

AB-0823-T

2023008041ST

07-23

Report No. 2023008041ST

Test item description:	Built-in LED module
Trade Mark:	monos
Manufacturer	Pan Aydınlatma ve Elektrik San. Tic. Ltd. Şti.
Model/Type reference	PCBP16600.24.1S4P
Ratings	2.9V, 350mA, Tc:85°C

PAN AYDINLATMA VE ELK. SAN. TIC. LTD. ŐTI. TEST REPORT

REPORT NUMBER

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NAME OF TESTING LABORATORY PREPARING THE REPORT

INTERTEK TEST HİZMETLERİ A.S. ELECTRIC LABORATORY

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TEST RAPORU /TESTING REPORT

Deney laboratuvarı olarak faaliyet gösteren Intertek Test Hizmetleri A.S. TÜRKAK'tan AB-0823-T ile yukarıda belirtilen standartlara göre akredite edilmiştir.

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The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

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Kuralın Tanımı: Eğer ürün veya test metodu, laboratuvar raporunda uygunluk bildirim zorunlu kılar, ancak ilgili standartlarda veya mevzuatta uygunluğun değerlendirilmesinde, güven düzeyinin ve ölçme belirsizliğinin etkilerine ilişkin herhangi bir bilgi yok ise Laboratuvar, güven düzeyi ve ölçüm belirsizliğini göz önünde bulundurmaksızın elde edilen test sonucunun yalnızca belirtilmiş sınırlar içinde olup olmadığına karar vererek uygun veya uygun değildir şeklinde değerlendirmesini yapabilir. Bu kural dünya çapında en fazla kullanılan kuraldır. Bu kural uygulandığında test metotlarına ait toplam belirsizlikler rapor üzerinde belirtilmez.

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Sonuçlar, yaklaşık %95'lik bir güven düzeyi veren 2 kapsama faktörü k kullanılarak hesaplanan genişletilmiş bir belirsizlikle rapor edilir.

The results are reported with an expanded uncertainty calculated using a coverage factor k of 2 which gives a level of confidence of approximately 95%.

Bu rapor laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz, üçüncü şahıslarla paylaşamaz ve reklam aracı olarak kullanılamaz.

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Numune müşteri tarafından sağlanmıştır ve raporda verilen ölçüm sonuçları sadece test edilen numune için geçerlidir.

Sample has been provided by the customer and measurement results are only valid for the appliance which are tested.

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Tests marked with () in this test report are not within the scope of TÜRKAK accreditation of this laboratory.*



TEST REPORT IEC 62031 LED modules for general lighting – Safety specifications	
Report Number.	202300804IST
Date of issue	20.07.2023
Total number of pages	31
Name of Testing Laboratory preparing the Report	Intertek Test Hizmetleri A.S. Electrical Laboratory
Applicant's name	PAN AYDINLATMA VE ELK. SAN. TIC. LTD. ŞTI..
Address	Sefaköy San.Sit. 7.Blok No:10 – Başakşehir/İstanbul/TURKEY
Test specification:	
Standard	IEC 62031:2018
Test procedure	LVD
Non-standard test method	N/A
Test Report Form No	IEC62031F
Test Report Form(s) Originator	Intertek Semko AB
Master TRF	2018-06-14
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Trade Mark :	
Manufacturer	Pan Aydınlatma ve Elektrik San. Tic. Ltd. Őti.
Model/Type reference	PCBP16600.24.1S4P
Ratings	2.9V, 350mA, Tc:85°C

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	Intertek Test Hizmetleri A.Ş. Electrical Laboratory
Testing location/ address.....:		Merkez Mahallesi Sanayi Caddesi No:23 Altındağ Plaza 34197 Yenibosna / İstanbul / TÜRKİYE
Tested by (name, function, signature).....:		Hüseyin YAMAN Senior Project Engineer
Approved by (name, function, signature)....:		Mert AKYÜZ Technical Laboratory Manager
Testing procedure: CTF Stage 1:		
Testing location/ address.....:		
Tested by (name, function, signature).....:		
Approved by (name, function, signature)....:		
Testing procedure: CTF Stage 2:		
Testing location/ address.....:		
Tested by (name + signature)		
Witnessed by (name, function, signature) .:		
Approved by (name, function, signature)....:		
Testing procedure: CTF Stage 3:		
Testing procedure: CTF Stage 4:		
Testing location/ address.....:		
Tested by (name, function, signature).....:		
Witnessed by (name, function, signature) .:		
Approved by (name, function, signature)....:		
Supervised by (name, function, signature) :		

<p>List of Attachments (including a total number of pages in each attachment):</p> <p>Attachment I: - List of test equipment (1 page)</p> <p>Attachment II: - EN IEC 62031: 2020 + A11: 2021 (1 page)</p> <p>Attachment III: - Photos (2 pages)</p>	
<p>Summary of testing: The EUT is in compliance with the requirements of the applied standards within this test report.</p>	
<p>Tests performed (name of test and test clause): IEC 62031:2018 EN IEC 62031: 2020 + A11: 2021</p> <p>The EN requirements listed above also added to this TRF, see appendixes for differences.</p> <p>Additional tests required by the standards mentioned above were also evaluated in the main report clauses.</p> <p>PCBP16600.24.1S4P model was tested completely.</p>	<p>Testing location: Intertek Test Hizmetleri A.S. Electrical Laboratory Merkez Mahallesi Sanayi Caddesi No:23 Altındağ Plaza 34197 Yenibosna / İstanbul / TÜRKİYE</p>
<p>Summary of compliance with National Differences:</p> <p>List of countries addressed European Group Differences, National Differences (CENELEC).</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of EN IEC 62031: 2020 + A11: 2021</p>	

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



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Test item particulars	Built-in LED module
Classification of installation and use	Class III, Built-in LED module
Supply Connection	Integral terminals for connection to the LED driver
Possible test case verdicts:	
- test case does not apply to the test object.....	: N/A
- test object does meet the requirement.....	: P (Pass)
- test object does not meet the requirement.....	: F (Fail)
Testing :	
Date of receipt of test item	: 29.05.2023
Test item serial number	: Engineering samples
Test item receipt number	: S23.0602
Date (s) of performance of tests	: 11.07.2023-14.07.2023
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator. Clause numbers between brackets refer to clauses in IEC 61347-1	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 61347-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable Not for a CB certificate
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)	PAN AYDINLATMA VE ELK. SAN. TIC. LTD. ŞTİ. Sefaköy San.Sit. 7.Blok No:10 – Başakşehir/İstanbul/TURKEY

General product information:

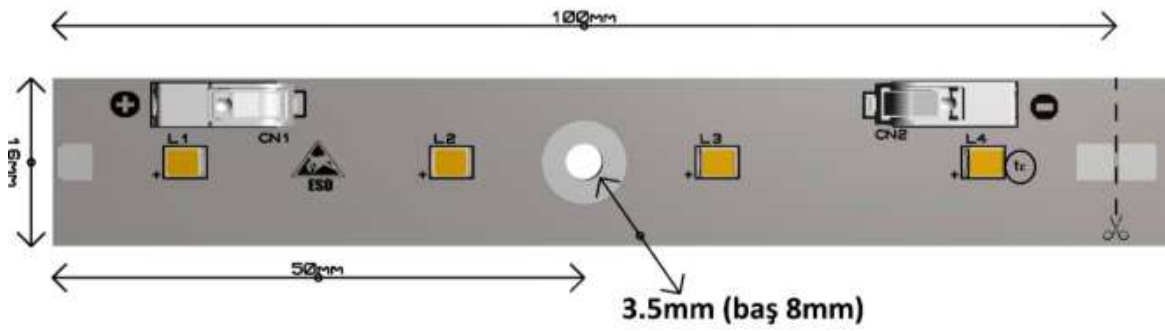
PCBP16600.24.1S4P model was tested completely. Tested appliances are Class III built-in LED modules which are working with constant current driver.

No live parts as the product are supplied at a voltage < 60VDC.

Models covered by this test report have no integrated control gear.

Ratings:



2.9V, 350mA, Tc:85°C



PCBP16600.24.1S4P

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

4	GENERAL REQUIREMENTS		P
4.2	Classification		
	Built-in module	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Independent module.....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Integral module	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
4.6	Independent modules comply with requirements in IEC 60598-1:2014/AMD1:2017	Built-in LED module	N/A
4.8	Modules with integrated controlgear providing SELV comply with requirements according to IEC 61347-1:2015/AMD1:2017 clause L.5 to L.11.	No integrated controlgear	N/A

6	MARKING		P
6.2	Contents of marking for built-in and for independent LED modules		P
	a) mark of origin		P
	b) model number, type reference	PCBP16600.24.1S4P	P
	c1) constant voltage module; rated supply voltage and supply frequency	Constant current	N/A
	c2) constant current module; rated supply current and supply frequency	Provided on the datasheet	P
	d) rated power	Provided on the datasheet	P
	e) indication of connections, wiring diagram		N/A
	f) value of t_c and place on the module	Provided on the datasheet 85°C, no specific place on the module	P
	g) E_{thr} if required		N/A
	h) symbol for built-in modules	 Provided on the datasheet	P
	i) heat transfer temperature t_d		N/A
	j) power for heat-conduction P_d		N/A
	k) working voltage for insulation		N/A
6.3	Location of marking for built-in LED modules		

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
	- marking of a) and b) in 6.2 on the modules	Marked on front surface of LED module	P
	- marking of other applicable items in 6.2 on the modules or in data sheet, leaflet or website	LED module datasheet	P
6.4	Location of marking for independent LED modules		N/A
	- marking of a), b), c) and f) in 6.2 on the modules	Built-in LED module	N/A
	- marking of other applicable items in 6.2 on the modules or in data sheet, leaflet or website		N/A
6.5	Marking of integral LED modules		N/A
	- information in 6.2 a) to g) in data sheet, leaflet or website	Built-in LED module	N/A
6.6	Durable and legibility of marking		P
	- marking on the LED module legible after test with water	Legible after the test	P
	- marking not on the LED module legible		N/A
7	TERMINALS		N/A
7.1	Integral terminals		N/A
	Screw terminals comply with section 14 of IEC 60598-1		N/A
	Screwless terminals comply with section 15 of IEC 60598-1		N/A
7.2	Terminals other than integral terminals		N/A
	Separately approved; component list		N/A
	Ratings suit the conditions		N/A
	Satisfy additional relevant requirements of this standard		N/A
8 (9)	EARTHING		N/A
- (9.1)	Provisions for protective earthing		N/A
	Terminal complying with clause 8	Class III LED module, no earth connection	N/A
	Locked against loosening and not possible to loosen by hand		N/A
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	Earthing via means of fixing		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Earthing terminal only used for the earthing of the control gear		N/A
	All parts of material minimizing the danger of electrolytic corrosion		N/A
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A
	Test according 7.2.3 of IEC 60598-1		N/A
- (9.2)	Provision for functional earthing		N/A
	Comply with clause 8 and 9.1	No functional earthing	N/A
	Functional earth insulated from live parts by double or reinforced insulation		N/A
- (9.3)	Lamp controlgear with conductors for protective earthing by tracks on printed circuit board		N/A
	Test with a current of 25 A between earthing terminal and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$		N/A
- (9.4)	Earthing of built-in lamp controlgear		N/A
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1	No built-in control gear	N/A
	Earthing terminal only for earthing the built-in controlgear		N/A
- (9.5)	Earthing via independent controlgear		N/A
- (9.5.1)	Earth connection to other equipment		N/A
	Looping or through connection, conductor min. 1,5 mm ² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$		N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
9 (10)	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		N/A
- (10.1)	Controlgear protected against accidental contact with live parts	Control gear was not provided with the LED module. No live parts as the product is supplied at a voltage < 60VDC	N/A
- (A2)	Voltage measured with 50 kΩ		N/A
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impedance device		N/A
- (10.1)	Lacquer or enamel not used for protection or insulation		N/A
	Adequate mechanical strength on parts providing protection		N/A
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50 V:		N/A
- (10.3)	Controlgear providing SELV		N/A
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		N/A
	No connection between output circuit and the body or protective earthing circuit		N/A
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		N/A
	SELV outputs separated from earth by at least basic insulation		N/A
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1		N/A
- (10.4)	Accessible conductive parts in SELV circuits		N/A
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		N/A
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c.:		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
10 (11)	MOISTURE RESISTANCE AND INSULATION		P
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ):		P
	For basic insulation $\geq 2 \text{ M}\Omega$	>4MΩ	P
	For double or reinforced insulation $\geq 4 \text{ M}\Omega$		N/A
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N/A
11 (12)	ELECTRIC STRENGTH		P
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V	Applied for SELV parts 500V is applied between mounting surface and different polarities of supply	P
	Working voltage $\leq 50 \text{ V}$, test voltage 500 V		P
	Working voltage $> 50 \text{ V} \leq 1000 \text{ V}$, test voltage (V):		N/A
	Basic insulation, $2U + 1000 \text{ V}$		N/A
	Supplementary insulation, $2U + 1000 \text{ V}$		N/A
	Double or reinforced insulation, $4U + 2000 \text{ V}$		N/A
	No flashover or breakdown	No breakdown	P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N/A
12 (14)	FAULT CONDITIONS		P
- (14.1)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material	No controlgear, only LED modules are tested. No flame or molten material	P
	- does not produce flammable gases	No gas was observed	P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value	No controlgear	N/A

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	No semiconductor on LED modules except LEDs therefore it is tested for LED only	P
- (14.2)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (after any reduction in 14.2 - 14.5)		N/A
- (14.3)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile		N/A
- (14.5)	Short-circuit across electrolytic capacitors	No capacitor	N/A
	Short-circuit or interruption of SPDs		N/A
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance $\geq 1 \text{ M}\Omega$	No such component	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.7)	Relevant fault condition tests with high-power a.c. supply and in turn to a d.c. supply		—
12.2	Overpower condition		P
	Module withstands overpower condition >15 min.	Withstands overpower condition	P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.	No such device	N/A
	No fire, smoke or flammable gas is produced	No fire or smoke	P
	Molten material does not ignite tissue paper, spread below the module	No ignition	P
14 (15)	CONSTRUCTION		P
- (15.1)	Wood, cotton, silk, paper and similar fibrous material		P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation	No such material is in use	P
- (15.2)	Printed circuits		P
	Printed circuits used as internal connections complies with clause 14		P
15 (16)	CREEPAGE DISTANCES AND CLEARANCES		N/A
- (16.1)	General		N/A

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
	Creepage distances and clearances according to 16.2 and 16.3		N/A
	Controlgears providing SELV comply with additional requirements in Annex L		N/A
	Insulating lining of metallic enclosures		N/A
	Controlgear protected against pollution comply with Annex P		N/A
- (16.2)	Creepage distances		N/A
- (16.2.2)	Minimum creepage distances for working voltages		N/A
	Creepage distances according to Table 7		N/A
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8		N/A
- (16.3)	Clearances		N/A
- (16.3.2)	Clearances for working voltages		N/A
	Clearances distances according to Table 9		N/A
- (16.3.3)	Clearances for ignition voltages and working voltages with higher frequencies		N/A
	Clearances distances for basic or supplementary insulation according to Table 10		N/A
	Clearances distances for reinforced insulation according to Table 11		N/A
16 (17)	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		N/A
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		—
(4.11)	Electrical connections		N/A
(4.11.1)	Contact pressure	No controlgear	N/A
(4.11.2)	Screws:		N/A
	- self-tapping screws	No screw	N/A
	- thread-cutting screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		N/A
(4.11.5)	No contact to wood or mounting surface		N/A
(4.11.6)	Electro-mechanical contact systems		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

(4.12)	Mechanical connections and glands		N/A
(4.12.1)	Screws not made of soft metal	No screw	N/A
	Screws of insulating material		N/A
	Torque test: torque (Nm); part..... :		N/A
	Torque test: torque (Nm); part..... :		N/A
	Torque test: torque (Nm); part..... :		N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm)	No such mechanical connections	N/A
	- lampholder; torque (Nm)		N/A
	- push-button switches; torque 0,8 Nm		N/A
(4.12.5)	Screwed glands; force (Nm)..... :		N/A

17 (18)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
- (18.1)	Ball-pressure test		N/A
- (18.2)	Test of printed boards	See Test Table 17 (18.2)	P
- (18.3)	Glow-wire test (650°C)		N/A
- (18.4)	Needle-flame test (10 s)	See Test Table 17 (18.4)	P
- (18.5)	Proof tracking test		N/A

18	RESISTANCE TO CORROSION		N/A
	Comply with requirements according 4.18 of IEC 60598-1		N/A

20	HEAT MANAGEMENT		P
20.1	General		P
	Fulfil clause 20 if replaceable LED module and when heat conducting thermal interface is needed.		P
20.2	Thermal interface material		P
	Thermal interface material delivered with the module if necessary		P
20.3	Heat protection		P
	Not impair safety when operated under poor heat-conduction conditions according Annex D		P

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

22	PHOTOBIOLOGICAL SAFETY		P
22.1	UV radiation		P
	Luminous radiation not exceed 2mW/klm	Reference report number: 6111899.50P(DEKRA)	P
22.2	Blue light hazard		P
	Assessed according to IEC TR 62778	RG1 Reference report number: 6111899.50P(DEKRA)	P
22.3	Infrared radiation		N/A
	Requirements for infrared radiation when required		N/A

A	ANNEX A - TESTS		N/A
	All tests performed in accordance with the advice given in Annex H of IEC 61347-1, if applicable		N/A

12 (14)	TABLE: tests of fault conditions		P
Part	Simulated fault		Hazard
LED module	Cl.12.2 Overpower condition		No
LED	Open-circuited		No
LED	Short-circuited		No

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15 (16)	TABLE: clearance and creepage distance measurements (mm)						N/A
Applicable part of IEC 61347-1 Table 7 – 11*							
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:							
Working voltage (V)						—	
Frequency if applicable (kHz)						—	
PTI.....			< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>			—	
Peak value of the working voltage \hat{U}_{out} if applicable (kV)						—	
Pulse voltage if applicable (kV)						—	
Supplementary information:							
Distance 2:							
Working voltage (V)						—	
Frequency if applicable (kHz)						—	
PTI.....			< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>			—	
Peak value of the working voltage \hat{U}_{out} if applicable (kV)						—	
Pulse voltage if applicable (kV)						—	
Supplementary information:							
Distance 3:							
Working voltage (V)						—	
Frequency if applicable (kHz)						—	
PTI.....			< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>			—	
Peak value of the working voltage \hat{U}_{out} if applicable (kV)						—	
Pulse voltage if applicable (kV)						—	
Supplementary information:							

** Insulation type: B – Basic; S – Supplementary; R – Reinforced

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17 (18.1)	TABLE: Ball Pressure Test of Thermoplastics			N/A
Allowed impression diameter (mm) :				2
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Supplementary information:				

17 (18.2)	TABLE: Test of printed boards				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
PCB	WODE ELECTRONICS	10	No	0 (No burning)	P
Supplementary information:					

17 (18.3)	TABLE: Glow-wire test					N/A
Glow wire temperature :					650°C	—
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict	
Any flame or glowing of the sample extinguished within 30 s of withdrawing the glow-wire, and any burning or molten drop did not ignite the underlying parts (Yes/No) :						
Supplementary information:						

17 (18.4)	TABLE: Needle-flame test				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
PCB	WODE ELECTRONICS	10	No	0 No burning	P

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Supplementary information:

17 (18.5)	TABLE: Proof tracking test			N/A
Test voltage PTI	175 V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens		Verdict
Supplementary information:				

(A)	ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK			N/A
(A.1)	Comply with A.2 or A.3			N/A
(A.2)				N/A

ANNEX 1	LED MODULES WITH INTEGRAL CONTROLGEAR PROVIDING SELV			N/A
(L.5)	Protection against electric shock			N/A
	Comply with 9.2 of IEC 61558-1			N/A
(L.6)	Heating			N/A
	No excessive temperatures in normal use			N/A
	Value if capacitor tc marked			—
	Winding insulation classified as Class			—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments			N/A
(L.7)	Short-circuit and overload protection			N/A
	Comply with tests of clause 15 of IEC 61558-1 with adjustments			N/A
(L.8)	Insulation resistance and electric strength			N/A
(L.8.1)	Conditioned 48 h between 91 % and 95 %			N/A
(L.8.2)	Insulation resistance			N/A
	Between input- and output circuits not less than 5 MΩ			N/A

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	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ		N/A
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ		N/A
(L.8.3)	Electric strength		N/A
	1) Between live parts of input circuits and live parts of output circuits		N/A
	2) Over basic or supplementary insulation between:		N/A
	a) live parts having different polarity		N/A
	b) live parts and body if intended to be connected to protective earth		N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord		N/A
	d) live parts and an intermediate metal part		N/A
	e) intermediate metal parts and the body		N/A
	f) each input circuit and all other input circuits		N/A
	3) Over reinforced insulation between the body and live parts		N/A
(L.9)	Construction		N/A
(L.9.1)	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		N/A
	HF transformer comply with 19 of IEC 61558-2-16		N/A
(L.10)	Components		N/A
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		N/A
(L.11)	Creepage distances, clearances and distances through insulation		N/A
	Creepage distances and clearances not less than in Clause 16		N/A
	Distance through insulation according Table L.5 in IEC 61347-1		N/A
	1) Basic distance through insulation		N/A
	Required distance (mm)		—
	Measured (mm)		N/A
	Supplementary information		—
	2) Supplementary distance through insulation		N/A
	Required distance (mm)		—

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	Measured (mm)		N/A
	Supplementary information		—
	3) Reinforced distance through insulation		N/A
	Required distance (mm)		—
	Measured (mm)		N/A
	Supplementary information		—

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ANNEX 2	TABLE: Critical components information						P
Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
LED	B	Lumileds	L128-xxxxSA35A00 A1	max. 200mA-2,95V Junction Temp. 125°C	IEC/EN 62471 IEC/EN 62278	CB Certificate Reference Report No: NL-75924 DEKRA Reference Report No: 6111899.50P	
PCB for LED module	B	WODE ELECTRONICS	PCBP16600.3 6.2S3P	FR4 1.2mm thickness	IEC/EN 62031	Tested with appliance	
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039. The codes above have the following meaning: A - The component is replaceable with another one, also certified, with equivalent characteristics B - The component is replaceable if authorised by the test house C - Integrated component tested together with the appliance D - Alternative component							

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ANNEX 3	Screw terminals (part of the luminaire)		N/A
(14)	SCREW TERMINALS		N/A
(14.2)	Type of terminal..... :		—
	Rated current (A)..... :		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm ²)..... :		—
(14.3.3)	Conductor space (mm)..... :		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread) :	M	N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm) :		N/A
	Torque (Nm)..... :		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N)..... :		N/A
(14.4.8)	Without undue damage		N/A

ANNEX 4	Screwless terminals (part of the luminaire)		N/A
(15)	SCREWLESS TERMINALS		N/A
(15.2)	Type of terminal..... :		—
	Rated current (A)..... :		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A

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(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5.1)	Terminals internal wiring		N/A
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples)		N/A
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples)		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples)		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples)		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples)		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples)		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples)		N/A
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A
	Terminal size and rating		N/A
(15.6.2)	Mechanical tests		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N)		N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N)		N/A
(15.6.3)	Electrical tests		N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

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(15.6.3.1)	TABLE: Contact resistance test / Heating tests										N/A
(15.6.3.2)	Voltage drop (mV) after 1 h										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop of two inseparable joints										
	Voltage drop after 10th alt. 25th cycle										
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop after 50th alt. 100th cycle										
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 10th alt. 25th cycle										
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 50th alt. 100th cycle										
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
Supplementary information:											

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Attachment I:**List of test equipment used:**

Measurement / testing	Testing / measuring equipment / material used	Equipment ID	Last Calibration date	Calibration due date
Variable stabilized power source	CHROMA 61612	EN 23	initial calibration	initial calibration
Power Meter	YOKOGAWA WT310	EN 33	01.2023	01.2024
Temperature recorder	YOKOGAWA MV2000	EN 34	11.2022	11.2023
Hand-held multimeter	FLUKE 179	EN 316	11.2022	11.2023
Electrical safety analyzer	CHROMA 19032-P	EN 21	09.2022	09.2023
Chronometer	CASIO HS-80TW	EN 114	02.2023	02.2024
Calliper	MITUTOYO 573-635	EN 37	09.2022	09.2023
Needle flame burner	Testing Europe	EN 046	01.2023	01.2024

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Attachment II:

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IEC62031F - ATTACHMENT			
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ATTACHMENT TO TEST REPORT IEC 62031:2018 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES (LED MODULES FOR GENERAL LIGHTING - SAFETY SPECIFICATIONS)			
Differences according to.....: EN IEC 62031: 2020 + A11: 2021			
TRF template used: IECEE OD-2020-F2:2022, Ed. 1.2			
Attachment Form No.....: EU_GD_IEC62031F			
Attachment Originator: UL Solutions (Demko)			
Master Attachment: Dated 2022-09-30			
Copyright © 2022 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
	CENELEC COMMON MODIFICATIONS (EN)		
	No Common modifications		P
ZA	ANNEX ZA, NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		P
ZZ	ANNEX ZZ, RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE SAFETY OBJECTIVES OF DIRECTIVE 2014/35/EU [2014 OJ L96] AIMED TO BE COVERED		N/A

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**Attachment III:
Photos:**

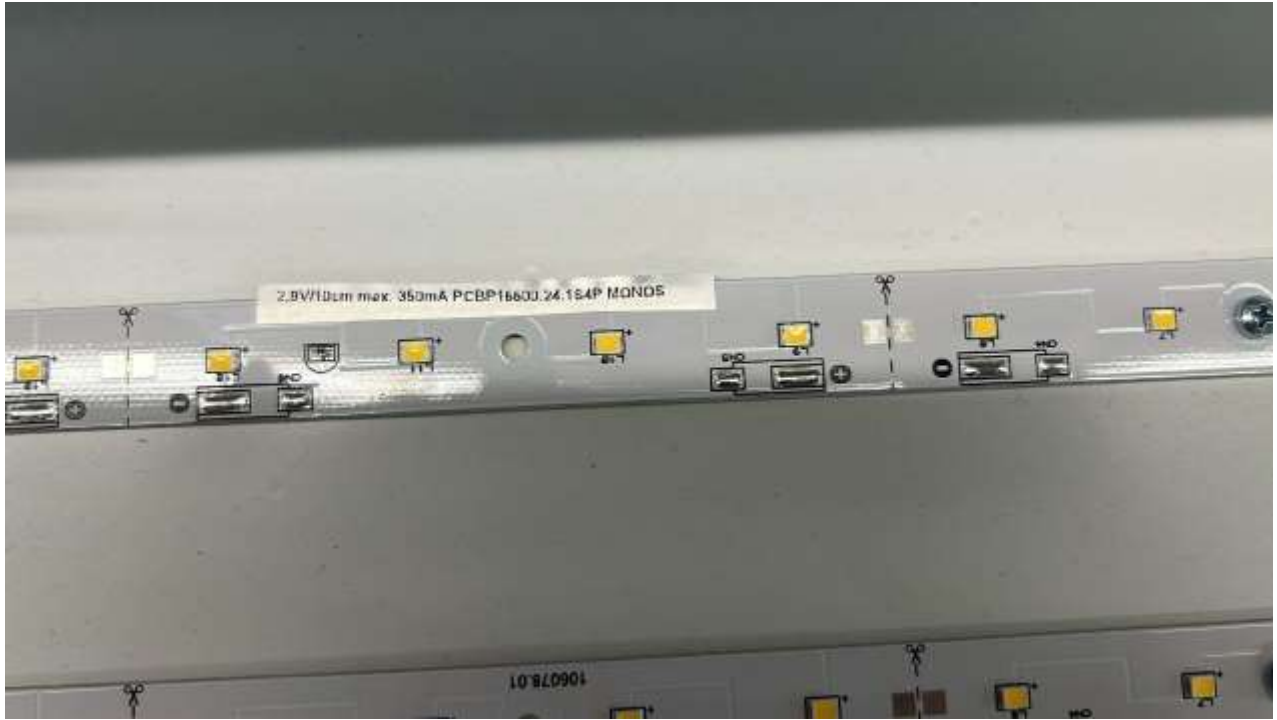


Photo 1. General view of Led module

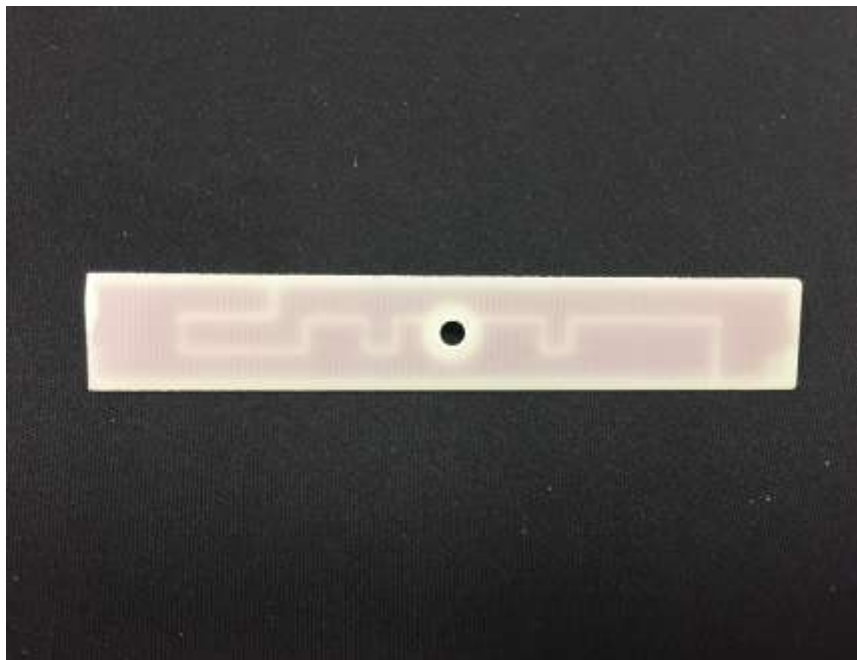


Photo 2. Rear view of Led module

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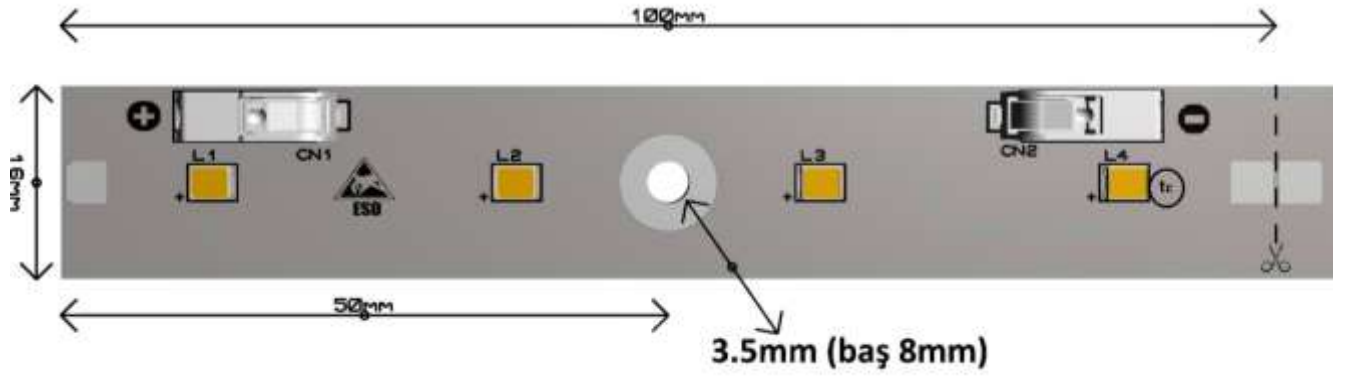


Photo 3. Dimensions of Led module