IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx EUT 23.0003X**

Certificate history:

Status: **Current**

Issue No: 0

Date of Issue: 2023-02-24

Applicant: **PALAZZOLI S.p.A.**
Via F. Palazzoli, 31
25128 Brescia (BS)
Italy

Equipment: **Floodlights and suspensions TIGUA-EX (Z1) series**

Optional accessory:

Type of Protection: **Increased safety 'eb', encapsulation "mb" and protection by enclosure 'tb'**

Marking: Ex eb mb IIC T6...T4 Gb
Ex tb IIIC T75°C, T85°C, T95°C Db

Approved for issue on behalf of the IECEx Certification Body: **Omar Galasso**

Position: **Deputy Head of IECEx Certification Body**

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

Eurofins Product Testing Italy S.r.l.
Via Cuorgnè
n.21 - 10156 Torino
Italy

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Date of issue: 2023-02-24 Issue No: 0

Manufacturer: **PALAZZOLI S.p.A.**
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Manufacturing locations: **PALAZZOLI S.p.A.**
Via F. Palazzoli, 31
25128 Brescia (BS)
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This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-18:2017 Explosive atmospheres - Part 18: Protection by encapsulation "m"
Edition:4.1

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

IT/EUT/ExTR23.0002/00

Quality Assessment Report:

IT/IMQ/QAR14.0001/10

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

Refer to the Annex file of this certificate.

SPECIFIC CONDITIONS OF USE: YES as shown below:
- Potential electrostatic charging hazard, see instructions.
- In case of installation with the light emission upwards, do not adjust the inclination of the luminaire beyond the horizontal line; refer to the safety instruction for further details.
- The equipment needs to be installed in areas having low risk of impact caused by foreign objects.

Annex:

Annex to CoC IECEx EUT 23.0003X Issue N. 0.pdf

Annex to certificate: **IECEx EUT 23.0003X Issue N. 0**

Equipment description

The TIGUA-EX (Z1) floodlights and suspensions luminaires series consists of LED luminaires designed to be used in presence of potentially explosive atmospheres requiring equipment with EPL Gb and/or Db having gas group IIC and dust group IIIC respectively.

The main enclosure body is made of aluminium alloy while the diffuser is made of tempered glass.

The aluminium enclosure is provided with a sided lid intended to have access to the termination compartment for the field wiring (consisting of already certified increased safety terminals); the same compartment includes also the factory wiring (belonging to Ex eb type of protection) and the LED driver (already certified as Ex component according to “Ex m” type of protection).

The light sources consist of LED encapsulated PCB modules assessed according to the type of protection Ex mb; these modules are provided with integral factory wiring connected to the LED driver through a dedicated terminal block.

An integral breathing valve made of anodized aluminium is also present on the sided lid and, on the same surface, a plain hole used to install an already certified cable gland M20 with locknut is present.

A silicone gasket is included between the diffuser and the body; clamps provide additional mechanical retaining of the glass as well as compression of the diffuser on the body of the equipment.

The luminaire is intended for stationary installation; with the related accessories it is possible to provide the following mounting configurations:

- Suspension
- Ceiling mounting
- Wall mounting with orientation

This luminaire series covers several power ratings depending on the total number of LED modules involved; different optics (symmetric and asymmetric non-convergent lens with various opening angles) and colour temperatures are also available as detailed in the code designation.

The equipment has an extended ambient temperature range of -40°C ÷ +60°C and a degree of protection IP66 according the standard IEC 60529 and IEC 60079-0.

Code designation:

Each product is identified on the label by a model code as explained by the coding scheme reported below:

Table 01

CODING LEGEND

Type code: **TIGUA-EX** a-**Z1**-bbb-cc-dd-ee-ff-ggg-hhh-iiii-nnn

a-Z1	Version	F-Z1 =	Floodlight (suitable for Ex Zones 1-2-21-22)
		S-Z1 =	Suspension (suitable for Ex Zones 1-2-21-22)
bbb	Diffuser material	TGL =	Transparent Glass
cc	Number of LED	12 =	12 LED = 1 LED module
		24 =	24 LED = 2 LED modules
dd	Dimming type	00 =	No dimming (ON-OFF)
		DA =	DALI
ee	Colour rendering index	80 =	$R_a \geq 80$ (standard value)

Table 01			
CODING LEGEND Type code: **TIGUA-EX** a-**Z1**-bbb-cc-dd-ee-ff-ggg-hhh-iiii-nnn			
	(CRI)	ee =	Other values ≠ 80
ff	Colour temperature	40 =	4000 K (standard value)
		ff=	Other values between 2700 K (ii = 27) to 6500 K (ii = 65)
ggg	LED driving current	ggg =	From 325 mA to 500 mA with step of 25 mA
hhh	Optic Type	S81 =	Wide Beam Symmetrical distribution (81°)
		A50 =	Wide Beam Asymmetric distribution (50°)
		hhh =	Other type of non-convergent optic
iiii	Type of cable gland	PL20 =	M20 Plastic for non-armoured cables
		BR20 =	M20 Nickel-plated brass for non-armoured cables
		AR20 =	M20 Nickel-plated brass for armoured cables
nnn	Custom characteristics	000 =	Standard version
		nnn =	Code to handle special versions such as: pre-mounted power supply cable, different external colour or other minor characteristics that do not affect the type of protection.

Temperature limitation chart and rated nominal voltage:

The relationships between number of LEDs (and related current values), ambient temperature ranges and temperature limits are reported in the table below:

Table 02					
No. LED	Driver input voltage range	LED Driver output current	Tamb range	Temperature class	Maximum surface temperature
12	110-277 Vac (50/60 Hz) or 110-250 Vdc	325 mA	- 40 °C ≤ Tamb ≤ +50°C	T6	T75°C
			- 40 °C ≤ Tamb ≤ +60°C	T5	T85°C
		350 … 500 mA	- 40 °C ≤ Tamb ≤ +45°C	T5	T85°C
			- 40 °C ≤ Tamb ≤ +55°C	T4	T95°C
24	160-277 Vac (50/60 Hz) or 160-250 Vdc	325 mA	- 40 °C ≤ Tamb ≤ +35°C	T6	T75°C
			- 40 °C ≤ Tamb ≤ +45°C	T5	T85°C
		350 … 500 mA	- 40 °C ≤ Tamb ≤ +30°C	T5	T85°C
			- 40 °C ≤ Tamb ≤ +40°C	T4	T85°C

The above mentioned temperature limits apply to all installation methods except for the ceiling mounting where the following limitations on the upper ambient temperature shall be considered:

- 24 LEDs version at any Driver current, max Tamb = 30 °C (T5, T85°C);

- 12 LEDs version at Driver current > 325 mA, max Tamb = 40 °C (T5, T85°C);

- 12 LEDs version at Driver current = 325 mA, max Tamb = 45 °C (T6, T75°C).

Warning label

- Do not open when energized

- Wait 10 minutes before opening

- Potential electrostatic charging hazard, see instructions

Routine tests

● According to Clause 7.1 of IEC 60079-7:2017 each equipment shall be submitted to the dielectric strength test after completing the factory wiring. The test shall be applied between the following connections:

Potentials involved in the test	***AC method***		***DC Method***	
	Voltage	***Minimum test duration***	***Voltage***	***Minimum test duration***
Phase, neutral and DALI connections (when involved) ⇔ Earth	1865 V r.m.s.	100 ms	2611 V d.c.	100 ms
Positive and negative DC side downstream the LED driver ⇔ Earth	2064 V r.m.s.	100 ms	2890 V d.c.	100 ms

The test shall be deemed to have passed if no breakdown or arcing occurs during testing with the application of the test voltages according to the test method defined by Clause 6.1 of the standard IEC 60079-7:2017.

● According to Clause 9.1 of IEC 60079-18:2017 each encapsulated LED module shall be submitted to the visual inspection. No damage shall be evident, such as cracks in the compound, exposure of the encapsulated parts, flaking, inadmissible shrinkage, swelling, decomposition, failure of adhesion (separation of any adhered parts) or softening.

Note: The encapsulated LED Driver is not subjected to this routine test since already required by the Ex Component certificate.

● According to Clause 9.2 of IEC 60079-18:2017 each encapsulated LED module shall be submitted to the dielectric strength test. The test shall be conducted as detailed below:

Potentials/parts involved in the test	***AC method & test duration ≥ 1 s***	***DC Method & test duration ≥ 1 s***	***AC method & test duration ≥ 100 ms***	***DC Method & test duration ≥ 100 ms***
	Test Voltage	***Test Voltage***	***Test Voltage***	***Test Voltage***
Positive and negative LED module integral wiring ⇔ Encapsulation outer surface including the polycarbonate lens	1720 V r.m.s.	2120 V d.c.	2064 V r.m.s.	2544 V d.c.
Positive and negative LED module integral wiring ⇔ Metal core of the LED module				

The test voltage shall be increased steadily within a period of not less than 10 s until it reaches the prescribed value, and it shall then be maintained for the duration mentioned in the table above.

The test shall be deemed to have passed if no breakdown or arcing occurs as defined by Clause 8.2.4.2 of the standard IEC 60079-18:2017.

Note: Primary and secondary sides of the encapsulated LED Driver are not subjected to this routine test since already required by the Ex Component certificate.

Specific Conditions of Use

Refer to the conditions reported in the IECEx CoC.