Esim

TÜRKAK
Test
TS EN ISO/IEC 17025
AB-0114-T

AB-0114-T
LVD-2019092
2019-05-28

TEST REPORT
IEC 61347-2-13
Part 2: Particular requirements:
Section 13 – dc or ac supplied electronic control gear for LED modules

Bölüm 2: Belirli özellikler

Kısım 13 – LED modülleri için doğru akım (d.a.) veya alternatif akım (a.a.) beslemeli elektronik kontrol düzeni

Report Reference No./ *Rapor Referans No...*:	LVD2019092
Date of issue / *Yayın Tarihi*.....:	2019-05-28
Tested by (name + signature) / *Test eden (isim + imza)*.....:	Esat KÖSELER
Approved by (+ signature) / *Onaylayan (Ad + imza)*.....:	Engin URULU
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Testing Laboratory / *Test Laboratuvarı*.....:	Esim Test Hizmetleri San. ve Tic. A.Ş.
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Applicant's name / *Başvuran*.....:	Hera Eğlence ve Mimari Aydınlatma Sistemleri A.Ş
Address / *Adres*.....:	Güllübağlar Mah. Kahramanlar Cad. No:3-1 34906 Pendik – İstanbul / **Turkey** / *Türkiye*
Test specification / *Test özelliği*.....:	**Standard** / *Standart*
Standard / *Standart*.....:	IEC 61347-2-13:2014, AMD1:2016 **used in conjunction with** / *ile birlikte kullanılan* IEC 61347-1:2015, AMD1:2017
Non-standard test method / *Standart olmayan test metodu*.....:	**N/A** / *Uygulanmaz*
Test Report Form No. / *Test Rapor Form No*.....:	ESİM61347_2_13G
Test Report Form(s) Originator / *Test Rapor Formu Düzenleyen*.....:	ESİM
Master TRF / *Asıl TRF*.....:	2017-12-01

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Test item description / *Test ögesi tanımı*.....:	**P08013 Power Pack 2000-48 2000W 8 Outputs Power Supply** / *P08013 Power Pack 2000-48 2000W 8 Çıkışlı Güç Kaynağı*
Trademark / *Ticari marka*.....:	HERA
Manufacturer / *Üretici*.....:	Hera Eğlence ve Mimari Aydınlatma Sistemleri A.Ş
Model and/or type reference / *Model ve/veya tip referansı*.....:	P08013 POWER PACK 2000
Ratings / *Beyan değerleri*.....:	**Input** / *Giriş*: 110-264 Vac, Max. 17,5 A, 50/60 Hz **Output** / *Çıkış*: 48 Vdc Constant voltage type, 2000 W, 8 x 250 W per Class I; IP 20, Independent

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Summary of testing / *Testin özeti*:

Tests performed (name of test and test clause) / *Uygulanan testler (test adı ve maddesi)*:	**Testing location** / *Test yeri*:
All tests for relevant clauses of this standard has been performed / *Bu standardın ilgili maddelerindeki tüm testler yapılmıştır.*	Esim Test Hizmetleri San. ve Tic. A.S. TOSB-Taysad Organize Sanayi Bölgesi 6. Cad. No:1/2 41420 Şekerpınar – Çayırova / Kocaeli / **Turkey** / *Türkiye*

The product fulfils the requirements of IEC 61347-2-13:2014, AMD1:2016 used in conjunction with IEC 61347-1:2015, AMD1:2017 and EN 61347-2-13:2014 + A1:2017 used in conjunction with EN 61347-1:2015

/ Test edilen ürün IEC 61347-2-13:2014, AMD1:2016 ile birlikte kullanılan IEC 61347-1:2015, AMD1:2017 ve EN 61347-2-13:2014 + A1:2017 ile birlikte kullanılan EN 61347-1:2015 standartlarındaki ilgili tüm gereklikleri yerine getirmektedir.

List of Attachments / *Eklerin listesi*:

APPENDIX 1: List of test equipment used, in Page 39 / *EK 1: Kullanılan test ekipmanlarının listesi sayfa 39'da.*

APPENDIX 2: **Photos of the tested product, in Pages 40 to 44** / *EK 2: Test edilen cihaz fotoğrafları sayfa 40'tan 44'e kadardır.*

APPENDIX 3: Attachment to test report IEC 61347-2-13 European and national group differences, in Page 44 / *EK 3: IEC 61347-2-13 Avrupa ve ulusal grup farklılıklar eki sayfa 44'de.*

Copy of marking plate / *İşaret etiketi kopyası*:

hera
entertainment & architecture lighting

CE RoHS compliant IP20

www.heraled.com **Made in Turkey**

P08013 Power Pack 2000 Power Supply
input : 110 ~ 264VAC Max. 17,5A 50/60Hz Universal AC input
Output : 48VDC / 2000W (Constant Voltage) 8 x 250W Per Port

Güllübağlar Mah. Kahramanlar Cad. No.3/1 Pendik İstanbul Turkey

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Test item particulars ..... :	**P08013 Power Pack 2000-48 2000W 8 Outputs Power Supply** / *P08013 Power Pack 2000-48 2000W 8 Çıkışlı Güç Kaynağı*
Classification of installation and use / *kullanım ve yerleşim sınıfı* ..... :	**Class I, Independent** / *Sınıf I, Bağımsız*
Supply Connection / *Besleme bağlantısı* ..... :	**Supply Connector, X type** / *Besleme Konnektörü , X tipi*
..... :	
Possible test case verdicts / *test durum karaları* ..... :	
- **test case does not apply to the test object** / *Bu ürüne uygulanmaz* ..... :	**N/A** / *Uygulanmaz*
- **test object does meet the requirement** / *test edilen ürünü kuralları karşılıyor* ..... :	**P(Pass)** / *Karşılıyor*
- **test object does not meet the requirement** / *test edilen ürün kuralları karşılamıyor* ..... :	**F(Fail)** / *Karşılamıyor*
Testing / *Test etme* ..... :	
Date of receipt of test item / *Ürünün geliş tarihi* ..... :	2019-04-22
Date (s) of performance of tests / *Ürün testlerinin yapılş tarihleri* ..... :	2019.04.26 – 2019.05.27

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General remarks:

The test results presented in this report relate only to the object/system tested. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer/applicant to ensure that all production models meet the intent of the requirements detailed within this report. / *Bu raporda verilen sonuçlar ve değerlendirmeler sadece üretici/başvuru sahibi tarafından test için sağlanan ürün/sistem ile ilgilidir. Üretilen diğer bütün modellerin bu raporda verilen gereksinimleri karşılaması üreticinin/başvuru sahibinin sorumluluğundadır.*

The test results and declaration of conformity presented in this report relate only to the object tested which is as provided from the customer. / *Bu raporda verilen test sonuçları ve uygunluk beyanı yalnızca test edilen ürün, ürünün müşteri tarafından teslim edildiği hali ile ilgilidir.*

Product information given in page 2 of this report has been provided by the manufacturer / applicant. Test results and declaration of conformity have been evaluated according to this information. The manufacturer / applicant is responsible for any changes that may occur in the data provided by the manufacturer / applicant / *Bu raporun ikinci sayfada verilen ürün bilgileri üretici / başvuran tarafından sağlanmıştır. Deney sonuçleri ve uygunluk beyanı bu bilgiler doğrultusunda değerlendirilmiştir. Üretici / başvuru sahibi tarafından sağlanan verilerde meydana gelebilecek değişikliklerden üretici / başvuru sahibi sorumludur*

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"(see Enclosure #)" refers to additional information appended to the report. / *(ilişikteki # bakınız) rapora eklenmiş ilave bilgilere başvurur.*

"(see appended table)" refers to a table appended to the report. / *(eklenmiş tabloya bakınız) rapora eklenmiş tabloya başvurur.*

Throughout this report a comma is used as the decimal separator. / *Bu raporda ondalık ayırıcı olarak virgül kullanılmıştır.*

General product information / *Ürün hakkında genel bilgi*:

The tested device is a constant voltage output and integral LED driver which supplies LED modules. /
Deneyden geçirilen cihaz LED modüllerini besleyen sabit gerilim çıkışlı ve bağımsız LED sürücüdür.

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IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
4 (4)	**GENERAL REQUIREMENTS**		—
- (4)	Insulation materials for double or reinforced insulation according requirements in Annex N of IEC 61347-1	(see Annex N)	P
- (4)	Compliance of independent controlgear enclosure with IEC 60598-1	IP20	P
- (4)	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
4 (4)	SELV controlgear comply with Annex I of this part 2 and Annex L of IEC 61347-1	(see Annex L)	N/A
4 (-)	Transformer comply with IEC 61558	SBI4.2 model transformer used in Meanwell trademark RSP-2000-48 model power supply comply with UL1446 approved by UL (File no.:E213679)	P
	Dielectric strength test of insulated winding wires is limited to 3 kV if input voltage ≤ 300 V		P

6 (6)	**CLASSIFICATION**		—
	Built-in controlgear ..... :	Yes ☐ No ☒	—
	Independent controlgear..... :	Yes ☒ No ☐	—
	Integral controlgear ..... :	Yes ☐ No ☒	—
6 (-)	Auto-wound controlgear ..... :	Yes ☐ No ☒	—
	Separating controlgear ..... :	Yes ☐ No ☒	—
	Isolating controlgear ..... :	Yes ☒ No ☐	—
	SELV controlgear ..... :	Yes ☐ No ☒	—

7 (7)	**MARKING**		—
7.1 (7.1)	**Mandatory markings**		—
	a) mark of origin	Hera	P
	b) model number or type reference	P08013 POWER PACK 2000	P
	c) symbol for independent controlgear, if applicable		P

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IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	d) correlation between interchangeable parts and controlgear marked		P
	e) rated supply voltage (V)	110-264 Vac	P
	supply frequency (Hz)	50/60 Hz	P
	supply current (A)	Max. 17,5 A	P
	f) earthing symbol		P
	k) wiring diagram		P
	l) value of tc		P
	m) symbol for declared temperature		N/A
	t) LUM earthing symbol		N/A
	u) if not SELV maximum working voltage U_{out} between:		P
	- output terminals (V) ..... :	48 Vdc	P
	- output terminals and earth (V) ..... :	47,9 Vdc	P
7.1 (-)	Constant voltage type:	Yes ☒ No ☐	—
	- rated output power P_{rated} (W) ..... :	8 x 230 W	P
	- rated output voltage U_{rated} (V) ..... :	48 Vdc	P
	Constant current type:	Yes ☐ No ☐	—
	- rated output power P_{rated} (W) ..... :		N/A
	- rated output current I_{rated} (A) ..... :		N/A
	Indication if for LED modules only		P
7.1 (7.2)	Marking durable and legible		P
	Rubbing 15 s water, 15 s petroleum; marking legible		P
7.2 (7.1)	**Information to be provided, if applicable**		—
	h) declaration of protection against accidental contact		P
	i) cross-section of conductors (mm²)		P
	j) number, type and wattage of lamp(s)		P
	s) SELV symbol		N/A
7.2 (-)	- declaration of mains connected windings		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**		—
- (10.1)	Controlgear protected against accidental contact with live parts		P
- (A2)	Voltage measured with 50 kΩ	(see Annex A)	P
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impendance device	(see Annex A)	P
- (10.1)	Lacquer or enamel not used for protection or insulation		P
	Adequate mechanical strength on parts providing protection		P
- (10.2)	Capacitors > 0,5 µF: voltage after 1 min (V): < 50 V ..... :	<50 V at 0,01 s	P
- (10.3)	**Controlgear providing SELV**		—
	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 by at least basic insulation		N/A
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1	(see Annex L)	N/A
- (10.4)	**Accessible conductive parts in SELV circuits**		—
	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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
9 (8)	**TERMINALS**		—
- (8.1)	**Integral terminals**		—
	Screw terminals according section 14 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the controlgear	(see Annex 2)	N/A
	Screwless terminals according section 15 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the controlgear	(see Annex 3)	N/A
- (8.2)	**Terminals other than integral terminals**		—
	Comply with relevant IEC standard	(see Annex 1)	N/A
	Suit the conditions		N/A
	Satisfy additional relevant requirements of this standard		N/A
10 (9)	**PROVISION FOR PROTECTIVE EARTHING**		—
- (9.1)	**Provisions for protective earthing**		**P**
	Terminal complying with clause 8		P
	Locked against loosening and not possible to loosen by hand		P
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	All parts of material minimizing the danger of electrolytic corrosion		P
	Made of brass or equivalent material		P
	Contact surface bare metal		P
	Test according 7.2.3 of IEC 60598-1		P
- (9.2)	**Provision for functional earthing**		—
	Comply with clause 8 and 9.1		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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**		—
	Test with a current of 25 A between earthing terminal or earthing contact and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω ..... :		P
- (9.4)	**Earthing of built-in lamp controlgear**		—
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N/A
	Earthing terminal only for earthing the built-in controlgear		N/A
- (9.5)	**Earthing via independent controlgear**		—
- (9.5.1)	Earth connection to other equipment		P
	Looping or through connection, conductor min. 1,5 mm² and of copper or equivalent		P
	Protective earthing wires in line with 5.3.1.1 and clause 7 of IEC 60598-1		P
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		P
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal or earthing contact and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω ..... :	0,09 Ω < 0,5 Ω	P
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1	No output earthing terminal	N/A

11 (11)	**MOISTURE RESISTANCE AND INSULATION**		—
- (11)	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance:		P
	For basic insulation ≥ 2 MΩ ..... :	Measured 25 MΩ	P
	For double or reinforced insulation ≥ 4 MΩ ..... :	Measured 16,25 MΩ	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
12 (12)	**ELECTRIC STRENGTH**		—
- (12)	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		N/A
	Working voltage ≤ 50 V, test voltage 500 V		N/A
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, 2U + 1000 V	1528 Vac ; 9,7 mA	P
	Supplementary insulation, 2U + 1000 V		N/A
	Double or reinforced insulation, 4U + 2000 V	3056 Vac ; 12,3 mA	P
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		P
14 (14)	**FAULT CONDITIONS**		—
- (14.1)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	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)	(see appended table)	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	(see appended table)	N/A
- (14.5)	Short-circuit across electrolytic capacitors	(see appended table)	P
	Short-circuit or interruption of SPDs	(see appended table)	P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
14 (-)	Reversed voltage polarity if d.c. supplied control gear	(see appended table)	P
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 MΩ ..... :	25 MΩ	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		—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C		N/A
15 (-)	**TRANSFORMER HEATING**		—
15.1	**General**		—
	Transformer comply with clause L.6 and L.7 of IEC 61347-1	RSP-2000-48 model power supply comply with UL1446 approved by UL (File no.:E213679)	N/A
	Output voltage of SELV controlgear not exceed limits in 10.4 of IEC 61347-1 during the test of 15.1 and 15.2		N/A
15.2 (-)	**Normal operation**		—
	Comply with clause L.6 of IEC 61347-1		P
15.3 (-)	**Abnormal operation**		—
	Comply with clause L.7 of IEC 61347-1		P
	Double LED modules or equivalent load connected in parallel to the output terminals of constant voltage type	constant voltage type The output terminals protected with fuse glass 7 A	P
	Double LED modules or equivalent load connected in serial to the output terminals of constant current type		N/A
15 (-)	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		**P**

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
16 (15)	**CONSTRUCTION**		—
- (15.1)	**Wood, cotton, silk, paper and similar fibrous material**		**P**
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	**Printed circuits**		**P**
	Printed circuits used as internal connections complies with clause 14		P
- (15.3)	**Plugs and socket-outlets used in SELV or ELV circuits**		—
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		P
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N/A
	- plugs not able to enter socket-outlets of other standardised system		N/A
	- socket-outlets not admit plugs of other standardised system		N/A
	- socket-outlets without protective earth		N/A
- (15.4)	**Insulation between circuits and accessible parts**		—
- (15.4.2)	SELV circuits		N/A
	Source used to supply SELV circuits:		N/A
	- safety isolating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- controlgear providing SELV in accordance with relevant part 2 of IEC 61347		N/A
	- another source		N/A
	Voltage in the circuit not higher than ELV		N/A
	SELV circuits insulated from LV by double or reinforced insulation		N/A
	SELV circuits insulated from non SELV circuits by double or reinforced insulation		N/A
	SELV circuits insulated from FELV circuits by supplementary insulation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	SELV circuits insulated from other SELV circuits by basic insulation		N/A
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
- (15.4.3)	FELV circuits		P
	Source used to supply FELV circuits:		P
	- separating transformer in accordance with relevant part 2 of IEC 61558		P
	- separating controlgear providing basic insulation between input and output circuits in accordance with relevant part 2 of IEC 61347		P
	- another source		P
	- source in circuits separated by the LV supply by basic insulation		P
	Voltage in the circuit not higher than ELV		P
	FELV circuits insulated from LV supply by at least basic insulation		P
	FELV circuits insulated from other FELV circuits if functional purpose		N/A
	FELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		P
	Plugs and socket-outlets for FELV system comply with:		P
	- plugs not able to enter socket-outlets of other voltage systems		N/A
	- socket-outlets not admit plugs of other voltage systems		N/A
	- socket-outlets have a protective conductor contact		P
- (15.4.4)	Other circuits		N/A
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		N/A
- (15.4.5)	Insulation between circuits and accessible conductive parts		P
	Accessible conductive parts insulated from active parts of electric circuits by insulating according Table 6		P
	Requirements for Class II construction with equipotential bonding for protection against indirect contact with live parts:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- all conductive parts are connected together		P
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		P
	- conductive parts comply with requirements of Annex A in case of insulation fault		P
17 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		—
- (16.1)	**General**		**P**
	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L	Not SELV	N/A
	Insulating lining of metallic enclosures		N/A
	Controlgear protected against pollution comply with Annex P	(see Annex P)	P
- (16.2)	**Creepage distances**		—
- (16.2.2)	Minimum creepage distances for working voltages		P
	Creepage distances according to Table 7	(see appended table)	P
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8	(see appended table)	N/A
- (16.3)	**Clearances**		—
- (16.3.2)	Clearances for working voltages		P
	Clearances distances according to Table 9	(see appended table)	P
- (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	(see appended table)	N/A
	Clearances distances for reinforced insulation according to Table 11	(see appended table)	N/A
18 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		—
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
(4.11)	**Electrical connections**		**P**
(4.11.1)	Contact pressure		P

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Clause	Requirement + Test	Result - Remark	Verdict
(4.11.2)	Screws:		P
	- self-tapping screws		P
	- thread-cutting screws		N/A
(4.11.3)	Screw locking:		P
	- spring washer		N/A
	- rivets		P
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	**Mechanical connections and glands**		—
(4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part .....:	2,9 mm; 0,5 Nm	P
	Torque test: torque (Nm); part .....:	3,9 mm; 1,2 Nm	P
	Torque test: torque (Nm); part .....:		N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		P
(4.12.4)	Locked connections:		P
	- fixed arms; torque (Nm) .....:		N/A
	- lampholder; torque (Nm).....:		N/A
	- push-button switches; torque 0,8 Nm .....:		P
(4.12.5)	Screwed glands; force (Nm) .....:		N/A

19 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		—
- (18.1)	Ball-pressure test .....:	See Test Table 19 (18.1)	P
- (18.2)	Test of printed boards .....:	See Test Table 19 (18.2)	P
- (18.3)	Glow-wire test .....:	See Test Table 19 (18.3)	P
- (18.4)	Needle flame test .....:	See Test Table 19 (18.4)	P
- (18.5)	Tracking test .....:	See Test Table 19 (18.5)	P

20 (19)	**RESISTANCE TO CORROSION**		—
	- test according 4.18.1 of IEC 60598-1	IP20	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- adequate varnish on the outer surface		N/A

21 (-)	MAXIMUM WORKING VOLTAGE (U_{out}) IN ANY LOAD CONDITION		-
	Not exceed declared maximum working voltage U_{out} in any load condition		P

14	TABLE: tests of fault conditions	P
Part	Simulated fault	Hazard
LED out	LED out connector + polarity and – polarity short circuited	NO
DMX	DMX port pins short-circuited	NO
LED out	Double resistive load connected in parallel to the output terminals	NO
C6	C6 capacitor open circuited	NO
C6	C6 capacitor short circuited	NO
D6	D6 diode short circuited	NO
U9 (5 pins)	Vout and GND ends short circuited	NO
U12 (3 pins)	Vout and GND ends short circuited	NO

17 (16)	TABLE: clearance and creepage distance measurements (mm)						P
Applicable part of IEC 61347-1 Table 7 – 11*							
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	13,0	3,0	9	13,0	5,0	7
Working voltage (V) ..... :					110-264 Vac		—
Frequency if applicable (kHz) ..... :							—
PTI ..... :					< 600 ☒	≥ 600 ☐	—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :							—
Pulse voltage if applicable (kV) ..... :							—
Supplementary information:							
Distance 2:							
Working voltage (V) ..... :							—

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Clause	Requirement + Test	Result - Remark	Verdict

Frequency if applicable (kHz) ..... :							—
PTI ..... :				< 600 ☐		≥ 600 ☐	—
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 ☐		≥ 600 ☐	—
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

19 (18.1)	TABLE: Ball Pressure Test		P
Allowed impression diameter (mm)..... :		2	—
Object/ Part No./ Material	**Manufacturer/ trademark**	**Test temperature (°C)**	**Impression diameter (mm)**
DC Axial Compact Fan enclosure	EBM-PAPST	75	0,96
Adhesive Crochet	Güven Elektrik	75	1,19
LED lens	Hera	75	0,65
5 Pole Male DMX input	NEUTRIK	75	1,00
DC Axial Compact Fan connector	EBM-PAPST	125	1,54
Button	Diptronics	125	1,19
Fuse Holder	Wuerth Elektronik Stelvio	125	0,95
Connector	Kls Electronic	125	1,44
LED out connector	Shenzhen Lilutong Connector Corp., Ltd.	125	0,95
Board connector	Kls Electronic	75	1,13

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Clause	Requirement + Test	Result - Remark	Verdict

Circuit Breaker	SCHURTER AG	125	0,63
Power supply connector	NEUTRIK	125	1,35
Power Switch	Swion	125	1,50
Supplementary information:			

19 (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	Baskı Devre San. Tic. A.Ş.	30	No	0	P
Supplementary information:					

19 (18.3)	TABLE: Glow-wire test			P
Glow wire temperature .....:	650°C			—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
DC Axial Compact Fan enclosure	EBM-PAPST	No	0	P
Adhesive Crochet	Güven Elektrik	No	0	P
LED lens	Hera	No	0	P
5 Pole Male DMX input	NEUTRIK	No	0	P
Board connector	Kls Electronic	No	0	P
Supplementary information:				

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Clause	Requirement + Test	Result - Remark	Verdict

19 (18.4)	TABLE: Needle-flame test				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
DC Axial Compact Fan connector	EBM-PAPST	10	No	0	P
Button	Diptronics	10	No	0	P
Fuse Holder	Wuerth Elektronik Stelvio	10	No	0	P
Connector	Kls Electronic	10	No	0	P
LED out connector	Shenzhen Lilutong Connector Corp., Ltd.	10	No	0	P
Circuit Breaker	SCHURTER AG	10	No	0	P
Power supply connector	NEUTRIK	10	Yes	>30	P
Power Switch	Swion	10	No	0	P
Supplementary information: The Power supply connector has a metal housing that provides effective barrier properties, and no flammable material underneath.					

19 (18.5)	TABLE: Proof tracking test				P
Test voltage PTI .....:	175 V				—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Fuse Holder	Wuerth Elektronik Stelvio				P
Connector	Kls Electronic				P
Power supply connector	NEUTRIK				P
PCB	Baskı Devre San. Tic. A.Ş.				P
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict
(A)	**ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK**		—
(A.1)	Comply with A.2 or A.3		P
(A.2)	Voltage ≤ 35 V peak or ≤ 60 V d.c .....:	47,9 Vdc	P
(A.3)	If voltage measured according Clause A.2 exceeds the limit value; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. .....:	0,0076 mA	P
	Comply with Annex G.2 of IEC 60598-1		P
(C)	**ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING**		—
(C3)	**GENERAL REQUIREMENTS**		—
(C3.1)	Thermal protection means integral with the convertor, protected against mechanical damage		N/A
	Renewable only by means of a tool		N/A
	If function depending on polarity, for cord-connected equipment protection means in both leads		N/A
	Thermal links comply with IEC 60691		N/A
	Electrical controls comply with IEC 60730-2-3		N/A
(C3.2)	No risk of fire by breaking (clause C7)		N/A
(C5)	**CLASSIFICATION**		—
	a) automatic resetting type		—
	b) manual resetting type		—
	c) non-renewable, non-resetting type		—
	d) renewable, non-resetting type		—
	e) other type of thermal protection; description ..:		—
(C6)	**MARKING**		—
(C6.1)	Symbol for temperature declared thermally protected ballasts		N/A
(C6.2)	Declaration of the type of protection provided		N/A
(C7)	**LIMITATION OF HEATING**		—

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Clause	Requirement + Test	Result - Remark	Verdict
(C7.1)	**Preselection test:**		—
	Test sample placed for at least 12 h in an oven having temperature (t_c - 5) K		N/A
	No operation of the protection device		N/A
(C7.2)	**Functioning of protection means:**		—
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (t_c +0; -5) °C is obtained		N/A
	No operation of the protection device		N/A
	Introducing of the most onerous test condition determined during test of clause 14.2 to 14.5		N/A
	Output of windings connected to the mains supply short-circuited, and other part of the controlgear operated under normal conditions		N/A
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		N/A
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Ballasts according to C5 b) working 6 times		N/A
	Ballasts according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value		N/A
	Any overshoot of 10% over the marked value within 15 min		N/A
	After 15 min value not exceed marked value		N/A

(D)	**ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR**		—
	Tests in C7 performed in accordance with Annex D, if applicable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
(F)	**ANNEX F – DRAUGHT-PROOF ENCOSURE**		—
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		N/A
(H)	**ANNEX H - TESTS**		—
	All tests performed in accordance with the advice given in Annex H, if applicable		P
I (L)	**ANNEX I IN THIS PART 2 – PARTICULAR ADDITIONAL REQUIREMENTS FOR SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEARS FOR LED MODULES**		—
(L.3)	**Classification**		—
	Class I	Yes ☒ No ☐	—
	Class II	Yes ☐ No ☒	—
	Class III	Yes ☐ No ☒	—
	non-inherently short circuit proof controlgear	Yes ☐ No ☐	—
	inherently short circuit proof controlgear	Yes ☒ No ☐	—
	fail safe controlgear	Yes ☐ No ☒	—
	non-short-circuit proof controlgear	Yes ☐ No ☒	—
(L.4)	**Marking**		—
	Adequate symbols are used		N/A
(L.5)	**Protection against electric shock**		—
	Comply with clause 9.2 of IEC 61558-1		N/A
(L.6)	**Heating**		—
	No excessive temperatures in normal use	See table 1	P
	Value if capacitor t_c 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**		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		P
(L.8)	**Insulation resistance and electric strength**		—
(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
	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**		—
(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**		—
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		N/A
(L.11)	**Creepage distances, clearances and distances through insulation**		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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) ..... :		—
	Measured (mm) ..... :		N/A
	Supplementary information		—
	3) Reinforced distance through insulation		N/A
	Required distance (mm) ..... :		—
	Measured (mm) ..... :		N/A
	Supplementary information		—

J (-)	**ANNEX J IN THIS PART 2 – PARTICULAR ADDITIONAL SAFETY REQUIREMENTS FOR A.C., A.C./D.C. OR D.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR EMERGENCY LIGHTING**		—
J.1	**General**		—
	Intended for centralized emergency power supply	Yes ☐ No ☐	—
J.2	**Marking**		—
J.2.1	Mandatory markings		N/A
	a) symbol EL		N/A
	b) rated emergency supply voltage (V)		N/A
J.2.2	Information to be provided if applicable		N/A
	a) Limits of ambient temperature		N/A
	b) Emergency output factor (EOF_x)		N/A
	c) Information if intended for use in luminaires for high-risk task area lighting		N/A
J.3	General notes on tests		N/A
	Length of output cable in tests..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Load instead of LED lamps/modules.....:		N/A
J.4	Starting conditions		N/A
	Start rated load in emergency mode without adversely affecting the performance		N/A
J.5	Operating condition		N/A
	Comply with the requirements of 7.2 of IEC 62384 at 90% and 110% of rated emergency supply voltage		N/A
J.6	Emergency supply current		N/A
	Emergency supply current not differ more than ±15 %		N/A
	Supply of low impedance and low inductance		N/A
J.7	EMC immunity		N/A
	Comply with the requirements of IEC 61547		N/A
J.8	Pulse voltage from central battery systems		N/A
	Withstand pulses according Table J.1		N/A
J.9	Tests for abnormal conditions		N/A
	Comply with the requirements of 12 of IEC 62384		N/A
J.10	Comply with the requirements of 13 of IEC 62384		N/A
J.11	Functional safety (EOF_x)		N/A
	Declared emergency output factor (EOF_x) achieved during emergency operation		N/A

(N)	**ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION**		—
(N.4)	**General requirements**		—
(N.4.1)	Material comply with IEC 60085 and IEC 60216 series		N/A
(N.4.2)	**Solid insulation**		—
	Electric strength test at least 5 kV or 1,35 x test voltage in Table N.1		N/A
	If not classified according IEC 60085 and IEC 60216 series: Electric strength test increased 10 % to 5,5 kV or 1,5 x test voltage in Table N.1		N/A
(N.4.3)	**Thin sheet insulation**		—

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Clause	Requirement + Test	Result - Remark	Verdict
(N.4.3.1)	Thickness and composition of thin sheet insulation		N/A
	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance		N/A
	- Non-separated layers: Min. 3 layers and fulfil mandrel test of 150N		N/A
	- Separated layers: Min. 2 layers and each layer fulfil mandrel test of 50N		N/A
	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N		N/A
(N.4.3.2)	Mandrel test (electric strength test during mechanical stress)		N/A
	Electric strength test after mandrel test:		N/A
	- Non-separated layers: min. 5 kV or 1,35 x test voltage in Table N.1		N/A
	- 2/3 of min. 3 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	- one of 2 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	No flashover or breakdown occurred		N/A
(O)	**ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION**		—
(O.6)	**Marking**		—
	Marking according clause 7 (7)	See clause 7	N/A
	Special symbol		N/A
	Meaning of the special symbol explained in catalogue		N/A
(O.7)	**Protection against accidental contact with live parts**		—
	Requirements of clause 8 (10)	See clause 8	N/A
	Test finger not possible to make contact with basic insulated metal parts		N/A
(O.8)	**Terminals**		—
	Clause 9 (8)	See clause 9	N/A
(O.9)	**Provision for earthing**		—
	Functional earthing terminals comply with clause 9 of part 1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	No protective earthing terminal		N/A
(O.10)	**Moisture resistance and insulation**		—
	Clause 11 (11)	See clause 11	N/A
(O.11)	**Electric strength**		—
	Clause 12 (12)	See clause 12	N/A
(O.13)	**Fault conditions**		—
	Clause 14 (14)	See clause 14	N/A
	End of test, between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface comply with dielectric strength test according clause 12 reduced to 35 % of values according Table 3 in part 1		N/A
	Insulation resistance according to O.10 between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface not less than 4 MΩ		N/A
(O.14)	**Construction**		—
	Clause 17 (15)	See clause 17	N/A
	Accessible metal parts insulated from live parts by double or reinforced insulation		N/A
	Live part insulated from supporting surface in contact with external faces by double or reinforced insulation		N/A
(O.15)	**Creepage distances and clearances**		—
	Clause 18 (16)	See clause 18	N/A
	Comply with corresponding values for luminaries in IEC 60598-1		N/A
(O.16)	**Screws, current-carrying parts and connections**		—
	Clause 19 (17)	See clause 19	N/A
(O.17)	**Resistance to heat and fire**		—
	Clause 20 (18)	See clause 20	N/A
(O.18)	**Resistance to corrosion**		—
	Clause 21 (19)	See clause 21	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
(P)	**Creepage distances and clearances and distance through isolation (DTI) for lamp controlgear which are protected against pollution by the use of coating or potting**		—
(P.1)	**General**		—
	P.2 applies if creepage distances less than the minimum in Table 7 and 8		N/A
	P.3 applies if clearance less than the minimum in Table 9, 10 and 11		N/A
(P.2)	**Creepage distances**		—
(P.2.2)	Minimum creepage distances for working voltages and rated voltages with frequencies up to 30 kHz (Table P.1)		N/A
	Basic or supplementary insulation:		N/A
	Required creepage .....:		—
	Measured .....:		N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Required creepage .....:		—
	Measured .....:		N/A
	Supplementary information		—
(P.2.3)	Creepage distances for working voltages with frequencies above 30 kHz (Table P.2)		N/A
	Voltage $\hat{U}_{out}$ kV .....:		—
	Frequency .....:		—
	Required distance .....:		—
	Measured .....:		N/A
	Supplementary information		—
(P.2.4)	Compliance with the required creepage distances		N/A
(P.2.4.1)	Compliance in accordance with 16.3.3 and test according P.2.4.2		N/A
(P.2.4.3)	Electrical tests after conditioning		N/A
(P.2.4.3.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3)	**Distance through isolation**		N/A
(P.3.4)	Electrical tests after conditioning		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
(P.3.4.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3.4.2)	Impulse voltage dielectrical test		N/A
	Basic or supplementary insulation:		N/A
	Working/rated voltage .....:		—
	Impulse voltage.....:		N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Working/rated voltage .....:		—
	Impulse voltage.....:		N/A
	Supplementary information		—

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1	TABLE: Critical components information					P
Object / part No.	**Code**	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
Power supply	B	MEAN WELL ENTERPRISES CO LTD	RSP-2000-48	input= 90 – 264 V output= 48VDC, 42A, 2000 W Class I	IEC 60950-1:2005+A1+A2	TÜV Rheinland Certificate No. JPTUV-066614
					ANSI/UL 60950-1	UL E183223
PCB	B	BASKI DEVRE SAN. TIC. A S	FR4	V-0, 90°C, 1.6 mm, (C13045_R2.0)	ANSI/UL 796, ANSI/UL 796F	UL E201793
DC Axial Compact Fan	A	EBM-PAPST	8318 H	80 x 32 mm V= 48VDC	IEC 60950-1:2005/AMD1:2009/AMD2:2013 EN 60950-1:2006 + A11 + A1 + A12 + A2:2013	VDE Certificate no. 40032509
					ANSI/UL 507	UL E38324
Button	C	Diptronics	DTS-24N-V	50mA, 12V DC	EN 61347-1 EN 61347-2-13	Tested with appliance
5 Pole Male DMX input	C	NEUTRIK	NC5MAH	-30 °C to +80 °C	EN 61347-1 EN 61347-2-13	Tested with appliance
FUSE HOLDER 5X20 PCB TYPE	C	Wuerth Elektronik Stelvio	PTF/50	ø5.2×20mm 10A.250V.AC	EN 60127-6:2014 IEC 60127-1:2006/AMD1:2011/AMD2:2015 IEC 60127-6:2014 EN 60127-1:2006+A1:2011+A2:2015	VDE Certificate no. 120170

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Clause	Requirement + Test			Result - Remark		Verdict
2x4 Pole Connector	C	NINGBO KLS ELECTRONIC CO.LTD	KLS1-4.20-2X04-S	300 V, 9 A, -40°C~+105°C	EN 61347-1 EN 61347-2-13	Tested with appliance
20 Pole Connector	C	NINGBO KLS ELECTRONIC CO.LTD	KLS1-202-20-S-B	-45°C~+105°C	EN 61347-1 EN 61347-2-13	Tested with appliance
40 Pole Connector	C	NINGBO KLS ELECTRONIC CO.LTD	KLS1-202-40-S-B	-45°C~+105°C	EN 61347-1 EN 61347-2-13	Tested with appliance
2 P Pole Connector	C	NINGBO KLS ELECTRONIC CO.LTD	KLS1-2.50-02-S	250V AC/DC, 3 A -25°C~+85°C	EN 61347-1 EN 61347-2-13	Tested with appliance
3 Pole Connector	C	NINGBO KLS ELECTRONIC CO.LTD	KLS1-2.50-03-S	250V AC/DC, 3 A -25°C~+85°C	EN 61347-1 EN 61347-2-13	Tested with appliance
4 Pole LED Out Connector	A	SHENZHEN LILUTONG CONNECTOR CORP., LTD.	LLT-M12 004	4 Pin 5 A, 100 V -30°C - + 85°C	UL 1977	UL E470166
Relay	A	NINGBO TIANBO GANGLIAN ELECTRONICS CO., LTD.	HJR1-2C L-05V	1 A, 5 VDC Coil Current : 40 mA -40°C - + 105°C	ANSI/UL 508, ANSI/UL 60947-1, ANSI/UL 60947-4-1	UL E173485
					EN 61810-1:2015	TÜV Rheinland R 50116175
Circuit Breaker	A	SCHURTER AG	TS-701-HT	20 A 250 Vac, -40°C - + 105°C	ANSI/UL 1077	UL E71572
Internal wiring	C	KLS Electronic	KLS17-127-FC Series	28 AWG	EN 61347-1 EN 61347-2-13	Tested with appliance
Internal wiring	A	TÜREN	H05V-K	1 x 1,0 mm^2 300/500 V	TSE 50525-2-31:2011	TSE 044780-TSE-05/01
Internal wiring	A	TÜREN	H07V-K	1 x 1,0 mm^2 300/500 V	TSE 50525-2-31:2011	TSE 044780-TSE-01/02

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Clause	Requirement + Test	Result - Remark	Verdict

Power supply plug	A	NEUTRIK	NAC3MPA-1	2 + PE 20 A, 250 V	EN 61984:2009	VDE Certificate no. 40014741
					UL 1977	UL E135070
Power supply connector	A	NEUTRIK	NAC3FCA	2 + PE 20 A, 250 V	EN 61984:2009	VDE Certificate no. 40014741
					UL 1977	UL E135070
Power Switch	A	Swion	MP016	-40°C...+ 70°C	EN 61058-1:2002+A2	TÜV Rheinland R 50213232
Adhesive Crochet	C	Güven Elektrik	HW-3A	19x19mm	EN 61347-1 EN 61347-2-13	Tested with appliance
Fuse Glass	C	Reomax	5GT7A	7 A, 250 V 5x20 mm	EN 61347-1 EN 61347-2-13	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

TABLE 1	**Temperature measurements, transformer heating of section 15.2**		P
	Type reference ..... :	P08013 POWER PACK 2000	—
	Mounting position of control gear ..... :	Fixed mounted	—
	Supply wattage (W) ..... :	1972 W / 264 Vac 1937 W / 110 Vac	—
	Supply current (A) ..... :	8,28 A / 264 Vac, 17,52 A / 110 Vac	—
	Table: measured temperatures corrected for ta = 25 °C:		—

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Clause	Requirement + Test	Result - Remark	Verdict

	- test 1: Upper rated voltage .....:	264 Vac	—
	- test 2: Lower rated voltage .....:	110 Vac	

Temperature measurements, (°C)

Part	Clause 15.2 – normal		
	test 1	test 2	limit
Power supply	34,6	43,6	70
On off switch	25,3	28,8	70
Circuit breaker	38,3	51,7	105
Plug connector	40,3	57,8	80
RL3 relay	39,7	46,5	85
Fuse holder	37,4	43,2	85
C13029 PCB	33,9	38,7	90
8 pins connector	41,0	46,7	Cl.18.1
Board connector	31,7	37,5	Cl.18.1
C13045 PCB	32,3	41,2	90
Fan	36,2	45,8	info
Internal wiring	34,5	43,9	75
RGB control circuit PCB	26,9	33,8	90
Supply cable	35,7	51,3	info
DMX socket	28,6	33,6	80
LED out socket	28,4	32,1	80
LED lens	26,2	31,8	Cl.18.1
Metal enclosure	29,4	38,5	45
Ambient	22,9	26,3	-
Supplementary information:			

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	**Screw terminals (part of the luminaire)**		—
(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 (mm²) ..... :		—
(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 3	**Screwless terminals (part of the luminaire)**		—
(15)	**SCREWLESS TERMINALS**		N/A
(15.2)	Type of terminal..... :		—
	Rated current (A) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(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)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N/A
(15.5.1.1.2)	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

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Clause	Requirement + Test	Result - Remark	Verdict

(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

(15.6.3.1) (15.6.3.2)	**TABLE: Contact resistance test / Heating tests**									N/A
	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:										

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

APPENDIX 1: List of test equipment used

Equipment	Equipment no	Manufacturer	Model	Serial no	Calib. Date	End of Calib.
CE Test Multimeter	EL1-203	Metrel	MI3394	15150073	04/2019	04/2020
Power Meter	EL2-74	GW Instek	GPM-8212	CE150979	11/2017	11/2019
Power Meter	EL1-167	ESİM	75 Amper	—	07/2017	07/2019
Touch current measuring network	EL1-117	ESİM	—	—	04/2017	04/2020
Etüv Heating Chamber	EL1-31	Nüve	FN400	01-2319	09/2017	09/2019
Etüv Heating Chamber	EL1-32	Nüve	FN400	01-2213	11/2017	11/2019
Glow-wire Test Device	EL1-102	EMS	GW-2003	—	11/2017	11/2019
Climate Room	EL1-174	WELLTECH	YTH960	EL1-174	02/2019	02/2021
Digital Thermometer	EL1-222	Fluke	52-2	40360228WS	10/2018	10/2019
Digital Caliper	EL2-101	Mitutoyo	500-171-20	11412751	03/2019	03/2020
Tracking Test Equip.	EL1-43	KEMA	IEC 112	—	11/2017	11/2019
Portable Multimeter	EL2-15	Goldstar	DM-341	S70202923	10/2018	10/2019
Torque Driver	EL2-115	Gedore	757-01	6DN100293	10/2018	10/2020
Varying Transformer	EL1-4	Devotrans	DVT	981022	—	—
Needle Flame Test Apparatus	EL1-111	Systemak	—	—	—	—
Data Acquisition	EL1-163	Agilent	34972A	MY49012456	08/2017	08/2019
20 Channel Multiplexer	EL1-164	Agilent	34901A	MY41168649	08/2017	08/2019

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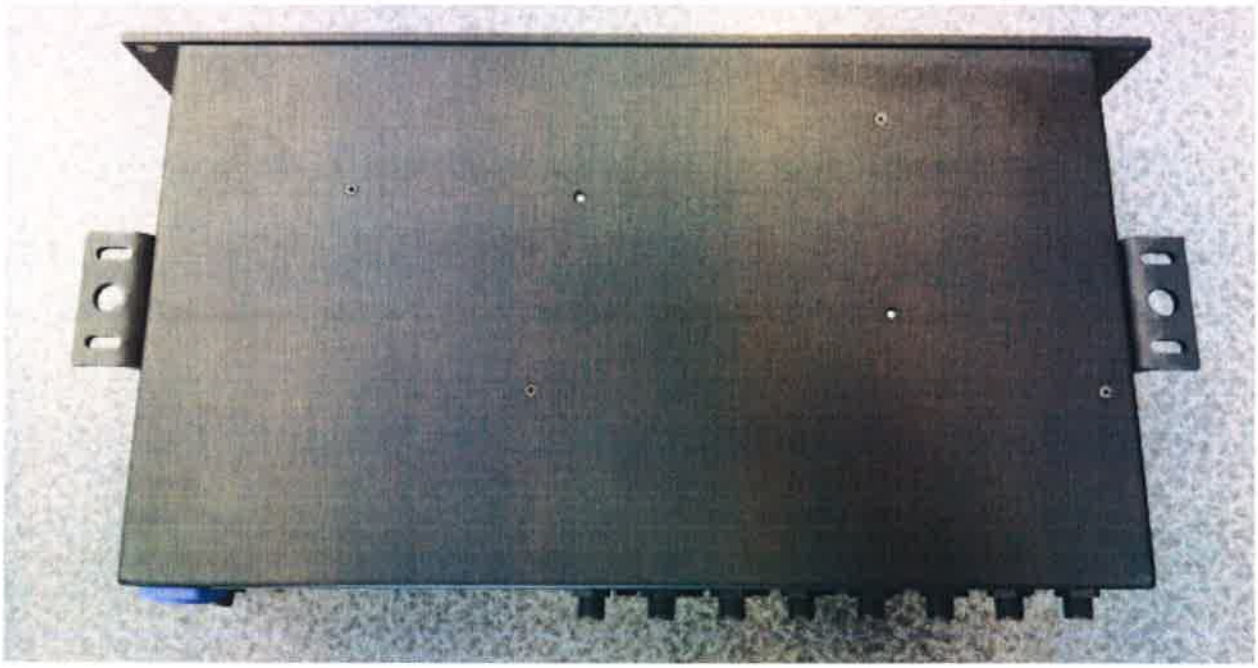
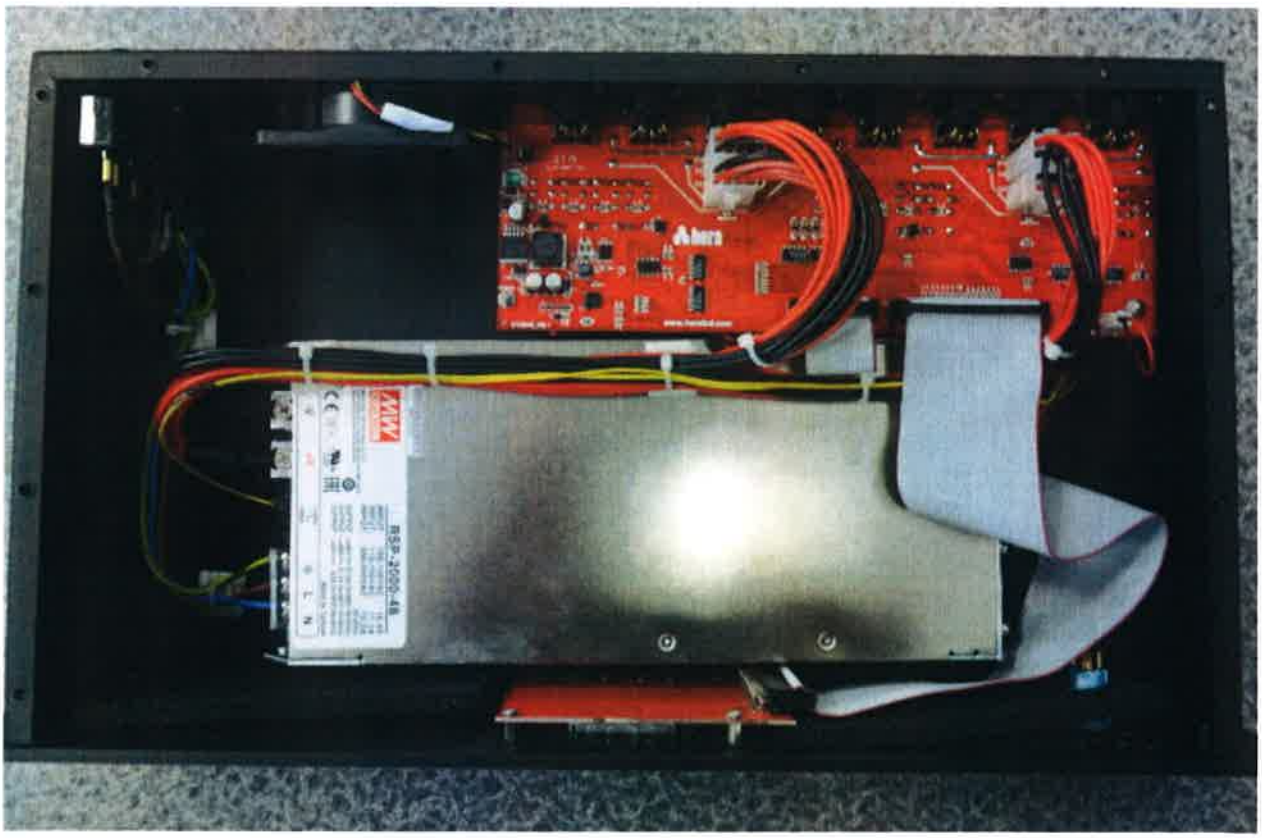
Clause	Requirement + Test	Result - Remark	Verdict

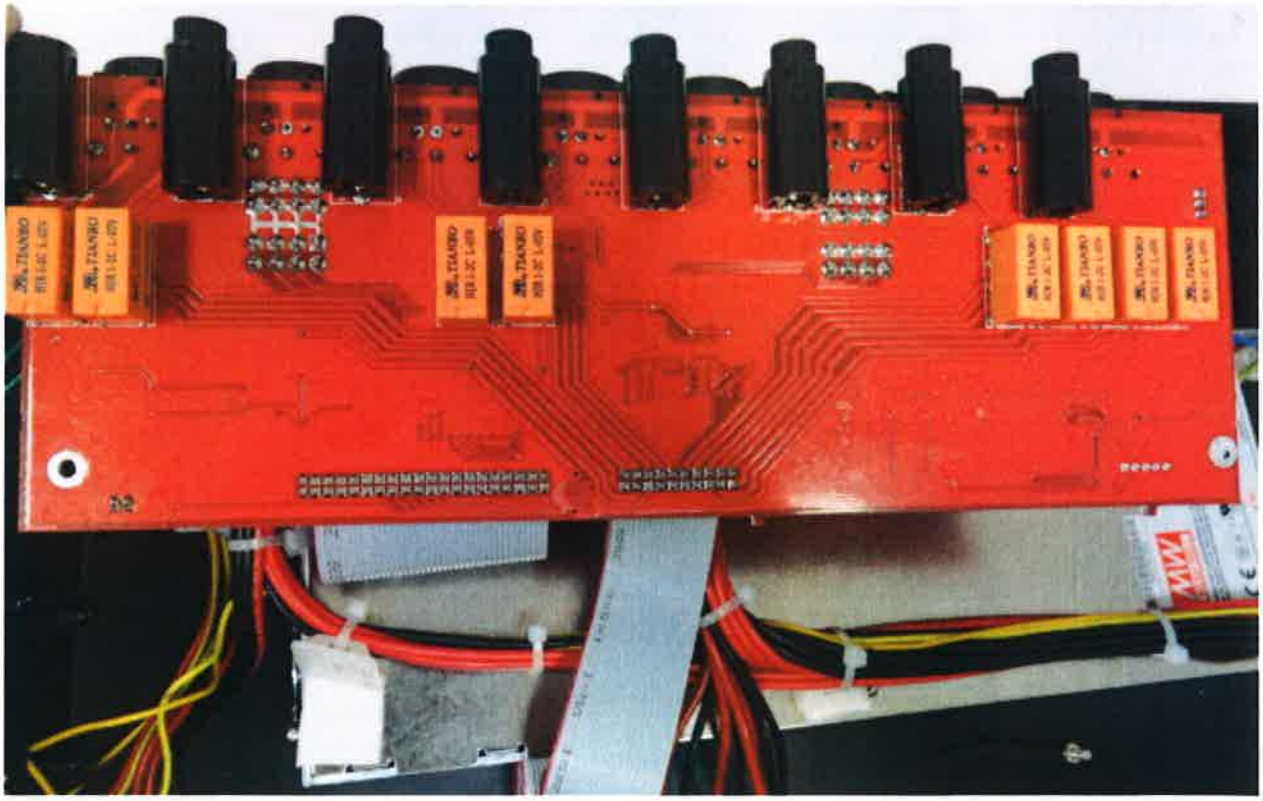
APPENDIX 2: Photos of Product

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

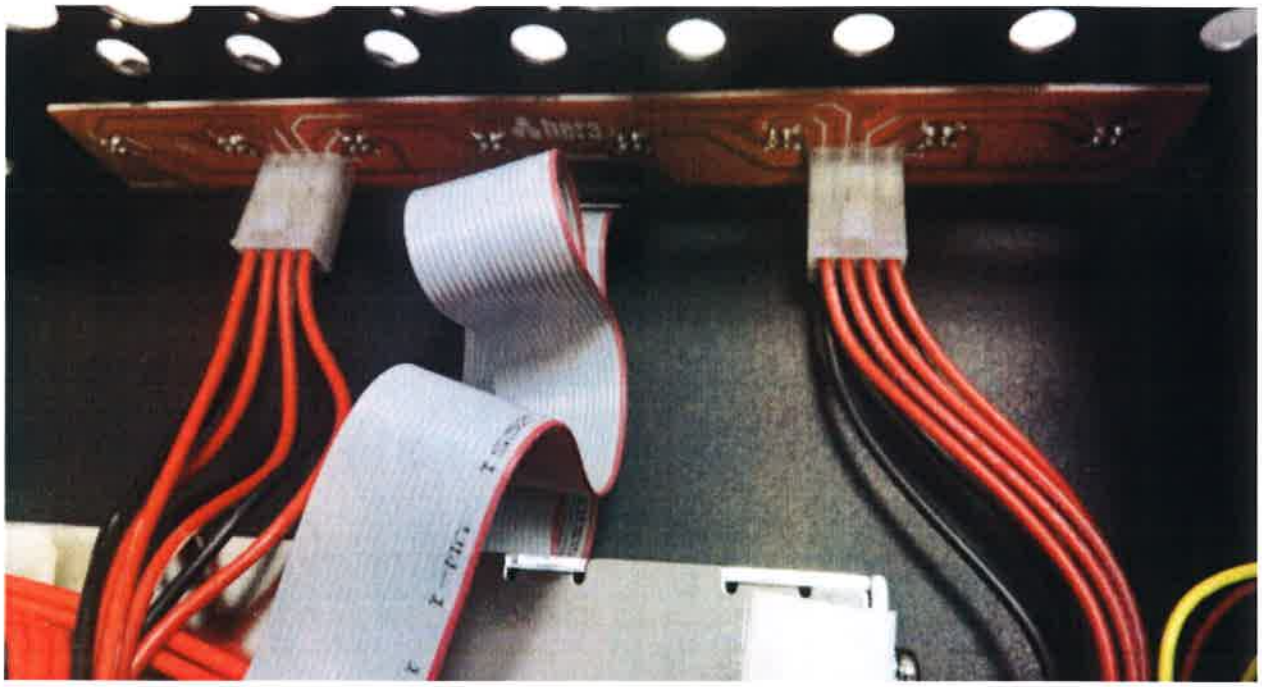


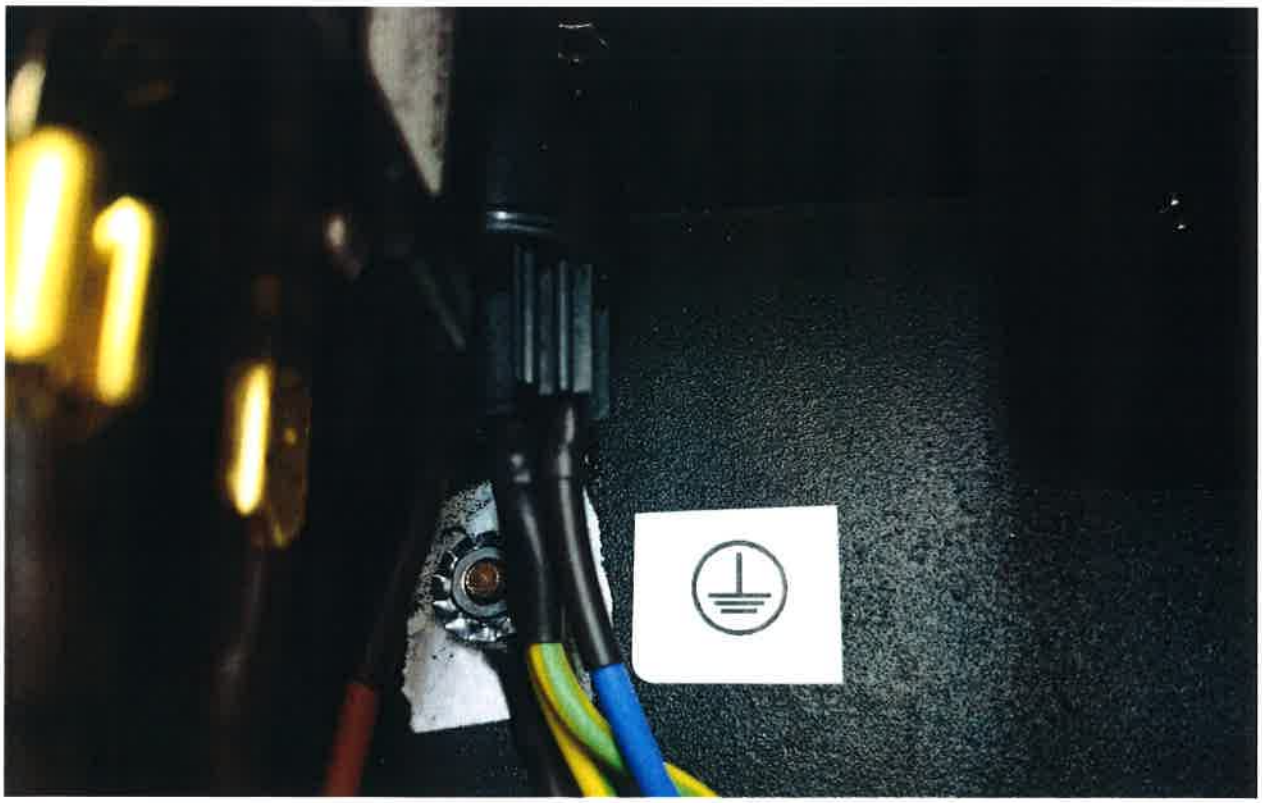


IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict



IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict





IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

APPENDIX 3:

ATTACHMENT TO TEST REPORT IEC 61347-2-13 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Part 2: Particular requirements Section Thirteen – d.c. or a.c. supplied electronic controlgear for LED modules	
Differences according to.....:	EN 61347-2-13:2014 + A1:2017 used in conjunction with EN 61347-1:2015
Attachment Form No......:	EU_GD_ESİM61347_2_13G
Attachment Originator.....:	ESİM
Master Attachment.....:	2017-12-01

	CENELEC COMMON MODIFICATIONS (EN)	—
	No Common modifications	N/A