



Test Report issued under the responsibility of:



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

Report Number 6120041.50
Date of issue 2021-11-23
Total number of pages 64 (including this page 1)

Name of Testing Laboratory preparing the Report DEKRA Testing and Certification (Shanghai) Ltd.

Applicant's name Signify Netherlands B.V.

Address High Tech Campus 48, 5656 AE Eindhoven, The Netherlands.

Test specification:

Standard IEC 61347-2-13:2014, AMD1:2016 used in conjunction with
IEC 61347-1:2015, AMD1:2017

Test procedure CB Scheme

Non-standard test method N/A

Test Report Form No. IEC61347_2_13G

Test Report Form(s) Originator Intertek Semko AB

Master TRF 2017-12-01

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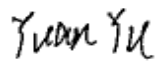



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General disclaimer:

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Test item description	LED driver
Trade Mark	PHILIPS
Manufacturer	Signify Netherlands B.V. High Tech Campus 48, 5656 AE Eindhoven, The Netherlands.
Model/Type reference	Xi SR 75W 2:0.3-1.0A SNEMPF C170 sXt
Ratings	Uin: 220-240Vac; Iin: 0,38-0,34Aac; fn: 50/60Hz; PF: 0,95; Uin: 186-250Vdc; Iin: 0,3-0,2Adc; Pin: 87W; Pout: 75W; Iout: 300-1050mA; Uout: 35-108Vdc, 170Vdc max.open circuit; ISR: 52-60mA ta: -40...+55°C; tc: 90°C; Built-in; isolating

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	DEKRA Testing and Certification (Shanghai) Ltd.
Testing location/ address		3/F, #250, Jiangchangsan Road, Building 16 Headquarter Economy Park Shibel Hi-Tech Park, Jing'an District, Shanghai, P.R.C 200436
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name, function, signature) .		
Approved by (name, function, signature) ..		
<input checked="" type="checkbox"/>	Testing procedure: CTF Stage 3:	Signify (China) Investment Co., Ltd Standard Testing Laboratory
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
Testing location/ address		Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai 200233, China
Tested by (name, function, signature)		Yu Yuan 
Witnessed by (name, function, signature)		Lix Li 
Approved by (name, function, signature)		Xiaojun Mao 
Supervised by (name, function, signature)		Lix Li 

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):

6111136.50 – Original report

Full type testing according to the IEC 61347-2-13 requirements.

6120041.50 – Amendment 1 report

Cl. Electric strength

Cl. 17 (16): Creepage distances and clearances

Testing location:

Signify (China) Investment Co., Ltd

Standard Testing Laboratory

Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai 200233, China

Summary of compliance with National Differences: P

List of countries addressed: EU Group Differences

☒ **The product fulfils the requirements of**

- EN 61347-1:2015 + A1:2021

- EN 61347-2-13:2014+A1:2017

Note: there is no difference between the above mentioned EN standard compared to the IEC standard.

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.


SimpleSet
o)))
→


PHILIPS


XITANIUM™


Xi SR 75W 2:0.3-1.0A SNEMPF C170 sXt 9290 028 272


 CE


 05



 D1



 UK
CA





Signify IBRS 1046 I, 5600VB, NL


Signify Commercial UK Limited
Unit 3, Guildford Business Park,
Guildford, Surrey, GU2 8XG, UK


 R


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 EL
Excl. high risk task areas



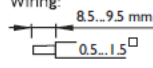
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 t_c

Configurable Constant Current LED Driver

Pin :	87 W	PF :	0.95
Uin :	220-240 V	Pout :	75 W
Iin :	0.38-0.34 A	Uout :	35-108 V
Uin :	186-250V	Iout :	300-1050 mA
Iin :	0.3-0.2 A	tc(max) :	90° C
fn :	50/60 Hz, DC		
ta :	-40...+55 °C		
ISR :	52-60 mA		

Uout (open circuit) = 170 Vmax

- Equipotential terminal double insulated
- Always connect equipotential terminal for optimal surge protection
- To prevent water traps do not mount the connectors upwards
- Operational Uin per MainsGuard 80-190Vac

Lexis Code
 Made in Poland
 XXX YYWW
 Wiring:


LED- CW	LED+ CW	LED- WW	LED+ WW	DA- / SGND	DA +	AUX	NTC SIG	NTC COM	EQUI	N	L
9	8	7	6	5	4	3	2	1	□	□	□

Test item particulars : --	
Classification of installation and use : Built-in	
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 : 2021-11-01	
Date (s) of performance of tests : 2021-11-01 ~2021-11-11	
General remarks:	
<p>"(See Enclosure #)" refers to additional information appended to the report.</p> <p>"(See appended table)" refers to a table appended to the report.</p> <p>The measurement result is considered in conformance with the requirement if it is within the prescribed limit. It is not necessary to calculate the uncertainty associated with the measurement result.</p> <p>The test results presented in this report relate only to the object tested.</p> <p>The information provided by the customer in this report may affect the validity of the results, the test lab is not responsible for it.</p> <p>This report shall not be reproduced, except in full, without the written approval.</p> <p>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</p> <p>Clause numbers between brackets refer to clauses in IEC 61347-1</p> <p>The project performed under CTF program is not covered by DEKRA's 17025 RvA accreditation.</p>	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 61347-1:	
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..... :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : Signify Poland Sp. z o.o. ul Przemysłowa 29, 64-920 Pila, Poland	

General product information:

The Xitanium LED Outdoor FlexTune driver is designed to operate a string of serial and parallel connected LEDs by means of current controlled output. It is suitable for nominal 202V to 254V 50Hz/60Hz mains supply. The LED driver is equipped with a dual reinforced isolated Class 2 output and is designed to be used in outdoor luminaires and to operate 2 white color strings (Cool White and Warm White, from 2200k to 6500k) to allow tunable color temperature, DALI Part 209 (Device Type 8). Alternatively, the two driver output channels of the SR FlexTune LEDXtreme driver can be controlled independently per DALI Part 207 (2x Device Type 6) in case CCT control is not required.

The topology contains an AC/DC off-line switch mode power supply. It consists of an input stage with EMI suppression, a Power Factor Corrector (PFC) stage followed by two DC/DC converters with current control.

It is designed to operate a series of LEDs by means of current controlled output. The operating window of this driver is limited by a minimum and maximum voltage, minimum and maximum current and minimum and maximum power. All performance specifications are guaranteed within this operating window, and any LED load which is specified to be within this operating window can be connected to the driver and will be operated according to the performance specifications. The LED current can be set within a range by means of SR (DALI) or NFC SimpleSet. Furthermore, NFC SimpleSet allows for configuration of key driver parameters (e.g. CLO, MTP, DynaDim)

Dimming is possible through the SR interface. Dimming range is 10%...100%. The SR interface provides power for a RF/Sensor. Final configuration of the output current and LED array information can be done through, the SR interface or the Philips SimpleSet NFC interface in the OEM production facility.

An auxiliary power supply provides a higher power than can be provided through the DALI bus power supply; this is intended for OLC controllers with GPRS or GPS.

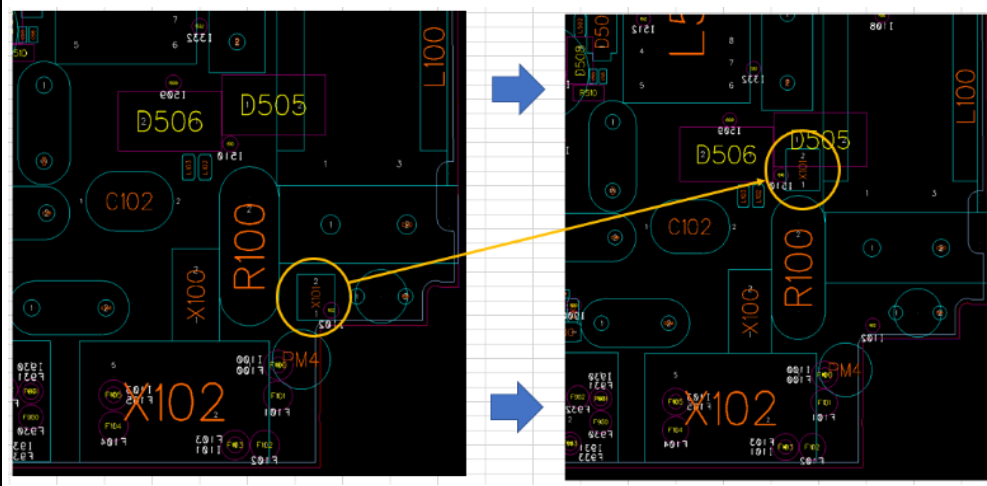
The driver is certified with D4i. D4i extends the existing DALI-2 certification program with additional features and functions, creating new possibilities for DALI in the IoT world.

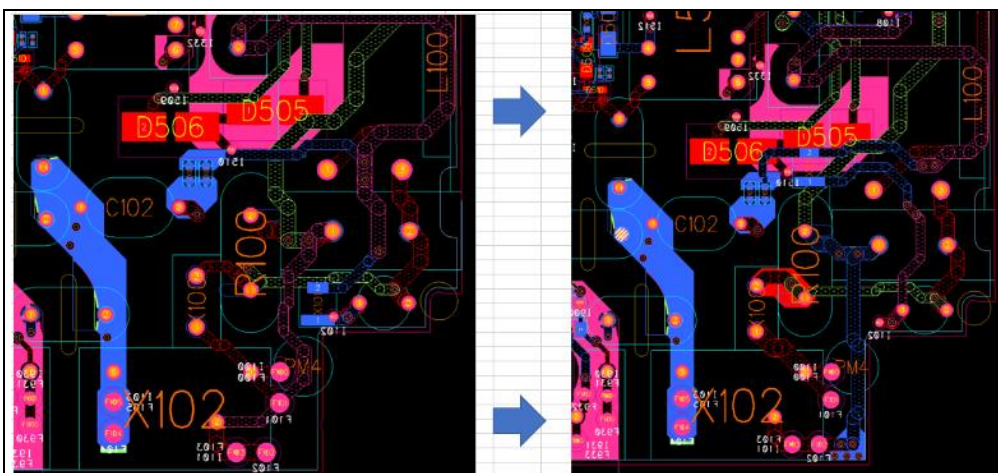
The insulation between input and output, input and DALI are considered as reinforced insulation. LED driver is completely potted with asphalt.

Amendment 1 report:

This report is issued to supersede the original test report 6111136.50 dated 2020-08-25 with the CB certificate NL-75952 dated 2020-09-08 and the ENEC certificate 31- 120413 dated 2020-08-29 to include the following changes:

Update the PCB layout





Due to these changes, additional tests were considered necessary, see “Summary of testing” for details.

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
4 (4)	GENERAL REQUIREMENTS		P
- (4)	Insulation materials for double or reinforced insulation according requirements in Annex N of IEC 61347-1	(see Annex N)	N/A
- (4)	Compliance of independent controlgear enclosure with IEC 60598-1		N/A
- (4)	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	P
4 (4)	SELV controlgear comply with Annex I of this part 2 and Annex L of IEC 61347-1	(see Annex L)	P
4 (-)	Transformer comply with IEC 61558		P
	Dielectric strength test of insulated winding wires is limited to 3 kV if input voltage ≤ 300 V		P

6 (6)	CLASSIFICATION		P
	Built-in controlgear	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Independent controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Integral controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
6 (-)	Auto-wound controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Separating controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Isolating controlgear	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	SELV controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

7 (7)	MARKING		P
7.1 (7.1)	Mandatory markings		P
	a) mark of origin	PHILIPS	P
	b) model number or type reference		P
	c) symbol for independent controlgear, if applicable		N/A
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)	220-240 Vac; 186-250 Vdc	P
	supply frequency (Hz)	50/60 Hz; DC	P
	supply current (A)	0,38-0,34 Aac; 0,3-0,2 Adc	P
	f) earthing symbol		P
	k) wiring diagram		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	l) value of t_c	90 °C	P
	m) symbol for declared temperature	120 °C	P
	t) LUM earthing symbol		N/A
	u) if not SELV maximum working voltage U_{out} between:		P
	- output terminals (V)	170	P
	- output terminals and earth (V)		N/A
7.1 (-)	Constant voltage type:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	- rated output power P_{rated} (W)		N/A
	- rated output voltage U_{rated} (V)		N/A
	Constant current type:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	- rated output power P_{rated} (W)	75 W	P
	- rated output current I_{rated} (A)	0,3-1,05 A	P
	Indication if for LED modules only		P
7.1 (7.2)	Marking durable and legible		P
	Rubbing 15 s water, 15 s petroleum; marking legible		P
7.2 (7.1)	Information to be provided, if applicable		P
	h) declaration of protection against accidental contact		N/A
	i) cross-section of conductors (mm ²)	Wiring mains: 0,5-1,5 mm ²	P
	j) number, type and wattage of lamp(s)		P
	s) SELV symbol		N/A
7.2 (-)	- declaration of mains connected windings		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 k Ω	(see Annex A)	N/A
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impedance device	(see Annex A)	P
- (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 μ F: voltage after 1 min (V): < 50 V	< 10 V	P
- (10.3)	Controlgear providing SELV		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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 circuit		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		N/A
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1	(see Annex L)	P
- (10.4)	Accessible conductive parts in SELV circuits		P
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V 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		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A

9 (8)	TERMINALS		P
- (8.1)	Integral 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)	N/A
- (8.2)	Terminals other than integral terminals		N/A
	Comply with relevant IEC standard	(see Annex 1)	N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Suit the conditions		N/A
	Satisfy additional relevant requirements of this standard		N/A

10 (9)	PROVISION FOR PROTECTIVE EARTHING		P
- (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
	All parts of material minimizing the danger of electrolytic corrosion		N/A
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A
	Test according 7.2.3 of IEC 60598-1		N/A
- (9.2)	Provision for functional earthing		P
	Comply with clause 8 and 9.1	EQUI terminal	P
	Functional earth insulated from live parts by double or reinforced insulation		P
- (9.3)	Lamp controlgear with conductors for protective earthing by tracks on printed circuit board		N/A
	Test with a current of 25 A between earthing terminal or earthing contact and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$		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 mm ² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7 of IEC 60598-1		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal or earthing contact and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$		N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A

11 (11)	MOISTURE RESISTANCE AND INSULATION		P
- (11)	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance:		P
	For basic insulation $\geq 2 \text{ M}\Omega$	Output - EQUI: $> 50 \text{ M}\Omega$ DA – EQUI: $> 50 \text{ M}\Omega$ Output – DA/AUX: $> 50 \text{ M}\Omega$	P
	For double or reinforced insulation $\geq 4 \text{ M}\Omega$	Input - Output: $> 50 \text{ M}\Omega$ Input - EQUI: $> 50 \text{ M}\Omega$ Input – DA/AUX: $> 50 \text{ M}\Omega$ All terminal - Metal foil: $> 50 \text{ M}\Omega$	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N/A

12 (12)	ELECTRIC STRENGTH		P
- (12)	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		N/A
	Working voltage $\leq 50 \text{ V}$, test voltage 500 V		N/A
	Working voltage $> 50 \text{ V} \leq 1000 \text{ V}$, test voltage (V):		P
	Basic insulation, $2U + 1000 \text{ V}$	Output - EQUI: 1340 V DA/AUX - EQUI: 1500 V	P
	Supplementary insulation, $2U + 1000 \text{ V}$	Output – DA: 1340	P
	Double or reinforced insulation, $4U + 2000 \text{ V}$	Input - Output: 3440 V Input - EQUI: 3000 V Input – DA/AUX: 3000 V All terminal - Metal foil: 3440 V	P
	No flashover or breakdown		P

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

	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N/A
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14 (14)	FAULT CONDITIONS		P
- (14.1)	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	120 °C	P
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P
- (14.2)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (after any reduction in 14.2 - 14.5)	(see appended table)	P
- (14.3)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	P
- (14.5)	Short-circuit across electrolytic capacitors	(see appended table)	P
	Short-circuit or interruption of SPDs	(see appended table)	P
14 (-)	Reversed voltage polarity if d.c. supplied control gear	(see appended table)	P
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance $\geq 1 \text{ M}\Omega$	> 10 M Ω	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
- (14.7)	Relevant fault condition tests with high-power a.c. supply and in turn to a d.c. supply		—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C	120 °C	P

15 (-)	TRANSFORMER HEATING		P
15.1	General		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Transformer comply with clause L.6 and L.7 of IEC 61347-1		P
	Output voltage of SELV controlgear not exceed limits in 10.4 of IEC 61347-1 during the test of 15.1 and 15.2		P
15.2 (-)	Normal operation		P
	Comply with clause L.6 of IEC 61347-1		P
15.3 (-)	Abnormal operation		P
	Comply with clause L.7 of IEC 61347-1		P
	Double LED modules or equivalent load connected in parallel to the output terminals of constant voltage type		N/A
	Double LED modules or equivalent load connected in serial to the output terminals of constant current type		P
15 (-)	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		P

16 (15)	CONSTRUCTION		P
- (15.1)	Wood, cotton, silk, paper and similar fibrous material		N/A
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		N/A
- (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
- (15.4)	Insulation between circuits and accessible parts		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
- (15.4.2)	SELV circuits		P
	Source used to supply SELV circuits:		P
	- safety isolating transformer in accordance with relevant part 2 of IEC 61558		P
	- controlgear providing SELV in accordance with relevant part 2 of IEC 61347		P
	- another source		N/A
	Voltage in the circuit not higher than ELV		P
	SELV circuits insulated from LV by double or reinforced insulation		P
	SELV circuits insulated from non SELV circuits by double or reinforced insulation		P
	SELV circuits insulated from FELV circuits by supplementary insulation		N/A
	SELV circuits insulated from other SELV circuits by basic insulation		N/A
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		P
- (15.4.3)	FELV circuits		N/A
	Source used to supply FELV circuits:		N/A
	- separating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- separating controlgear providing basic insulation between input and output circuits in accordance with relevant part 2 of IEC 61347		N/A
	- another source		N/A
	- source in circuits separated by the LV supply by basic insulation		N/A
	Voltage in the circuit not higher than ELV		N/A
	FELV circuits insulated from LV supply by at least basic insulation		N/A
	FELV circuits insulated from other FELV circuits if functional purpose		N/A
	FELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
	Plugs and socket-outlets for FELV system comply with:		N/A
	- plugs not able to enter socket-outlets of other voltage systems		N/A
	- socket-outlets not admit plugs of other voltage systems		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- socket-outlets have a protective conductor contact		N/A
- (15.4.4)	Other circuits		P
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		P
- (15.4.5)	Insulation between circuits and accessible conductive parts		P
	Accessible conductive parts insulated from active parts of electric circuits by insulating according Table 6		P
	Requirements for Class II construction with equipotential bonding for protection against indirect contact with live parts:		N/A
	- all conductive parts are connected together		N/A
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		N/A
	- conductive parts comply with requirements of Annex A in case of insulation fault		N/A

17 (16)	CREEPAGE DISTANCES AND CLEARANCES		P
- (16.1)	General		P
	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L		N/A
	Insulating lining of metallic enclosures		N/A
	Controlgear protected against pollution comply with Annex P	(see Annex P)	P
- (16.2)	Creepage distances		P
- (16.2.2)	Minimum creepage distances for working voltages		P
	Creepage distances according to Table 7	(see appended table)	P
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8	(see appended table)	N/A
- (16.3)	Clearances		P
- (16.3.2)	Clearances for working voltages		P
	Clearances distances according to Table 9	(see appended table)	P
- (16.3.3)	Clearances for ignition voltages and working voltages with higher frequencies		N/A
	Clearances distances for basic or supplementary insulation according to Table 10	(see appended table)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Clearances distances for reinforced insulation according to Table 11	(see appended table)	N/A

18 (17)	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		P
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
(4.11)	Electrical connections		P
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
(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

19 (18)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
- (18.1)	Ball-pressure test	See Test Table 19 (18.1)	P
- (18.2)	Test of printed boards	See Test Table 19 (18.2)	N/A
- (18.3)	Glow-wire test	See Test Table 19 (18.3)	P
- (18.4)	Needle flame test	See Test Table 19 (18.4)	P

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Clause	Requirement + Test	Result - Remark	Verdict
- (18.5)	Tracking test	See Test Table 19 (18.5)	N/A
20 (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
21 (-)	MAXIMUM WORKING VOLTAGE (U_{out}) IN ANY LOAD CONDITION		P
	Not exceed declared maximum working voltage U_{out} in any load condition	138 V	P
14	TABLE: tests of fault conditions		P
Part	Simulated fault		Hazard
See Appendix 3			

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Clause	Requirement + Test				Result - Remark		Verdict
17 (16)	TABLE: clearance and creepage distance measurements (mm)						P
Applicable part of IEC 61347-1 Table 7 – 11*							
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	3,0	1,5	9	3,0	2,5	7
Working voltage (V)					250		—
Frequency if applicable (kHz)					N/A		—
PTI					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: between L and N							
Distance 2:	R	6,0	3	9	6,0	5,0	7
Working voltage (V)					250		—
Frequency if applicable (kHz)					N/A		—
PTI					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: between L/N and EQUI							
Distance 3:	R	--	--	--	6,0	5,0	7
Working voltage (V)					250		—
Frequency if applicable (kHz)					N/A		—
PTI					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: between input and DA on PCB							
Distance 4:	R	--	--	--	6,0	1,78	P.1
Working voltage (V)					359		—
Frequency if applicable (kHz)					N/A		—
PTI					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: between input and output on PCB							
Distance 5:	B	6,0	3	9	6,0	2,5	7
Working voltage (V)					250		—

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Clause	Requirement + Test				Result - Remark		Verdict
Frequency if applicable (kHz)					N/A		—
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: between EQUI and DA							
Distance 6:	B	5,8	1,5	9	5,8	1,7	7
Working voltage (V)					170		—
Frequency if applicable (kHz)					N/A		—
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: between output and EQUI							
Distance 7:	S	3,1	1,5	9	3,1	1,7	7
Working voltage (V)					170		—
Frequency if applicable (kHz)					N/A		—
PTI					< 600 <input type="checkbox"/> ≥ 600 <input checked="" type="checkbox"/>		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: between Output and DA							
Distance 8:	R	5,0	3	9	5,0	5	7
Working voltage (V)					250		—
Frequency if applicable (kHz)					N/A		—
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: between input and enclosure							
Distance 9:	B	5,4	3	9	5,4	1,7	7
Working voltage (V)					170		—
Frequency if applicable (kHz)					N/A		—
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: between output and enclosure							

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Clause		Requirement + Test			Result - Remark		Verdict
Distance 10:	B	5,4	1,5	9	5,4	2,5	7
Working voltage (V)					250		—
Frequency if applicable (kHz)					N/A		—
PTI					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: between DA and enclosure							

** Insulation type: B – Basic; S – Supplementary; R – Reinforced

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Clause	Requirement + Test	Result - Remark	Verdict

19 (18.1)	TABLE: Ball Pressure Test			P
Allowed impression diameter (mm)			2,0	—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Bobbin L306	Refer to annex 1	127.9	0,8	
Bobbin L309	Refer to annex 1	126.5	0,8	
Bobbin L501	Refer to annex 1	125	0,8	
PCB	Refer to annex 1	125	1,2	
Housing	Refer to annex 1	125	1,2	
Supplementary information: --				

19 (18.2)	TABLE: Test of printed boards				N/A
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Supplementary information:					

19 (18.3)	TABLE: Glow-wire test			P
Glow wire temperature.....			650 °C	—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Bobbin L306	Refer to annex 1	No	0	P
Bobbin L309	Refer to annex 1	No	0	P
Bobbin(L501)	Refer to annex 1	No	0	P
PCB	Refer to annex 1	No	0	P
Housing	Refer to annex 1	No	0	P
Supplementary information:				

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Clause	Requirement + Test	Result - Remark	Verdict

19 (18.4)	TABLE: Needle-flame test				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Bobbin L306	Refer to annex 1	10	No	0	P
Bobbin L309	Refer to annex 1	10	No	0	P
Bobbin(L501)	Refer to annex 1	10	No	0	P
PCB	Refer to annex 1	10	No	0	P
Housing	Refer to annex 1	10	No	0	P
Supplementary information: --					

19 (18.5)	TABLE: Proof tracking test				N/A
Test voltage PTI		:	175 V		—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Supplementary information:					

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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. :		N/A
(A.3)	If voltage measured according Clause A.2 exceeds the limit value; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. :	0,326 mA	P
	Comply with Annex G.2 of IEC 60598-1		P

(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		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)		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 .. :	Inherent	P
(C6)	MARKING		P
(C6.1)	Symbol for temperature declared thermally protected ballasts	120 °C	P
(C6.2)	Declaration of the type of protection provided		P
(C7)	LIMITATION OF HEATING		P
(C7.1)	Preselection test:		P
	Test sample placed for at least 12 h in an oven having temperature ($t_c - 5$) K		P
	No operation of the protection device		P
(C7.2)	Functioning of protection means:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	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	Ta: 74,0 °C tc: 89,8 °C	P
	No operation of the protection device		P
	Introducing of the most onerous test condition determined during test of clause 14.2 to 14.5	L309 1-3 short-circuit	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		P
	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	110,3 °C	P
	Any overshoot of 10% over the marked value within 15 min		N/A
	After 15 min value not exceed marked value		N/A

(D)	ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR		P
	Tests in C7 performed in accordance with Annex D, if applicable		P

(F)	ANNEX F – DRAUGHT-PROOF ENCLOSURE		N/A
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(H)	ANNEX H - TESTS		P
	All tests performed in accordance with the advice given in Annex H, if applicable		P

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Clause	Requirement + Test	Result - Remark	Verdict
I (L)	ANNEX I IN THIS PART 2 – PARTICULAR ADDITIONAL REQUIREMENTS FOR SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEARS FOR LED MODULES		P
(L.3)	Classification		P
	Class I	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Class II	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Class III	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	non-inherently short circuit proof controlgear	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	inherently short circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	fail safe controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	non-short-circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
(L.4)	Marking		P
	Adequate symbols are used		P
(L.5)	Protection against electric shock		P
	Comply with clause 9.2 of IEC 61558-1		P
(L.6)	Heating		P
	No excessive temperatures in normal use		P
	Value if capacitor t_c marked	105 °C	—
	Winding insulation classified as Class	Class B (120 °C)	—
	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		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	Input – Output: > 50 MΩ	P
	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	Output – Metal foil: > 50 MΩ Input – Metal foil: > 50 MΩ DA/AUX – Metal foil: > 50 MΩ	P
(L.8.3)	Electric strength		P

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Clause	Requirement + Test	Result - Remark	Verdict
	1) Between live parts of input circuits and live parts of output circuits	Input – Output: 3440 V Input – DA/AUX: 3440 V	P
	2) Over basic or supplementary insulation between:		N/A
	a) live parts having different polarity		N/A
	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	All terminal - Metal foil: 3440V	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		P
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		P
(L.11)	Creepage distances, clearances and distances through insulation		P
	Creepage distances and clearances not less than in Clause 16		P
	Distance through insulation according Table L.5 in IEC 61347-1		P
	1) Basic distance through insulation		N/A
	Required distance (mm)		—
	Measured (mm)		N/A
	Supplementary information		—
	2) Supplementary distance through insulation		P
	Required distance (mm)	0,16	—
	Measured (mm)	0,165	P
	Supplementary information	3-layer insulation tape of isolation transformer L501	—
	3) Reinforced distance through insulation		P
	Required distance (mm)	0,32 / 1,1	—
	Measured (mm)	0,33 / 1,6	P

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Clause	Requirement + Test	Result - Remark	Verdict

	Supplementary information	6-layer insulation tape of isolation transformer L306/ L406 Thickness of housing	—
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J (-)	ANNEX J IN THIS PART 2 – PARTICULAR ADDITIONAL SAFETY REQUIREMENTS FOR A.C., A.C./D.C. OR D.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR EMERGENCY LIGHTING		P
J.1	General		P
	Intended for centralized emergency power supply	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
J.2	Marking		P
J.2.1	Mandatory markings		P
	a) symbol EL		P
	b) rated emergency supply voltage (V)	186-250 DC	P
J.2.2	Information to be provided if applicable		P
	a) Limits of ambient temperature		N/A
	b) Emergency output factor (EOF _x)	0,6	P
	c) Information if intended for use in luminaires for high-risk task area lighting		N/A
J.3	General notes on tests		P
	Length of output cable in tests	20 cm; 200 cm	P
	Load instead of LED lamps/modules	75 W	P
J.4	Starting conditions		P
	Start rated load in emergency mode without adversely affecting the performance		P
J.5	Operating condition		P
	Comply with the requirements of 7.2 of IEC 62384 at 90% and 110% of rated emergency supply voltage		P
J.6	Emergency supply current		P
	Emergency supply current not differ more than ±15 %		P
	Supply of low impedance and low inductance		N/A
J.7	EMC immunity		P
	Comply with the requirements of IEC 61547		P
J.8	Pulse voltage from central battery systems		P
	Withstand pulses according Table J.1		P
J.9	Tests for abnormal conditions		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Comply with the requirements of 12 of IEC 62384		P
J.10	Comply with the requirements of 13 of IEC 62384		P
J.11	Functional safety (EOF _x)		N/A
	Declared emergency output factor (EOF _x) achieved during emergency operation	EOF _x is Settable	N/A

(N)	ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION	N/A
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(O)	ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION		P
(O.6)	Marking		P
	Marking according clause 7 (7)	See clause 7	P
	Special symbol		P
	Meaning of the special symbol explained in catalogue		P
(O.7)	Protection against accidental contact with live parts		P
	Requirements of clause 8 (10)	See clause 8	P
	Test finger not possible to make contact with basic insulated metal parts		P
(O.8)	Terminals		P
	Clause 9 (8)	See clause 9	P
(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		P
	Clause 11 (11)	See clause 11	P
(O.11)	Electric strength		P
	Clause 12 (12)	See clause 12	P
(O.13)	Fault conditions		P
	Clause 14 (14)	See clause 14	P
	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		P

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Clause	Requirement + Test	Result - Remark	Verdict
	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		P
(O.14)	Construction		P
	Clause 17 (15)	See clause 17	P
	Accessible metal parts insulated from live parts by double or reinforced insulation		P
	Live part insulated from supporting surface in contact with external faces by double or reinforced insulation		P
(O.15)	Creepage distances and clearances		P
	Clause 18 (16)	See clause 18	P
	Comply with corresponding values for luminaries in IEC 60598-1		P
(O.16)	Screws, current-carrying parts and connections		P
	Clause 19 (17)	See clause 19	P
(O.17)	Resistance to heat and fire		P
	Clause 20 (18)	See clause 20	P
(O.18)	Resistance to corrosion		N/A
	Clause 21 (19)	See clause 21	N/A

(P)	Creepage distances and clearances and distance through isolation (DTI) for lamp controlgear which are protected against pollution by the use of coating or potting		P
(P.1)	General		P
	P.2 applies if creepage distances less than the minimum in Table 7 and 8		P
	P.3 applies if clearance less than the minimum in Table 9, 10 and 11		P
(P.2)	Creepage distances		P
(P.2.2)	Minimum creepage distances for working voltages and rated voltages with frequencies up to 30 kHz (Table P.1)		P
	Basic or supplementary insulation:		N/A
	Required creepage	see table 17(16)	—
	Measured	see table 17(16)	N/A
	Supplementary information		—
	Reinforced insulation:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Required creepage	see table 17(16)	—
	Measured	see table 17(16)	P
	Supplementary information		—
(P.2.3)	Creepage distances for working voltages with frequencies above 30 kHz (Table P.2)		N/A
	Voltage \hat{U}_{out} kV		—
	Frequency		—
	Required distance		—
	Measured		N/A
	Supplementary information		—
(P.2.4)	Compliance with the required creepage distances		P
(P.2.4.1)	Compliance in accordance with 16.3.3 and test according P.2.4.2		P
(P.2.4.3)	Electrical tests after conditioning		P
(P.2.4.3.1)	Insulation resistance and electric strength according Clause 11 and 12		P
(P.3)	Distance through isolation		P
(P.3.4)	Electrical tests after conditioning		P
(P.3.4.1)	Insulation resistance and electric strength according Clause 11 and 12		P
(P.3.4.2)	Impulse voltage dielectrical test		P
	Basic or supplementary insulation:		N/A
	Working/rated voltage		—
	Impulse voltage.....		N/A
	Supplementary information		—
	Reinforced insulation:		P
	Working/rated voltage	359V	—
	Impulse voltage.....	7400V	P
	Supplementary information	Between input and output	—

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1	TABLE: Critical components information						P
Object / part No.	Code	Manufacturer/ trademark	Type/ model	Technical data	Standard	Mark(s) of conformity ¹⁾	
F101	B	CONQUER ELECTRONICS CO. LTD.	T; MST	250 V; 5 A	IEC/EN 60127-1/3	VDE	
F101 (alt.)	--	Interchangeable	--	250 V; 5 A	IEC/EN 60127-1/3	Certified	
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating						
PCB (MB)	C	SHEN ZHEN SUN & LYNN CIRCUITS CO LTD	SL-M	FR4; V-0; 130 °C; 1,6 mm (E234156)	IEC/EN 61347-2-13	Tested in appliance	
PCB (MB) (alt.)	--	Interchangeable	--	FR4; V-0; 130 °C; 1,6 mm; UL certified	IEC/EN 61347-2-13	--	
PCB (DB)	C	Liang Dar Technology Co.,Ltd.	MD	FR4; V-0; 130 °C; 1,0 mm (E166132)	IEC/EN 61347-2-13	Tested in appliance	
PCB (DB) (alt.)	--	Interchangeable	--	FR4; V-0; 130 °C; 1,0 mm; UL certified	IEC/EN 61347-2-13	--	
NFC PCB	C	SHEN ZHEN SUN & LYNN CIRCUITS CO LTD	SL-M	FR4; V-0; 130 °C; 1,0 mm (E234156)	IEC/EN 61347-2-13	Tested in appliance	
NFC PCB (alt.)	--	Interchangeable	--	FR4; V-0; 130 °C; 1,0 mm; UL certified	IEC/EN 61347-2-13	--	
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating						
Y capacitor (C102)	B	MURATA	RA	Y1; 500 V; 1,5 nF; 125 °C	IEC/EN 60384-14	VDE	
	--	Interchangeable	--	Y1; 500 V; 1,5 nF; 125 °C	IEC/EN 60384-14	Certified	
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating						
Y capacitor (C313)	B	MURATA	RA	Y1; 500 V; 470 pF; 125 °C	IEC/EN 60384-14	VDE	
	--	Interchangeable	--	Y1; 500 V; 470pF; 125 °C	IEC/EN 60384-14	Certified	
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating						
	B	MURATA	SA_X	Y2; 300 V; 4,7 nF; 125 °C	IEC/EN 60384-14	VDE	

IEC 61347-2-13						
Clause	Requirement + Test			Result - Remark		Verdict
Y capacitor (C308,C512,C516)	--	Interchangeable	--	Y2; 300 V; 4,7 nF; 125 °C	IEC/EN 60384-14	Certified
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating					
X capacitor (C100)	B	Sichuan Zhongxing Electronic	MKP61	X2; 305 V; 330 nF; 110 °C	IEC/EN 60384-14	VDE
	--	Interchangeable	--	X2; 305 V; 3300 nF; 110 °C	IEC/EN 60384-14	Certified
X capacitor (C101)	B	Sichuan Zhongxing Electronic	MKP61	X2; 305 V; 100 nF; 110 °C	IEC/EN 60384-14	VDE
	--	Interchangeable	--	X2; 305 V; 100 nF; 110 °C	IEC/EN 60384-14	Certified
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating					
Varistor (V102)	B	Thinking	TVR; TVR07511 KFABY-H	320 V; 105 °C; Type:4	IEC 61051-1/2	VDE
Varistor (alt.)	--	Interchangeable	--	320 V; 105 °C; Type:4	IEC 61051-1/2	Certified
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating					
Varistor (V100)	B	Thinking	TVR-V; TVR14511 V	320 V; 105 °C; Type:5	IEC 61051-1/2	VDE
Varistor (alt.)	--	Interchangeable	--	320 V; 105 °C; Type:5	IEC 61051-1/2	Certified
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating					
Varistor (V102)	B	Thinking	TVR-M; TVR10361 M	230 V; 125 °C; Type:5	IEC 61051-1/2	VDE
Varistor (alt.)	--	Interchangeable	--	230 V; 125 °C; Type:5	IEC 61051-1/2	Certified
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating					
Terminal block (X102)	B	Chang Hong	250; ZY250	7 A; 300 V; T60	EN 60947-7-1	Intertek
Terminal block (alt.)	B	Wago	250-...	7 A; 300 V; T60	EN 60998-2-2	DEKRA

IEC 61347-2-13						
Clause	Requirement + Test			Result - Remark		Verdict
Terminal block (alt.)	--	Interchangeable	--	7 A; 300 V; T60	EN 60947-7-1 / EN 60998-2-2	Certified
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating					
Terminal block (X930)	B	Chang Hong	250; ZY250	7 A; 300 V; T60	EN 60947-7-1	Intertek
Terminal block (alt.)	B	Wago	250-...	7 A; 300 V; T60	EN 60998-2-2	DEKRA
Terminal block (alt.)	--	Interchangeable	--	7 A; 300 V; T60	EN 60947-7-1 / EN 60998-2-2	Certified
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating					
Housing	C	Graform	Akulon K225-KS	T = 1,5 mm	IEC/EN 61347-2-13	Tested in appliance
Description:	--					
Housing (cover)	C	Graform	Akulon K225-KS	T = 1,6 mm	IEC/EN 61347-2-13	Tested in appliance
Description:	--					
Insulation foil(optional)	C	Foundertop	Mylar	84x26x0,19 mm VTM-2 (UL: E93687)	IEC/EN 61347-2-13	Tested in appliance
Insulation foil(optional) (alt.)	--	Interchangeable	--	84x26x0,19 mm VTM-2; UL certified	IEC/EN 61347-2-13	--
Description:	--					
Opto-coupler (U902 / U1553 / U1554/U1585)	B	VISHAY	VOL618A_	5000 V; DTI: > 0,4 mm; 110 °C	IEC/EN 60747-5-5	VDE
Opto-coupler (U902 / U1553 / U1554/U1585)	--	Interchangeable	--	5000 V; DTI: > 0,4 mm; 110 °C	IEC/EN 60747-5-5	Certified
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating					
Transformer (L306/L406)	C	OCL	EF25/11E_ TR	5 mH; 120 °C (Spec see appendix 5)	IEC/EN 61347-2-13	Tested in appliance
Transformer (L306/L406) (alt.)	--	Interchangeable	--	5 mH; 120 °C	IEC/EN 61347-2-13	--
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating					

IEC 61347-2-13						
Clause	Requirement + Test			Result - Remark		Verdict
Transformer (L309/L409)	C	MEIXING	EP7	14 mH; 120 °C (Spec see appendix 5)	IEC/EN 61347-2-13	Tested in appliance
Transformer (L309/L409) (alt.)	--	Interchangeable	--	14 mH; 120 °C	IEC/EN 61347-2-13	--
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating					
Transformer (L501)	C	MEIXING	EP7	4,4 mH; 120 °C (Spec see appendix 5)	IEC/EN 61347-2-13	Tested in appliance
Transformer (L501) (alt.)	--	Interchangeable	--	4,4 mH; 120 °C	IEC/EN 61347-2-13	--
Description:	Interchangeability based on specified dimensions due to mounting (including connections) and specified rating					
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. 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 Note: Components License available upon request						

ANNEX 2	Screw terminals (part of the luminaire)	N/A
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ANNEX 3	Screwless terminals (part of the luminaire)	N/A
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Appendix 1: IEC 61558-2-16			
Clause	Requirement + Test		Verdict
14	TABLE: Heating Test		P
	Test voltage (V)	254	—
	Ambient (°C)	73,65	—
Thermocouple Locations		max. temperature measured (°C)	max. temperature limit (°C)
Transformer winding (L306)		102,9	120
Transformer winding (L309)		101,5	120
Transformer winding (L406)		102,1	120
Transformer winding (L409)		100,34	120
Transformer winding (L501)		91,3	120
Supplementary information: Clause 14.1: Winding: Class B			

15	TABLE: Short circuit and overload protection		P
	Test voltage (V)	264	—
	Ambient (°C)	73,65	—
Thermocouple Locations		max. temperature measured (°C)	max. temperature limit, (°C)
Transformer winding (L306)		76,08	175
Transformer winding (L309)		75,65	175
Transformer winding (L406)		75,13	175
Transformer winding (L409)		75,32	175
Transformer winding (L501)		75,52	175
Supplementary information: Clause 15.3.1: short-circuit safe			

26	TABLE: Clearance And Creepage Distance Measurements					P
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
PRI - SEC (L306/L406)	--	359 (P1)	--	--	2,16	3,7
PRI - SEC (L309/L409)	--	284 (P1)	--	--	2,16	7,2
PRI - SEC (L501)	--	360	--	--	7,2	8,1
Supplementary information: Transformer L306/L406, L309/L409 passed P1 test						

26.2.4	Enclosed parts, by impregnation or potting		P
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Appendix 1: IEC 61558-2-16						
Clause		Requirement + Test		Result - Remark		Verdict
26.2.4.1		– The requirements of reduced values as stated for pollution degree 1 (P1) are fulfilled				P
		– all isolating materials are classified acc. to IEC 60085 and IEC 60216				P
		Test B				P
		– thermal class		Class B		P
		– working voltage		359 V		P
		– Test with three specially specimens, potted or impregnated. The dielectric strength test is applied directly to the joint.		(see appended table)		P
		Two of the three specimens are subjected to:				P
		– the relevant humidity treatment according to 17.2 (48 h)				P
		– the relevant dielectric strength test of 18.3 multiplied with factor 1,25		5450 V		P
		– One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,25 immediately at the end of the last cycle with high temperature		5450 V		P
		The three spacemen pass the Impulse dielectric test according to 4.1.1.2.1 of IEC 60 664-1 (1,2 / 50 s waveform) – see Annex R of IEC 61558-1				P
BB.26.2 TEST B		TABLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES THROUGH INSULATION				P
		Test with three specially prepared specimens with potted – P1 values are required		Xi SR 75W 2:0.3-1.0A SNEMPF C170 sXt		P
cycles with 2 x working voltage between pri / sec		68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hour 0 °C	1 hour 25 °C	
1.	720 Vac	115 °C	25 °C	0 °C	25 °C	Start: 2021-05-14
2.	720 Vac	115 °C	25 °C	0 °C	25 °C	
3.	720 Vac	115 °C	25 °C	0 °C	25 °C	
4.	720 Vac	115 °C	25 °C	0 °C	25 °C	
5.	720 Vac	115 °C	25 °C	0 °C	25 °C	
6.	720 Vac	115 °C	25 °C	0 °C	25 °C	
7.	720 Vac	115 °C	25 °C	0 °C	25 °C	
8.	720 Vac	115 °C	25 °C	0 °C	25 °C	
9.	720 Vac	115 °C	25 °C	0 °C	25 °C	
10.	720 Vac	115 °C	25 °C	0 °C	25 °C	End: 2021-06-18

Appendix 2: Creepage distances and clearances

Minimum distance for a.c. (50/60Hz) sinusoidal voltages between
 tracks on printed circuit board
 - short circuit across distances if less than the values specified below

Distance between measured points	RMS voltage (V)	Distance (mm)	Limit (mm)	Result
28	422,9	1,75	2,12	SC
39	294,5	1,19	1,38	SC
48	407,5	2,00	2,04	SC
56	271,8	0,70	1,19	SC
70	290,5	1,19	1,35	SC
71	290,8	1,19	1,35	SC
74	293,6	1,19	1,37	SC
83	412,5	2,00	2,06	SC
109	296,5	1,04	1,40	SC
110	294,8	1,04	1,38	SC
111	292,2	1,04	1,36	SC
112	256,7	0,76	1,06	SC
114	261,8	0,91	1,10	SC
115	278,6	0,83	1,25	SC
119	98,1	0,35	0,50	SC
4	0,2	3,10	0,50	PASS
5	3,3	3,91	0,50	PASS
6	240,0	3,00	0,93	PASS
7	0,5	2,24	0,50	PASS
8	242,0	3,15	0,94	PASS
9	3,7	1,77	0,50	PASS
10	334,0	3,12	1,67	PASS
11	71,1	0,90	0,50	PASS
12	280,5	5,18	1,26	PASS
14	63,6	0,90	0,50	PASS
16	268,5	3,09	1,16	PASS
18	14,1	1,40	0,50	PASS
21	244,0	2,84	0,96	PASS
22	416,1	2,21	2,08	PASS
23	171,6	1,25	0,54	PASS
25	172,7	1,20	0,54	PASS
26	0,0	0,20	0,00	PASS
27	46,9	0,90	0,50	PASS
29	10,7	0,25	0,50	SC
30	0,0	0,20	0,00	PASS
31	0,4	0,25	0,50	SC
32	3,0	0,25	0,50	SC

33	15,5	0,47	0,50	SC
34	17,2	0,59	0,50	PASS
35	304,5	1,83	1,47	PASS
36	19,1	0,63	0,50	PASS
37	24,8	0,56	0,50	PASS
38	0,6	0,95	0,50	PASS
40	404,0	2,36	2,02	PASS
41	14,4	0,50	0,50	PASS
42	99,5	0,57	0,50	PASS
43	98,6	2,23	0,50	PASS
44	16,8	1,53	0,50	PASS
45	16,8	0,98	0,50	PASS
46	404,5	2,05	2,02	PASS
47	406,2	2,72	2,03	PASS
49	0,9	1,37	0,50	PASS
50	0,0	0,20	0,00	PASS
51	405,8	3,30	2,03	PASS
52	223,0	1,19	0,80	PASS
53	232,0	1,19	0,87	PASS
54	11,8	1,08	0,50	PASS
55	9,6	2,15	0,50	PASS
57	1,1	0,73	0,50	PASS
58	434,0	2,87	2,17	PASS
59	122,4	1,32	0,50	PASS
60	218,3	1,21	0,77	PASS
61	134,4	0,56	0,50	PASS
62	145,3	1,19	0,50	PASS
63	112,9	0,50	0,50	PASS
64	9,3	0,42	0,50	SC
65	2,6	0,29	0,50	SC
66	3,7	0,27	0,50	SC
67	0,0	0,20	0,00	PASS
68	2,7	0,26	0,50	SC
69	466,7	2,50	2,33	PASS
72	7,9	2,68	0,50	PASS
73	7,8	2,46	0,50	PASS
75	404,2	2,10	2,02	PASS
76	400,1	2,08	2,00	PASS
77	434,5	2,21	2,17	PASS
81	399,8	2,00	2,00	PASS
82	401,5	2,08	2,01	PASS
84	10,6	0,35	0,50	SC
85	298,6	2,00	1,42	PASS

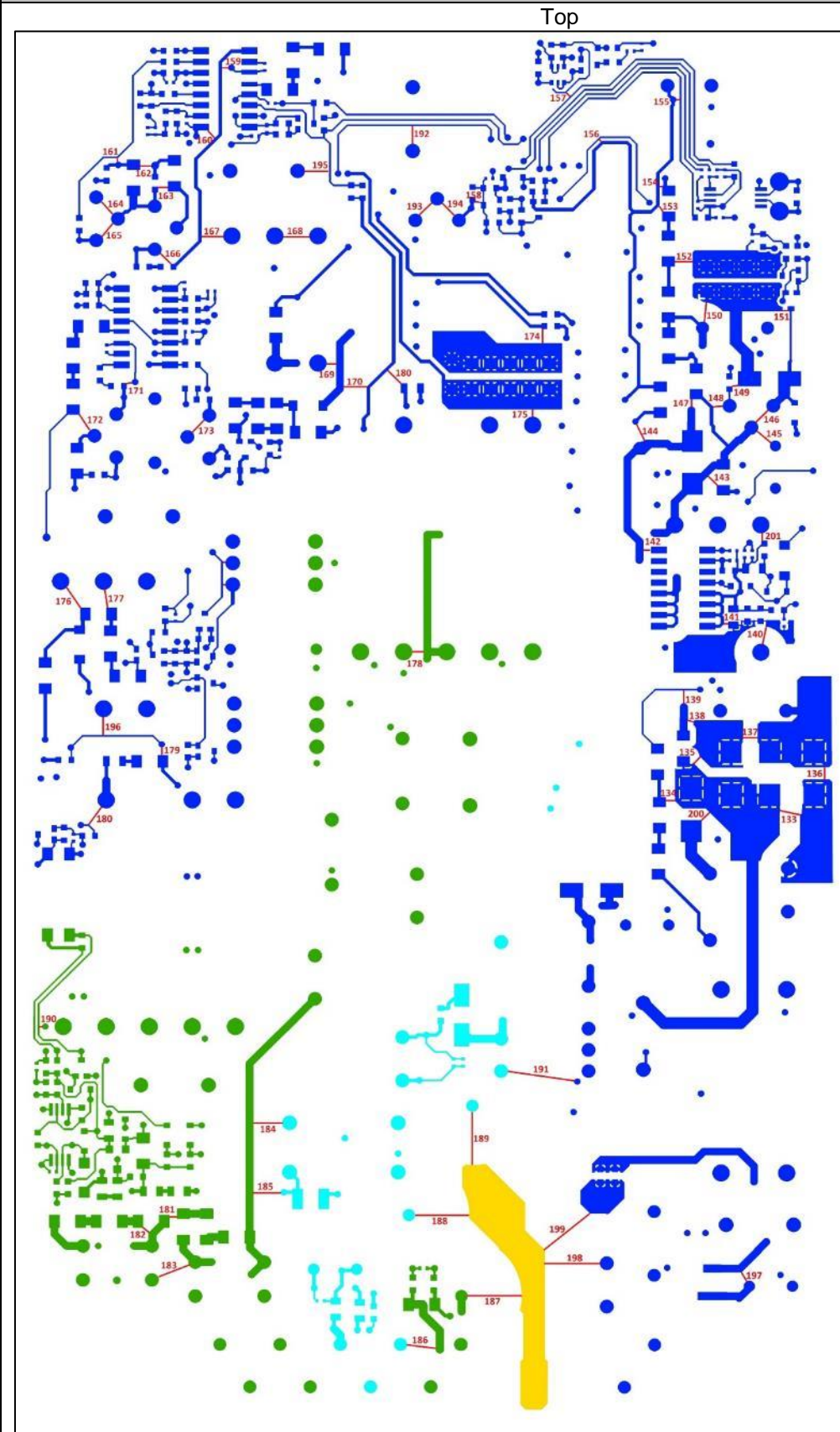
86	0,0	0,20	0,00	PASS
87	393,5	2,00	1,97	PASS
88	102,3	1,60	0,50	PASS
89	140,4	1,60	0,50	PASS
90	102,4	1,60	0,50	PASS
91	140,5	1,60	0,50	PASS
92	0,5	0,51	0,50	PASS
93	86,7	0,70	0,50	PASS
94	102,4	2,69	0,50	PASS
95	73,8	1,00	0,50	PASS
96	69,3	1,22	0,50	PASS
97	0,2	2,01	0,50	PASS
98	93,8	1,20	0,50	PASS
99	93,6	1,00	0,50	PASS
100	0,6	0,90	0,50	PASS
101	93,6	1,00	0,50	PASS
102	69,1	1,00	0,50	PASS
103	48,2	0,70	0,50	PASS
106	68,6	0,50	0,50	PASS
107	68,5	1,00	0,50	PASS
108	69,9	0,81	0,50	PASS
113	309,7	1,65	1,51	PASS
116	1,8	1,72	0,50	PASS
117	11,8	0,74	0,50	PASS
118	5,7	1,30	0,50	PASS
120	0,5	0,33	0,50	SC
125	27,7	1,34	0,50	PASS
126	11,5	0,55	0,50	PASS
127	16,8	0,68	0,50	PASS
129	0,8	3,32	0,50	PASS
130	0,9	3,32	0,50	PASS
131	93,7	2,82	0,50	PASS
146	289,50	1,19	1,34	SC
147	268,80	0,74	1,16	SC
148	289,50	1,00	1,34	SC
160	294,40	1,00	1,38	SC
162	287,50	1,21	1,32	SC
163	289,90	1,05	1,34	SC
164	287,50	1,19	1,32	SC
165	285,50	1,19	1,30	SC
173	284,50	1,19	1,30	SC
133	244,10	2,30	0,96	PASS
134	89,70	1,00	0,50	PASS

135	170,30	1,00	0,53	PASS
136	172,60	1,20	0,54	PASS
137	240,40	1,65	0,93	PASS
138	95,50	0,65	0,50	PASS
139	95,40	1,41	0,50	PASS
140	244,40	2,00	0,96	PASS
141	0,80	0,41	0,50	SC
142	102,40	0,75	0,50	PASS
143	289,20	1,36	1,34	PASS
144	385,50	2,00	1,93	PASS
145	275,30	1,50	1,22	PASS
149	7,60	0,55	0,50	PASS
150	399,80	2,00	2,00	PASS
151	0,73	0,52	0,50	PASS
152	231,10	1,95	0,86	PASS
153	92,20	0,59	0,50	PASS
154	0,00	0,20	0,00	PASS
155	13,60	0,28	0,50	SC
156	0,00	0,20	0,00	PASS
157	2,90	0,48	0,50	SC
158	0,78	0,52	0,50	PASS
159	7,50	0,62	0,50	PASS
161	7,70	0,31	0,50	SC
166	3,70	1,61	0,50	PASS
167	208,80	2,43	0,70	PASS
168	17,60	2,30	0,50	PASS
169	13,40	1,00	0,50	PASS
170	146,50	2,55	0,50	PASS
171	9,50	0,52	0,50	PASS
172	399,60	2,12	2,00	PASS
174	2,80	1,55	0,50	PASS
175	96,60	0,75	0,50	PASS
176	265,50	2,74	1,13	PASS
177	154,60	2,01	0,50	PASS
178	50,50	0,85	0,50	PASS
179	3,50	0,76	0,50	PASS
180	173,30	2,41	0,54	PASS
181	44,40	0,77	0,50	PASS
182	22,70	0,78	0,50	PASS
183	71,10	3,07	0,50	PASS
190	0,00	0,20	0,00	PASS
192	1,10	2,00	0,50	PASS
194	13,10	1,19	0,50	PASS

195	214,70	2,70	0,74	PASS
196	97,80	2,00	0,50	PASS
197	4,90	1,25	0,50	PASS
200	131,10	1,22	0,50	PASS
201	6,40	0,77	0,50	PASS

Appendix 2: Creepage distances and clearances (continued)

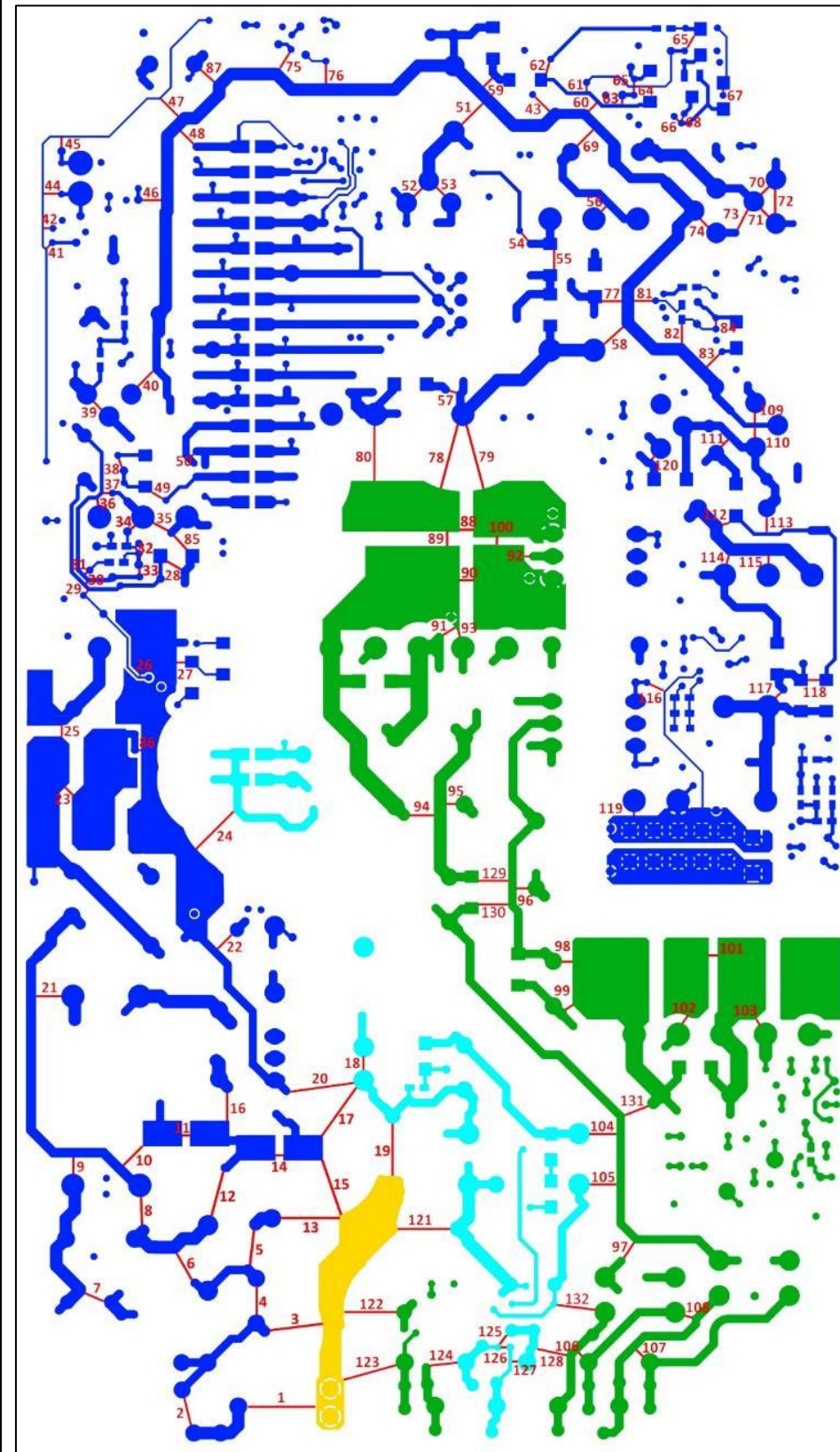
PCB layout attached



TRF No. IEC61347_2_13G

Appendix 2: Creepage distances and clearances (continued)**PCB layout attached**

Bottom

**Appendix 3: Fault Conditions**

TRF No. IEC61347_2_13G

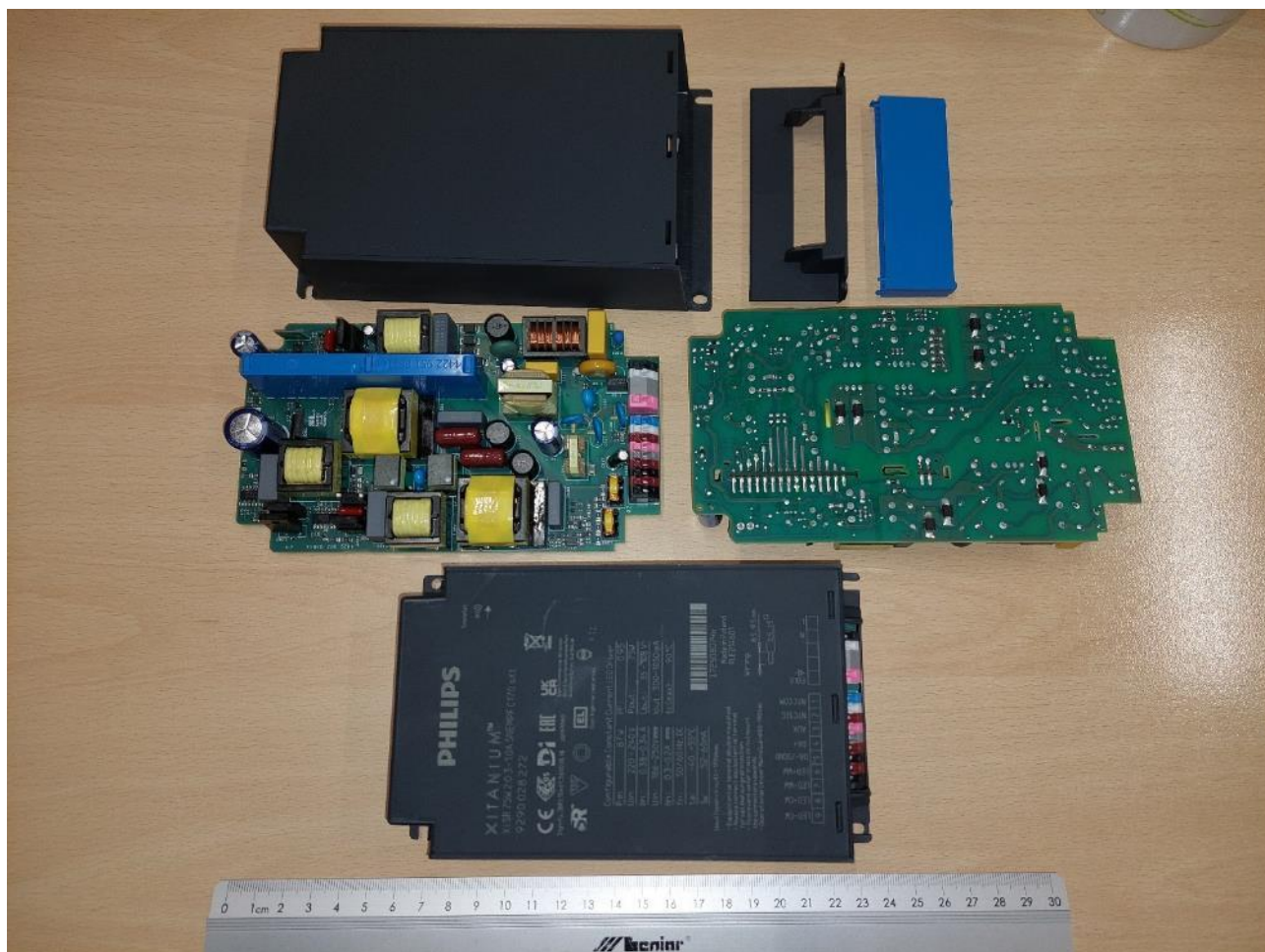
Between test points	No flames or flammable gases	No molten material	Insulation resistance not less than 1 MΩ	Accessible part haven't become live	OCV (V)	Result
Short circuit across distances with "FC" marks in page "CL14,2 ,,, "						
28	Y	Y	Y	Y	N/A	Pass
39	Y	Y	Y	Y	N/A	Pass
48	Y	Y	Y	Y	N/A	Pass
56	Y	Y	Y	Y	N/A	Pass
70	Y	Y	Y	Y	N/A	Pass
71	Y	Y	Y	Y	N/A	Pass
74	Y	Y	Y	Y	N/A	Pass
83	Y	Y	Y	Y	N/A	Pass
109	Y	Y	Y	Y	N/A	Pass
110	Y	Y	Y	Y	N/A	Pass
111	Y	Y	Y	Y	N/A	Pass
112	Y	Y	Y	Y	N/A	Pass
114	Y	Y	Y	Y	N/A	Pass
115	Y	Y	Y	Y	N/A	Pass
119	Y	Y	Y	Y	N/A	Pass
29	Y	Y	Y	Y	N/A	Pass
31	Y	Y	Y	Y	N/A	Pass
32	Y	Y	Y	Y	N/A	Pass
33	Y	Y	Y	Y	N/A	Pass
64	Y	Y	Y	Y	N/A	Pass
65	Y	Y	Y	Y	N/A	Pass
66	Y	Y	Y	Y	N/A	Pass
68	Y	Y	Y	Y	N/A	Pass
84	Y	Y	Y	Y	N/A	Pass
120	Y	Y	Y	Y	N/A	Pass
146	Y	Y	Y	Y	N/A	Pass
147	Y	Y	Y	Y	N/A	Pass
148	Y	Y	Y	Y	N/A	Pass
160	Y	Y	Y	Y	N/A	Pass
162	Y	Y	Y	Y	N/A	Pass
163	Y	Y	Y	Y	N/A	Pass
164	Y	Y	Y	Y	N/A	Pass
165	Y	Y	Y	Y	N/A	Pass

173	Y	Y	Y	Y	N/A	Pass
141	Y	Y	Y	Y	N/A	Pass
155	Y	Y	Y	Y	N/A	Pass
157	Y	Y	Y	Y	N/A	Pass
161	Y	Y	Y	Y	N/A	Pass

Appendix 3: Fault Conditions (continued)

Part	Simulated fault	Hazard
U207 D-S	Short circuited	NO
D507	Short circuited	NO
U301	Short circuited	NO
R310	Short circuited	NO
C207	Short circuited	NO
L309	Short circuited	NO
D304	Short circuited	NO
Q302 D OC	Open circuited	NO
R201 SC	Short circuited	NO
R100 SC	Short circuited	NO
D103(DC)	Short circuited	NO

Appendix 4: Photo



Xi SR 75W 2:0,3-1,0A SNEMPF C170 sXt

For label refer to “copy of marking plate”

Appendix 5: Transformer spec

L306/L406:



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SPECIFICATION FOR APPROVAL

客户名称/Customer: Signify		
客户物料编码/Customer Part No.: 442295405551		客户版本/Customer Rev.:
客户型号/Customer Model No.:		客户缩号/Customer ID: Signify
欧沸尔型号/OCL Model No.: PH-EF25/11-80		欧沸尔版本/OCL Rev.: A4
规格描述/Title: L Convert 5mH		
样品单号/Sample No.: OCL-0288-21		日期/Date: 2021/05/24
Qianqian Wu	Po Dong	George Pu
Designed/Marker	Checked by	Approved by

Please evaluate the samples, sign this approval sheet and return to OCL

- ☒ Approved
☐ Rejected
☐ Conditional Approved

Comments:

Customer Approved by: Ludwig Oostvogels Digitally signed by Ludwig Oostvogels
 Date: 2021.05.25 11:21:15 +02'00'

Signature & Date

Appendix 5: Transformer spec (continued)

L306/L406:

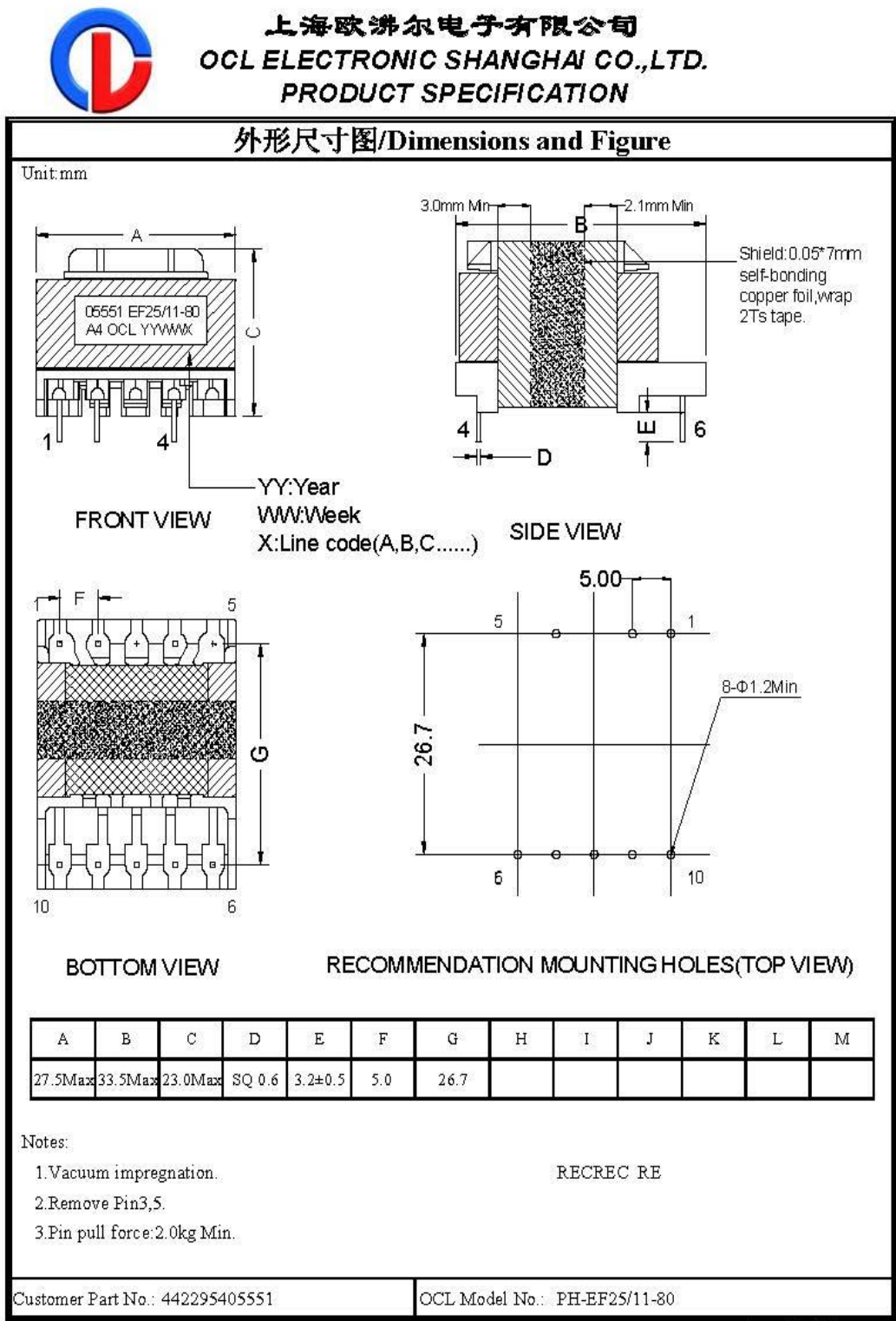


上海欧沸尔电子有限公司
OCL ELECTRONIC SHANGHAI CO.,LTD.
PRODUCT SPECIFICATION

Updated date	Descriptions of change	Approved	Revision
2020.07.03	Initial issue	George Pu	A0
2021.02.03	The 12NC changed to 828800072672	George Pu	A1
	The N2/N3 windings changed to bifilar		
2021.02.24	The 12NC changed to 828800072673	George Pu	A2
	The barrier tape changed to 3.7mm		
	The N1 changed to AWG38H*10P;N2 changed to AWG38H*14P		
	The N1 tape changed to 6Ts		
	The core material changed to TP4D		
2021.05.14	The 12NC changed to 442295405551	George Pu	A3
2021.05.24	The barrier tape changed to WF*(c)(h)	George Pu	A4
	Added Creepage & Clearance distances		
Customer Part No.: 442295405551			
OCL Model No.: PH-EF25/11-80			

Appendix 5: Transformer spec (continued)

L306/L406:



Appendix 5: Transformer spec (continued)

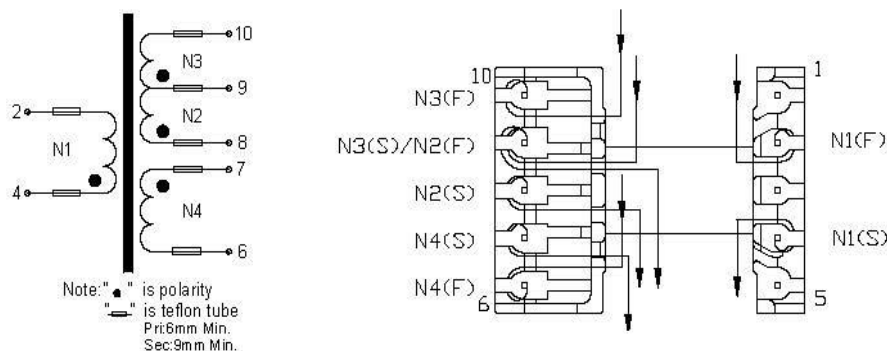
L306/L406:



上海欧沸尔电子有限公司
OCL ELECTRONIC SHANGHAI CO.,LTD.
PRODUCT SPECIFICATION

电气特性/Electrical Characteristics

原理图/Circuit diagram:



No.	Start	End	Wire	Turns	Tape	Barrier tape	Twist pitch (mm/Turns)	Dir	Remark
N1	4	2	AWG38H*10	56	6	3.7mm+3.7mm	10.0±10%	CCW	
N2	8	9	AWG38H*14P	26	2	3.7mm+3.7mm	17.56±10%	CCW	Bifilar
N3	9	10	AWG38H*14P	26			17.56±10%		
N4	7	6	AWG30H*1P	6	2	3.7mm+3.7mm		CCW	

电气参数/Electrical test:

NO.	Items	Measuring point	Specification	Test condition	Apparatus
1	Inductance	4-2	5.0mH Min	10KHz/50mV Series test	WK 6420 (Impedance: 100Ω)
2	Leakage inductance	4-2	50uH Max	100KHz/50mV Series test (Shorted N2,N3)	
3	Hi-pot test	N1-N2,N3,N4	3700V AC	50Hz,3mA,1S	VR 512
		Windings-CORE	1500V AC	50Hz,3mA,1S	
4	DC Resistance	4-2	0.63Ω Max	AT 25℃	TH2512B
		8-9	0.29Ω Max		
		9-10	0.29Ω Max		
		7-6	0.18Ω Max		
5	Turns ratio	N1:N2:N3:N4	56:26:26:6(±0.5)	50KHz/1V	GK T3259
6	Operating temperature range	-40℃ to + 125℃			

If there is doubt about the results, measurement shall be made within the following limits.

Ambient temperature: 25℃±1℃

Relative humidity: 63% to 67%

Customer Part No.: 442295405551

OCL Model No.: PH-EF25/11-80

Appendix 5: Transformer spec (continued)

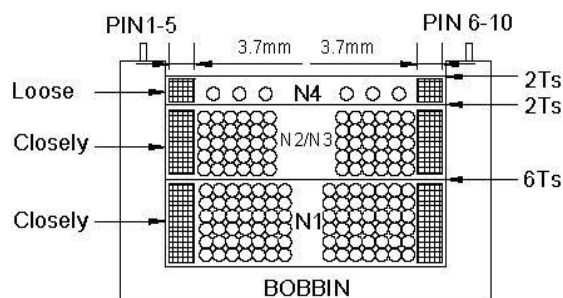
L306/L406:



上海欧沸尔电子有限公司
OCL ELECTRONIC SHANGHAI CO.,LTD
PRODUCT SPECIFICATION

结构图/Construction Diagram

剖面图/Cutaway view



材料清单/Material list

" " is Barrier tape

Items	Type	Materials	Rating		Manufacturer	UL NO.
			Temperature	Flammability		
Core	EF25/11	TP4D	N/A	N/A	TDG HOLDING CO LTD	N/A
Bobbin	EF25/11	WH-9100(G1)(G2)	130	V-0	WAH HONG INDUSTRIAL CORP	E150608
Wire	AWG38H*10P	MW80-C	155	N/A	SHANDONG SAINT ELECTRIC CO LTD	E194410
	AWG38H*14P	MW80-C	155	N/A		
	AWG30H*1P	MW80-C	155	N/A		
Barrier tape	3.7mm	WF*(c)(h)	130	N/A	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	E165111
Copper foil	0.05	N/A	N/A	N/A	KUNSHAN GUANYAN METAL MATERIAL CO LTD	N/A
Tape	0.055	CT*(c)(g)	130	N/A	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	E165111
Tube	19L	WF	200	N/A	SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD	E203950
	28L					
Varnish	N/A	T-4260(a)	180	N/A	SUZHOU TAIHU INSULATING MATERIAL CO LTD	E228349

Note: The above materials meet RoHS requirement

Customer Part No.: 442295405551

OCL Model No.: PH-EF25/11-80

Appendix 5: Transformer spec (continued)

L306/L406:



上海欧沸尔电子有限公司
OCL ELECTRONIC SHANGHAI CO.,LTD.
PRODUCT SPECIFICATION

包装规格/Packing Specification

数量&尺寸/Quantity & Size:

每盘/Each tray : 370*250*33mm;72PCS/Each tray

外箱/Box:380*260*180mm;360PCS/Box

重量/Weight:

每个产品/Each Product: 35.25g

每箱/Each box: 13.7Kg(Ref)

外箱标签/Box label:

客户	Signify	
品名规格	PH-EF25/11-80	
物料编号	442295405551	
订单号		
工单号		
数量		条形码
箱号		
生产日期	重量:	
生产厂商	上海欧沸尔电子有限公司	

Customer Part No.: 442295405551

OCL Model No.: PH-EF25/11-80

Page 6 of 7

Appendix 5: Transformer spec (continued)

L306/L406:

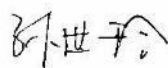
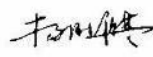


上海欧沸尔电子有限公司
OCL ELECTRONIC SHANGHAI CO.,LTD.
PRODUCT SPECIFICATION

Samples test report													
Customer: Signify			Sample size: 10pcs										
Customer Part No.: 442295405551			OCL Model No.: PH-EF25/11-80										
Sample No.: OCL-0288-21			Date: 2021/05/24										
MECHANICAL DIMENSION TESTS													
Items	Units	Requirements	Test results for sample No.										
			1	2	3	4	5	6	7	8	9	10	
A	mm	27.5Max	26.26	26.28	26.30	26.30	26.30	26.27	26.31	26.35	26.25	26.31	
B	mm	33.5Max	33.12	33.15	33.20	33.16	3.18	33.13	33.12	33.15	33.20	33.21	
C	mm	23.0Max	22.34	22.22	22.25	22.30	22.22	22.25	22.26	22.31	22.28	22.31	
D	mm	SQ 0.6	0.61	0.61	0.60	0.60	0.61	0.61	0.61	0.60	0.62	0.61	
E	mm	3.2±0.5	3.31	3.28	3.31	3.25	3.20	3.22	3.25	3.30	3.24	3.20	
F	mm	5.0	5.03	5.00	5.00	5.02	5.05	5.02	5.01	5.00	5.04	5.03	
G	mm	26.7	26.81	26.78	26.80	26.75	26.79	26.80	26.81	26.72	26.83	26.80	
ELECTRONICAL TESTS													
Items	Test condition	Test spec.	Measuring point	Test results for sample No.									
				1	2	3	4	5	6	7	8	9	10
Inductance	10KHz/50mV Series test	5.0mH Min	4-2	7.782	9.697	9.736	8.736	9.199	7.290	7.535	6.077	7.891	7.895
Inductance Leakage	100KHz/50mV Series test (Shorted N2,N3)	50uH Max	4-2	29.60	29.31	29.32	29.27	29.94	29.69	28.95	29.28	29.54	29.72
Hi-pot Test	50Hz,3mA,1S	3700V AC	N1-N2,N3,N4	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	50Hz,3mA,1S	1500V AC	Windings-CORE	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
DC Bias													
DC Resistance	AT 25°C	0.63Ω Max	4-2	0.539	0.538	0.540	0.540	0.538	0.539	0.540	0.538	0.539	0.539
		0.29Ω Max	8-9	0.231	0.230	0.231	0.232	0.232	0.231	0.230	0.231	0.231	
		0.29Ω Max	9-10	0.230	0.230	0.231	0.233	0.233	0.234	0.233	0.232	0.234	0.231
		0.18Ω Max	7-6	0.144	0.145	0.144	0.145	0.145	0.144	0.145	0.143	0.144	0.145
Turns Ratio	50KHz/1V	56	4-2	0.539	0.538	0.540	0.540	0.538	0.539	0.540	0.538	0.539	0.539
		26	8-9	0.231	0.230	0.231	0.232	0.232	0.231	0.230	0.231	0.231	
		26	9-10	0.230	0.230	0.231	0.233	0.233	0.234	0.233	0.232	0.234	0.231
		6	7-6	0.144	0.145	0.144	0.145	0.145	0.144	0.145	0.143	0.144	0.145
Remarks:													
Tested by: Lei Xu			Checked by: Gang Zhang				Approved by: George Pu						

Appendix 5: Transformer spec (continued)

L309/L409:

RoHS		上海美星电子有限公司 SHANGHAI MEIXING ELECTRONICS CO., LTD	
		规格书 SPECIFICATION SET	
L Convert 14mH EP7 (4-Winding SELV)			
母料号 Collective Code:			
子料号 Member Code: 4422 409 66401			
客户: 飞利浦照明电子			
Customer: Philips Lighting Electronics Co., LTD			
UL RECOGNIZED INSULATION SYSTEM :E332645			
System designation:MX-130B Table II			
System Temperature:130℃			
内部确认Internal Approval		客户确认Customer Approval	
签名Signature	日期Date	签名Signature	日期Date
Gaoyingcun	2017/10/24		2017.10.24
	2017/10/24		
版本号 REV: C		第1页 (共4页) page1 (4pages)	

Appendix 5: Transformer spec (continued)

L309/L409:

1. 绕线数据表Winding Data							
绕阻编号 Coil NO.	开始 Star	结束 End	圈数 Turns	绕线方向 Direction	漆包线 Wire	层数 Layer	备注 Remarks
W1	3	2	50	顺时针CW	AWG35H	5/0	两绕组并绕/ W1 and W2 bifilar
W2	2	1			AWG35H		
G						2/0	胶带/ Tape 1350F-1 3.0mm 2 T'S
W3	4	5	1	顺时针CW	TEX-E 0.30 mm	0/1	密绕/ Closely,The whole winding with Teflon Tube AWG23S
W4	5	6	1	顺时针CW	TEX-E 0.30 mm	0/1	密绕/ Closely,The whole winding with Teflon Tube AWG23S

2. 材料明细Material Data					
材料Material	描述Description	材料供应商material supplier	PVC Free	BFR Free	UL No.
骨架 Bobbin	EP07 (1,2,3,4,5,6) PM6530 175≤CTI≤250	住友电木有限公司 /SUMITOMO BAKELITE CO LTD	Y	Y	E41429
磁芯 Core	EP07 A043 GAP=0	峰越ACME	Y	Y	
	MIN Ae=8.5cm ²				
漆包线 Wire	AWG35H (MW80-C, Heavy, 155C)	山东赛特 Shandong Saint Electric Co Ltd	Y	Y	E194410
	TEX-E 0.30mm 130℃	Furukawa	Y	Y	E206440
套管Tube	TFS-201, TFS, AWG23S 200℃/600V	GREAT HOLDING INDUSTRIAL CO LTD	Y	Y	E156256
胶水 GLUE	UV152 (-40℃~120℃)	北京海斯达克新材料公司 Beijing Hystic New Material Co Ltd.	Y	Y	
胶带Tape	1350F-1 3.0mm 130C/400≤TI≤600 (Coil tape)	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	Y	N	E17385
	1350F-1 5mm 130C/400≤TI≤600 (Core tape)				

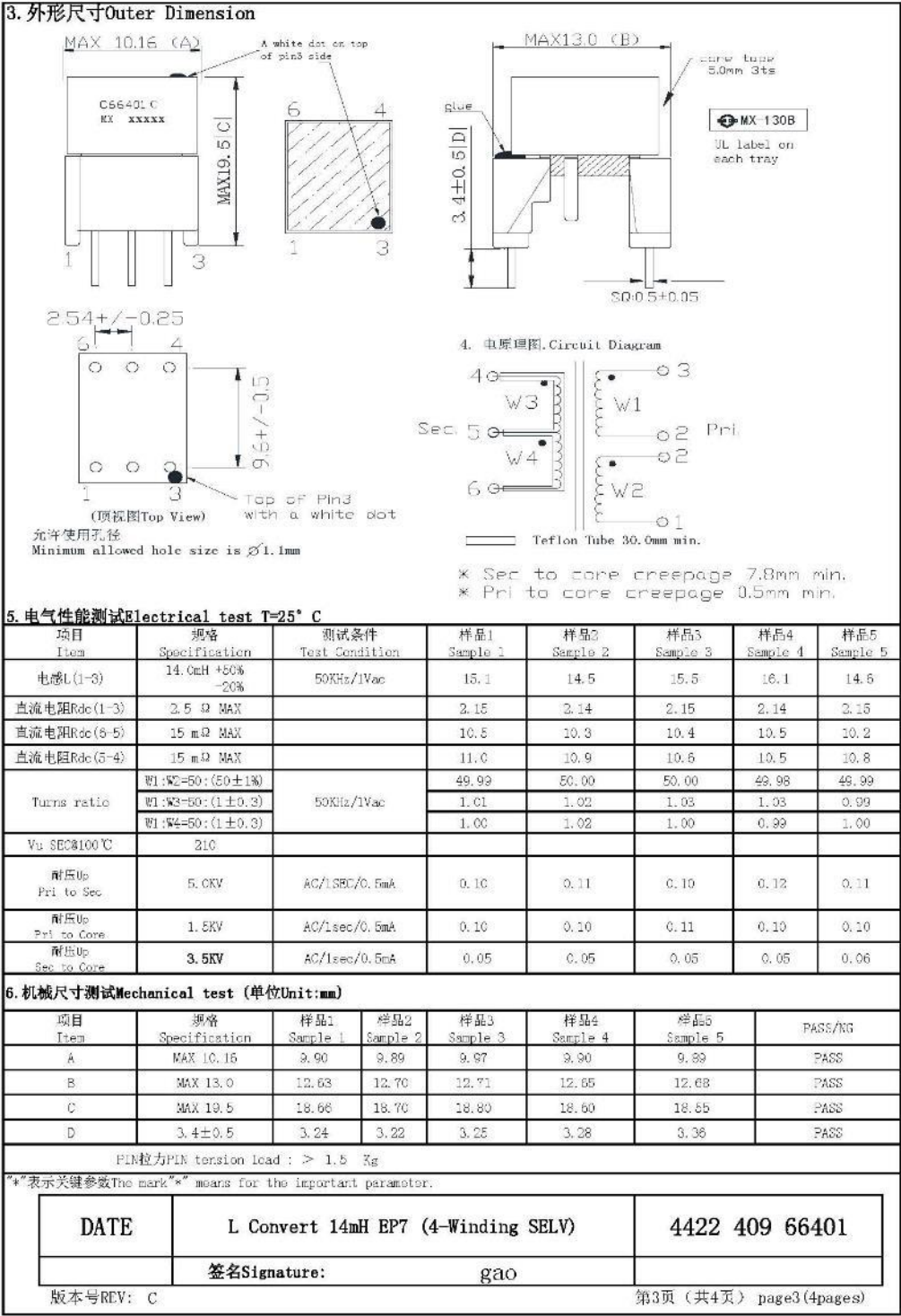
工作温度Operating temperature : -40℃~120℃

DATE	L Convert 14mH EP7 (4-Winding SELV)	4422 409 66401
	签名Signature: gao	

版本号REV: C
 第2页 (共4页) page2(4pages)

Appendix 5: Transformer spec (continued)

L309/L409:



Appendix 5: Transformer spec (continued)

L309/L409:

每盘135只
135pcs in a tray

MX-130B
UL label on each tray

A white dot on top of Pin 3
PIN3顶部点白点

宽度为60mm的封箱胶带
Width 60mm transparent tape

标识
Mark

产品的PIN 1
统一朝
外箱标签方向

每盘 135 只
135 pcs in a tray
每箱 6 盘, 共 810 只
6trays in one box total 810只

磁环吸塑盘: MX3345263135

小箱衬板: MX5345260004

磁环中外箱: MX1360270160

MX-130B
UL label on box.

宽度为60mm的封箱胶带
Width 60mm transparent tape

UL label must be marked on each tray and remain the same style.
所以UL 标签保持一致性贴在吸塑盘的同一侧的同一位置。
All products in each tray must be settled in the same way PIN1
towards the same side. 所有产品放盘时PIN1侧朝向一致, 盘与盘也保持一致。

7. 包装Packaging

7.1外形尺寸Outer Dimension: 360x270x160mm
7.2包装重量Pack Weight: 3.7 kg 2.85
7.3产品重量Transformer net Weight: 2.9 g

8. 标识Mark

订单号P/O: 例如Expl.:PBF-***** **
供货单位Vender name: ShangHai MeiXing Electronics Co.,LTD
母料号Collective Code:
子料号Member Code: 4422 409 66401
包装数量Pack Quantity: 810 pcs
生产日期Date: 例如Expl. 20081128-1
1车间Workshop
2008/11/28

9. 修改记录Description of change

日期 Date	版本号 Rev No.	修改记录 Description of change	修改人 Changed
2017/3/12	A	new issued.	Gaoyingcun
2017/6/12	B	1 Marking: Pri to core creepage 0.5mm Min. 2. Add UL system.	Gaoyingcun
2017/10/26	C	Correct TEX-E 0.3mm 155C to TEX-E 0.3mm 130C	

DATE	L Convert 14mH EP7 (4-Winding SELV)	4422 409 66401
	签名Signature: gao	

版本号REV: C 第4页 (共4页) page4 (4pages)

Appendix 5: Transformer spec (continued)

L501:

 上海美星电子有限公司 SHANGHAI MEIXING ELECTRONICS CO.,LTD			
规格书 SPECIFICATION			
L CONVERT 4.4mH EF20/6 (Z shape Version /double insulation)			
母料号 Collective Code:			
子料号 Member Code: 8288 000 87791			
客户: 飞利浦照明电子有限公司			
Customer: Philips Lighting Electronics Co.,LTD			
UL Recognized Insulation System: E332645			
System Designation: MX-130C Table III			
System Temp: 130℃			
内部确认Internal Approval		客户确认Customer Approval	
签名Signature	日期Date	签名Signature	日期Date
Yingcun Gao	2021/3/10 2021/3/10		

版本号REV: A 第1页 (共4页) page1(4pages)

Appendix 5: Transformer spec (continued)

L501:

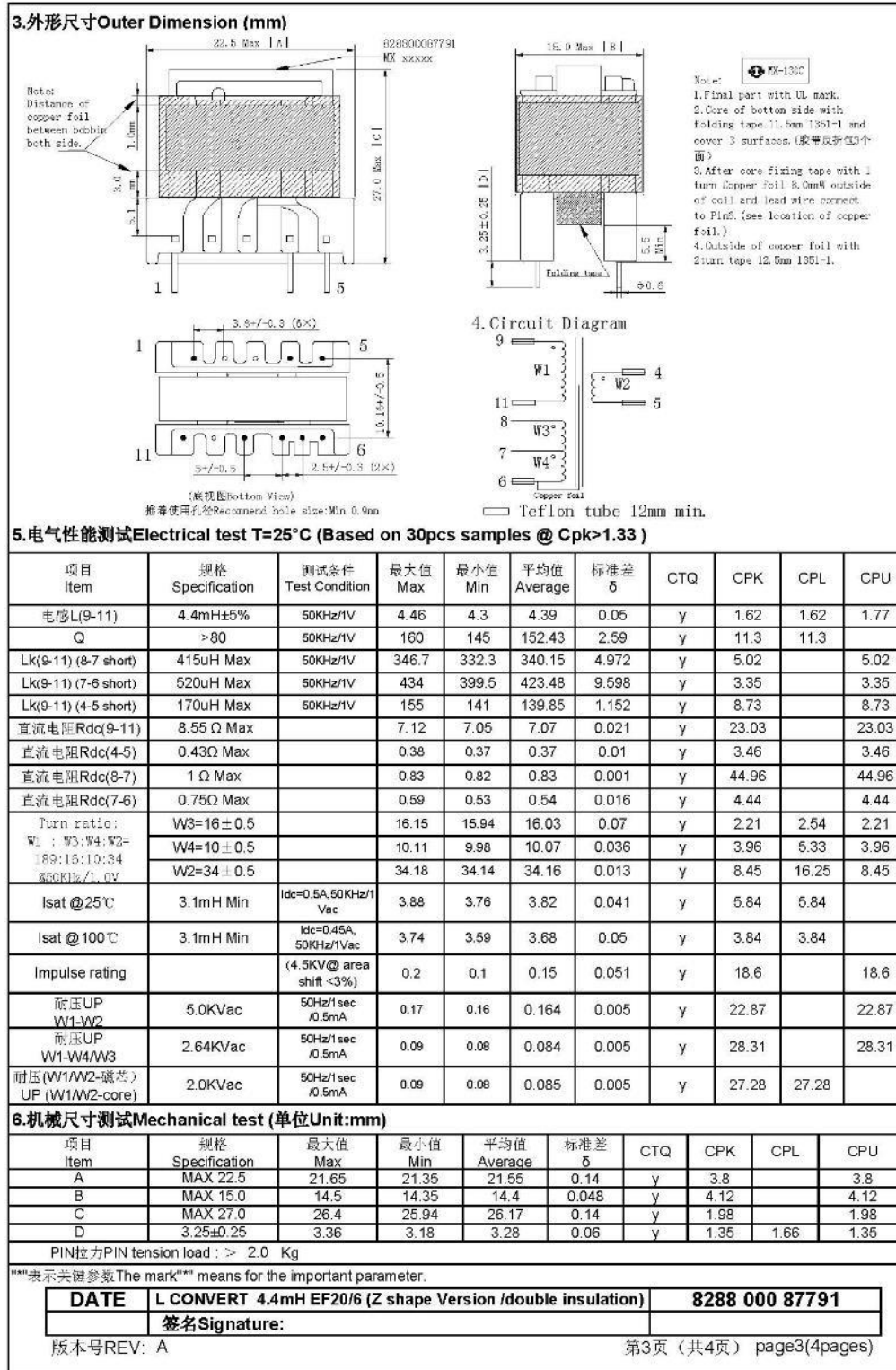
1.绕线数据表Winding Data						
绕组编号 Coil No.	开始 Start	结束 Finish	圈数 Turns	绕线方向 Direction	漆包线 Wire	层数 Layer
P						1
coil1	9 Tube 12.0mm Min(CTQ)	11 Tube 12.0mm Min(CTQ)	189 (47/1/47/1/ 47/1/45)	逆时针CCW	AWG 35H 180℃	4
P						1
P						2
coil2	4 Tube 12.0mm Min(CTQ)	5 Tube 12.0mm Min(CTQ)	34 (20/13)	顺时针CW	TRW-F U.32	2
P						3
P						1
coil3	6	7	16	逆时针CCW	AWG 35H 180℃	1
coil4	7	6 Tube 12.0mm Min(CTQ)	10	逆时针CCW	AWG 35U 100℃	1
P						2

材料Material	描述Description	材料供应商Supplier	UL No.
骨架Bobbin	EF20/6 70G33L 11PIN CTI level 0 Min Thk:0.71mm 130℃ UL94V-0	杜邦E I DUPONT DE NEMOURS & CO INC	E41938
CP Wire	0.6mm round (electro tin plated covered steel wire)	南京飞清Phoebe Materials Co.,Ltd	
磁芯Core	EF20/6 TP4D GAP≈0.42mm*1 Curie temperature≥220C.	天通TDG	
漆包线Wire	AWG 35H (MW83-C, Heavy,180℃)	山东赛特SHANGDONG SAINT ELECTRIC CO LTD	E194410
套管Tube	PTFE, TFL201, AWG28L/23L	GREAT HOLDING INDUSTRIAL CO LTD	E156256
三层绝缘线TIW	TRW-F 0.32mm 155℃	盛凌GREAT LEIFLON INDUSTRIAL CO LTD	E211989
绝缘漆Varnish	BC-359 130℃		E317427
稀释剂Solvent	T-100	JOHN C DOLPH CO	
胶带Tape	1351-1 12.5mm 130℃	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	E17385
	1351-1 11.5mm 130℃		
	WF2901-1.5mm CT280 5.0mm 130℃(Core)	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	E165111
	CP-3002-E25 8.0mm Copper foil		
Solder	SnCu	云南锡业 YunNan Tin Co.,Ltd	
Ink	684	伟思捷 Videojet Technologies Co.,Ltd	

T.作温度Operating temperature : -40℃~125℃

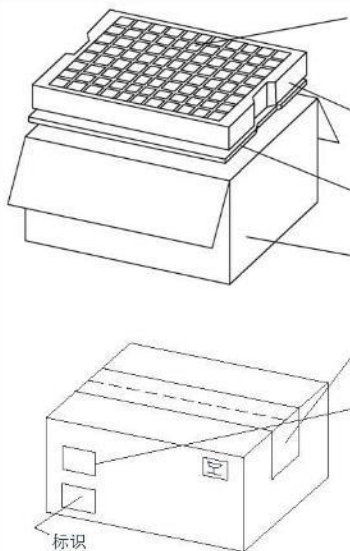
Appendix 5: Transformer spec (continued)

L501:



Appendix 5: Transformer spec (continued)

L501:



每盘 120 只
120 pcs in a tray
每箱 5 盘, 共 600 只
5 trays in one box total 600 pcs

吸塑盘 MX3345274120

衬板 MX5345260004

纸箱 MX1360270170

宽度为60mm的封箱胶带
Width 60mm transparent tape

MX-130C

7. 包装Packaging

7.1外形尺寸Outer Dimension: 360x270x170mm

7.2包装重量Pack Weight: 8.8 kg (13 g/pcs)

8. 标识Mark

订单号 P/O: 例如Expl.: PBF-*****_***

供货单位 Vender name: ShangHai MeiXing Electronics Co.,LTD

母料号 Collective Code: 0

子料号 Member Code: 8288 000 87791

包装数量 Pack Quantity: 600 pcs

生产日期 Date: 例如Expl. 20081128-1

└─ 1车间Workshop

└─ 2008/11/28

9. 修改记录Description of change

日期 Date	版本号 Rev No.	修改记录 Description of change	修改人 Changed
2021/3/10	A	1. Following 4422 409 60752 Rev A.	Gaoyingcun

DATE	L CONVERT 4.4mH EF20/6 (Z shape Version /double insulation)	8288 000 87791
	签名Signature:	

版本号REV: A 第4页 (共4页) page4 (4pages)

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