artist of light

Specification

For LED Neon Flex Ribbon

C-FR-ProF21B

CLEAR LIGHTING

NICHIA c UL us LISTED CE TÜV RoHS COMPLIANT

Table of Contents

Introduction

C-FR-ProF21B is a member of the Artist of Light series with Nichia LEDs and smooth domed profile that allows various monochromatic lighting solutions and produces superior homogenized illumination along its full length.

Built-in protection circuit design which means single LED failure has no effect on other LEDs working in the same unit and the whole light can keep constant lighting.

C-FR-ProF21B is UL/cUL, CE, TUV and RoHS compliant. Moreover, it has passed environmental resistance, optical, mechanical and electrical tests in our lab under the support of advanced experimental equipments and technology to ensure it meets the requirements of harsh environments. Also it has passed relevant tests of third party inspection authority.

Fully encapsulated in the flexible PVC chamber by utilizing consummate extrusion technology, assembled with multiple patented connectors to achieve IP68 protection, easy for installation and applicable for various circumstances.

C-FR-ProF21B features large beam angle of 320 degree, bright and uniform continuous illumination, and ultra flexibility with small bend diameter in curve bending shape.

Applications:

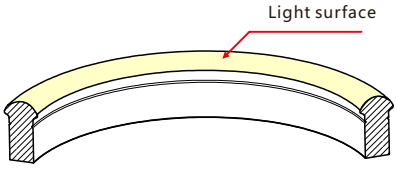
1. Outdoor or Indoor Contour/Border Lighting
2. Architectural Outline/Decorative Lighting
3. Cove/Accent Lighting
4. Facade/Floor Lighting
5. Signage/Stage Lighting

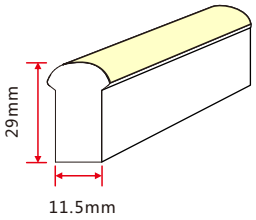
1. Specifications & Parameters

NICHIA -inside

Beam Angle 10% | Bending Diameter | Flame Resistant | UV Resistant | Solvents Resistant | Saltwater Resistant | IP 68 Protection | IK08 Protection | Warranty

1.1 Dimensions of Light





Note: Unless otherwise stated, the tolerance of the light is ±0.3mm.

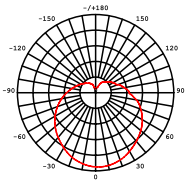
1.2 Technical Parameters

Technical Parameters	
Article No.	C-FR-ProF21B-D24CC
Color	Warm White/White
Working Voltage	DC 24V
Rated Power/m	12W
LED Qty/m	60LEDs
LED Distance	16.67mm
Min. Cutting Unit	6LEDs(1unit)
Min. Cutting Length	100mm(1unit)
Continuous Length	10m
Weight/m	490g
Storage Temperature	-20~60℃
Environmental Working Temperature	-20~45℃
Environmental Installation Temperature	0~45℃
IP Rating	IP68/IP40

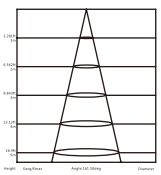
1.3 Optical Parameters

Photometric Data		
Article No.	C-FR-ProF21B-24CC-R80	
LED Type	SMD	
Beam Angle 100%	320°	
Color	CCT	Lumen/m
2200K	2238±102K	>340lm
2500K	2460±120K	>340lm
2700K	2725±145K	>340lm
3000K	3045±175K	>340lm
3500K	3465±245K	>380lm
4000K	3985±275K	>380lm
4500K	4503±243K	>380lm
5000K	5029±283K	>380lm

Candle Power Distribution



Illuminance Characteristics

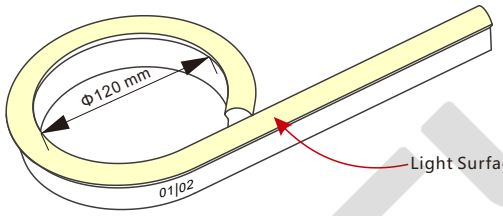


2. Functions & Features

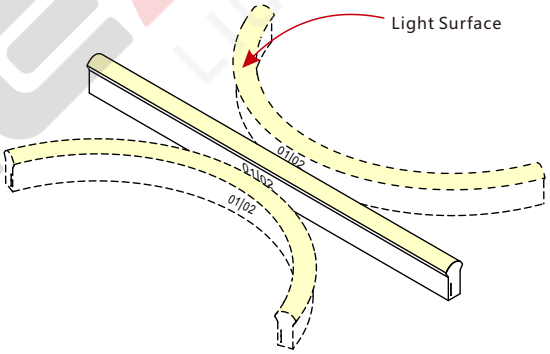
2.1 Product Features

1. High quality and high brightness Nichia SMD LED chip.
2. Protection Circuit: Each LED Protected.
3. Variety of monochromatic lights for white color.
4. UV & flame resistant construction(PVC).
5. Domed profile for large beam angle(320°).
6. High color consistency&smooth illumination with no light dots.
7. Flexible with 120mm minimum bending diameter.
8. Easy installation and assembly with DIY accessories for joining and terminating.
9. High IP rating(IP68).
10. The product IP rate is ultimately in line with properly applied IP rated connectors.
11. Continuous length up to 10m by powering one end.
12. Environmentally friendly & energy efficient.
13. Automated production, high reliability & long warranty.
14. 5 years life span.

2.2 Minimum Bend Diameter



The light can only be bent laterally (opposite bend along to light surface).



Do not bend smaller than allowed minimum bend diameter.

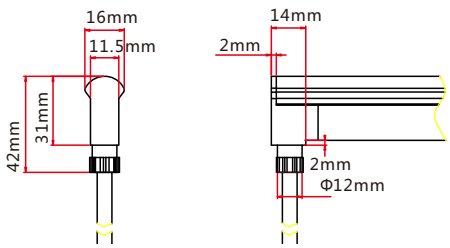
3. Types of Connector

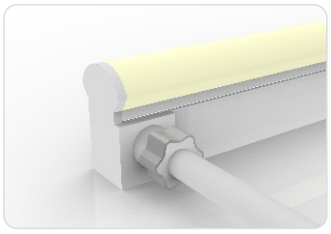
3.1 Injection-moulded Connector

Note: Unless otherwise stated, the tolerance of the connector is ±0.5mm.

Injection-moulded Front Connector (bottom)

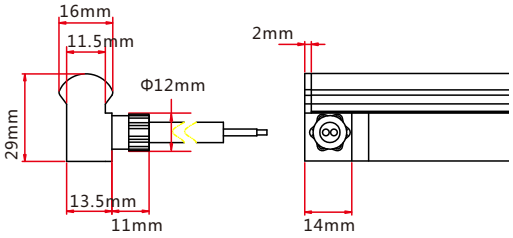
Connects light to power supply with pre-installed bottom feed cable, IP67. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

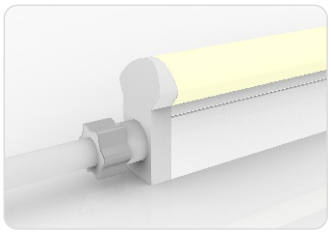




Injection-moulded Front Connector (side)

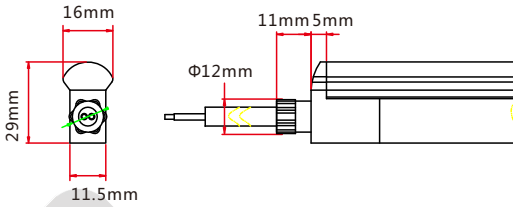
Connects light to power supply with pre-installed side feed cable, IP67. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

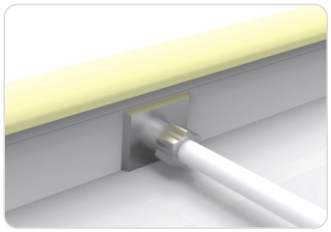




Injection-moulded Front Connector (top end)

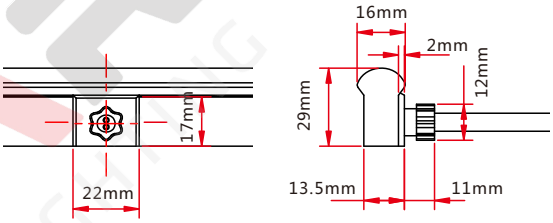
Connects light to power supply with pre-installed end feed cable, IP67. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

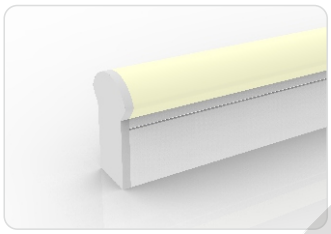




Injection-moulded Middle Feed Connector

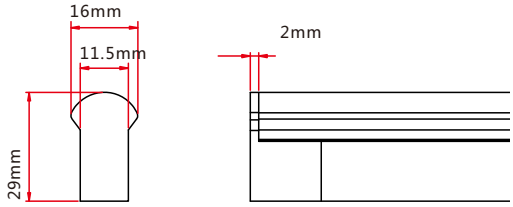
Connects light to power supply with pre-installed end feed cable, IP67. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

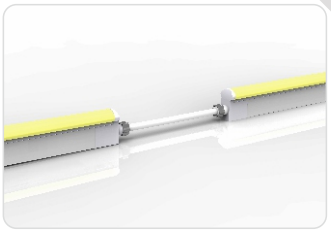




Injection-moulded End Cap

Pre-installed termination protection of the light, IP67.

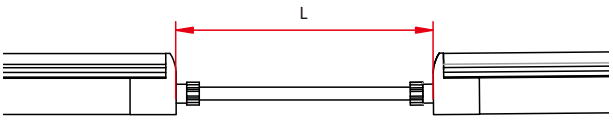




Injection-moulded Jumper

Connects two pieces of lights together with a flexible cable. IP67 Injection-moulded connector. L available in 0.3~1m.

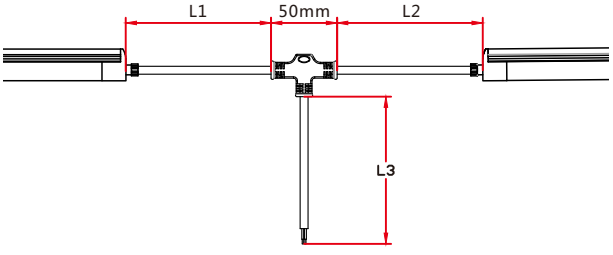
Maximum 8 Jumpers in 20m
Maximum 4 Jumpers in 10m



Injection-moulded T-feed

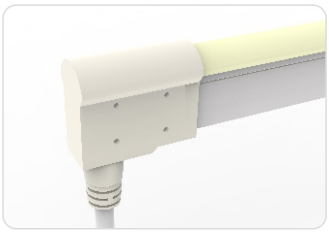
Connects two pieces of lights together with a T joint, energized from middle. IP67 Injection-moulded connector. L1 and L2 available in 0.15~0.5m. L3 available in 0.3-3m.

Maximum 8 T-feeds in 20m
Maximum 4 T-feeds in 10m



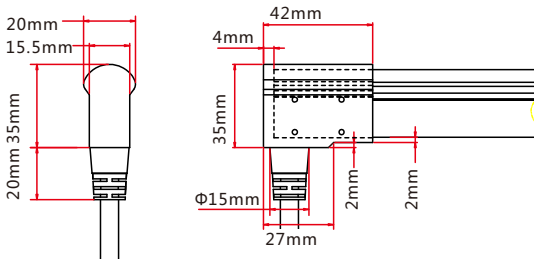
3.2 Dual Injection-moulded Connector

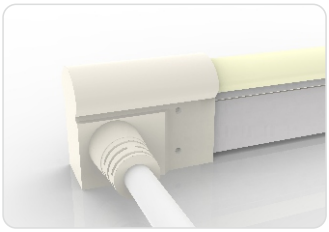
Note: Unless otherwise stated, the tolerance of the connector is ±0.5mm.



Dual Injection-moulded Front Connector (bottom)

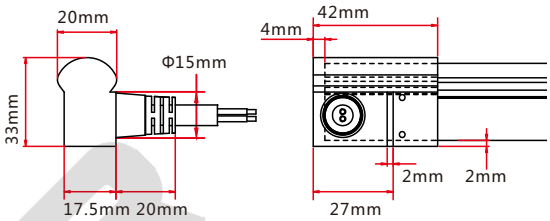
Connects light to power supply with pre-installed bottom feed cable, IP68. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

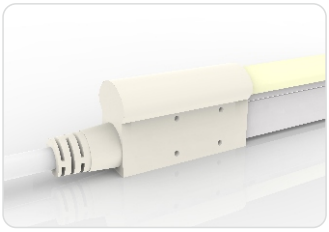




Dual Injection-moulded Front Connector (side)

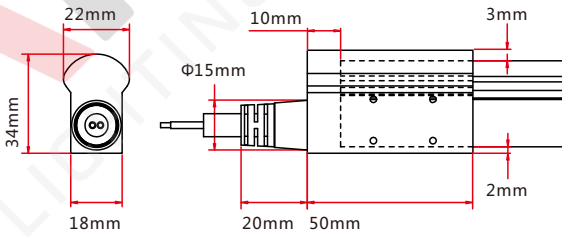
Connects light to power supply with pre-installed side feed cable, IP68. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

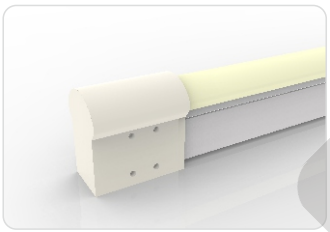




Dual Injection-moulded Front Connector (top end)

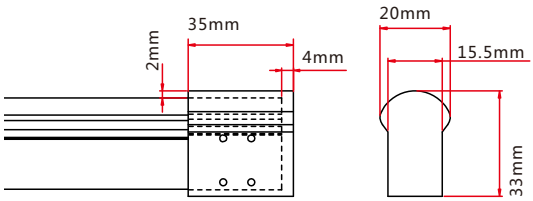
Connects light to power supply with pre-installed end feed cable, IP68. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

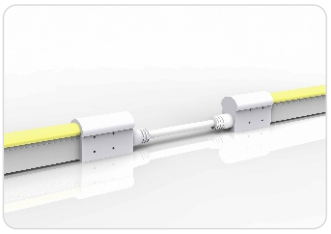




Dual Injection-moulded End Cap

Pre-installed termination protection of the light, IP68.

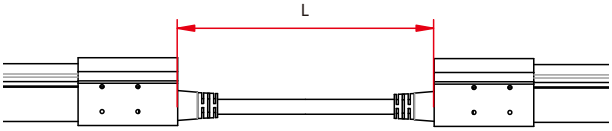


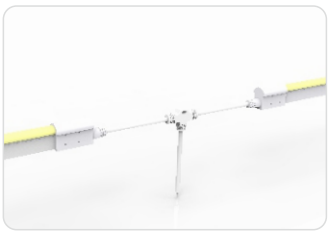


Dual Injection-moulded Jumper

Connects two pieces of lights together with a flexible cable. IP68 Dual Injection-moulded connector. L available in 0.3~1m.

Maximum 8 Jumpers in 20m
Maximum 4 Jumpers in 10m

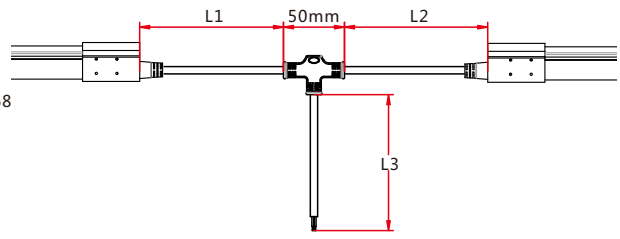




Dual Injection-moulded T-feed

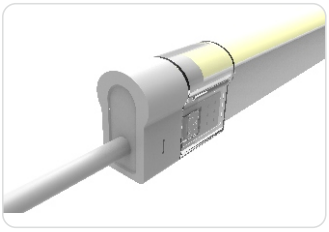
Connects two pieces of lights together with a T joint, energized from middle. IP68 Dual Injection-moulded connector. L1 and L2 available in 0.15~0.5m. L3 available in 0.3-3m.

Maximum 8 T-feeds in 20m
Maximum 4 T-feeds in 10m



3.3 Sleeve Connector

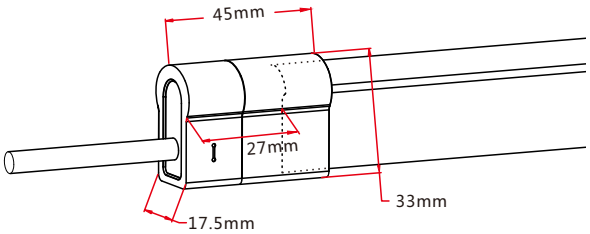
Note: Unless otherwise stated, the tolerance of the connector is ±0.5mm.

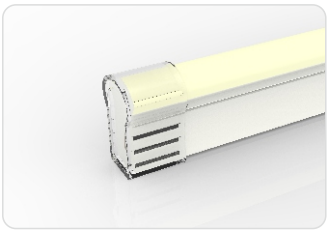


Sleeve Front Connector

Connects light to power supply. IP40 DIY connector. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

Feed connector*1 (Two-pin)
PC cover*1
Anti-skidding clips*2

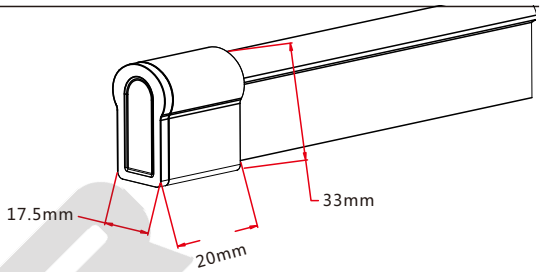


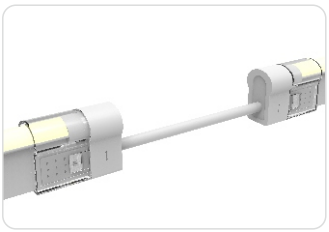


Sleeve End Cap

Termination protection of the light. IP40 DIY connector.

Shading Sheat*1
PC cover*1

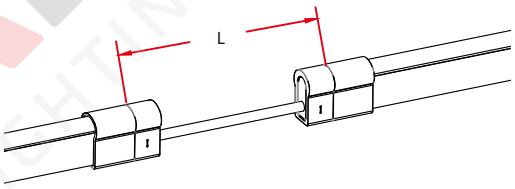


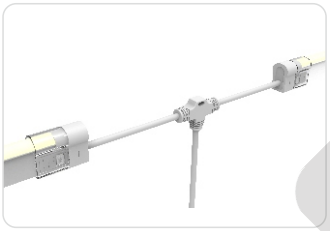


Sleeve Jumper

Connects two pieces of lights together with a flexible cable. IP40 DIY connector. L available in 0.3m, 1m and 3m.

Double-end feed connector*1 (Two-pin)
PC cover*2
Anti-skidding clips*4

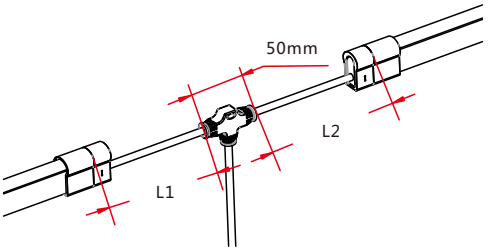




Sleeve Power T-feed

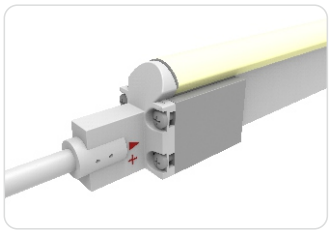
Connects two pieces of lights together with a T joint, energized from middle. IP40 DIY connector. L1 and L2 available in 0.3m.

T joint*1 (Two-pin)
PC cover*2
Anti-skidding clips*4



3.4 Screw Connector

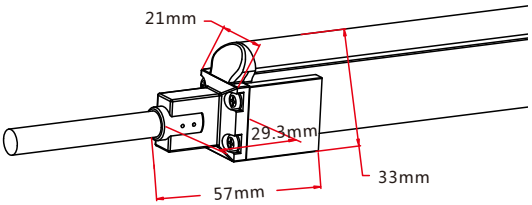
Note: Unless otherwise stated, the tolerance of the connector is ±0.5mm.



Screw Front Connector(top end)

Connects light to power supply. IP67
DIY connector. Cable length available
in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

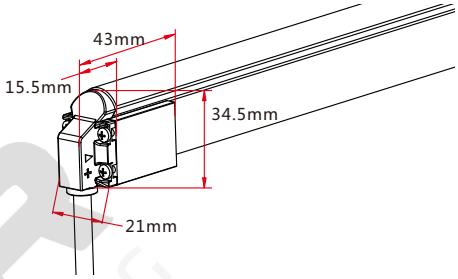
Feed connector*1 (Two-pin)
Silicone gasket*1
Aluminum mounting piece*1
Anti-skidding clip*1
Screw*4

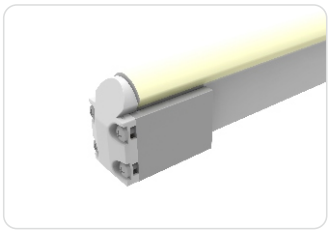


Screw Front Connector(bottom)

Connects light to power supply. IP67
DIY connector. Cable length available
in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

Feed connector*1 (Two-pin)
Silicone gasket*1
Aluminum mounting piece*1
Anti-skidding clip*1
Screw*4

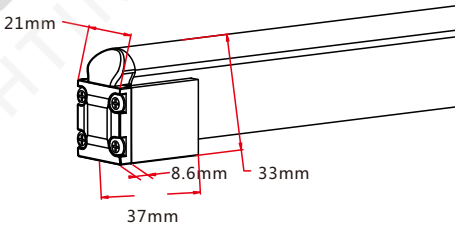


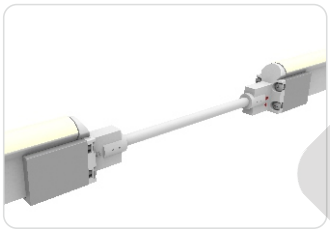


Screw End Cap

Termination protection of the light.
Ip67. DIY connector.

Tail plug*1
Silicone gasket*1
Aluminum mounting piece*1
Anti-skidding clip*1
Screw*4

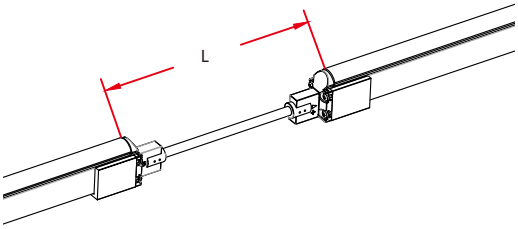




Screw Jumper

Connects two pieces of lights together
with a flexible cable. IP67 DIY connector.
L available in 0.3m, 1m and 3m.

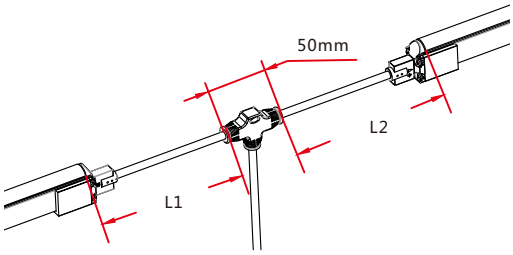
Double-end feed connector*1 (Two-pin)
Silicone gasket*2
Aluminum mounting piece*2
Anti-skidding clip*2
Screw*8



Screw Power T-feed

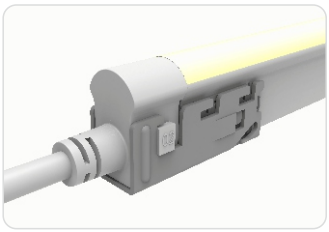
Connects two pieces of lights together with
a T joint, energized from middle. IP67 DIY
connector. L1 and L2 available in 0.3m.

T joint*1 (Two-pin)
Silicone gasket*2
Aluminum mounting piece*2
Anti-skidding clip*2
Screw*8



3.5 Clasp Connector

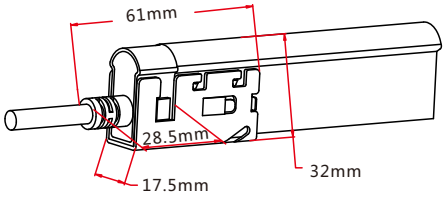
Note: Unless otherwise stated, the tolerance of the connector is ±0.5mm.

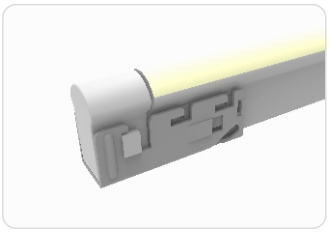


Clasp Front Connector

Connects light to power supply. IP67 DIY connector. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

Feed connector*1 (Two-pin)
Silicone gasket*1
U steel plate*1
Anti-skidding clip*1

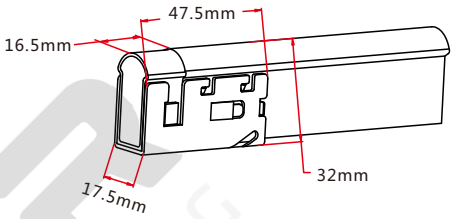


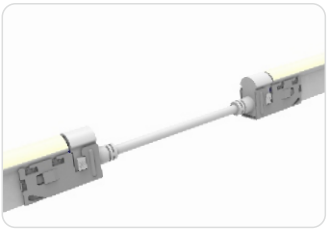


Clasp End Cap

Termination protection of the light. IP67 DIY connector.

Tail plug*1
Silicone gasket*1
U steel plate*1
Anti-skidding clip*1

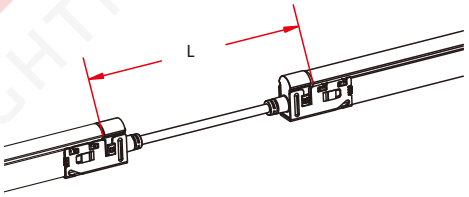




Clasp Jumper

Connects two pieces of lights together with a flexible cable. IP67 DIY connector. L available in 0.3m, 1m and 3m.

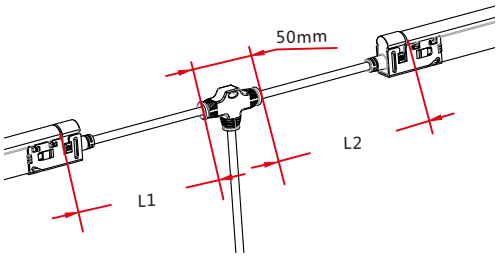
Double-end feed connector*1 (Two-pin)
Silicone gasket*2
U steel plate*2
Anti-skidding clip*2

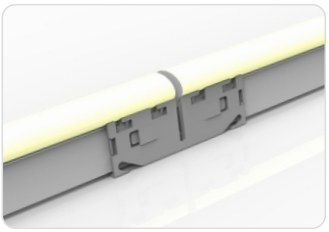


Clasp Power T-feed

Connects two pieces of lights together with a T joint, energized from middle. IP67 DIY connector. L1 and L2 available in 0.3m.

T joint*1 (Two-pin)
Silicone gasket*2
U steel plate*2
Anti-skidding clip*2

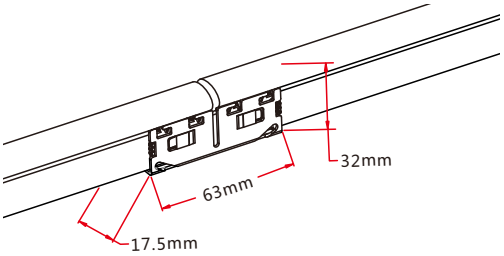




Seamless Middle Connector

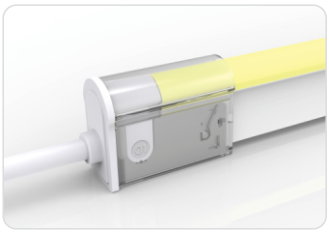
Connects two pieces of lights together seamlessly. IP40 DIY connector.

Silicone gasket*1
Joint PCB*1
U steel plate*2
Anti-skidding clip*2



3.6 Snap Connector

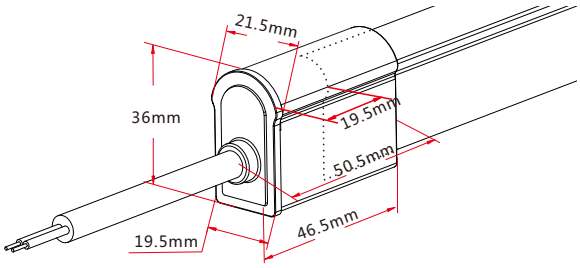
Note: Unless otherwise stated, the tolerance of the connector is ±0.5mm.

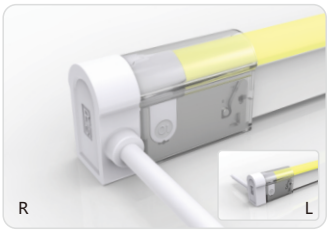


Snap Front Connector

Connects light to power supply. IP67 DIY connector. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

Feed connector*1 (Two-pin)
Silicone gaskett*1
U steel plate*1
Anti-skidding clip*1
PC Cover*1

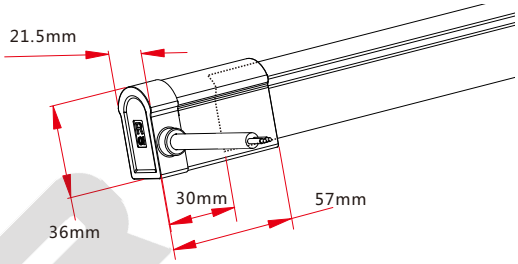




Snap Front Connector (side right/left)

Connects light to power supply. IP67 DIY connector. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

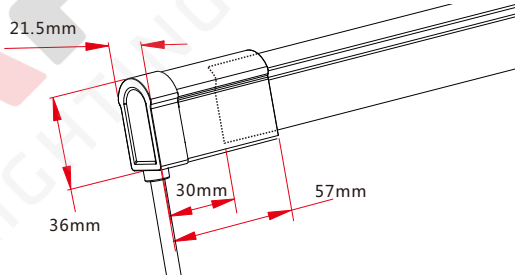
Feed connector*1 (Two-pin)
Silicone gaskett*1
U steel plate*1
Anti-skidding clip*1
PC Cover*1

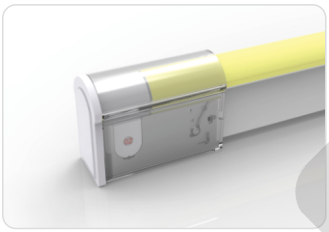


Snap Front Connector(bottom)

Connects light to power supply. IP67 DIY connector. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

Feed connector*1 (Two-pin)
Silicone gaskett*1
U steel plate*1
Anti-skidding clip*1
PC Cover*1

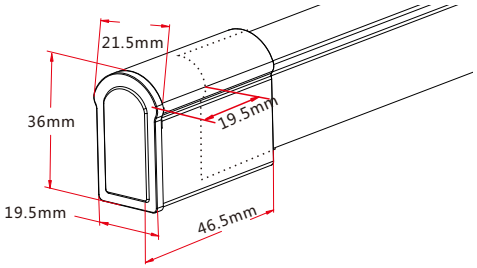


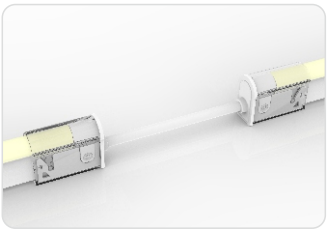


Snap End Cap

Termination protection of the light. IP67. DIY connector.

Tail plug*1
Silicone gasket*1
U steel plate*1
Anti-skidding clip*1
PC Cover*1

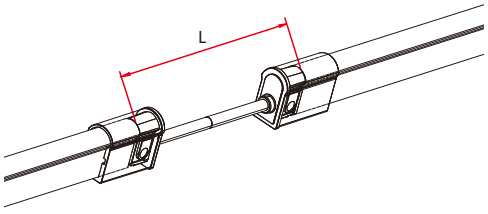




Snap Jumper

Connects two pieces of lights together with a flexible cable. IP67 DIY connector. L available in 0.3m, 1m and 3m.

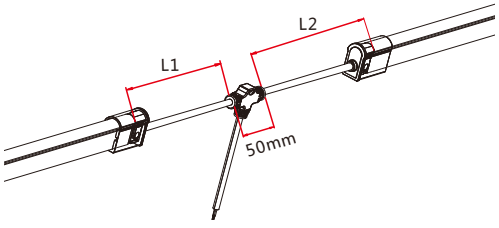
Double-end feed connector*1 (Two-pin)
Silicone gasket*2
U steel plate*2
Anti-skidding clip*2
PC Cover*2



Snap Power T-feed

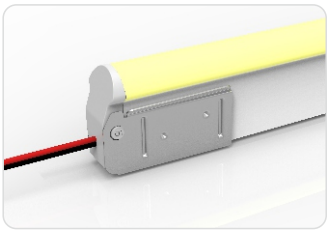
Connects two pieces of lights together with a T joint, energized from middle. IP67 DIY connector. L1 and L2 available in 0.3m.

T joint*1 (Two-pin)
Silicone gasket*2
U steel plate*2
Anti-skidding clip*2
PC Cover*2



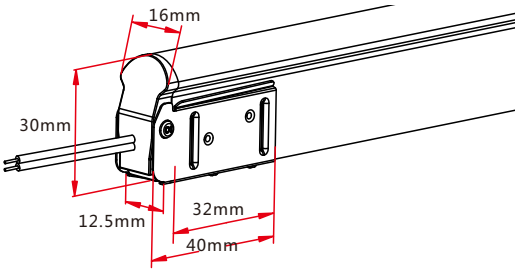
3.7 Swivel Connector

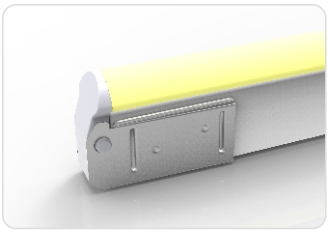
Note: Unless otherwise stated, the tolerance of the connector is ±0.5mm.



Swivel Front Connector (top end)

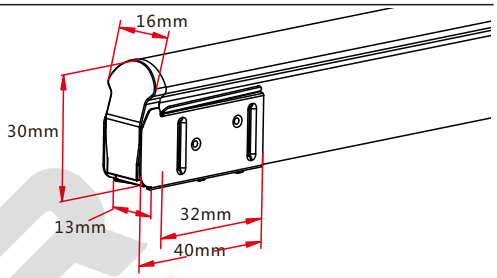
Connects light to power supply. IP20 DIY connector. Cable length available in 0.3m, 1m.





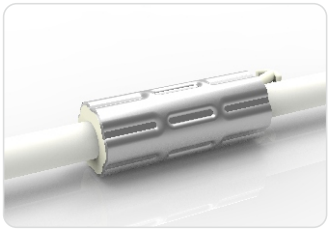
Swivel End Cap

Termination protection of the light,IP20 DIY connector.



3.8 Anti-wicking Ferrule

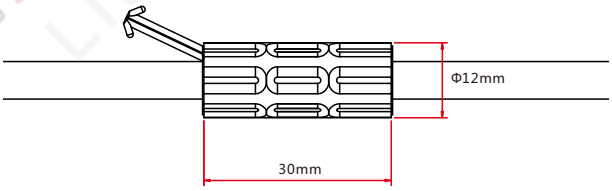
Note: Unless otherwise stated, the tolerance is ±0.5mm.



Anti-wicking Ferrule

The anti-wicking ferrule is located at 115mm (±5mm tolerance) from the connector on the cable.

For protection against water ingress from inside of cable wire and hence damage the light.

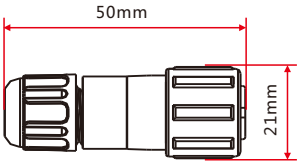


3.9 Male & Female Connector

Note: Unless otherwise stated, the tolerance is ±2mm.

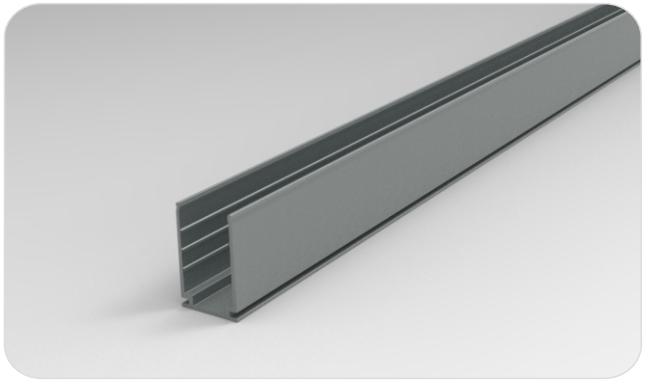
Male & female Connector

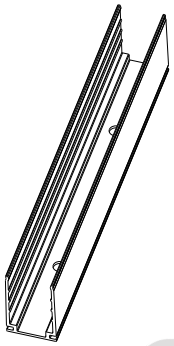
For plug and play cable junction, DIY or Pre-installed connector, IP68

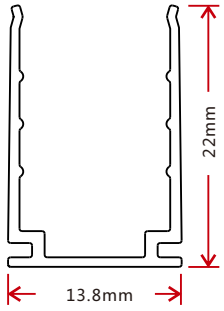


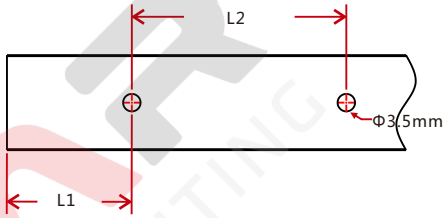
4. Mounting Profile

4.1 Standard Aluminum Profile





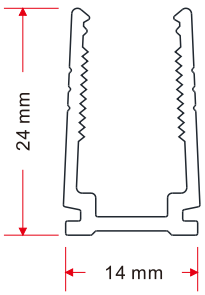


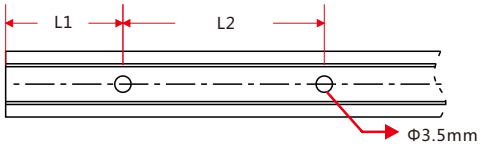


Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

Model	W*H(mm)	Standard Length (mm)	L1 (mm)	L2 (mm)	Screw Hole (mm)	Hole Number	For Product
F21-A/PL	13.8*22	35	17.5	/	Φ3.5	1	F11, F15, F21
		500	50	200	Φ3.5	3	F11, F15, F21
		1000	100	200	Φ3.5	5	F11, F15, F21
		2000	100	200	Φ3.5	10	F11, F15, F21

4.2 Plastic Profile

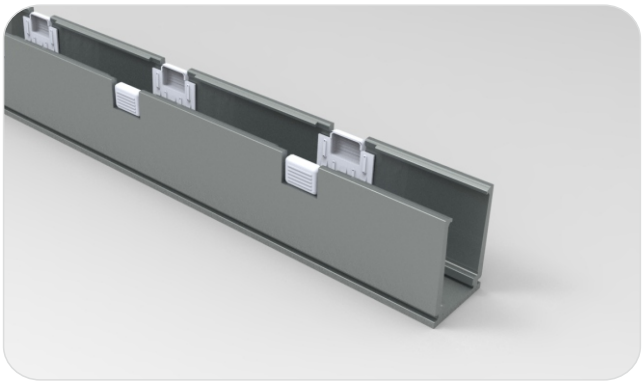


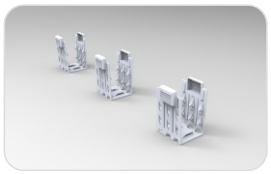


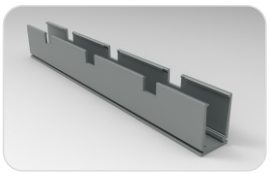
Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

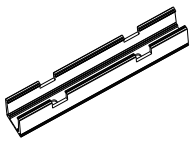
Model	W*H(mm)	Standard Length (mm)	L1 (mm)	L2 (mm)	Screw Hole (mm)	Hole Number	For Product
F21-PC/PL	14*24	500	50	200	Φ3.5	3	F11, F15, F21
		1000	100	200	Φ3.5	5	F11, F15, F21
		2000	100	200	Φ3.5	10	F11, F15, F21

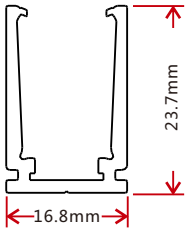
4.3 Self-locking Aluminum Profile (Using with the Clip)



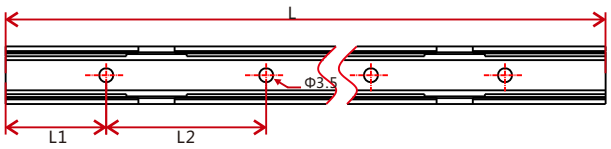


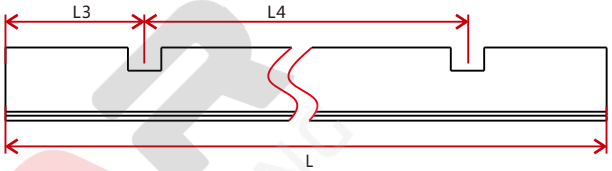






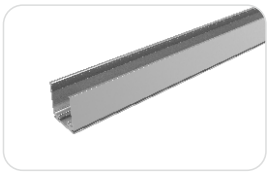
Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

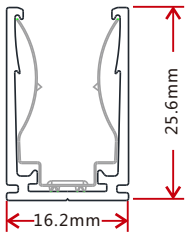




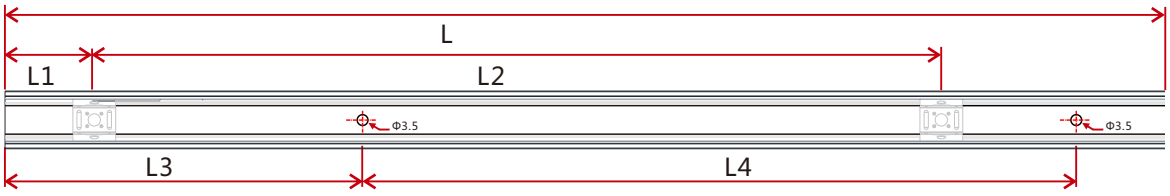
Model	W*H(mm)	Standard Length(mm)	L1(mm)	L2(mm)	L3(mm)	L4(mm)	Hole Screw(mm)	Hole Number	Clip Number
F21-SLA/PL	16.8*23.7	35	17.5	25	5	/	Φ3.5	2	1
		500	50	200	75	350	Φ3.5	3	2
		1000	100	200	150	350	Φ3.5	5	3
		2000	100	200	125	350	Φ3.5	10	6

4.4 Self-locking Aluminum Profile Ver 2.0 (Using with the Clip)



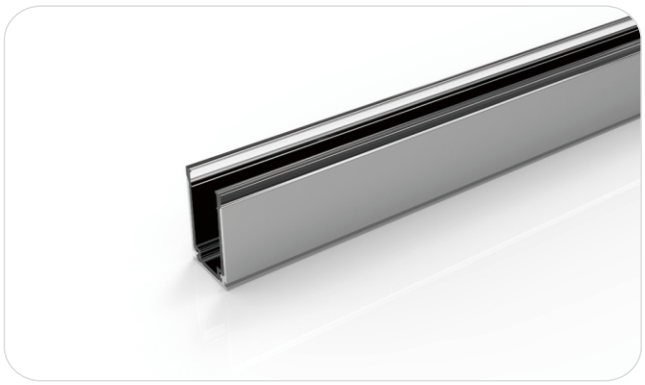


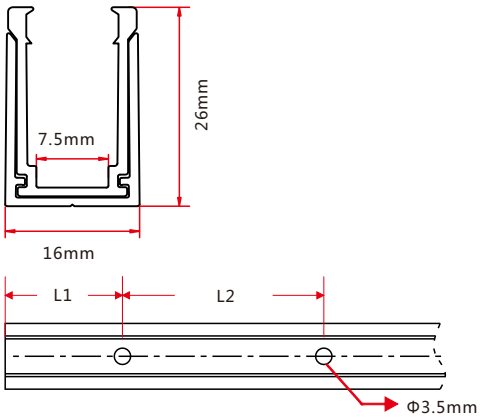
Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.



Model	W*H(mm)	Standard Length(mm)	L1(mm)	L2(mm)	L3(mm)	L4(mm)	Hole Screw(mm)	Hole Number	Clip Number
F21-SLA/PL2	16.2*25.6	35	17.5	/	5	25	Φ3.5	2	1
		500	25	225	50	200	Φ3.5	3	3
		1000	25	237.5	100	200	Φ3.5	5	5
		2000	25	243.8	100	200	Φ3.5	10	9

4.5 Plastic & Aluminum Combination Profile

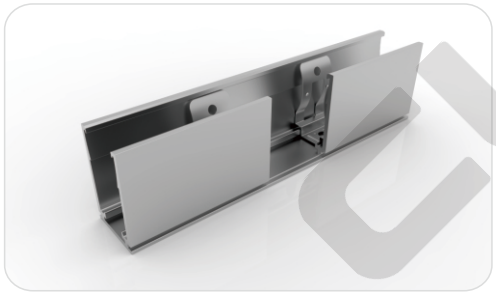


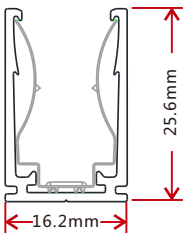


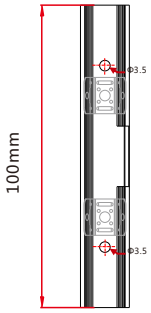
Model	W*H(mm)	Standard Length (mm)	L1 (mm)	L2 (mm)	Screw Hole (mm)	Hole Number	For Product
F21-PA/PL	16*26	35	17.5	/	Φ3.5	1	F11/15/21
		500	50	200	Φ3.5	3	F11/15/21
		1000	100	200	Φ3.5	5	F11/15/21
		2000	100	200	Φ3.5	10	F11/15/21

4.6 Cable Exit Oriented Aluminum Profile (Applicable to Injection-moulded Connector Only)

4.6.1 Self-locking Aluminum Profile Ver. 2, Middle Feed (Using with the Clip)



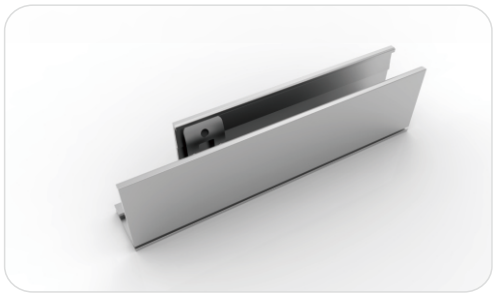


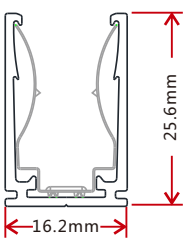


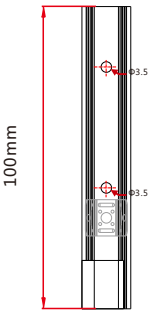
Model: F21-SLA/PL2-M

Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

4.6.2 Self-locking Aluminum Profile Ver. 2, Side Feed From Left (Using with the Clip)



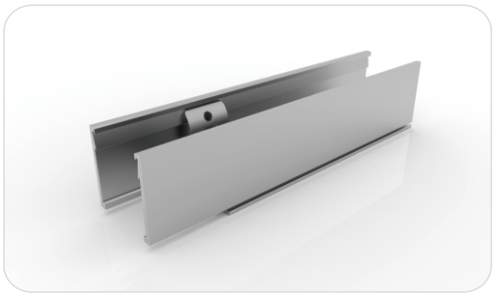


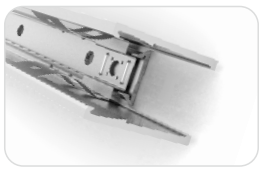


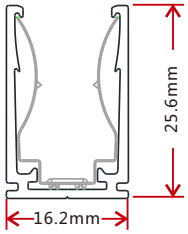
Model: F21-SLA/PL2-SL

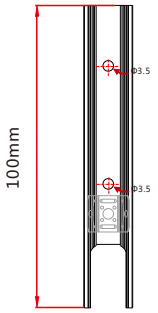
Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

4.6.3 Self-locking Aluminum Profile Ver. 2, Bottom Feed (Using with the Clip)





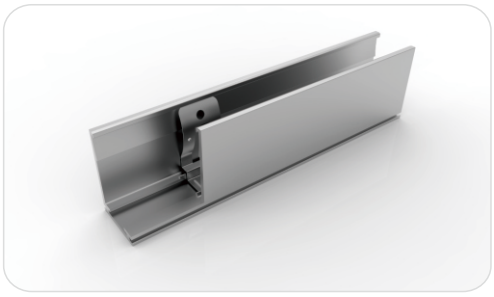


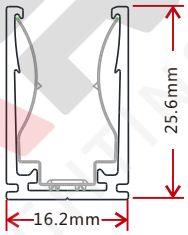


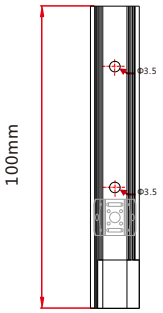
Model: F21-SLA/PL2-B

Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

4.6.4 Self-locking Aluminum Profile Ver. 2, Side Feed From Right (Using with the Clip)





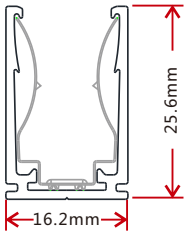


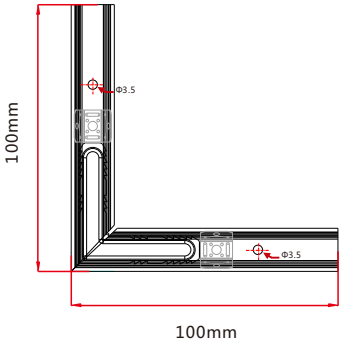
Model: F21-SLA/PL2-SR

Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

4.7 Corner Aluminum Profile (Applicable to Injection-moulded Connector Only)

4.7.1 L Shape Self-locking Aluminum Profile Ver. 2 (Using with the Clip)

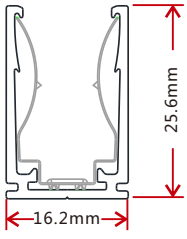


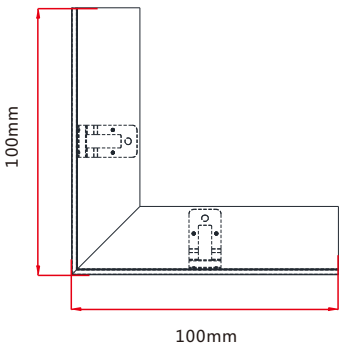


Model: F21-SLA/PL2-L

Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

4.7.2 Inward L Shape Self-locking Aluminum Profile Ver.2 (Using with the Clip)

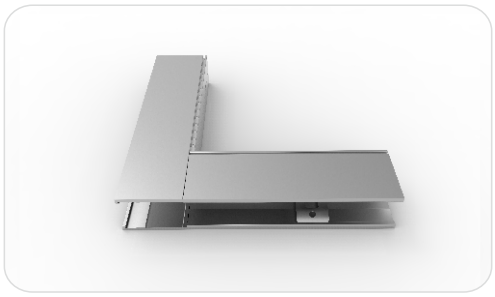


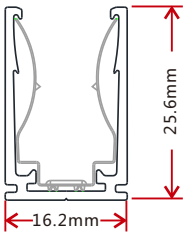


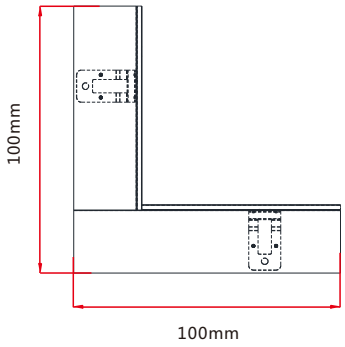
Model: F21-SLA/PL2-IL

Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

4.7.3 Outward L Shape Self-locking Aluminum Profile Ver.2 (Using with the Clip)

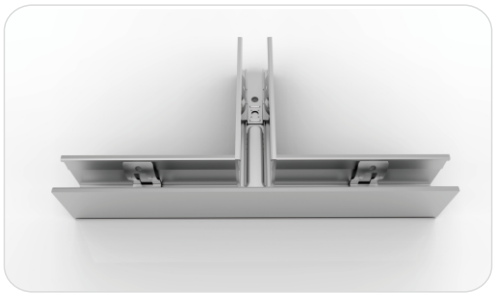


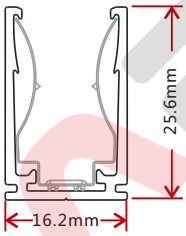


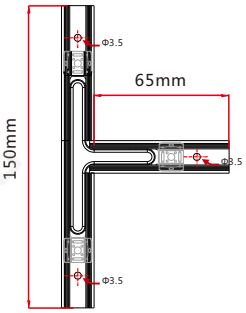


Model: F21-SLA/PL2-OL
Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

4.7.4 T Shape Self-locking Aluminum Profile Ver. 2 (Using with the Clip)

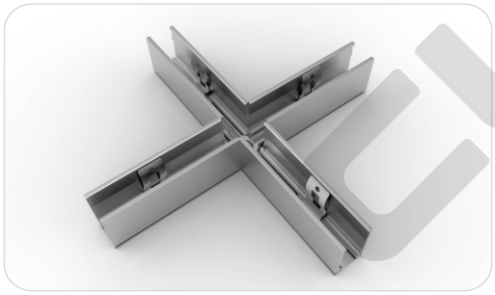


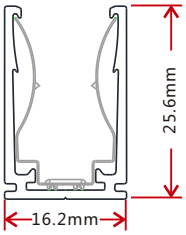


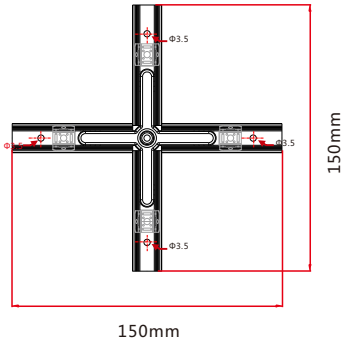


Model: F21-SLA/PL2-T
Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

4.7.5 X Shape Self-locking Aluminum Profile Ver. 2 (Using with the Clip)

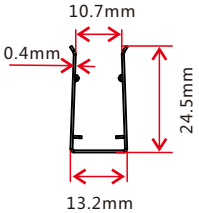


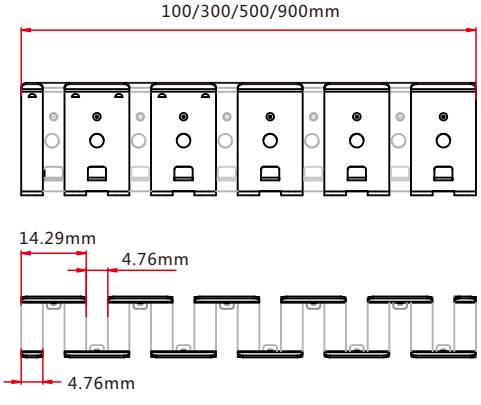




Model: F21-SLA/PL2-X
Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

4.8 Curve Stainless Steel Profile

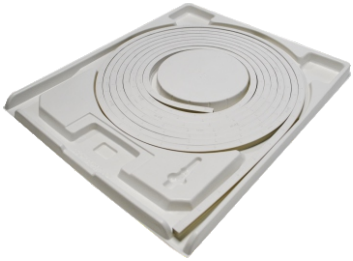




Model: F21-CS/PL
Note: Unless otherwise stated, the tolerance of the profile is ±0.5mm.

5.Packaging

Packaging Method



Plastic Plate

White Box

Carton

Packaging Detail

Light Length	White Box Dimension (cm)	Carton Dimension (cm)	Numbers of White Box	Carton Weight (kg)
5m	39*5.2*50	52*41*28	5	14
10m	51*5.2*62	64*53*28	5	26
10m	51*5.2*62	64*53*17.5	3	16
20m	68*5.2*79	81*70*12.5	2	22

6. Appendix

6.1 Product Naming Convention

C-FR-XXX(-)X-XX-XXX-XXX-XXX-XXX

- LED Quantity/Meter
- Cover Color
- Color/CCT
- Working Voltage
- Bending Direction
- Light Output
- Product Type
- Product Category(FR: Flexible Ribbon Light)
- Abbreviation of Company Name: CLEAR

For Example: C-FR-ProF21B-HB-24CC-30K-WM-60

6.2 Certificate

Certificating Type	Testing Organization	Certificate Serial Number	Report Reference
UL 2108	UL	20160726-E360029	E360029-20130322
CE-EMC	SGS	SZEM1702001259LMV	SZEM160600421302

6.3 Third-Party Test Report

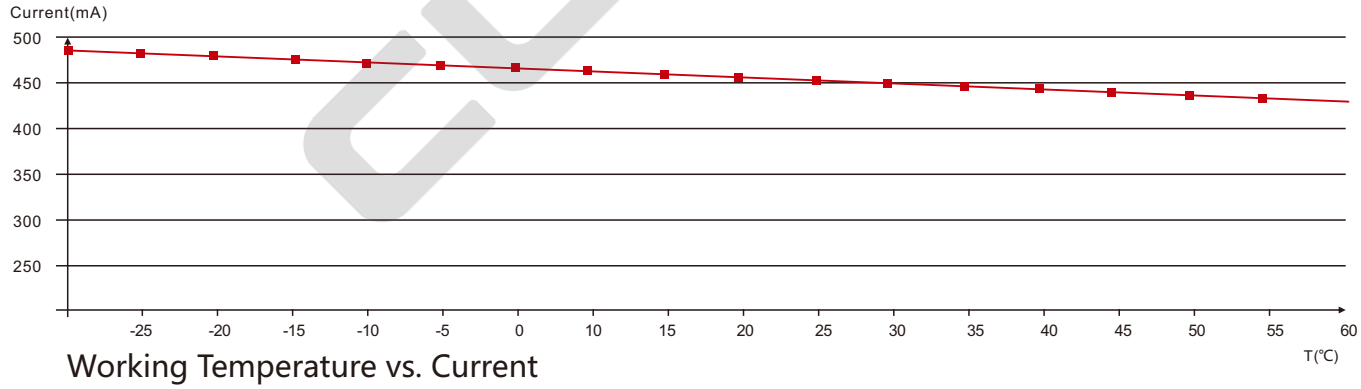
Testing Item	Testing Organization	Report Number
RoHS	SGS	CANEC1202163502 A01
IP68: Screw type	TUV SUD	68.140.12.136.02
IP68: Clasp type	SGS	GZES140200135301 GZES140200135401 GZES140200135501 GZES140200135701 GZES140200135801
IPX8: Molding type	SGS	SZES141200357301 SZES141200357401 SZES141200357501
IPX8: Snap type	SGS	GZES160600792031
Flame retardant	TUV SUD	68.140.13.068.01
UV@340nm: Light	AOV	A002R130308065—1R01
UV@340nm: PVC	AOV	A002R130308065—2R01

>>Note: The testing reports and certificates are available from the related official website.

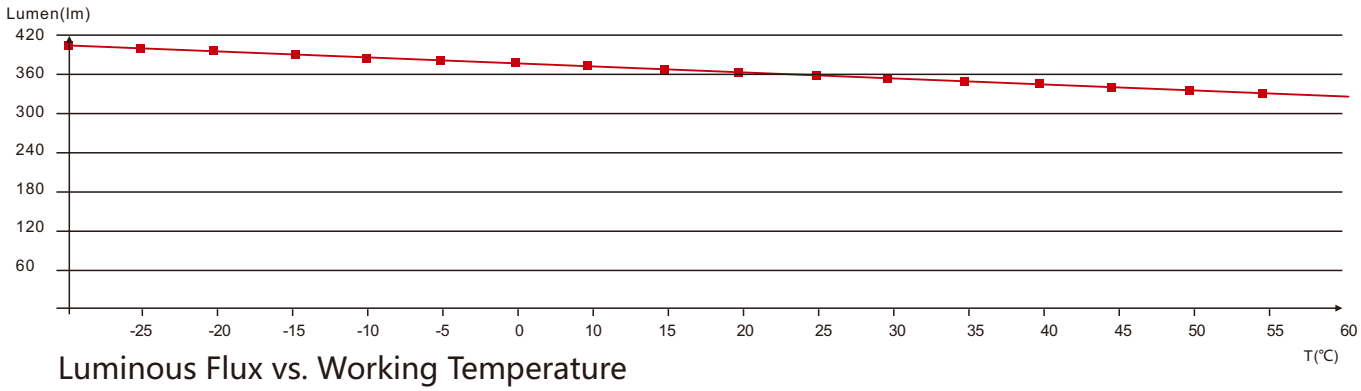
6.4 Reliability Test of Light

TESTING ITEM	PERFORMANCE	STANDARD/REFERENCE VALUE/DESCRIPTION
PHOTOMETRIC TESTING	Spectrum Analysis	IES LM 79 (lumen, CCT, CRI, XY, SDCM, wave length)
	Photometric Distribution	IES LM 79(lumen intensity distribution & Lux diagram)
	Lumen Maintenance & Life Time	IES LM84 & IES TM28
TEMPERATURE RISE TESTING	Normal Temperature Test	UL1598 & UL2388 & IEC60598-1 & IEC60598-2-21
	Abnormal Operation Test	UL1598 & UL2388 & IEC60598-1 & IEC60598-2-21
MECHANICS & PHYSICS TESTING	Bending Test	Manufacturer-defined, 500 cycles
	Swing Test	UL2388, >750 cycles
	Tensile Test	Manufacturer-defined, > the weight of light in
	Twist Test	maximum connection length with both ends feed Manufacturer-defined, >200 cycles
	Ball Impact	UL1598 & UL2388 & IEC60598-1 & IEC60598-2-21
	IK07 IK08	IEC62262
WEATHERING TESTING	Swimming Pool Water Immersion Test	GB9667, PH6.8-7.6, free chlorine 0.3-0.6mg/L
	Sea Water Immersion Test	IEC60598-1, Salinity 4%
	Salt Spray Test	IEC68-2-11
	Outdoor Exposure	Manufacturer-defined
ENVIROMENT TESTING	Flame Resistant Test	UL94
	UV Exposure Test	ASTMG 154，ISO 4892-3，UVA@340nm
	IPX5 IPX6 IPX7 IPX8	IEC60529
ENDURANCE & THERMAL TEST LAB	Temperature Shock Test	Manufacturer-defined，-40℃-60℃ (typical temperature range)
	Constant Temperature Test	Manufacturer-defined，70℃ (typical temperature)

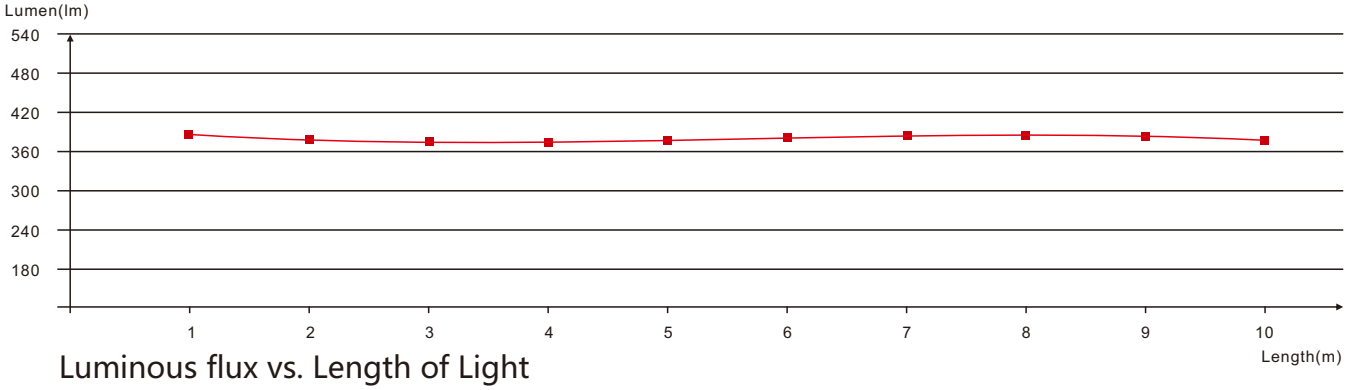
6.5 Figures of Typical Characteristics



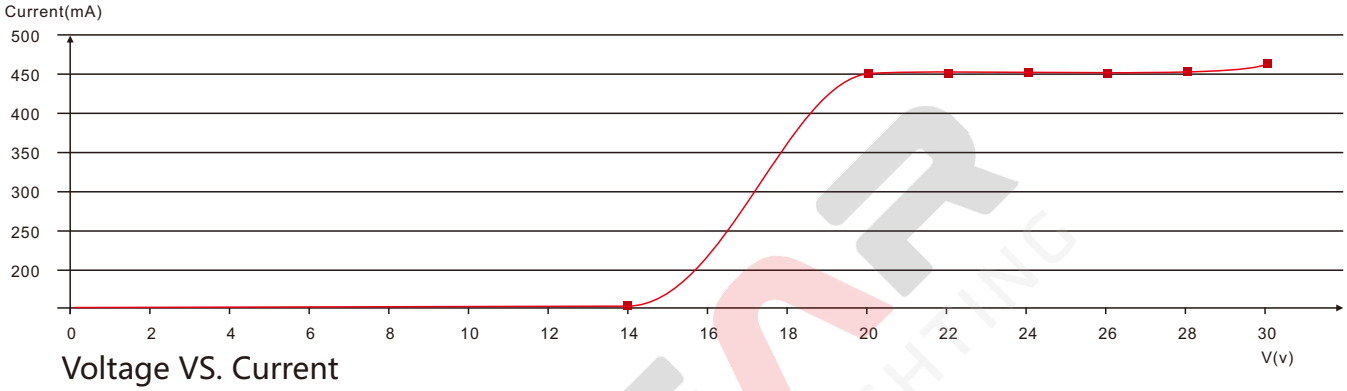
Working Temperature vs. Current



Luminous Flux vs. Working Temperature

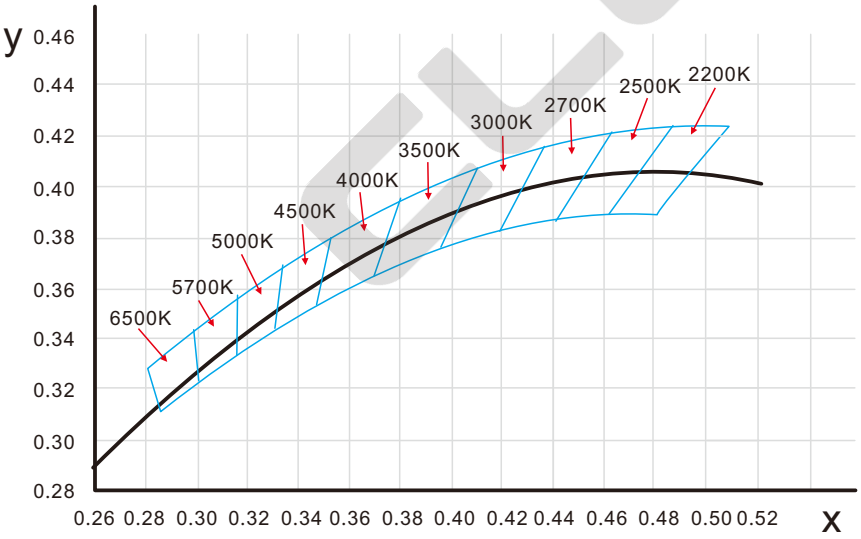


Luminous flux vs. Length of Light



Voltage VS. Current

6.6 (X,Y) Chromaticity Diagram



6.7 Correlated Color Temperature

ANSI STANDARD

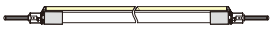
Nominal CCT Categories

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) ±ΔT 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.

6.8 Loading Chart

Type.	Rated Power /mtr	Power Supply											
		35w	60w	75w	80w	100w	120w	150w	120w	150w	185w	240w	320w
F21	6.5w/7.2w/8w	3m	6m	7.5m	8m	10m	12m	15m			18m	24m	30m
	10.6w/11w/12w	2m	3.5m	4.5m	5m	6m	7m	10m			12m	14m	20m
	15w	2m	3m	4m	4.2m	5m			6m	8m	10m		
Energizing Way		DC input  01/02							DC input  DC input 01 02				

Note : 1. These are the light maximum recommended running length subject to selected power supply.
2. For example: It is recommended to use one 80W power supply loading maximum 8m light (7.2w/m) or maximum 5m light (12w/m) by energizing the light one end.