Test Report issued under the responsibility of:
Intertek Testing Services Shenzhen Ltd.
Guangzhou Branch

TEST REPORT

IEC 61347-2-13

Part 2: Particular requirements

Section Thirteen – d.c. or a.c. supplied electronic controlgear for LED modules

Report Reference No. ..... :	GZ09060579-1R2
Date of issue ..... :	13 Aug. 2012
Total number of pages ..... :	45
CB Testing Laboratory ..... :	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Address ..... :	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China
Applicant's name ..... :	Eaglerise Electronics (Foshan) Co., Ltd.
Address ..... :	No.4, East Huanzhen Road, Beijiao, Shunde, Foshan, Guangdong, 528000, China
Test specification:	
Standard ..... :	☒ IEC 61347-2-13:2006 used in conjunction with IEC 61347-1:2007 ☒ EN 61347-2-13:2006 used in conjunction with EN 61347-1:2008
Test procedure ..... :	S+CB+LVD
Non-standard test method ..... :	N/A
Test Report Form No ..... :	TTRF_IEC61347_2_13B+EN
TRF Originator ..... :	Intertek ETL Semko Guangzhou
Master TRF ..... :	Dated 2009-04

Test item description.....:	LED power supply
Trade Mark .....:	EAGLERISE
Manufacturer.....:	Eaglerise Electronics (Foshan) Co., Ltd.
Model/Type reference.....:	ELP06-12LS; ELP09-12LS; ELP12-12LS; ELP18-12LS
Ratings.....:	Class II; SELV; IP 20; ta 50 °C; tc 80 °C; Built-in; Constant voltage type; 110°C thermal protection; Inherently short-circuit proof; Suitable for direct mounting on normally flammable surfaces; ELP06-12LS: Input: 220-240 VAC 50/60 Hz; 65 mA; Output: 12 VDC; 0,5 A; ELP09-12LS: Input: 220-240 VAC 50/60 Hz; 90 mA; Output: 12 VDC; 0,75 A; ELP12-12LS: Input: 220-240 VAC 50/60 Hz; 120 mA; Output: 12 VDC; 1 A; ELP18-12LS: Input: 220-240 VAC 50/60 Hz; 200 mA; Output: 12 VDC; 1,5 A

Testing procedure and testing location:	
☒ CB Testing Laboratory:	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Testing location/ address.....:	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China
☐ Associated CB Laboratory:	
Testing location/ address.....:	
Tested by (name + signature).....:	Ben Han
Approved by (+ signature).....:	Shelley Ying
☐ Testing procedure: TMP	
Tested by (name + signature).....:	—
Approved by (+ signature)..... :	—
Testing location/ address.....:	
☐ Testing procedure: WMT	
Tested by (name + signature).....:	—
Witnessed by (+ signature)..... :	—
Approved by (+ signature).....:	—
Testing location/ address.....:	
☐ Testing procedure: SMT	
Tested by (name + signature).....:	—
Approved by (+ signature).....:	—
Supervised by (+ signature).....:	—
Testing location/ address..... :	
☐ Testing procedure: RMT	
Tested by (name + signature).....:	—
Approved by (+ signature).....:	—
Supervised by (+ signature).....:	—
Testing location/ address.....:	

Summary of testing:

The tested samples fulfilled the requirements of specified standards.

ELP09-12LS; ELP12-12LS and ELP18-12LS have similar circuit diagram; similar mechanical and electrical constructions, except technical data of some components; output wattage are different. So, ELP18-12LS was selected to do fully test since maximum output wattage, other models were selected to do construction check. ELP06-12LS was selected to do fully test because of different PCB layout and circuit diagram.

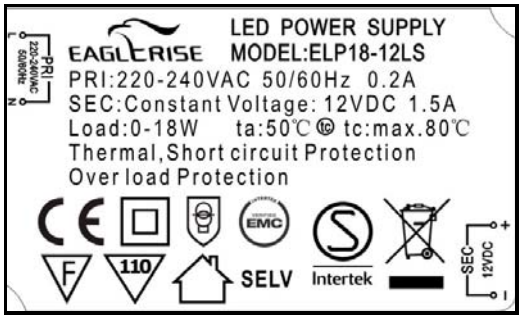
Tests performed (name of test and test clause):	**Testing location:**
7 Marking 8 Protection against accidental contact with live parts 9 Terminals 11 Moisture resistance and insulation 12 Electric strength 14 Fault conditions 16 Abnormal conditions 17 Construction 18 Creepage distances and clearances 19 Screws, current-carrying parts and connections 20 Resistance to heat, fire and tracking 21 Resistance to corrosion Annex C Particular requirements for electronic lamp controlgear with means of protection against overheating Annex I Particular additional requirements for independent SELV d.c. or a.c. supplied electronic step-down convertors for filament lamps	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China

Summary of compliance with National Differences:

Not checked

Copy of marking plate

(Representative)



Location: Stuck on the outer surface of enclosure

Remark on above marking:

1, The height of graphical symbols shall not be less than 5 mm;

2, The height of letters and numerals shall be not less than 2 mm.

Test item particulars ..... :	
Classification of installation and use ..... :	Built-in; Class II; for use with LED loads
Supply Connection ..... :	Connection leads
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A (not applicable)
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing	
Date of receipt of test item ..... :	10 June 2009; 17 September 2009 1st revision: 09 November 2011 2nd revision: 28 Mar. 2012
Date (s) of performance of tests ..... :	10 June 2009 to 6 November 2009 1st revision: 09 November 2011 to 17 November 2011 2nd revision: 28 Mar. 2012 to 13 Aug. 2012

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.
Throughout this report a comma is used as the decimal separator.

Clause numbers between brackets refer to clauses in IEC 61347-1.

When determining for test conclusion, measurement uncertainty of tests has been considered.

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The test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid.

The clause which indicated with * is the subcontract test item.

Revision history：

1st revision: based on the pervious tested report GZ09060579-1 dated on 12 November 2009 for S+LVD: Below are the revisions:

1) Revised the circuit diagram and PCB layout for model ELP12-12LS. Details please kindly refer to the product photos;

Revised the component list: Mod. Some information for X2 capacitor and PCB; added an component insulation sheet. Details please kindly read component list.

2nd revision: based on and superseded the previous test report GZ09060579-1 dated on 12 November 2009 and GZ09060579-1R1 dated on 21 November 2011 for S + LVD; and superseded GZ10090817-1R1 dated on 21 November 2011 for CB. The revision changed the applicant and manufacturing address from “Guicheng Sci-Tech Industrial Park, Jianping Road, Nanhai District, Foshan City, Guangdong Province, P.R. China” to “No.4, East Huanzhen Road, Beijiao, Shunde, Foshan, Guangdong, 528000, China”. And changed the applicant and manufacturing name from “Eaglerise Electric & Electronic (Foshan) Co., Ltd.” to “Eaglerise Electronics (Foshan) Co., Ltd.” And update the component list and label.

Manufacturing site: Eaglerise Electronics (Foshan) Co., Ltd.

Manufacturing address: No.4, East Huanzhen Road, Beijiao, Shunde, Foshan, Guangdong, 528000, China.

This report consists of: Total 38 pages;
Page 1-25 for test report;
Page 26-30 for component list;
Page 31-45 for product photos.

General product information:

The products covered by this test report are built-in LED Class II power supplies intended for use with LED.

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
4 (4)	**GENERAL REQUIREMENTS**		—
	Compliance of independent controlgear enclosure with EN 60 598-1		N/A
	Independent SELV controlgear comply with Annex I	(see Annex I)	N/A
6 (6)	**CLASSIFICATION**		—
	Independent controlgear .....:	Yes ☐ No ☒	—
	Built-in controlgear .....:	Yes ☒ No ☐	—
	Integral controlgear .....:	Yes ☐ No ☒	—
	SELV-equivalent or isolating controlgear .....:	Yes ☐ No ☒;	—
	Auto-wound controlgear .....:	Yes ☐ No ☒	—
	Independent SELV controlgear .....:	Yes ☐ No ☒; Built-in SELV controlgear	—
7	**MARKING**		**P**
7.1 (7.1)	Mandatory markings:		P
	- mark of origin		P
	- model number, type reference .....:	ELP06-12LS; ELP09-12LS; ELP12-12LS; ELP18-12LS	P
	- symbol for independent controlgear, if applicable		N/A
	- correlation between interchangeable parts and controlgear marked		N/A
	- rated supply voltage (V) .....:	220-240	P
	- earthing symbol		N/A
	- wiring diagram		P
	- value of t_c		P
	- symbol for declared temperature		P
	Constant voltage type:	Yes ☒ No ☐	—
	- rated supply voltage (V) .....:	DC 12	P
	Constant current type:	Yes ☐ No ☒	—
	- rated output current (A) .....:		N/A
	- rated maximum output voltage (V) .....:		N/A
	- indication if for LED modules only		N/A
7.2 (7.1)	- information to be provided, if applicable		P
	- declaration on protection against accidental contact		N/A

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
	- cross-section of conductors (mm²) .....:	ELP06-12LS: 0,5…0,75 mm^2 for input and 0,5…1,5 mm^2 for output; ELP09-12LS; ELP12-12LS; ELP18-12LS: 0,75 mm² for input and 18 AWG for output	P
	- number, type and wattage of lamp(s)		P
	- directly mains-connected windings		N/A
	SELV-equivalent controlgear		N/A
- (7.2)	Marking durable and legible		P
	Rubbing 15 s water, 15 s petroleum; marking legible		P

8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**		**P**
- (10.1)	Controlgear protected against accidental contact with live parts		P
- (A2)	The current flowing between the part concerned and earth is measured and does not exceed 0,7 mA (peak) or 2 mA d.c. .....:		N/A
- (A2)	For frequencies above 1 kHz, the current does not exceed 0,7 mA (peak) multiplied by the value of the frequency in kilohertz or 70 mA (peak) .....:		N/A
- (A3)	The voltage between the part concerned and any accessible part is measured and does not exceed 34 V (peak).....:		N/A
- (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 :	< 0,5 μF	N/A
8.1 (-)	SELV-equivalent controlgear accessible parts are insulated from live parts by double or reinforced insulation according 8.6 and 13.1 in IEC 60065		N/A
8.2 (-)	Exposed terminals of SELV or SELV-equivalent controlgear are allowed if: - the rated or maximum output voltage does not exceeding 25 V r.m.s. - the no-load output voltage does not exceed 30 V r.m.s. or 33 √2 V peak		N/A
	Insulated terminals if rated output voltage >25 V		N/A

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
	One capacitor Y1 or two capacitors Y2 of the same values used in series between SELV or SELV-equivalent output and primary circuits - Capacitor complying with IEC 60384-14 - Other components bridging the separating transformer complying with IEC 60065, clause 14		P
9 (8)	**TERMINALS**		**N/A**
	Screw terminals: compliance with Section 14 of IEC 60598-1		N/A
	Screwless terminals: compliance with Section 15 of IEC 60598-1		N/A
10 (9)	**PROVISION FOR EARTHING**		**N/A**
	External metal parts connected to the earthterminal:		N/A
	- compliance with 7.2.1 in IEC 60598-1		N/A
	Test with a current of 10 A between earthing terminal and each of the accessible metal parts; measured resistance (Ω): < 0,5 Ω .....:		N/A
	Protective earth, symbol		N/A
	Terminal complying with clause 8 in Part 1		N/A
	Locked against loosening and not possible to loosen by hand		N/A
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	Earthing via means of fixing		N/A
	Earthing terminal only used for the earthing of the control gear		N/A
	All parts of material minimizing the danger of electrolytic corrosion		N/A
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A
	Conductors by tracks on printed circuit boards:		N/A
	- a.c. current of 25 A for 1 min between earthing terminal and accessible metal parts		N/A
	- compliance with clause 7.2.1 in IEC 60598-1		N/A
11 (11)	**MOISTURE RESISTANCE AND INSULATION**		**P**

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ):		P
	≥ 2 MΩ for basic insulation.....:	> 100 MΩ	P
	≥ 4 MΩ for double or reinforced insulation .....:	> 100 MΩ	P
11 (-)	Adequate insulation between input and output terminals not bounded together in SELV-equivalent controlgear		N/A
12 (12)	**ELECTRIC STRENGTH**		**P**
	Immediately after clause 11 electric strength test for 1 min		P
	Working voltage ≤ 42 V, test voltage 500 V		N/A
	Working voltage > 42 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, 2U + 1000 V	1480 V	P
	Supplementary insulation, 2U + 1750 V		N/A
	Double or reinforced insulation, 4U + 2750 V	3710 V	P
	No flashover or breakdown		P
	Windings in separating transformers in SELV-equivalent control gear according to 14.3.2 of EN 60065		N/A
13 (13)	**THERMAL ENDURANCE FOR WINDINGS (Not applicable)**		—
14 (14)	**FAULT CONDITIONS**		**P**
	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
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)		N/A
	Distances on printed boards provided with coating according to IEC 60664-3		N/A

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
- (14.2)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile		N/A
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	P
- (14.5)	After the tests the insulation resistance with d.c. 500 V (MΩ) are ≥ 1 MΩ ..... :	> 100 MΩ	P
	After the tests the accessible parts has not become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
	Temperature declared thermally protected controlgear fulfil the requirements in Annex C		P

15	**TRANSFORMER HEATING**		**N/A**
	Windings of separating transformer in a SELV-equivalent controlgear fulfil the requirements according to 7.1 and 11.2 of IEC 60065		N/A
15.1	Temperatures do not exceed the changed values of the values in column 2 of Table 3 of IEC 60065, in respect to relevant ambient temperature at t_c, under normal operation		N/A
15.2	Temperatures do not exceed the changed values of the values in column 3 of Table 3 of IEC 60065, in respect to relevant ambient temperature at t_c, under abnormal conditions of Cl. 16 and fault conditions of Cl. 14		N/A
	Ambient temperature at t_c ..... :		N/A

16	**ABNORMAL CONDITIONS**		**P**
	Safety not impaired when the controlgear is operated at any voltage between 90% and 110% of rated voltage		P
16.1	Control gear which are of the constant voltage output type:		—
	a) No LED module inserted		P
	b) Double LED modules or equivalent load connected to the output terminals		P
	c) Output terminal short-circuited (20 cm and 200 cm or declared length)	0,1 m and 2,5 m	P

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		P
16.2	Control gear which are of the constant current output type:		—
	a) No LED module connected		N/A
	b) Double the LED modules or equivalent load connected in series to the output terminals		N/A
	c) Output terminal short-circuited (20 cm and 200 cm or declared length)		N/A
	Maximum output voltage not exceeded		N/A
	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		N/A
17 (15)	**CONSTRUCTION**		**P**
- (15.1)	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	Printed boards used as internal connections complies with clause 14 of IEC 61347-1		P
	Socket-outlet in the output circuit does not accept plugs complying with IEC 60083 and IEC 60906		N/A
	Not possible to engage plugs accepted by socket-outlet in the output circuit with socket-outlets complying with IEC 60083 and IEC 60906		N/A
18 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
	Creepage distances and clearances according to Table 3 and 4, as appropriate	(see appended table)	P
	Printed boards see clause 14 of IEC 61347-1		P
	Insulating lining of metallic enclosures		N/A
19 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		**P**
	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
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
	- at least two self-tapping 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		P
(4.12)	Mechanical connections and glands		N/A
(4.12.1)	Mechanical stress		N/A
	Screws not made of soft metal		N/A
	Screws of insulating material		N/A
	Torque test: part; torque (Nm) .....:		N/A
	Torque test: part; torque (Nm) .....:		N/A
	Torque test: part; torque (Nm) .....:		N/A
(4.12.2)	Screw diameter < 3 mm screwed into metal		N/A
(4.12.3)	Void		—
(4.12.4)	Locked connections		N/A
(4.12.5)	Screwed glands: force (N) .....:		N/A

20 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
20 (18.1)	Parts of insulating material retaining live parts in position, ball-pressure test:		P
	- part; test temperature (°C) .....:	Bobbin of L1 (ELP18-12LS); 130	P
	- part; test temperature (°C) .....:	Bobbin of TR1 (ELP18-12LS); 125	P
	- part; test temperature (°C) .....:	Bobbin of T1 (ELP06-12LS); 125	P
	- part; test temperature (°C) .....:	Enclosure; 108	P
20 (18.2)	Printed boards in accordance with IEC 60249-1, 4.3		P
20 (18.3)	External parts of insulating material preventing electric shock glow-wire test 650 °C	Enclosure; insulation sheet	P
20 (18.4)	Parts of insulating material retaining live parts in position, needle-flame test 10 s:		P
	- flame extinguished within 30 s	Bobbin of L1 (ELP18-12LS); Bobbin of TR1 (ELP18-12LS); Bobbin of T1 (ELP06-12LS)	P
	- no flaming drops igniting tissue paper		P
20 (18.5)	Tracking test		N/A

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

21 (19)	**RESISTANCE TO CORROSION**		**N/A**
	Rust protection:		N/A
	- test according 4.18.1 of IEC 60598-1		N/A
	- adequate varnish on the outer surface		N/A

- (20)	**NO-LOAD OUTPUT VOLTAGE**	N/A
	No load output voltage not differ more than 10 % from rated voltage	N/A

14	**TABLE: tests of fault conditions**	**P**
Part	Simulated fault	Hazard
ELP18-12LS		
D1	Short-circuit	NO
D3	Open-circuit	NO
C2	Short-circuit	NO
D8	Short-circuit	NO
D9	Short-circuit	NO
C7	Short-circuit	NO
ELP06-12LS		
BR1	Short-circuit (AC-AC pins)	NO
C1	Short-circuit	NO
D1	Short-circuit	NO
U2	Short-circuit Input pins	NO
D2	Short-circuit	NO
C8	Short-circuit	NO
ELP12-12LS		
Output terminal	Short-circuit	NO
C8	Short-circuit	NO
D9	Short-circuit	NO
D8	Short-circuit	NO
C5	Short-circuit	NO
U2	Short-circuit Input pins	NO
C4	Short-circuit	NO
C2	Short-circuit	NO
D1	Short-circuit	NO

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

18 (16)	**TABLE: creepage distances and clearances (See CENELEC COMMON MODIFICATIONS (EN))**						**P**
	Minimum distances for a.c. (50/60 Hz) sinusoidal voltages						P
RMS working voltage (V) not exceeding		50	150	250	500	750	1000
1 minimum distances between live parts of different polarity. Specify the value measured.		—	—	ELP06-12LS: 3,2 mm; ELP18-12LS: 3,1 mm; ELP12-12LS: 3,9 mm	—	—	—
2 minimum distances between live parts and accessible parts which are permanently fixed to the ballast, including screws or devices for fixing covers or fixing the ballast to its support. Specify the value measured.		—	—	ELP18-12LS: 6,2 mm ELP06-12LS: 6,2 mm; ELP12-12LS: 7,1 mm	—	—	—
- required creepage distances (mm), insulation PTI ≥ 600		0,6	1,4	1,7	3	4	5,5
- required creepage distances (mm), insulation PTI < 600		1,2	1,6	2,5	5	8	10
- required clearances (mm)		0,2	1,4	1,7	3	4	5,5
3 minimum distances between live parts and a flat supporting surface or a loose metal cover, if any, if the construction does not ensure that the values under 2 above are maintained under the most unfavourable circumstances		—	—	--	—	—	—
- required clearances (mm)		2	3,2	3,6	4,8	6	8
	Minimum distances for non-sinusoidal pulse voltages						N/A
rated pulse voltage (peak kV)	2,0	2,5	3,0	4,0	5,0	6,0	8,0
required minimum distances, clearances (mm)	1,0	1,5	2	3	4	5,5	8
Specify the value measured	—	—	—	—	—	—	—
rated pulse voltage (peak kV)	10	12	15	20	25	30	40
required minimum distances, clearances (mm)	11	14	18	25	33	40	60

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

Specify the value measured	—	—	—	—	—	—	—	
rated pulse voltage (peak kV)	50	60	80	100	-	-	-	
required minimum distances, clearances (mm)	75	90	130	170	-	-	-	
Specify the value measured	—	—	—	—	—	—	—	

A	**ANNEX A (NORMATIVE), TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK**		**N/A**
A.2	See clause 8 A.2 in this Test Report		N/A
A.3	See clause 8 A.3 in this Test Report		N/A

C	**ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING**		**P**

C3	**GENERAL REQUIREMENTS**		**P**
C3.1	Thermal protection means integral with the controlgear, protected against mechanical damage	IC incorporates thermal protection	P
	Renewable only by means of a tool		P
	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)		P

C5	**CLASSIFICATION**		**P**
	a) automatic resetting type	Yes	—
	b) manual resetting type	No	—
	c) non-renewable, non-resetting type	No	—
	d) renewable, non-resetting type	No	—
	e) other type of thermal protection; description .....:		N/A

C6	**MARKING**		**P**
C6.1	Symbol for temperature declared thermally protected ballasts	110	P
C6.2	Declaration of the type of protection provided		P
C7	**LIMITATION OF HEATING**		**P**

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
C7.1	Preselection test		P
	Test sample placed for at least 12 h in an oven having temperature (tc - 5) K	75	P
	No operation of the protection device		P
C7.2	Functioning of protection means		P
	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		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		P
	Continuous measuring of the highest surface temperature		P
	Controlgear according to C5 a) or C5 e) operated until stable conditions are achieved		P
	Automatic-resetting thermal protectors working 3 times		P
	Controlgear according to C5 b) working 6 times		N/A
	Controlgear according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value	ELP18-12LS: 68 °C; ELP06-12LS: 79 °C ELP12-12LS: 94 °C	P
	Any overshoot of 10% over the marked value within 15 min		N/A
D	**ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR**		P
	Tests in C7 performed in accordance with Annex D, if applicable		P
E	**ANNEX E – USE OF CONSTANT S OTHER THAN 4500 IN t_w TESTS**		**N/A**
E1	Constant S claimed		N/A
	Claimed test method		N/A

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Clause	Requirement – Test	Result - Remark	Verdict
E2	Procedure A		N/A
	Adequate data provided by the manufacturer		N/A
	The inverse of the slope is greater than or equal to the claimed value of S		N/A
	Compliance with the failure criteria for procedure B		N/A
E3	Procedure B		N/A
	Claimed value of T_1		N/A
	Claimed value of T_2		N/A
	Endurance test carried out at:		N/A
	T_1 (7 samples)		N/A
	T_2 (7 samples)		N/A
	Duration of test calculated from equation (2)		N/A
	T_1		N/A
	T_2		N/A
	During the test: - No open circuit - No breakdown insulation		N/A
	The claimed constant S is deemed to be verified		N/A
F	**ANNEX F - DRAUGHT-PROOF ENCLOSURE**		**P**
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		N/A
H	**ANNEX H - TESTS**		**P**
	All tests performed in accordance with the advise given in Annex H, if applicable		P
I	**ANNEX I - PARTICULAR ADDITIONAL REQUIREMENTS FOR INDEPENDENT SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR LED MODULES**		**P**
I.3	Classification		—
I.3.1	Class I	Yes ☐ No ☒	—
	Class II	Yes ☒ No ☐; built-in	—

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Clause	Requirement – Test	Result - Remark	Verdict
I.3.2	a) non-inherently short circuit proof controlgear	Yes ☐ No ☒	—
	b) non-inherently open circuit proof controlgear	Yes ☐ No ☒	—
	c) inherently short circuit proof controlgear	Yes ☒ No ☐	—
	d) inherently open circuit proof controlgear	Yes ☐ No ☒	—
	e) fail safe controlgear	Yes ☐ No ☒	—
	f) non-short-circuit proof controlgear	Yes ☐ No ☒	—
	g) non-open-circuit proof controlgear	Yes ☐ No ☒	—
I.4	Marking		P
	Adequate symbols are used		P
I.5	Protection against electric shock		P
I.5.1	No connection between output winding and body		P
	No connection between output winding and protective earthing circuit		N/A
I.5.2	Input and output circuits electrically separated from each other		P
I.5.2.1	Insulation between input and output winding of the HF-transformer consists of double or reinforced insulation		P
	Class II: insulation between input/output and body consists of double or reinforced insulation		P
	Class I: insulation between input and body consists of basic and between output and body supplementary insulation		N/A
I.5.2.2	Insulation between input and output winding via the core consists of double or reinforced insulation		P
	Insulation between cord and windings of the HF-transformer consists of basic insulation		N/A
I.5.2.3	Serrated tape, additional layer		N/A
I.5.2.4	Class I controlgear for fixed connection provided with basic insulation plus protective screening comply with the following conditions:		N/A
	a) Insulation between the input winding and the protective screen complies with the requirements for basic insulation		N/A
	b) Insulation between the protective screen and the output winding complies with the requirements for basic insulation		N/A
	c) Metal screen consists of a metal foil or of a wire wound screen		N/A

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Clause	Requirement – Test	Result - Remark	Verdict
	d) Metal screen so arranged that both edges cannot simultaneously touch a magnetic core		N/A
	e) Metal screen and its lead-out wire have a cross-section sufficient to ensure that an overload device will open the circuit before the screen is destroyed		N/A
	f) Lead-out wire sufficiently fixed to the metal screen		N/A
I.5.2.5	Last turn of each winding of the transformer retained by positive means		P
	Impregnated winding		P
	Winding held together by means of insulating material		P
I.5.3	Components bridging between input and output circuit	One opto-coupler and Y1 capacitor between input and output circuits	P
I.5.3.1	Used capacitors and resistors comply with 8.2		N/A
I.5.3.2	Used opto-couplers		P
I.6	Heating		—
I.6.1	No excessive temperatures in normal use		P
	Used material classified as Class _____	E	—
	Stated value of t_a _____	50 °C	—
I.6.2	Upri: 1.06 time supply rated voltage	254,4 V	—
	Determined temperature rises in windings:	ELP06-12LS / ELP18-12LS	P
	- Primary: _____ K	33 / 45	
	- Limit max: _____ K	65 / 65	
	- Secondary: _____ K	34 / 43	
	- Limit max: _____ K	65 / 65	
	Determined temperature rises in windings:	ELP12-12LS	P
	- Primary: _____ K	56	
	- Limit max: _____ K	65	
	- Secondary: _____ K	54	
	- Limit max: _____ K	65	
	After the test:		P
	- no connections have worked loose		P
	- no reduction of creepage distances and clearances		P
	- no flow of sealing compound		N/A

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Clause	Requirement – Test	Result - Remark		Verdict
	- no operation of protecting devices			P
	- electric strength test between input and output windings			P
I.6.3	Cycling test (10 cycles):			N/A
I.6.3.1	- heat run at _____ K			N/A
I.6.3.2	- moisture treatment 48 h			N/A
I.6.3.3	- vibration test 1 h; 1,5 g			N/A
I.6.3.4	After the tests:			N/A
	- insulation resistance			N/A
	- dielectric strength test at 35 % of specified value; test voltage _____ V			N/A
	- Current or the ohmic component does not deviates by more than 30 %			N/A
I.7	Short-circuit and overload protection			P
I.7.1	Upri: 1.06 times rated voltage or 0.94 and 1.06 times rated supply voltage - used voltage _____ V	254,4		P
I.7.2 I.7.3 I.7.4	Determined temperature rise in windings and on other parts:			P
	- test according to Clause _____	I.7.2 all temperatures decreased		P
		ELP06-12LS	ELP18-12LS	
	- Primary winding _____ K	33	45	P
	- Limit max _____ K	115	115	P
	- Secondary winding _____ K	34	43	P
	- Limit max _____ K	115	115	P
	- External enclosure _____ K	25	17	P
	- Limit max _____ K	55	55	P
	- PVC insulation of wiring (Input) _____ K	6	7	P
	- Limit max _____ K	35	35	P
	- PVC insulation of wiring (Output) _____ K	15	15	P
	- Limit max _____ K	35	35	P
	- Supports _____ K	16	18	P
	- Limit max _____ K	55	55	P
	- test according to Clause _____	I.7.2 all temperatures decreased		P

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Clause	Requirement – Test	Result - Remark	Verdict
		ELP12-12LS	
	- Primary winding _____ K	56	P
	- Limit max _____ K	115	P
	- Secondary winding _____ K	54	P
	- Limit max _____ K	115	P
	- External enclosure _____ K	16	P
	- Limit max _____ K	55	P
	- PVC insulation of wiring (Input) _____ K	6	P
	- Limit max _____ K	35	P
	- PVC insulation of wiring (Output) _____ K	12	P
	- Limit max _____ K	35	P
	- Supports _____ K	25	P
I.7.5	- Limit max _____ K	55	N/A
I.7.5.1	- Upri: 1.06 times rated supply voltage.....V:	—	—
	- Isec: 1.5 times rated output current .....A:	—	—
	- time until steady-state conditions t1 (h) .....:	—	—
	- time until failure t2 (h): ≤ t1; ≤ 5 h .....:	—	N/A
I.7.5.2	During the test:		N/A
	- no flames, molten material, etc.		N/A
	- temperature rise of enclosure ≤ 150 K		N/A
	- temperature rise of plywood support ≤ 100 K		N/A
	After the test:		N/A
	- electric strength (test voltage; 35 % of specified value); no flashover or breakdown for primary-to-secondary and for primary-to-body		N/A
	- live parts not accessible by test finger through holes of enclosure		N/A
I.8	Insulation resistance and electric strength		P
I.8.1	Conditioned 48 h between 91 % and 95 %		P
I.8.2	Adequate insulation (500 V d.c. for 1 min) between:		P
	Live parts and the body -for basic insulation not less than 2 MΩ ..... :		N/A
	Live parts and the body -for reinforced insulation not less than 4 MΩ ..... :	> 100 MΩ	P
	Input- and output circuits not less than 5 MΩ ..... :	> 100 MΩ	P

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Clause	Requirement – Test	Result - Remark	Verdict
	Metal parts of class II controlgear which are separated from live parts by basic insulation only and the body not less than 5 MΩ ..... :		N/A
	Metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ ..... :	> 100 MΩ	P
I.8.3	Electric strength test:		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 which are or may become of 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
	3) Over reinforced insulation between the body and live parts ..... :	3750 V	P
	No flashover or breakdown occurred		P
I.9	Construction		P
I.9.1	Comply with all requirements		P
I.9.2	The distance between input and output terminals shall not be less than 25 mm ..... :	Connection leads	N/A
I.10	Components		N/A
I.10.1	Socket-outlets in the output circuit does not accept plugs complying with IEC 60083 and IEC 60906-1		N/A
I.10.2	Self-resetting protective devices shall not be used unless it is certain that there will be no hazards		N/A
	Compliance is checked by connecting the controlgear for 48 h at 1.06 times the rated voltage with the output short-circuited		N/A
I.11	Creepage distances and clearances		P
	1. Insulation between input and output circuits:		P
	a) measured values ≥ specified values (mm) ..... :	The components between input circuit and output circuit: 6,1 mm (limit: 6,0 mm);	P
	b) measured values ≥ specified values (mm) ..... :		N/A

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Clause	Requirement – Test	Result - Remark	Verdict
	c) measured values ≥ specified values (mm) ..... :	ELP06-12LS: Multi-layer insulation magnet wire as secondary winding; ELP18-12LS: thickness of three layers of insulation tape: 0,18 mm (limit: 0,1 mm) ELP12-12LS: thickness of three layers of insulation tape: 0,18 mm (limit: 0,1 mm)	P
	2. Insulation between adjacent input circuits: measured values ≥ specified values (mm) ..... :		N/A
	2. Insulation between adjacent output circuits: measured values ≥ specified values (mm) ..... :		N/A
	3. Insulation between terminals for external connection:		N/A
	a) measured values ≥ specified values (mm) ..... :		N/A
	b) measured values ≥ specified values (mm) ..... :		N/A
	c) measured values ≥ specified values (mm) ..... :		N/A
	4. Basic or supplementary insulation:		P
	a) measured values ≥ specified values (mm) ..... :	Between the poles of fuse: 3,1 mm (limit: 3,0 mm)	P
	b) measured values ≥ specified values (mm) ..... :		N/A
	c) measured values ≥ specified values (mm) ..... :		N/A
	5. Reinforced insulation: measured values ≥ specified values (mm) ..... :	Between the live parts and the body: ELP18-12LS: 6,2 mm (limit: 6,0 mm); ELP06-12LS: 6,2 mm (limit: 6,0 mm) ELP12-12LS: 7,1 mm (limit: 6,0 mm)	P
	6. Distande through insulation:		P
	a) measured values ≥ specified values (mm) ..... :		N/A
	b) measured values ≥ specified values (mm) ..... :	Thickness of enclosure: 1,20 mm (limit: 1,0 mm)	P
	c) measured values ≥ specified values (mm) ..... :		N/A
	d) measured values ≥ specified values (mm) ..... :		N/A

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Clause	Requirement – Test	Result - Remark	Verdict

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18 (16)	**TABLE: creepage distances and clearances**							**P**
	Minimum distances for a.c. (50/60 Hz) sinusoidal voltages							P
RMS working voltage (V) not exceeding			50	150	250	500	750	1000
1 between live parts of different polarity			—	—	ELP06-12LS: 3,2 mm; ELP18-12LS: 3,1 mm; ELP12-12LS: 3,9 mm	—	—	—
2 between live parts and accessible metal parts which are permanently fixed to the ballast, including screws or devices for fixing covers or fixing the ballast to its support			—	—	ELP18-12LS: 6,2 mm ELP06-12LS: 6,2 mm; ELP12-12LS: 7,1 mm	—	—	—
3 for ballasts declared not to rely on the luminaire enclosure for protection against electric shock – between live parts and outer accessible surface of insulating parts			—	—	—	—	—	—
Creepage distances	Basic insulation	PTI≥600	0,6	0,8	1,5	3	4	5,5
		PTI<600	1,2	1,6	**2,5**	5	8	10
	Supplementary insulation	PTI≥600	--	0,8	1,5	3	4	5,5
		PTI<600	--	1,6	2,5	5	8	10
	Reinforced insulation		--	3,2	5	6	8	11
Clearances	Basic insulation		0,2	0,8	**1,5**	3	4	5,5
	Supplementary insulation		--	0,8	1,5	3	4	5,5
	Reinforced insulation		--	1,6	3	6	8	11