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Business Stream Products
Certification Department

TÜV Rheinland LGA Products GmbH · 90431 Nürnberg

Ningbo Snappy Optoelectronics
Co., Ltd.
No. 56, Keda Road
National Hi-tech park of Ningbo
315040 ZHEJIANG
CHINA

Contact

Tel. +49 911 655-5225
Mail service@de.tuv.com

Date August 05, 2019

Application for	**: CB-Zertifikat**
Certificate No.	: DE 02025589
Device	: Electronic Ballast LED Power Supply
Type	: see Certificate
Test requirement	: IEC 61347-2-13:2014+A1 IEC 61347-1:2015+A1

Dear Madame or Sir,

The submitted sample of the product has been tested and in this configuration found to be in accordance with the above mentioned requirements.
Enclosed please find the certificate No. DE 02025589.

Kind regards

Certification body

Guoping Zheng

Test sample: no, documentation available

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IEC IECEE CB SCHEME	Ref. Certif. No.
	DE 2-025589

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	LED Power Supply
Name and address of the applicant	Ningbo Snappy Optoelectronics Co., Ltd. No. 56, Keda Road National Hi-tech park of Ningbo, 315040 Zhejiang, China
Name and address of the manufacturer	Ningbo Snappy Optoelectronics Co., Ltd. No. 56, Keda Road National Hi-tech park of Ningbo, 315040 Zhejiang, China
Name and address of the factory	Ningbo Snappy Optoelectronics Co., Ltd. No. 56, Keda Road National Hi-tech park of Ningbo, 315040 Zhejiang, China
Ratings and principal characteristics	I/P: AC 220-240V, 50/60Hz, Independent use, SELV. For details, refer to the test report.
Trademark (if any)	Snappy
Customer's Testing Facility (CTF) Stage used	N/A
Model / Type Ref.	SE150-12VL , SE150-24VL
Additional information (if necessary may also be reported on page 2)	For model differences, refer to the test report.
A sample of the product was tested and found to be in conformity with	IEC 61347-2-13:2014+A1 IEC 61347-1:2015+A1
As shown in the Test Report Ref. No. which forms part of this Certificate	50276554 001

This CB Test Certificate is issued by the National Certification Body

TÜVRheinland®

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TÜV Rheinland LGA Products GmbH TÜVRheinland Zertifizierungsstelle

Date: 05.08.2019

Signature: Guoping Zheng

10/062 04.17

Test Report issued under the responsibility of:

TÜVRheinland®

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. .....:	50276554 001
Date of issue .....:	31.07.2019
Total number of pages.....	50 pages
Applicant's name.....:	Ningbo Snappy Optoelectronics Co., Ltd.
Address .....:	No.56, Keda Road National Hi-tech park of Ningbo Zhejiang 315040 P.R. China
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

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

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.

General disclaimer:

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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description ..... :	LED POWER SUPPLY
Trade Mark ..... :	Snappy Optoelectronics / SNAPPY KNOW HOW, NO LIMITS
Manufacturer ..... :	Ningbo Snappy Optoelectronics Co., Ltd. No.56, Keda Road National Hi-tech park of Ningbo Zhejiang 315040 P.R. China
Model/Type reference ..... :	SE150-12VL, SE150-24VL
Ratings ..... :	I/P: AC 220-240V; 50/60Hz; Independent use; SELV. Details in "General product information".

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒ **CB 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	
Tested by (name, function, signature) ..... :	Kitty Cheng	
Approved by (name, function, signature) .. :	Chengchao Huang	
☐ **Testing procedure: CTF Stage 1:**	N/A	
Testing location/ address:	N/A	
Tested by (name, function, signature) ..... :	N/A	
Approved by (name, function, signature) .. :	N/A	
☐ **Testing procedure: CTF Stage 2:**	N/A	
Testing location/ address:	N/A	
Tested by (name + signature) ..... :	N/A	
Witnessed by (name, function, signature) . :	N/A	
Approved by (name, function, signature) .. :	N/A	
☐ **Testing procedure: CTF Stage 3:**	N/A	
☐ **Testing procedure: CTF Stage 4:**	N/A	
Testing location/ address:	N/A	
Tested by (name, function, signature) ..... :	N/A	
Witnessed by (name, function, signature) . :	N/A	
Approved by (name, function, signature) .. :	N/A	
Supervised by (name, function, signature) :	N/A	

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

Assessment 1: Photo documents. (total 12 pages)

Summary of testing:

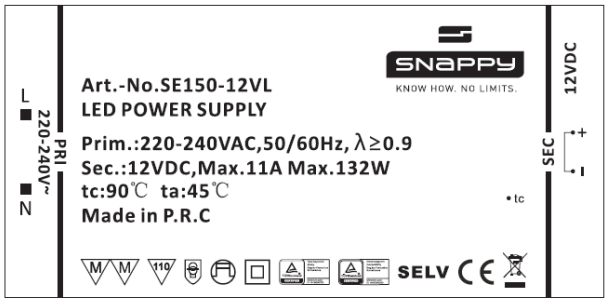
Tests performed (name of test and test clause):	**Testing location:**
(☒ Tests performed ☐ Tests not performed) ☒7 (7)marking ☒8 (10) protection against accidental contact with live parts ☒9 (8)terminals ☒10(9)provision for protective earthing ☒11 (11)moisture resistance and insulation ☒12 (12)electric strength ☒14 (14)fault condition ☒15 transformer heating ☒16 (15)construction ☒17 (16)creepage distances and clearances ☒18 (17)screws, current-carrying parts and connections ☒19 (18)resistance to heat, fire and tracking ☐20 (19)resistance to corrosion ☒21 (-)maximum working voltage(Uout) in any load SE150-12VL selected to perform all tests. SE150-24VL selected to perform additional heating and working voltage tests. Annex 4: EXTERNAL AND INTERNAL WIRING according to EN 60598-1 on page 47-49. Annex 5: Temperature Measurements for MM Mark (VDE 0710 Part 14/04.82) on page 50. 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

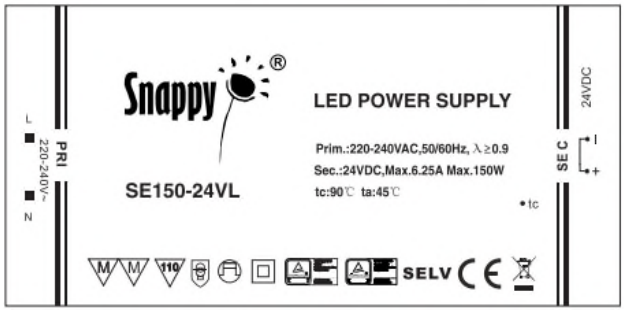
Summary of compliance with National Differences:

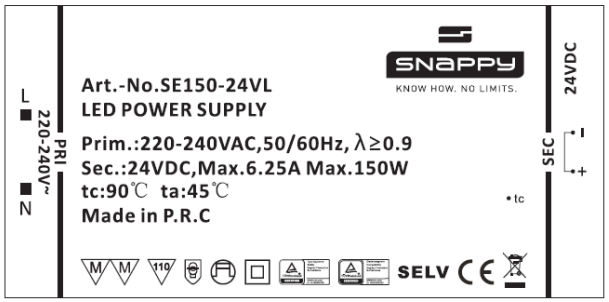
List of countries addressed: N/A

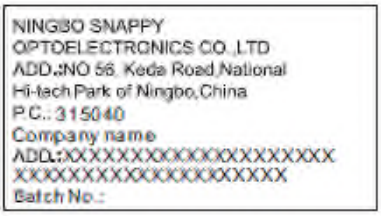
Copy of marking plate

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 ..... :	LED POWER SUPPLY
Classification of installation and use ..... :	Independent use
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 ..... :	20.06.2019
Date (s) of performance of tests..... :	20.06.2019-25.07.2019

General remarks:
"(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) ..... :	Ningbo Snappy Optoelectronics Co., Ltd. No.56, Keda Road National Hi-tech park of Ningbo Zhejiang 315040 P.R. China

General product information:

LED power supplies are constant output voltage type which with plastic enclosure, the intended use is independent use, the protection degree is Class II, suitable together use with LED lighting source and the output type of driver belong to SELV, the protection type is Non-inherently short-circuit proof control gear.
LED power supplies will be potted with glue before using.

Details see below:

Type or Model No.	Rated input voltage	Rated output voltage (VDC)	Max.output current (A)	ta value (℃)	tc value (℃)	Max.wattage
SE150-12VL	220-240VAC /50/60Hz	12VDC	Max.11A	45°C	90°C	Max.132W
SE150-24VL	220-240VAC /50/60Hz	24VDC	Max.6.25A	45°C	90°C	Max.150W

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

4 (4)	**GENERAL REQUIREMENTS**		**P**
- (4)	Insulation materials according requirements in Annex N of IEC 61347-1	(see Annex N)	P
- (4)	Compliance of independent controlgear enclosure with IEC 60598-1		P
- (4)	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
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 ☐ No ☒	—
	Independent controlgear ..... :	Yes ☒ No ☐	—
	Integral controlgear ..... :	Yes ☐ No ☒	—
6 (-)	Auto-wound controlgear ..... :	Yes ☐ No ☒	—
	Separating controlgear ..... :	Yes ☐ No ☒	—
	Isolating controlgear ..... :	Yes ☒ No ☐	—
	SELV controlgear ..... :	Yes ☒ No ☐	—

7 (7)	**MARKING**		P
7.1 (7.1)	**Mandatory markings**		**P**
	a) mark of origin	Snappy SNAPPY KNOW HOW. NO LIMITS.	P
	b) model number or type reference	See Label	P
	c) symbol for independent controlgear, if applicable		P
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)	220-240VAC	P
	supply frequency (Hz)	50/60Hz	P
	supply current (A)	In marking plates	P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	f) earthing symbol		N/A
	k) wiring diagram		N/A
	l) value of tc	90℃	P
	m) symbol for declared temperature	110	P
	t) LUM earthing symbol		N/A
	u) if not SELV maximum working voltage U_{out} between:		N/A
	- output terminals (V) ..... :		N/A
	- output terminals and earth (V) ..... :		N/A
7.1 (-)	Constant voltage type:	Yes ☒ No ☐	—
	- rated output power P_{rated} (W) ..... :	See Label	P
	- rated output voltage U_{rated} (V) ..... :	See Label	P
	Constant current type:	Yes ☐ No ☒	—
	- rated output power P_{rated} (W) ..... :		N/A
	- rated output current I_{rated} (A) ..... :		N/A
	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		P
	i) cross-section of conductors (mm²)	See user manual	P
	j) number, type and wattage of lamp(s)		P
	s) SELV symbol		P
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 kΩ	(see Annex A)	P
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impendance device	(see Annex A)	P
- (10.1)	Lacquer or enamel not used for protection or insulation		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Adequate mechanical strength on parts providing protection		P
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50 V .....:	SE150-12VL:0,648uF SE150-24VL:0,468uF	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 circuit		N/A
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		N/A
	SELV outputs separated by at least basic insulation		P
	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.	SE150-24VL:Max.24,31Vdc. SE150-12VL:Max,12,24Vdc	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		P
	Resistors comply with test (a) in 14.1 of IEC 60065		P

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

9 (8)	**TERMINALS**		**P**
- (8.1)	**Integral terminals**		**N/A**
	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:		**N/A**
	Separately approved; component list	(see Annex 1)	N/A
	Part of the controlgear	(see Annex 3)	N/A
- (8.2)	**Terminals other than integral terminals**		**P**
	Comply with relevant IEC standard	(see Annex 1)	P
	Suit the conditions		P
	Satisfy additional relevant requirements of this standard		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
	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**		**N/A**
	Comply with clause 8 and 9.1		N/A
	Functional earth insulated from live parts by double or reinforced insulation		N/A
- (9.3)	**Lamp controlgear with conductors for protective earthing by tracks on printed circuit board**		**N/A**

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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 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 of IEC 60598-1		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 or earthing contact 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**
- (11)	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance:		P
	For basic insulation ≥ 2 MΩ ..... :	>500MΩ between L-N after fuse open)	P
	For double or reinforced insulation ≥ 4 MΩ ..... :	>500MΩ (between input circuit and output circuit) (between transformer's primary and secondary circuit) (between live parts and plastic enclosure)	P
11(-)	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P

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

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	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. Utest: 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 Utest 240V→ 2960V (Between transformer's primary and secondary circuit between transformer's core and secondary circuit: $U_{working\ volgate}$254V→ 3016V(12V) $U_{working\ volgate}$262V→ 3048V(24V))	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

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		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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)	N/A
- (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)	N/A
- (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 ≥ 1 MΩ ..... :	>200MΩ	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		—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C	110℃	P

15 (-)	**TRANSFORMER HEATING**		**P**
15.1	**General**		**P**
	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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Double LED modules or equivalent load connected in parallel to the output terminals of constant voltage type		P
	Double LED modules or equivalent load connected in parallel to the output terminals of constant current type		N/A
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**		**P**
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		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
- (15.4)	**Insulation between circuits and accessible parts**		**P**
- (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		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	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		N/A
- (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
	- socket-outlets have a protective conductor contact		N/A
- (15.4.4)	Other circuits		N/A
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
- (15.4.5)	Insulation between circuits and accessible conductive parts		N/A
	Accessible conductive parts insulated from active parts of electric circuits by insulating according Table 6		N/A
	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)	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L		P
	Insulating lining of metallic enclosures		N/A
	Controlgear protected against pollution comply with Annex P	(see Annex P)	N/A
- (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		P
	Creepage distances according to Table 8	(see appended table)	P
- (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		P
	Clearances distances for basic or supplementary insulation according to Table 10	(see appended table)	N/A
	Clearances distances for reinforced insulation according to Table 11	(see appended table)	P
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

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Clause	Requirement + Test	Result - Remark	Verdict

(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		N/A
(4.11.5)	No contact to wood or mounting surface		N/A
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	**Mechanical connections and glands**		P
(4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part ..... :	Enclosure cover:0,5Nm Φ=2,89mm	P
	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
- (18.5)	Tracking test ..... :	See Test Table 19 (18.5)	P

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Clause	Requirement + Test	Result - Remark	Verdict

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		P

14	**TABLE: tests of fault conditions** (carried out on three samples)	**P**
Part	Simulated fault (SE150-12VF)	Hazard
BD1	SC; The F1 opened	~~YES~~/NO
C1	SC; No operation	~~YES~~/NO
C2	SC; No operation	~~YES~~/NO
C3	SC; No operation	~~YES~~/NO
C5	SC; No operation	~~YES~~/NO
C15	SC; The F1 opened	~~YES~~/NO
C30	SC; No operation	~~YES~~/NO
Q7 be	SC; No operation	~~YES~~/NO
Q7 ec	SC; The F1 opened	~~YES~~/NO
Q7 bc	SC; The F1 opened	~~YES~~/NO
Output of T2	SC; No operation	~~YES~~/NO
Output of T2	OC; No operation	~~YES~~/NO
Remark: SC means short circuit, OC means open circuit.		

15	**TABLE: test of transformer heating** **(☒ Constant voltage ☐ Constant current)**		P
	Type reference:	SE150-VL	—
	Test 1: Normal Operation		—
	1.06 times rated voltage:	1,06Un:254,4V, 0,606A,	—

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Clause	Requirement + Test	Result - Remark	Verdict

		143,74W	
		Output::11,8V, 11A, 129,65W	—
	ta = ...:	45°C	—
	Test 2: Abnormal Operation: Short-circuit the output according to L.7		—
	1.1 or 0.9 times rated voltage:	1,1Un: 264V, 0,13A, 4,12W,	—
	Output:	Protected	
	ta = ...:	45°C	—
	Test 3: Abnormal Operation: overload according to L.7.		—
	1.1 or 0.9 times rated voltage:	1.1Un: 264V,0,681A, 170,21W	—
	Output:	Output:11,7V, 13,03A, 152,25W	—
	tc = ...:	45°C	—
	Test 4: Abnormal Operation: Short-circuit the output.		—
	1.1 or 0.9 times rated voltage: 3,0	1,1Un: 264V, 0,11A, 3,77W,	—
		Protected	—
	tc = ...:	45°C	—

Temperature (°C) of Part	Cl. 15.1		Cl. 15.2			
	Test 1(ºC)	Limit[3)]	Test 2(ºC)	Test 3(ºC)	Test 4(ºC)	Limit[3)]
Input terminal	60,1	110	59,9	62,4	60,1	--
C1	104,2	125	104,2	125,2	104,3	--
C2	99,1	125	98,8	117,5	99,1	--
C3	96,6	125	96,3	114,1	96,6	--
C5	90,1	105	89,9	100,4	90,1	--
C8	84,3	105	83,7	91,9	84,3	--
C12	89,5	105	90,6	98,9	89,5	
C30	89,0	105	88,8	99,7	89,0	
CX1	76,5	110	76,1	81,9	76,5	
CY1	72,9	110	72,5	77,9	72,9	--
U3	98,6	130	98,2	116,3	98,6	--
PRI. winding of T2	106,7	110	106,4	127,5	106,7	175
SEC. winding of T2	106,2	110	105,9	127,6	106,3	175
PCB	102,1	130	101,7	122,0	102,1	--

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Clause	Requirement + Test	Result - Remark	Verdict

Bobbin	102,1	110	101,8	120,2	102,1	--
tc point	80,2	90	79,7	88,5	80,3	110
Mounting surface	86,7	90	86,6	101,1	86,8	110
Enclosure inside	95,9	Ref.	95,5	110,2	95,9	--
Output terminal	87,6	110	89,4	106,5	87,6	--
Ambient temperature	45,0	--	45,0	45,0	45,0	--

15	**TABLE: test of transformer heating (☒ Constant voltage ☐ Constant current)**		P
	Type reference:	SE150-24VL	
	Test 1: Normal Operation		—
	1.06 times rated voltage:	1,06Un: 254,4V, 162,67W, 0,6577A	—
	Ouput	24,22V, 6,25A, 151,35W	
	ta = ...:	45°C	—
	Test 2: Abnormal Operation: Short-circuit the output according to L.7		—
	1.1 or 0.9 times rated voltage:	N/A	—
		--	
	tc = ...:	N/A	—
	Test 3: Abnormal Operation: overload according to L.7		—
	1.1 or 0.9 times rated voltage:	N/A	—
		--	
	tc = ...:	N/A	—
	Test 4: Abnormal Operation: Double the number of LED modules or equivalent load..		—
	1.1 or 0.9 times rated voltage:	N/A	—
		--	
	tc = ...:	N/A	—

Temperature (°C) of Part	Cl. 15.1		Cl. 15.2			
	Test 1(ºC)	Limit[3)]	Test 2(ºC)	Test 3(ºC)	Test 4(ºC)	Limit[3)]
Input terminal	59,5	110	--	--	--	--
C1	103,9	125	--	--	--	--

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Clause	Requirement + Test	Result - Remark	Verdict

C2	97,4	125	--	--	--	--
C3	95,3	125	--	--	--	--
C5	92,3	105	--	--	--	--
C8	85,7	105	--	--	--	--
C12	92,2	105	--	--	--	--
C30	92,2	105	--	--	--	--
CX1	71,5	110	--	--	--	--
CY1	71,6	110	--	--	--	--
U3	97,7	130	--	--	--	--
PRI. winding of T2	103,6	110	--	--	--	175
SEC. winding of T2	103,0	110	--	--	--	175
PCB	101,3	130	--	--	--	--
Bobbin	100,2	110	--	--	--	--
tc point	88,5	90	--	--	--	110
Mounting surface	89,3	90	--	--	--	110
Enclosure inside	94,1	Ref.	--	--	--	--
Output terminal	82,7	110	--	--	--	--
Ambient temperature	45	--	--	--	--	--

Working Voltage Measurement	Test sample: SE150-12VF		
Supply voltage：240Vac, 50/60Hz; Output condition: Max Load or no load: Max :254V			
Location	V peak	V rms	Frequency(kHz)
PIN 3-P1	410	180	83,9
PIN 3-P2	380	180	83,9
PIN 3-P3	520	254	86,2
PIN 1-P1	232	162	86,2
PIN 1-P2	304	166	86,2
PIN 1-P3	484	234	86,2
PIN 4-P1	388	180	85,0
PIN 4-P2	432	186	92,6

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Clause	Requirement + Test	Result - Remark	Verdict

Working Voltage Measurement	Test sample: SE150-12VF		
Supply voltage：240Vac, 50/60Hz; Output condition: Max Load or no load: Max :254V			
Location	V peak	V rms	Frequency(kHz)
PIN 4-P3	408	183	86,2
PIN 6-P1	376	179	82,0
PIN 6-P2	508	241	88,1
PIN 6-P3	288	164	83,9
CY3 pin1- pin2	360	172	0,06
U3 pin1-pin2	372	179	0,06

Working Voltage Measurement	Test sample: SE150-24VF		
Supply voltage：240Vac, 50/60Hz; Output condition: Max Load or no load			
Location	V peak	V rms	Frequency(kHz)
PIN 3-P1	416	181	74,6
PIN 3-P2	388	174	74,6
PIN 3-P3	448	226	74,8
PIN 1-P1	328	174	74,3
PIN 1-P2	304	167	74,5
PIN 1-P3	500	262	74,4
PIN 4-P1	376	173	74,5
PIN 4-P2	364	172	74,6
PIN 4-P3	396	175	74,5
PIN 6-P1	356	172	0,06
PIN 6-P2	472	243	74,9
PIN 6-P3	296	168	75,1
CY3 pin1- pin2	360	172	0,06
U3 pin1-pin2	380	187	0,06

18	**TABLE: Transformer check** for SE150-12VF	**P**
Construction details: Core: PC44		
Transformer TR1 manufacturer: Ningbo Snappy Optoelectronics Co., Ltd. Type designation: SNP5.770.332		

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Clause	Requirement + Test	Result - Remark	Verdict

Measured creepage distance base on Max. working voltage 254Vrms according to Annex I of EN 61347-2-13		
Location	Required (mm)	Measured (mm)
Pri. – Sec.	4,7mm	6,0mm
Pri. – Core	--	0
Sec. – Core	5,1mm	7,35mm
Measured clearance distance:		
Location	Required (mm)	Measured (mm)
Pri. – Sec.	4,7mm	6,0mm
Pri. – Core	--	0
Sec. – Core	5,1mm	7,5mm
Distance through insulation	Required (mm)	Measured (mm)
use reinforced insulation SEC. wire	--	--
Electric strength test: AC 3770V; 60s between Pri. to Sec.	Pass	
Specifications of winding:		
Primary winding: N1: 26Ts (Ø.45mmX1); N4: 9Ts (Ø.45mmX1); N5: 5Ts (Ø.2mmX1); Secondary winding: N2/N3:2Ts(Ø.0.1mmX45X3); Insulation: Class B (130ºC)		

18	**TABLE: Transformer check** for SE150-24VF	**P**
Construction details: Core: PC44		
Transformer TR1 manufacturer: Ningbo Snappy Optoelectronics Co., Ltd. Type designation: SNP5.770.333		
Measured creepage distance base on Max. working voltage 262Vrms according to Annex I of EN 61347-2-13		
Location	Required (mm)	Measured (mm)
Pri. – Sec.	4,8mm	6,0mm
Pri. – Core	--	0
Sec. – Core	5,25mm	7,5mm
Measured clearance distance:		

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Clause	Requirement + Test	Result - Remark	Verdict

Location	Required (mm)	Measured (mm)
Pri. – Sec.	4,8mm	6,0mm
Pri. – Core	--	0
Sec. – Core	5,25mm	7,5mm
Distance through insulation	Required (mm)	Measured (mm)
use reinforced insulation SEC. wire	--	--
Electric strength test: AC 3864V; 60s between Pri. to Sec.	Pass	
Specifications of winding:		
Primary winding: N1: 26Ts (Ø.45mmX1); N4: 9Ts (Ø.45mmX1); N5: 5Ts (Ø.2mmX1); Secondary winding: N2/N3:2Ts(Ø.0.1mmX45X2); Insulation: Class B (130ºC)		

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	3,1mm	1,5mm	9	3,1mm	2,5mm	7	
Working voltage (V) ..... :					250V			—
Frequency if applicable (kHz) ..... :					--			—
PTI ..... :					< 600 ☒ ≥ 600 ☐			—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :								—
Pulse voltage if applicable (kV) ..... :					--			—
Supplementary information: Between different polarity, and under Fuse								
Distance 2:	R	7,5mm	3,1mm	9/11	7,5mm	5,24mm	7/8	
Working voltage (V) ..... :					262V			—
Frequency if applicable (kHz) ..... :					74,8			—
PTI ..... :					< 600 ☒ ≥ 600 ☐			—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					0,448			—
Pulse voltage if applicable (kV) ..... :					--			—
Supplementary information: Between Input and output circuit								

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Clause	Requirement + Test	Result - Remark	Verdict

Distance 3:	R	5,35mm	3,0mm	9	5,35mm	5,0mm	7
Working voltage (V) ..... :					250V		—
Frequency if applicable (kHz) ..... :					--		—
PTI ..... :					< 600 ☒	≥ 600 ☐	—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					--		—
Pulse voltage if applicable (kV) ..... :					--		—
Supplementary information: Between live parts and enclosure							

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

19 (18.1)	**TABLE: Ball Pressure Test**			**P**
Allowed impression diameter (mm) ..... :		< 2mm		—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Bobbin	CHANG CHUN PLASTICS CO.,LTD	128°C	0,8mm	
PCB	WALEX ELECTRONIC (WUXI) CO.,LTD	128°C	0,9mm	
Enclosure	COVESTRO DEUTSCHLAND AG [PC RESINS]	121°C	1,2mm	
Supplementary information: N/A				

19 (18.2)	**TABLE: Test of printed boards**				**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
PCB	WALEX ELECTRONIC (WUXI) CO.,LTD	10s	No	0s	P
Supplementary information: N/A					

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Clause	Requirement + Test	Result - Remark	Verdict

19 (18.3)	**TABLE: Glow-wire test**			**P**
Glow wire temperature..... :	750°C			—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Enclosure	See Annex 1	Yes	10s	P
Supplementary information: N/A				

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	CHANG CHUN PLASTICS CO.,LTD	10s	No	0s	P
PCB	WALEX ELECTRONIC (WUXI) CO.,LTD	10s	No	0s	P
Terminal block	DONGGUANSHI CHANGHE ELECTRONICS CO., LTD	10s	No	0s	P
Supplementary information: N/A					

19 (18.5)	**TABLE: Proof tracking test**				**P**
Test voltage PTI ..... :	175 V				—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
PCB	WALEX ELECTRONIC (WUXI) CO.,LTD	Yes	Yes	Yes	P
Supplementary information: N/A					

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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 ..... :	SE150-24VL:Max.24,31Vdc. SE150-12VL:Max,12,24Vdc	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 (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)		N/A
(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	110	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		P
	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		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 ENCOSURE**		P
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Other design; description		N/A
(H)	**ANNEX H - TESTS**		P
	All tests performed in accordance with the advice given in Annex H, if applicable		P
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 ☐ 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 clause 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 .....:	125℃	—
	Winding insulation classified as Class .....:	Class B	—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments	Heating result refer to clause 15.2 of relevant models	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 15.3 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

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Clause	Requirement + Test	Result - Remark	Verdict
	Between input- and output circuits not less than 5 MΩ ..... :	>500MΩ	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 ..... :	>500MΩ	P
(L.8.3)	Electric strength		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 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		N/A
	HF transformer comply with 19 of IEC 61558-2-16	Triple wires VDE approved	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	Comply with clause 26 of IEC 61558-1, see below table	P
	Distance through insulation according Table L.5 in IEC 61347-1		N/A
	1) Basic distance through insulation		N/A
	Required distance (mm) ..... :		—
	Measured (mm) ..... :		N/A
	Supplementary information		—

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	2) Supplementary distance through insulation		N/A
	Required distance (mm) ..... :		—
	Measured (mm) ..... :		N/A
	Supplementary information		—
	3) Reinforced distance through insulation		P
	Required distance (mm) ..... :	0,83mm	—
	Measured (mm) ..... :	min1,2mm	P
	Supplementary information		—

J	**ANNEX J: PARTICULAR ADDITIONAL SAFETY REQUIREMENTS FOR A.C., A.C./D.C. OR D.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR EMERGENCY LIGHTING**		**N/A**
J.1	**General**		N/A
	Intended for centralized emergency power supply	Yes ☐ No ☐	—
J.2	**Marking**		N/A
J.2.1	Mandatory markings		N/A
	a) symbol EL		N/A
	b) rated emergency supply voltage (V)		N/A
J.2.2	Information to be provided if applicable		N/A
	a) Limits of ambient temperature		N/A
	b) Emergency output factor (EOF_X)		N/A
	c) Information if intended for use in luminaires for high-risk task area lighting		N/A
J.3	General notes on tests		N/A
	Length of output cable in tests..... :		N/A
	Load instead of LED lamps/modules..... :		N/A
J.4	Starting conditions		N/A
	Start rated load in emergency mode without adversely affecting the performance		N/A
J.5	Operating condition		N/A
	Comply with the requirements of 7.2 of IEC 62384 at 90% and 110% of rated emergency supply voltage		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
J.6	Emergency supply current		N/A
	Emergency supply current not differ more than ±15 %		N/A
	Supply of low impedance and low inductance		N/A
J.7	EMC immunity		N/A
	Comply with the requirements of IEC 61547		N/A
J.8	Pulse voltage from central battery systems		N/A
	Withstand pulses according Table J.1		N/A
J.9	Tests for abnormal conditions		N/A
	Comply with the requirements of 12 of IEC 62384		N/A
J.10	Comply with the requirements of 13 of IEC 62384		N/A
J.11	Functional safety (EOF_x)		N/A
	Declared emergency output factor (EOF_x) achieved during emergency operation		N/A
(N)	**ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION**		**N/A**
(N.4)	**General requirements**		N/A
(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**		**N/A**
(N.4.3.1)	Thickness and composition of thin sheet insulation		N/A
	- 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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N		N/A
(N.4.3.2)	Mandrel test (electric strength test during mechanical stress)		N/A
	Electric strength test after mandrel test:		N/A
	- 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		N/A
	- 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		N/A
(O)	**ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION**		**N/A**
(O.6)	**Marking**		**N/A**
	Marking according clause 7 (7)	See clause 7	N/A
	Special symbol		N/A
	Meaning of the special symbol explained in catalogue		N/A
(O.7)	**Protection against accidental contact with live parts**		**N/A**
	Requirements of clause 8 (10)	See clause 8	N/A
	Test finger not possible to make contact with basic insulated metal parts		N/A
(O.8)	**Terminals**		**N/A**
	Clause 9 (8)	See clause 9	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

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Clause	Requirement + Test	Result - Remark	Verdict
	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)	See clause 17	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
	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)	See clause 19	N/A
(O.17)	**Resistance to heat and fire**		**N/A**
	Clause 20 (18)	See clause 20	N/A
(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**		N/A
(P.1)	**General**		**N/A**
	P.2 applies if creepage distances less than the minimum in Table 7 and 8		N/A
	P.3 applies if clearance less than the minimum in Table 9, 10 and 11		N/A
(P.2)	**Creepage distances**		N/A
(P.2.2)	Minimum creepage distances for working voltages and rated voltages with frequencies up to 30 kHz (Table P.1)		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Basic or supplementary insulation:		N/A
	Required creepage ..... :		—
	Measured ..... :		N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Required creepage ..... :		—
	Measured ..... :		N/A
	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		N/A
(P.2.4.1)	Compliance in accordance with 16.3.3 and test according P.2.4.2		N/A
(P.2.4.3)	Electrical tests after conditioning		N/A
(P.2.4.3.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3)	**Distance through isolation**		N/A
(P.3.4)	Electrical tests after conditioning		N/A
(P.3.4.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3.4.2)	Impulse voltage dielectrical test		N/A
	Basic or supplementary insulation:		N/A
	Working/rated voltage ..... :		—
	Impulse voltage ..... :		N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Working/rated voltage ..... :		—
	Impulse voltage ..... :		N/A

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

IEC 61347-2-13			
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]**
Enclosure	B	COVESTRO DEUTSCHLAND AG [PC RESINS]	2807+(z)(f1)	PC; V-2; 125°C	IEC 61347-1 IEC 61347-2-13	UL:E41613 (Test with appliance)
Alternative	D	COVESTRO DEUTSCHLAND AG [PC RESINS]	6557+(z)(f1)	PC; V-2; 125°C	IEC 61347-1 IEC 61347-2-13	UL:E41613 (Test with appliance)
Alternative	D	COVESTRO DEUTSCHLAND AG [PC RESINS]	6265+(z)(f1)	PC; V-0; 125°C	IEC 61347-1 IEC 61347-2-13	UL:E41613 (Test with appliance)
CON1/CON2	B	DONGGUANSHI CHANGHE ELECTRONICS CO., LTD	CT350-06-635	250V/10A 105 °C	EN 60998-1 EN 60998-2-1	Test with appliance
Alternative	D	DEGSON ELECTRONICS CO.LTD	DG636-6.35	1.5-4.0mm² ,24A 450V 105℃	EN 60998-1 EN 60998-2-1	VDE:40022076
PCB	B	WALEX ELECTRONIC (WUXI) CO.,LTD	FR-4	V-0 or better, 130 °C	IEC 61347-1 IEC 61347-2-13	UL:E154355 (Test with appliance)
Alternative	B	KUNSHAN CITY SUYUAN ELECTRON CO LTD	SY-3	V-0 or better, 130 °C	IEC 61347-1 IEC 61347-2-13	UL:E233870 (Test with appliance)
Alternative	D	LEUCHTEK ELECTRONICS (ZHEJIANG) CO LTD	PFR-4	V-0 or better, 130 °C	IEC 61347-1 IEC 61347-2-13	UL:E199273 (Test with appliance)
Varistor (VR1)	B	BrightkingCo.,Ltd	10D471K	300VAC T85	IEC61051-1 IEC61051-2 IEC61051-2-2	VDE:40027827
Alternative	D	JoyinCo.,Ltd	10N471K	300VAC T85	IEC61051-1 IEC61051-2 IEC61051-2-2	VDE: 005937

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

Alternative	D	Thinking Electronic Co.,Ltd.	TVR10471	300VAC T85	IEC61051-1 IEC61051-2 IEC61051-2-2	VDE:005944
Alternative	D	Thinking Electronic Co.,Ltd.	TVR10471-M	300VAC T125	IEC61051-1 IEC61051-2 IEC61051-2-2	VDE:40036061
Fuse F1	B	XC ELECTRONICS (SHENZHEN) CORP.LTD	4T	AC 250V;4A	EN 60127-1 EN 60127-3	VDE:40029295
Alternative	D	WALTER ELECTRONIC CO LTD	ICP	AC 250V;4A	EN 60127-1 EN 60127-3	VDE:40012824
Alternative	B	XC ELECTRONICS (SHENZHEN) CORP.LTD	5TE	AC 250V;4A	EN 60127-1 EN 60127-3	VDE:40029550
Alternative	D	WALTER ELECTRONIC CO LTD	2010series	AC 250V;4A	EN 60127-1 EN 60127-3	VDE:40018781
Alternative	D	CONQUER ELECTRONICS CO LTD	MST	AC 250V;4A	EN 60127-1 EN 60127-3	VDE:40017118
X2 Capacitor (CX1/CX2)	B	FARATRONIC	MKP62	275VAC 0.33uF T110	IEC 60384-14	VDE:40000358
Alternative	D	DAIN ELECTRONICS CO LTD	MPX	275VAC 0.33uF T110	IEC 60384-14	VDE:40018798
Alternative	D	UITRA TECH XIPHI ENTERPRISE CO.,LTD	HQX	275VAC 0.33uF T100	IEC 60384-14	VDE:40024534
Alternative	D	CARLI ELECTRONICS CO LTD	MPX	275VAC 0.33uF T100	IEC 60384-14	VDE:40008520
Alternative	D	KEMET ELECTRONICS CORPORATION	R.46	275VAC 0.33uF T100	IEC 60384-14	ENEC:DAT 97000141
Alternative	D	SHENZHEN CHUANGSHUODA ELECTRONICS CO.,LTD	MPX	275VAC 0.33uF T110	IEC 60384-14	VDE:40037763

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

Alternative	D	ZHUHAI SUNG HO ELECTRONICS CO. LTD.	CMPP	275VAC 0.33uF T110	IEC 60384-14	VDE:40026078
Y1 Capacitor (CY1/ CY3)	B	JYA-NAY CO.,LTD.	JN	AC 400V;Y1;2200pF; T125	IEC 60384-14	TUV:HN69242987
Alternative	D	MURATA MFG CO.,LTD	KX	AC 440V;Y1;2200pF; T125	IEC 60384-14:	VDE:40002831
Alternative	D	TDK	CD	AC 440V;Y1;2200pF; T125	IEC 60384-14:	VDE:40029780
Alternative	D	SUCCESS ELECTRONICS	SE	AC 500V;Y1;2200pF; T125	IEC 60384-14:	VDE:40020002
Bridge diode (BD1)	D	LITEON	GBU1010	10A,1000V	IEC 61347-1 IEC 61347-2-13	Test with appliance
Alternative	D	GALAXY	GBU10M	10A, 1000V	IEC 61347-1 IEC 61347-2-13	Test with appliance
Photo Coupler (U3)	B	Everlight Electronics Co.,Ltd	EL1018	110°C	EN 60747-5-5	VDE:40028391
Alternative	D	VISHAY Semiconductor GmbH	VOL617A-3T	110°C	EN 60747-5-5	VDE:132473
Transformer (T2) (FOR 12V)	B	NINGBO SNAPPY OPTOELECTRONICS	SNP5.770.332	N1:26Ts(⌀0.45mmX1); N2/ N3:2Ts(⌀0.1mmX45 X3); N4:9Ts(⌀0.45mmX1); N5:5Ts(⌀0.2mmX1);	IEC 61347-1 IEC 61347-2-13	Test with appliance
Alternative	D	Jiangxi Yongning Electronic Science and Technology Co., Ltd	SNP5.770.332	N1:26Ts(⌀0.45mmX1); N2/ N3:2Ts(⌀0.1mmX45 X3); N4:9Ts(⌀0.45mmX1); N5:5Ts(⌀0.2mmX1);	IEC 61347-1 IEC 61347-2-13	Test with appliance
Transformer (T2)(FOR 24V)	D	NINGBO SNAPPY OPTOELECTRONICS	SNP5.770.333	N1:26Ts(⌀0.45mmX1); N2/ N3:4Ts(⌀0.1mmX45 X2); N4:9Ts(⌀0.45mmX1); N5:5Ts(⌀0.2mmX1);	IEC 61347-1 IEC 61347-2-13	Test with appliance

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

Alternative	D	Jiangxi Yongning Electronic Science and Technology Co., Ltd	SNP5.770.333	N1:26Ts(∅0.45mmX1); N2/ N3:4Ts(∅0.1mmX45 X2); N4:9Ts(∅0.45mmX1); N5:5Ts(∅0.2mmX1);	IEC 61347-1 IEC 61347-2-13	Test with appliance
Primary Wire	B	SHANDONG SAINT ELECTRIC CO., LTD	QA/130, QA/130 Litz MW75	130°C	IEC 61347-1 IEC 61347-2-13	UL:E194410 (Test with appliance)
Triple insulation wire	B	TOTOKU ELECTRIC CO.,LTD	TIW-2 series	130°C	EN 60950-1	VDE:40005152
Alternative	D	TOTOKU ELECTRIC CO.,LTD	TIW-3 series	130°C	EN 60950-1	VDE:40005154
Alternative	D	GREAT LEOFLON INDUSTRIAL CO.,LTD	TRW(B)	130°C	EN 60950-1	VDE:136581
Varnish	B	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO.,LTD	T-4260(a)	130°C	IEC 61347-1 IEC 61347-2-13	UL:E228349 (Test with appliance)
Bobbin	B	CHANG CHUN PLASTICS CO.,LTD	T375J	V-0, 150°C	IEC 61347-1 IEC 61347-2-13	UL:E59481 (Test with appliance)
Insulating tape	B	JINGJIANG JINGYI ADHESIVE PRODUCT CO.,LTD	JY25-A(b)	130°C	IEC 61347-1 IEC 61347-2-13	UL:E246950 (Test with appliance)
Teflon tube	B	GREAT HOLDING INDUSTRIAL CO.,LTD	TFL	150V 200°C VW-1	IEC 61347-1 IEC 61347-2-13	UL:E156256 (Test with appliance)
Glue	B	DOW CORNING (SHANGHAI) CO.,LTD	CN-8760 G	V-0, 150°C	IEC 61347-1 IEC 61347-2-13	UL:E251343 (Test with appliance)
Alternative	D	GUANGZHOU HUITIAN FINE CHEMICAL CO.,LTD	5296#	V-0, 150°C	IEC 61347-1 IEC 61347-2-13	UL:E306078 (Test with appliance)
Alternative	D	STOCKMEIER URETHANES GMBH&CO.KG	L781	V-0, 130°C	IEC 61347-1 IEC 61347-2-13	UL:E302173 (Test with appliance)

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

Alternative	D	WEVO-CHEMIE GMBH	PU 552 FL/(b)	V-0, 130°C	IEC 61347-1 IEC 61347-2-13	UL:E108835 (Test with appliance)
Alternative	D	RAMPF POLYMER SOLUTIONS GMBH & CO KG	21-2350-(xx)	V-0, 130°C	IEC 61347-1 IEC 61347-2-13	UL:E111148 (Test with appliance)
Alternative	D	SHANGHAI FUMING SEALING MATERIAL CO., LTD	FM-700	V-0, 135°C	IEC 61347-1 IEC 61347-2-13	UL:E350185 (Test with appliance)
Alternative	D	SHENZHEN AFFLUENCE TECHNOLOGY CO.,LTD	AFL-080	V-0, -60~220°C	IEC 61347-1 IEC 61347-2-13	Test with appliance
Alternative	D	Wuxi East Grace Electronic Material Technology Co., Ltd.	7800A	V-0, 130°C	IEC 61347-1 IEC 61347-2-13	Test with appliance
Jump (J2)	B	Hong shun wire & cable fluoroplastics factory	3HS2AF	300V/500V	VDE 0250 Teil 106:1982-10	VDE:40017008
Alternative	D	guangzhou tang yao wires co.,ltd.	TY 1990	300V/500V	VDE 0250 Teil 106:1982-10	VDE:40002540
Alternative	D	NINGBO XUANHUA ELECTRIC CO, LTD	SVT	105°C, 300V	IEC 61347-1 IEC 61347-2-13	UL:E313867 (Test with appliance)
Alternative	D	SHANGYU JINTAO ELECTRON CO., LTD	SVT	105°C, 300V	EN 61347-1 EN 61347-2-13	UL:E308842 (Test with appliance)
Alternative	D	WONDERFUL HI-TECH CO.,LTD	SVT	105°C, 300V	EN 61347-1 EN 61347-2-13	UL:E77975 (Test with appliance)
Alternative	D	ZHONGSHANCITY HONGSHANCHUAN ELECTRICAL EQUIPMENTS CO., LTD	SVT	105°C, 300V	IEC 61347-1 IEC 61347-2-13	UL:E470030 (Test with appliance)

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

glue (FOR SNP60-12/24VFP-1)	B	DOW CORNING (SHANGHAI) CO., LTD	CN-8760 G	V-0, 150°C	IEC 61347-1 IEC 61347-2-13	UL:E251343 (Test with appliance)
Alternative	D	GUANGZHOU HUITIAN FINE CHEMICAL CO.,LTD	5296#	V-0, 150°C	IEC 61347-1 IEC 61347-2-13	UL:E306078 (Test with appliance)
Alternative	D	STOCKMEIER URETHANES GMBH &CO.KG	L781	V-0, 130°C	IEC 61347-1 IEC 61347-2-13	UL:E302173 (Test with appliance)
Alternative	D	WEVO-CHEMIE GMBH	PU 552 FL/(B)	V-0, 130°C	IEC 61347-1 IEC 61347-2-13	UL:E108835 (Test with appliance)
Alternative	D	RAMPF POLYMER SOLUTIONS GMBH & CO KG	21-2350-(XX)	V-0, 130°C	IEC 61347-1 IEC 61347-2-13	UL:E111148 (Test with appliance)
Alternative	D	SHANGHAI FUMING SEALING MATERIAL CO., LTD	FM-700	V-0, 135°C	IEC 61347-1 IEC 61347-2-13	UL:E350185 (Test with appliance)
Alternative	D	SHENZHEN AFFLUENCE TECHNOLOGY CO.,LTD	AFL-080	V-0, -60~220°C	IEC 61347-1 IEC 61347-2-13	Test with appliance
Alternative	D	WUXI EAST GRACE ELECTRONIC MATERIAL TECHNOLOGY CO., LTD.	7800A	V-0, 130°C	IEC 61347-1 IEC 61347-2-13	Test with appliance

Supplementary information:

[1)] Provided evidence ensures the agreed level of compliance.

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) VDE apporval**		P
(14)	**SCREW TERMINALS**		P
(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) ..... :		—
(14.3.3)	Conductor space (mm) ..... :		N/A
(14.4)			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		P
(14.4.5)	Corrosion		P
(14.4.6)	Nominal diameter of thread (mm)..... :		P
	Torque (Nm)..... :	0,5N	P
(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

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 3	**Screwless terminals (part of the luminaire)**		N/A
(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
(15.5.2)	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
	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
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	Terminal size and rating		N/A
15.6.2	Mechanical tests		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....:		N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N) .....:		N/A
(15.6.3)	Electrical tests		N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

(15.6.3.1) (15.6.3.2)	**TABLE: Contact resistance test / Heating tests**									N/A
	Voltage drop (mV) after 1 h									—
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)										
Supplementary information:										

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
1.10 (5)	**ANNEX 4:EXTERNAL AND INTERNAL WIRING according to EN 60598-1**		**P**
1.10 (5.2)	Supply connection and external wiring		P
1.10 (5.2.1)	Means of connection.....:	Terminal block	P
1.10 (5.2.2)	Type of cable .....:	In user manual	P
	Nominal cross-sectional area (mm^2).....:	In user manual	P
	Cables equal to IEC 60227 or IEC 60245		N/A
1.10 (5.2.3)	Type of attachment, X, Y or Z		N/A
1.10 (5.2.5)	Type Z not connected to screws		N/A
1.10 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
1.10 (5.2.7)	Cable entries through rigid material have rounded edges		P
1.10 (5.2.8)	Insulating bushings:		N/A
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
1.10 (5.2.9)	Locking of screwed bushings		N/A
1.10 (5.2.10)	Cord anchorage:		P
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
1.10 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
1.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N/A
1.10 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) ..... :	60N 1,5mm^2	P
	- torque test: torque (Nm) ..... :	0,25Nm	P
	- displacement ≤ 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
1.10 (5.2.11)	External wiring passing into luminaire		N/A
1.10 (5.2.12)	Looping-in terminals		N/A
1.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
1.10 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
1.10 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Appliance couplers of class II type		N/A
1.10 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
1.10 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
1.10 (5.3)	Internal wiring		P
1.10 (5.3.1)	Internal wiring of suitable size and type		N/A
	Through wiring		N/A
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A) ..... :		N/A
	- temperatures ..... :	(see Annex 2)	N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Green-yellow for earth only		N/A
1.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm²) ..... :		N/A
	Insulation thickness		N/A
	Extra insulation added where necessary		N/A
1.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Adequate cross-sectional area and insulation thickness		N/A
1.10 (5.3.1.3)	Double or reinforced insulation for class II		N/A
1.10 (5.3.1.4)	Conductors without insulation		N/A
1.10 (5.3.1.5)	SELV current-carrying parts		N/A
1.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
1.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		P
1.10 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
1.10 (5.3.4)	Joints and junctions effectively insulated		N/A
1.10 (5.3.5)	Strain on internal wiring		P
1.10 (5.3.6)	Wire carriers		N/A
1.10 (5.3.7)	Wire ends not tinned		N/A

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 .....:	SE150-12VL	—
	Lamp used .....:	LED POWER SUPPLY	—
	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	371,47V	—

Temperature (°C) of Part	Normal		Abnormal	
	Test 1	Limit	Test2	Limit
Mounting surface	78,9	95	76,6	115
Top surface	78,4	95	73,0	115
Side surface	86,0	95	86,5	115
Primary winding	105,8	--	106,2	--
Ambient temperature	45,0	--	45,0	--
Remarks: N/A				

PHOTO DOCUMENTATION

Attachment 1 of TR 50276554 001

for

LED POWER SUPPLY

SE150-12VL, SE150-24VL.

Ningbo Snappy Optoelectronics Co., Ltd

This documentation consists of 11 pages (excluding this cover page)

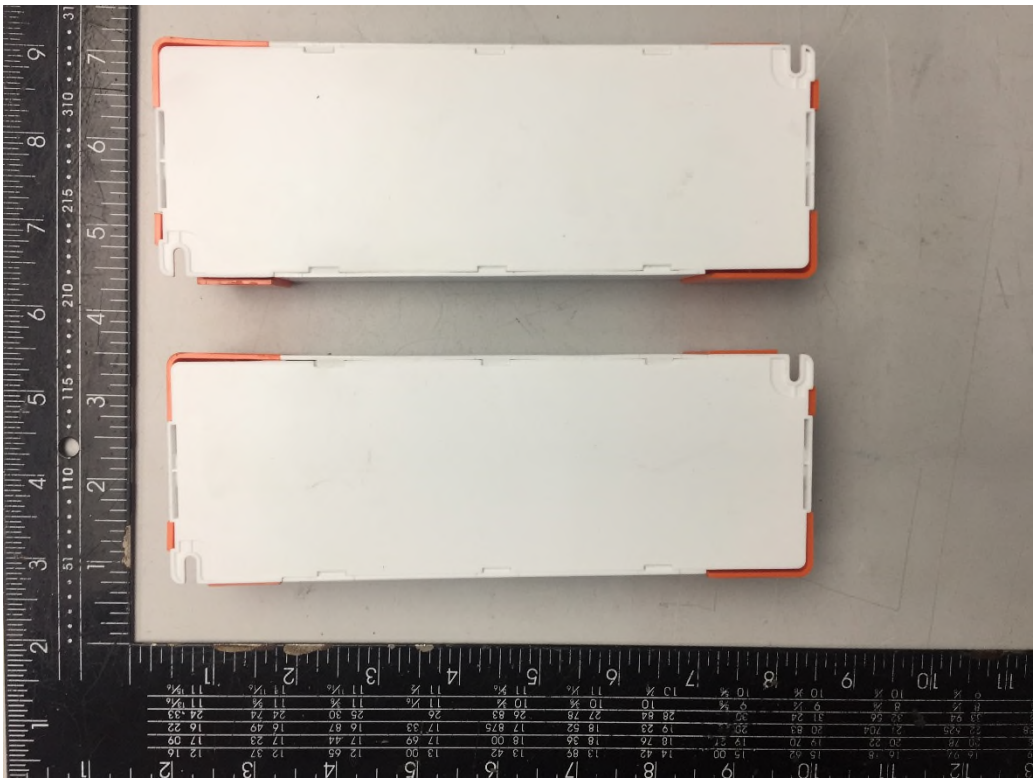
Photo Documentation

Attachment 1 of TR 50276554 001

Model: SE150-12VL, SE150-24VL.

The LED POWER SUPPLY SE150 series have the same construction, schematic, and PCB layout.
Only the minor difference in secondary circuit.

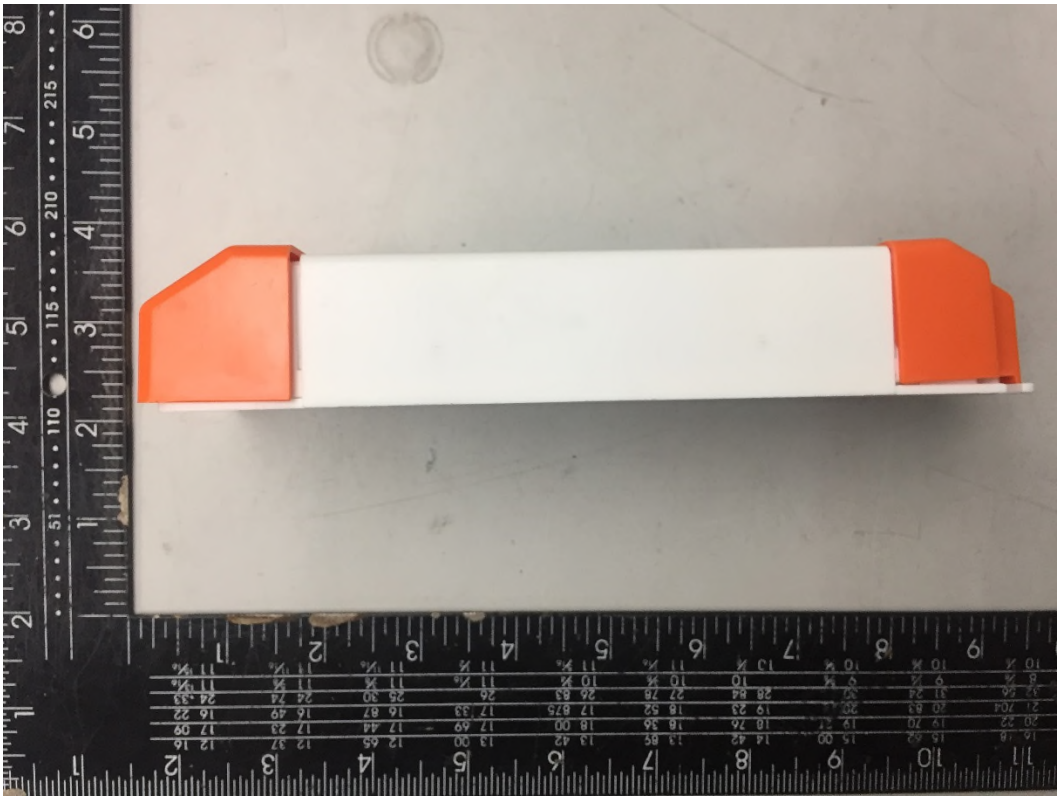
Top view



Bottom view

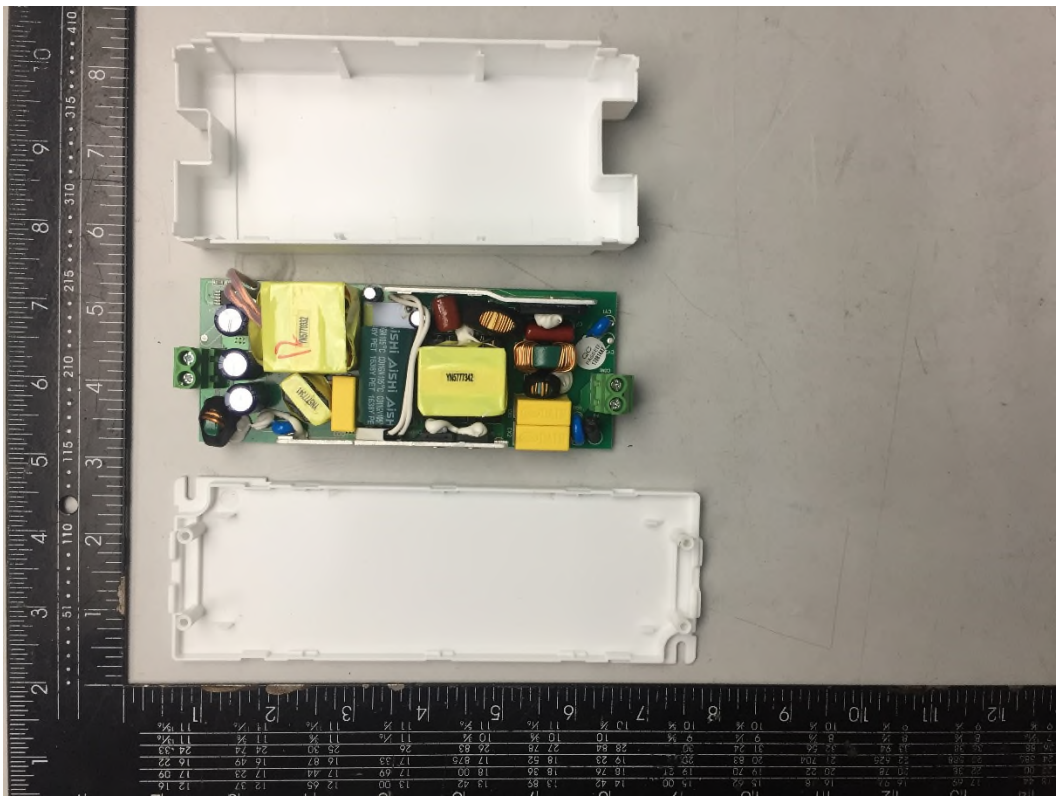
Model: SE150-12VL, SE150-24VL.

Terminal view

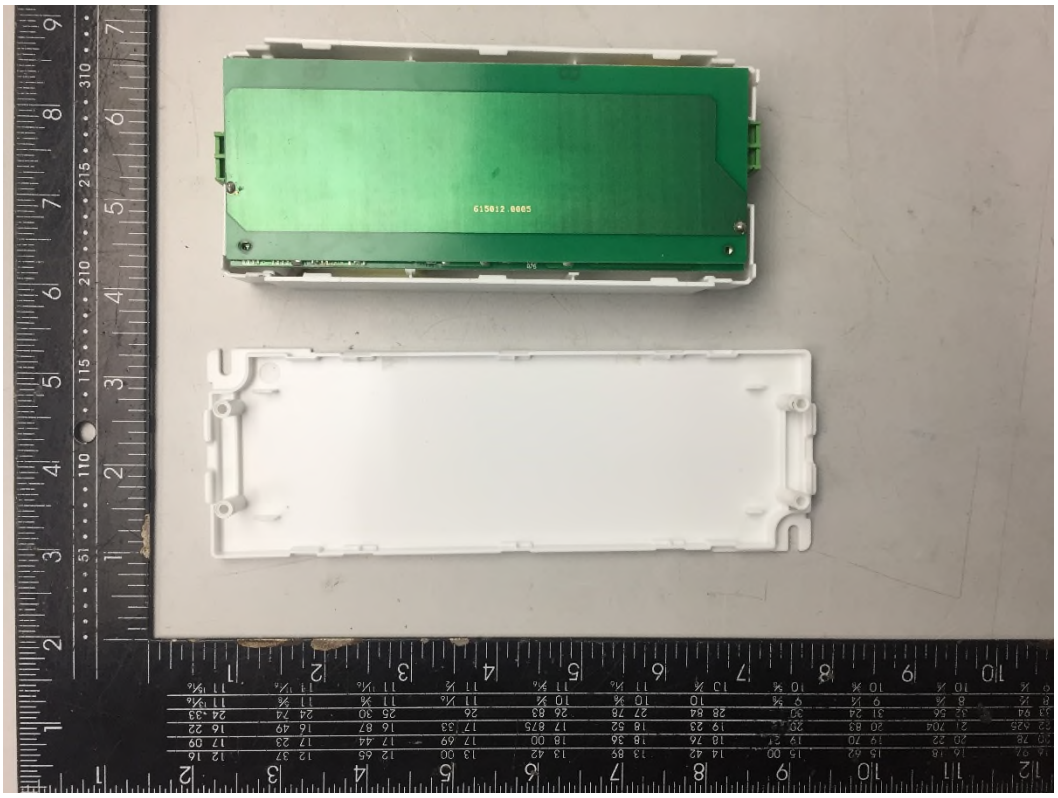


Side view

Model: SE150-12VL, SE150-24VL.

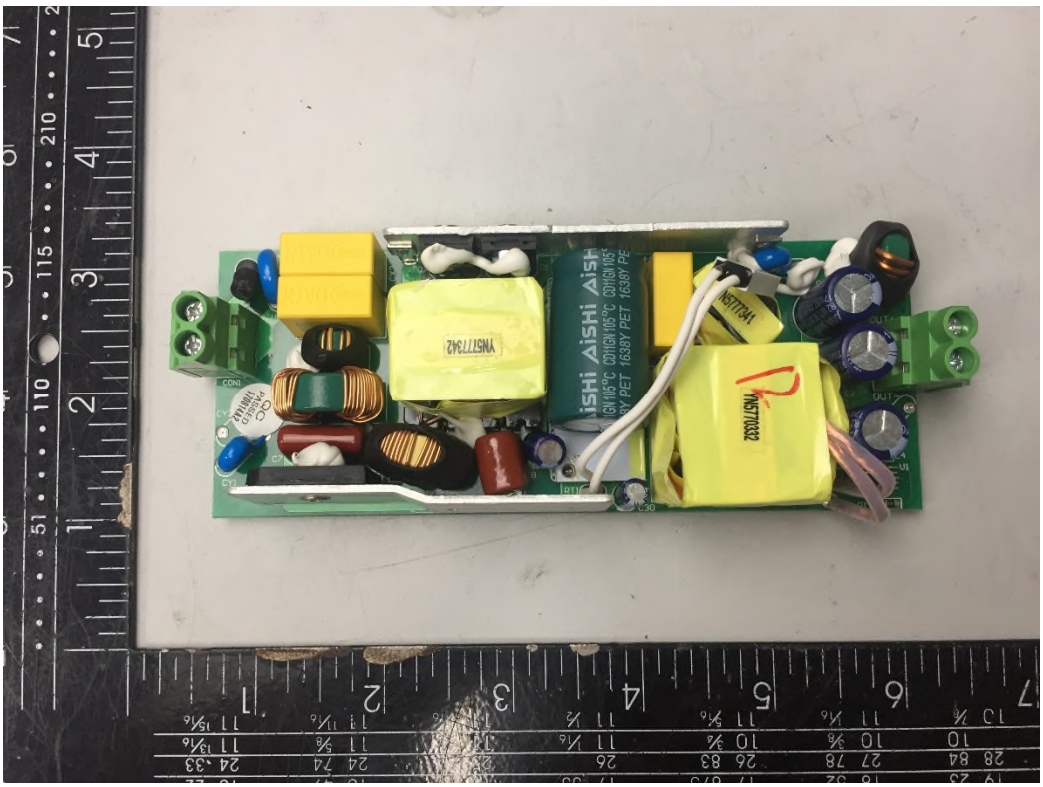


Inside veiw

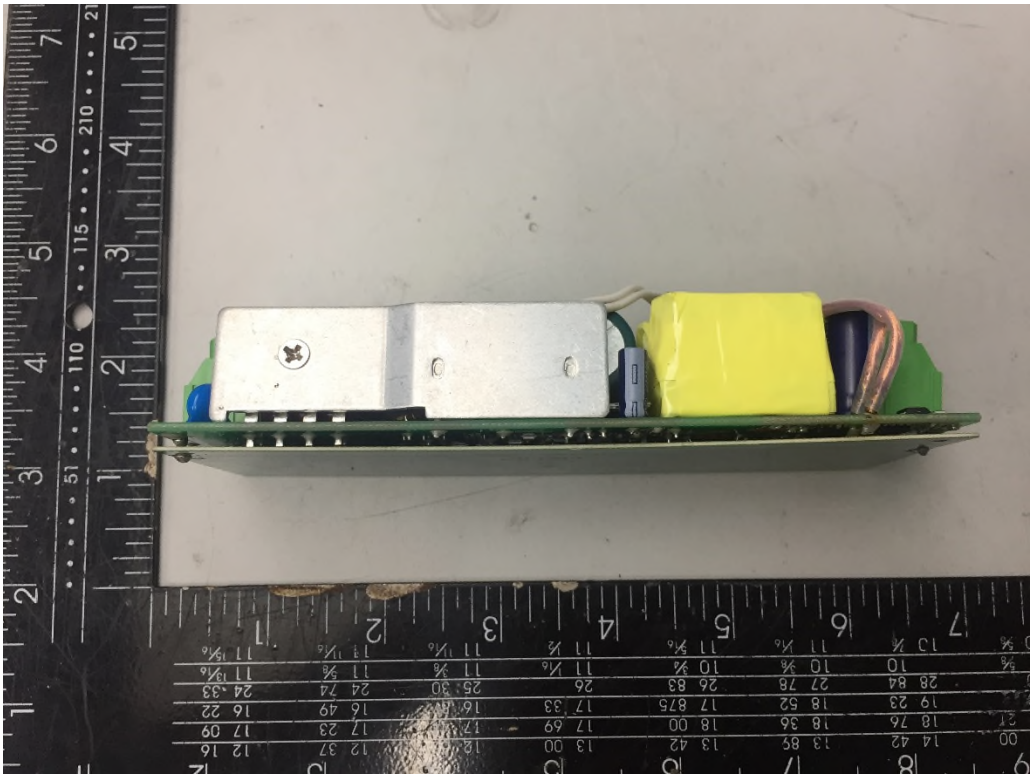


Internal view

Model: SE150-12VL, SE150-24VL.

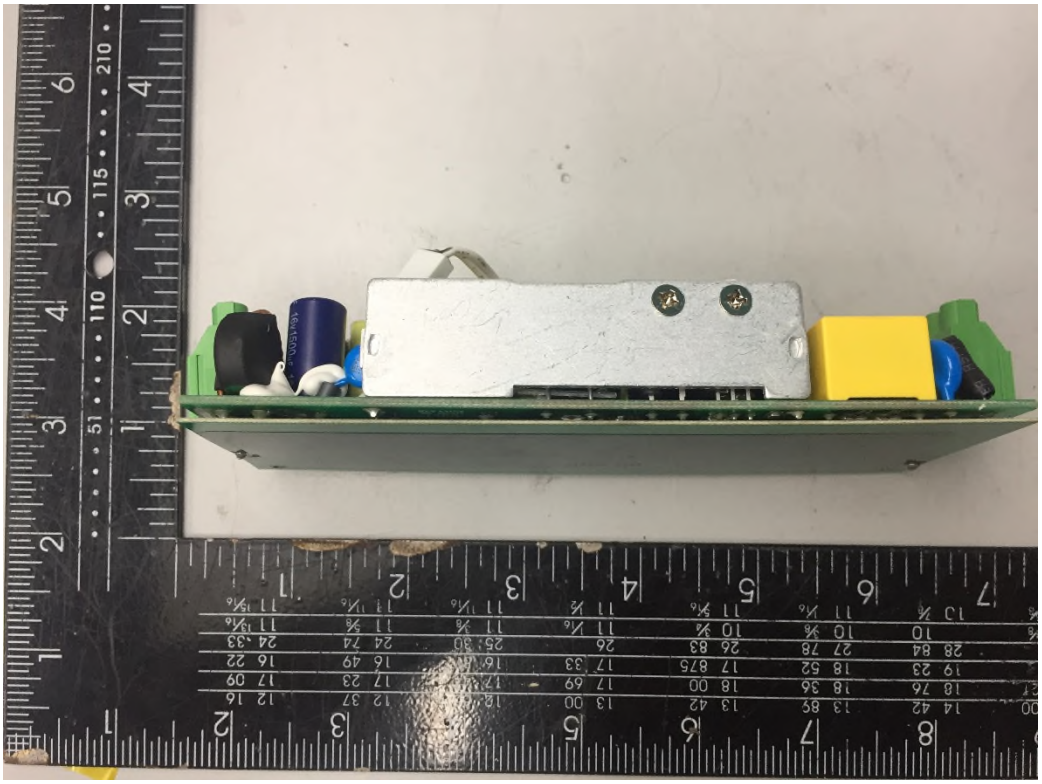


PCB view

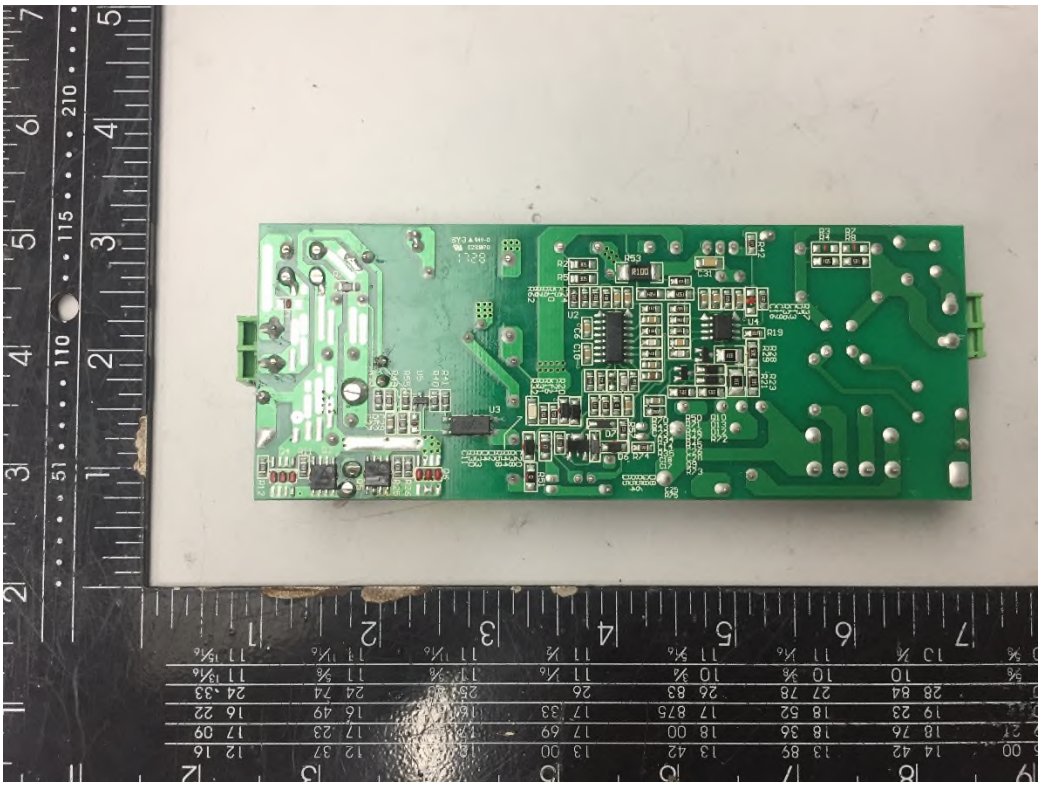


PCB side view

Model: SE150-12VL, SE150-24VL.

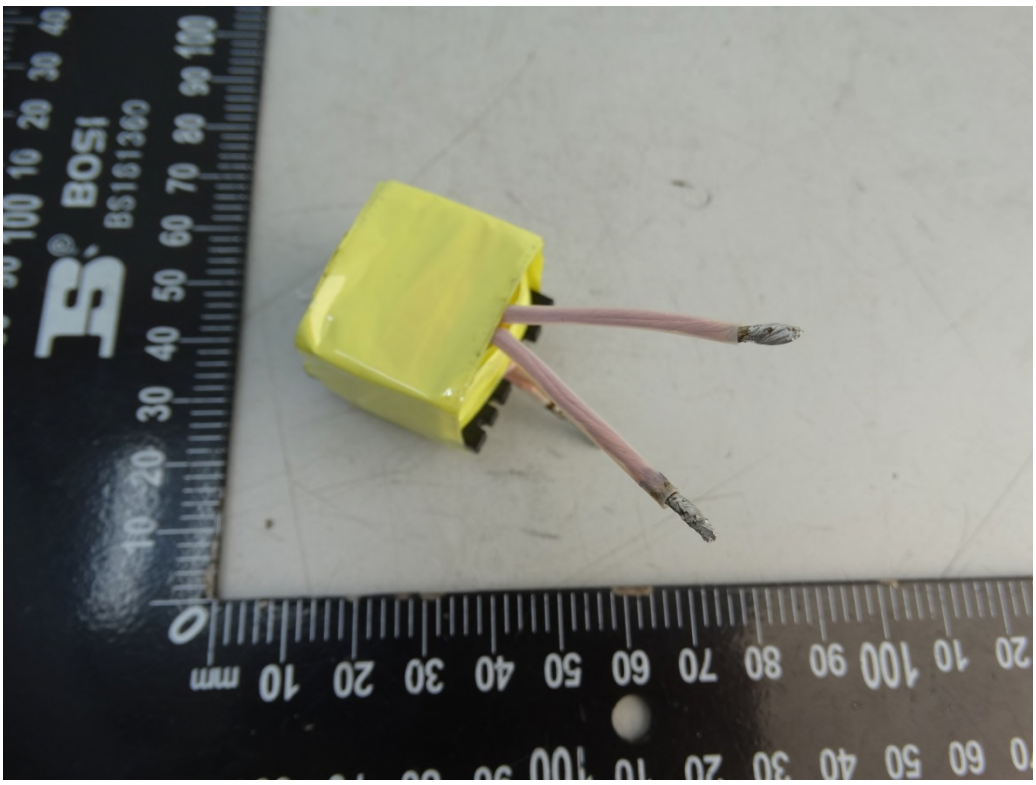


PCB side view

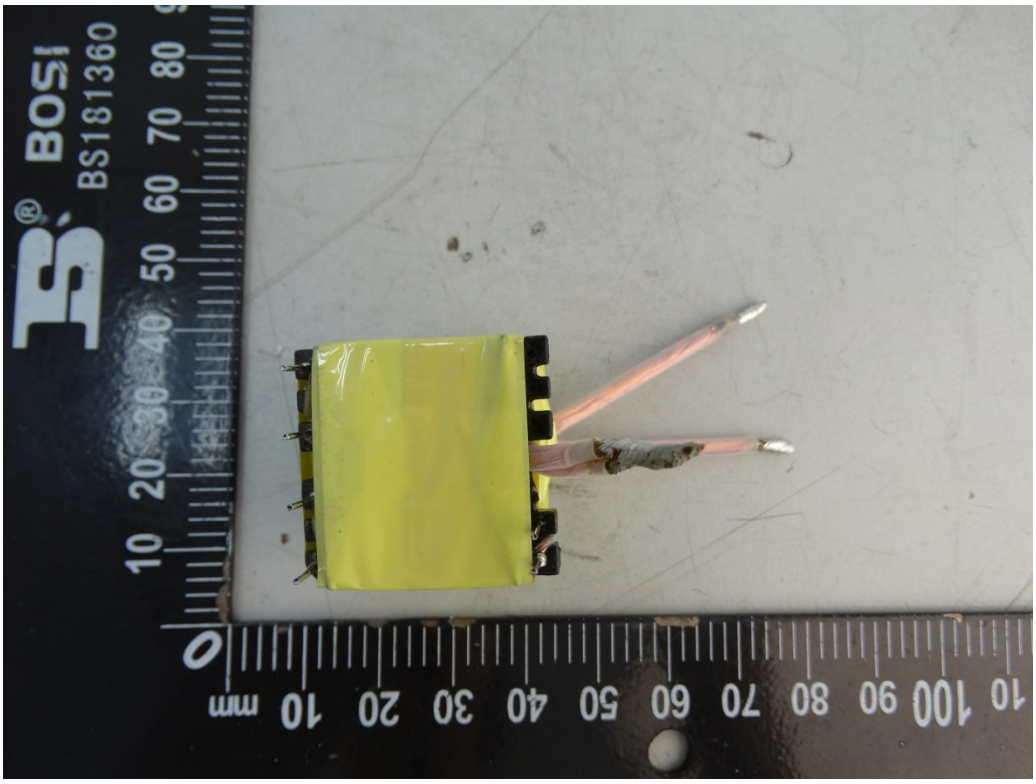


PCB bottom view

Model: SE150-12VL, SE150-24VL.

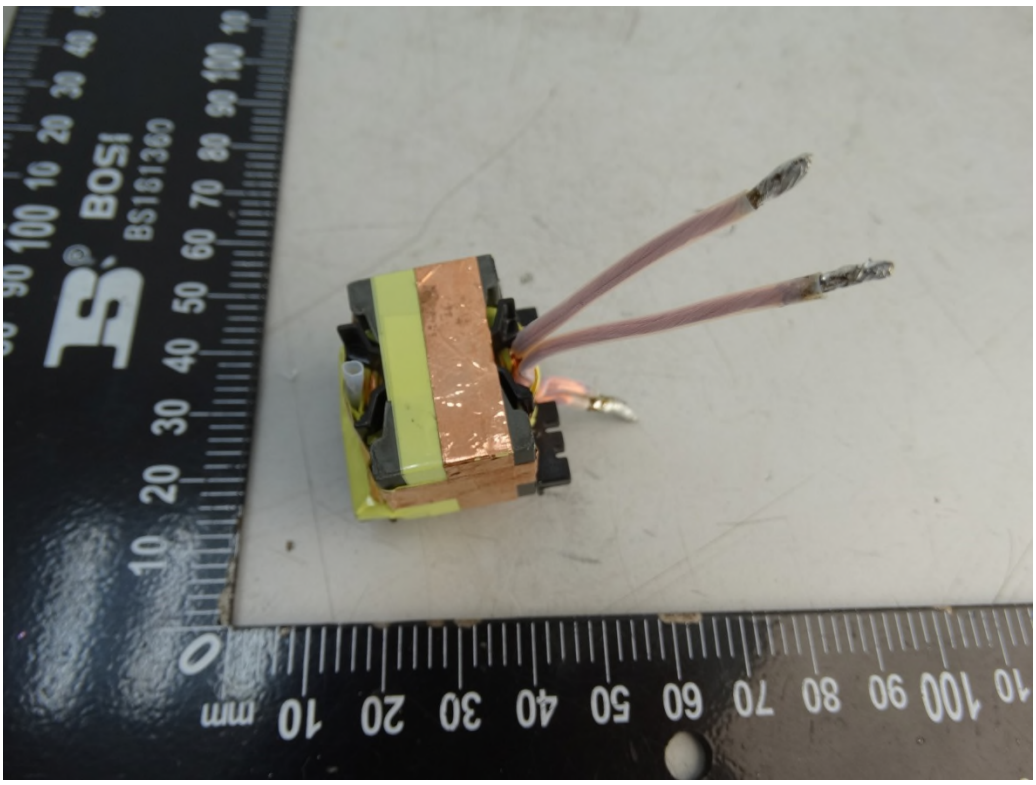


Transformer view

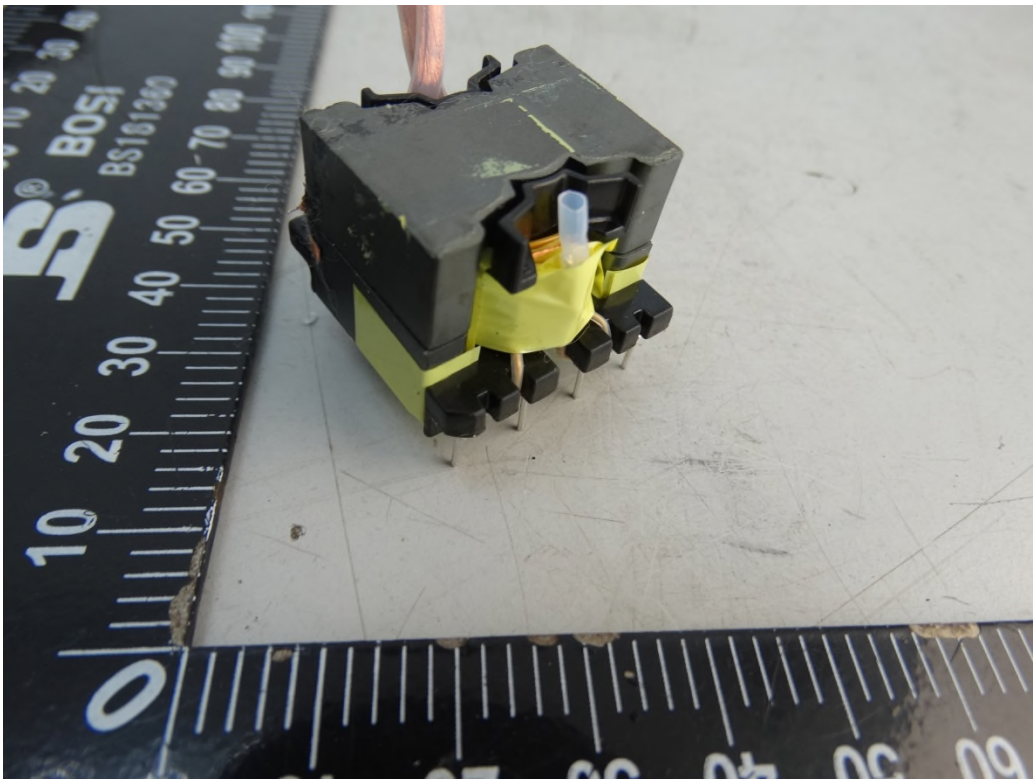


Transformer view

Model: SE150-12VL, SE150-24VL.

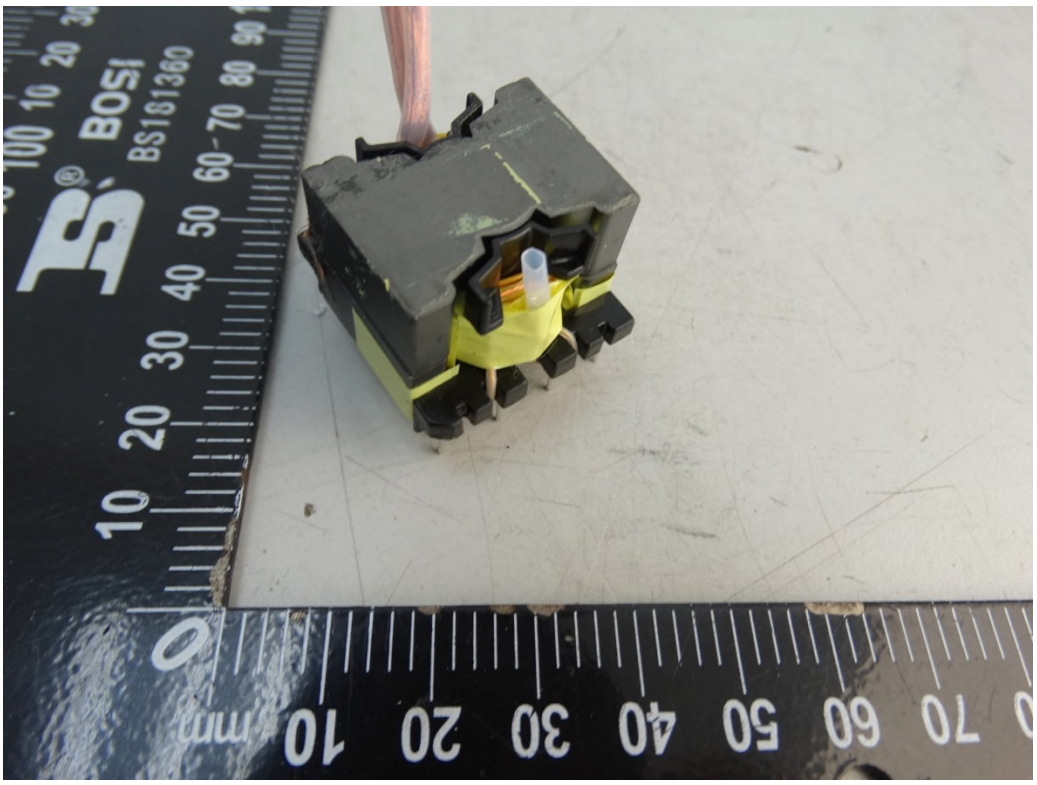


Transformer view

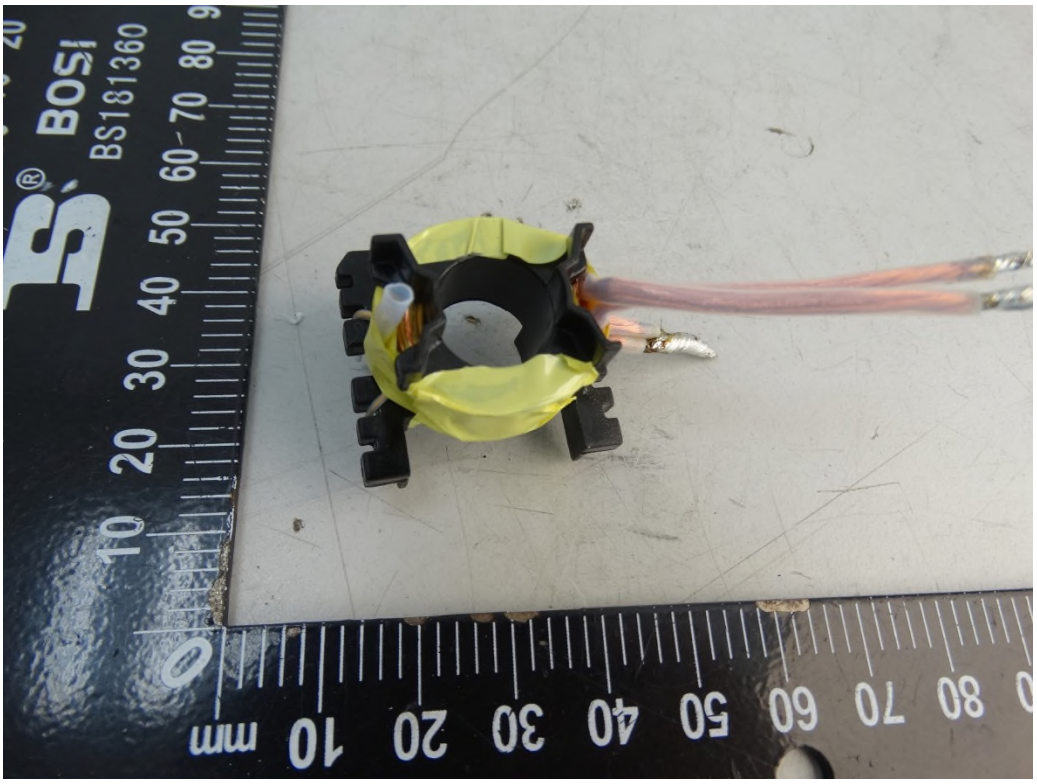


Transformer view

Model: SE150-12VL, SE150-24VL.

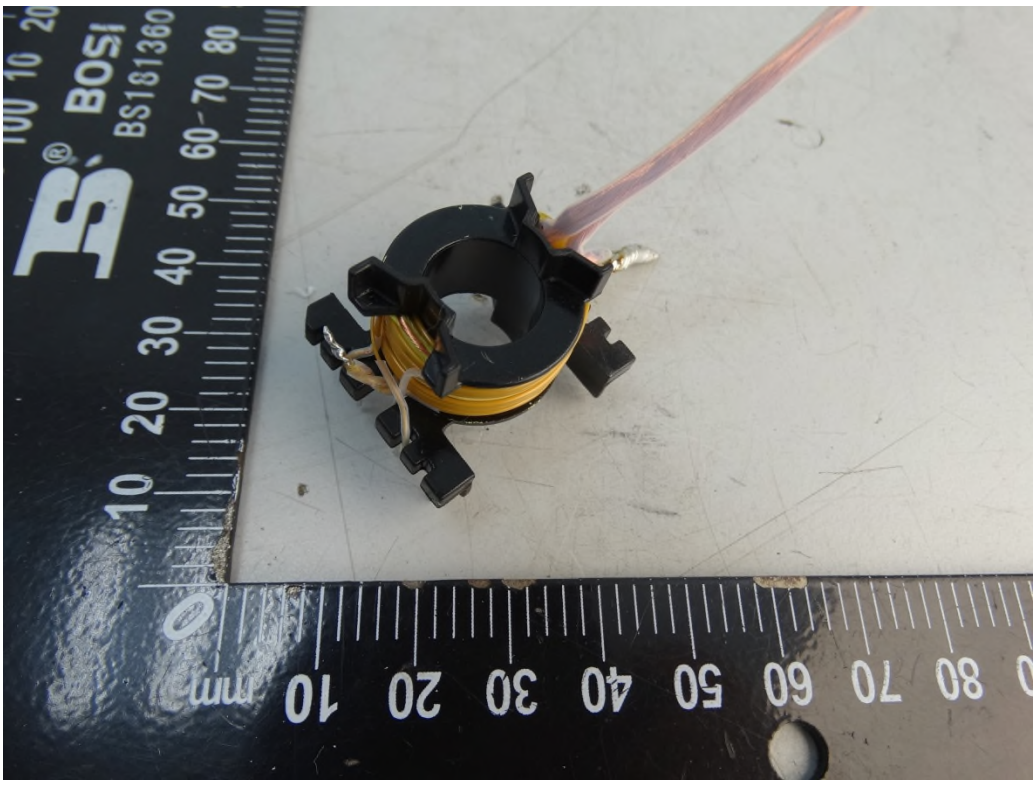


Transformer view

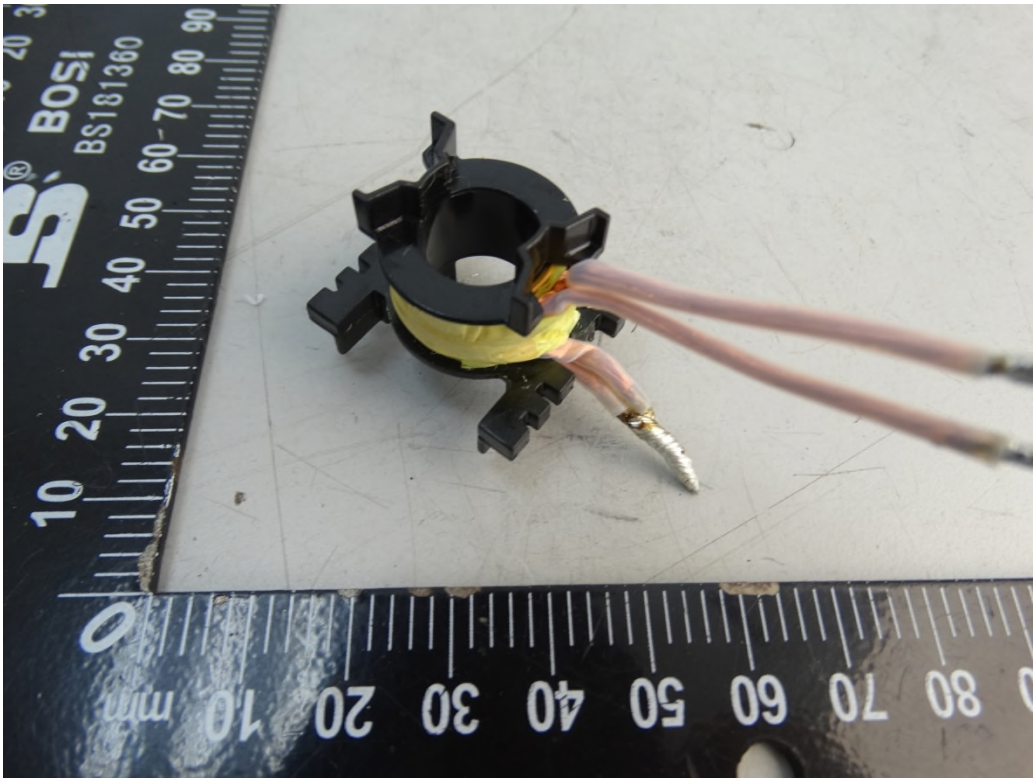


Transformer view

Model: SE150-12VL, SE150-24VL.

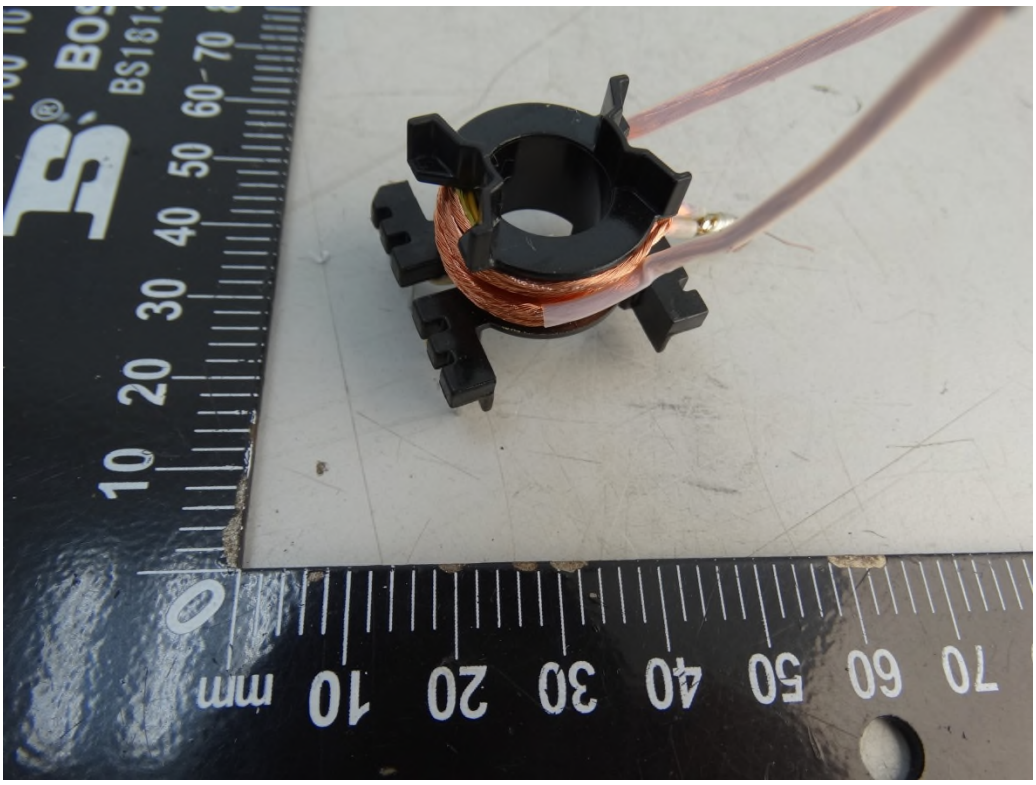


Transformer view

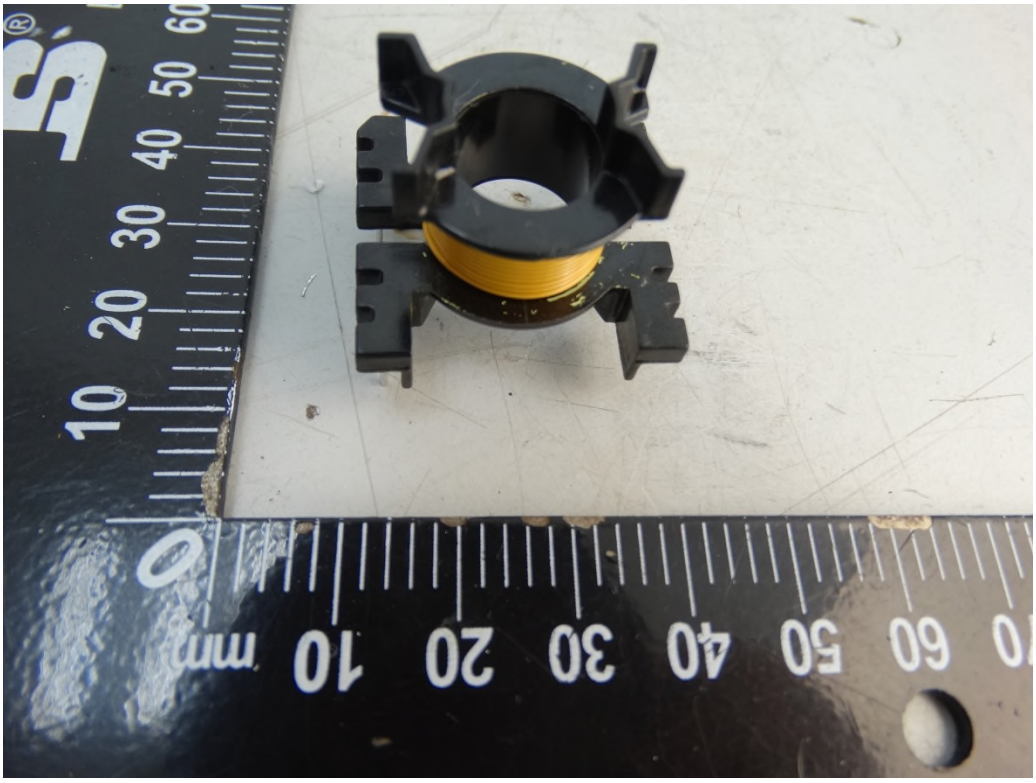


Transformer view

Model: SE150-12VL, SE150-24VL.

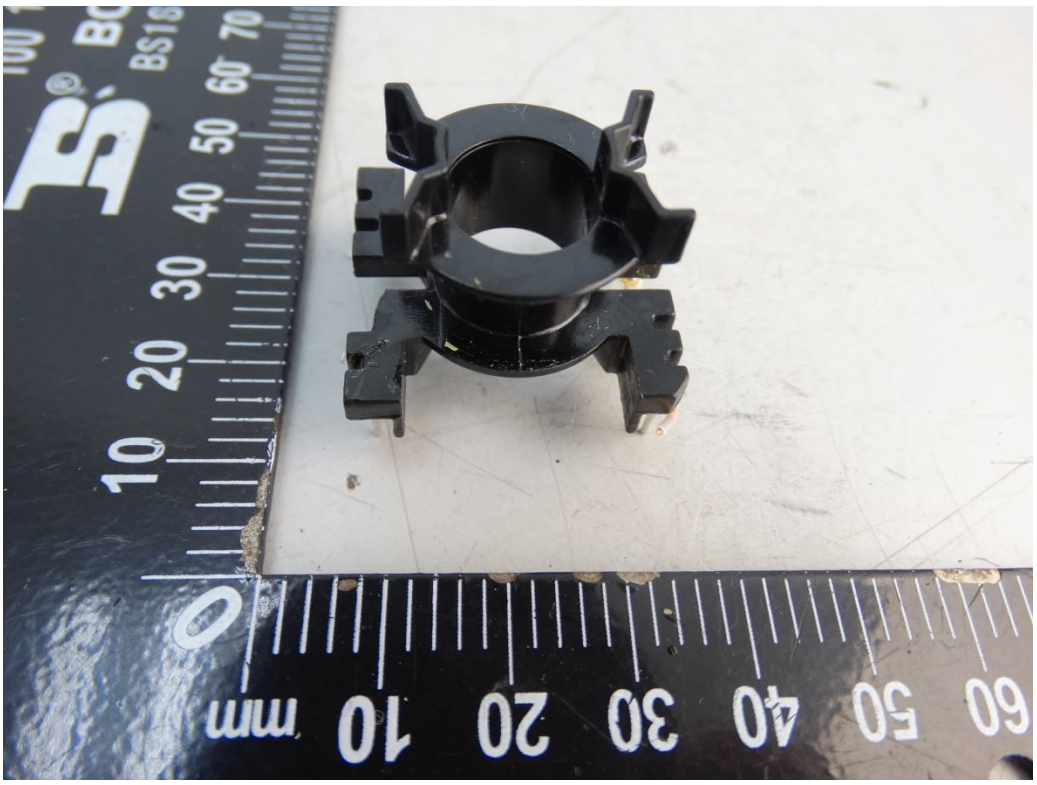


Transformer view



Transformer view

Model: SE150-12VL, SE150-24VL.



Transformer view