Prüfbericht-Nr.: *Test Report No.:*	**14718906 001**	**Auftrags-Nr.:** *Order No.:*	1160025505	Seite 1 von 56 *Page 1 of 56*
Kunden-Referenz-Nr.: *Client Reference No.:*	N/A	**Auftragsdatum:** *Order date:*	27.05.2016	
Auftraggeber: *Client:*	R & C Agency (International) Pty Ltd 94 Wecker Road MANSFIELD QLD 4122 Australia			
Prüfgegenstand: *Test item:*	LED POWER SUPPLY			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	EXTM-12VDC12W, EXTM-12VDC8W			
Auftrags-Inhalt: *Order content:*	Type test			
Prüfgrundlage: *Test specification:*	IEC 61347-1:2000 MOD IEC 61347-2-13, Ed.1.0(2006) MOD AU National Deviation			

Wareneingangsdatum: *Date of receipt:*	27.05.2016
Prüfmuster-Nr.: *Test sample No.:*	1160025505
Prüfzeitraum: *Testing period:*	27.05.2016 – 07.06.2016
Ort der Prüfung: *Place of testing:*	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.
Prüfergebnis*: *Test result*:*	Pass

geprüft von / *tested by*:

2016. 06. 12 Jing Zheng / PE

Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

kontrolliert von / *reviewed by*:

2016-6-12 Guoping Zheng / TC

Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

Sonstiges / *Other*: National Deviation report of AS/NZS 61347.1:2002 and AS/NZS IEC 61347.2.13:2013 from IEC 61347-1:2000 MOD and IEC 61347-2-13, Ed.1.0(2006)MOD.

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

V04

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT
EN / IEC 61347-2-13
Part 2: Particular requirements:
Section Thirteen – d.c. or a.c. supplied electronic controlgear for LED modules

Report Number. .....:	14718906 001
Date of issue .....:	See cover page
Total number of pages.....	See cover page
Applicant's name.....:	R & C Agency (International) Pty Ltd
Address .....:	94 Wecker Road MANSFIELD QLD 4122 Australia
Test specification:	
Standard .....:	IEC 61347-2-13:2006 used in conjunction with IEC 61347-1:2008 + A1:2011 + A2:2013
Test procedure .....:	Type test
Non-standard test method……..:	N/A
Test Report Form No.....:	IEC61347_2_13D
Test Report Form(s) Originator.....:	Intertek Semko AB
Master TRF.....:	2013-10

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

Test item description .....:	LED Driver
Trade Mark .....:	R&C GRC Lighting
Manufacturer.....:	R & C Agency (International) Pty Ltd 94 Wecker Road MANSFIELD QLD 4122 Australia
Model/Type reference .....:	EXTM-12VDC8W, EXTM-12VDC12W
Ratings .....:	I/P: 100-240V~ 50/60Hz,independent use; Output: ta: 50℃, λ>0.5, thermally protected 110

Testing procedure and testing location:	
☒ **Testing Laboratory:**	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.
Testing location/ address .....:	3F, Building C13, R&D Park, No.32 Lane 299 Guanghua Road, National Hi-Tech Zone, Ningbo 315048, P.R. China
☐ **Associated CB Laboratory:**	
Testing location/ address .....:	
Tested by (name + signature) .....:	See cover page
Approved by (+ signature).....:	See cover page
☐ Testing procedure: TMP	
Testing location/ address .....:	
Tested by (name + signature) .....:	
Approved by (+ signature).....:	
☐ Testing procedure: WMT	
Testing location/ address .....:	
Tested by (name + signature) .....:	
Witnessed by (+ signature) .....:	
Approved by (+ signature).....:	
☐ Testing procedure: SMT	
Testing location/ address .....:	
Tested by (name + signature) .....:	
Approved by (+ signature).....:	
Supervised by (+ signature) .....:	

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

N/A

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
All tests performed on EXTM-12VDC8W, EXTM-12VDC12W Result: Pass.	TÜV Rheinland / CCIC (Ningbo) Co., Ltd. 3F, Building C13, R&D Park, No.32 Lane 299 Guanghua Road, National Hi-Tech Zone, Ningbo 315048, P.R. China

Summary of compliance with National Differences:

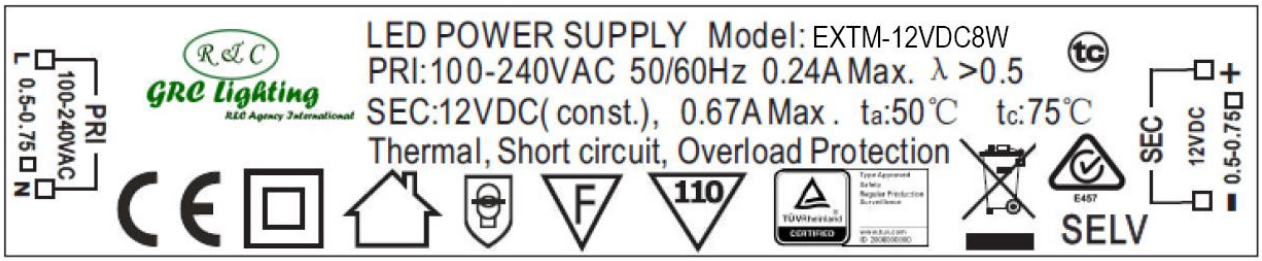
List of countries addressed:

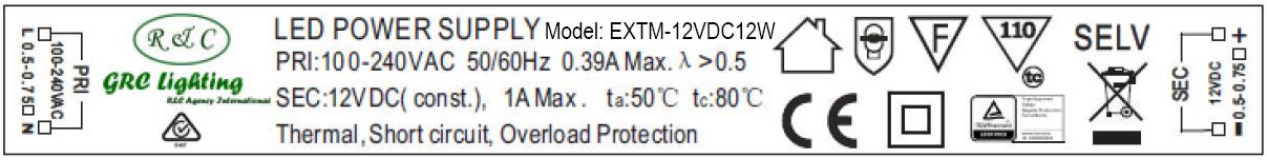
EU Group Differences.

☒ The product fulfils the requirements of **AS/NZS 61347.1:2002 and AS/NZS IEC 61347.2.13:2013**

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.





Test item particulars ..... :	
Classification of installation and use ..... :	Independent use with trace
Supply Connection ..... :	Connecting leads
..... :	
..... :	
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 ..... :	See cover page
Date (s) of performance of tests ..... :	See cover page

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

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :

☐ Yes
☒ Not applicable

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... : TITAN LIGHTING CO., LTD.
10, South Industrial Avenue, XiaoLan Town, ZhongShan City, GuangDong Province 528415, P.R. China

General product information:

LED Drivers are used for Class II appliances, suitable together with LED lighting source. It belongs to independent SELV, Non-inherently short-circuit proof controlgear.

The drivers should install with track, and fasten the track and the drivers on the ceiling, so have not any touch with supply cord inside.

The models differences as see below table to details:

Model name	Input	Transformer type	Output rating	ta (°C)	tc (°C)	IP
EXTM-12VDC12W	100-240vdc;50/60Hz	EE19-1	12Vdc, 12W	50	80	20
EXTM-12VDC8W,	100-240vdc;50/60Hz	EE19-2	12Vdc, 8W	50	75	20

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

4 (4)	**GENERAL REQUIREMENTS**		**P**
	Insulation materials according requirements in Annex N of IEC 61347-1		P
	Compliance of independent controlgear enclosure with IEC 60 598-1		P
	Built-in magnetic ballast with double or reinforced insulation comply with Annex I of IEC 61347-1		N/A
	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
	SELV controlgear comply with Annex L of IEC 61347-1	(see Annex L)	P
	Independent SELV controlgear comply with Annex I of this part 2	(see Annex I)	P

6 (6)	**CLASSIFICATION**		**P**
	Built-in controlgear ..... :	Yes ☐ No ☒	—
	Independent controlgear ..... :	Yes ☒ No ☐	—
	Integral controlgear ..... :	Yes ☐ No ☒	—
	SELV-equivalent or isolating controlgear ..... :	Yes ☐ No ☒	—
	Auto-wound controlgear ..... :	Yes ☐ No ☒	—
	Independent SELV controlgear ..... :	Yes ☐ No ☒	—

7 (7)	**MARKING**		**P**
7.1 (7.1)	Mandatory markings		P
	a) mark of origin	R&C GRC Lighting	P
	b) model number or type reference	See general product information	P
	c) symbol for independent controlgear, if applicable		P
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)	100-240V	P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	supply frequency (Hz)	50/60Hz	P
	supply current (A)	In marking plates	P
	f) earthing symbol		N/A
	k) wiring diagram		P
	l) value of t_c	75°C for EXTM-12VDC8W; 80°C for EXTM-12VDC12W	P
	m) symbol for declared temperature	110	P
	Constant voltage type:	Yes ☒ No ☐	—
	- rated output voltage (V) ..... :	See general product information	P
	- rated maximum output current (A) ..... :	See general product information	P
	- indication if for LED modules only	LED	P
	Constant current type:	Yes ☐ No ☒	—
	- rated output current (A) ..... :		N/A
7.1 (7.2)	Marking durable and legible		P
	Rubbing 15 s water, 15 s petroleum; marking legible	15 s water 15 s petroleum	P
7.2 (7.1)	Information to be provided, if applicable:		P
	h) declaration on protection against accidental contact		P
	i) cross-section of conductors (mm²)		P
	j) number, type and wattage of lamp(s)	LED	P
	- declaration of mains connected windings		N/A
	- declaration for SELV-equivalent controlgear		N/A

8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**		**P**
- (10.1)	Controlgear protected against accidental contact with live parts		P
- (A2)	Voltage measured with 50 kΩ	(see Annex A)	P
- (A3)	Voltage > 35 V r.m.s. or > 60 V d.c. or protective independance device	(see Annex A)	N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
- (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 .....:	Less than 0,5μF	P
- (10.3)	Controlgear providing SELV		P
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		P
	No connection between output circuit and the body or protective earthing curcuit		P
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		P
	SELV outputs separated by at least basic insulation		P
	ELV conductive parts insulated as live parts	SELV	N/A
	Tests according Annex L of IEC 61347-1	Checked	P
- (10.4)	Accessible conductive parts in SELV circuits		P
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.	Output voltage under 60V d.c	P
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. .....:		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		P
	Y1 or Y2 capacitors comply with IEC 60384-14		P
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
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	Terminal with plastic cover	P
	Insulated terminals if convertor with rated output voltage > 25 V	Insulated terminals used	P
	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	Y1 capacitor approved by VDE	P
	Other components bridging the separating transformer complying with IEC 60065, clause 14		N/A

9 (8)	**TERMINALS**		**P**
	Screw terminals according section 14 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the controlgear	(see Annex 2)	N/A
	Screwless terminals according section 15 of IEC 60598-1:		P
	Separately approved; component list	(see Annex 1)	P
	Part of the controlgear	(see Annex 3)	P

10 (9)	**PROVISION FOR PROTECTIVE EARTHING**		**N/A**
- (9.1)	Provisions for protective earthing		N/A
	Terminal complying with clause 8	.	N/A
	Locked against loosening and not possible to loosen by hand		N/A
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	Earthing via means of fixing		N/A
	Earthing terminal only used for the earthing of the control gear		N/A
	All parts of material minimizing the danger of electrolytic corrosion		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A
- (9.2)	Provision for functional earthing		N/A
	Comply with clause 8 and 9.1		N/A
- (9.3)	Earth contact via the track on the printed board		N/A
	Test with a current of 25 A between earthing terminal and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω ..... :		N/A
- (9.4)	Earthing of built-in lamp controlgear		N/A
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N/A
	Earthing terminal only for earthing the built-in controlgear		N/A
- (9.5)	Earthing via independent controlgear		N/A
- (9.5.1)	Earth connection to other equipment		N/A
	Looping or through connection, conductor min. 1,5 mm² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω ..... :		N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A

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 ..... :	>100 MΩ (between L-N after fuse open)	P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	For double or reinforced insulation ≥ 4 MΩ ..... :	>100 MΩ (between input circuit and output circuit) (between primary circuit and enclosure) (between transformer's primary and secondary circuit) (between transformer core to secondary, and insulation tape)	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P
11 (-)	Adequate insulation between input and output terminals not bounded together in SELV-equivalent controlgear		N/A

12 (12)	**ELECTRIC STRENGTH**		**P**
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V	Between SELV circuit to enclosure	P
	Working voltage ≤ 50 V, test voltage 500 V		N/A
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, 2U + 1000 V	Between L-N after fuse open. U_{test}: 240V→ 1480V	P
	Supplementary insulation, 2U + 1000 V		N/A
	Double or reinforced insulation, 4U + 2000 V	Between input circuit and output circuit. Between input circuit and enclosure. For model with input voltage U_{test} 240V→ 2960V	P
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		P
12 (-)	Windings in separating transformers in SELV-equivalent convertors according to 14.3.2 of IEC 60065		N/A

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

14 (14)	**FAULT CONDITIONS**		**P**
- (14)	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	110	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)	(see appended table)	N/A
	Creepage distances on printed boards less than specified in clause 16 in Part 1 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
- (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 ..... :	> 100 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		—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C	110°C	P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
15 (-)	**TRANSFORMER HEATING**		**P**
	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 (-)	Normal operation		P
	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 (-)	Abnormal operation		P
	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 ..... :		—

16 (-)	**ABNORMAL CONDITIONS**		**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
	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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
17 (15)	**CONSTRUCTION**		**P**
- (15.1)	Wood, cotton, silk, paper and similar fibrous material		P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation	No such material	P
- (15.2)	Printed circuits		P
	Printed circuits used as internal connections complies with clause 14		P
- (15.3)	Plugs and socket-outlets used in SELV or ELV circuits		N/A
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N/A
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N/A
	- plugs not able to enter socket-outlets of other standardised system		N/A
	- socket-outlets not admit plugs of other standardised system		N/A
	- socket-outlets without protective earth		N/A
17 (-)	Socket-outlet in the output circuit does not accept plugs complying with IEC 60083 and IEC 60906		N/A
	Not possible to engage plugs accepted by socket-outlet in the output circuit with socket-outlets complying with IEC 60083 and IEC 60906		N/A

18 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
- (16)	Creepage distances and clearances according to Table 3 and 4, as appropriate	(see appended table)	P
	Controlgears providing SELV comply with L.1 in Annex L		P
	Insulating lining of metallic enclosures		N/A
	Basic insulation on printed boards tested according to clause 14		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Distances subjected to both sinusoidal voltage as non-sinusoidal pulses not less than value in either Table 3 or 4		N/A
	Creepage distances not less than minimum clearance	Checked	P
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		N/A
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	Mechanical connections and glands		N/A
(4.12.1)	Screws not made of soft metal		N/A
	Screws of insulating material		N/A
	Torque test: torque (Nm); part ..... :		N/A
	Torque test: torque (Nm); part ..... :		N/A
	Torque test: torque (Nm); part ..... :		N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm)..... :		N/A
	- lampholder; torque (Nm)..... :		N/A
	- push-button switches; torque 0,8 Nm..... :		N/A
(4.12.5)	Screwed glands; force (Nm) ..... :		N/A

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

20 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
- (18.1)	Ball-pressure test:		P
	- part tested; temperature (°C)..... :	Main Enclosure; 125°C; 0.99mm	P
	- part tested; temperature (°C)..... :	Terminal : 125°C,0.82mm	P
	- part tested; temperature (°C)..... :	Bobbin; 125°C; 0.76mm	P
- (18.2)	Test of printed boards:	In considered	P
	- part tested..... :	PCB 10s	P
	- part tested..... :		N/A
- (18.3)	Glow-wire test (650°C):		P
	- part tested..... :	750°C	P
	- part tested..... :		N/A
- (18.4)	Needle flame test (10 s):		P
	- part tested..... :	PCB	P
	- part tested..... :	Bobbin	P
- (18.5)	Tracking test:		P
	- part tested..... :	PCB	P
	- part tested..... :	Bobbin	P

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

14	**TABLE: tests of fault conditions**	**P**
Part	Simulated fault	Hazard
EC5	Fuse open	~~YES~~/NO
EC1	Fuse open	~~YES~~/NO
EC3	1s，input：0.009A,0.159W; Output shut down ,recoverable	~~YES~~/NO
EC4	1s，input：0.013A,0.79W; Output shutdown,recoverable	~~YES~~/NO
Q1 D-S	Fuse open	~~YES~~/NO

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Clause	Requirement + Test	Result - Remark	Verdict

Q1 G-S	R11 damage	~~YES~~/NO
Output	1s，input：0.013A,0.76W; Output shutdown,recoverable	~~YES~~/NO
Output	1s，input：0.009A,0.159W; Output shutdown,recoverable	~~YES~~/NO
Remark: SC means short circuit, OC means open circuit.		

15	**TABLE: test of transformer heating (☒ Constant voltage ☐ Constant current)**		**P**
	Type reference:	EXTM-12VDC12W	
	Test 1: Normal Operation		—
	1.06 times rated voltage:.....	0,9Un/1,1Un: 90V/264V	—
	ta = ...:	50°C	—
	Test 2: Abnormal Operation: No LED module is inserted.		—
	1.1 or 0.9 times rated voltage:	1,1Un: 264V	—
	tc = ...:	80°C	—
	Test 3: Abnormal Operation: Double the number of LED modules or equivalent load.		—
	1.1 or 0.9 times rated voltage:	1,1Un: 264V	—
	tc = ...:	80°C	—
	Test 4: Abnormal Operation: Short-circuit the output.		—
	1.1 or 0.9 times rated voltage:	1,1Un: 264V	—
	tc = ...:	80°C	—

Temperature (°C) of Part	Cl. 15.1			Cl. 15.2			
	Test 1 (ºC) 90V	Test 1 (ºC) 264V	Limit[3)]	Test 2 (ºC)	Test 3 (ºC)	Test 4 (ºC)	Limit[3)]
Input terminal	66.4	55.8	110	59.8	60.3	60.2	--
MOV1	81.2	60.9	85	64.3	65.2	64.9	--
CX1	96.3	69.1	125	72.5	73.3	72.8	--
EC1	81.8	74.7	105	79.6	80.2	80.0	--
EC5	89.7	70.7	105	74.8	75.6	75.3	--

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Clause	Requirement + Test	Result - Remark	Verdict

Q1	87.6	102.9	105	91.9	92.8	92.6	--
C1	76.8	81.0	130	86.5	86.8	86.9	--
CY1	81.3	87.0	125	92.2	92.6	92.7	--
EC4	90.2	93.8	105	98.2	98.9	99.1	--
EC3	86.0	86.6	105	90.6	91.3	91.7	--
PRI.winding of T1	88.1	94.5	130	99.4	99.9	100.1	175
SEC.winding of T1	87.9	93.1	130	97.9	98.4	98.5	175
PCB	79.6	84.2	130	89.4	89.9	90.0	--
Bobbin	86.9	92.8	130	97.8	98.2	98.3	--
tc point	70.7	73.7	80	78.2	78.5	78.6	110
Mounting surface	62.8	60.5	80	65.1	65.7	65.6	110
Enclosure inside	76.3	80.3	Ref.	84.9	85.5	85.5	--
Output terminal block	56.9	56.4	110	60.6	61.2	61.3	--
Ambient temperature	49.4	49.3	--	53.8	53.8	53.9	--

15	**TABLE: test of transformer heating (☒ Constant voltage ☐ Constant current)**		**P**
	Type reference:	EXTM-12VDC8W	
	Test 1: Normal Operation		—
	1.06 times rated voltage:.....	0,9Un/1,1Un: 90V/264V	—
	ta = ...:	50°C	—
	Test 2: Abnormal Operation: No LED module is inserted.		—
	1.1 or 0.9 times rated voltage:	1,1Un: 264V	—
	tc = ...:	75°C	—
	Test 3: Abnormal Operation: Double the number of LED modules or equivalent load.		—
	1.1 or 0.9 times rated voltage:	1,1Un: 264V	—
	tc = ...:	75°C	—
	Test 4: Abnormal Operation: Short-circuit the output.		—
	1.1 or 0.9 times rated voltage:	1,1Un: 264V	—

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Clause	Requirement + Test	Result - Remark	Verdict

	tc = ...:	75°C	—

Temperature (°C) of Part	Cl. 15.1			Cl. 15.2			
	Test 1 (ºC) 90V	Test 1 (ºC) 264V	Limit[3)]	Test 2 (ºC)	Test 3 (ºC)	Test 4 (ºC)	Limit[3)]
Input terminal	64.5	55.0	110	59.2	59.7	59.6	--
MOV1	80.2	60.0	85	63.9	64.7	64.5	--
CX1	87.2	67.5	125	72.0	72.6	72.4	--
EC1	82.3	77.1	105	82.4	82.9	82.7	--
EC5	83.7	70.2	105	74.9	75.5	75.3	--
Q1	79.8	87.7	130	94.9	95.5	95.4	--
C1	74.1	76.2	105	81.5	81.9	81.9	--
CY1	73.7	77.0	125	81.8	82.1	82.1	--
EC4	73.9	75.5	105	79.6	80.1	80.0	--
EC3	78.3	81.6	105	86.1	86.5	86.6	--
PRI.winding of T1	77.4	81.0	130	85.5	85.7	85.8	175
SEC.winding of T1	78.7	80.9	130	85.1	85.4	85.4	175
PCB	76.1	79.7	130	84.1	84.5	84.4	--
Bobbin	63.6	65.2	130	71.9	71.5	72.3	--
tc point	62.0	63.5	75	68.3	68.7	68.7	110
Mounting surface	69.3	71.6	75	76.0	76.3	76.3	110
Enclosure inside	58.9	59.4	Ref.	63.7	63.9	63.9	--
Output terminal block	49.4	49.3	110	53.9	53.9	53.9	--
Ambient temperature	49.4	49.3	--	53.8	53.8	53.9	--

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Clause	Requirement + Test	Result - Remark	Verdict

18 (16)	**TABLES: Creepage distances and clearances**						**P**
Table 3	**Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages**						**P**
RMS working voltage (V) not exceeding		50	150	250	500	750	1000
Creepage distances							
Required basic insulation, PTI ≥ 600		0,6	0,8	1,5	3	4	5,5
Measured							
Required basic insulation, PTI < 600		1,2	1,6	2,5	5	8	10
Measured				See Annex I			
Required supplementary insulation PTI ≥ 600		-	0,8	1,5	3	4	5,5
Measured							
Required supplementary insulation PTI < 600		-	1,6	2,5	5	8	10
Measured							
Required reinforced insulation		-	3,2	5	6	8	11
Measured				See Annex I			
Clearances							
Required basic insulation		0,2	0,8	1,5	3	4	5,5
Measured				See Annex I			
Required supplementary insulation		-	0,8	1,5	3	4	5,5
Measured							
Required reinforced insulation		-	1,6	3	6	8	11
Measured				See Annex I			
Table 4	**Minimum distances (mm) for non-sinusoidal pulse voltages**						**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict

Rated pulse voltage (peak kV)	2,0	2,5	3,0	4,0	5,0	6,0	8,0
Required clearances	1,0	1,5	2	3	4	5,5	8
Measured							
Rated pulse voltage (peak kV)	10	12	15	20	25	30	40
Required clearances	11	14	18	25	33	40	60
Measured							
Rated pulse voltage (peak kV)	50	60	80	100	-	-	-
Required clearances	75	90	130	170	-	-	-
Measured							

Working Voltage Measurement	Test sample: EXTM-12VDC12W	
Supply voltage：240Vac, 50/60Hz; Output condition: Max Load or no load		
Location	V peak	V rms
T1 PIN 1-PA	302	107
T1 PIN 1-PB	360	120
T1 PIN 2-PA	98	20.3
T1 PIN 2-PB	132	81.3
T1 PIN 3-PA	354	328
T1 PIN 3-PB	406	329
T1 PIN 4-PA	354	330
T1 PIN 4-PB	344	330
CY1 pin1- pin2	134	81.7

Working Voltage Measurement	Test sample: EXTM-12VDC8W	
Supply voltage：240Vac, 50/60Hz; Output condition: Max Load or no load		
Location	V peak	V rms
T1 PIN 1-PA	364	91.5
T1 PIN 1-PB	370	95.2
T1 PIN 2-PA	116	19.4
T1 PIN 2-PB	112	66.8

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Clause	Requirement + Test	Result - Remark	Verdict

Working Voltage Measurement	Test sample: EXTM-12VDC8W	
Supply voltage：240Vac, 50/60Hz; Output condition: Max Load or no load		
Location	V peak	V rms
T1 PIN 3-PA	342	324
T1 PIN 3-PB	422	325
T1 PIN 4-PA	354	326
T1 PIN 4-PB	342	325
CY1 pin1- pin2	112	67

18	**TABLE: Transformer check** for EXTM-12VDC8W		**P**
Construction details: Core: PG232A			
Transformer TR1 manufacturer: Foshan Shunde Jiyu Electronic Co., Ltd. Type designation: EE19-1			
Measured creepage distance base on Max.354V working voltage 326Vrms according to Annex I of EN 61347-2-13			
Location	Required (mm)	Measured (mm)	
Pri. – Sec.	6,8	9,7	
Pri. – Core	--	0	
Sec. – Core	6,8	9,7	
Measured clearance distance:			
Location	Required (mm)	Measured (mm)	
Pri. – Sec.	6,8	9,7	
Pri. – Core	--	0	
Sec. – Core	6,8	9,7	
Distance through insulation	Required (mm)	Measured (mm)	
use reinforced insulation SEC. wire	--	--	
Electric strength test: AC 3304V; 60s between Pri. to Sec.	Pass		
Specifications of winding:			
Primary winding: N2:41Ts(∅0.19mmX1); N4:13Ts(∅0.19mmX1); N1-1:41Ts(∅0.19mmX1); N1-2:40Ts(∅0.19mmX1);			

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Clause	Requirement + Test	Result - Remark	Verdict

Secondary winding: N3:11Ts(∅0.55mmX1);
Insulation: Class B (130ºC)

18	TABLE: Transformer check for EXTM-12VDC12W		P
Construction details: Core: PG232A			
Transformer TR1 manufacturer: Foshan Shunde Jiyu Electronic Co., Ltd. Type designation: EE19-2			
Measured creepage distance base on Max.354V working voltage 330Vrms according to Annex I of EN 61347-2-13			
Location	Required (mm)	Measured (mm)	
Pri. – Sec.	6,8	7,0	
Pri. – Core	--	0	
Sec. – Core	6,8	7,0	
Measured clearance distance:			
Location	Required (mm)	Measured (mm)	
Pri. – Sec.	6,8	7,0	
Pri. – Core	--	0	
Sec. – Core	6,8	7,0	
Distance through insulation	Required (mm)	Measured (mm)	
use reinforced insulation SEC. wire	--	--	
Electric strength test: AC 3320V; 60s between Pri. to Sec.	Pass		
Specifications of winding:			
Primary winding: N2:35Ts(∅0.21mmX1); N4:11Ts(∅0.21mmX1); N1-1:35Ts(∅0.21mmX1); N1-2:35Ts(∅0.21mmX1); Secondary winding: N3:11Ts(∅0.55mmX1); Insulation: Class B (130ºC)			

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Clause	Requirement + Test	Result - Remark	Verdict
A	**ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK**		**P**
A.1	Comply with A.2 or A.3		P
A.2	Voltage ≤ 35 V peak or ≤ 60 V d.c ..... :	Under 60V d.c	P
A.3	If voltage > 35 V r.m.s. or > 60 V d.c. or protective impendance device; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. ..... :		N/A
	Comply with Annex G of IEC 60598-1		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 convertor, protected against mechanical damage		P
	Renewable only by means of a tool		P
	If function depending on polarity, for cord-connected equipment protection means in both leads		N/A
	Thermal links comply with IEC 60691		N/A
	Electrical controls comply with IEC 60730-2-3		N/A
C3.2	No risk of fire by breaking (clause C7)		P
C5	**CLASSIFICATION**		**P**
	a) automatic resetting type		—
	b) manual resetting type		—
	c) non-renewable, non-resetting type		—
	d) renewable, non-resetting type		—
	e) other type of thermal protection; description .. :	Electronic 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

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Clause	Requirement + Test	Result - Remark	Verdict
	Test sample placed for at least 12 h in an oven having temperature (t_c - 5) K		P
	No operation of the protection device		P
C7.2	Functioning of protection means:		P
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (t_c +0; -5) °C is obtained		P
	No operation of the protection device		P
	Introducing of the most onerous test condition determined during test of clause 14		P
	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		P
	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	110	P
	Any overshoot of 10% over the marked value within 15 min		P

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

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Clause	Requirement + Test	Result - Remark	Verdict

E	**ANNEX E – USE OF CONSTANT S OTHER THAN 4500 IN t_w TESTS**		N/A
	Comply with tests according Annex E		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 CONTROLGEAR FOR LED MODULES**		**P**
I.3	**Classification**		P
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		P

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Clause	Requirement + Test	Result - Remark	Verdict
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 HD-transformer consists of basic insulation		N/A
I.5.2.3	Serrated tape, additional layer		N/A
I.5.2.4	Class I controlgear for fixed connection provided with basic insulation plus protective screening comply with the following conditions:		N/A
	a) Insulation between the input winding and the protective screen complies with the requirements for basic insulation		N/A
	b) Insulation between the protective screen and the output winding complies with the requirements for basic insulation		N/A
	c)Metal screen consists of a metal foil or of a wire		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		P
	Winding held together by means of insulating material		P

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Clause	Requirement + Test	Result - Remark		Verdict
I.5.3	Components bridging between input and output circuit	Y1 capacitor approval by VDE		P
I.5.3.1	Used capacitors and resistors comply with 8.2			P
I.5.3.2	Used opto-couplers comply with 2.10.5.2 of IEC 60950-1 or 0,4 mm and test in I.8			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 ..... :	50		—
I.6.2	Temperature rises (Upri: 1.06 time supply rated voltage)			P
	Determined temperature rises in windings: - Primary (K) ..... : - Limit max (K) ..... : - Secondary (K) ..... : - Limit max (K) ..... :	EXTM-12VDC8W 86,6K 70K 85,8K 70K	EXTM-12VDC12W 100,1K 70K 98,5K 70K	P
	After the test:			P
	- no connections have worked loose			P
	- no reduction of creepage distances and clearances			P
	- no flow of sealing compound			N/A
	- 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 ≥ 2, 4 or 5 MΩ			N/A
	- dielectric strength test for 2 min. at 35 % of specified value in table I.6			N/A

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Clause	Requirement + Test	Result - Remark		Verdict
	- 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 (V) ..... :	264		P
I.7.2 I.7.3 I.7.4	Determined temperature rise in windings and on other parts:			P
	- test according to Clause ..... :	I.7.3		P
		EXTM-12VDC8W	EXTM-12VDC12W	—
	- Primary winding (K) ..... :	41,5K	48,2K	P
	- Limit max (K) ..... :	150K		P
	- Secondary winding (K) ..... :	40,6K	48,7K	P
	- Limit max (K) ..... :	150K		P
	- External enclosure ≤ 80 (K) ..... :	20,3K	26,8K	P
	- Rubber insulation of wiring ≤ 60 (K) ..... :	--		N/A
	- PVC insulation of wiring ≤ 60 (K) ..... :	--		N/A
	- Supports ≤ 80 (K) ..... :	16,5K	12,3K	P
I.7.5	Fail-safe convertors			P
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

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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 ..... :	>100 MΩ	P
	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 convertors 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 ..... :		N/A
I.8.3	Electric strength test:		P
	1) Between live parts of input circuits and live parts of output circuits ..... :	3750V	P
	2) Over basic or supplementary insulation between:		P
	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**		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 :		P

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Clause	Requirement + Test	Result - Remark	Verdict

I.10	**Components**		P
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 convertor for 48 h at 1.06 times the rated voltage with the output short-circuited		P
I.11	**Creepage distances and clearances**		P
	1. Insulation between input and output circuits:		P
	a) measured values > specified values (mm) ..... :	Cr.>=Cl.=7,0mm>6,0mm	P
	b) measured values ≥ specified values (mm) ..... :		N/A
	c) measured values ≥ specified values (mm) ..... :		N/A
	2. Insulation between adjacent input circuits: measured values ≥ specified values (mm) ..... :		N/A
	2. Insulation between adjacent output circuits: measured values ≥ specified values (mm) ..... :		N/A
	3. Insulation between terminals for external connection:		N/A
	a) measured values > specified values (mm) :		N/A
	b) measured values > specified values (mm) :		N/A
	c) measured values > specified values (mm) :		N/A
	4. Basic or supplementary insulation:		P
	a) measured values > specified values (mm) ..... :	Cr.=Cl.=3,6mm>3,0mm	P
	b) measured values ≥ specified values (mm) ..... :		N/A
	c) measured values ≥ specified values (mm) ..... :		N/A
	d) measured values ≥ specified values (mm) ..... :		N/A
	e) measured values ≥ specified values (mm) ..... :		N/A
	5. Reinforced insulation: measured values > specified values (mm) ..... :	Cr.>=Cl.=6,3mm>6,0mm	P
	6. Distance through insulation:		P
	a) measured values > specified values (mm) ..... :	Cr.=Cl.=1,2 mm>0,8mm	P

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Clause	Requirement + Test	Result - Remark	Verdict
	b) measured values ≥ specified values (mm)..... :		N/A
	c) measured values ≥ specified values (mm)..... :		N/A
	d) measured values ≥ specified values (mm)..... :		N/A
L	**ANNEX L: PARTICULAR ADDITIONAL REQUIREMENTS FOR CONTROLGEARS PROVIDING SELV** (IEC 61347-1)		**P**
L.3	**Classification**		**P**
	Class I	Yes ☐ No ☒	—
	Class II	Yes ☒ No ☐	—
	Class III	Yes ☐ No ☒	—
	non-inherently short circuit proof controlgear	Yes ☒ No ☐	—
	inherently short circuit proof controlgear	Yes ☐ No ☒	—
	fail safe controlgear	Yes ☐ No ☒	—
	non-short-circuit proof controlgear	Yes ☐ No ☒	—
L.4	**Marking**		**P**
	Adequate symbols are used		P
L.5	**Protection against electric shock**		**P**
	Comply with 9.2 of IEC 61558-1	After 5s, 0V	P
L.6	**Heating**		**P**
	No excessive temperatures in normal use		P
	Value if capacitor t_c marked ..... :		—
	Winding insulation classified as Class ..... :	Class B	—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		P
L.7	**Short-circuit and overload protection**		**P**
	Comply with tests of clause 15 of IEC 61558-1 with adjustments	Heating result refer to clause I.7 of relevant models	P
L.8	**Insulation resistance and electric strength**		**P**
L.8.1	Conditioned 48 h between 91 % and 95 %		P
L.8.2	Insulation resistance		P
	Between input- and output circuits not less than 5 MΩ ..... :	Measured data: >100MΩ.	P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ ..... :		N/A
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ ..... :		P
L.8.3	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits ..... :	3000V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity ..... :	1500V	P
	b) live parts and body if intended to be connected to protective earth ..... :		N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord ..... :		N/A
	d) live parts and an intermediate metal part ..... :		N/A
	e) intermediate metal parts and the body ..... :		N/A
	f) each input circuit and all other input circuits ... :		N/A
	3) Over reinforced insulation between the body and live parts ..... :	3000V	P
L.9	**Construction**		P
L.9.1	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		P
	HF transformer comply with 19 of IEC 61558-2-16		P
L.10	**Components**		N/A
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		N/A
L.11	**Creepage distances and clearances**		**P**
	1. Insulation between input and output circuits, basic insulation:		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
	2. Insulation between input and output circuits, double or reinforced insulation:		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	a) measured values ≥ specified values (mm) ..... :	cl:7,0mm>4,7mm cr:7,0mm>5,0mm	P
	b) measured values ≥ specified values (mm) ..... :		N/A
	c) measured values ≥ specified values (mm) ..... :		N/A
	3. Insulation between adjacent input circuits		N/A
	- measured values ≥ specified values (mm) ..... :		N/A
	3. Insulation between adjacent output circuits		N/A
	- measured values ≥ specified values (mm) ..... :		
	4. Insulation between terminals for external connection:		N/A
	- measured values ≥ specified values (mm) ..... :		N/A
	5. Basic or supplementary insulation:		P
	a) measured values ≥ specified values (mm) ..... :	Different polarity: cl:3,6mm>2,5mm cr:3,6mm>2,6mm	P
	b) measured values ≥ specified values (mm) ..... :		N/A
	c) measured values ≥ specified values (mm) ..... :		N/A
	d) measured values ≥ specified values (mm) ..... :		N/A
	e) measured values ≥ specified values (mm) ..... :		N/A
	6. Reinforced insulation or insulation:		P
	Between body and output circuit: measured values ≥ specified values (mm) ..... :	cl:6,3mm>4,7mm cr:6,3mm>5,0mm	P
	Between body and output circuit if provision against transient voltages: measured values ≥ specified values (mm) ..... :		N/A
	7. Distance through insulation:		P
	a) measured values ≥ specified values (mm) ..... :	cr=cl=1,2mm>0,8mm	P
	b) measured values ≥ specified values (mm) ..... :		N/A
	c) measured values ≥ specified values (mm) ..... :		N/A

N	**ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION** (IEC 61347-1)	**P**
N.4	**General requirements**	P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
N.4.1	Material comply with IEC 60085 and IEC 60216 series		N/A
N.4.2	Solid insulation		N/A
	Electric strength test at least 5 kV or 1,35 x test voltage in Table N.1		N/A
	If not classified according IEC 60085 and IEC 60216 series: Electric strength test increased 10 % of 5,5 kV or 1,5 x test voltage in Table N.1		N/A
N.4.3	Thin sheet insulation		P
N.4.3.1	Thickness and composition of thin sheet insulation		P
	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance		N/A
	- Non-separated layers: Min. 3 layers and fulfil mandrel test of 150N		N/A
	- Separated layers: Min. 2 layers and each layer fulfil mandrel test of 50N		N/A
	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N		P
N.4.3.2	Mandrel test (electric strength test during mechanical stress)		P
	Electric strength test after mandrel test:		P
	- Non-separated layers: min. 5 kV or 1,35 x test voltage in Table N.1		N/A
	- 2/3 of min. 3 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		P
	- one of 2 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	No flashover or breakdown occurred		P

O	**ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION** (IEC 61347-1)		**N/A**
O.6	**Marking**		**N/A**
	Marking according clause 7 (7)	Add special in usemanul	N/A
	Special symbol		N/A
	Meaning of the special symbol explained in catalogue		N/A

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

O.7	**Protection against accidental contact with live parts**		**N/A**
	Requirements of clause 8 (10)		N/A
	Test finger not possible to make contact with basic insulated metal parts		N/A
O.8	**Terminals**		**N/A**
	Clause 9 (8)		N/A
O.9	**Provision for earthing**		N/A
	Functional earthing terminals comply with clause 9 of part 1		N/A
	No protective earthing terminal		N/A
O.10	**Moisture resistance and insulation**		N/A
	Clause 11 (11)	See clause 11	N/A
O.11	**Electric strength**		**N/A**
	Clause 12 (12)	See clause 12	N/A
O.13	**Fault conditions**		**N/A**
	Clause 14 (14)	See clause 14	N/A
	End of test, between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface comply with dielectric strength test reduced to 35 % of values according Table 1 in part 1		N/A
	Insulation resistance according to O.10 between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface not less than 4 MΩ		N/A
O.14	**Construction**		**N/A**
	Clause 17 (15)		N/A
	Accessible metal parts insulated from live parts by double or reinforced insulation		N/A
	Live part insulated from supporting surface in contact with external faces by double or reinforced insulation		N/A
O.15	**Creepage distances and clearances**		**N/A**
	Clause 18 (16)	See clause 18	N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Comply with corresponding values for luminaries in IEC 60598-1		N/A
O.16	**Screws, current-carrying parts and connections**		**N/A**
	Clause 19 (17)		N/A
O.17	**Resistance to heat and fire**		**N/A**
	Clause 20 (18)		N/A
O.18	**Resistance to corrosion**		**N/A**
	Clause 21 (19)		N/A

IEC 61347-2-13			
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
EXTM-12VDC12W						
X2 capacitor	B	Foshan City Nanhai District Xinyuan Electronic Co.,Ltd.	MKP-X2	AC 275 V; 0.1μF; 40/100/21C	IEC 60384-14	VDE (40027433)
alternative	D	Shenzhen Jinghao Capacitor Co., Ltd.	CBB62B	AC 280 V;0.1μF; 40/110/56/C	IEC 60384-14	VDE (40018690)
alternative	D	Ultra Tech Xiphi Enterprise Co., Ltd.	HQX	AC 275 V; 0.1μF; 40/100/21C	IEC 60384-14	VDE (40024534)
alternative	D	Shenzhen Yiman Feng Science And Technology Co.,Ltd.	MPX/MKP	AC 280 V; 0.1uF; 40/100/21	IEC 60384-14	VDE (40028516)
alternative	D	Fuxin Pan Ocean Electronic Ltd.	MPX-X2	AC 275 V; 0.1uF; 40/110/21	IEC 60384-14	VDE (40015756)
Y1 capacitor	B	Murata Mfg. Co., Ltd.	KX	3300 pF; AC250V; 25/125/21/C	IEC 132400; IEC 60384-14	VDE (40002831)
alternative	D	Walsin Technology Corp.	AH	3300 pF; AC 250V 25/125/21/C	IEC 132400; IEC 60384-14	VDE (40001804)
alternative	D	Shenzhen Teruixiang Electronic Co.,Ltd.	TY	3300 pF; AC400V; 25/125/21/C	IEC 60384-14	VDE (40031733)
alternative	D	Yinan Don's Electronic Component Co.,Ltd.	CT81	3300 pF; AC 250 V/400 V; 25/125/21/C	IEC 60384-14	VDE (135256)
alternative	D	Shenzhen Haotian Electronic Co.,Ltd.	HT	3300 pF; AC400V; 25/125/21	IEC 60384-14	VDE (40029300)
Varistor	B	Joyin Company Ltd.	7N471K	AC 2500 V; 40/85/56;125℃	IEC 61051-1 CECC 42000 CECC 42001	VDE (005937)

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

alternative	D	Centra Science Corp.	CNR-7D471K	AC 2500 V; 40/085/56	IEC 61051-1 CECC 42000 CECC 42001	VDE (40008220)
alternative	D	Cerglass MFG Inc	7D471K	AC 2500 V; 40/85/21	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE (40028836)
alternative		Xianhua Advanced Sensitive Components	FNR-07K471	AC 2500 V; 40/085/56	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE (40008242)
alternative	D	Thinking Electronic Industrial Co., Ltd.	TVR07471-M	AC 2500 V; 40/125/56	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE (40036061)
Alternative		Joyin Co., Ltd.	JVT7S471K JVT7S511K	AC 470V/510V; 40/125/56	IEC 61051-1 IEC 61051-2-2	VDE(40004658)
PCB	B	Shandong Jinbao Electronics Co., Ltd.	ZD-95(G)F	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL (E141940) Tested with appliance
alternative	D	Kingboard Laminates (Macao Commercial Offshore) Ltd.	KB-3150	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13-13	UL (E123995) Test with appliance
alternative	D	ZHONGSHAN LIXIN CHAINBOARD CO LTD	CEM-1	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E230073) Test with appliance
alternative	D	GUANGZHOU TIMESQICK ELECTRONICCO	SD-BQ	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E315225) Test with appliance
alternative	D	FOSHAN CITY SHUNDE DISTRICT WEIZE ELECTRONIC CO LTD	SDWZ-A, SDWZ-B	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL (E339513) Test with appliance
alternative	D	GOLDENMAX INTERNATIONAL TECHNOLOGY LTD	CEM-1,FR-4	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E224772) Test with appliance

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

alternative	D	INTERNATIONAL LAMINATE MATERIAL LTD	FR-4	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E134893) Test with appliance
alternative	D	GOLDENMAX INTERNATIONAL TECHNOLOGY(ZHUHAI) LTD	FR-4	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E330731) Test with appliance
alternative	D	HOYO ELECTRONICS MANUFACTURING	HY-04	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL E465050 Test with appliance
Current fuse	B	XC Electronics (ShenZhen) Corp.,Ltd.	2T	AC 250 V; 1 A; T;	IEC 61347-1 IEC 61347-2-13	UL(E249609) Test with appliance
alternative	D	Hollyland Co.,Ltd	20T	AC 250 V; 1 A; T;	IEC 61347-1 IEC 61347-2-13	UL(E156471) Tested with appliance
Terminal block	B	DongGuan Dieran Electronics Science and Technology Co.,Ltd.	DA250	300 V; 0,5-0.75 mm2; 105°C;	IEC 60998-1; IEC 60998-2-2	VDE (40031801)
transformer	C	Eaglerise electric & electronic (china) Co., ltd	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
alternative	D	Eaglerise electric & electronic (china) Co., ltd Chencun branch	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
alternative	D	Zhongshan zhuoyi electron Co., Ltd	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
alternative	D	Foshan city shunde district beijiao shengyi electrical appliance factory	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
alternative	D	Foshan shunde jiyu electronic co.,ltd	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance

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

alternative	D	Shenzhen longshun electron co.,ltd	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
alternative	D	Zhongshan city jisheng electronics ltd	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
alternative	D	QIAOJING ELECTRONIC CO.,LTD	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
Core	C	FENG HUAADVANED TECHNOLOGY (HOLDING)	EE19A	PG232A	IEC 61347-1 IEC 61347-2-13	Test with appliance
Bobbin	B	CHANG CHUN PLASTICS CO LTD	EE19(5+5P) RH-EE-1934-2	T-375J	IEC 61347-1 IEC 61347-2-13	UL(E59481) Test with appliance
Magnet wire	B	XINGNING JINYAN ELECTRICAL CO LTD	QA-1	Φ0.21mm	IEC 61347-1 IEC 61347-2-13	UL(E238500) Test with appliance
Multi-layer insulated wire	B	FURUKAWA ELECTRIC CO LTD	TEX-E	Φ0.55mm	IEC 61347-1 IEC 61347-2-13	UL(E206440) Test with appliance
Teflon tube	B	CHANGYUAN ELECTRONICS (SHENZHEN) CO LTD	CB-TT-T	28L	IEC 61347-1 IEC 61347-2-13	UL(E180908) Test with appliance
Mylar tape	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT-280	5mmX0.055mm 9mmX0.055mm 14mmX0.055mm	IEC 61347-1 IEC 61347-2-13	UL(E165111) Test with appliance
Enclosure	B	Sabic innovative plastics JAPAN L.LC	PC	PC-223R(f1)	IEC 61347-1 IEC 61347-2-13	UL:E45587 Test with appliance
NTC2	B	JOYIN CO., LTD	08S220L	22Ωat 25° C	IEC 61347-1 IEC 61347-2-13	UL:E171531 Tested with appliance
EXTM-12VDC8W						
X2 capacitor	B	Foshan City Nanhai District Xinyuan	MKP-X2	AC 275 V; 0.1 μF; 40/100/21C	IEC 60384-14	VDE (40027433)

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

alternative	D	Shenzhen Jinghao Capacitor Co.,Ltd.	CBB62B	AC 280 V; 0.1μF; 40/110/56/C	IEC 60384-14	VDE (40018690)
alternative	D	Ultra Tech Xiphi Enterprise Co.,Ltd.	HQX	AC 275 V; 0.1 μF; 40/100/21C	IEC 60384-14	VDE (40024534)
alternative	D	ShenzhenYiman Feng Science And Technology Co.,Ltd.	MPX/MKP	AC 280 V; 0.1 uF; 40/100/21	IEC 60384-14	VDE (40028516)
alternative	D	Fuxin Pan Ocean Electronic Ltd.	MPX-X2	AC 275 V; 0.1 uF; 40/110/21	IEC 60384-14	VDE (40015756)
Y1 capacitor	B	Murata Mfg. Co., Ltd.	KX	3300 pF; AC 250 V; 25/125/21/C	IEC 132400; IEC 60384-14	VDE (40002831)
alternative	D	Walsin Technology Corp.	AH	3300 pF; AC 250 V; 25/125/21/C	IEC 132400; IEC 60384-14	VDE (40001804)
alternative	D	ShenzhenTeruixiang ElectronicCo.,Ltd.	TY	3300 pF; AC 400 V; 25/125/21/C	IEC 60384-14	VDE (40031733)
alternative	D	Yinan Don's Electronic Component Co.,Ltd.	CT81	3300 pF; AC 250 V/400 V; 25/125/21/C	IEC 60384-14	VDE (135256)
alternative	D	Shenzhen Haotian Electronic Co.,Ltd.	HT	3300 pF; AC 400 V; 25/125/21	IEC 60384-14	VDE (40029300)
Varistor	B	Joyin Company Ltd.	7N471K	AC 2500 V; 40/85/56;125℃	IEC 61051-1 CECC 42000 CECC 42001	VDE (005937)
alternative	D	Centra Science Corp.	CNR-7D471K	AC 2500 V; 40/085/56	IEC 61051-1 CECC 42000 CECC 42001	VDE (40008220)
alternative	D	Cerglass MFG Inc	7D471K	AC 2500 V; 40/85/21	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE (40028836)
alternative	D	Xianhua Advanced Sensitive ComponentsCo.Ltd.	FNR-07K471	AC 2500 V; 40/085/56	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE (40008242)

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

alternative	D	Thinking Electronic Industrial Co., Ltd.	TVR07471-M	AC 2500 V; 40/125/56	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE (40036061)
alternative	D	Joyin Co., Ltd.	JVT7S471K JVT7S511K	AC 470V/510V; 40/125/56	IEC 61051-1 IEC 61051-2-2	VDE(40004658)
PCB	B	Shandong Jinbao Electronics Co.,Ltd.	ZD-95(G)F	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E141940) Test with appliance
alternative	D	KingboardLaminates (MacaoCommercial Offshore) Ltd.	KB-3150	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E123995) Test with appliance
alternative	D	ZHONGSHANLIXIN CHAINBOARD COLTD	CEM-1	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E230073) Test with appliance
alternative	D	GUANGZHOU TIMESQICK ELECTRONIC	SD-BQ	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E315225) Test with appliance
alternative	D	FOSHAN CITY SHUNDEDISTRICT WEIZEELECTRONIC CO TD	SDWZ-A, SDWZ-B	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E339513) Test with appliance
alternative	D	GOLDENMAX INTERNATIONAL TECHNOLOGYLTD	CEM-1,FR-4	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E224772) Test with appliance
alternative	D	INTERNATIONAL LAMINATE MATERIAL LTD	FR-4	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E134893) Test with appliance
alternative	D	GOLDENMAX INTERNATIONAL TECHNOLOGY(ZHU HAI) LTD	FR-4	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL(E330731) Test with appliance
alternative	D	HOYO ELECTRONICS MANUFACTURING CO LTD	HY-04	V-0; 130 °C	IEC 61347-1 IEC 61347-2-13	UL E465050 Test with appliance

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

Current fuse	B	Hollyland Co.,Ltd	5ET	AC 250 V; 0.8 A; T;	IEC 60127-1; IEC 60127-3	VDE (40015669)
alternative	D	Ever Island Electric Co.,Ltd.	2010	AC 250 V; 0.8 A; T;	IEC 60127-1; IEC 60127-3	VDE (40018781)
alternative	D	XC Electronics (ShenZhen) Corp.,Ltd.	2T	AC 250 V; 0.8 A; T;	IEC 60127-1; IEC 60127-3	VDE (40029550)
alternative	D	Conquer Electronics Co.,Ltd.	MST	AC 250 V; 0.8 A; T;	IEC 60127-1; IEC 60127-3	VDE (40017118)
Terminal block	B	DongGuan Dieran Electronics	DA250	300 V; 0,5-0.75 mm2; 105°C;	IEC 60998-1; IEC 60998-2-2	VDE (40031801)
Poly Film Wrap	B	JIANGSU YUXING FILM TECHNOLOG	6020	VTM-2; 105°C; 0.188mm	IEC 61347-1 IEC 61347-2-13	UL E212271 Test with appliance
alternative	D	GARWARE POLYESTER LTD	EM6	VTM-2; 120°C; 0.188mm	IEC 61347-1 IEC 61347-2-13	UL E110983 Test with appliance
alternative	D	SHENZHEN BORNSUN INDUSTRIAL CO LTD	BN-ZD16	VTM-0;115°C; 0.188mm	IEC 61347-1 IEC 61347-2-13	UL E256822 Test with appliance
transformer	C	Eaglerise electric & electronic (china) Co., ltd	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
alternative	D	Eaglerise electric & electronic (china) Co., ltd Chencun branch	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
alternative	D	Zhongshan zhuoyi electron Co., Ltd	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
alternative	D	Foshan city shunde district beijiao shengyi electrical appliance factory	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance

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

alternative	D	Foshan shunde jiyu electronic co.,ltd	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
alternative	D	Shenzhen longshun electron co.,ltd	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
alternative	D	Zhongshan city jisheng electronics ltd	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
alternative	D	QIAOJING ELECTRONIC CO.,LTD	EE19A	0.55mH-0.65mH	IEC 61347-1 IEC 61347-2-13	Test with appliance
Core	C	FENG HUAADVANED TECHNOLOGY (HOLDING) CO.,LTD	EE19A	PG232A	IEC 61347-1 IEC 61347-2-13	Test with appliance
Bobbin	B	CHANG CHUN PLASTICS CO LTD	EE19(5+5P) RH-EE-1934-2	T-375J	IEC 61347-1 IEC 61347-2-13	UL(E59481) Test with appliance
Magnet wire	B	XINGNING JINYAN ELECTRICAL CO LTD	QA-1	Φ0.21mm	IEC 61347-1 IEC 61347-2-13	UL(E238500) Test with appliance
Multi-layer insulated wire	B	FURUKAWA ELECTRIC CO LTD	TEX-E	Φ0.55mm	IEC 61347-1 IEC 61347-2-13	UL(E206440) Test with appliance
Teflon tube	B	CHANGYUAN ELECTRONICS (SHENZHEN) CO LTD	CB-TT-T	28L	IEC 61347-1 IEC 61347-2-13	UL(E180908) Test with appliance
Mylar tape	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT-280	5mmX0.055mm 9mmX0.055mm 14mmX0.055mm	IEC 61347-1 IEC 61347-2-13	UL(E165111) Test with appliance

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

Enclosure	B	Sabic innovative plastics JAPAN L.LC	PC	PC-223R(f1)	IEC 61347-1 IEC 61347-2-13	UL:E45587 Test with appliance
NTC2	B	JOYIN CO., LTD	08S220L	22Ωat 25° C	IEC 61347-1 IEC 61347-2-13	UL:E171531 Tested with 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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	ANNEX 2: screw terminals (part of the luminaire)		N/A
(14)	**SCREW TERMINALS**		N/A
(14.2)	Type of terminal		—
	Rated current (A)		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm²)		N/A
(14.3.3)	Conductor space (mm)		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread) .		N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm).....		N/A
	Torque (Nm)		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N)		N/A
(14.4.8)	Without undue damage		N/A

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

	ANNEX 3: screwless terminals (approved by VDE)	**P**

(15)	**SCREWLESS TERMINALS**		N/A
(15.2)	Type of terminal ..... :		—
	Rated current (A) ..... :		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples)….:		N/A
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples)……:		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.6)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples) ..... :		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles ..... :		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples) ..... :		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples) ..... :		N/A

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

	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples)..... :										N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples)..... :										N/A
(15.7)	Terminals external wiring										N/A
	Terminal size and rating										N/A
(15.8.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) ..... :										N/A
	Pull test pin or tab terminals (4 samples); pull (N) ..... :										N/A
(15.9)	Contact resistance test										N/A
	Voltage drop (mV) after 1 h										N/A
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop of two inseparable joints										N/A
	Voltage drop after 10th alt. 25th cycle										N/A
	Max. allowed voltage drop (mV) ..... :										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop after 50th alt. 100th cycle										N/A
	Max. allowed voltage drop (mV) ..... :										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 10th alt. 25th cycle										N/A
	Max. allowed voltage drop (mV) ..... :										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 50th alt. 100th cycle										N/A
	Max. allowed voltage drop (mV) ..... :										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											

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

Appendix 1: Temperature Measurements for MM Mark (VDE 0710 Part 14/04.82)			P
	Type reference .....:	EXTM-12VDC12W	—
	Lamp used .....:	LED Driver	—
	Mounting position.....:	On black plywood	—
	Calculated power factor.....:	N/A	—
	Table: measured temperatures corrected for ta = 45°C:		—
	Test 1: Normal Operation,1,06 times rated voltage:	1,1 times:264V	—
	Test 2: Abnormal Operation, from 1.1times rated voltage, increase the voltage in steps of 5% rated voltage until the output off	390,0V	—

Temperature (°C) of Part	Normal		Abnormal	
	Test 1	Limit	Test2	Limit
Mounting surface	52,3	95	79,0	115
Top surface	50,9	95	55,9	115
Side surface	51,2	95	57,0	115
Primary winding	50,8	-	100,9	-
Ambient temperature	51,2	-	50,1	-
Remarks: N/A				

Appendix 1: Temperature Measurements for MM Mark (VDE 0710 Part 14/04.82)			P
	Type reference .....:	EXTM-12VDC8W	—
	Lamp used .....:	LED	—
	Mounting position.....:	On black plywood	—
	Calculated power factor.....:	N/A	—
	Table: measured temperatures corrected for ta = 50°C:		—
	Test 1: Normal Operation,1,06 times rated voltage:	1,1 times:264V	—
	Test 2: Abnormal Operation, from 1.1times rated voltage, increase the voltage in steps of 5% rated voltage until the output off	390,0V	—

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

Temperature (°C) of Part	Normal		Abnormal	
	Test 1	Limit	Test2	Limit
Mounting surface	52,5	95	69,6	115
Top surface	51,0	95	56,5	115
Side surface	51,1	95	50,7	115
Primary winding	50,9	-	82,0	-
Ambient temperature	51,3	-	50,6	-
Remarks: N/A				

AS/NZS 61347.1			
Clause	Requirement – Test	Result - Remark	Verdict

National difference of Australian/New Zealand

Summary of test:
AS/NZS 61347.1:2002 and AS/NZS 61347.2.13:2013 VARIATIONS TO IEC 61347-1:2000 MOD and IEC 61347-2-13, Ed.1.0 (2006) MOD

9 (8)	**TERMINALS, CABLES AND CORDS**		**P**
	Screw terminals: compliance with Section 14 of AS/NZS 60598.1		N/A
	Screwless terminals: compliance with Section 15 of AS/NZS 60598.1		P
	Cables and cords shall comply with the relevant requirements of section 5 of AS/NZS 60598.1		N/A

20 (18)	**RESISTANCE TO FLAME AND IGNITION**		**P**
(18.2.1)	Parts of insulating material retaining current-carrying parts in position shall withstand the following tests:		P
	Parts are subjected to a test using a nickel-chrominm glow-wire heated to 750°C.	PCB board, plastic enclosure, terminal block and bobbin	P
	Any flame or glowing of the sample shall extinguish within 30 s if withdrawing the glow-wire, and any burning or molten drop shall not ignite a single layer of tissue paper specified in 6.86 of ISO 4046	PCB board, terminal block and bobbin tested at 750°C: no flame; plastic enclosure tested at 750°C: no flame	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:		P
	Parts are subjected to a test using a nickel-chrominm glow-wire heated to 650°C.	Cover (material same as plastic enclosure)	P
	Any flame or glowing of the sample shall extinguish within 30 s if withdrawing the glow-wire, and any burning or molten drop shall not ignite a single layer of tissue paper specified in 6.86 of ISO 4046	Cover tested at 650°C: no flame	P
(18.2.3)	During the application of glow-wire tests of subclause 18.2.1 and 18.2.2, the height and duration of the flames are measured.		P

AS/NZS 61347.1			
Clause	Requirement – Test	Result - Remark	Verdict
	In addition, for parts that withstand the glow-wire test but which flame during the application of the glow-wire, the surrounding parts are subjected to needle-flame test, in accordance with AS/NZS 4695.2.2.		N/A
	The needle-flame test is not carried out on parts that are made of material classified as FV-0 or FV-1 according to IEC 60707.		N/A
	If parts, other than enclosures, do not withstand the glow-wire tests of subclause 18.2.1 and 18.2.2 by failure to extinguish within 30 s after removal of the glow-wire tip. The needle-flame test in accordance with AS/NZS 4695.2.2 is made for 30 s.		N/A
(18.3)	Lamp controlgear intended for building into luminaires other than ordinary, independent lamp controlgear having insulation subject to starting voltages with a peak value higher than 1500V shall be resistant to tracking.		P
	For materials other than ceramic, compliance is checked by subjecting the parts to the tracking test according to section 13 of AS/NZS 60598.1	PTI=175V; 50 drops.	P

AS/NZS 61347.1			
Clause	Requirement + Test	Result - Remark	Verdict

4	**General requirements**		**P**
	Where the controlgear has accessible outputs, the controlgear shall be SELV output and comply with Annex I.		P
	SELV equivalent is not permitted where controlgear has accessible outputs or is classified as independent SELV.		P

8	**Protection against accidental contact with live parts**		**P**
8.2	Output circuits of SELV controlgear with accessible outputs shall not exceed 25 V r.m.s. or 60 V d.c. ripple-free d.c. under load except as indicated below.	Output voltage under 60V d.c	P
	If the voltage exceeds 25 V r.m.s. or 60 V ripple-free d.c., the output shall comply with the following:		N/A
	a) the touch current shall not exceed: – for a.c.: 0,7 mA (peak); – for d.c.: 2,0 mA;		N/A
	b) the no-load output shall not exceed 33 2 V peak or 60 V ripple free d.c.		N/A
	For controlgears with more than one supply voltage, the requirements are applicable for each of the rated supply voltages.		P
	Controlgear with an output greater than the limits above shall have insulated terminals.		N/A
	Accessible conductive parts separated by double or reinforced insulation, e.g. live parts and the body or primary and secondary circuits, may be bridged (conductive bridged) by resistors or Y2 capacitors provided they consist of at least two separate components of the same rated value (resistance or capacitance) and are rated for the total working voltage and whose impedance is unlikely to change significantly during the individual lifetime of the controlgear.		P
	In addition, accessible conductive parts separated by double or reinforced insulation from live parts, as above, may be bridged by a single Y1 capacitor.		P

AS/NZS 61347.1			
Clause	Requirement + Test	Result - Remark	Verdict
	Y1 or Y2 capacitors shall comply with relevant requirements of IEC 60384-14 and if resistors are used they shall comply with the requirements of test a) in 14.1 of IEC 60065:2001.		P
9(8)	**Terminals**		**P**
9.1	Direct plug-in control gear		N/A
	Plug-in controlgear with pins for direct insertion into a socket-outlet shall comply with Appendix J of AS/NZS 3112:2011.		N/A
16	**Abnormal conditions**		**P**
16.2	d) For controlgear with SELV output, the LED modules, or equivalent load for which the controlgear is designed, shall continue to be connected in series incrementally to the output terminals until the controlgear ceases to operate or the output voltage is stabilized.		P
	During the tests specified under d), the maximum voltage measured on the output terminals shall not exceed the SELV limits of Clause 8.		P
A (A)	**ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK**		**P**
(A.1)	The part concered is a live part if a current of more than 0,7 mA (peak) or 2 mA d.c. is measured ..... :	The live parts and output circuit can not be touched.	P
(A.2)	The part concered is a live part if a voltage of more than 34V(peak) is measured ..... :	The live parts and output circuit can not be touched.	P