Test report

On Behalf of

MEAN WELL ENTERPRISES CO.,LTD.

For

LED Driver

Model No.: ELG-200-36A

Prepared for : MEAN WELL ENTERPRISES CO.,LTD.

NO.28, Wuquan 3rd RD., Wugu Dist., New Taipei City 24891,Taiwan

Prepared By :TMC Testing Services(Shenzhen) Co., Ltd.

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Date of Test: September 23, 2018 to September 30, 2018

Date of Report: September 30, 2018

Report Number: TMC180923111-S

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.....:	TMC180923111-S
Tested by (name and signature) .....:	Bart Deng
Approved by (name and signature) .....:	Lemon Rao
Date of issue.....:	September 30, 2018
Contents .....:	29 Pages

Applicant's name.....:	MEAN WELL ENTERPRISES CO.,LTD.
Address .....:	NO.28, Wuquan 3rd RD., Wugu Dist., New Taipei City 24891,Taiwan

Test specification:

Standard .....:	IEC 61347-2-13:2006 used in conjunction with IEC 61347-1 (Second Edition) : 2007+A1:2010 and AS/NZS 61347.1: 2002
Test procedure .....:	CB Scheme
Non-standard test method……..:	N/A

Test Report Form No.....:	IEC61347_2_13C
Test Report Form(s) Originator .....:	Intertek Semko AB
Master TRF.....:	2011-06

Test item description ..... :	LED Driver
Trade Mark .....:	
Manufacturer.....:	MEAN WELL ENTERPRISES CO.,LTD.
Model/Type reference.....:	ELG-200-36A
Ratings.....:	100-240V ~ ,50/60Hz , 180W

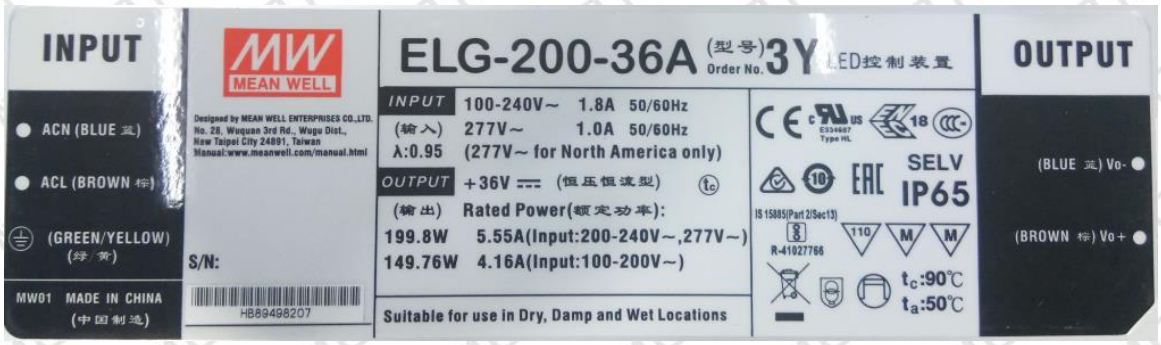
Testing procedure and testing location:

☒ **Testing Laboratory:**	**TMC Testing Services(Shenzhen) Co., Ltd.**
Testing location/ address..... :	1st Floor, Block A1, Zone A, Xinshidai Gongrong Industrial Park, No. 2, Shihuan Road, Shiyan Street, Baoan District, Shenzhen, China

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
Test sample ELG-200-36A was subjected to full tests and construction check.	**TMC Testing Services(Shenzhen) Co., Ltd.** 1st Floor, Block A1, Zone A, Xinshidai Gongrong Industrial Park, No. 2, Shihuan Road, Shiyan Street, Baoan District, Shenzhen, China

Copy of marking plate



Test item particulars	:	LED Driver
Classification of installation and use	:	Class I, IP65,
Supply Connection	:	Terminal block
Possible test case verdicts:		
- 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)
Testing	:	
Date of receipt of test item	:	September 23, 2018
Date (s) of performance of tests	:	September 23, 2018 to September 30, 2018

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 (point) is used as the decimal separator.
Clause numbers between brackets refer to clauses in IEC 61347-1

General product information:

Based on the above information, the samples have been tested and found compliant with the requirements of the safety standard listed below:

IEC 61347-2-13: 2006 + AS/NZS 61347.1: 2002.

List of attachments(including a total number of pages in each attachment):

Attachment 1: Applicable clause of IEC 61347-2-13: 2006 + AS/NZS 61347.1: 2002
Attachment 2: Product pictures

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
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 convertor ..... :	Yes ☒ No ☐	—
	Built-in convertor ..... :	Yes ☐ No ☒	—
	Integral convertor ..... :	Yes ☐ No ☒	—
	SELV-equivalent or isolating convertor ..... :	Yes ☒ No ☐	—
	Auto-wound convertor ..... :	Yes ☐ No ☒	—
	Independent SELV controlgear ..... :	Yes ☐ No ☒	—
7	**MARKING**		—
7.1 (7.1)	Mandatory markings:		P
	- mark of origin	Refer to marking label	P
	- model number, type reference ..... :	ELG-200-36A	P
	- symbol for independent convertor, if applicable	Refer to marking label	P
	- correlation between interchangeable parts and convertor marked		N/A
	- rated supply voltage (V) ..... :	100-240V~	P
	- earthing symbol		N/A
	- wiring diagram	Refer to marking label	P
	- value of t_c	Refer to marking label	P
	- symbol for declared temperature	Refer to marking label	P
	Constant voltage type:	Yes ☒ No ☐	—
	- rated supply voltage (V) ..... :		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		P
7.2 (7.1)	- information to be provided, if applicable:		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- declaration on protection against accidental contact		N/A
	- cross-section of conductors (mm²) ..... :	Refer to user manual	P
	- number, type and wattage of lamp(s)	LED module only	N/A
	- declaration of mains connected windings	Refer to marking label	P
	- declaration for SELV-equivalent convertor		N/A
- (7.2)	Marking durable and legible		P
	Rubbing 15 s water, 15 s petroleum; marking legible	No legible and clear after the test.	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. ..... :		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		N/A
	Adequate mechanical strength on parts providing protection		N/A
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50 V .....:	Voltage=0V after 1min	P
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 if: - the rated or maximum rated output voltages ≤ 25 V r.m.s. - the no-load output voltage ≤ 30 V r.m.s. or 33 √2 V peak	All terminals cove by enclosure and cannot access.	N/A
	Insulated terminals if convertor with rated output voltage > 25 V		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	One capacitor Y1 or two capacitors Y2 complying with IEC 60384-14 of the same values used in series between SELV or SELV-equivalent output and primary circuits		P
	Other components bridging the separating transformer complying with IEC 60065, clause 14		P
9 (8)	**TERMINALS**		—
	Separately approved, component list	(see Annex 1)	P
	Screw terminals: compliance with Section 14 of IEC 60598-1	(see Annex 2)	N/A
	Screwless terminals: compliance with Section 15 of IEC 60598-1	(see Annex 3)	N/A
10 (9)	**PROVISION FOR EARTHING**		P
	Terminal complying with clause 8 in Part 1		P
	Locked against loosening and not possible to loosen by hand		P
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	Earthing via means of fixing		P
	Earthing terminal only used for the earthing of the control gear		N/A
	All parts of material minimizing the danger of electrolytic corrosion		P
	Made of brass or equivalent material		P
	Contact surface bare metal		P
	Earth contact via the track on the printed board		P
	Test with a current of 25 A between earthing terminal and each of the accessible metal parts; measured resistance (Ω): < 0,5 Ω ..... :		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
	For basic insulation ≥ 2 MΩ ..... :	>1000 MΩ	P
	For double or reinforced insulation ≥ 4 MΩ ..... :		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Adequate insulation between input and output terminals not bounded together in SELV-equivalent controlgear		—
12 (12)	**ELECTRIC STRENGTH**		**P**
	Immediately after clause 11 electric strength test for 1 min		N/A
	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		N/A
	Supplementary insulation, 2U + 1750 V		N/A
	Double or reinforced insulation, 4U + 2750 V	3710V	P
	No flashover or breakdown		P
	Windings in separating transformers in SELV-equivalent convertors according to 14.3.2 of IEC 60065		N/A
14 (14)	**FAULT CONDITIONS** (Carried out on three samples)		**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 ballasts does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected		N/A
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 18 (except between live parts and accessible metal parts)	(see appended table)	P
	Creepage distances on printed boards less than specified in clause 18 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	(see appended table)	N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	P
- (14.5)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 MΩ	>1000 MΩ	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.6)	Relevant fault condition tests with high-power supply		—
	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C		P
15	**TRANSFORMER HEATING**		—
	Windings of separating transformer in a SELV-equivalent controlgear fulfil the requirements according to 7.1 and 11.2 of IEC 60065		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 ..... :	85 degree C	—
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:		P
	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)		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:		N/A
	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		P
	Socket-outlet in the output circuit does not accept plugs complying with IEC 60083 and IEC 60906	Terminal block cover by enclosure	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		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	VDE approved terminal block	P
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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		N/A
(4.11.5)	No contact to wood		N/A
(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
(4.12.4)	Locked connections		N/A
(4.12.5)	Screwed glands: force (N) .....:		N/A
20 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		—
- (18.1)	Parts of insulating material retaining live parts in position, ball-pressure test:		P
	- part; test temperature (°C) .....:	Terminal Block 125°C	P
	- part; test temperature (°C) .....:	PCB, Bobbin of transformer, Bobbin of inductor: 125°C	P
- (18.2)	Printed boards in accordance with 8.7 of IEC 61189-2 and relevant parts of IEC 61249-2		N/A
- (18.3)	External parts of insulating material preventing electric shock glow-wire test 650 °C	Metal enclosure 650°C	P
- (18.4)	Parts of insulating material retaining live parts in position, needle-flame test 10 s:		P
	- flame extinguished within 30 s	Terminal block, PCB, Bobbin of transformer, bobbin of inductor, plastic enclosure	P
	- no flaming drops igniting tissue paper		P
- (18.5)	Tracking test according section 13 of IEC 60598-1 if required		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
21 (19)	**RESISTANCE TO CORROSION**		N/A
	Applicable parts comply with 4.18.1 of IEC 60598-1		N/A
	Adequate varnish on the outer surface		N/A
- (20)	**NO-LOAD OUTPUT VOLTAGE**		P
	No load output voltage not differ more than 10 % from rated voltage		P

14	**TABLE: tests of fault conditions**	**P**
Part	Simulated fault	Hazard
Output wires	Short circuit	NO
Transformer output	Short circuit	NO
C13	Short circuit	NO
Output pin of optical isolator-U2	Short circuit	NO
Input pin of optical isolator-U2	Short circuit	NO
IC1 pin1-7	Short circuit	NO
IC1 pin 1-6	Short circuit	NO
IC1 pin 6-7	Short circuit	NO
U3 pin1-2	Short circuit	NO
U3 pin1-3	Short circuit	NO
U3 pin3-2	Short circuit	NO
D1	Short circuit	NO

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

18 (16)	**TABLE: creepage distances and clearances**						P
	Minimum distances for a.c. (50/60 Hz) sinusoidal voltages						
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.				cl>3,0 Cr>3,0			
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.				cl>3,0 Cr>3,0			
- 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)								
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								

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**		N/A
C3	**GENERAL REQUIREMENTS**		N/A
C3.1	Thermal protection means integral with the convertor, protected against mechanical damage		N/A
	Renewable only by means of a tool		N/A
	If function depending on polarity, for cord-connected equipment protection means in both leads		N/A
	Thermal links comply with IEC 60691		N/A
	Electrical controls comply with IEC 60730-2-3		N/A
C3.2	No risk of fire by breaking (clause C7)		N/A
C5	**CLASSIFICATION**		N/A
	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 ... :		N/A
C6	**MARKING**		N/A
C6.1	Symbol for temperature declared thermally protected ballasts		N/A
C6.2	Declaration of the type of protection provided		N/A
C7	**LIMITATION OF HEATING**		N/A
C7.1	Preselection test:		N/A
	Test sample placed for at least 12 h in an oven having temperature (tc - 5) K		N/A
	No operation of the protection device		N/A
C7.2	Functioning of protection means		N/A
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (t_c +0; -5) °C is obtained		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	No operation of the protection device		N/A
	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 convertor operated under normal conditions		N/A
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		N/A
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Ballasts according to C5 b) working 6 times		N/A
	Ballasts according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value		N/A
	Any overshoot of 10% over the marked value within 15 min		N/A
D	**ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR**		N/A
	Tests in C7 performed in accordance with Annex D, if applicable		N/A
E	**ANNEX E – USE OF CONSTANT S OTHER THAN 4500 IN t_w TESTS**		N/A
	Annex E if windings of 50 Hz/60 Hz		N/A
E1	Constant S claimed		N/A
	Claimed test method		N/A
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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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		P
H	**ANNEX H - TESTS**		**P**
	All tests performed in accordance with the advice given in Annex H, if applicable		P
I	**ANNEX I - PARTICULAR ADDITIONAL REQUIREMENTS FOR INDEPENDENT SELV D.C. OR A.C. SUPPLIED ELECTRONIC STEP-DOWN CONVERTORS FOR FILAMENT LAMPS**		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 ☒	—

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	g) non-open-circuit proof controlgear	Yes ☐ No ☒	—
I.4	**Marking**		P
	Adequate symbols are used	Refer to marking label	P
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/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	Class I	N/A
	Class I: insulation between input and body consists of basic and between output and body supplementary insulation		P
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 HD-transformer consists of basic insulation		N/A
I.5.2.3	Serrated tape, additional layer		P
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		V

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	f) Lead-out wire sufficiently fixed to the metal screen		N/A
I.6	**Heating**		P
I.6.1	No excessive temperatures in normal use		P
	Used material classified as Class .....:	Class B	—
	Stated value of t_a .....:	60 Degree C	—
I.6.2	Temperature rises (Upri: 1.06 time supply rated voltage)		—
	Determined temperature rises in windings: - Primary (K) .....: - Limit max (K) .....: - Secondary (K) .....: - Limit max (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):		—
I.6.3.1	- heat run at (K) .....:		P
I.6.3.2	- moisture treatment 48 h		P
I.6.3.3	- vibration test 1 h; 1,5 g		P
I.6.3.4	After the tests:		—
	- insulation resistance ≥ 2, 4 or 5 MΩ		P
	- dielectric strength test for 2 min. at 35 % of specified value in table I.6		P
	- Current or the ohmic component does not deviates by more than 30 %		P
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 (V) .....:	240*1.06=254.4VAC	P
I.7.2 I.7.3 I.7.4	Determined temperature rise in windings and on other parts:		—
	- test according to Clause .....:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- Primary winding (K) .....:		P
	- Limit max (K) .....:		P
	- Secondary winding (K) .....:		P
	- Limit max (K) .....:		P
	- External enclosure ≤ 80 (K) .....:		P
	- Rubber insulation of wiring ≤ 60 (K) .....:		P
	- PVC insulation of wiring ≤ 60 (K) .....:		P
	- Supports ≤ 80 (K) .....:		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:		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**		—
I.8.1	Conditioned 48 h between 91 % and 95 %		P
I.8.2	Adequate insulation (500 V d.c. for 1 min) between:		—
	Live parts and the body -for basic insulation not less than 2 MΩ .....:	>1000 MΩ	P
	Live parts and the body -for reinforced insulation not less than 4 MΩ .....:	>1000 MΩ	P
	Input- and output circuits not less than 5 MΩ .....:	>1000 MΩ	P
	Metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ .....:	No metal part used	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ ..... :	>1000 MΩ	P
I.8.3	Electric strength test:		—
	1) Between live parts of input circuits and live parts of output circuits ..... :	3750V	P
	2) Over basic or supplementary insulation between:		N/A
	a) live parts which are or may become of different polarity ..... :	1875V	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 ..... :	3750V	P
	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 ..... :	>25mm	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		P
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 convertor for 48 h at 1.06 times the rated voltage with the output short-circuited		N/A
I.11	**Creepage distances and clearances**		—
	1. Insulation between input and output circuits:		—
	a) measured values ≥ specified values (mm) ..... :	>6.0mm	P
	b) measured values ≥ specified values (mm) ..... :		N/A
	c) measured values ≥ specified values (mm) ..... :	Separately approved triple insulated winding wire used	P

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Clause	Requirement + Test	Result - Remark	Verdict
	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:		—
	a) measured values ≥ specified values (mm) .....:	>6.0mm	P
	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) .....:	>3.0mm	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) .....:	>6.0mm	P
	6. Distande through insulation:		N/A
	a) measured values ≥ specified values (mm) .....:		N/A
	b) measured values ≥ specified values (mm).....:	>1.0mm	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

	ANNEX 1: components					P
object/part No.	code	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
Fuse(F1)	B	Ever Island Electric Co. Led and Walter electric	2010 Series(s)	T/AC250V /1.0A	EN 60127-1 EN 60127-3	VDE 40018781
Terminal	B	Various	Various	AC250V/10A	/	VDE
CY1	A	TDK-EPC corporation	CD	250/400v, 2200pF 125C/ Y1	IEC 60384-14	VDE135256
	D	Various	Various	250/400v, 2200pF 125C/ Y1	IEC 60384-14	VDE
Optocoupler	B	Sharp	PC817	100C	EN 60747-5-2	VDE40008087
PCB	A	T&K PCB Co,ltd	CEM1	130C/V-0	IEC61347-2-13/AS/NZS 61347.1	Test in appliance
	D	Various	Various	130C/V-0	IEC61347-2-13/AS/NZS 61347.1	Test in appliance
Insulation Tap	B	Jingjiang yahua pressure sensitive glue Co.,ltd	CT	Polyimide 130C, V-0	IEC61347-2-13/AS/NZS 61347.1	Test in appliance
	B	Various	Various	Polyimide 130C, V-0	IEC61347-2-13/AS/NZS 61347.1	Test in appliance
Winding of transformer	B	Pacific electric wire&cable (Shenzhen) Co.,ltd	UEW/U	130C, V-0	IEC61347-2-13/AS/NZS 61347.1	Test in appliance
Secondary wire of transformer	B	Furukawa electric Co.,ltd	TEX-E	130C, V-0	IEC61347-2-13/AS/NZS 61347.1	Test in appliance
Bobbin of transformer	B	Sumitomo Bakelite Co., ltd	PM9820	150C, V-0	IEC61347-2-13/AS/NZS 61347.1	Test in appliance

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Clause	Requirement + Test	Result - Remark	Verdict

Metal enclosure	B	Various	Various	80C, V-2	IEC61347-2-13/AS/NZS 61347.1	Test in appliance

The codes above have the following meaning:

A - The component is replaceable with another one, also certified, with equivalent characteristics

B - The component is replaceable if authorised by the test house

C - Integrated component tested together with the appliance

D - Alternative component

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Clause	Requirement + Test	Result - Remark	Verdict

Temperature rise and heating test			P
	Type reference……..:	LED driver	—
	Test Voltage……..:	240V~	—
	Supply wattage (W)……:	180W	—
	Supply Current (A)……:	0.78A	—
	Mounting position……..:	As instruction manual	—
	Frequency……..…:	50/60Hz	
	Table: Measured temperatures corrected for ta=45°C		

temperature (°C) of part	207V	254.4V	Limited(°C)	Verify
	t (°C)	t (°C)		
Plastic enclosure inside	52,1	52,8	80	P
Plastic enclosure outside	51,2	51,4	80	P
Terminal block	61,2	60,1	Ref.	P
T1 winding	89	90	110	P
T1 Bobbin	86,2	91,1	150	P
PWB under T1	77,2	76,3	130	P
Y capacitor	66.8	65,9	125	P
Mounting surface	53,8	53,4	Ref.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Attachment 1: (AU/NZ) Australian/New Zealand Deviations AS/NZS61347.1:2002		P

	(AU/NZ) Australian/New Zealand Deviations AS/NZS61347.1:2002		**P**
5	In Australia, the supply voltage is 230/400v+10%-6% and for testing according to this standard, the rated voltage shall be 240V/415V		P
8	Cables and cords shall comply with the relevant requirements of section 5 of AS/NZS 60598.1		N/A
9	Protective earth(Ground). Symbol  417C-IEC-5019		N/A
18.2	Parts of insulating material retailing current carrying parts, SELV parts in position, and external parts of insulating material providing protection against electric shock shall be resistant to flame and ignition.		P
18.2.1	Parts of insulating material retaining current carrying parts in position shall withstand the following tests: Glow-wire of 750°C	See appended table	P
18.2.2	Parts of insulating material which do not retain live parts in position, but which provide protection against electric shock, and parts of insulating material retaining SELV, parts in position shall withstand the following test: Glow-wire of 650°C	See appended table	P
	Do not apply in those cases where the control gear provide and effective barrier to burning drops where the insulation material is ceramic		N/A
18.2.3	Parts that withstand the glow-wire test but with flame during the application of the glow-wire, the surrounding parts are subjected to the needle-flame test of 30s		N/A
	Parts shielded by a separate barrier that meets the needle-flame test are not tested		N/A
	Not carried out on material classified as FV-0 or FV-1 according to AS/NZS 4695.707		N/A
	Needle-flame test on parts, other than enclosures, do not withstand the flow-wire tests		N/A
	Parts shielded by a separate barrier that meets the needle-flame test are not tested		N/A
13.3	**Glow-Wire Test**		

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Clause	Requirement + Test	Result - Remark	Verdict

Parts name; material spec. if applicable	Test Temp (°C)	Duration of flame(s)	Height of flame(mm)	Burning drop ignite tissue paper(Y/N)	Verify
PCB	750	No	No	N	P
Bobbin of transformer	750	No	No	N	P
Terminal block	750	No	No	N	P
Plastic enclosure	650	No	No	N	P

	(AU/NZ) Australian/New Zealand Deviations AS/NZS61347.1.13	P
	No deviation reported	P

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

Attachment 2: Photos

Fig 1 Over view-Top

Fig 2 Overview-Bottom

********End of Report********