





# CERTIFICATE

- [1] **EU-TYPE EXAMINATION CERTIFICATE**
- [2] **Equipment or Protective System intended for use in potentially explosive atmospheres**  
**Directive 2014/34/EU**
- [3] EU-Type Examination Certificate number:  
**TÜV IT 19 ATEX 086 X**
- [4] Equipment or Protective System: Ex flexible strip light, model No.: ma-F2010, mb-F2010 series.
- [5] Manufacturer: Shenzhen Clear Lighting Co., Ltd.
- [6] Address: 901#, 9F, Unit B, Block B(South Area), Zhuoyue Meilin Center Plaza, Meilin Road, Meilin Street, Futian District, Shenzhen City, Guangdong Province, China.
- [7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- [8] TÜV Italia, notified body no. 0948 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
- The examination and test results are recorded in confidential report no. R 19 EX 058
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
**EN IEC 60079-0 : 2018 ; EN 60079-18 : 2015 + A1:2017 ; EN 60079-28 : 2015**
- [10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- [11] This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.
- [12] The marking of the product shall include the following:
- |                        |   |  |
|------------------------|---|--|
| <b>ma-F2010 series</b> |  | <b>I M2 Ex ma op is I Mb</b>   |
| <b>mb-F2010 series</b> |  | <b>I M2 Ex mb op is I Mb</b><br><b>II 2G Ex mb op is IIC T6 Gb</b><br><b>II 2D Ex mb op is IIIC T80°C Db</b> |

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Issue date: 20<sup>th</sup> December 2019



PRD N° 081B

Membro degli Accordi di Mutuo Riconoscimento  
EA, IAF e ILAC  
Signatory of EA, IAF and ILAC Mutual  
Recognition Agreements



**TÜV Italia S.r.l.**  
**Notified body N° 0948**

  
**Alberto Carelli**  
**Industry Service – Real Estate & Infrastructure**  
**Managing Director**

TÜV Italia has been authorized by Italian government to operate as notified body for the certification of equipment or protective system intended for use in potentially explosive atmospheres. This document is not valid without official signature and logo. The internal reference code is 722210446.

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PEX-01-M002\_r07 del 29/03/2018



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Certificate History

Revision:	Description:	Report rev.:	Issue Date:
-	First issued	-	2019/12/20

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Description of equipment

These “ma-F2010 and mb-F2010 series” are three different lighting effects LED flexible strip light with encapsulation enclosure which is made by rubber mixings of silicone rubber. The whole electrical parts are protected by Ex ‘m’ type. The limitation of power is 4W to 240W. The rated input voltage is 48V DC/AC. The model ma-F2010 is intended to be used in explosive mine condition, EPL is Mb; The model mb-F2010 series is intended to be used in explosive gas and dust conditions, EPL are Gb and Db. Both series ambient temperature is from -30°C to + 40°C. The driver and adaptor are not integrated in this product and are not covered in this certification.

Rated characteristics

aa-F2010b-ccccV-dd-eee-fffM-gggW series:

Model designation:

aa - F2010 b - cccc V - dd - eee - fff M - ggg W  
↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑  
I II III IV V VI VII VIII IX X XI

Remark: a, b, c, d, e, f and g are variables

I -- Level of protection:

aa= ma or mb

II -- Model designation:

F2010: Light body section size is W20\*H10mm;

III -- Typical light output model:

B: Single color;

S: Chasing

IV -- Input voltage:

cccc= AC 24, DC 24, AC 36, DC 36, AC 48 or DC 48,when b=B(Single color);

cccc= DC 24, when b=S(Chasing)

V -- Unit of voltage:

V

VI -- LED numbers per meter:

dd= 42, 56, 70 or 84 (when cccc=AC 24 or DC 24, c=B);

dd= 22, 44, 66 or 88 (when cccc =AC 36 or DC 36, c=B);

dd= 28, 56 or 84 (when cccc =AC 48 or DC 48, c=B);

dd= 14, 28 or 42 (when cccc = DC 24, c=S);

Remark: Different LEDs per meter correspond to different powers per meter(W/M)

VII -- Light color

eee= W, R, G or A (when c=B);

eee= R, G, A, W, RG, AG, RW, GW, AW, RGA, RGW, RWW, GWW, AWW or WWW (when c=S);

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Remark: W= white, R= Red, G= Green, A= Amber

VIII -- Lengths of light

fff are numbers, stand for lengths of light. The length is variable and the minimum step is 0.5.

The length of the light varies according to different EPL, input voltage(cccc), LED number per meter(ddd), and light color(eee):

- fff min.=0.5, fff max.=15, when aa=ma;
- fff min.=0.5, fff max.=48, when aa=mb, b=B, cccc= AC 24 or DC 24;
- fff min.=0.5, fff max.=96, when aa=mb, b=B, cccc= AC 36 or DC 36;
- fff min.=0.5, fff max.=72, when aa=mb, b=B, cccc= AC 48 or DC 48;
- fff min.=0.5, fff max.=240, when aa=mb, b=S, cccc= DC 24;

Remark: Details refer to “Model difference”:

IX -- Unit of length

M

X -- Powers of light

ggg are numbers, stand for powers of light. The power is variable and correspond to light length.

The length of the light varies according to different EPL, input voltage(cccc), LED number per meter(ddd), and light color(eee):

- ggg min.=2.5, ggg max.=180, when aa=ma, b=B, cccc= AC 24 or DC 24;
- ggg min.=1.25, ggg max.=180, when aa=ma, b=B, cccc= AC 36 or DC 36;
- ggg min.=1.67, ggg max.=180, when aa=ma, b=B, cccc= AC 48 or DC 48;
- ggg min.=0.5, ggg max.=45, when aa=ma, b=S, cccc= DC 24;

- ggg min.=2.5, ggg max.=240, when aa=mb, b=B, cccc= AC 24 or DC 24;
- ggg min.=1.25, ggg max.=240, when aa=mb, b=B, cccc= AC 36 or DC 36;
- ggg min.=1.67, ggg max.=240, when aa=mb, b=B, cccc= AC 48 or DC 48;
- ggg min.=0.5, ggg max.=240, when aa=mb, b=S, cccc= DC 24;

Remark: Details refer to “Model difference”:

XI -- Unit of power

W

Model difference:

Model: ma-F2010b-ccccV-dd-eee-fffM-gggW series:			
	dd stands for LED numbers per meter	eee stands for light color	fff stands for length of light ggg stands for power of light,
b=B cccc =AC 48 or DC 48	dd =84	eee =W	fff =0.5~15, step is 0.5 ggg =6~180, step is 6,
		eee =R,G or A	fff =0.5~15, step is 0.5 ggg =5~150, step is 5,
	dd =56	eee=W	fff =0.5~15, step is 0.5 ggg =4~120, step is 4,
		eee=R,G or A	fff =0.5~15, step is 0.5 ggg =3.25~100, step is 3.33,

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	dd =28	eee =W	fff =0.5~15, step is 0.5 ggg =2~60, step is 2,
		eee=R,G or A	fff =0.5~15, step is 0.5 ggg =1.67~50, step is 1.67,
b=B cccc =AC 36 or DC 36	dd =88	eee=W	fff =0.5~15, step is 0.5 ggg =6~180, step is 6,
		eee =R,G or A	fff =0.5~15, step is 0.5 ggg =5~150, step is 5,
	dd =66	eee =W	fff =0.5~15, step is 0.5 ggg =4.5~135, step is 4.5,
		eee=R,G or A	fff =0.5~15, step is 0.5 ggg =3.75~112.5, step is 3.75,
	dd =44	eee =W	fff =0.5~15, step is 0.5 ggg =3~90, step is 3,
		eee =R,G or A	fff =0.5~15, step is 0.5 ggg =2.5~75, step is 2.5,
	dd =22	eee =W	fff =0.5~15, step is 0.5 ggg =1.5~45, step is 1.5,
		eee =R,G or A	fff =0.5~15, step is 0.5 ggg =1.25~37.5, step is 1.25,
b=B cccc =AC 24 or DC 24	dd =84	eee =W	fff =0.5~15, step is 0.5 ggg =6~180, step is 6,
		eee =R,G or A	fff =0.5~15, step is 0.5 ggg =5~150, step is 5,
	dd =70	eee =W	fff =0.5~15, step is 0.5 ggg =5~150, step is 5,
		eee =R,G or A	fff =0.5~15, step is 0.5 ggg =4.17~125, step is 4.17,
	dd =56	eee =W	fff =0.5~15, step is 0.5 ggg =4~120, step is 4,
		eee =R,G or A	fff =0.5~15, step is 0.5 ggg =3.33~100, step is 3.33,
	dd =42	eee =W	fff =0.5~15, step is 0.5 ggg =3~90, step is 3,
		eee =R,G or A	fff =0.5~15, step is 0.5 ggg =2.5~75, step is 2.5,
	dd stands for LED numbers per meter	eee stands for light color	gg stands for power of light, hh stands for length of light
b=S cccc =DC 24	dd =42	eee =RGA, RGW, RWW,GWW,AWW,or WWW	fff =0.5~15, step is 0.5 ggg =1.5~45, step is 1.5,
	dd =28	eee = RG, GA, RW, GW or AW	fff =0.5~15, step is 0.5 ggg =1~30, step is 1.0,
	dd =14	eee =R, G, A or W	fff =0.5~15, step is 0.5 ggg =0.5~15, step is 0.5,

<b>Model: mb-F2010b-ccccV-dd-eee-fffM-gggW series:</b>			
	dd stands for LED numbers per meter	eee stands for light color	gg stands for power of light, hh stands for length of light
b=B cccc =AC 48V or	dd =84	eee =W	fff =0.5~20, step is 0.5 ggg =6~240, step is 6,
		eee=R,G or A	fff =0.5~24, step is 0.5 ggg =5~240, step is 5,

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DC 48V	dd =56	eee =W	fff =0.5~30, step is 0.5 ggg =4~240, step is 4,
		eee=R,G or A	fff =0.5~36, step is 0.5 ggg =3.25~240, step is 3.33,
	dd =28	eee =W	fff =0.5~60, step is 0.5 ggg =2~240, step is 2,
		eee=R,G or A	fff =0.5~72, step is 0.5 ggg =1.67~240, step is 1.67,
b=B cccc =AC 36V or DC 36V	dd =88	eee =W	fff =0.5~20, step is 0.5 ggg =6~240, step is 6,
		eee=R,G or A	fff =0.5~24, step is 0.5 ggg =5~240, step is 5,
	dd =66	eee =W	fff =0.5~26.5, step is 0.5 ggg =4.5~240, step is 4.5,
		eee=R,G or A	fff =0.5~32, step is 0.5 ggg =3.75~240, step is 3.75,
	dd =44	eee =W	fff =0.5~40, step is 0.5 ggg =3~240, step is 3,
		eee=R,G or A	fff =0.5~48, step is 0.5 ggg =2.5~240, step is 2.5,
	dd =22	eee =W	fff =0.5~80, step is 0.5 ggg =1.5~240, step is 1.5,
		eee=R,G or A	fff =0.5~96, step is 0.5 ggg =1.25~240, step is 1.25,
b=B cccc =AC 24V or DC 24V	dd =84	eee =W	fff =0.5~20, step is 0.5 ggg =6~240, step is 6,
		eee=R,G or A	fff =0.5~24, step is 0.5 ggg =5~240, step is 5,
	dd =70	eee =W	fff =0.5~24, step is 0.5 ggg =5~240, step is 5,
		eee=R,G or A	fff =0.5~28.5, step is 0.5 ggg =4.17~240, step is 4.17,
	dd =56	eee =W	fff =0.5~30, step is 0.5 ggg =4~240, step is 4,
		eee=R,G or A	fff =0.5~36, step is 0.5 ggg =3.33~240, step is 3.33,
	dd =42	eee =W	fff =0.5~40, step is 0.5 ggg =3~240, step is 3,
		eee=R,G or A	fff =0.5~48, step is 0.5 ggg =2.5~240, step is 2.5,
	dd stands for LED numbers per meter	eee stands for light color	fff stands for length of light ggg stands for power of light,
b=S cccc =DC 24V	dd =42	eee =RGA, RGW, RWW,GWW,AWW,or WWW	fff =0.5~80, step is 0.5 ggg =1.5~240, step is 1.5,
	dd =28	eee = RG, GA, RW, GW or AW	fff =0.5~120, step is 0.5 ggg =1~240, step is 1.0,
	dd =14	eee=R, G, A or W	fff =0.5~240, step is 0.5 ggg =0.5~240, step is 0.5,

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Warning label

None.

[16] Report no. R 19 EX 058

Routine tests

The manufacture shall carry out below tests as 100%:

- 1. Visual inspection, no any damage shall be evident.
  - 2. Dielectric strength test:
    - 1) 600VAC between input terminal and enclosure for 0.1s at least.
- No breakdown shall occur.

[17] Special conditions for safe use

The ambient temperature range is from -30°C to +40°C.

[18] Essential Health and Safety Requirements

Assured by compliance with the standards set out in the [9].

[19] Drawings and Documents

Listed documents (prot. 722210446)

Title:	Description:	Pag.	Rev:	Date:
CL-WI-03107~03113	BOM	7	V1	2019/09/25
CL-WI-03106	EU DECLARATION OF CONFORMITY (Draft)	1	V0	2019/11/1
CL-WI-10055	Compound specification	6	V1	2019/09/25
CL-D-YF/02-Ex-FPC-001	Drawing Layout Diagrams Ex- ma mb op is-F2010B series AC/DC24V	1	V1	2019/09/25
CL-D-YF/02-Ex-FPC-003	Drawing Layout Diagrams Ex- ma mb op is-F2010B series AC/DC36V	1	V1	2019/09/25
CL-D-YF/02-Ex-FPC-002	Drawing Layout Diagrams Ex- ma mb op is-F2010B series AC/DC48V	1	V1	2019/09/25
CL-D-YF/02-Ex-FPC-004	Drawing Layout Diagrams Ex- ma mb op is-F2010S series DC	1	V1	2019/09/25

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CL-D-YF/02-Ex-FPC-010	Drawing Electric Schematic Diagrams Ex-ma mb op is- F2010B series AC	1	V1	2019/09/25
CL-D-YF/02-Ex-FPC-009	Drawing Electric Schematic Diagrams_ Ex-ma mb op is- F2010B series DC	1	V1	2019/09/25
CL-D-YF/02-Ex-FPC-011	Drawing Electric Schematic Diagrams_ Ex-ma mb op is- F2010S series DC	1	V1	2019/09/25
CL-D-YF/02-Ex-FPC-016 CL-D-YF/02-Ex-FPC-017	Nameplates	1	V1	2019/10/15
CL-D-YF/02-F2010-001	Drawing moulding dimension Ex-ma op is/mb op is-F2010	1	V1	2019/10/11
CL-D-YF/02-F2010-013	Drawing Section Size Ex-ma op is-F2010B/F2010S	1	V1	2019/10/11
CL-D-YF/02-F2010-002	Drawing Section Size Ex-mb op is-F2010B/F2010S	1	V1	2019/10/11
CL-WI-10042 CL-WI-10061	LED specification	1	V1	2019/10/11
CL-WI-03103 CL-WI-03104	User manuals	12 14	V0	2019/10/11

One copy of all documents is kept in TÜV Italia files.

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