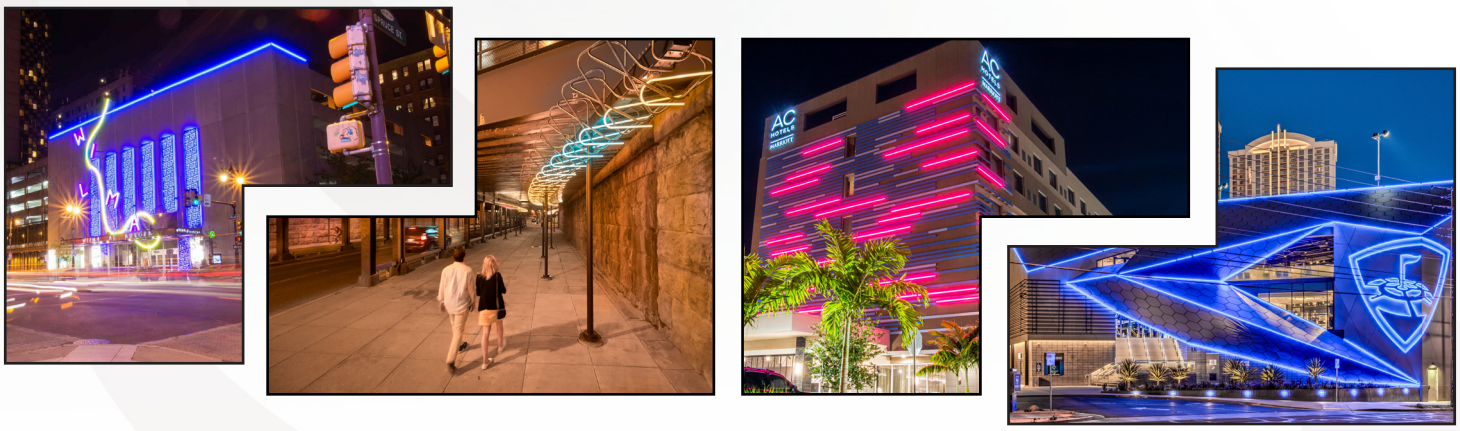
## STATIC

## SILICONE 24V

c UL us LISTED E347880 | CE | RoHS COMPLIANT | INDOOR USE | OUTDOOR USE | IP68 | DMX RDM | DALI | DIMMABLE

**For More Information**

**Toll Free:** 1 (888) 580-6366



| | | |
|---|---|---|
| Light Dimension | 0.63 x 0.67in (16x17mm) | |
| **Output** | **Red/Amber** | **Green/Blue/White** |
| LED Light | SMD LED Chip | SMD LED Chip |
| Max Run Length* | | |
| Single Feed | 65.62ft (20m) | 49.21ft (15m) |
| Double Feed | 131.23ft (40m) | 98.43ft (30m) |
| Light Surface | Square profile 160° | |
| Lumen Maintenance | 70,000 Hours L70 @ 25°C : 90,000 L50 @ 25°C<br>50,000 Hours L70 @ 50°C : 70,000 Hours L50 @ 50°C | |
| **Electrical** | | |
| Input Voltage | 24V DC | 24V DC |
| Power Consumption | 2.44W/ft (8W/m) | 3.66W/ft (12W/m) |
| **Physical** | | |
| LED Count | 33 LEDs / ft (108 LEDs/m) | 33 LEDs / ft (108 LEDs/m) |
| LED Spacing | 0.37in (9.26mm) | 0.37in (9.26mm) |
| Cutting Unit Length | 3.28in (83.3mm)<br>(9 LEDs) | 2.19in (55.6mm)<br>(6 LEDs) |
| Thermal Management | Free air convection | |
| Fixture Connections | End, side & bottom lead wires | |
| Minimum Bend Diameter | 11.81in (300mm)<br>(Side Bending OR Top Bending) | |
| **Temperature Ranges** | | |
| Installation | -40°F to 113°F (-40°C to 45°C) | |
| Operating | -40°F to 131°F (-40°C to 55°C) | |
| Humidity | 0-95% non condensing | |
| **Dependability** | | |
| Warranty | 10 Year Limited Warranty | |
| **Safety** | | |
| Certification | Tested to UL & CSA by Underwriters Laboratory for use in USA and Canada, complies with California Title 24 Requirements, Lighting Facts.<br>Exceeds ANSI C78.377A, CE & RoHS Compliant. | |
| IP Rating | IP68 with appropriately rated accessories | |

*Max Run Length: Unless otherwise stated, snap and seamless run lengths are the same.

## CRI90

### Available Colors

| Color | CCT |
|---|---|
| 2200K | 2238 ± 102K |
| 2700K (WW) | 2725 ± 145K |
| 3000K | 3045 ± 175K |
| 3500K (W) | 3465 ± 245K |
| 4000K | 3985 ± 275K |

| Color | Lumen Count Per Foot | Lumen Count Per Meter | Top Bending Per Foot | Top Bending Per Meter |
|---|---|---|---|---|
| 2200K | >140.21lm | >460lm | >128.02lm | >420lm |
| 2700K (WW) | >140.21lm | >460lm | >128.02lm | >420lm |
| 3000K | >140.21lm | >460lm | >128.02lm | >420lm |
| 3500K (W) | >140.21lm | >460lm | >128.02lm | >420lm |
| 4000K | >140.21lm | >460lm | >128.02lm | >420lm |

For 2200K: Minimum order quantity of 100 meters.

### Available Colors

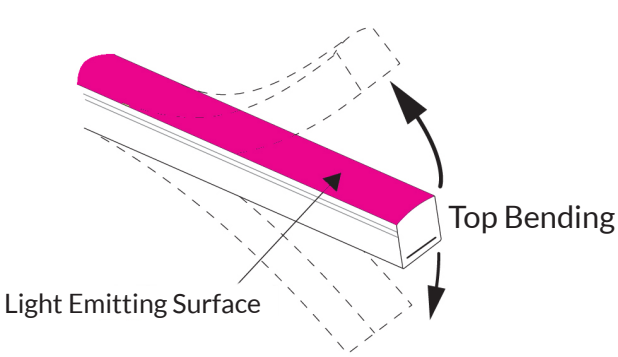
| Color | CCT Wavelength |
|---|---|
| Red | 618-624nm |
| Green | 522-528nm |
| Blue | 468-474nm |
| Amber | 588-594nm |
| 2200K | 2238 ± 102K |
| 2700K | 2725 ± 145K |
| 3000K | 3045 ± 175K |
| 3500K | 3045 ± 175K |
| 4000K | 3985 ± 275K |
| 5700K | 5669 ± 355K |

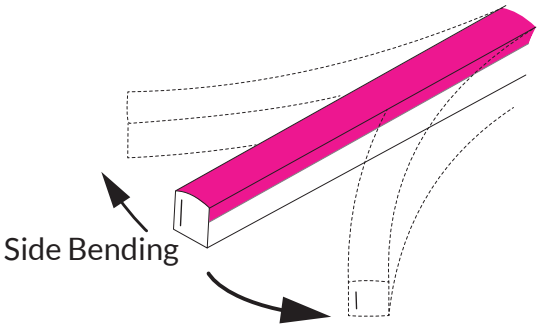
| Color | Lumen Count Per Foot | Lumen Count Per Meter | Top Bending Per Foot | Top Bending Per Meter |
|---|---|---|---|---|
| Red | >56.40lm | >185lm | >50.29lm | >165lm |
| Green | >167.68lm | >550lm | >137.16lm | >450lm |
| Blue | >36.59lm | >120lm | >33.53lm | >110lm |
| Amber | >56.40lm | >185lm | >50.29lm | >165lm |
| 2200K | >137.20lm | >450lm | >116lm | >380lm |
| 2700K | >172lm | >565lm | >143lm | >470lm |
| 3000K | >172lm | > 565lm | >143lm | >470lm |
| 3500K | >177lm | >580lm | >146lm | >480lm |
| 4000K | >177lm | >580lm | >146lm | >480lm |
| 5700K | >177lm | >580lm | >146lm | >480lm |



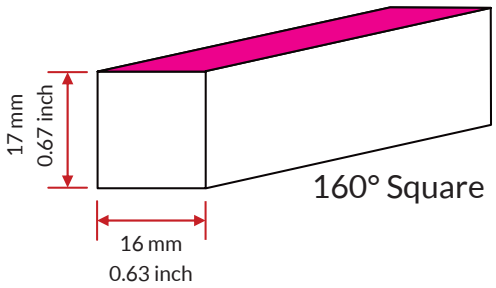

**Beam Angle** | **Bending Diameter** | **Flame Resistant** | **UV Resistant** | **Solvents Resistant** | **Saltwater Resistant** | **IP68 Protection** | **IK08 Protection** | **10 Year Warranty**

## Bending Direction

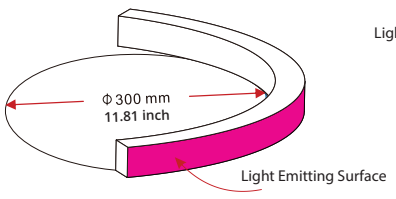


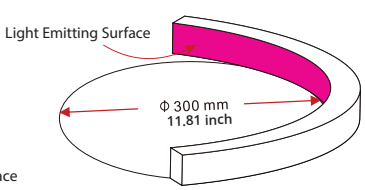




## Light Profile

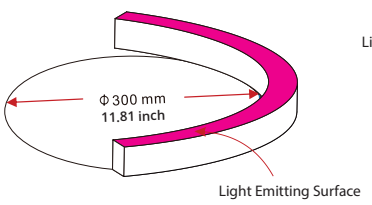


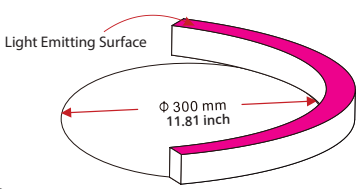

## Minimum Bending Diameter




Top Bending




Side Bending

## Fixtures

SF-16E-X-01-2W-E-XXX-24DC

- XXX → LED Color (3 digits)
- X → Bending Direction (1 Digit)

| Bending Direction (1 digit) | LED Color (3 digits) | | |
|---|---|---|---|
| 0 - Top Bending (VB) | RED - Red | 22K - 2200K | CRI90 - COLORS |
| 1 - Side Bending (HB) | GRE - Green | 27K - 2700K (WW) | 22R - 2200K |
| | BLU - Blue | 30K - 3000K | 27R - 2700K |
| | AMB - Amber | 35K - 3000K (W) | 30R - 3000K |
| | ORA - Orange | 40K - 4000K | 35R - 3500K |
| | PIN - Pink | 57K - 5700K | 40R - 4000K |

## Lead Connector

FA-16E-X-00-2W-XX-X-XX-XXX - P

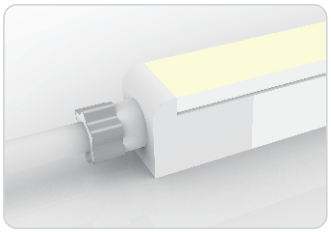
- XXX → Length (3 digits)
- XX → Exit Type (2 Digits)
- X → For Fixture End (1 Digit)
- XX → Connector Type (2 Digits)
- X → Bending Direction (1 Digit)

| Bending Direction (2 Digit) | Connector Type (2 Digits) | For Fixture End (1 digit) | Exit Type (2 digits) | Length (3 digits) |
|---|---|---|---|---|
| 0 - Top Bending (VB) | SC - Snap Conenctor | 1 - Input side | EN - End | 0M3 - 0.98ft (30cm) |
| 1 - Side Bending (HB) | SE - Seamless | 2 - Output side | BO - Bottom | 01M - 3.28ft (1m) |
| | SV - Swivel | 0 - Jumpers/T-Feeds/ Seamless Bottom/ Seamless End | SL - Side left | 03M - 9.84ft (3m) |
| | | | SR - Side right | 05M - 16ft (5m) |
| | | | EJ - End jumper | 10M - 32.81ft (10m) |
| | | | BJ - Bottom jumper | 000 - For End Cap |
| | | | TF - Power T feed | |

For full part number naming rules, please refer to the document on www.glls.com/support/documentation/

IP68: Submersible. Factory Assembly only.

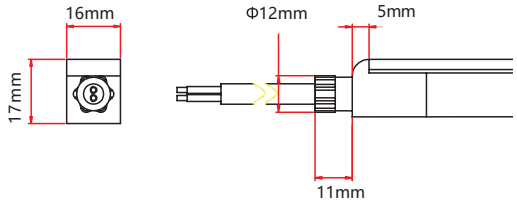
# Seamless

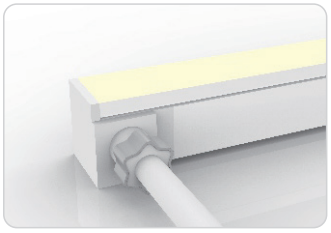


## Seamless End Exit

FA-16E-0-00-2W-SE-0-EN-XXX-P

FA-16E-1-00-2W-SE-0-EN-XXX-P

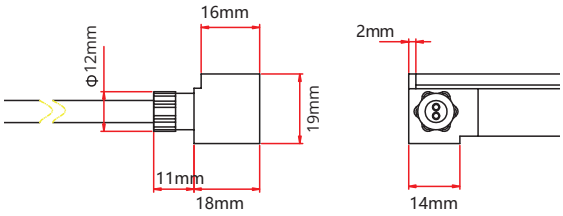


## Seamless Side Exit

FA-16E-0-00-2W-SE-1-SL-XXX-P
FA-16E-0-00-2W-SE-2-SL-XXX-P
FA-16E-0-00-2W-SE-1-SR-XXX-P
FA-16E-0-00-2W-SE-2-SR-XXX-P

FA-16E-1-00-2W-SE-2-SL-XXX-P
FA-16E-1-00-2W-SE-1-SR-XXX-P

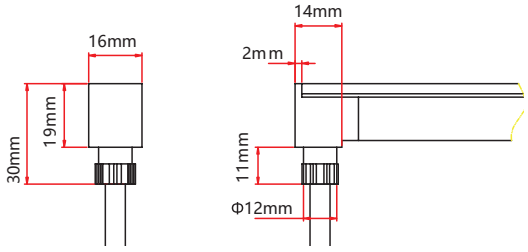


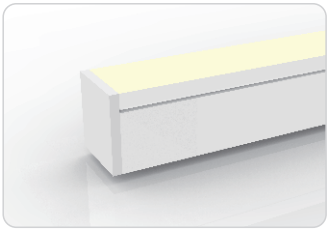



## Seamless Bottom Exit

FA-16E-0-00-2W-SE-0-BO-XXX-P

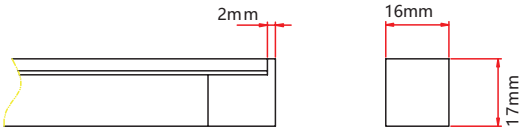
FA-16E-1-00-2W-SE-0-BO-XXX-P

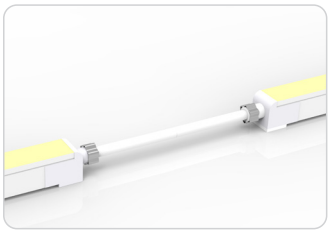


## Seamless End Cap

FA-16E-1-00-0W-SE-1-EC-000-P
FA-16E-1-00-0W-SE-2-EC-000-P

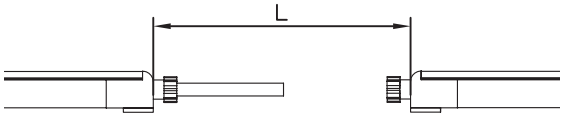


## Seamless Jumper

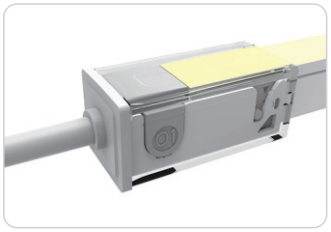
FA-16E-0-00-2W-SE-0-EJ-XXX-P

FA-16E-1-00-2W-SE-0-EJ-XXX-P



IP67: Rated for outdoor use.
Factory Assembly or DIY.

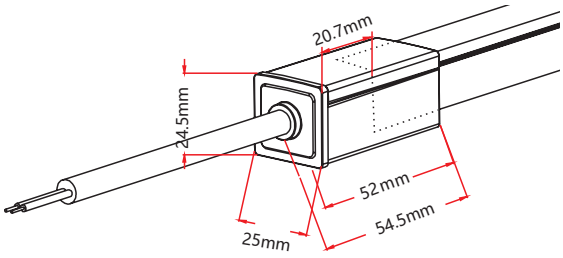
# Snap

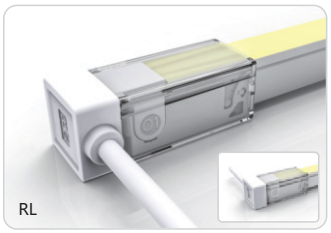


## Snap End Exit

NA-16E-0-00-2W-SC-1-EN-XXX-P
NA-16E-0-00-2W-SC-2-EN-XXX-P

NA-16E-1-00-2W-SC-1-EN-XXX-P
NA-16E-1-00-2W-SC-2-EN-XXX-P




## Snap Side Exit

NA-16E-0-00-2W-SC-1-SL-XXX-P
NA-16E-0-00-2W-SC-2-SL-XXX-P
NA-16E-0-00-2W-SC-1-SR-XXX-P
NA-16E-0-00-2W-SC-2-SR-XXX-P

NA-16E-1-00-2W-SC-1-SL-XXX-P
NA-16E-1-00-2W-SC-2-SL-XXX-P
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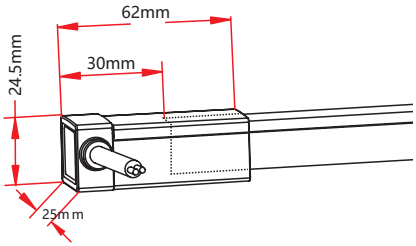


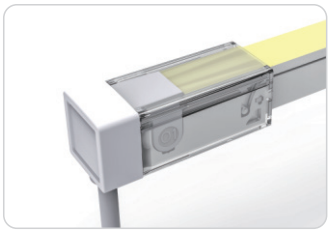

## Snap Bottom Exit

NA-16E-0-00-2W-SC-1-BO-XXX-P
NA-16E-0-00-2W-SC-2-BO-XXX-P

NA-16E-1-00-2W-SC-1-BO-XXX-P
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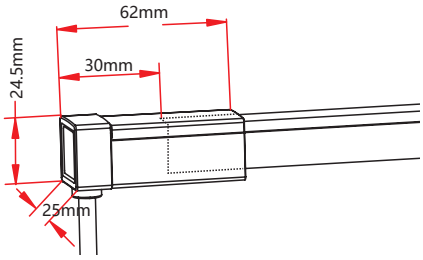
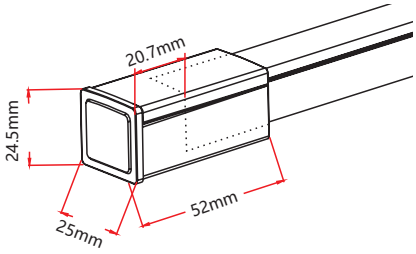


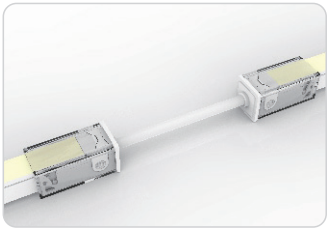



## Snap End Cap

NA-16E-0-00-0W-SC-1-EC-000-P
NA-16E-0-00-0W-SC-2-EC-000-P

NA-16E-1-00-0W-SC-1-EC-000-P
NA-16E-1-00-0W-SC-2-EC-000-P

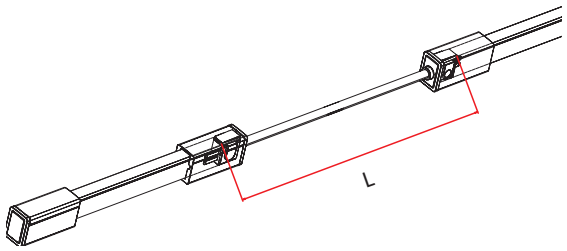


## Snap Jumper

NA-16E-0-00-2W-SC-0-EJ-XXX-P

NA-16E-1-00-2W-SC-0-EJ-XXX-P



IP67: Rated for outdoor use.
Factory Assembly or DIY.

# Snap



### Snap Power T Feed

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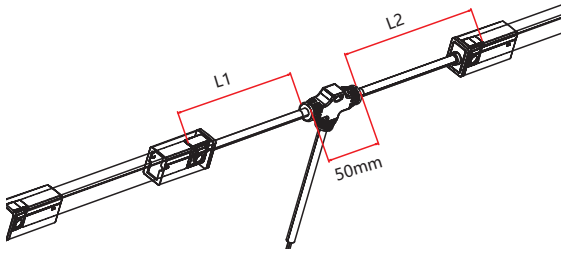
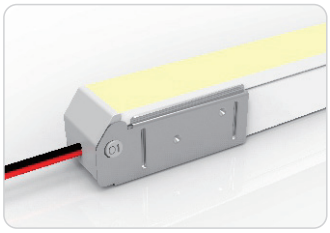
NA-16E-1-00-2W-SC-0-TF-XXX-P




# Swivel

IP20: Rated for indoor use only.
Factory Assembly or DIY.



### Swivel End Exit

NA-16E-0-00-2W-SV-1-EN-XXX-P
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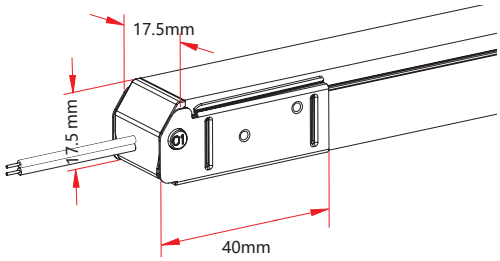
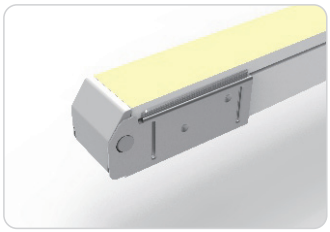
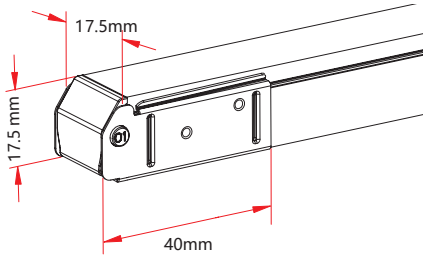


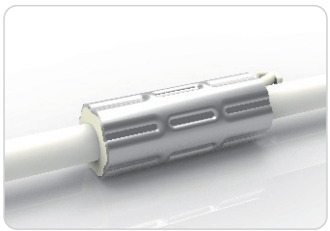



### Swivel End Cap

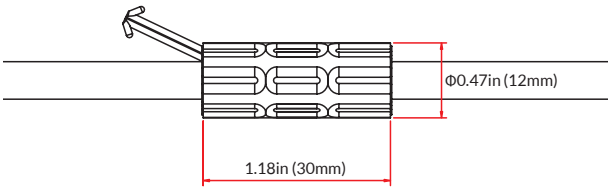
NA-16E-1-00-0W-SV-1-EC-000-P
NA-16E-1-00-0W-SV-2-EC-000-P




# Lead Wire Accessories



### Anti-Wicking Ferrule



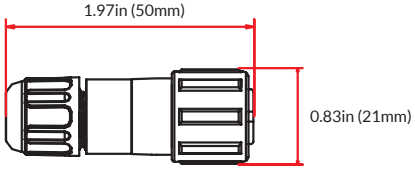



### Barrel Connectors

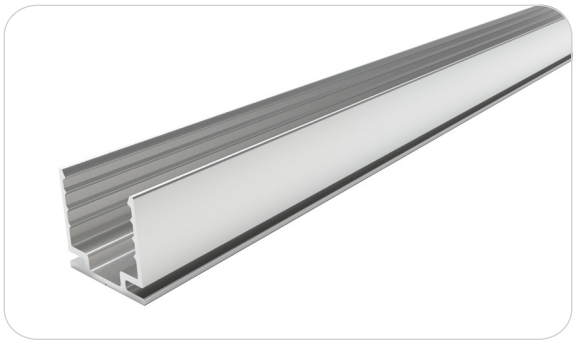
NA-XX-BC-DC-CXX-F
NA-XX-BC-DC-CXX-M

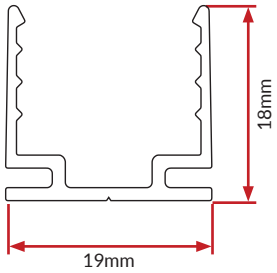
NA-XX-BN-XXA-CXX-F
NA-XX-BN-XXA-CXX-M

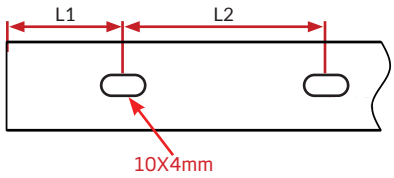
NA-XX-PL-XXA-CXX-F
NA-XX-PL-XXA-CXX-M



# Standard Anodized Aluminum Channel

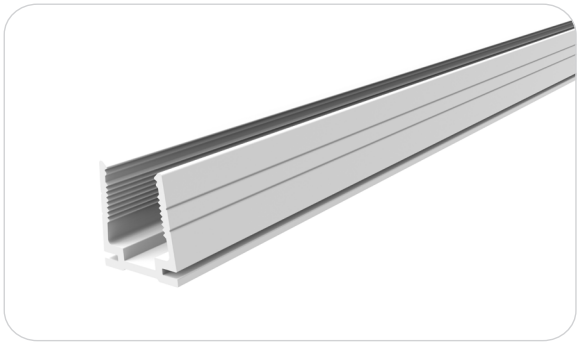


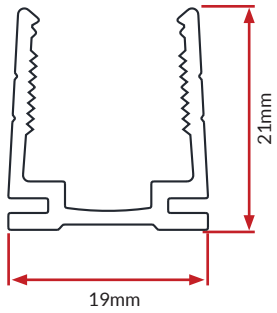


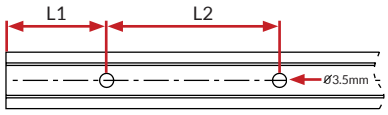




| W x H | Standard Length | Part Number | L1 | L2 | Screw Hole Φ | Hole # |
|---|---|---|---|---|---|---|
| 0.75 x 0.71in | 1.38in (35mm) | CL-16-R-AL-3C5-SD | 0.69in (17.5mm) | / | 0.39in x 0.16in (10x4mm) | 1 |
| (19 x 18mm) | 19.69in (500mm) | CH-16-R-AL-0M5-SD | 1.97in (50mm) | 7.87in (200mm) | 0.39in x 0.16in (10x4mm) | 3 |
| | 39.37in (1000mm) | CH-16-R-AL-01M-SD | 3.94in (100mm) | 7.87in (200mm) | 0.39in x 0.16in (10x4mm) | 5 |
| | 78.74in (2000mm) | CH-16-R-AL-02M-SD | 3.94in (100mm) | 7.87in (200mm) | 0.39in x 0.16in (10x4mm) | 10 |

# Plastic Channel



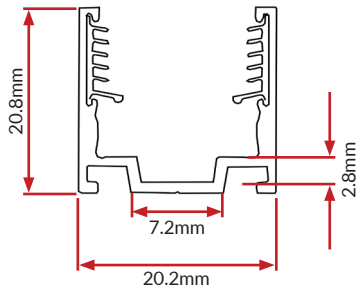


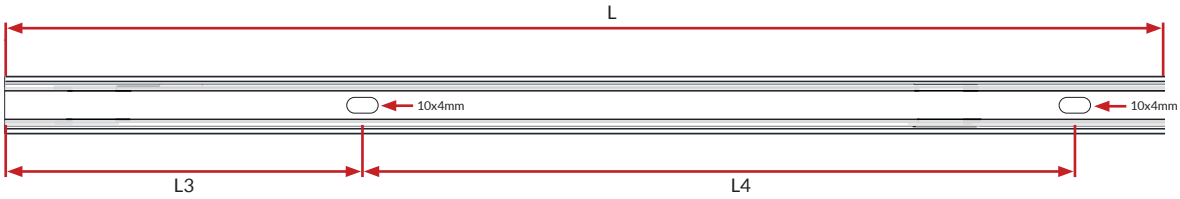




| W x H | Standard Length | Part Number | L1 | L2 | Screw Hole ø | Hole # |
|---|---|---|---|---|---|---|
| 0.75 x 0.83in | 19.69in (500mm) | CH-16-R-PL-0M5-SD | 1.97in (50mm) | 7.87in (200mm) | ø0.14in (3.5mm) | 3 |
| (19x 21mm) | 39.37in (1000mm) | CH-16-R-PL-01M-SD | 3.94in (100mm) | 7.87in (200mm) | ø0.14in (3.5mm) | 5 |
| | 78.74in (2000mm) | CH-16-R-PL-02M-SD | 3.94in (100mm) | 7.87in (200mm) | ø0.14in (3.5mm) | 10 |

# Standard Aluminum Channel with Silicone Grip

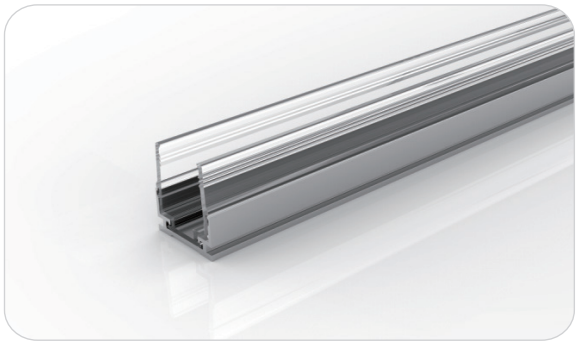


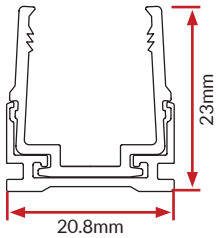


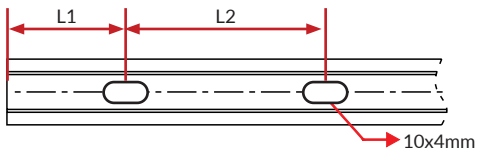




| W x H | Standard Length | Part Number | L3 | L4 | Screw Hole | Hole # |
|---|---|---|---|---|---|---|
| 0.82 x 0.88in | 0.79in (20mm) | CL-16-R-AL-02C-SE | 0.2in (5mm) | 0.98in (25mm) | 0.39in x 0.16in (10 x 4mm) | 1 |
| (20.7 x 22.3mm) | 19.69in (500mm) | CH-16-R-AL-0M5-SE | 1.97in (50mm) | 7.87in (200mm) | 0.39in x 0.16in (10 x 4mm) | 3 |
| | 39.37in (1000mm) | CH-16-R-AL-01M-SE | 3.94in (100mm) | 7.87in (200mm) | 0.39in x 0.16in (10 x 4mm) | 5 |
| | 78.74in (2000mm) | CH-16-R-AL-02M-SE | 3.94in (100mm) | 7.87in (200mm) | 0.39in x 0.16in (10 x 4mm) | 10 |

# Plastic and Aluminum Channel






| W x H | Standard Length | Part Number | L1 | L2 | Screw Hole Φ | Hole # |
|---|---|---|---|---|---|---|
| 0.82 x 0.91in | 1.38in (35mm) | CL-16-R-AP-3C5-SD | 0.69in (17.5mm) | / | 0.39in x 0.16in (10x4mm) | 1 |
| (20.8x 23mm) | 19.69in (500mm) | CH-16-R-AP-0M5-SD | 1.97in (50mm) | 7.87in (200mm) | 0.39in x 0.16in (10x4mm) | 3 |
| | 39.37in (1000mm) | CH-16-R-AP-01M-SD | 3.94in (100mm) | 7.87in (200mm) | 0.39in x 0.16in (10x4mm) | 5 |
| | 78.74in (2000mm) | CH-16-R-AP-02M-SD | 3.94in (100mm) | 7.87in (200mm) | 0.39in x 0.16in (10x4mm) | 10 |

### Certifications

| | Testing Organization | Certificate Serial N° | Report Reference |
|---|---|---|---|
| UL 2108 | UL | 20160726-E360029 | E360029-2013 |
| CE-EMC | SGS | SZEM1702001259LMV | SZEM160600421302 |

# Fixture Testing

## Optical Testing

| | |
|---|---|
| Spectrum Analysis | IES LM 79 (Lumen, CCT, CRI, XY, SDCM, wavelength) |
| Photometric Distribution | IES LM 73 (Lumen intensity distribution & Lux diagram) |
| Lumen Maintenance & Lifetime | IES LM 84 & IES TM28 |

## Temperature Testing

| | |
|---|---|
| Normal Temperature Test | UL1598 & UL2388 & IEC60598-1 & IEC60598-2-21 |
| Abnormal Operation Test | UL1598 & UL2388 & IEC60598-1 & IEC60598-2-21 |

## Durability Testing

| | |
|---|---|
| Bending Test | Manufacturer-defined, 500 cycles |
| Swing Test | UL2388, >750 cycles |
| Tensile Test | Manufacturer-defined, > the weight of light in max. connection length double feed |
| Twist Test | Max connection length double feed<br>Manufacturer-defined, >200 cycles |
| Ball Impact | UL1598 & UL2388 & IEC60598-1 & IEC60598-2-21 |
| IK07 IK08 | IEC62262 |

## Environmental Testing

| | |
|---|---|
| Chlorinated Water Immersion | BG9667, PH6.8-7.6, free chlorine 0.3-0.6mg/L |
| Salt Water Immersion | IEC60598-1, Sailinity 4% |
| Salt Spray Test | IEC68-2-11 |
| Outdoor Exposure | Manufacturer-defined |
| Flame Resistance | UL94 |
| UV Exposure | ASTMG 154, ISO 4892-3, UVA @ 340nm |
| IPX5, IPX6, IPX7, IPX8 | IEC60529 |
| Temperature Shock | Manufacturer-defined, -40°C - 60°C (typical temperature range) |
| Constant Temperature | Manufacturer-defined |

# Charts

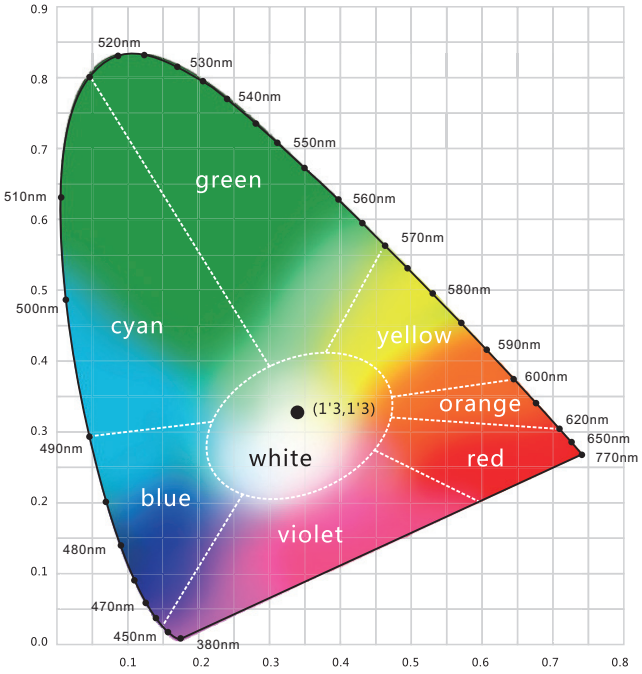
## ANSI STANDARD

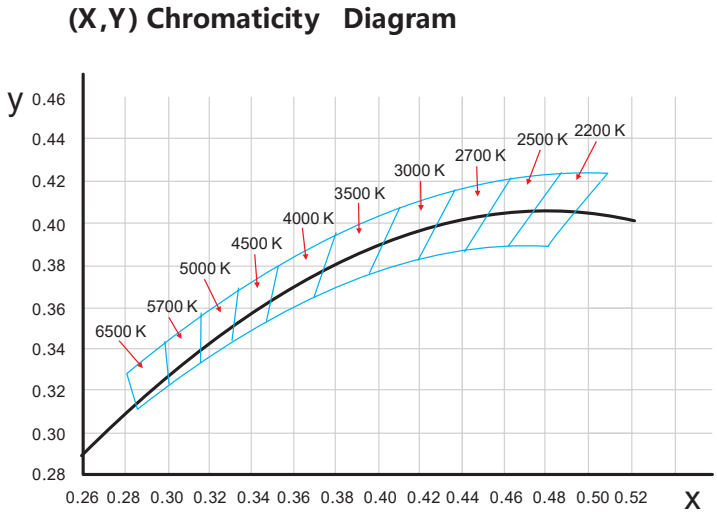
### Nominal CCT Categories

| Nominal CCT | Target CCT and tolerance(K) | Target $D_{uv}$ | $D_{uv}$ Tolerance Range |
|---|---|---|---|
| 2200K | 2238 ±102 | 0.0000 | Tx:CCT of the source |
| 2500K | 2460±120 | 0.0000 | For Tx<2870K |
| 2700K | 2725 ±145 | 0.0000 | 0.000±0.0060 |
| 3000K | 3045±175 | 0.0001 | For Tx≥2870K |
| 3500K | 3465±245 | 0.0005 | Duv(Tx)±0.0060 |
| 4000K | 3985±275 | 0.0010 | where |
| 4500K | 4503±243 | 0.0015 | Duv(Tx)=57700 x (1/Tx)2 |
| 5000K | 5029±283 | 0.0020 | -44.6 x (1/Tx) |
| 5700K | 5667±355 | 0.0025 | +0.00854 |
| 6500K | 6532±510 | 0.0031 | |
| Flexible CCT (2200-6500K) | $T_F$ [1] ±$\Delta T$ [2] | $D_{uv}T_F$ [3] | |

Remark:

1) $T_F$ is chosen to be at 100K steps (2300,2400,.....,6400K),excluding the ten nominal CCTs listed in Table 1.
2) $\Delta T=1.1900x10^{8}xT^{3}-1.5434x10^{4}xT^{2}+0.7168xT-902.55$
3) Same as in the $D_{uv}$ Tolerance Range.



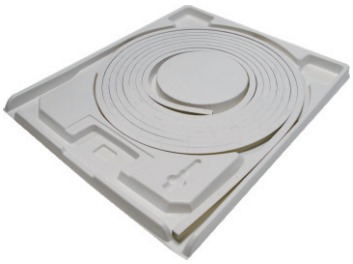
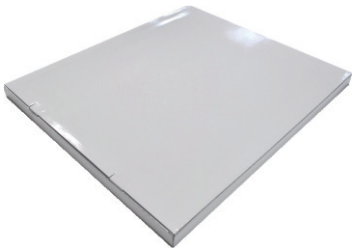




## Light Color

**Red** 620-630nm

**Green** 520-530nm

**Blue** 465-475nm



White Box  Packing Box

| Fixture Length | White Box Dimensions | Packing Box Dimensions | # Of White Boxes | Package Weight |
|---|---|---|---|---|
| 196.85in (5m) | 15.35x2.05x19.67in (39x5.2x50cm) | 20.47x15.34x11.02in (52x41x28cm) | 5 | 30.86lbs (14kg) |
| 393.7in (10m) | 20.08x2.05x24.41in (51x5.2x62cm) | 25.2x20.87x11.02in (64x53x28cm) | 5 | 57.32lbs (26kg) |
| 393.7in (10m) | 20.08x2.05x24.41in (51x5.2x62cm) | 25.2x20.87x6.9in (64x53x17.5cm) | 3 | 35.27lbs (16kg) |
| 787.4in (20m) | 26.77x2.05x31.1in (68x5.2x79cm) | 31.9x27.56x4.92in (81x70x12.5cm) | 2 | 48.5lbs (22kg) |