



# LVD TEST REPORT

**Report No.:** NTEK- 2012NT0706364S

**Product:** LED Power Supply

ELP040C\*\*\*\*LS ("\*\*\*\*" is for the output current and represents the number from 0700 to 1400 increasing in multiples of 50.);

**Model No.:**

ELP050C\*\*\*\*LS ("\*\*\*\*" is for the output current and represents the number from 0700 to 1500 increasing in multiples of 50.)

**Applicant:** Eaglerise Electronics (Foshan) Co., Ltd.

**Address:** No. 4, East Huanzhen Road, Beijiao, Shunde, Foshan, Guangdong, 528000, China

**Issued by:** NTEK Testing Technology Co., Ltd.

**Lab Location:** 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China

**Tel:** (86)-0755-61156588      **Fax** (86)-0755-61156599



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**TEST REPORT  
EN 61347-2-13**

**Part 2: Particular requirements**

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

Report Reference No. .... : NTEK-2012NT0706364S

Tested by (+ signature)..... : Andy Huang Andy Huang

Approved by (+ signature)..... : Ethan Chen Ethan Chen

Date of issue ..... : 2012-07-18

**Testing laboratory**

Name ..... : NTEK Testing Technology Co., Ltd.  
Address ..... : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China  
Testing location ..... : Same as above

**Client**

Name ..... : Eaglerise Electronics (Foshan) Co., Ltd.  
Address ..... : No. 4, East Huanzhen Road, Beijiao, Shunde, Foshan, Guangdong, 528000, China

**Test specification**

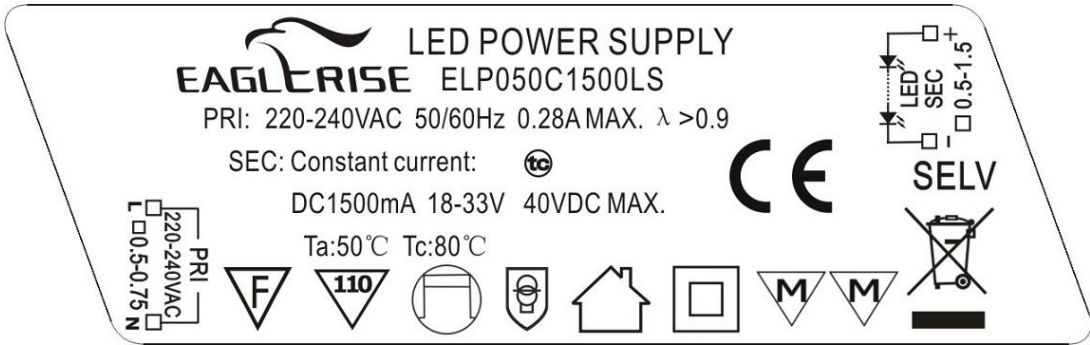
Standard ..... : EN 61347-2-13:2006 conjunction with EN 61347-1:2008+A1:2011.  
Test procedure ..... : CE Attestation  
Procedure deviation ..... : N/A

**Test Report Form/blank test report**

Test Report Form No. .... : EN 61347-2-13  
Test Report Form(s) Originator ..... : NTEK  
Master TRF ..... : 08-035  
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**Test item**

Description ..... : LED Power Supply  
Trademark ..... : EAGLERISE  
Model and/or type reference..... : ELP040C\*\*\*\*LS, ELP050C\*\*\*\*LS  
Rating(s)..... : Input: 100-240V~, 50/60Hz, Max. 0.45A; Output: Constant Current type, 700-1400mA for ELP040C\*\*\*\*LS;  
Input: 220-240V~, 50/60Hz, Max. 0.28A; Output: Constant Current type, 700-1500mA for ELP050C\*\*\*\*LS.  
Manufacturer ..... : Eaglerise Electronics (Foshan) Co., Ltd.

<b>Summary of testing:</b>	
<b>Tests performed (name of test and test clause):</b>	<b>Testing location:</b> See page 2
<b>Sample of marking plate</b>	
 <p>English label</p>	



<b>Test item particulars</b> .....	
Protection against electric shock .....	LED Power Supply
Supply Connection .....	Supply wire/Connector
Operating condition .....	Continuous
Classification of installation and use .....	Component part
<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> .....	
Date of receipt of test item.....	2012-07-04
Date (s) of performance of tests .....	2012-07-04 to 2012-07-18
<b>General remarks:</b>	
<b>General product information:</b>	
LED power supply is used as a LED control gear for LED lamp.	
All models have the same layout and construction except the input/output voltage, current and power:	
ELP040C****LS: Input: 100-240V~, 50/60Hz, Max. 0.45A; Output: Constant Current type, 700-1400mA;	
ELP050C****LS: Input: 220-240V~, 50/60Hz, Max. 0.28A; Output: Constant Current type, 700-1500mA.	
All tests were conducted on the model ELP050C1500LS. Which with the rating as following:	



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Clause	Requirement – Test	Result - Remark	Verdict
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<b>4 (4)</b>	<b>GENERAL REQUIREMENTS</b>		-
	Compliance of independent controlgear enclosure with EN 60598-1		P
	Independent SELV controlgear comply with Annex I	(see Annex I)	P

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

<b>7</b>	<b>MARKING</b>		-
7.1 (7.1)	Mandatory markings:		P
	- mark of origin	See label	P
	- model number, type reference .....	Refer to the model list in page 2	P
	- symbol for independent controlgear, if applicable		N
	- correlation between interchangeable parts and controlgear marked		N
	- rated supply voltage (V) .....	220-240V~	P
	- earthing symbol		N
	- wiring diagram		P
	- value of t <sub>c</sub>		N
	- symbol for declared temperature		N
	Constant voltage type:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	- rated output voltage (V) .....	18-33V, Max.40V <del>----</del>	P
	Constant current type:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	- rated output current (A) .....	1.5	P



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Clause	Requirement – Test	Result - Remark	Verdict
	- rated maximum output voltage (V) .....	40	P
	- indication if for LED modules only		P
7.2 (7.1)	- information to be provided, if applicable		P
	- declaration on protection against accidental contact	See user manual for detail.	P
	- cross-section of conductors (mm <sup>2</sup> ) .....		N
	- number, type and wattage of lamp(s)	For LED module only	P
	- directly mains-connected windings		N
	SELV-equivalent controlgear		N
- (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		-
- (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. ....	Measured current: Max. 0.13mA; Limit:0.7mA	P
- (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) .....	Measured current: Max. 2.55mA; Limit:16.5mA(measured frequency 23.6kHz)	P
- (A3)	The voltage between the part concerned and any accessible part is measured and does not exceed 34 V (peak).....	Integral LED driver equipment	N
- (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:	The capacitor is 0.33uF <0,5uF	N

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Clause	Requirement – Test	Result - Remark	Verdict
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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		P
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 33 V r.m.s. or 33 $\sqrt{2}$ V peak		P
	Insulated terminals if rated output voltage >25 V	Insulation case	P
	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	One approved Y1 capacitor used	P

<b>9 (8)</b>	<b>TERMINALS</b>		-
	Screw terminals: compliance with Section 14 of IEC 60598-1	No such part	N
	Screwless terminals: compliance with Section 15 of IEC 60598-1		N

<b>10 (9)</b>	<b>PROVISION FOR EARTHING</b>		-
	External metal parts connected to the earth-terminal:	Integral LED driver equipment	N
	- compliance with 7.2.1 in IEC 60598-1		N
	Test with a current of 10 A between earthing terminal and each of the accessible metal parts; measured resistance ( $\Omega$ ): < 0,5 $\Omega$ .....		N
	Protective earth, symbol		N
	Terminal complying with clause 8 in Part 1		N
	Locked against loosening and not possible to loosen by hand		N



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	Not possible to loosen clamping means unintentionally on screwless terminals		N
	Earthing via means of fixing		N
	Earthing terminal only used for the earthing of the control gear		N
	All parts of material minimizing the danger of electrolytic corrosion		N
	Made of brass or equivalent material		N
	Contact surface bare metal		N
	Conductors by tracks on printed circuit boards:		N
	- a.c. current of 25 A for 1 min between earthing terminal and accessible metal parts		N
	- compliance with clause 7.2.1 in IEC 60598-1		N

<b>11 (11)</b>	<b>MOISTURE RESISTANCE AND INSULATION</b>		-
	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		P

<b>12 (12)</b>	<b>ELECTRIC STRENGTH</b>		-
	Immediately after clause 11 electric strength test for 1 min		P
	Working voltage ≤ 42 V, test voltage 500 V		N
	Working voltage > 42 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, 2U + 1000 V	1480V	P
	Supplementary insulation, 2U + 1750 V		N
	Double or reinforced insulation, 4U + 2750 V	3710V	P
	No flashover or breakdown		P





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Clause	Requirement – Test	Result - Remark	Verdict

	Windings in separating transformers in SELV-equivalent control gear according to 14.3.2 of EN 60065		N
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<b>13 (13)</b>	<b>THERMAL ENDURANCE FOR WINDINGS (Not applicable)</b>		—
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<b>14 (14)</b>	<b>FAULT CONDITIONS</b>		-
	When operated under fault conditions the controlgear:		-
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N
	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)		P
	Distances on printed boards provided with coating according to IEC 60664-3		N
- (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
- (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 $\geq 1 \text{ M}\Omega$ .....		P
	After the tests the accessible parts has not become live	>100 MΩ	P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		N
	Temperature declared thermally protected controlgear fulfil the requirements in Annex C		P

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Clause	Requirement – Test	Result - Remark	Verdict

15	<b>TRANSFORMER HEATING</b>		-
	Windings of separating transformer in a SELV-equivalent controlgear fulfil the requirements according to 7.1 and 11.2 of IEC 60065	See temperature in table 15	P
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		P
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		P
	Ambient temperature at $t_c$ .....		N

16	<b>ABNORMAL CONDITIONS</b>		-
	Safety not impaired when the controlgear is operated at any voltage between 90% and 110% of rated voltage	See appended table	P
16.1	Control gear which are of the constant voltage output type:		—
	a) No LED module inserted		N
	b) Double LED modules or equivalent load connected to the output terminals		N
	c) Output terminal short-circuited (20 cm and 200 cm or declared length)		N
	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		N
16.2	Control gear which are of the constant current output type:		—
	a) No LED module connected		P
	b) Double the LED modules or equivalent load connected in series to the output terminals		P
	c) Output terminal short-circuited (20 cm and 200 cm or declared length )		P

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Clause	Requirement – Test	Result - Remark	Verdict
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	Maximum output voltage not exceeded	40V	N
	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		P

17 (15)	CONSTRUCTION		-
- (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	No such parts	N
	Not possible to engage plugs accepted by socket-outlet in the output circuit with socket-outlets complying with IEC 60083 and IEC 60906		N

18 (16)	CREEPAGE DISTANCES AND CLEARANCES		-
	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

19 (17)	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		-
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
(4.11)	Electrical connections		P
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		P
	- self-tapping screws		N
	- thread-cutting screws		P
	- at least two self-tapping screws		N
(4.11.3)	Screw locking:		P
	- spring washer		P



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Clause	Requirement – Test	Result - Remark	Verdict
	- rivets		N
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood		P
(4.12)	Mechanical connections and glands		N
(4.12.1)	Mechanical stress		P
	Screws not made of soft metal		P
	Screws of insulating material		N
	Torque test: part; torque (Nm) .....		N
	Torque test: part; torque (Nm) .....		N
	Torque test: part; torque (Nm) .....		N
(4.12.2)	Screw diameter < 3 mm screwed into metal		N
(4.12.3)	Void		—
(4.12.4)	Locked connections		N
(4.12.5)	Screwed glands: force (N) .....		N

<b>20 (18)</b>	<b>RESISTANCE TO HEAT, FIRE AND TRACKING</b>		-
20 (18.1)	Parts of insulating material retaining live parts in position, ball-pressure test:		P
	- part; test temperature (°C) .....	Enclosure:1.2mm at 125°C, Limit: 2.0mm	P
	- part; test temperature (°C) .....	PCB: 0.5mm at 125°C Limit: 2.0mm	P
	- part; test temperature (°C) .....	Transformer Bobbin:1.1mm at 125°C Limit: 2.0mm	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	Insulation enclosure Transformer bobbin	P
20 (18.4)	Parts of insulating material retaining live parts in position, needle-flame test 10 s:		P
	- flame extinguished within 30 s	Insulation enclosure	P



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	- no flaming drops igniting tissue paper	Transformer bobbin	P
20 (18.5)	Tracking test		P

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

<b>- (20)</b>	<b>NO-LOAD OUTPUT VOLTAGE</b>		<b>P</b>
	No load output voltage not differ more than 10 % from rated voltage		P

<b>14</b>	<b>TABLE: tests of fault conditions</b>		<b>P</b>
Part	Simulated fault	Result	Hazard
RV1	SC	Fuse open immediately, no hazards.	NO
Q3 Pin(S-G)	SC	Fuse open immediately, Q3 damaged.	NO
C0	SC	Unit shut down immediately and recoverable.	NO
T1(pin 1 to pin 2)	SC	Fuse open immediately, U1, Q3 damaged.	NO
T1(pin 3 to pin 4)	SC	Fuse open immediately, U1, Q3 damaged.	NO
T1 sec. pin 1 to 2		Unit shut down immediately and recoverable.	NO
C3	SC	Unit shut down immediately and recoverable.	NO
C9	SC	Unit shut down immediately and recoverable.	NO
D7	SC	Unit shut down immediately and recoverable.	NO
D6	SC	Fuse open immediately, Q3 damaged.	NO
Output terminal	SC	Unit shut down immediately and recoverable.	NO



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Clause	Requirement – Test	Result - Remark	Verdict

TABLE: 18 (16)	Clearance and creepage distance measurements			P
	Cl measure (mm)	Cl limited (mm)	Cr measure (mm)	Cr limited (mm)
L to N	5.3	2.0	5.3	2.5
Different polarity of current fuse	2.9	2.0	2.9	2.5
Primary to Secondary of Transformer	15.9	6.0	15.9	6.0
Y1 primary to secondary	6.9	6.0	6.9	6.0
U2/U3 primary to secondary	6.7	6.0	6.7	6.0

Note: the secondary winding is used multiple insulated winding wire.

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Clause	Requirement – Test	Result - Remark	Verdict
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<b>A</b>	<b>ANNEX A (NORMATIVE), TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK</b>		-
A.2	See clause 8 A.2 in this Test Report		N
A.3	See clause 8 A.3 in this Test Report		N

<b>C</b>	<b>ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING</b>		-
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<b>C3</b>	<b>GENERAL REQUIREMENTS</b>		-
C3.1	Thermal protection means integral with the controlgear, protected against mechanical damage		N
	Renewable only by means of a tool		N
	If function depending on polarity, for cord-connected equipment protection means in both leads		N
	Thermal links comply with IEC 60691		N
	Electrical controls comply with IEC 60730-2-3		N
C3.2	No risk of fire by breaking (clause C7)		N

<b>C5</b>	<b>CLASSIFICATION</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 .....		-

<b>C6</b>	<b>MARKING</b>		-
C6.1	Symbol for temperature declared thermally protected ballasts		N
C6.2	Declaration of the type of protection provided		N
<b>C7</b>	<b>LIMITATION OF HEATING</b>		-

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Clause	Requirement – Test	Result - Remark	Verdict
C7.1	Preselection test		N
	Test sample placed for at least 12 h in an oven having temperature ( $t_c - 5$ ) K		N
	No operation of the protection device		N
C7.2	Functioning of protection means		N
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that ( $t_c +0; -5$ ) °C is obtained		N
	No operation of the protection device		N
	Introducing of the most onerous test condition determined during test of clause 14		N
	Output of windings connected to the mains supply short-circuited, and other part of the controlgear operated under normal conditions		N
	Increasing of the current through the windings continuously until operation of the protection means		N
	Continuous measuring of the highest surface temperature		N
	Controlgear according to C5 a) or C5 e) operated until stable conditions are achieved		N
	Automatic-resetting thermal protectors working 3 times		N
	Controlgear according to C5 b) working 6 times		N
	Controlgear according to C5 c) and C5) d) working once		N
	Highest temperature does not exceed the marked value		N
	Any overshoot of 10% over the marked value within 15 min		N
<b>D</b>	<b>ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR</b>		-
	Tests in C7 performed in accordance with Annex D, if applicable		N
<b>E</b>	<b>ANNEX E – USE OF CONSTANT S OTHER THAN 4500 IN <math>t_w</math> TESTS</b>		-





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E1	Constant S claimed		N
	Claimed test method		N
E2	Procedure A		N
	Adequate data provided by the manufacturer		N
	The inverse of the slope is greater than or equal to the claimed value of S		N
	Compliance with the failure criteria for procedure B		N
E3	Procedure B		N
	Claimed value of $T_1$		N
	Claimed value of $T_2$		N
	Endurance test carried out at:		N
	$T_1$ (7 samples)		N
	$T_2$ (7 samples)		N
	Duration of test calculated from equation (2)		N
	$T_1$		N
	$T_2$		N
	During the test: - No open circuit - No breakdown insulation		N
	The claimed constant S is deemed to be verified		N

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

<b>H</b>	<b>ANNEX H - TESTS</b>		-
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	All tests performed in accordance with the advise given in Annex H, if applicable		N
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<b>I</b>	<b>ANNEX I - PARTICULAR ADDITIONAL REQUIREMENTS FOR INDEPENDENT SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR LED MODULES</b>		-
I.3	Classification		—
I.3.1	Class I	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Class II	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
I.3.2	a) non-inherently short circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	b) non-inherently open circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	c) inherently short circuit proof controlgear	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	d) inherently open circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	e) fail safe controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	f) non-short-circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	g) non-open-circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
I.4	Marking		-
	Adequate symbols are used		N
I.5	Protection against electric shock		-
I.5.1	No connection between output winding and body		P
	No connection between output winding and protective earthing circuit		N
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		N
	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

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Clause	Requirement – Test	Result - Remark	Verdict
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
I.5.2.3	Serrated tape, additional layer		N
I.5.2.4	Class I controlgear for fixed connection provided with basic insulation plus protective screening comply with the following conditions:		N
	a) Insulation between the input winding and the protective screen complies with the requirements for basic insulation		N
	b) Insulation between the protective screen and the output winding complies with the requirements for basic insulation		N
	c) Metal screen consists of a metal foil or of a wire wound screen		N
	d) Metal screen so arranged that both edges cannot simultaneously touch a magnetic core		N
	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
	f) Lead-out wire sufficiently fixed to the metal screen		N
I.5.2.5	Last turn of each winding of the transformer retained by positive means		P
	Impregnated winding		N
	Winding held together by means of insulating material		P
I.5.3	Components bridging between input and output circuit		P
I.5.3.1	Used capacitors and resistors comply with 8.2		P
I.5.3.2	Used opto-couplers		N
I.6	Heating		—
I.6.1	No excessive temperatures in normal use		P
	Used material classified as Class _____		—

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Clause	Requirement – Test	Result - Remark	Verdict
	Stated value of $t_a$ _____		—
I.6.2	Upri: 1.06 time supply rated voltage		—
	Determined temperature rises in windings: - Primary: <u>84.2</u> K - Limit max: <u>110</u> K - Secondary: <u>79.5</u> K - Limit max: <u>110</u> K		P
	After the test:		P
	- no connections have worked loose		P
	- no reduction of creepage distances and clearances		P
	- no flow of sealing compound		P
	- no operation of protecting devices		P
	- electric strength test between input and output windings		P
I.6.3	Cycling test (10 cycles):		N
I.6.3.1	- heat run at _____ K		N
I.6.3.2	- moisture treatment 48 h		N
I.6.3.3	- vibration test 1 h; 1,5 g		N
I.6.3.4	After the tests:		N
	- insulation resistance		N
	- dielectric strength test at 35 % of specified value; test voltage _____ V		N
	- Current or the ohmic component does not deviates by more than 30 %		N
I.7	Short-circuit and overload protection		-
I.7.1	Upri: 1.06 times rated voltage or 0.94 and 1.06 times rated supply voltage - used voltage <u>254.4</u> V		P
I.7.2 I.7.3 I.7.4	Determined temperature rise in windings and on other parts:		P

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Clause	Requirement – Test	Result - Remark	Verdict
	- test according to Clause <u>  II  </u>		P
	- Primary winding <u>  84.2  </u> K		P
	- Limit max <u>  110  </u> K		P
	- Secondary winding <u>  79.5  </u> K		P
	- Limit max <u>  110  </u> K		P
	- External enclosure <u>  56.6  </u> K		P
	- Limit max 80 K		P
	- Rubber insulation of wiring <u>      </u> K		N
	- Limit max 60 K		N
	- PVC insulation of wiring <u>      </u> K		N
	- Limit max 60 K		N
	- Supports <u>      </u> K		N
	- Limit max 80 K		N
I.7.5	Fail-safe convertors		N
I.7.5.1	- U <sub>pri</sub> : 1.06 times rated supply voltage ..... V:		—
	- I <sub>sec</sub> : 1.5 times rated output current ..... A:		—
	- time until steady-state conditions t <sub>1</sub> (h) .....:		—
	- time until failure t <sub>2</sub> (h): ≤ t <sub>1</sub> ; ≤ 5 h .....:		N
I.7.5.2	During the test:		-
	- no flames, molten material, etc.		N
	- temperature rise of enclosure ≤ 150 K		N
	- temperature rise of plywood support ≤ 100 K		N
	After the test:		N
	- electric strength (test voltage; 35 % of specified value); no flashover or breakdown for primary-to-secondary and for primary-to-body		N
	- live parts not accessible by test finger through holes of enclosure		N
I.8	Insulation resistance and electric strength		-
I.8.1	Conditioned 48 h between 91 % and 95 %		P
I.8.2	Adequate insulation (500 V d.c. for 1 min) between:		-

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Clause	Requirement – Test	Result - Remark	Verdict
	Live parts and the body -for basic insulation not less than 2 MΩ .....		N
	Live parts and the body -for reinforced insulation not less than 4 MΩ .....	>500 MΩ	P
	Input- and output circuits not less than 5 MΩ .....	>500 MΩ	P
	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
	Metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ .....	>500 MΩ	P
I.8.3	Electric strength test:		-
	1) Between live parts of input circuits and live parts of output circuits .....	3710 V	P
	2) Over basic or supplementary insulation between:		N
	a) live parts which are or may become of different polarity .....		N
	b) live parts and body if intended to be connected to protective earth .....		N
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord .....		N
	d) live parts and an intermediate metal part .....		N
	e) intermediate metal parts and the body .....		N
	3) Over reinforced insulation between the body and live parts .....		N
	No flashover or breakdown occurred		P
I.9	Construction		-
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 .....		P
I.10	Components		-
I.10.1	Socket-outlets in the output circuit does not accept plugs complying with IEC 60083 and IEC 60906-1		N



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Clause	Requirement – Test	Result - Remark	Verdict
I.10.2	Self-resetting protective devices shall not be used unless it is certain that there will be no hazards		N
	Compliance is checked by connecting the controlgear for 48 h at 1.06 times the rated voltage with the output short-circuited		N
I.11	Creepage distances and clearances		-
	1. Insulation between input and output circuits:		-
	a) measured values $\geq$ specified values (mm) ..... :	T1 bobbin thickness:1.2	P
	b) measured values $\geq$ specified values (mm) ..... :		N
	c) measured values $\geq$ specified values (mm) ..... :		N
	2. Insulation between adjacent input circuits: measured values $\geq$ specified values (mm) ..... :		N
	2. Insulation between adjacent output circuits: measured values $\geq$ specified values (mm) ..... :		N
	3. Insulation between terminals for external connection:		-
	a) measured values $\geq$ specified values (mm) ..... :		N
	b) measured values $\geq$ specified values (mm) ..... :		N
	c) measured values $\geq$ specified values (mm) ..... :		N
	4. Basic or supplementary insulation:		-
	a) measured values $\geq$ specified values (mm) ..... :		P
	b) measured values $\geq$ specified values (mm) ..... :		N
	c) measured values $\geq$ specified values (mm) ..... :		N
	5. Reinforced insulation: measured values $\geq$ specified values (mm) ..... :		P
	6. Distance through insulation:		-
	a) measured values $\geq$ specified values (mm) ..... :		N
	b) measured values $\geq$ specified values (mm) ..... :		N
	c) measured values $\geq$ specified values (mm) ..... :		N
	d) measured values $\geq$ specified values (mm) ..... :		N



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Clause	Requirement – Test	Result - Remark	Verdict
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15	TABLE: Annex I.6.2 Heating test, thermocouples		P
	Model No.:	ELP050C1500LS	—
	Test voltage (V) :	240V, 60Hz	—
	Ambient (°C) :	23.7	—
Thermocouple locations	dT (K)		Max. dT (K)
	240V, 60Hz	--	
AC connector	34.3	--	70
CX1	42.7	--	100
L2 winding	46.4	--	130
L5 winding	55.7	--	130
PCB under IC	72.7	--	130
T1 coil	82.4	--	110
T1 core	79.5	--	110
CY1	63.2	--	100
PCB near D7	107.6	--	130
Enclosure inside near T1	64.0	--	90
Enclosure OUTside near T1	56.6	--	90
Support	61.1	--	90
Ambient	23.7	--	---