

# artist of light

## Specification

For LED Neon Flex Ribbon

C-FR-F21A



**CLEAR** Lighting<sup>®</sup>

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# Introduction

C-FR-F21A is a member of the Artist of Light series adopting tri-chip RGB LEDs and compatible with RGB controller or DMX 512, which delivers homogeneous, vibrant illumination and ultimate versatility for your colorful lighting scheme.

C-FR-F21A 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.

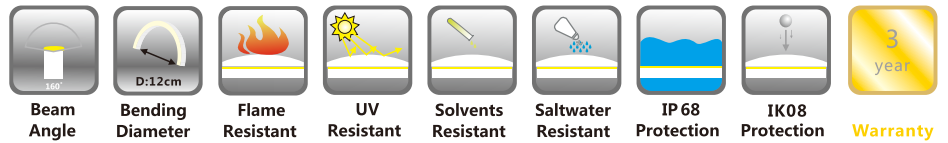
Fully encapsulated in the flexible PVC chamber by utilizing consummate extrusion technology, assembled with multiple patented connectors to achieve IP68 protection, easy for installation and applicable for various circumstances.

C-FR-F21A features large view angle of 270 degree, complete smooth color changing and high brightness, also ultra flexibility and pliability with small bend diameter in curve bending shape.

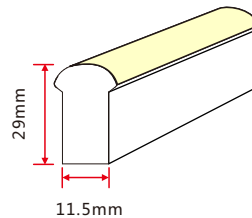
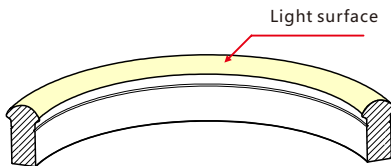
Applications:

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



## 1.1 Dimensions of Light



Note: Unless otherwise stated, the tolerance of the light is  $\pm 0.2\text{mm}$ .

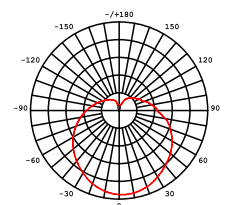
## 1.2 Technical Parameters

Technical Parameters	
Article No.	C-FR-F21A
Color	RGB
Working Voltage	DC 24V
Rated Power/mtr	12W
LED Qty/mtr	60LEDs
LED Distance	16.67mm
Min. Cutting Unit	10CM
Min. Cutting Length	10CM(1unit)
Continuous Length	10M
Weight/m	490g
Storing Temp.	-20~60°C
Working Temp.	-20~45°C
Operating Temp.	0~45°C
IP Rating	IP68/IP65/IP40

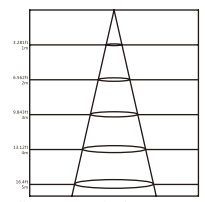
## 1.3 Optical Parameters

Photometric Data			
Article No.	C-FR-F21A		
LED Type	SMD		
Beam Angle	160°		
Color	CCT	Lumen/m	Power/m
Red	620-630nm	>22lm	3w
Green	520-530nm	>90lm	4.5w
Blue	465-475nm	>18lm	4.5w
R+G+B (white)	N/A	>130lm	12w

Candle Power Distribution



Illuminance Characteristics

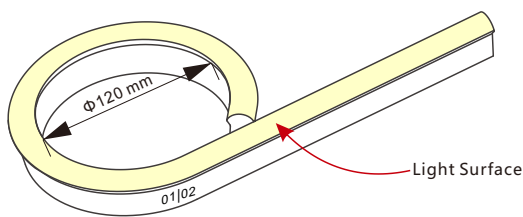


## 2. Functions & Features

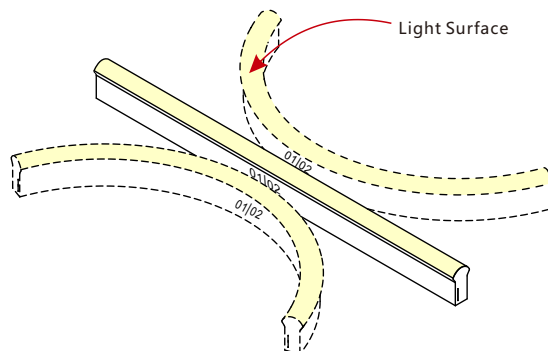
### 2.1 Product Features

1. High quality SMD, tri-chip RGB LED.
2. Dimmable or DMX 512, DALI, 1-10V controllable, RGB color changing.
3. UV & flame resistant construction (PVC).
4. High color consistency & smooth illumination with no light dots.
5. Domed profile for large viewing angle(270°).
6. High lumen output and IP rating (IP68).
7. Ultra flexible, bending diameter of 120mm.
8. Easy installation and assembly with DIY accessories for joining and terminating.
9. Continuous length up to 10m by powering one end.
10. Environmentally friendly & energy efficient.
11. Automated production, high reliability & long warranty.
12. 5 years life span (Do not continuously operate over 8 hours per day ).

### 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.

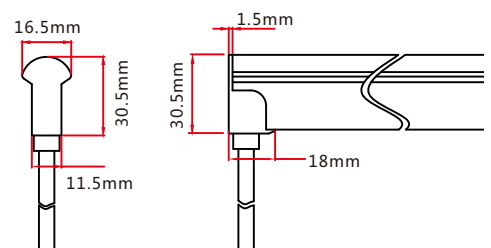
## 3. Types of Connector

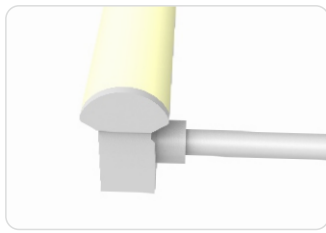
### 3.1 Injection-moulded Connector



#### Injection-moulded Front Connector (bottom)

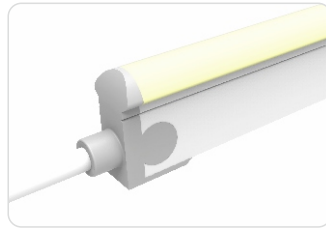
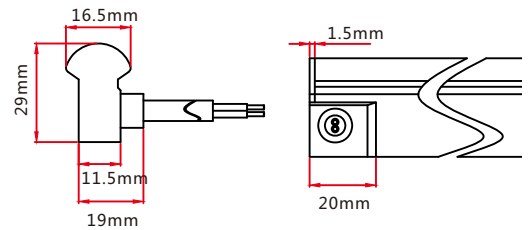
Connects light to power supply with pre-installed bottom feed cable, IP68. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.





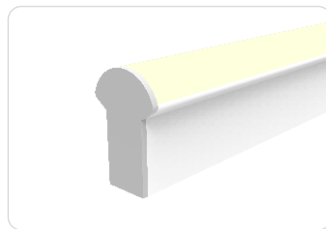
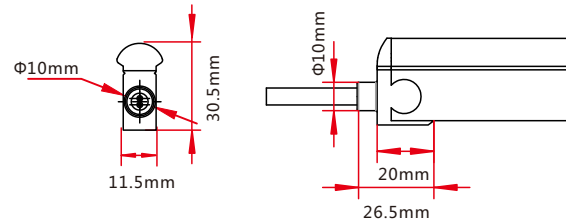
### Injection-moulded Front Connector (side)

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



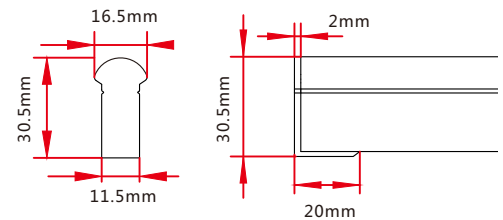
### Injection-moulded Front Connector (top end)

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

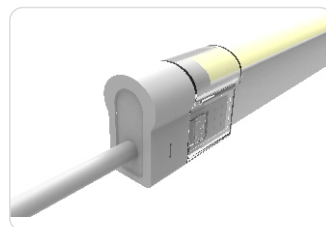


### Injection-moulded End Cap

Pre-installed termination protection of the light, IP68.



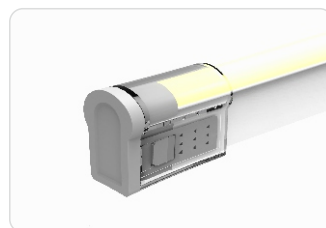
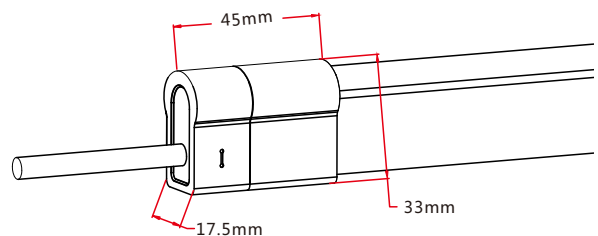
## 3.2 Sleeve Connector



### Sleeve Front Connector

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

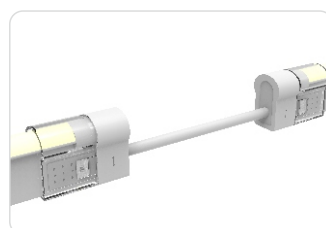
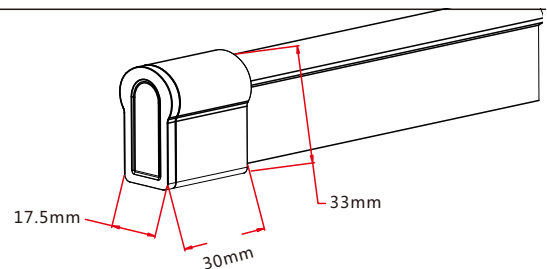
Feed connector\*1 (Four-pin)  
PC cover\*1  
Anti-skidding clips\*2  
Heat-shrink tube\*1



### Sleeve End Cap

Termination protection of the light. IP40 DIY connector.

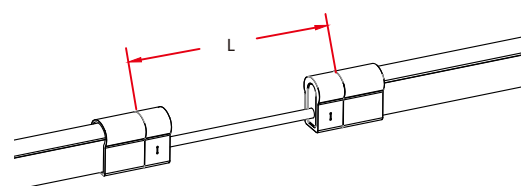
Tail plug\*1  
Shading sheet\*1  
Heat-shrink tube\*1

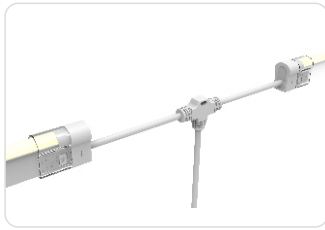


### Sleeve Jumper

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 (Four-pin)  
PC cover\*2  
Anti-skidding clips\*4  
Heat-shrink tube\*2

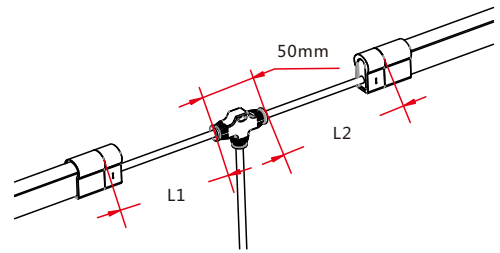




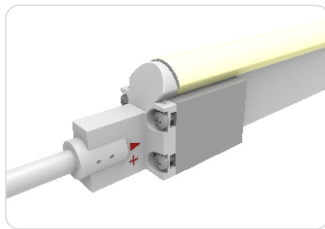
### Sleeve Power T-feed

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 (Four-pin)  
PC cover\*2  
Anti-skidding clips\*4  
Heat-shrink tube\*2



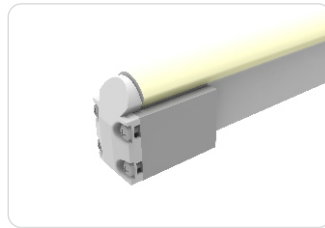
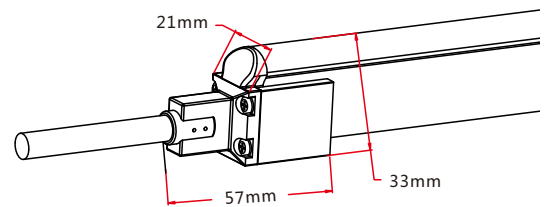
## 3.3 Screw Connector



### Screw Front Connector

Connects light to power supply. IP68. DIY connector. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

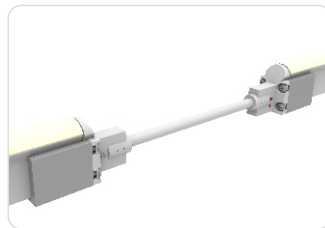
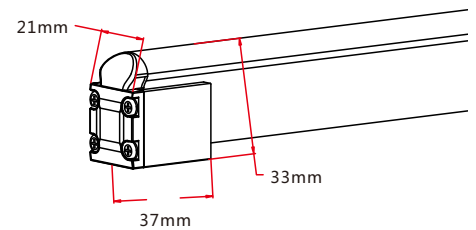
Feed connector\*1 (Four-pin)  
Silicone gasket\*1  
Aluminum mounting piece\*1  
Anti-skidding clip\*1



### Screw End Cap

Termination protection of the light. IP68. DIY connector.

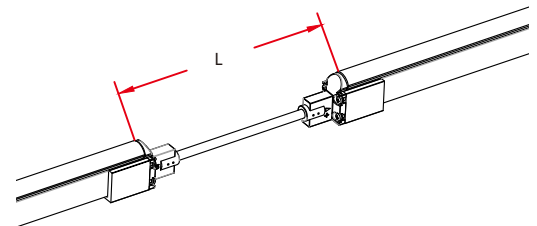
Tail plug\*1  
Silicone gasket\*1  
Aluminum mounting piece\*1  
Anti-skidding clip\*1



### Screw Jumper

Connects two pieces of lights together with a flexible cable. IP68 DIY connector available in 0.3m, 1m and 3m.

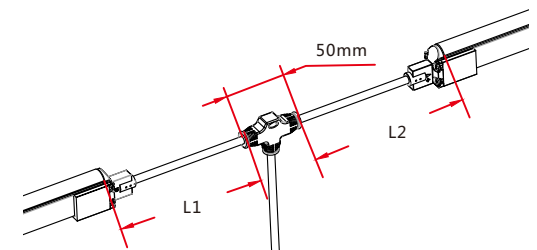
Double-end feed connector\*1 (Four-pin)  
Silicone gasket\*2  
Aluminum mounting piece\*2  
Anti-skidding clip\*2



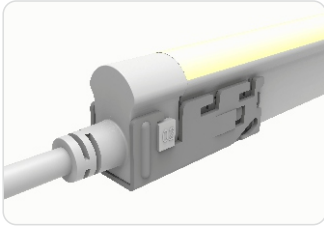
### Screw Power T-feed

Connects two pieces of lights together with a T joint, energized from middle. IP68 DIY connector. L1 and L2 available in 0.3m.

T joint\*1 (Four-pin)  
Silicone gasket\*2  
Aluminum mounting piece\*2  
Anti-skidding clip\*2



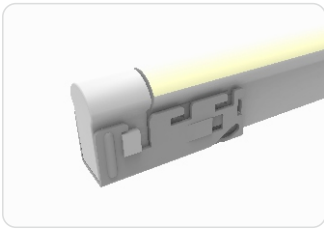
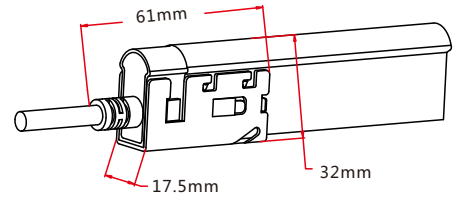
### 3.4 Clasp Connector



#### Clasp Front Connector

Connects light to power supply. IP68 DIY connector. Cable length available in 0.3m, 1m, 3m, 5m, 10m, 15m, 20m.

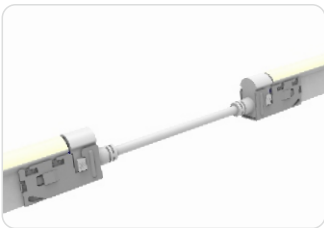
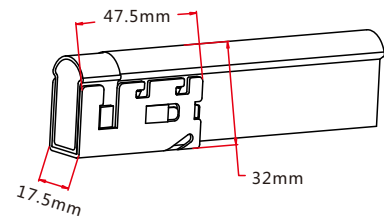
Feed connector\*1 (Four-pin)  
Silicone gasket\*1  
U steel plate\*1  
Anti-skidding clip\*1



#### Clasp End Cap

Termination protection of the light. IP68. DIY connector.

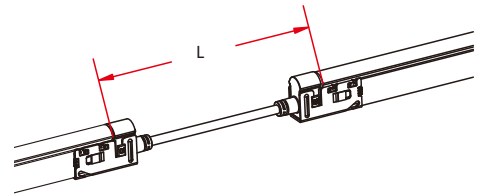
Tail plug\*1  
Silicone gasket\*1  
U steel plate\*1  
Anti-skidding clip\*1



#### Clasp Jumper

Connects two pieces of lights together with a flexible cable. IP68 DIY connector. L available in 0.3m, 1m and 3m.

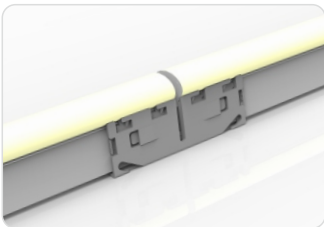
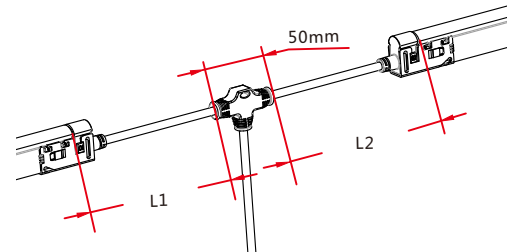
Double-end feed connector\*1 (Four-pin)  
Silicone gasket\*2  
U steel plate\*2  
Anti-skidding clip\*2



#### Clasp Power T-feed

Connects two pieces of lights together with a T joint, energized from middle. IP68 DIY connector. L1 and L2 available in 0.3m.

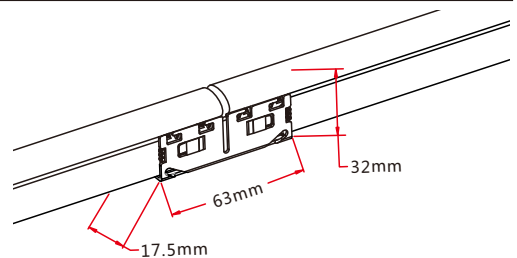
T joint\*1 (Four-pin)  
Silicone gasket\*2  
U steel plate\*2  
Anti-skidding clip\*2



#### Seamless Middle Connector

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

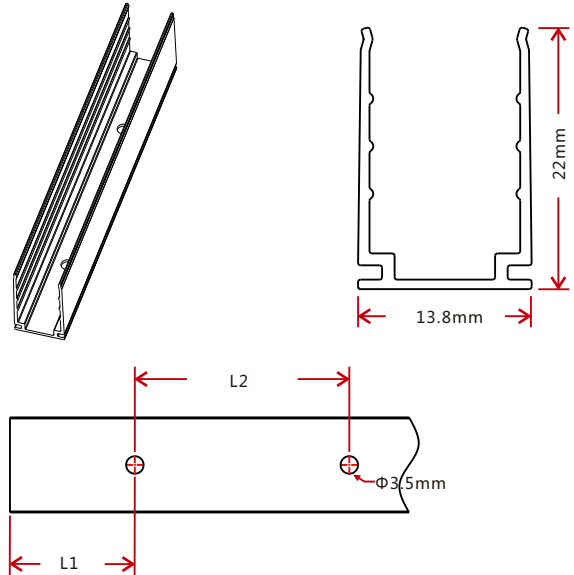
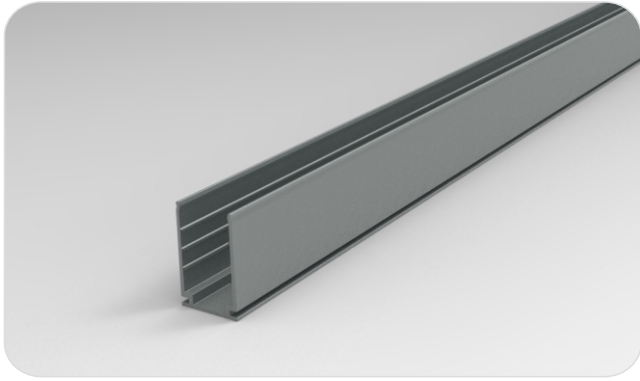
Silicone gasket\*1  
Joint PCB\*1  
U steel plate\*2  
Anti-skidding clip\*2





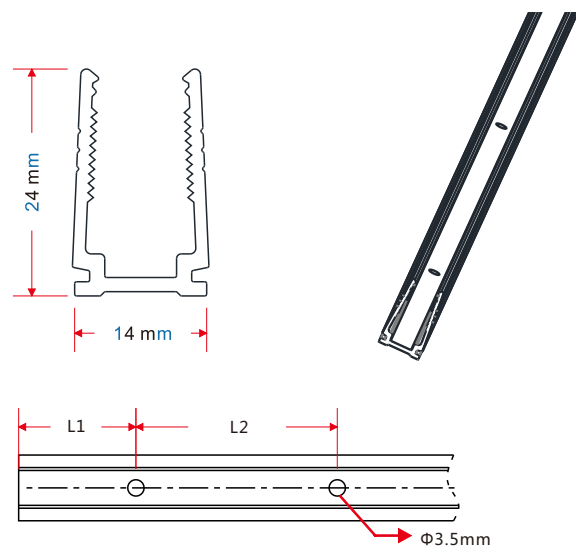
## 4. Mounting Profile

### 4.1 Standard Aluminum Profile



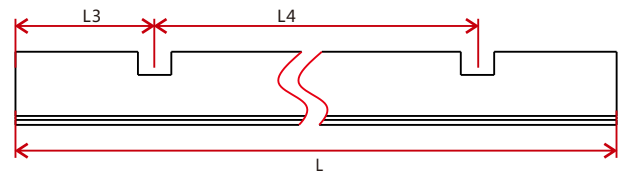
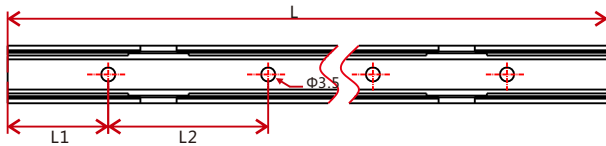
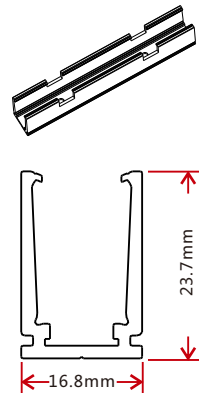
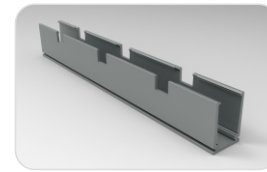
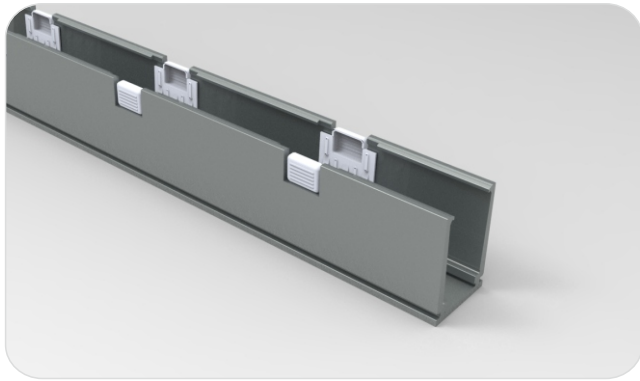
Model	W*H(mm)	Standard Length ( L:mm)	L1 (mm)	L2 (mm)	Screw Hole (Φ:mm)	Hole Number	For Product
K107	13.8*22	30	15	/	Φ3.5	1	F11, F15, F21
		50	25	/	Φ3.5	1	F11, F15, F21
		500	50	290	Φ3.5	3	F11, F15, F21
		1000	100	200	Φ3.5	5	F11, F15, F21
		2000	100	200	Φ3.5	10	F11, F15, F21

### 4.2 Plastic Profile



Model	W*H(mm)	Standard Length ( L:mm)	L1 (mm)	L2 (mm)	Screw Hole (Φ:mm)	Hole Number	For Product
FR014	14*24	300	50	200	Φ3.5	2	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

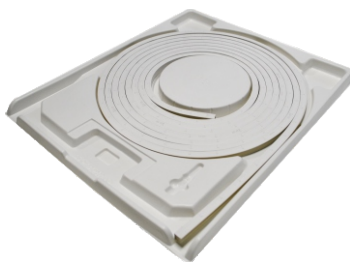
### 4.3 Self-locking Aluminum Profile (Using with the Clip)



Model	W*H(mm)	Standard Length(L : mm)	L1(mm)	L2(mm)	L3(mm)	L4(mm)	Hole Screw(Φmm)	Hole Number	Clip Number
FR004	16.8*23.7	35	17.5	/	17.5	/	Φ3.5	1	1
		50	25	/	25	/	Φ3.5	1	1
		500	100	300	150	200	Φ3.5	2	2
		1000	100	200	150	350	Φ3.5	5	3
		2000	100	200	125	350	Φ3.5	10	6

## 5. Packaging

### Packaging Method



Plastic Plate



White Box



Carton



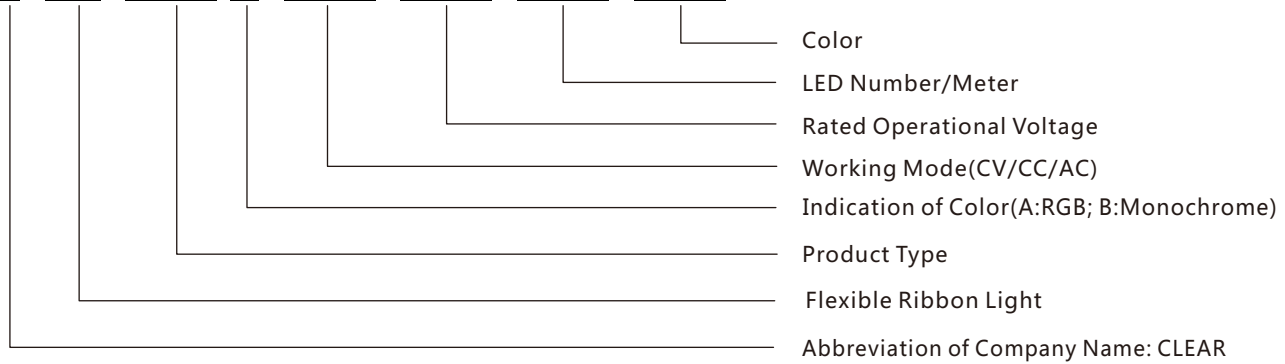
### Packaging Detail

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-XXX-XXX-XXX-XXX**



For Example: C-FR-F21A-CV-D24V-60-RGB

### 6.2 Third-Party Test Report

Testing Item	Testing Organization	Report Number
RoHS	SGS	CANECI202163502 A01
IP68: Screw type	TUV SUD	68.140.12.136.02
IP68: Clasp type	SGS	GZESI40200135301 GZESI40200135401 GZESI40200135501 GZESI40200135701 GZESI40200135801
IPX8: Molding type	SGS	SZESI41200357301 SZESI41200357401 SZESI41200357501
Flame retardant	TUV SUD	68.140.13.068.01
IK08	TUV SUD	68.140.1 2.171.01
Temperature risen	UL	UL file E360029-Test Record-1 Datasheet
UV: Light	AOV	A002R130308065—1R01
UV: PVC	AOV	A002R130308065—2R01

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

### 6.3 Certificate

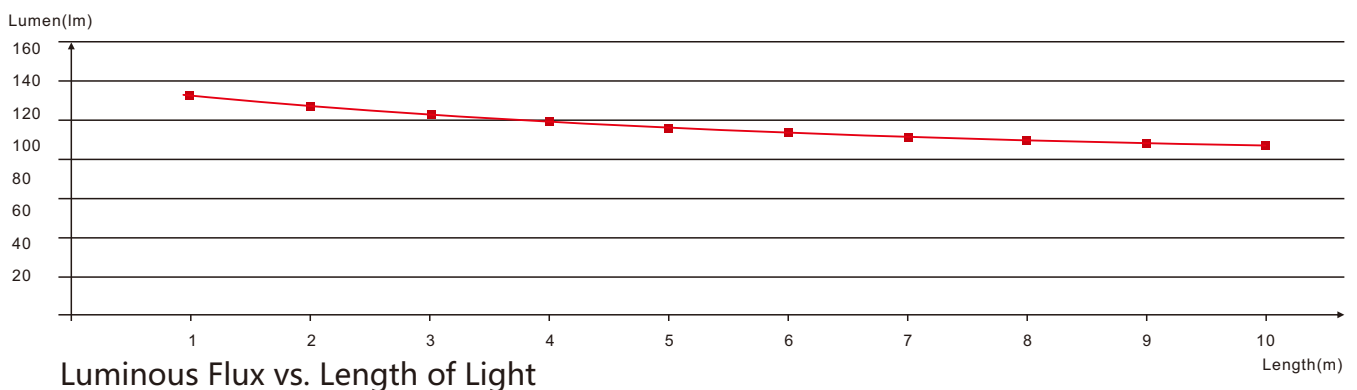
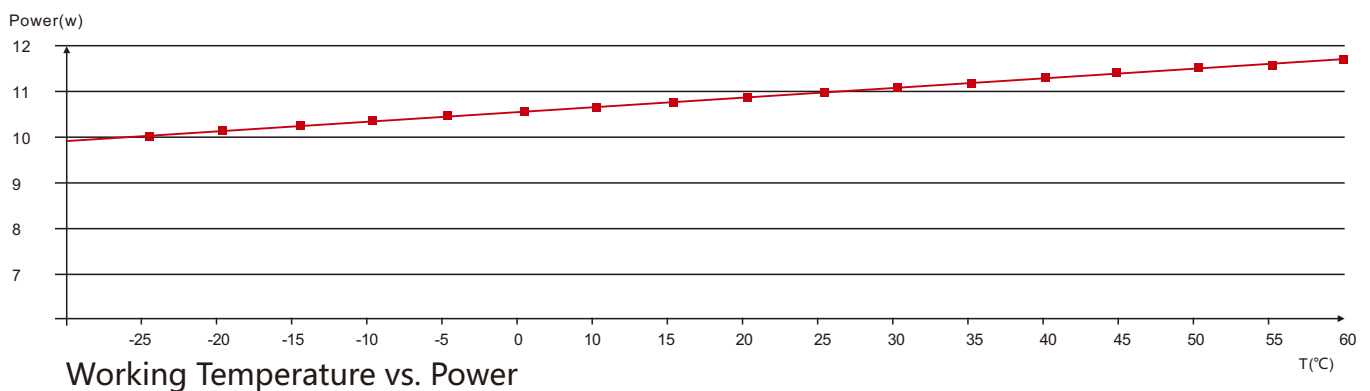
Certificating Type	Testing Organization	Certificate Serial Number	Report Reference
CE-EMC	SGS	SZEMI41000576803V	SZEMI41000576803
CE-EMC	TUV Rheinland	AE 50274407 0001	17037105 001
CE-LVD	TUV Rheinland	AE 50275368 0001	17036967 001
UL & cUL	UL	20130417-E360029	E360029-20130322

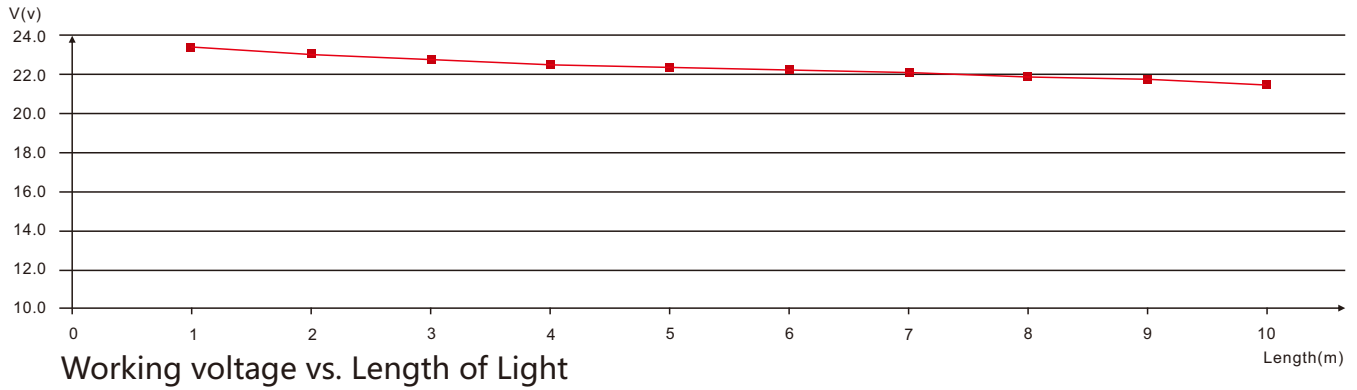
## 6.4 Reliability Test of Light

Testing Item	Classification	Reference Criterion	Testing Condition/Method	Result
IP Rating Test	IP65/IP68 1m	IEC60529	/	Pass
Environmental Test	High Temperature Storing	IEC 68—2—2	60°C	Pass
	High Temperature and Humidity Impact	IEC 68—2—3	70°C. 95%Rh	Pass
	Corrosion Resistance Test in Swimming Pool Water	/	/	Refer to test report
	Corrosion Resistance Test in Artificial Sea Water	/	/	Refer to test report
	Corrosion Resistance Test in Volatile Oil	/	/	Refer to test report
	Salt Spray Test	IEC 68—2—11	Spray continuously for 96 hours and the concentration of NaCl solution is 5%	Pass
	UV Test	ISO 4892—2	0.76W / m <sup>2</sup> , UVA—340nm, 65°C	Refer to test report
Optical Test	Light Spectrum	ANSI C78 · 377	/	Refer to test report
	Candela Distribution	LM 79	/	Refer to test report
Mechanical Test	Bending Test	/	Bending Diameter 12cm	> 500 times
	Torsion Test	/	Twisting Angle: -180°~180°, Rotating Speed:7200°/min	> 200 cycles
	Swing Test	/	Swinging Angle: -90°~90°, 750 times/cycle, lift weight:300g	>Screw 3750 times >CLasp 2250 times
	Tensile Test	/	Increasing the strength gradually till PCB break	>68kg.f
Electrical Test	Insulation Resistance	IEC60598—1	/	> 2MΩ
	Electrical Continuity	IEC60598—1	Weights were added on the connector for 1min	> 14kg.f

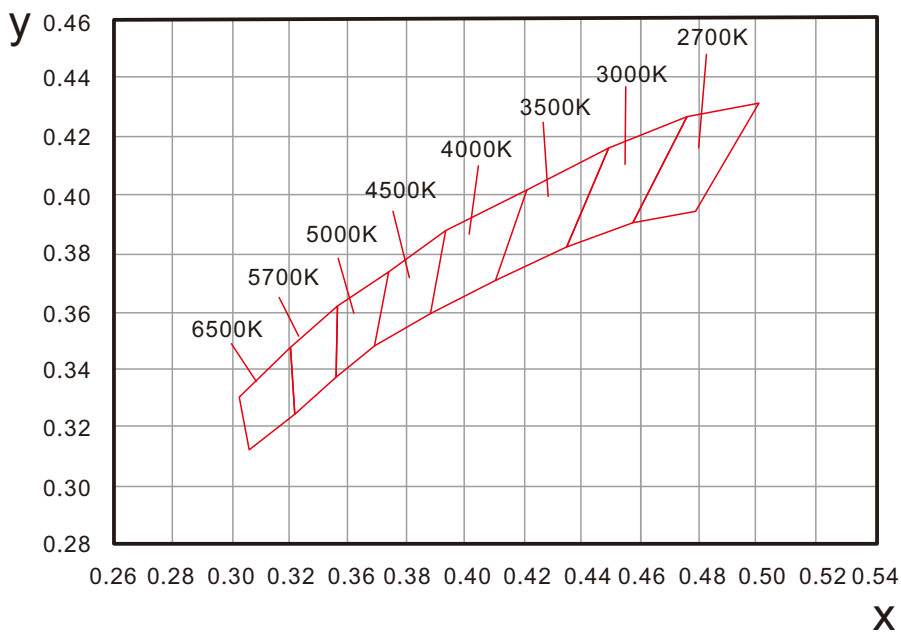
> > Note: Please contact us for related test report.

## 6.5 Figures of Typical Characteristics





## 6.6 (X,Y) Chromaticity Diagram



## 6.7 Power Using Criterion

Take the percentage of its rated power (power efficiency) as the maximum used power for the product, that is, the using standard of the maximum load power for the standard power supply.

### Power Supply Configuration Table

The maximum number of standard length light for different rated power(pcs)											
Product Standard Length (m)	18W/83%	35W/85%	60W/89%	75W/89%	80W/90.5%	100W/93%	120W/93%	150W/93%	185W/93.5%	240W/93%	320W/94%
1	1	2	4	5	6	8	9	12	15	19	26
2	*	1	2	3	3	4	5	6	8	10	14
3	*	*	1	2	2	3	3	4	5	7	9
4	*	*	1	1	1	2	2	3	4	5	7
5	*	*	1	1	1	1	2	2	3	4	6
10	*	*	*	*	*	*	1	1	1	2	3
15	*	*	*	*	*	*	*	*	1	1	1
20	*	*	*	*	*	*	*	*	*	*	1

Note : 1. "\*" indicates that this option won't be considered. More than 10 m light should consider double end feed  
 2. For example: 18W/83% stands for that the rated power is 18W and the power efficiency is 83%

## 6.8 Correlated Color Temperature

### ANSI STANDARD

#### Nominal CCT Categories

Nominal CCT	Target CCT and tolerance(K)	Target Duv and tolerance
2700K	2725 ± 145	0.000 ± 0.006
3000K	3045 ± 175	0.000 ± 0.006
3500K	3465 ± 245	0.000 ± 0.006
4000K	3985 ± 275	0.001 ± 0.006
4500K	4503 ± 243	0.001 ± 0.006
5000K	5028 ± 283	0.002 ± 0.006
5700K	5665 ± 355	0.002 ± 0.006
6500K	6530 ± 510	0.003 ± 0.006
Flexible CCT (2700-6500K)	$T^2 + \Delta T^3$	$D_{uv}T^2 \pm 0.006$

#### Remark:

1. Six of the nominal CCTs correspond to those in the fluorescent lamp specification  
[2]: 2700K, 3000K (Warm White), 3500K (White), 4100K (Cool White), 5000K and 6500K (Daylight), respectively.
2. T is chosen to be at 100K steps (2800, 2900, ..., 6400K), excluding those eight nominal CCTs listed in Table 1.
3.  $\Delta T$  is given by  $\Delta T = 0.0000108 \times T^2 + 0.0262 \times T + 8$ .
4. Duv is given by  $D_{uv} = 57700 \times (1/T)^2 - 44.6 \times (1/T) + 0.0085$