



Test Report issued under the responsibility of:



<b>TEST REPORT</b> <b>IEC 61347-2-13</b> <b>Part 2: Particular requirements:</b> <b>Section 13 – d.c. or a.c. supplied electronic controlgear for</b> <b>LED modules</b>	
<b>Report Number</b> .....	4789057363.1.1
<b>Date of issue</b> .....	2019-09-10; Amendment 1: 2020-03-29
<b>Total number of pages</b> .....	50 ( including attachment)
<b>Name of Testing Laboratory preparing the Report</b> .....	UL-CCIC Company limited GuangZhou Branch
<b>Applicant's name</b> .....	Energy Recovery Products (Zhuhai) CO., Ltd.
<b>Address</b> .....	Nanping Scientific Tec Industry Park No.8 Pingdong Rd 2, Zhuhai, Guangdong, 519060, China
<b>Test specification:</b>	
<b>Standard</b> .....	IEC 61347-2-13:2014, AMD1:2016 used in conjunction with IEC 61347-1:2015, AMD1:2017
<b>Test procedure</b> .....	CB Scheme
<b>Non-standard test method</b> .....	N/A
<b>Test Report Form No.</b> .....	IEC61347_2_13G
<b>Test Report Form(s) Originator</b> .....	Intertek Semko AB
<b>Master TRF</b> .....	2017-12-01
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<b>Test item description .....</b>	d.c. or a.c. supplied electronic controlgear for LED modules
<b>Trade Mark .....</b>	ERP
<b>Manufacturer.....</b>	Same as applicant
<b>Model/Type reference .....</b>	DALPPW-XXXX-VV-T-YYYYY-ZZZZZ
<b>Ratings .....</b>	Input: 220-240 Vac, 50/60 Hz, Max. 0.28 A; PF:0.9C Output : see model list Built-in, double insulation, SELV, constant current output, tc: 90 °C; non-inherently short circuit proof and 100 °C declared thermally protected lamp controlgear.

<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	
<b>Testing location/ address .....</b>		UL-CCIC Company Limited Guangzhou Branch Electronic Building, Parage Electronic Industrial Park, No. 8 Nanyun Er Road, Guangzhou Science Park, Guangzhou 510670, China
<b>Tested by (name, function, signature) .....</b>		Ben Han / Project Handler <i>Ben Han</i>
<b>Approved by (name, function, signature) ..</b>		Anna Luo / Reviewer <i>Anna Luo</i>
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 1:</b>	
<b>Testing location/ address .....</b>		
<b>Tested by (name, function, signature) .....</b>		
<b>Approved by (name, function, signature) ..</b>		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 2:</b>	
<b>Testing location/ address .....</b>		
<b>Tested by (name + signature) .....</b>		
<b>Witnessed by (name, function, signature) ..</b>		
<b>Approved by (name, function, signature) ..</b>		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 3:</b>	
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 4:</b>	
<b>Testing location/ address .....</b>		
<b>Tested by (name, function, signature) .....</b>		
<b>Witnessed by (name, function, signature) ..</b>		
<b>Approved by (name, function, signature) ..</b>		
<b>Supervised by (name, function, signature) :</b>		

**List of Attachments (including a total number of pages in each attachment):****ATTACHMENT 1: European Group differences and national differences: Total 1 page****ATTACHMENT 2: Temperature measurements, thermal tests: Total 3 pages****ATTACHMENT 3: Product photos: Total 12 pages.****Summary of testing:**

The submitted samples fulfil the require of standard:

IEC 61347-2-13:2014/AMD1:2016 used in conjunction with IEC 61347-1:2015;

EN 61347-2-13:2014+A1:2017 used in conjunction with EN 61347-1:2015.

**Tests performed (name of test and test clause):**

cl.7(7): Marking  
 cl.8(10): Protection against accidental contact with live parts  
 cl.9(8): Terminals  
 cl.10(9): Provision for protective earthing  
 cl.11(11): Moisture Resistance and Insulation  
 cl.12(12): Electric Strength  
 cl.14(14): Fault conditions  
 cl.15(-): Transformer Heating  
 cl.16(15): Construction  
 cl.17(16): Creepage distances and Clearances  
 cl.18(17): Screws, current carrying parts and connections  
 cl.19(18): Resistance to heat, fire and tracking  
 cl.20(19): Resistance to corrosion  
 cl.21(-): Maximum working voltage(Uout) in any load condition  
 Annex A: Test to establish whether a conductive part is a live part which may cause an electric shock  
 Annex I(L): In this part 2- particular additional requirements for SELV D.C Or A.C. Supplied electronic Controlgears for LED modules  
 Annex N: Requirements for Insulation materials used for double or reinforced insulation  
 Annex O: Additional requirements for built-in Electronic Controlgear with Double or Reinforced insulation.

**Testing location:**

UL-CCIC Company Limited Guangzhou Branch  
 Electronic Building, Parage Electronic Industrial Park,  
 No. 8 Nanyun Er Road, Guangzhou Science Park,  
 Guangzhou 510670, China

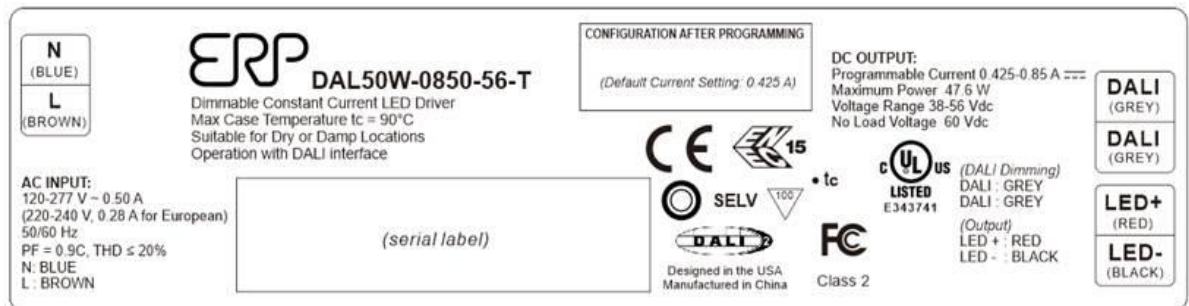
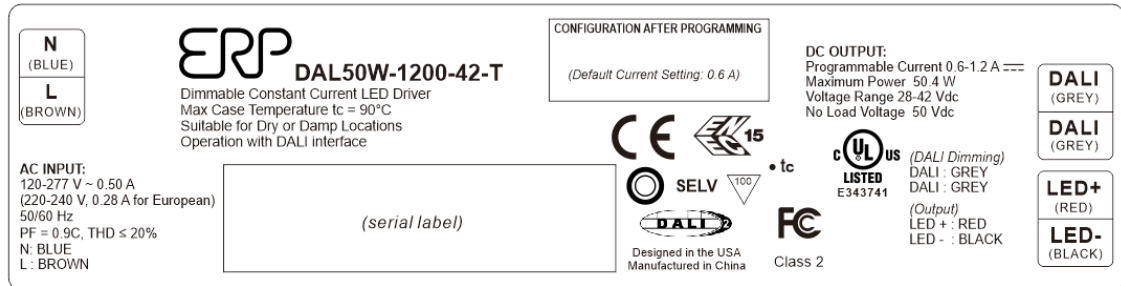
**Summary of compliance with National Differences:****List of countries addressed:**

European Group differences (Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom)

☒ **The product fulfils the requirements of EN 61347-2-13:2014+A1:2017 used in conjunction with EN 61347-1:2015.**

**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.

**Representative**

**Location: attached on the surface of enclosure**

<b>Test item particulars .....</b>	
<b>Classification of installation and use .....</b>	Double-Insulation and used for LED module
<b>Supply Connection.....</b>	Terminal block
<b>Possible test case verdicts:</b>	
- 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)
<b>Testing .....</b>	
<b>Date of receipt of test item .....</b>	2019-06-17 Amendment 1: 2020-03-16
<b>Date (s) of performance of tests .....</b>	2019-06-17 to 2019-08-23 Amendment 1: 2020-03-16 to 2020-03-29
<b>General remarks:</b>	
<p>"(See Enclosure #)" refers to additional information appended to the report.          "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p> <p>Clause numbers between brackets refer to clauses in IEC 61347-1</p>	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC 61347-1:</b>	
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
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies) .....</b>	Energy Recovery Products (Zhuhai) CO., Ltd. Nanping Scientific Tec Industry Park No.8 Pingdong Rd 2, Zhuhai, Guangdong, 519060, China

**General product information:**

Products covered by this report is built-in, double insulated LED driver with lead wire for input and output. It has the DALI dimming function that adjust the output current by DALI, the max. output current do not more than the limit in the model list, the DALI circuit have evaluated that isolated with output circuit.

These model are similar with the original model DAL50W-1200-42-T, they have same construction, electronic circuit and PCB-Layout except parameters of output and some components. Model DAL50W-1200-42-T was selected as the test model due to it have the Max. power and output current. Model DAL50W-0850-56-T was selected to do party test due to it have the Max. output voltage.

The models are denoted by the following nomenclature:

Model: DALPPW-XXXX-VV-T-YYYYY-ZZZZZ

1. "PP" – Denotes output power (Pout) rating code. PP"– If  $P_{out} \leq 10W$ , "PP"=10; if  $10W < P_{out} \leq 20W$ , "PP"=20; if  $20W < P_{out} \leq 30W$ , "PP"=30; if  $30W < P_{out} \leq 40W$ , "PP"=40; if  $40W < P_{out} \leq 50.4W$ , "PP"=50.
2. "XXXX" – Denotes regulated output current. Regulated output current is not greater than Max. output regulated current within the output current range.
3. "VV" – Denotes Maximum output voltage, it may be "08-56" Vdc.
4. "-YYYYY"-Denotes customer code for market purpose only. It could be blank, 2 - 5 digits, any combination of alphanumeric characters or blank;
5. "-ZZZZZ" - Denotes customer code for market purpose only. It could be blank, 2- 5 digits, any combination of alphanumeric characters or blank.

Model List:

Models	programmable Max. current (mA)	Max output Voltage (V dc)	Max. no load Voltage (V dc)	Max. output power (W)
DAL10W-XXXX-VV-T-YYYYY-ZZZZZ	100-1200	56	60	10
DAL20W-XXXX-VV-T-YYYYY-ZZZZZ	100-1200	56	60	20
DAL30W-XXXX-VV-T-YYYYY-ZZZZZ	100-1200	56	60	30
DAL40W-XXXX-VV-T-YYYYY-ZZZZZ	100-1200	56	60	40
DAL50W-XXXX-VV-T-YYYYY-ZZZZZ	100-1200	56	60	50.4

**Original CB test report dated 2019-09-10, Amendment No. 1: 2020-03-29.**

**Amendment 1 Report: (Technical Amendment)**

The Original test Report Ref. No. 4789057363.1.1, dated 2019-09-10 was modified on 2020-03-29 to include the following changes and /or additions:

**Update Model/Type reference and add Model nomenclature for Series model DALPPW-XXXX-VV-T-YYYYY-ZZZZ, the series are similar as DAL50W-1200-42-T except the parameters of output and some components. In addition to update Ratings and add Marking Plate.**

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
<b>4 (4)</b>	<b>GENERAL REQUIREMENTS</b>		<b>P</b>
- (4)	<u>Insulation materials</u> for double or reinforced insulation according requirements in Annex N of IEC 61347-1	(see Annex N)	P
- (4)	Compliance of <u>independent controlgear enclosure</u> with IEC 60 598-1		N/A
- (4)	<u>Built-in electronic controlgear</u> with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	P
4 (4)	<u>SELV controlgear</u> comply with Annex I of this part 2 and Annex L of IEC 61347-1	(see Annex L)	P
4 (-)	Transformer comply with IEC 61558		P
	Dielectric strength test of insulated winding wires is limited to 3 kV if input voltage $\leq 300$ V		P

<b>6 (6)</b>	<b>CLASSIFICATION</b>		<b>P</b>
	Built-in controlgear .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Independent controlgear .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Integral controlgear .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
6 (-)	Auto-wound controlgear .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Separating controlgear .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Isolating controlgear .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	SELV controlgear .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—

<b>7 (7)</b>	<b>MARKING</b>		<b>P</b>
<b>7.1 (7.1)</b>	<b>Mandatory markings</b>		<b>P</b>
	a) mark of origin		P
	b) model number or type reference		P
	c) symbol for independent controlgear, if applicable		N/A
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)		P
	supply frequency (Hz)		P
	supply current (A)		P
	f) earthing symbol		N/A



IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	k) wiring diagram		P
	l) value of $t_c$		P
	m) symbol for declared temperature		P
	t) LUM earthing symbol		N/A
	u) if not SELV maximum working voltage $U_{out}$ between:		N/A
	- output terminals (V) .....		N/A
	- output terminals and earth (V) .....		N/A
7.1 (-)	Constant voltage type:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	- rated output power $P_{rated}$ (W) .....		N/A
	- rated output voltage $U_{rated}$ (V) .....		N/A
	Constant current type:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	- rated output power $P_{rated}$ (W) .....	Refer to label and model list	P
	- rated output current $I_{rated}$ (A) .....	Refer to label and model list	P
	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
<b>7.2 (7.1)</b>	<b>Information to be provided, if applicable</b>		<b>P</b>
	h) declaration of protection against accidental contact		P
	i) cross-section of conductors (mm <sup>2</sup> )		P
	j) number, type and wattage of lamp(s)		P
	s) SELV symbol		P
7.2 (-)	- declaration of mains connected windings		N/A

<b>8 (10)</b>	<b>PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS</b>		<b>P</b>
- (10.1)	Controlgear protected against accidental contact with live parts		P
- (A2)	Voltage measured with 50 k $\Omega$	(see Annex A)	P
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impedance device	(see Annex A)	P
- (10.1)	Lacquer or enamel not used for protection or insulation		N/A
	Adequate mechanical strength on parts providing protection		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
- (10.2)	Capacitors > 0,5 $\mu$ F: voltage after 1 min (V): < 50 V .....	0.152 $\mu$ F	N/A
- (10.3)	<b>Controlgear providing SELV</b>		<b>P</b>
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		P
	No connection between output circuit and the body or protective earthing circuit		P
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		P
	SELV outputs separated by at least basic insulation		P
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1	(see Annex L)	P
- (10.4)	<b>Accessible conductive parts in SELV circuits</b>		<b>P</b>
	Output voltage under load $\leq 25$ V r.m.s. or $\leq 60$ V d.c.		P
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output $\leq 35$ V peak or $\leq 60$ 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		P
	Y1 or Y2 capacitors comply with IEC 60384-14		P
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A

<b>9 (8)</b>	<b>TERMINALS</b>		<b>P</b>
- (8.1)	<b>Integral terminals</b>		<b>P</b>
	Screw terminals according section 14 of IEC 60598-1:		<b>N/A</b>
	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:		<b>P</b>
	Separately approved; component list	(see Annex 1)	P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Part of the controlgear	(see Annex 3)	N/A
- (8.2)	<b>Terminals other than integral terminals</b>		N/A
	Comply with relevant IEC standard	(see Annex 1)	N/A
	Suit the conditions		N/A
	Satisfy additional relevant requirements of this standard		N/A

<b>10 (9)</b>	<b>PROVISION FOR PROTECTIVE EARTHING</b>		N/A
- (9.1)	<b>Provisions for protective earthing</b>		N/A
	Terminal complying with clause 8		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
	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)	<b>Provision for functional earthing</b>		N/A
	Comply with clause 8 and 9.1		N/A
	Functional earth insulated from live parts by double or reinforced insulation		N/A
- (9.3)	<b>Lamp controlgear with conductors for protective earthing by tracks on printed circuit board</b>		N/A
	Test with a current of 25 A between earthing terminal or earthing contact and each of the accessible metal parts; measured resistance ( $\Omega$ ) at $\geq 10$ A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$ .....		N/A
- (9.4)	<b>Earthing of built-in lamp controlgear</b>		N/A
	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)	<b>Earthing via independent controlgear</b>		N/A
- (9.5.1)	Earth connection to other equipment		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Looping or through connection, conductor min. 1,5 mm <sup>2</sup> and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7 of IEC 60598-1		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 ( $\Omega$ ) between earthing terminal or earthing contact and each of the accessible metal parts at $\geq 10$ 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

<b>11 (11)</b>	<b>MOISTURE RESISTANCE AND INSULATION</b>		<b>P</b>
- (11)	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance:		P
	For basic insulation $\geq 2 \text{ M}\Omega$ ..... :	$>2.6 \text{ M}\Omega$	P
	For double or reinforced insulation $\geq 4 \text{ M}\Omega$ ..... :	$>5.2 \text{ M}\Omega$	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P

<b>12 (12)</b>	<b>ELECTRIC STRENGTH</b>		<b>P</b>
- (12)	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		P
	Working voltage $\leq 50 \text{ V}$ , test voltage 500 V		N/A
	Working voltage $> 50 \text{ V} \leq 1000 \text{ V}$ , test voltage (V):		P
	Basic insulation, $2U + 1000 \text{ V}$	1480 V	P
	Supplementary insulation, $2U + 1000 \text{ V}$		N/A
	Double or reinforced insulation, $4U + 2000 \text{ V}$	2960 V	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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
<b>14 (14)</b>	<b>FAULT CONDITIONS</b>		<b>P</b>
- (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		P
	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
14 (-)	Reversed voltage polarity if d.c. supplied control gear	(see appended table)	N/A
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance $\geq 1 \text{ M}\Omega$ ..... : $>1.3 \text{ M}\Omega$		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		P
<b>15 (-)</b>	<b>TRANSFORMER HEATING</b>		<b>P</b>
<b>15.1</b>	<b>General</b>		<b>P</b>
	Transformer comply with clause L.6 and L.7 of IEC 61347-1		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Output voltage of SELV controlgear not exceed limits in 10.4 of IEC 61347-1 during the test of 15.1 and 15.2		P
<b>15.2 (-)</b>	<b>Normal operation</b>		<b>P</b>
	Comply with clause L.6 of IEC 61347-1		P
<b>15.3 (-)</b>	<b>Abnormal operation</b>		<b>P</b>
	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		N/A
	Double LED modules or equivalent load connected in serial to the output terminals of constant current type		P
<b>15 (-)</b>	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		<b>P</b>

<b>16 (15)</b>	<b>CONSTRUCTION</b>		<b>P</b>
<b>- (15.1)</b>	<b>Wood, cotton, silk, paper and similar fibrous material</b>		<b>P</b>
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
<b>- (15.2)</b>	<b>Printed circuits</b>		<b>N/A</b>
	Printed circuits used as internal connections complies with clause 14		N/A
<b>- (15.3)</b>	<b>Plugs and socket-outlets used in SELV or ELV circuits</b>		<b>N/A</b>
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N/A
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A
	Plugs and socket-outlets for SELV $\leq 3$ A, $\leq 25$ V r.m.s. or $\leq 60$ V d.c. and $\leq 72$ 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
<b>- (15.4)</b>	<b>Insulation between circuits and accessible parts</b>		<b>P</b>

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
- (15.4.2)	SELV circuits		P
	Source used to supply SELV circuits:		P
	- 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		P
	- another source		N/A
	Voltage in the circuit not higher than ELV		P
	SELV circuits insulated from LV by double or reinforced insulation		P
	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
	SELV circuits insulated from other SELV circuits by basic insulation		P
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		P
- (15.4.3)	FELV circuits		N/A
	Source used to supply FELV circuits:		N/A
	- separating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- separating controlgear providing basic insulation between input and output circuits in accordance with relevant part 2 of IEC 61347		N/A
	- another source		N/A
	- source in circuits separated by the LV supply by basic insulation		N/A
	Voltage in the circuit not higher than ELV		N/A
	FELV circuits insulated from LV supply by at least basic insulation		N/A
	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		N/A
	Plugs and socket-outlets for FELV system comply with:		N/A
	- plugs not able to enter socket-outlets of other voltage systems		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- socket-outlets not admit plugs of other voltage systems		N/A
	- socket-outlets have a protective conductor contact		N/A
- (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		N/A
	Accessible conductive parts insulated from active parts of electric circuits by insulating according Table 6		N/A
	Requirements for Class II construction with equipotential bonding for protection against indirect contact with live parts:		N/A
	- all conductive parts are connected together		N/A
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		N/A
	- conductive parts comply with requirements of Annex A in case of insulation fault		N/A

<b>17 (16)</b>	<b>CREEPAGE DISTANCES AND CLEARANCES</b>		<b>P</b>
<b>- (16.1)</b>	<b>General</b>		<b>P</b>
	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L		P
	Insulating lining of metallic enclosures		P
	Controlgear protected against pollution comply with Annex P	(see Annex P)	N/A
<b>- (16.2)</b>	<b>Creepage distances</b>		<b>P</b>
- (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
<b>- (16.3)</b>	<b>Clearances</b>		<b>P</b>
- (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



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Clause	Requirement + Test	Result - Remark	Verdict
	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

<b>18 (17)</b>	<b>SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS</b>		<b>P</b>
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
<b>(4.11)</b>	<b>Electrical connections</b>		<b>P</b>
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		N/A
	- self-tapping screws		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		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N/A
<b>(4.12)</b>	<b>Mechanical connections and glands</b>		<b>N/A</b>
(4.12.1)	Screws not made of soft metal		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) .....		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

<b>19 (18)</b>	<b>RESISTANCE TO HEAT, FIRE AND TRACKING</b>		<b>P</b>
- (18.1)	Ball-pressure test .....	See Test Table 19 (18.1)	P

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Clause	Requirement + Test	Result - Remark	Verdict
- (18.2)	Test of printed boards .....	See Test Table 19 (18.2)	N/A
- (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)	N/A

<b>20 (19)</b>	<b>RESISTANCE TO CORROSION</b>		N/A
	- test according 4.18.1 of IEC 60598-1		N/A
	- adequate varnish on the outer surface		N/A

<b>21 (-)</b>	<b>MAXIMUM WORKING VOLTAGE (<math>U_{out}</math>) IN ANY LOAD CONDITION</b>		N/A
	Not exceed declared maximum working voltage $U_{out}$ in any load condition		N/A

<b>14</b>	<b>TABLE: tests of fault conditions</b>		<b>P</b>
Part	Simulated fault		Hazard
V+; V-	Short circuit; the unit shut down, recoverable , no damage		NO
D+; D-	Short circuit; the unit work as normal, recoverable , no damage		NO
D88 (pin 1 to pin 2)	Short circuit; the unit work as normal, recoverable , no damage		NO
D43 (D to G)	Short circuit; the unit work as normal, recoverable , no damage		NO
Q44 (e to b)	Short circuit; the unit work as normal, recoverable , no damage		NO
D9	Short circuit; the unit shut down, recoverable , no damage		NO
D12	Short circuit; the unit work as normal, recoverable , no damage		NO
C36	Short circuit; the unit shut down, recoverable , no damage		NO
Q16 (e to b)	Short circuit; the unit shut down, recoverable , no damage		NO
D41	Short circuit; the unit work as normal, recoverable , no damage		NO
Q1 (d to g)	Short circuit; Q1 was broken, unrecoverable, no damage.		NO
C22	Short circuit; the unit shut down, recoverable , no damage		NO
C14	Short circuit; C9 was broken, unrecoverable, no damage.		NO
D18	Short circuit; the unit shut down, recoverable , no damage		NO
D81	Short circuit; the unit work as normal, recoverable , no damage		NO
D23	Short circuit; C9 was broken, unrecoverable, no damage.		NO
D3	Short circuit; Fuse open, unrecoverable, no damage.		NO

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Clause	Requirement + Test	Result - Remark	Verdict
D3	Open circuit; the unit shut down, recoverable, no damage.		NO
C2	Short circuit; Fuse open, unrecoverable, no damage.		NO
MV1	Short circuit; Fuse open, unrecoverable, no damage.		NO

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Clause	Requirement + Test	Result - Remark	Verdict

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	4.39	1.5	9	4.39	2.5	7	
Working voltage (V) .....					220 - 240		—	
Frequency if applicable (kHz) .....					50/60 Hz		—	
PTI .....					< 600 ☒ ≥ 600 ☐		—	
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....					—		—	
Pulse voltage if applicable (kV) .....					—		—	
Supplementary information: Between L and N of trace in PWB.								
Distance 2:	R	> 3.9	3	9	> 6.5	5	7	
Working voltage (V) .....					220-240		—	
Frequency if applicable (kHz) .....					50/60 Hz		—	
PTI .....					< 600 ☒ ≥ 600 ☐		—	
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....					—		—	
Pulse voltage if applicable (kV) .....					—		—	
Supplementary information: Live part in PWB to metal enclosure and accessible part								
Distance 3:	B	2.5	1.5	9	> 3.25	2.5	7	
Working voltage (V) .....					220 - 240		—	
Frequency if applicable (kHz) .....					50/60 Hz		—	
PTI .....					< 600 ☒ ≥ 600 ☐		—	
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....					—		—	
Pulse voltage if applicable (kV) .....					—		—	
Supplementary information: Between SELV output and dimming circuit								
Distance 4:	R	5	4.67	13@	5	5	13@	
Working voltage (V) .....					220 - 240		—	
Frequency if applicable (kHz) .....					50/60 Hz		—	
PTI .....					< 600 ☒ ≥ 600 ☐		—	
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....					—		—	
Pulse voltage if applicable (kV) .....					—		—	

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information: Between primary circuit to output circuit and dimming circuit  
@ according to the IEC61558-1:2005 cl.26, table 13.

\*\* 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)	
Plastic cover	See Annex 1	106	1.37	
Bobbin of transformer	See Annex 1	128	0.96	
Material of terminal block	See Annex 1	125	1.79	
PWB	See Annex 1	125	0.99	
Supplementary information:--				

<b>19 (18.2)</b>	<b>TABLE: Test of printed boards</b>				<b>N/A</b>
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
—	—	—	—	—	—
Supplementary information: —					

<b>19 (18.3)</b>	<b>TABLE: Glow-wire test</b>			<b>P</b>
<b>Glow wire temperature.....</b>		<b>650°C</b>	<b>—</b>	
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
<b>Plastic Cover</b>	<b>See Annex 1</b>	<b>No</b>	<b>0</b>	<b>P</b>
Supplementary information: —				

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Clause	Requirement + Test			Result - Remark	Verdict
<b>19 (18.4)</b>	<b>TABLE: Needle-flame test</b>				<b>P</b>
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
<b>Bobbin of transformer</b>	<b>See Annex 1</b>	<b>10</b>	<b>No</b>	<b>0</b>	<b>P</b>
<b>Terminal block</b>	<b>See Annex 1</b>	<b>10</b>	<b>No</b>	<b>0</b>	<b>P</b>
Supplementary information: —					

19 (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: —						

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Clause	Requirement + Test	Result - Remark	Verdict

<b>(A)</b>	<b>ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK</b>		<b>P</b>
(A.1)	Comply with A.2 or A.3		P
(A.2)	Voltage $\leq 35$ V peak or $\leq 60$ V d.c. .... :	Max. 50.5 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. .... :		N/A
	Comply with Annex G.2 of IEC 60598-1		N/A

<b>(C)</b>	<b>ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING</b>		<b>P</b>
<b>(C3)</b>	<b>GENERAL REQUIREMENTS</b>		<b>P</b>
(C3.1)	Thermal protection means integral with the convertor, protected against mechanical damage		P
	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		P
	Electrical controls comply with IEC 60730-2-3		N/A
(C3.2)	No risk of fire by breaking (clause C7)		P
<b>(C5)</b>	<b>CLASSIFICATION</b>		<b>P</b>
	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 .. :	Circuit protection	—
<b>(C6)</b>	<b>MARKING</b>		<b>P</b>
(C6.1)	Symbol for temperature declared thermally protected ballasts		P
(C6.2)	Declaration of the type of protection provided		P
<b>(C7)</b>	<b>LIMITATION OF HEATING</b>		<b>P</b>
<b>(C7.1)</b>	<b>Preselection test:</b>		<b>P</b>
	Test sample placed for at least 12 h in an oven having temperature ( $t_c - 5$ ) K		P

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Clause	Requirement + Test	Result - Remark	Verdict
	No operation of the protection device		P
<b>(C7.2)</b>	<b>Functioning of protection means:</b>		<b>P</b>
	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		P
	No operation of the protection device		P
	Introducing of the most onerous test condition determined during test of clause 14.2 to 14.5		P
	Output of windings connected to the mains supply short-circuited, and other part of the controlgear operated under normal conditions		P
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		P
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved		P
	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		P
	Any overshoot of 10% over the marked value within 15 min		N/A
	After 15 min value not exceed marked value		N/A

<b>(D)</b>	<b>ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR</b>		<b>P</b>
	Tests in C7 performed in accordance with Annex D, if applicable		P

<b>(F)</b>	<b>ANNEX F – DRAUGHT-PROOF ENCLOSURE</b>		<b>P</b>
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		N/A



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Clause	Requirement + Test	Result - Remark	Verdict

(H)	<b>ANNEX H - TESTS</b>		P
	All tests performed in accordance with the advice given in Annex H, if applicable		P

I (L)	<b>ANNEX I IN THIS PART 2 – PARTICULAR ADDITIONAL REQUIREMENTS FOR SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEARS FOR LED MODULES</b>		P
(L.3)	<b>Classification</b>		P
	Class I	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Class II	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Class III	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	non-inherently short circuit proof controlgear	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	inherently short circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	fail safe controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	non-short-circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
(L.4)	<b>Marking</b>		P
	Adequate symbols are used		P
(L.5)	<b>Protection against electric shock</b>		P
	Comply with clause 9.2 of IEC 61558-1		P
(L.6)	<b>Heating</b>		P
	No excessive temperatures in normal use		P
	Value if capacitor $t_c$ marked .....	105	—
	Winding insulation classified as Class .....	130	—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		P
(L.7)	<b>Short-circuit and overload protection</b>		P
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		P
(L.8)	<b>Insulation resistance and electric strength</b>		P
(L.8.1)	Conditioned 48 h between 91 % and 95 %		P
(L.8.2)	Insulation resistance		P
	Between input- and output circuits not less than 5 M $\Omega$ .....	>6.5	P

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Clause	Requirement + Test	Result - Remark	Verdict
	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 .....	>6.5	P
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ .....	>2.6	P
(L.8.3)	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits .....	3750 V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity .....	1875 V	P
	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 .....	3750 V	P
(L.9)	<b>Construction</b>		<b>P</b>
(L.9.1)	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		P
	HF transformer comply with 19 of IEC 61558-2-16		P
(L.10)	<b>Components</b>		<b>P</b>
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		P
(L.11)	<b>Creepage distances, clearances and distances through insulation</b>		<b>P</b>
	Creepage distances and clearances not less than in Clause 16		P
	Distance through insulation according Table L.5 in IEC 61347-1		P
	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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Clause	Requirement + Test	Result - Remark	Verdict
	Measured (mm) .....		N/A
	Supplementary information		—
	3) Reinforced distance through insulation		P
	Required distance (mm) .....	0.25 mm	—
	Measured (mm) .....	0.25 mm thickness	P
	Supplementary information	Insulation sheet	—

<b>J (-)</b>	<b>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</b>		N/A
<b>J.1</b>	<b>General</b>		N/A
	Intended for centralized emergency power supply	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
<b>J.2</b>	<b>Marking</b>		N/A
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 <sub>x</sub> )		N/A
	c) Information if intended for use in luminaires for high-risk task area lighting		N/A
<b>J.3</b>	General notes on tests		N/A
	Length of output cable in tests.....		N/A
	Load instead of LED lamps/modules.....		N/A
<b>J.4</b>	Starting conditions		N/A
	Start rated load in emergency mode without adversely affecting the performance		N/A
<b>J.5</b>	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
<b>J.6</b>	Emergency supply current		N/A
	Emergency supply current not differ more than ±15 %		N/A
	Supply of low impedance and low inductance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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 <sub>x</sub> )		N/A
	Declared emergency output factor (EOF <sub>x</sub> ) achieved during emergency operation		N/A

<b>(N)</b>	<b>ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION</b>		P
<b>(N.4)</b>	<b>General requirements</b>		P
(N.4.1)	Material comply with IEC 60085 and IEC 60216 series		P
<b>(N.4.2)</b>	<b>Solid insulation</b>		P
	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	5625	P
<b>(N.4.3)</b>	<b>Thin sheet insulation</b>		N/A
(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

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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
<b>(O)</b>	<b>ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION</b>		<b>P</b>
<b>(O.6)</b>	<b>Marking</b>		<b>P</b>
	Marking according clause 7 (7)	See clause 7	P
	Special symbol		P
	Meaning of the special symbol explained in catalogue		P
<b>(O.7)</b>	<b>Protection against accidental contact with live parts</b>		<b>P</b>
	Requirements of clause 8 (10)	See clause 8	P
	Test finger not possible to make contact with basic insulated metal parts		P
<b>(O.8)</b>	<b>Terminals</b>		<b>P</b>
	Clause 9 (8)	See clause 9	P
<b>(O.9)</b>	<b>Provision for earthing</b>		<b>N/A</b>
	Functional earthing terminals comply with clause 9 of part 1		N/A
	No protective earthing terminal		N/A
<b>(O.10)</b>	<b>Moisture resistance and insulation</b>		<b>P</b>
	Clause 11 (11)	See clause 11	P
<b>(O.11)</b>	<b>Electric strength</b>		<b>P</b>
	Clause 12 (12)	See clause 12	P
<b>(O.13)</b>	<b>Fault conditions</b>		<b>P</b>
	Clause 14 (14)	See clause 14	P
	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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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		P
<b>(O.14)</b>	<b>Construction</b>		<b>P</b>
	Clause 17 (15)	See clause 17	P
	Accessible metal parts insulated from live parts by double or reinforced insulation		P
	Live part insulated from supporting surface in contact with external faces by double or reinforced insulation		P
<b>(O.15)</b>	<b>Creepage distances and clearances</b>		<b>P</b>
	Clause 18 (16)	See clause 18	P
	Comply with corresponding values for luminaries in IEC 60598-1		P
<b>(O.16)</b>	<b>Screws, current-carrying parts and connections</b>		<b>P</b>
	Clause 19 (17)	See clause 19	P
<b>(O.17)</b>	<b>Resistance to heat and fire</b>		<b>P</b>
	Clause 20 (18)	See clause 20	P
<b>(O.18)</b>	<b>Resistance to corrosion</b>		N/A
	Clause 21 (19)	See clause 21	N/A

<b>(P)</b>	<b>Creepage distances and clearances and distance through isolation (DTI) for lamp controlgear which are protected against pollution by the use of coating or potting</b>		N/A
<b>(P.1)</b>	<b>General</b>		N/A
	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
<b>(P.2)</b>	<b>Creepage distances</b>		N/A
(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		—

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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
<b>(P.3)</b>	<b>Distance through isolation</b>		N/A
(P.3.4)	Electrical tests after conditioning		N/A
(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 <sup>1)</sup>	
Input , output and dimming terminal block	B	Dongguan Changhe Electronic Co.,Ltd.	CS200-00-350	250 V; 3.5 A; rate 0.75 mm <sup>2</sup> ; min. 0.34 mm <sup>2</sup> ; T110	IEC 60998-2-2; IEC 60998-1	VDE 40022503	
Fuse (F1)	B	Cooper Bussmann LLC	SS-5H-Serie(s)	300 Vac; 1.6 A;	IEC 60127-1; IEC 60127-3	VDE 40031800	
Thermistor (RT3)	B	Thinking Electronic Industrial Co., Ltd.	SCK10103MS Y	10 OH 3A	IEC 60738-1-3	TUV RH R50050155	
Thermistor (RT1)	B	Thinking Electronic Industrial Co., Ltd	TSM1A103F39 H1RZ	10k, NTC	IEC 60738-1-3	TUV RH R 50167657	
Varistor (MV1)	B	Thinking Electronic Industrial Co., Ltd	TVR07511-D	Supply voltage: 510 V; Reference current: 1 mA	IEC 61051-1; IEC 61051-2; IEC 61051-2-2	VDE 40021243	
X capacitor (C1)	B	Nistronics (Jiangxi) Co.,Ltd.	MPR	X2, 310 Vac; 0.15 uF; 40/100/21 or 40/110/56	IEC 60384-14;	VDE 40032056	
Y capacitor (C18)	B	JYH HSU (JEC) Electronics Ltd.	JD	Y1, 400 Vac; 2200 pF; 40/125/21	IEC 60384-14	VDE 40038642	
Y Capacitor (C117)	B	Johanson Dielectrics Inc.	502R29W102 KV3E	Y1, 1000pf, 5kV	IEC 60384-14	TUV RH R 50227900	
Optocoupler (IC4,IC12,IC20,IC21,IC24)	B	Lite-on Technology Corporation	LTV-217	U <sub>iorm</sub> : 565 V peak, U <sub>iotm</sub> : 6000 V <sub>peak</sub> ; Creepage distance input - output: ≥ 5mm; Clearance input – output: ≥ 5mm	IEC 60747-5-5	VDE 138213	
Optocoupler (IC27)	B	Lite-on Technology Corporation	LTV-357T	U <sub>iorm</sub> : 565 V peak, U <sub>iotm</sub> : 6000 V <sub>peak</sub> ; Creepage distance input - output: ≥ 5mm; Clearance input – output: ≥ 5mm	IEC 60747-5-5	VDE 138213	



IEC 61347-2-13						
Clause	Requirement + Test			Result - Remark		Verdict
Winding of T1	B	Zhuhai Weihai Wire Co., Ltd.	Xuew-F@/155	MW79-C; 155 °C	IEC 61347-1; IEC 61347-2-13	Tested with appliance and UL E339217
Bobbin of T1	B	Sumitomo Bakelite Co., Ltd.	PM-9820 PM-9630	V-0; 150 °C	IEC 61347-1; IEC 61347-2-13	Tested with appliance and UL E41429
PWB	B	Zhuhai Handa Technology Co., Ltd	HD-1	V-0; 130 °C; 1.5 mm thickness	IEC 61347-1; IEC 61347-2-13	Tested with appliance and UL E353483
Insulation sheet	B	Dupont Teijin Films Co., Ltd.	Mylar A	PET, VTM-2, Min. 0.25 mm thickness, 105°C	IEC 61347-1; IEC 61347-2-13	Tested with appliance and UL E93687
Potting compound	B	Dongguan Zhaoshun Silicone Technology Co., Ltd	ZS-GF	V-0; 150 °C	IEC 61347-1; IEC 61347-2-13	Tested with appliance and UL E329120
<p>Supplementary information:</p> <p><sup>1)</sup> Provided evidence ensures the agreed level of compliance. See OD-CB2039.</p> <p>The codes above have the following meaning:</p> <p>A - The component is replaceable with another one, also certified, with equivalent characteristics</p> <p>B - The component is replaceable if authorised by the test house</p> <p>C - Integrated component tested together with the appliance</p> <p>D - Alternative component</p>						

<b>IEC 61347-2-13</b>			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ANNEX 2</b>	<b>Screw terminals (part of the luminaire)</b>	N/A
<b>(14)</b>	<b>SCREW TERMINALS</b>	N/A

<b>ANNEX 3</b>	<b>Screwless terminals (part of the luminaire)</b>	N/A
<b>(15)</b>	<b>SCREWLESS TERMINALS</b>	N/A

European Group differences and national differences-ATTACHMENT 1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT IEC 61347-2-13</b> <b>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b> Part 2: Particular requirements Section Thirteen – d.c. or a.c. supplied electronic controlgear for LED modules	
<b>Differences according to.....:</b>	EN 61347-2-13:2014+A1:2017 used in conjunction with EN 61347-1:2015
<b>Attachment Form No.....:</b>	-
<b>Attachment Originator .....</b>	-
<b>Master Attachment .....</b>	-
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	<b>CENELEC COMMON MODIFICATIONS (EN)</b>	<b>P</b>
	No Common modifications	<b>P</b>

## Temperature measurements, thermal tests – ATTACHMENT 2

	TABLE: Temperature measurements, thermal tests of Annex L and CL.15		P		
	Type reference.....:	DAL50W-1200-42-T	—		
	Lamp used .....	Electrical loading	—		
	Lamp control gear used .....	-	—		
	Mounting position of luminaire .....	Built-in; LED driver	—		
	Supply wattage (W) .....	61.9 W	—		
	Supply current (A).....:	0.26 A	—		
	Calculated power factor .....	0.99	—		
	Table: measured temperatures corrected for tc = 90 °C:		P		
	- abnormal operating mode.....:	Short-output circuit; overloading	—		
	- test 1: rated voltage .....	240 V	—		
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage .....	240 V x 1.06 = 254.4 V	—		
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....:	—	—		
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage .....	240 V x 1.1 = 264 V	—		
	Through wiring or looping-in wiring loaded by a current of A during the test .....	—	—		
Temperature measurements, (°C)					
Part	Ambient	Clause 12.4 – normal			
		test 1	test 2	test 3	limit
Input terminal block	24.5	—	73.8	—	110
Output terminal block	24.5	—	74.8	—	110
Dimming terminal block	24.5	—	77.7	—	110
Fuse	24.5	—	74.8	—	Ref.
Winding of L5	24.5	—	75.7	—	130
Surface of C1	24.5	—	76.2	—	125
Surface of RT3	24.5	—	78.4	—	85
Surface of MV1	24.5	—	74.0	—	85
Winding of L1	24.5	—	82.9	—	130
Bobbin of L1	24.5	—	81.9	—	Ref.

## Temperature measurements, thermal tests – ATTACHMENT 2

Winding of L3	24.5	—	83.7	—	130
Surface of C14	24.5	—	90.1	—	105
Surface of C22	24.5	—	94.4	—	105
Surface of C18	24.5	—	94.4	—	125
Winding of L2	24.5	—	97.1	—	130
Primary winding of T1	24.5	—	107.7	—	155
Secondary winding of T1	24.5	—	103.4	—	155
Bobbin of T1	24.5	—	102.7	—	155
Surface of C36	24.5	—	89.1	—	125
PWB near the T1	24.5	—	97.7	—	130
Surface of insulated sheet over the T1	24.5	—	91.6	—	105
Internal wire	24.5	—	87.0	—	130
Surface of PWB of reaction	24.5	—	81.6	—	130
Case LOC 1 - Tc showed on the label	24.5	73.2	73.0	—	90
Case LOC 2 – surface of enclosure at side over the transformer	24.5	84.3	84.2	—	90
Case LOC 3 - surface of enclosure at bottom over the transformer	24.5	89.2	89.2	—	90
Case LOC 4 - surface of enclosure at top over the transformer	24.5	73.1	72.8	—	90
Inner surface of plastic cover	24.5	—	80.6	—	105
Oven Ambient	24.5	36.6	36.9	—	—

Supplementary information: Built-in LED driver, the test will be conducted at Tc.

Part	Ambient	Clause 12.5 – abnormal			
		test 4			limit
		*Output short circuit @ 200 cm	*Double loading	Overloads	
Input terminal block	24.2	50.5	59.8	59.9	—
Output terminal block	24.2	51.7	68.9	61.3	—
Dimming terminal block	24.2	52.8	69.1	63.2	—
Fuse	24.2	51.4	61.3	60.7	—
Winding of L5	24.2	51.6	61.5	60.9	175

## Temperature measurements, thermal tests – ATTACHMENT 2

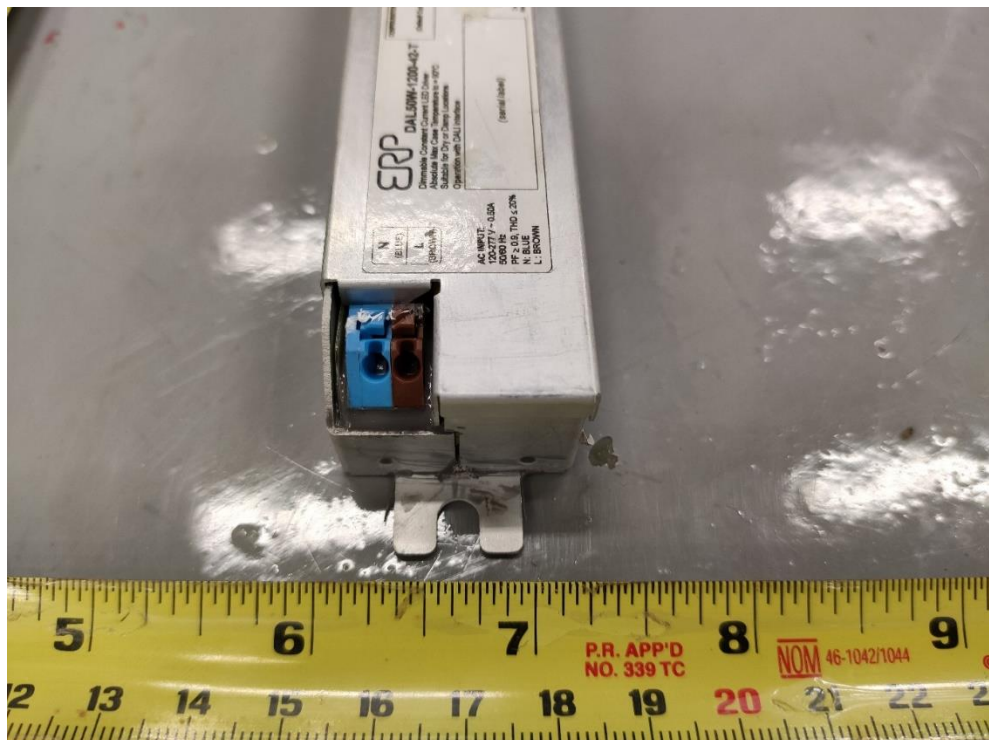
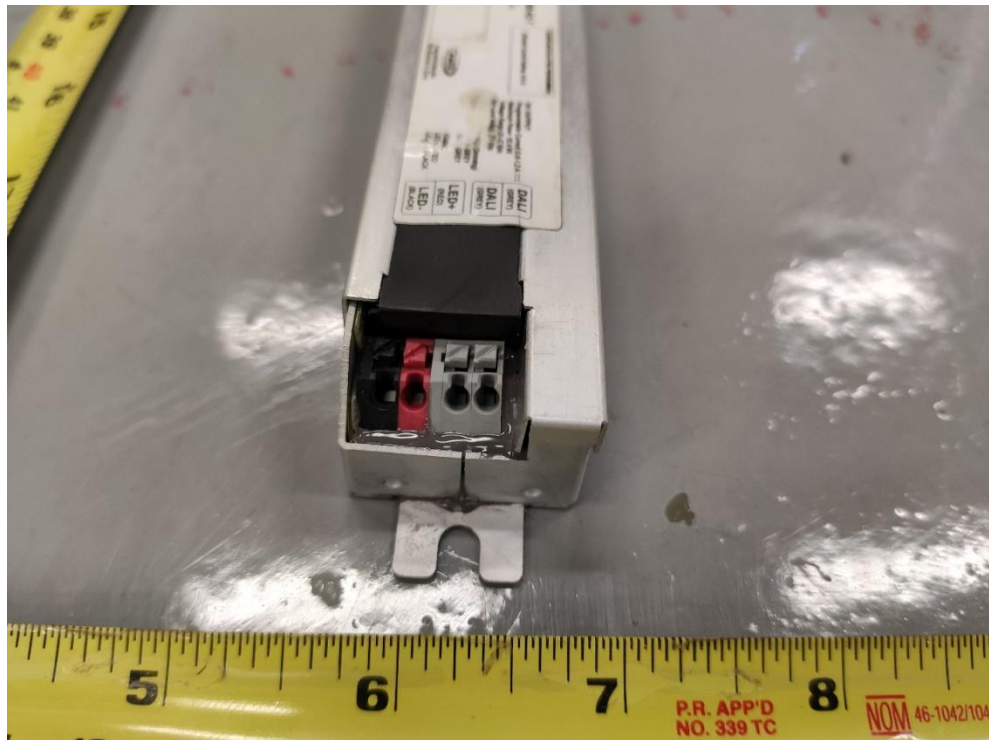
Surface of C1	24.2	51.6	61.5	61.2	135
Surface of RT3	24.2	52.9	62.8	62.8	95
Surface of MV1	24.2	50.9	60.7	59.8	95
Winding of L1	24.2	53.9	65.2	65.1	175
Bobbin of L1	24.2	53.7	65.4	64.7	—
Winding of L3	24.2	54.7	66.9	65.9	175
Surface of C14	24.2	57.6	71.2	69.9	115
Surface of C22	24.2	60.7	71.9	72.8	115
Surface of C18	24.2	59.7	71.8	71.8	135
Winding of L2	24.2	58.7	70.7	72.5	175
Primary winding of T1	24.2	65.2	78.5	80.0	195
Secondary winding of T1	24.2	63.7	79.5	78.6	195
Bobbin of T1	24.2	63.5	78.6	77.1	—
Surface of C36	24.2	57.1	79.2	70.9	135
PWB near the T1	24.2	67.9	77.9	76.1	—
Surface of insulated sheet over the T1	24.2	58.7	71.7	70.1	—
Internal wire	24.2	58.3	72.8	69.0	—
Surface of PWB of reaction	24.2	54.3	68.9	64.6	—
Case LOC 1 - Tc showed on the label	24.2	50.9	61.7	59.5	100
Case LOC 2 – surface of enclosure at side over the transformer	24.2	56.9	72.0	67.8	100
Case LOC 3 - surface of enclosure at bottom over the transformer	24.2	59.7	76.5	71.4	100
Case LOC 4 - surface of enclosure at top over the transformer	24.2	50.7	61.6	59.3	100
Inner surface of plastic cover	24.2	53.9	66.9	63.8	—
Oven Ambient	24.2	36.0	35.3	36.0	—
Supplementary information: --					

## Product photos – ATTACHMENT 3



Overall view for all model  
(The picture show Model: DAL50W-1200-42-T as the example)

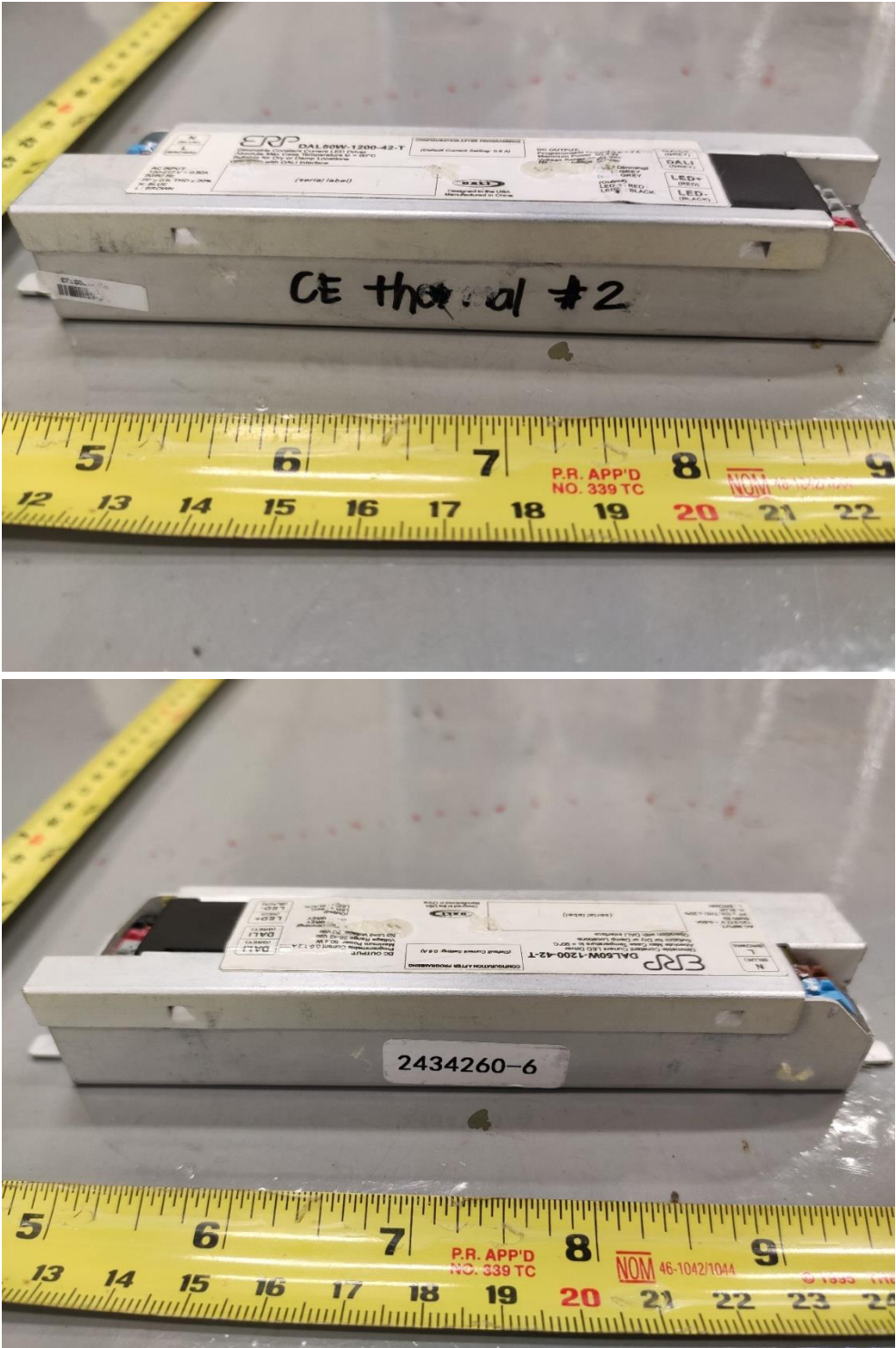
## Product photos – ATTACHMENT 3



Detail view of input and output terminal block for all models

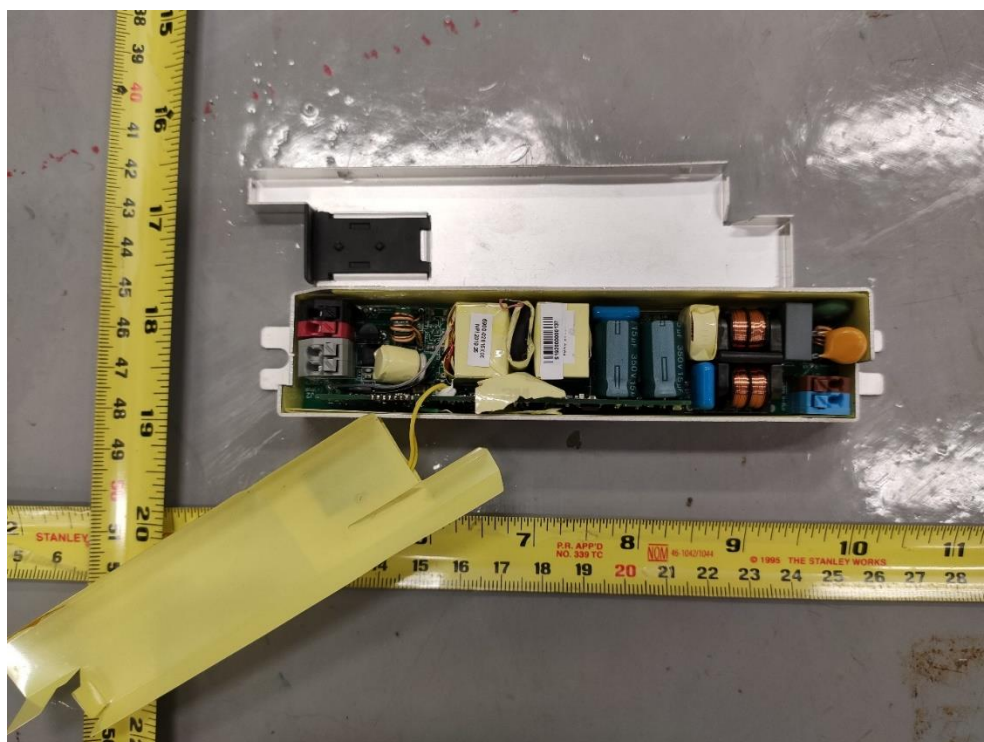


## Product photos – ATTACHMENT 3



## Over view of side for all models

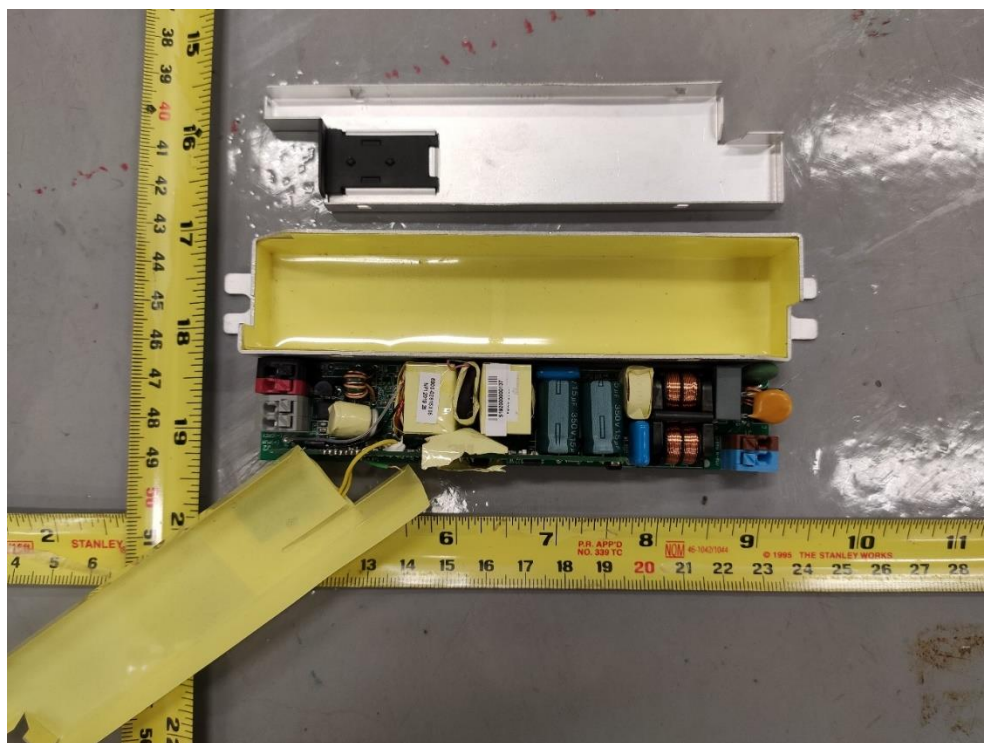
Product photos – ATTACHMENT 3



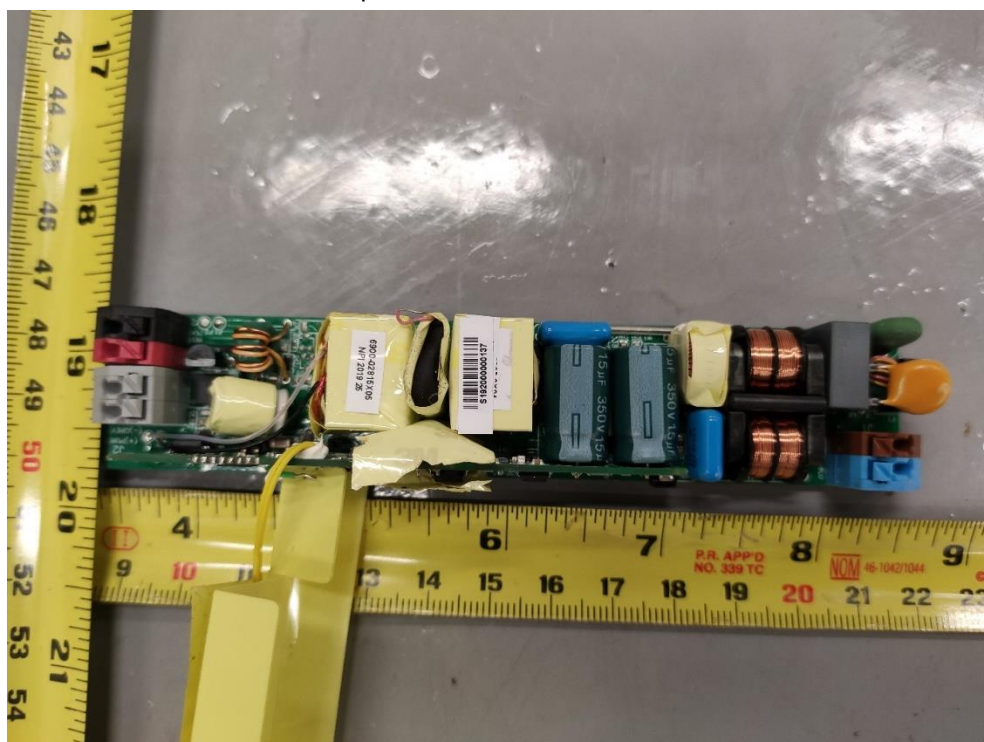
Exploded view for all models



Product photos – ATTACHMENT 3

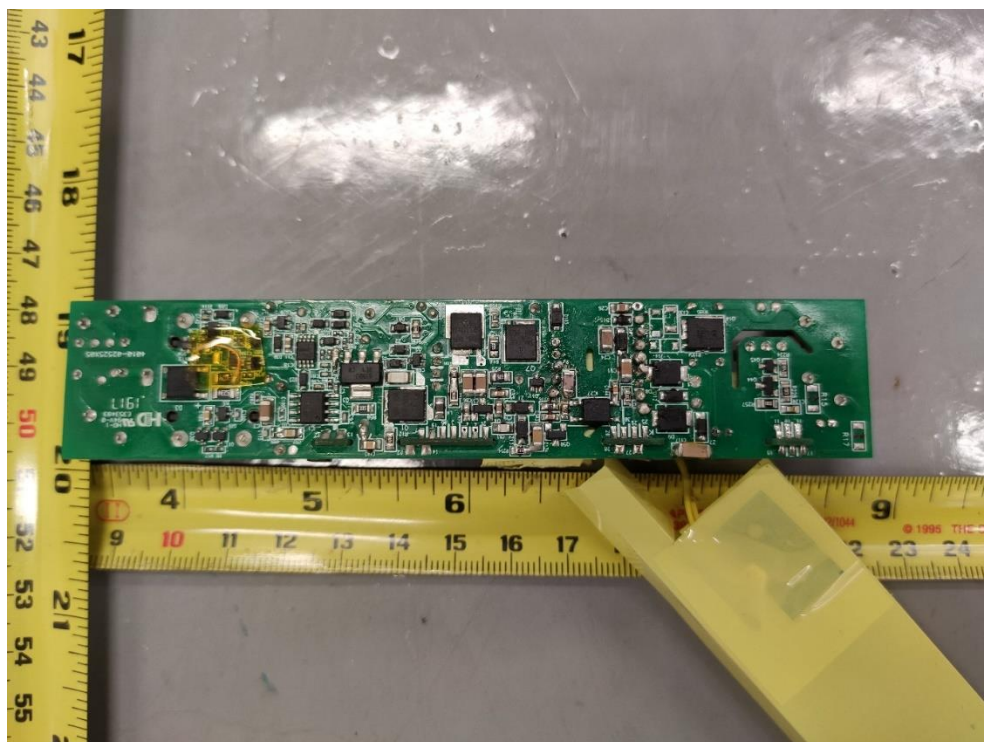


Exploded view for all models



Overall view of PCB for all models

Product photos – ATTACHMENT 3



Overall view of PWB for all models

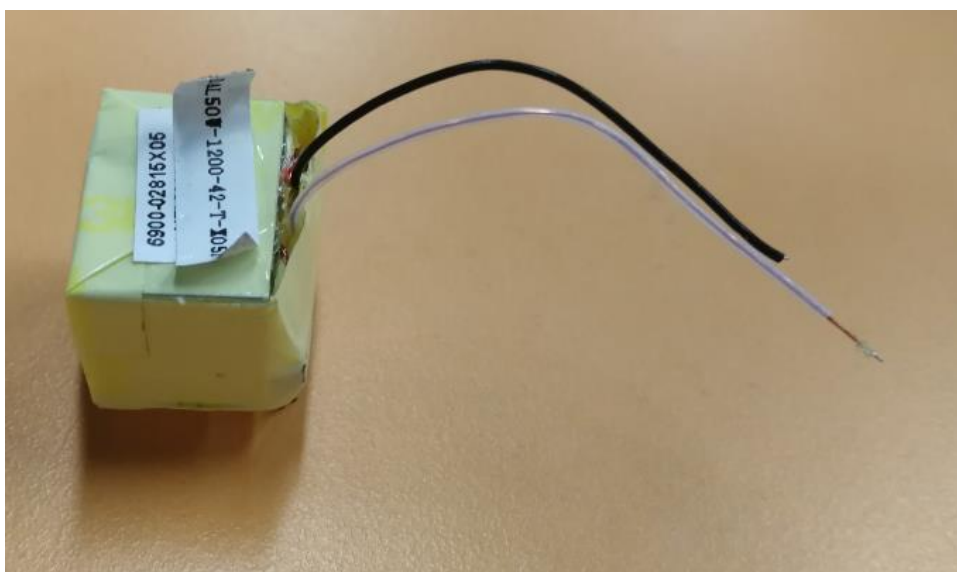


Detail view of dali PWB for all models

Product photos – ATTACHMENT 3



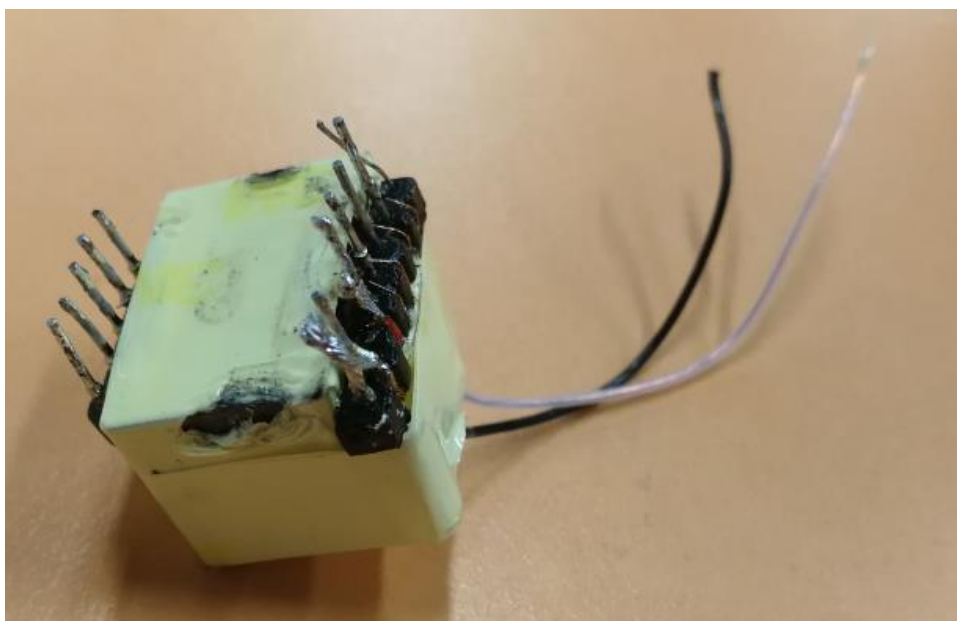
Detail view of Dali PWB for all models



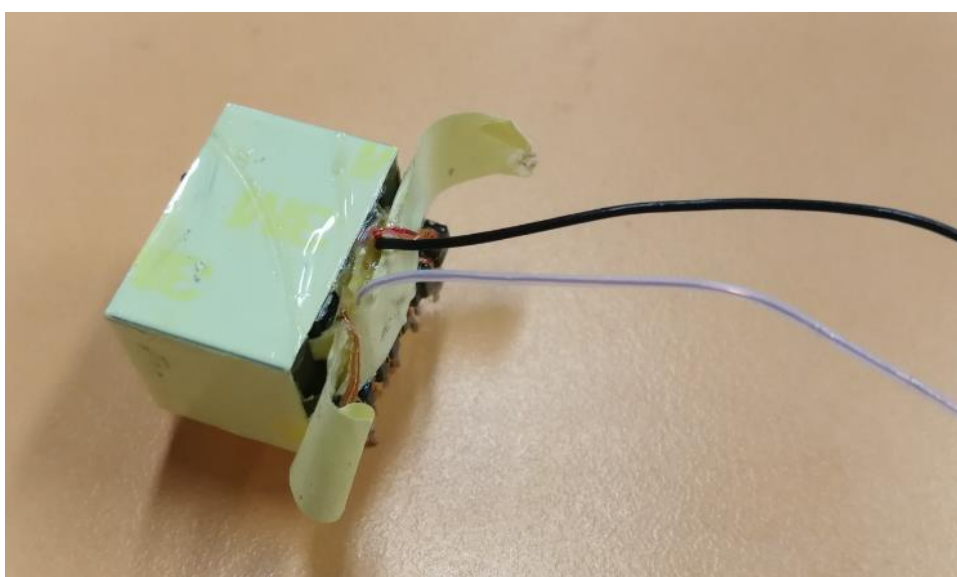
Overall view of Transformer



Product photos – ATTACHMENT 3



Overall view of Transformer

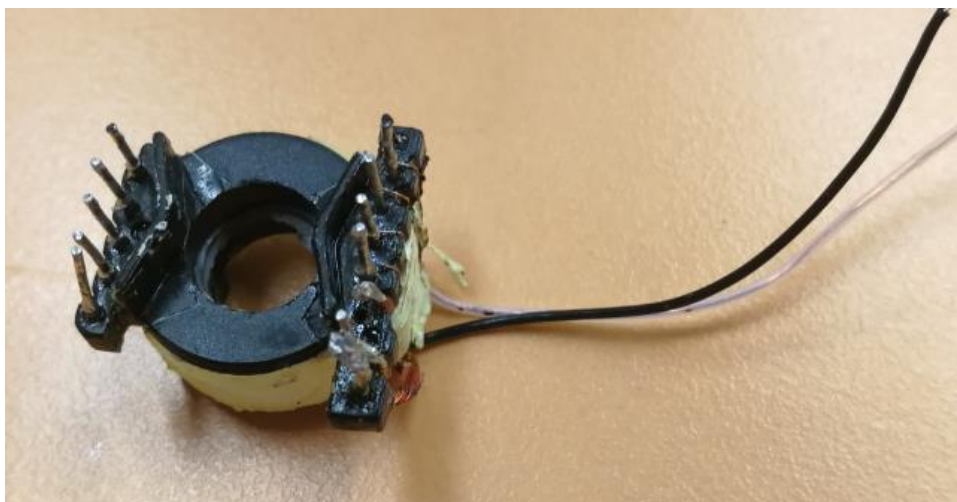


Overall view of Transformer

Product photos – ATTACHMENT 3

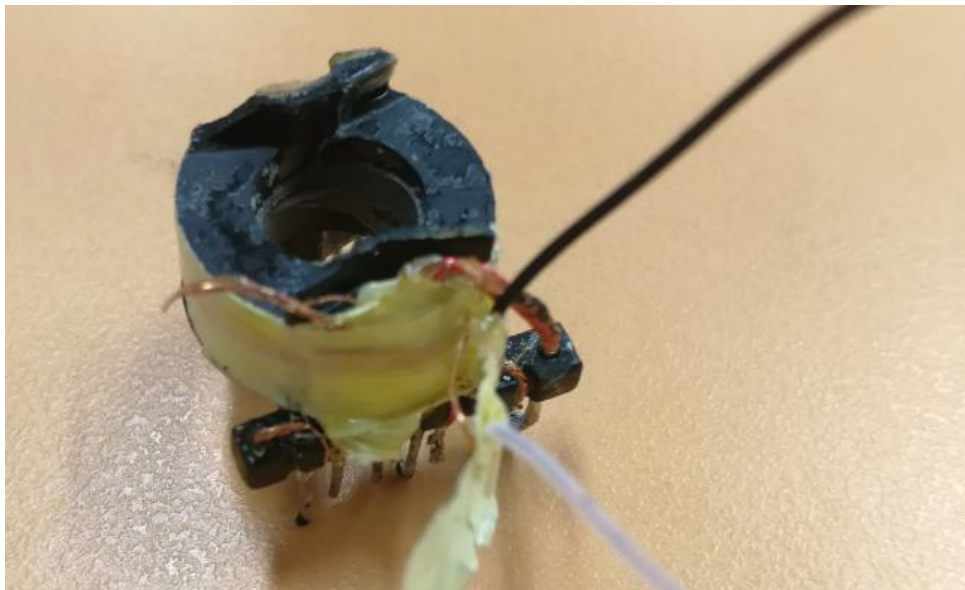


Exploded view of transformer

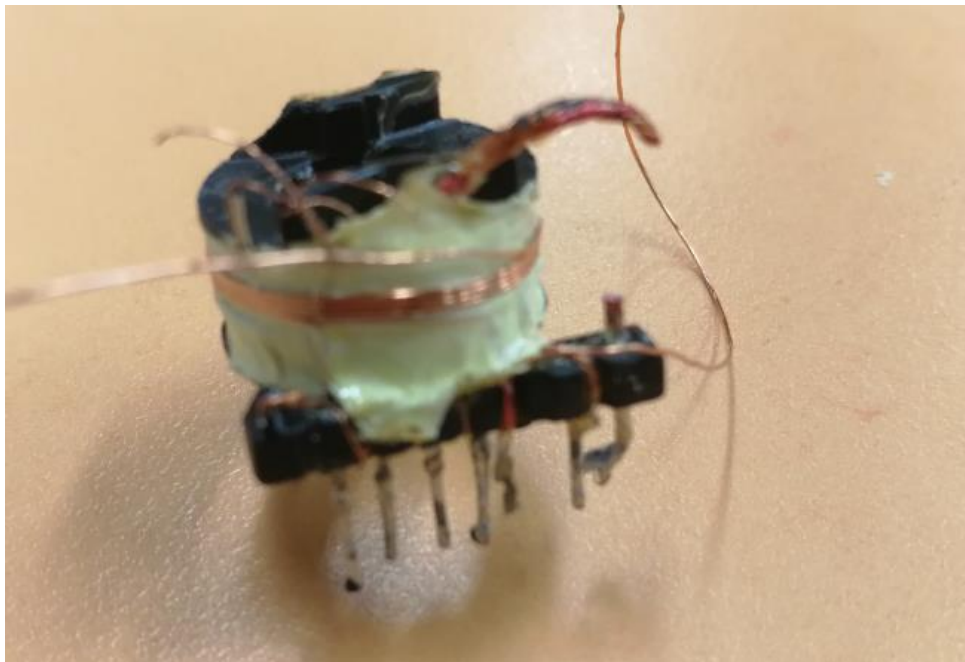


Overall view of Transformer

Product photos – ATTACHMENT 3



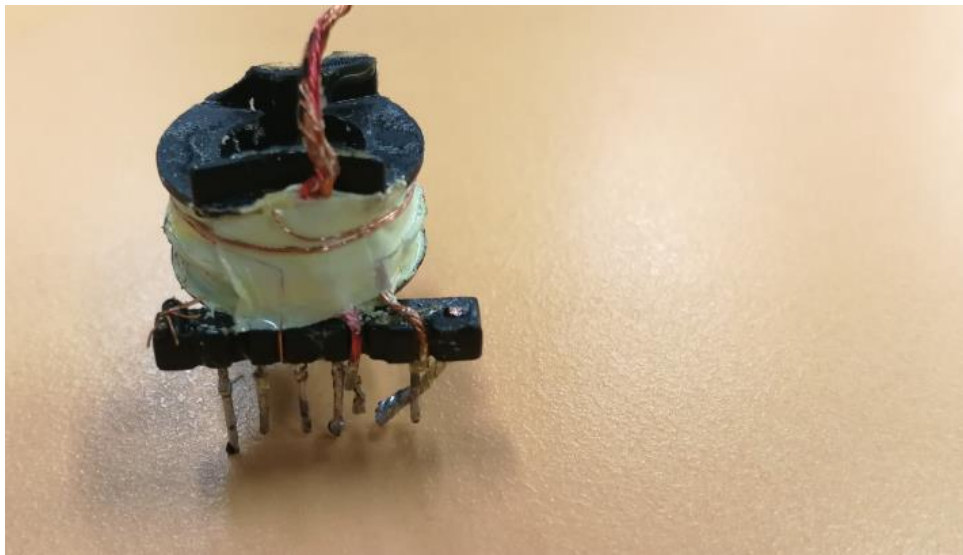
Overall view of secondary winding



Overall view of secondary winding



Product photos – ATTACHMENT 3

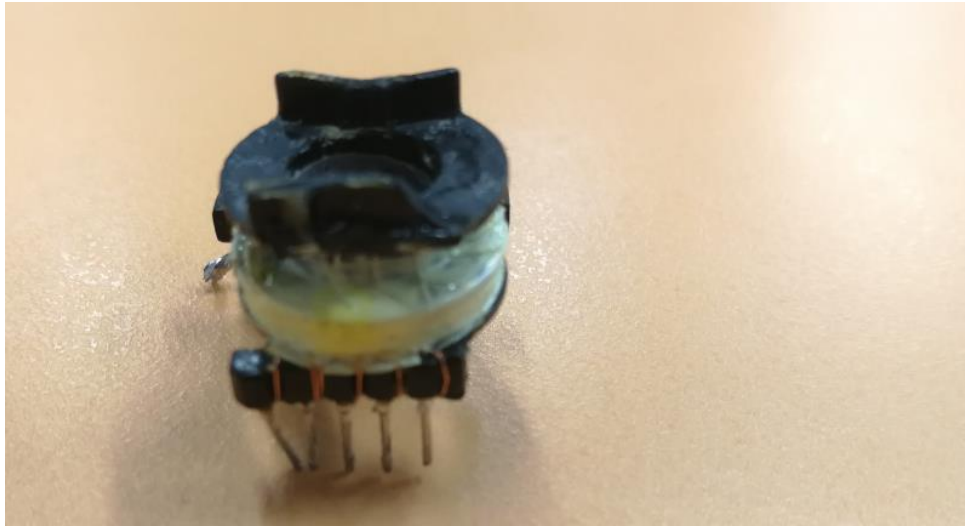


Overall view of secondary winding



Overall view of secondary winding

Product photos – ATTACHMENT 3



Overall view of secondary winding