**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.**.....: | GZ10010378-1R2 |
| Date of issue.....: | 27 October 2011 |
| Total number of pages .....: | 31 |
| **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 Electric & Electronic (Foshan) Co., Ltd. |
| Address.....: | Guicheng Sci-Tech Industrial Park, Jianping Road, Nanhai District, Foshan City, Guangdong Province, P.R. China |
| **Test specification:** | |
| Standard .....: | ☐ IEC 61347-2-13:2006 used in conjunction with IEC 61347-1:2007<br>☒ EN 61347-2-13:2006 used in conjunction with EN 61347-1:2008 |
| Test procedure .....: | S+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** .....: | d.c. or a.c. supplied electronic controlgear for LED modules (LED Driver) |
| Trade Mark .....: | EAGLERISE |
| Manufacturer.....: | Eaglerise Electric & Electronic (Foshan) Co., Ltd. |
| Model/Type reference.....: | ELP6X3CS |
| Ratings.....: | Input: 100-240 VAC; 50/60 Hz; 0,19 A; ta -20~50 °C; tc 80 °C; Class II; SELV; IP 65; Built-in; 110°C thermal protection;<br>Inherently short-circuit proof;<br>Suitable for direct mounting on normally flammable surfaces;<br>With input and output lead wire;<br>Output: Constant current type; 0,7 A; Max. 28 VDC; Load: 18 W Max. |

| **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).....: | Harry Zou Harry Zou |
| Approved by (+ signature).....: | Shelley Ying 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:**

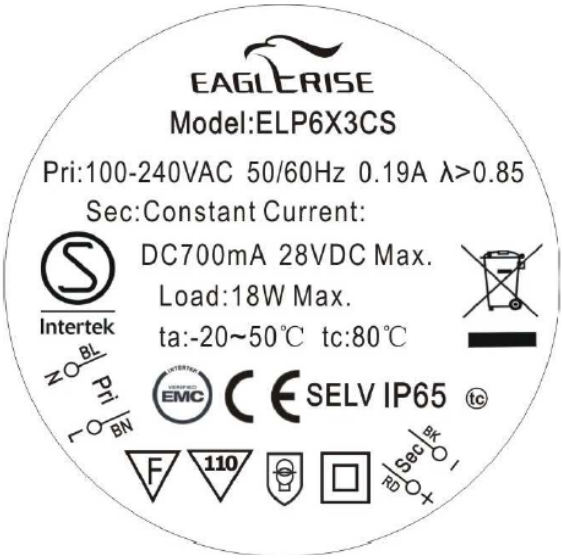
The tested samples fulfilled the requirements of specified standards.

| **Tests performed (name of test and test clause):** | **Testing location:** |
|---|---|
| 7 Marking<br>8 Protection against accidental contact with live parts<br>9 Terminals<br>11 Moisture resistance and insulation<br>12 Electric strength<br>14 Fault conditions<br>16 Abnormal conditions<br>17 Construction<br>18 Creepage distances and clearances<br>19 Screws, current-carrying parts and connections<br>20 Resistance to heat, fire and tracking<br>21 Resistance to corrosion<br>Annex C Particular requirements for electronic lamp controlgear with means of protection against overheating<br>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:**




Location: on the body 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 LED use |
| Supply Connection .....: | with input and output lead wire |
| **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.....: | 13 Jan. 2010 |
| | 1st revision: 21 June 2010 |
| | 2nd revision: 09 October 2011 |
| Date (s) of performance of tests.....: | 13 Jan. 2010 to 04 Mar. 2010 |
| | 1st revision: 21 June 2010 to 8 July 2010 |
| | 2nd revision: 09 October 2011 to 27 October 2011 |

**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.

This report is totally 31 pages; Page 1-21 is test report; page 22-26 is component list and page 27-31 is product photos.

Manufacturer site: Eaglerise Electric & Electronic (Foshan) Co., Ltd.

Address: Guicheng Sci-Tech Industrial Park, Jianping Road, Nanhai District, Foshan City, Guangdong Province, P.R. China

This report shall be used with GZ10010378-1R1.

1st revision: Based on and superseded the previous test report GZ10010378-1 dated on 4 March 2010 for S+LVD, added an alternative fuse (model name, 2T). Details please kindly read component list.

2nd revision: Based on the previous test report GZ10010378-1R1 dated on 08 July 2011 for S+LVD, below were the revisions:

1) Revised the circuit diagram and PCB layout. Details please kindly refer to the product photos;

2) Revised the component list. Details please kindly read component list.

**General product information:**

The product covered by this report is Class II; built-in; SELV LED power supply.

| IEC 61347-2-13 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| **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:<br>- the rated or maximum output voltage does not exceeding 25 V r.m.s.<br>- 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 |
| | One capacitor Y1 or two capacitors Y2 of the same values used in series between SELV or SELV-equivalent output and primary circuits<br>- Capacitor complying with IEC 60384-14<br>- Other components bridging the separating transformer complying with IEC 60065, clause 14 | | P |

| | | | |
|---|---|---|---|
| **11 (11)** | **MOISTURE RESISTANCE AND INSULATION** | | **P** |
| | After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ): | | P |
| | ≥ 2 MΩ for basic insulation .....: | > 100 MΩ | P |
| | ≥ 4 MΩ for double or reinforced insulation.....: | > 100 MΩ | P |

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

| IEC 61347-2-13 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | 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 |
| **16** | **ABNORMAL CONDITIONS** | | **P** |
| | Safety not impaired when the controlgear is operated at any voltage between 90% and 110% of rated voltage | 264 V | P |
| 16.1 | Control gear which are of the constant voltage output type: | | — |
| | a) No LED module inserted | | N/A |
| | b) Double LED modules or equivalent load connected to the output terminals | | N/A |
| | c) Output terminal short-circuited (20 cm and 200 cm or declared length) | | N/A |
| | During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced | | N/A |
| 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 ) | 10 ~ 200 cm | P |
| | Maximum output voltage not exceeded | | P |
| | During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced | | P |
| **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 |

| IEC 61347-2-13 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | 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 |
| | - 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 or mounting surface | | 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 |

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

| | | | |
|---|---|---|---|
| **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) .....: | Enclosure; 100 °C | P |
| | - part; test temperature (°C) .....: | L3 base: 125 °C | P |
| | - part; test temperature (°C) .....: | T1 bobbin; 125 °C | P |
| | - part; test temperature (°C) .....: | L1 bobbin; 125 °C | 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 | P |
| 20 (18.4) | Parts of insulating material retaining live parts in position, needle-flame test 10 s: | | P |
| | - flame extinguished within 30 s | T1bobbin; L1 bobbin; L3 base | P |
| | - no flaming drops igniting tissue paper | | P |
| 20 (18.5) | Tracking test | Enclosure | P |

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

| **14** | **TABLE: tests of fault conditions** | **P** |
|---|---|---|
| Part | Simulated fault | Hazard |
| Output wire | Short-circuited; recovered when removed the fault | NO |
| C12 | Short-circuited; recovered when removed the fault | NO |
| Input terminal of U2 | Short-circuited; recovered when removed the fault | NO |
| C9 | Short-circuited; recovered when removed the fault | NO |
| C8 | Short-circuited; recovered when removed the fault | NO |
| C5 | Short-circuited; recovered when removed the fault | NO |
| C4 | Short-circuited; the fuse-link operation | NO |
| C3 | Short-circuited; the fuse-link operation | NO |
| Input of BR1 | Short-circuited; the fuse-link operation | NO |

| IEC 61347-2-13 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| **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 | | 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 | | N/A |
| | Electrical controls comply with IEC 60730-2-3 | | N/A |
| C3.2 | No risk of fire by breaking (clause C7) | Inherently circuit feedback protection | P |
| **C5** | **CLASSIFICATION** | | **P** |
| | 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 .....: | Inherently circuit feedback protection | P |
| **C6** | **MARKING** | | **P** |
| C6.1 | Symbol for temperature declared thermally protected ballasts | | P |
| C6.2 | Declaration of the type of protection provided | | P |
| **C7** | **LIMITATION OF HEATING** | | **P** |
| C7.1 | Preselection test | | P |
| | Test sample placed for at least 12 h in an oven having temperature (tc - 5) K | 75 °C | P |

| IEC 61347-2-13 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | 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 | | N/A |
| | 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 | 80 °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 |
| **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 |

| IEC 61347-2-13 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | 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 ☐ | — |
| 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 | | P |
| I.5.2.3 | Serrated tape, additional layer | | N/A |

| IEC 61347-2-13 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 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 |
| | 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 | | N/A |
| | 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 | | P |
| I.6 | Heating | | — |
| I.6.1 | No excessive temperatures in normal use | | P |
| | Used material classified as Class _____ | B | — |
| | Stated value of $t_a$ _____ | 50 | — |
| I.6.2 | Upri: 1.06 time supply rated voltage | 1) 1,06 x 100 =106 V;<br>2) 1,06 x 240 =254,4 V | — |
| | Determined temperature rises in windings: | 1) 2) | P |
| | - Primary: _____ K | 36 36 | |
| | - Limit max: _____ K | 70 70 | |
| | - Secondary: _____ K | 38 38 | |
| | - Limit max: _____ K | 70 70 | |

| IEC 61347-2-13 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | 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/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<br>- used voltage _____ V | 1) 1,06 x 100 =106 V;<br>2) 1,06 x 240 =254,4 V | P |
| I.7.2<br>I.7.3<br>I.7.4 | Determined temperature rise in windings and on other parts: | | P |
| | - test according to Clause _____ | I.7.2<br>1) 2) | P |
| | - Primary winding _____ K | 38 / 36 | P |
| | - Limit max _____ K | 125 | P |
| | - Secondary winding _____ K | 38 / 38 | P |
| | - Limit max _____ K | 125 | P |
| | - External enclosure _____ K | 28 / 26 | P |
| | - Limit max _____ K | 55 | P |
| | - Silicone rubber insulation of wiring _____ K | — / — | N/A |
| | - Limit max _____ K | — / — | N/A |
| | - PVC insulation of wiring _____ K | 19 / 19 | P |

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|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | - Limit max _____ K | 35 | P |
| | - Supports _____ K | 20 \| 20 | P |
| | - Limit max _____ K | 55 | P |
| I.7.5 | Fail-safe convertors | | 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: | | |
| | - 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 |
| | 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 |

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|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | 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 ..... : | | 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 product is overall encapsulated by self-hardening compound bond (epoxy casting compound);<br>Component between the primary and secondary circuit: 6,2 mm (limited: 6,0 mm)<br>Pri. Winding to sec. winding:6,2 mm (limited: 6,0 mm) | P |
| | b) measured values ≥ specified values (mm) ..... : | | N/A |
| | c) measured values ≥ specified values (mm) ..... : | Three layers of insulation tape as reinforced insulation, total dti.; >0,24 mm (limited: 0,2 mm) | P |
| | 2. Insulation between adjacent input circuits: measured values ≥ specified values (mm) ..... : | | N/A |

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|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | 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) ..... : | 3,2 mm (limited: 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) ..... : | | N/A |
| | 6. Distance through insulation: | | P |
| | a) measured values ≥ specified values (mm) ..... : | | N/A |
| | b) measured values ≥ specified values (mm) ..... : | Plastic enclosure thickness: 1,2 mm (limited: 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 |

| | **CENELEC COMMON MODIFICATIONS (EN)** | P |
|---|---|---|

| **18 (16)** | **TABLE: creepage distances and clearances** (The product is overall encapsulated by self-hardening compound bond (epoxy casting compound)) | 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 | | | — | — | 3,2 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 | | | — | — | — | — | — | — |
| 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 |