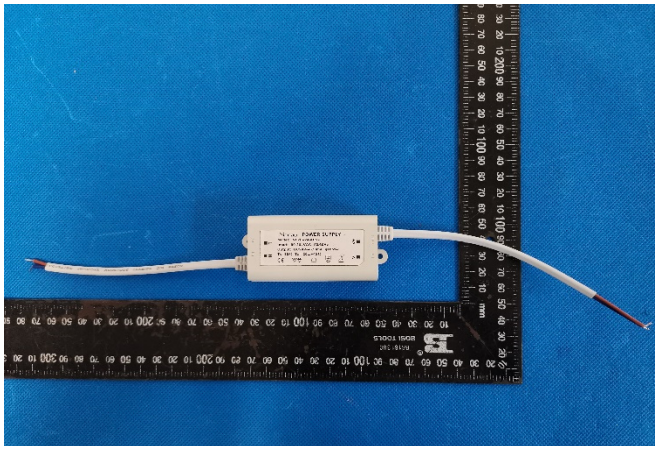
Prüfbericht-Nr.: *Test report no.:*	**50270955 001**	**Auftrags-Nr.:** *Order no.*:	**168113475**	**Seite 1 von 39** *Page 1 of 39*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2019.07.09	
Auftraggeber: *Client:*	**Nirrau Electronics Design and Manufacturing Co., Limited.** 7/F., Bonham Centre 79-85 Bonham Strand Sheung Wan, Hong Kong			
Prüfgegenstand: *Test item:*	LED Driver			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	NE-X-24-ACV, NE-16-Y-ACC			
Auftrags-Inhalt: *Order content*:	LVD CoC			
Prüfgrundlage: *Test specification:*	**EN 61347-1:2015** **EN 61347-2-13:2014+A1:2017** **EN 62493:2015**			

Wareneingangsdatum: *Date of sample receipt:*	2020.02.10
Prüfmuster-Nr.: *Test sample no:*	A001051940
Prüfzeitraum: *Testing period:*	2020.02.10 – 2020.04.14
Ort der Prüfung: *Place of testing:*	**TÜV Rheinland (Shenzhen) Co., Ltd.**
Prüflaboratorium: *Testing laboratory:*	**TÜV Rheinland (Shenzhen) Co., Ltd.**
Prüfergebnis*: *Test result*:*	Pass



geprüft von: *tested by:*	X Young Yang Signed by: Young Yang	**genehmigt von:** authorized by:	X Jimmy Hong Signed by: Jimmy Hong
Datum: *Date:* 2020.04.23		**Ausstellatum:** *Issue date:* 2020.04.23	
Stellung / *Position:*	Project Engineer	**Stellung** / *Position:*	Technical Certifier

Sonstiges / *Other:* 1. This report is for issuing LVD CoC for LED driver mentioned above.

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

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

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. .....:	See cover page
Date of issue .....:	See cover page
Total number of pages.....	See cover page
Name of Testing Laboratory preparing the Report.....:	See cover page
Applicant's name.....:	See cover page
Address .....:	See cover page
Test specification:	
Standard .....:	IEC 61347-2-13:2014, AMD1:2016 used in conjunction with IEC 61347-1:2015, AMD1:2017
Test procedure .....:	LVD CoC
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

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 Driver
Trade Mark .....:	N/A
Manufacturer.....:	Same as applicant's name and address
Model/Type reference .....:	NE-X-24-ACV, NE-16-Y-ACC
Ratings .....:	AC 110-264V or AC 90-264V, 50/60Hz; ta: 45°C; tc: 85°C. For other ratings, refer to "General product information".

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

Attachment 1: Test result for creepage distances and clearances. (1 page)

Attachment 2: Temperature measurements, thermal tests. (4 pages)

Attachment 3: Tests according to IEC 60598-1:2014+A1 and EN 60598-1:2015+A1. (6 pages)

Attachment 4: EMF Assessment according to EN 62493:2015. (1 page)

Attachment 5: Photo document. (10 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 All applicable tests as described in test case and measurement section were performed on models NE-16-24-ACV and NE-16-350-ACC. Test result: Pass.	**TÜV Rheinland (Shenzhen) Co., Ltd.** 1F East & 2-4F, Cybio Technology Building No. 1 No. 16 Kejibei 2nd Road, High-Tech Industrial Park North, Nanshan District 518057, Shenzhen China

Summary of compliance with National Differences:

List of countries addressed

DE=Germany

☒ **The product fulfils the requirements of EN 61347-2-13:2014/A1:2017 used in conjunction with EN 61347-1:2015.**

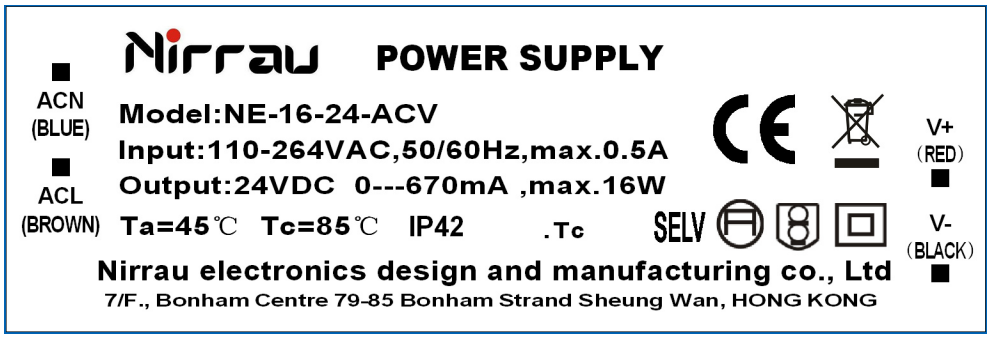
Remark:

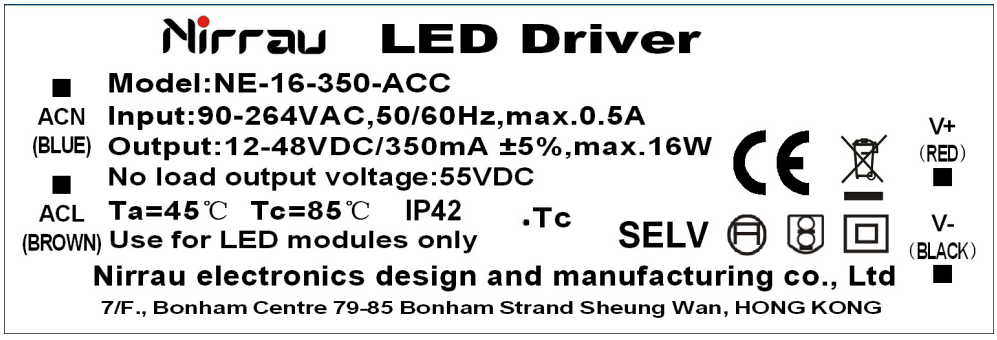
The text of the International Standard IEC 61347-2-13:2014/A1:2016 was approved by CENELEC as a European Standard without any modification.

The IECEE TRF No. 61347_2_13G was applied (that includes the standards IEC 61347-2-13:2014 +AMD1:2016 used in conjunction with IEC 61347-1:2015 +AMD1:2017). In case of compliance with EN standard, the Amendment 1 is not applicable for TUV Mark licensing, because A1:2017 of IEC 61347-1:2015 has not been published as European 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.





Remark:

- Above labels are only representative, other model labels have the same design, except model name and rating are different correspondingly.
- Due to lack space of label, the name and address of importer are shown on the packaging or instruction.

Test item particulars..... :	LED controlgear
Classification of installation and use ..... :	Independent SELV controlgear
Supply Connection ..... :	Supply cord
..... :	
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing ..... :	
Date of receipt of test item..... :	See cover page
Date (s) of performance of tests..... :	See cover page

General remarks:
"(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**
ManµFacturer'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 ManµFacturer 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) .....:	Same as applicant's name and address

General product information:

Product: LED Driver.

Rating: AC 110-264V or AC 90-264V, 50/60Hz, ta: 45°C, tc: 85°C, IP42, Class II, independent, SELV, for indoor use only.

1. Models in same series have same mechanical construction, circuit diagram and transformer except some components' parameters in secondary and primary circuit are different.

2. Y in model name of series 2 is variable and represents rated output current, and relevant tests mentioned in summary of testing were perform on model NE-16-350-ACC with max load.

Table 1. Model list

Series No	Model	Input ratings	Max. Input current (mA)	Output voltage with load (Vdc)	Output current (mA)	Rated output power (W)	Uout (Vdc)	Output type
1	NE-X-24-ACV	110-264Vac, 50/60Hz	500	24	0 - 670	5,…16	24	Constant voltage
2	NE-16-Y-ACC	90-264Vac, 50/60Hz	500	12-48	100,…350	5,…16	55	Constant current

Remark:

- X in series 1 model name represents output power in W, could be 5, 6, 7…16, for detail see table 2.
- Y in series 2 model name represents rated output current in mA, increasing in step of 10mA.

Table 2. details of series 1 models

Series No	Model	Max. Input current (mA)	Output voltage with load (Vdc)	Output current (mA)	Rated output power (W)	Uout (Vdc)
1	NE-16-24-ACV	500	24	0 - 670	16	24
	NE-15-24-ACV			0 - 630	15	
	NE-12-24-ACV			0 - 500	12	
	NE-10-24-ACV			0 - 420	10	
	NE-9-24-ACV			0 - 380	9	
	NE-8-24-ACV			0 - 340	8	
	NE-7-24-ACV			0 - 300	7	
	NE-6-24-ACV			0 - 250	6	
	NE-5-24-ACV			0 - 210	5	

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		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		P
	b) model number or type reference	See marking plate	P
	c) symbol for independent controlgear, if applicable		P
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)	110-264V or AC 90-264V	P
	supply frequency (Hz)	50/60Hz	P
	supply current (A)	On label	P
	f) earthing symbol		N/A
	k) wiring diagram		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	l) value of tc	85°C	P
	m) symbol for declared temperature		N/A
	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 ☐ For series 1 models	—
	- rated output power P_{rated} (W) ..... :	16W	P
	- rated output voltage U_{rated} (V) ..... :	24V	P
	Constant current type:	Yes ☒ No ☐ For series 2 models	—
	- rated output power P_{rated} (W) ..... :	16W	P
	- rated output current I_{rated} (A) ..... :	0,35A	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 (mm²)		N/A
	j) number, type and wattage of lamp(s)		N/A
	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)	N/A
- (10.1)	Lacquer or enamel not used for protection or insulation		P
	Adequate mechanical strength on parts providing protection		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
- (10.2)	Capacitors > 0,5 µF: voltage after 1 min (V): < 50 V .....:	For NE-16-24-ACV: Max. 4V; For NE-16-350-ACC: Max. 2V	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		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.	For NE-16-24-ACV: Max. 24Vdc; For NE-16-350-ACC: Max. 48Vdc	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	Y1 capacitor used	P
	Y1 or Y2 capacitors comply with IEC 60384-14		P
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A

9 (8)	**TERMINALS**		**N/A**
- (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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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**		**N/A**
	Comply with relevant IEC standard	(see Annex 1)	N/A
	Suit the conditions		N/A
	Satisfy additional relevant requirements of this standard		N/A
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**
	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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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 ..... :	Between L-N after fuse open: >2000 MΩ; Between output circuit and enclosure with metal foil: >2000 MΩ;	P
	For double or reinforced insulation ≥ 4 MΩ ..... :	Between input circuit and output circuit: >2000 MΩ; Between input circuit and enclosure: >2000 MΩ;	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P
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 output circuit and enclosure with metal foil	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: 264V→ 1528V;	P
	Supplementary insulation, 2U + 1000 V		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Double or reinforced insulation, 4U + 2000 V	Between input circuit and output circuit: For NE-16-24-ACV: Utest 309V→ 3236V; For NE-16-350-ACC: Utest 264V→ 3056V; Between input circuit and enclosure: For NE-16-24-ACV: Utest 309V→ 3236V; For NE-16-350-ACC: Utest 264V→ 3056V;	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		N/A

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		N/A
	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)	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 ..... :	>2000 MΩ	P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
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
	Double LED modules or equivalent load connected in parallel to the output terminals of constant voltage type	For NE-16-24-ACV	P
	Double LED modules or equivalent load connected in serial to the output terminals of constant current type	For NE-16-350-ACC	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**		**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**

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	- controlgear providing SELV in accordance with relevant part 2 of IEC 61347		P
	- another source		P
	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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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
- (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		P
	Insulating lining of metallic enclosures		N/A
	Controlgear protected against pollution comply with Annex P	(see Annex P)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

- (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)	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		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)	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**		**P**
(4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part ..... :	Fixed enclosure: 0,5Nm	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

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Clause	Requirement + Test	Result - Remark	Verdict
(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)	P
- (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)	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		P
14	**TABLE: tests of fault conditions**		**P**
Part	Simulated fault		Hazard
For model NE-16-24-ACV (110-264Vac, 50/60Hz)			
VR1	Short circuit: Test result: fuse open, no hazard.		~~YES~~/NO
VR1	Open circuit: Test result: normal operation, input: 18,0W, 0,16A, no damage, no hazard, recoverable.		~~YES~~/NO
EC1	Short circuit: Test result: fuse open, no hazard.		~~YES~~/NO
DB1	Short circuit: Test result: fuse open, no hazard.		~~YES~~/NO
LF1 (1-2)	Short circuit: Test result: normal operation, input: 18,0W, 0,16A, no damage, no hazard, recoverable.		~~YES~~/NO

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Clause	Requirement + Test	Result - Remark	Verdict

LF1 (3-4)	Short circuit: Test result: normal operation, input: 18,0W, 0,16A, no damage, no hazard, recoverable.	~~YES/~~NO
CE2	Short circuit: Test result: fuse open, no hazard.	~~YES/~~NO
CE3	Short circuit: Test result: unit shut down, input: 0,3W, 0,02A, no damage, no hazard, recoverable.	~~YES/~~NO
U1 (1-5)	Short circuit: Test result: unit shut down, input: 0,3W, 0,02A, no damage, no hazard, recoverable.	~~YES/~~NO
U1 (3-5)	Short circuit: Test result: unit shut down, input: 0,3W, 0,02A, no damage, no hazard, recoverable.	~~YES/~~NO
D2	Short circuit: Test result: unit shut down, input: 0,5W, 0,02A, no damage, no hazard, recoverable.	~~YES/~~NO
T1 pri. (1-4)	Short circuit: Test result: unit shut down, input: 0,3W, 0,02A, no damage, no hazard, recoverable.	~~YES/~~NO
T1 pri. (2-3)	Short circuit: Test result: unit shut down, input: 0,3W, 0,02A, no damage, no hazard, recoverable.	~~YES/~~NO
T1 sec. (5-6)	Short circuit: Test result: unit shut down, input: 0,3W, 0,02A, no damage, no hazard, recoverable.	~~YES/~~NO
U3 (d-s)	Short circuit: Test result: unit shut down, input: 0,3W, 0,02A, no damage, no hazard, recoverable.	~~YES/~~NO
U3 (d-g)	Short circuit: Test result: unit shut down, input: 0,3W, 0,02A, no damage, no hazard, recoverable.	~~YES/~~NO
U3 (g-s)	Short circuit: Test result: unit shut down, input: 0,3W, 0,02A, no damage, no hazard, recoverable.	~~YES/~~NO
CE4	Short circuit: Test result: unit shut down, input: 0,3W, 0,02A, no damage, no hazard, recoverable.	~~YES/~~NO
LF1 (1-2)	Short circuit: Test result: unit shut down, input: 0,4W, 0,02A, no damage, no hazard, recoverable.	~~YES/~~NO

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Clause	Requirement + Test	Result - Remark	Verdict

LF1 (3-4)	Short circuit: Test result: unit shut down, input: 0,5W, 0,02A, no damage, no hazard, recoverable.	~~YES~~/NO
Output	Short circuit: Test result: unit shut down, input: 0,3W, 0,02A, no damage, no hazard, recoverable.	~~YES~~/NO

14	**TABLE: tests of fault conditions**	**P**
Part	Simulated fault	Hazard
For model NE-16-350-ACC (0-264Vac, 50/60Hz)		
VR1	Short circuit: Test result: fuse open, no hazard.	~~YES~~/NO
VR1	Open circuit: Test result: normal operation, input: 20,0W, 0,16A, no damage, no hazard, recoverable.	~~YES~~/NO
DB1	Short circuit: Test result: fuse open, no hazard.	~~YES~~/NO
LF1 (1-2)	Short circuit: Test result: normal operation, input: 20,0W, 0,16A, no damage, no hazard, recoverable.	~~YES~~/NO
LF1 (3-4)	Short circuit: Test result: normal operation, input: 20,0W, 0,16A, no damage, no hazard, recoverable.	~~YES~~/NO
C1	Short circuit: Test result: fuse open, no hazard.	~~YES~~/NO
C2	Short circuit: Test result: fuse open, no hazard.	~~YES~~/NO
C10	Short circuit: Test result: unit shut down, input: 0,2W, 0,02A, no damage, no hazard, recoverable.	~~YES~~/NO
L1	Short circuit: Test result: normal operation, input: 20,0W, 0,16A, no damage, no hazard, recoverable.	~~YES~~/NO
U1 (1-2)	Short circuit: Test result: unit shut down, input: 0,2W, 0,02A, no damage, no hazard, recoverable.	~~YES~~/NO
U1 (4-5)	Short circuit: Test result: unit shut down, input: 0,2W, 0,02A, no damage, no hazard, recoverable.	~~YES~~/NO

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Clause	Requirement + Test	Result - Remark	Verdict
D6	Short circuit: Test result: unit shut down, input: 0,1W, 0,02A, no damage, no hazard, recoverable.		~~YES/~~NO
Q1 (d-s)	Short circuit: Test result: fuse open, no hazard.		~~YES/~~NO
Q1 (d-g)	Short circuit: Test result: unit shut down, input: 0,1W, 0,02A, no damage, no hazard, recoverable.		~~YES/~~NO
Q1 (g-s)	Short circuit: Test result: unit shut down, input: 0,1W, 0,02A, no damage, no hazard, recoverable.		~~YES/~~NO
T1 pri. (1-4)	Short circuit: Test result: fuse open, no hazard.		~~YES/~~NO
T1 pri. (2-3)	Short circuit: Test result: fuse open, no hazard.		~~YES/~~NO
T1 sec. (5-6)	Short circuit: Test result: power decrease, input: 7,7W, 0,1A, no damage, no hazard, recoverable.		~~YES/~~NO
D7	Short circuit: Test result: power decrease, input: 13W, 0,1A, no damage, no hazard, recoverable.		~~YES/~~NO
C8	Short circuit: Test result: unit shut down, input: 0,5W, 0,02A, no damage, no hazard, recoverable.		~~YES/~~NO
L2 (1-2)	Short circuit: Test result: unit shut down, input: 0,5W, 0,02A, no damage, no hazard, recoverable.		~~YES/~~NO
L2 (3-4)	Short circuit: Test result: unit shut down, input: 0,5W, 0,02A, no damage, no hazard, recoverable.		~~YES/~~NO
Output	Short circuit: Test result: unit shut down, input: 0,5W, 0,02A, no damage, no hazard, recoverable.		~~YES/~~NO

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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	See attachment 1	--	9, 10	See attachment 1	--	7, 8
Working voltage (V) ..... :					AC 264V		—
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: See attachment 1.							
Distance 2:	R	See attachment 1	--	9, 10	See attachment 1	--	7, 8
Working voltage (V) ..... :					AC 264V		—
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: See attachment 1.							
Distance 3:	R	See attachment 1	--	13 of IEC 61558-1	See attachment 1	--	13 of IEC 61558-1
Working voltage (V) ..... :					AC 264V		—
Frequency if applicable (kHz) ..... :					See attachment 1		—
PTI ..... :					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					See attachment 1		—
Pulse voltage if applicable (kV) ..... :					--		—
Supplementary information: See attachment 1.							

** 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		—
Object/ Part No./ Material	ManµFacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Bobbin	See annex 1	153	Max. 1,4	
PCB	See annex 1	125	Max. 1,0	
Plastic enclosure	See annex 1	101	Max. 1,2	
Supplementary information: N/A				

19 (18.2)	**TABLE: Test of printed boards**				**P**
Object/ Part No./ Material	ManµFacturer/ trademark	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
PCB	See annex 1	30s	No	0s	P
Supplementary information: N/A					

19 (18.3)	**TABLE: Glow-wire test**			**P**
Glow wire temperature..... :		650°C		—
Object/ Part No./ Material	ManµFacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Plastic enclosure	See annex 1	No	0s	P
Supplementary information: N/A				

19 (18.4)	**TABLE: Needle-flame test**				**P**
Object/ Part No./ Material	ManµFacturer/ trademark	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Bobbin	See annex 1	10s	No	2s	P
PCB	See annex 1	10s	No	3s	P
Supplementary information: N/A					

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Clause	Requirement + Test	Result - Remark	Verdict

19 (18.5)	**TABLE: Proof tracking test**					**N/A**
Test voltage PTI ..... :		175 V				—
Object/ Part No./ Material	ManµFacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens				Verdict
--	--	--	--	--		--
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 ..... :	For NE-16-24-ACV: Max. 24V; For NE-16-350-ACC: Max. 126V;	P
(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. ..... :	For NE-16-350-ACC: Max. 0,02mA	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**		N/A
(C3)	**GENERAL REQUIREMENTS**		**N/A**
(C3.1)	Thermal protection means integral with the convertor, protected against mechanical damage		N/A
	Renewable only by means of a tool		N/A
	If function depending on polarity, for cord-connected equipment protection means in both leads		N/A
	Thermal links comply with IEC 60691		N/A
	Electrical controls comply with IEC 60730-2-3		N/A
(C3.2)	No risk of fire by breaking (clause C7)		N/A
(C5)	**CLASSIFICATION**		**N/A**
	a) automatic resetting type		—
	b) manual resetting type		—
	c) non-renewable, non-resetting type		—
	d) renewable, non-resetting type		—
	e) other type of thermal protection; description .. :		—
(C6)	**MARKING**		**N/A**
(C6.1)	Symbol for temperature declared thermally protected ballasts		N/A
(C6.2)	Declaration of the type of protection provided		N/A
(C7)	**LIMITATION OF HEATING**		**N/A**
(C7.1)	**Preselection test:**		**N/A**

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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		N/A
	No operation of the protection device		N/A
(C7.2)	**Functioning of protection means:**		**N/A**
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (t_c +0; -5) °C is obtained		N/A
	No operation of the protection device		N/A
	Introducing of the most onerous test condition determined during test of clause 14.2 to 14.5		N/A
	Output of windings connected to the mains supply short-circuited, and other part of the controlgear operated under normal conditions		N/A
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		N/A
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Ballasts according to C5 b) working 6 times		N/A
	Ballasts according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value		N/A
	Any overshoot of 10% over the marked value within 15 min		N/A
	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**		N/A
	Tests in C7 performed in accordance with Annex D, if applicable		N/A
(F)	**ANNEX F – DRAUGHT-PROOF ENCOSURE**		P
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

(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		P
(L.6)	**Heating**		**P**
	No excessive temperatures in normal use		P
	Value if capacitor t_c marked .....:	125°C	—
	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 15.2 of relevant models	P
(L.8)	**Insulation resistance and electric strength**		**P**
(L.8.1)	Conditioned 48 h between 91 % and 95 %		P
(L.8.2)	Insulation resistance		P
	Between input- and output circuits not less than 5 MΩ .....:	>2000 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

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Clause	Requirement + Test	Result - Remark	Verdict
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ ..... :	>2000 MΩ	P
(L.8.3)	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits ..... :	For NE-16-24-ACV: 3795V; For NE-16-350-ACC: 3750V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity ..... :	For NE-16-24-ACV: 1898V; For NE-16-350-ACC: 1875V	P
	b) live parts and body if intended to be connected to protective earth ..... :		N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord ..... :		N/A
	d) live parts and an intermediate metal part ..... :		N/A
	e) intermediate metal parts and the body ..... :		N/A
	f) each input circuit and all other input circuits ... :		N/A
	3) Over reinforced insulation between the body and live parts ..... :	For NE-16-24-ACV:3795V; For NE-16-350-ACC: 3750V	P
(L.9)	**Construction**		**P**
(L.9.1)	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		P
	HF transformer comply with 19 of IEC 61558-2-16		P
(L.10)	**Components**		**N/A**
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		N/A
(L.11)	**Creepage distances, 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		N/A
	Required distance (mm) ..... :		—
	Measured (mm) ..... :		N/A
	Supplementary information		—

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Clause	Requirement + Test	Result - Remark	Verdict
	3) Reinforced distance through insulation		P
	Required distance (mm) ..... :	For NE-16-24-ACV: 1,02mm; For NE-16-350-ACC: 0,88mm	—
	Measured (mm) ..... :	Min.1,5mm	P
	Supplementary information		—

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**		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
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

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Clause	Requirement + Test	Result - Remark	Verdict
	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 % to 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
	- 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

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Clause	Requirement + Test	Result - Remark	Verdict
(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
	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 according clause 12 reduced to 35 % of values according Table 3 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

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Clause	Requirement + Test	Result - Remark	Verdict
(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
	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		—

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Clause	Requirement + Test	Result - Remark	Verdict
(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
	Supplementary information		—

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1	TABLE: Critical components information					P
Object / part No.	**Code**	**ManµFacturer / trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
Input cord	B	Kenic Electric Mfg.Co,Ltd	H05VVH2-F	2 x 1,0mm^{2,}	EN 50525-2-11	VDE 103853
Alternative	D	Jiaxing Yongda Electrification Co. Ltd	H07RN-F	2 x 1,0mm^{2,}	EN 50525-2-21	VDE 40029727
Alternative	D	Dongguan Ziqiang Cable Co. Ltd.	H05VVH2-F	2 x 1,0mm^{2,}	EN 50525-2-11	VDE 40042876
Output cord	B	Kenic Electric Mfg.Co,Ltd	H03VVH2-F	2 x 0,5mm^{2,}	EN 50525-2-11	VDE 103853
Alternative	D	Jiaxing Yongda Electrification Co. Ltd	H03VV-F	2 x 0,5mm^{2,}	EN 50525-2-11	VDE 128617
Alternative	D	Dongguan Ziqiang Cable Co. Ltd.	H03VVH2-F	2 x 0,5mm^{2,}	EN 50525-2-11	VDE 40042876
PCB	C	SHENZHEN HUAQIANGJU FENG ELECTRONIC CO LTD	HQPCB-2	V-0, 130°C	--	UL E469747
Alternative	D	SHENZHEN NAILIDE TECHNOLOG Y CO LTD	ULNLD01	V-0, 120°C	--	UL E479351
Plastic enclosure	C	FORMOSA CHEMICALS & FIBRE CORP PLASTICS	AC3900	PC, V-0	--	UL E162823
Fuse	B	DONGGUAN REOMAX ELECTRONIC S CO LTD	MTS	300V; 2A	IEC 60127	VDE 40039420
Alternative	D	LITTELFUSE WICKMANN WERKE.	392	300V; 2A	EN 60127-1 EN 60127-3	VDE 126983

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Clause	Requirement + Test	Result - Remark	Verdict

Varistor	B	Lien Shun Electronics Co., Ltd.	10D511K	AC 315V, T85	IEC/EN 61051-1 IEC 61051-2 IEC 61051-2-2	VDE 40005858
Alternative	D	Hongzhi Enterprises Ltd	HEL10D511K	AC 318V, T85	IEC/EN 61051-1 IEC 61051-2 IEC 61051-2-2	VDE 40037512
Alternative	D	Ceramate Techn. Co., Ltd.	GNR 10D511K	AC 318V, T85	IEC/EN 61051-1 IEC 61051-2 IEC 61051-2-2	VDE 005938
X-capacitor (CX1)	B	Dain Electronic Co., Ltd.	MPX	AC 275V, 0,22uF, X2, 40/100/21	IEC/EN 60384-14	VDE 40018798
Alternative	D	Dongguan Weiqing Electronic Co., Ltd.	MPX	AC 275V, 0,22uF, X2, 40/110/56	IEC/EN 60384-14	VDE 40040406
Alternative	D	Shenzhen Su Rong Capacitors Co., Ltd.	MPX/MKP	AC 280V, 0,22uF, X2, 40/100/21	IEC/EN 60384-14	VDE 40008924
LF1	C	SHENZHEN GREATFUBON Technology CO.，LTD	1212-20mH	Class B	EN 61347-1, EN 61347-2-13	Tested with appliance
Optocoupler (U2)	B	Everlight Electronics Co., Ltd.	EL817	AC 380V, Cr, Cl ≥7,6, 55/110/21	EN 60747-5-5	VDE 132249
Y- capacitor (CY1)	B	Jyh Chung Electronic Co., Ltd.	JY	AC 300V, Y2, 40/125/21, 2200pF	IEC/EN 60384-14	VDE 123326
Alternative	D	DONGGUAN CITY DERSONIC ELECTRONICS CO., LTD	CS	AC 300V, Y2, 40/125/21/C, 2200pF	IEC/EN 60384-14	VDE 40045478

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

T1 transformer for NE-16-24-ACV	C	SHENZHEN JIANENGJIE ELECTRONICS CO.,LTD	EE16W	Class B	EN 61347-1, EN 61347-2-13	Test with appliance
T1 transformer for NE-16-350-ACC	C	SHENZHEN JIANENGJIE ELECTRONICS CO.,LTD	EFD20	Class B	EN 61347-1, EN 61347-2-13	Test with appliance
- magnet winding	C	TAI-I ELECTRIC WIRE & CABLE CO LTD	UEW	130°C	--	UL E85640
Alternative	D	SHANTOU SHENGANG ELECTRICAL INDUSTRIAL CO LTD	2UEW	130°C	--	UL E239508
- Teflon tube	C	GREAT HOLDING INDUSTRIAL CO LTD	TFT	200°C, 600V	--	UL E156256
- bobbin	C	CHANG CHUN PLASTICS CO LTD	T375J	V-0, 150°C	--	UL E59481
- insulation tape	C	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ-280	130°C	--	UL E165111
Alternative	D	XINYU SHENGDAFENG ELECTRIC MATERIAL CO LTD	SDF-312	130°C	--	UL E317896
- triple insulation wire	B	Suzhou Yusheng Electronic Co.,Ltd	TIW-B	600V, 130°C	IEC/EN 62368-1	VDE 40033527
- Varnsih	C	GUANGZHOU BETTER NEW MATERIALS CO LTD	BETTER 116 (n)	180°C	--	UL E230067
L2 inductance for NE-16-24-ACV	C	Shenzhen Ganchao Technology CO.,LTD	T9*5*3	400uH*2	EN 61347-1, EN 61347-2-13	Test with appliance

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

L1 inductance for NE-16-350-ACC	C	Shenzhen Ganchao Technology CO.,LTD	T9*5*3	400uH*2	EN 61347-1, EN 61347-2-13	Test with appliance
L2 inductance for NE-16-350-ACC	C	Shenzhen Ganchao Technology CO.,LTD	T9*5*3	400uH*2	EN 61347-1, EN 61347-2-13	Test with appliance

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

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Clause	Requirement + Test	Result - Remark	Verdict

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

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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 Alternative 25th cycle (4 samples).....:		N/A
	Voltage drop (mV) after 50th Alternative 100th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 10th Alternative 25th cycle (4 samples) .....:		N/A
	After ageing, voltage drop (mV) after 50th Alternative 100th cycle (4 samples) .....:		N/A
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A
	Terminal size and rating		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

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 Alternative 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 Alternative 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 Alternative 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 Alternative 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:--										

Attachment 1: Test result for creepage distances and clearances			
Clause	Requirement + Test	Result - Remark	Verdict

Cr. and Cl. between different parts	Test result
For model NE-16-24-ACV	
Max. working voltage between input and output circuit: 309V r.m.s, 532V peak., 65kHz.	
L to N before fuse	cl.=4,0mm>1,5mm cr.=4,0mm>2,64mm
Different poles of fuse	cl.=3,4mm>1,5mm cr.=3,4mm>2,64mm
Between live parts and accessible enclosure	cl.=7,0mm>3,0mm cr.=7,0mm>5,3mm
Between pri. to sec. of CY1	cl.=8,1mm>3,0mm cr.=8,1mm>5,3mm
Primary core to secondary components	cl.=5,7mm>3,0mm cr.=5,7mm>5,3mm
Between pri. to sec. of Trace	cl.=7,1mm>5,6mm cr.=7,1mm>6,2mm
Primary winding to secondary pin	cl.=8,0mm>5,6mm cr.=8,0mm>6,2mm
Primary core to secondary pin	cl.=7,0mm>5,6mm cr.=7,0mm>6,2mm
For model NE-16-350-ACC	
Max. working voltage between input and output circuit: 238V r.m.s, 384V peak., 60Hz.	
L to N before fuse	cl.=3,1mm>1,5mm cr.=3,1mm>2,64mm
Different poles of fuse	cl.=3,1mm>1,5mm cr.=3,1mm>2,64mm
Between live parts and accessible enclosure	cl.=7,6mm>3,0mm cr.=7,6mm>5,3mm
Between pri. to sec. of CY1	cl.=7,0mm>3,0mm cr.=7,0mm>5,3mm
Primary core to secondary components	cl.=5,5mm>3,0mm cr.=5,5mm>5,3mm
Between pri. to sec. of Trace	cl.=7,0mm>4,9mm cr.=7,0mm>5,3mm
Primary winding to secondary pin	cl.=10,0mm>4,9mm cr.=10,0mm>5,3mm
Primary core to secondary pin	cl.=10,0mm>4,9mm cr.=10,0mm>5,3mm

Attachment 2: Temperature measurements, thermal tests			
Clause	Requirement + Test	Result - Remark	Verdict

15.1	**TABLE: test of transformer heating (☒ Constant voltage ☐ Constant current)**		**P**
	Type reference:	NE-16-24-ACV	—
15.2	Test 1: Normal Operation		—
	1.06 times rated voltage:	1,06Un: Input: 116,6V, 0,29A, 19,4W; 279,84V, 0,22A, 18,2W; Output: 24V, 0,67A, 16W; 24V, 0,67A, 16W;	—
	Under ta = ...:	45°C	—
15.3	Test 2: Abnormal Operation: Short-circuit the output according to L.7		—
	1.1 or 0.9 times rated voltage:	1,1Un: 279,84V	—
		Shut down	
	ta = ……:	45°C	—
	Test 3: Abnormal Operation: overload according to L.7		—
	1.1 or 0.9 times rated voltage:	0,9Un: Input: 99V, 0,29A, 23,9W; Output: 23,5V, 0,81A, 18,9W; 1,1Un: Input: 290,4V, 0,27A, 28,2W; Output: 23,1V, 1,0A, 23,1W;	—
	ta = ...:	45°C	—
	Test 4: Abnormal Operation: Double the number of LED modules or equivalent load.		—
	1.1 or 0.9 times rated voltage:	1,1Un: 279,84V	—
		Shut down	
	ta = ...:	45°C	—

Temperature (ºC) of Part	Cl. 15.2			Cl. 15.3				
	Test 1 (ºC)		Limit[3)]	Test 2 (ºC)	Test 3 (ºC)		Test 4 (ºC)	Limit[3)]
	116,6V	279,84V			99V	290,4V		
Input wire	61,9	54,4	90	--	64,5	62,0	--	85
VR1	74,8	61,1	85	--	--	--	--	--
EC1	82,9	64,6	105	--	--	--	--	--

Attachment 2: Temperature measurements, thermal tests								
Clause	Requirement + Test				Result - Remark			Verdict
LF1 winding	79,7	64,0	120	--	85,6	82,0	--	175
LF1 bobbin	68,4	58,0	Ref.	--	--	--	--	--
CX1 body	92,3	71,9	100	--	--	--	--	--
EC2	95,8	74,9	105	--	--	--	--	--
CE3	92,2	73,0	105	--	--	--	--	--
U1 (opto-coupler)	92,4	75,3	110	--	--	--	--	--
PCB under T1	101,0	82,4	Ref.	--	--	--	--	--
PRI. winding of T1	113,0	89,8	120	--	131,0	127,0	--	175
SEC. winding of T1	114,0	91,2	120	--	125,0	127,0	--	175
Bobbin of T1	114,0	91,8	Ref.	--	125,0	128,0	--	Ref.
tc point on the top of T1	64,8	62,5	85	--	71,6	79,3	--	105
Enclosure inside on the top of T1	75,8	65,2	Ref.	--	--	--	--	--
Enclosure outside on the bottom of T1	66,1	62,1	Ref.	--	--	--	--	--
CY1	105,0	84,7	125	--	--	--	--	--
CE4	103,0	94,1	105	--	--	--	--	--
LF2 winding	87,9	77,7	120	--	101,0	97,0	--	175
Mounting surface	66,1	57,5	90	--	74,4	68,6	--	105
Output wire	77,5	67,1	90	--	79,5	79,7	--	85

Attachment 2: Temperature measurements, thermal tests			
Clause	Requirement + Test	Result - Remark	Verdict

15.1	**TABLE: test of transformer heating (☐ Constant voltage ☒ Constant current)**		**P**
	Type reference:	NE-16-350-ACC	—
15.2	Test 1: Normal Operation		—
	1.06 times rated voltage:	1,06Un: Input: 95,4V, 0,33A, 19,4W; 279,84V, 0,18A, 20,2W; Output: 48V, 0,32A, 15,4W; 46V, 0,35A, 16,1W;	—
	Under ta = ...:	45°C	—
15.3	Test 2: Abnormal Operation: Short-circuit the output according to L.7		—
	1.1 or 0.9 times rated voltage:	1,1Un: 279,84V	—
		Shut down	
	ta = ……:	45°C	—
	Test 3: Abnormal Operation: overload according to L.7		—
	1.1 or 0.9 times rated voltage:	0,9Un: Input: 81V, 0,35A, 18,1W; Output: 49V, 0,27A, 13,5W; 1,1Un: Input: 290,4V, 0,2A, 18,5W; Output: 48,7V, 0,3A, 14,6W;	—
	ta = ...:	45°C	—
	Test 4: Abnormal Operation: Double the number of LED modules or equivalent load.		—
	1.1 or 0.9 times rated voltage:	1,1Un: 279,84V	—
		Shut down	
	ta = ...:	45°C	—

Temperature (ºC) of Part	Cl. 15.2			Cl. 15.3				
	Test 1 (ºC)		Limit[3)]	Test 2 (ºC)	Test 3 (ºC)		Test 4 (ºC)	Limit[3)]
	116,6V	279,84V			99V	290,4V		
Input wire	63,4	56,1	90	--	65,5	56,8	--	85
VR1	79,4	71,2	85	--	--	--	--	--
CX1 body	73,4	71,8	100	--	--	--	--	--

Attachment 2: Temperature measurements, thermal tests								
Clause	Requirement + Test				Result - Remark			Verdict
C10	88,0	84,4	105	--	--	--	--	--
C1	66,9	79,5	105	--	--	--	--	--
L1 winding	93,5	74,1	120	--	98,8	75,7	--	175
L1 bobbin	95,7	75,9	Ref.	--	--	--	--	--
C2	70,5	90,1	105	--	--	--	--	--
PCB under T1	86,6	102,0	Ref.	--	--	--	--	--
PRI. winding of T1	94,1	102,0	120	--	97,0	105,0	--	175
SEC. winding of T1	99,0	110,0	120	--	101,0	114,0	--	175
Bobbin of T1	98,8	93,6	Ref.	--	104,0	96,6	--	Ref.
tc point on the top of T1	55,5	65,2	85	--	60,4	66,1	--	105
Enclosure inside on the top of T1	64,1	72,1	Ref.	--	--	--	--	--
Enclosure outside on the bottom of T1	59,0	65,0	Ref.	--	--	--	--	--
CY1	80,0	89,7	125	--	--	--	--	--
C8	70,3	104,3	105	--	--	--	--	--
L2 winding	77,7	97,1	120	--	78,1	100,0	--	175
Mounting surface	63,7	75,3	90	--	63,9	77,5	--	105
Output wire	68,0	66,9	90	--	70,3	68,6	--	85

Attachment 3: Tests according to IEC 60598-1:2014+A1, EN 60598-1:2015+A1			
Clause	Requirement + Test	Result - Remark	Verdict

4	**CONSTRUCTION**		**P**
4.13	**Mechanical strength**		**P**
4.13.1	Impact tests:		P
	- fragile parts; energy (Nm)..... :		N/A
	- other parts; energy (Nm) ..... :	0,5 Nm	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
4.13.2	Metal parts have adequate mechanical strength		N/A
4.13.3	Straight test finger		P

5	**EXTERNAL AND INTERNAL WIRING**		**P**
5.2	**Supply connection and external wiring**		**P**
5.2.1	Means of connection..... :	Supply cord	P
5.2.2	Type of cable ..... :	H03VV-F	P
	Nominal cross-sectional area (mm²)..... :	2x1,0mm^2	P
	Cables equal to IEC 60227 or IEC 60245		P
5.2.3	Type of attachment, X, Y or Z	Type Z	P
5.2.5	Type Z not connected to screws		P
5.2.6	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
5.2.7	Cable entries through rigid material have rounded edges		N/A
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
5.2.9	Locking of screwed bushings		N/A
5.2.10	Cord anchorage:		P
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P

Attachment 3: Tests according to IEC 60598-1:2014+A1, EN 60598-1:2015+A1			
Clause	Requirement + Test	Result - Remark	Verdict
	- no tying of cables into knots etc.		P
	- insulating material or lining		N/A
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
	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
5.2.10.2	Adequate cord anchorage for type Y and type Z attachment	Type Z	P
5.2.10.3	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) ..... :	60N	P
	- torque test: torque (Nm) ..... :	0,25Nm	P
	- displacement ≤ 2 mm	Max. 0,2mm	P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
5.2.11	External wiring passing into luminaire		N/A
5.2.12	Looping-in terminals		N/A
5.2.13	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		P
5.2.14	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
5.2.16	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard		N/A
5.2.17	No standardized interconnecting cables properly assembled		N/A

Attachment 3: Tests according to IEC 60598-1:2014+A1, EN 60598-1:2015+A1			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.18	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
5.3	**Internal wiring**		P
5.3.1	Internal wiring of suitable size and type		P
	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
	Green-yellow for earth only		N/A
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
5.3.1.2	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Cross-sectional area (mm²) ..... :		N/A
5.3.1.3	Double or reinforced insulation for class II		N/A
5.3.1.4	Conductors without insulation		N/A
5.3.1.5	SELV current-carrying parts		P
5.3.1.6	Insulation thickness other than PVC or rubber		N/A
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
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
5.3.4	Joints and junctions effectively insulated		N/A
5.3.5	Strain on internal wiring		N/A
5.3.6	Wire carriers		N/A

Attachment 3: Tests according to IEC 60598-1:2014+A1, EN 60598-1:2015+A1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.7	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		P
5.4	**Test to determine suitability of conductors having a reduced cross-sectional area**		N/A
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(see Annex 2)	N/A
	No damage to luminaire wiring after test		N/A

8	**PROTECTION AGAINST ELECTRIC SHOCK**		**P**
8.2.1	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		P
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		P
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		P
	Double-ended high pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
8.2.2	Portable luminaire adjusted in most unfavourable position		N/A
8.2.3.a	Class II luminaire:		N/A
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		N/A
8.2.3.b	BC lampholder of metal in class I luminaires shall be earthed		N/A

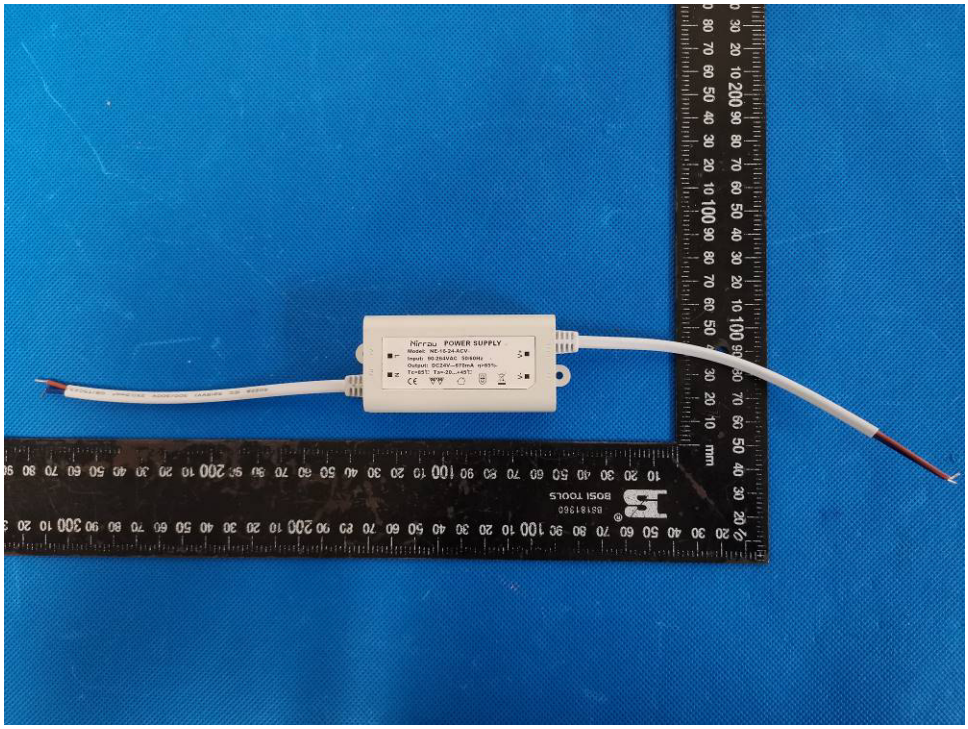
Attachment 3: Tests according to IEC 60598-1:2014+A1, EN 60598-1:2015+A1			
Clause	Requirement + Test	Result - Remark	Verdict
8.2.3.c	SELV circuits with exposed current carrying parts:		P
	Ordinary luminaire:		P
	- voltage under load (V) .....:	Max, 24Vdc for NE-16-24-ACV; Max, 48Vdc for NE-16-350-ACC	P
	- no-load voltage (V) .....:	Max. 48Vdc	P
	- touch current if applicable (mA) .....:		N/A
	One conductive part insulated if required		N/A
	Other than ordinary luminaire:		N/A
	- nominal voltage (V) .....:		N/A
	Class III luminaire only for connection to SELV		N/A
	Class III luminaire not provided with means for protective earthing		N/A
8.2.4	Portable luminaire have protection independent of supporting surface		N/A
8.2.5	Compliance with the standard test finger or relevant probe		P
8.2.6	Covers reliably secured		P
8.2.7	Luminaire other than below with capacitor > 0,5 µF not exceed 50 V 1 min after disconnection	For NE-16-24-ACV: Max. 4V; For NE-16-350-ACC: Max. 2V	P
	Portable luminaire with capacitor > 0,1 µF (0.25) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 µF (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N/A

9	**RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE**		**P**
-	If IP ≥ IP 20 the order of the test specified in clause 1.12		P
9.2	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP ..... :	IP42	—
	- mounting position during test..... :	According to the instruction	—
	- fixing screws tightened; torque (Nm)..... :	Fixed enclosure: 0,33Nm	—
	- tests according to clauses ..... :	cl. 9.2.0 and cl. 9.2.3.2	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		N/A

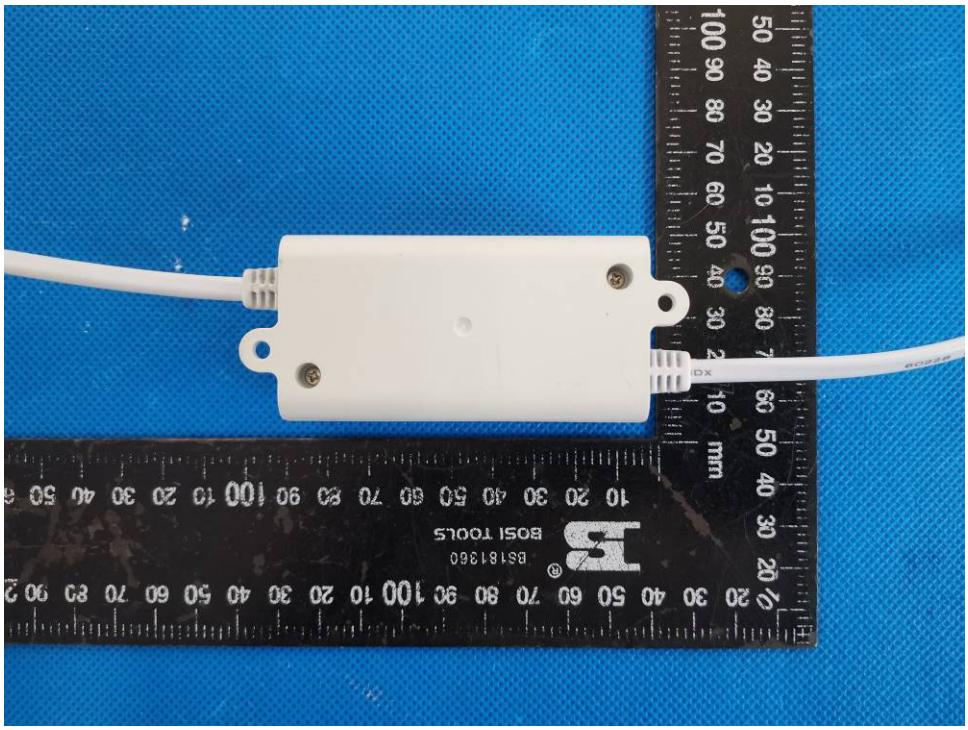
Attachment 3: Tests according to IEC 60598-1:2014+A1, EN 60598-1:2015+A1			
Clause	Requirement + Test	Result - Remark	Verdict
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		P
	c.1) For luminaires without drain holes – no water entry		P
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight or pressure watertight luminaire		N/A
	e) no contact with live parts (IP 2X)		N/A
	e) no entry into enclosure (IP 3X and IP 4X)	IP 42	P
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)	No such parts	N/A
	f) no trace of water on part of lamp requiring protection from splashing water		P
	g) no damage of protective shield or glass envelope		P
1.13 (9.3)	Humidity test 48 h		P

Attachment 4: EMF Assessment according to EN 62493:2015			
Clause	Requirement + Test	Result - Remark	Verdict

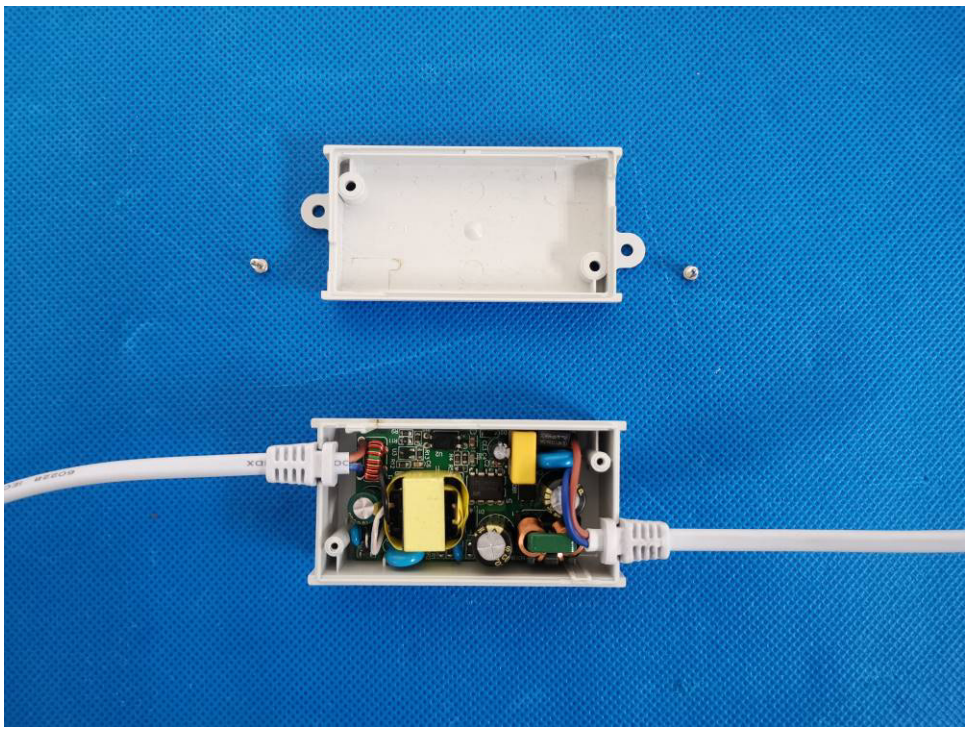
Procedure	Products are applications with	If no	If yes
a)	Non-electronic control gear?	☒ see Procedure b)	☐ Pass
b)	Incandescent-lamp technology or halogen?	☒ see Procedure c)	☐ see Procedure h)
c)	LED light-source technology?	☐ see Procedure d)	☒ see Procedure h)
d)	OLED light-source technology?	☐ see Procedure e)	☐ see Procedure h)
e)	High-pressure discharge lamp technology?	☐ see Procedure f)	☐ see Procedure h)
f)	Low-pressure discharge lamp technologies with an exposure distance larger than or equal to 50cm (Distance for Hand lights, table lightings and Self-ballasted lamps is less than 50cm)	☐ see Procedure g)	☐ see Procedure h)
g)	Independent auxiliary?	☐ see Procedure i)	☐ see Procedure h)
h)	Non-wireless technology (exclude infra-red)?	☐ see Procedure i)	☒ Pass
i)	Additional test is performed and result is Pass Test Report with No.: ……..	☐ see Procedure b)	☐ Pass



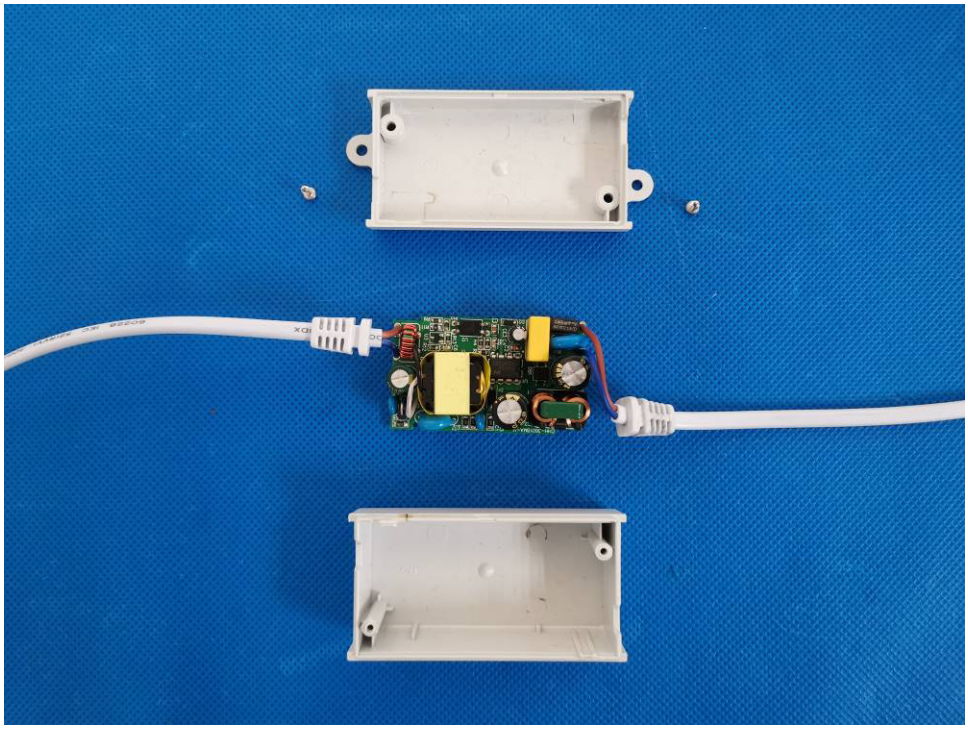
Picture 1. Overview of model NE-16-24-ACV
(This marking only for indicating location, product information see copy of marking plate for details)



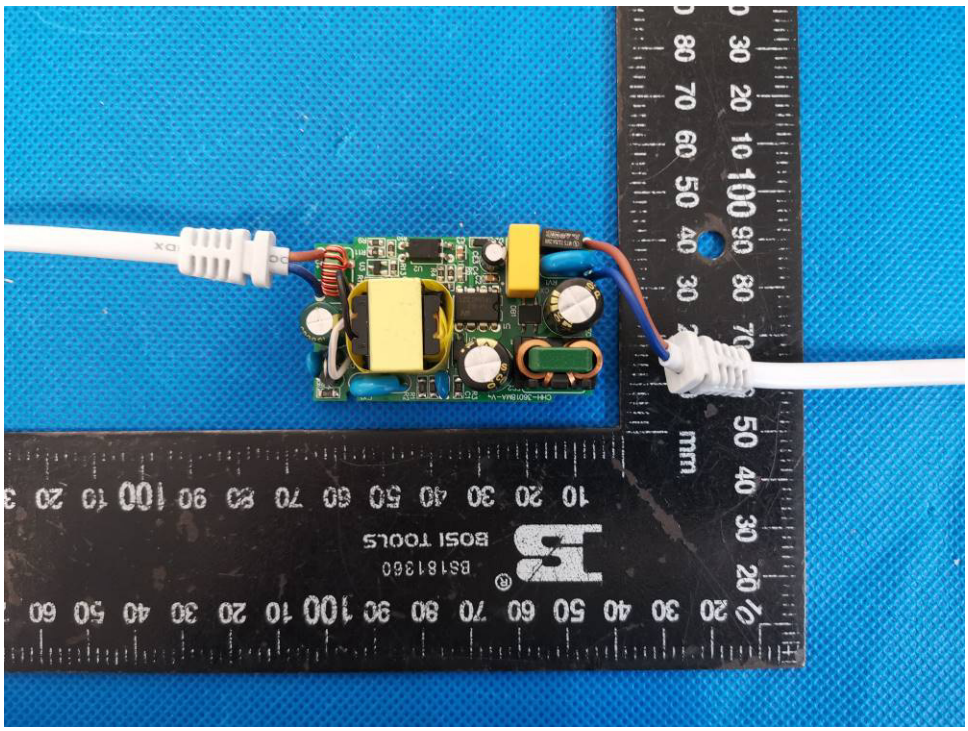
Picture 2. Bottom view of model NE-16-24-ACV



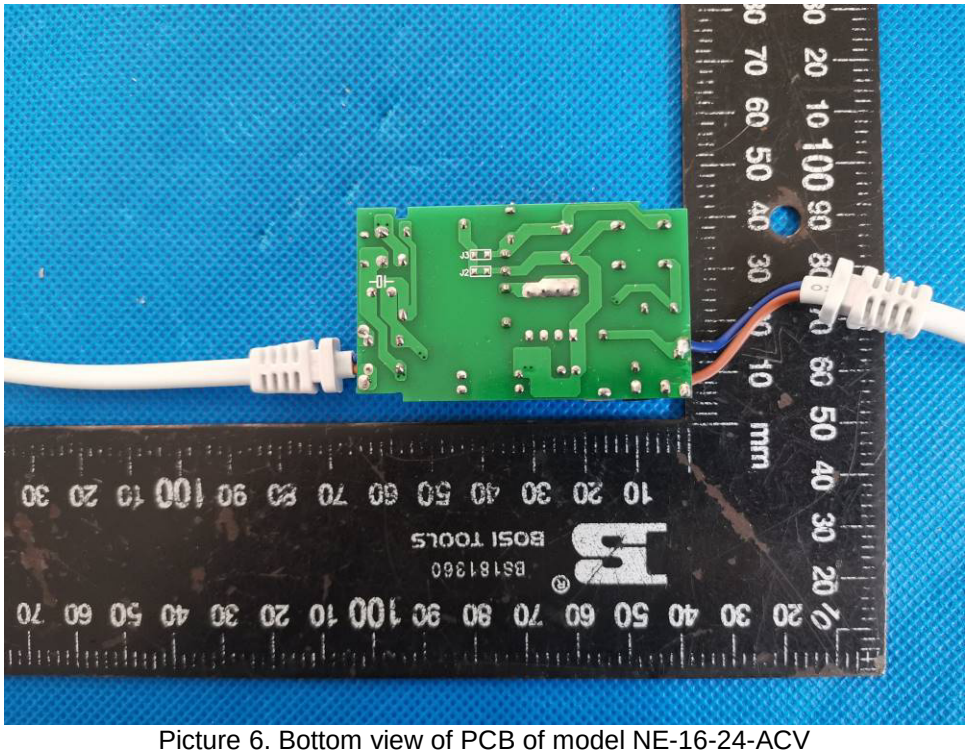
Picture 3. Internal view of model NE-16-24-ACV



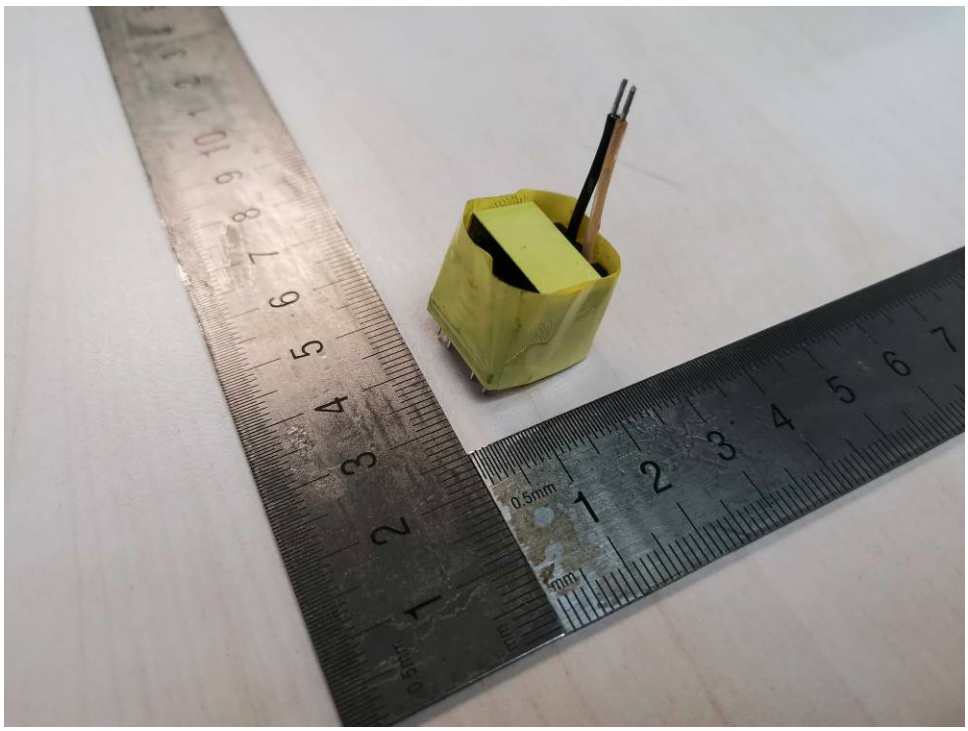
Picture 4. Internal view of model NE-16-24-ACV



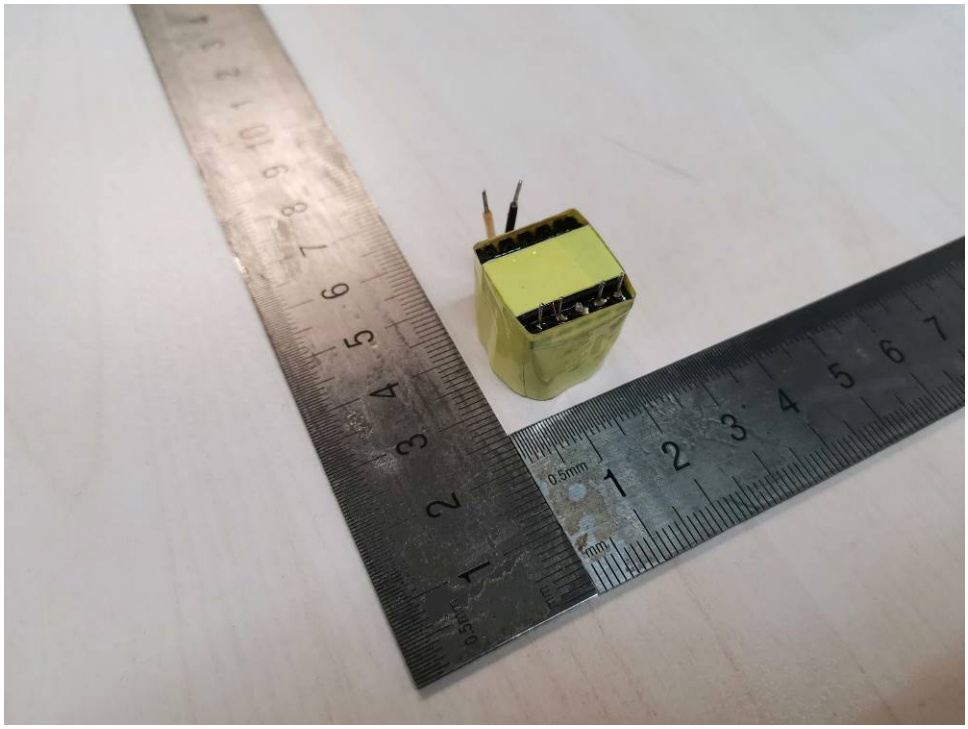
Picture 5. Top view of PCB of model NE-16-24-ACV



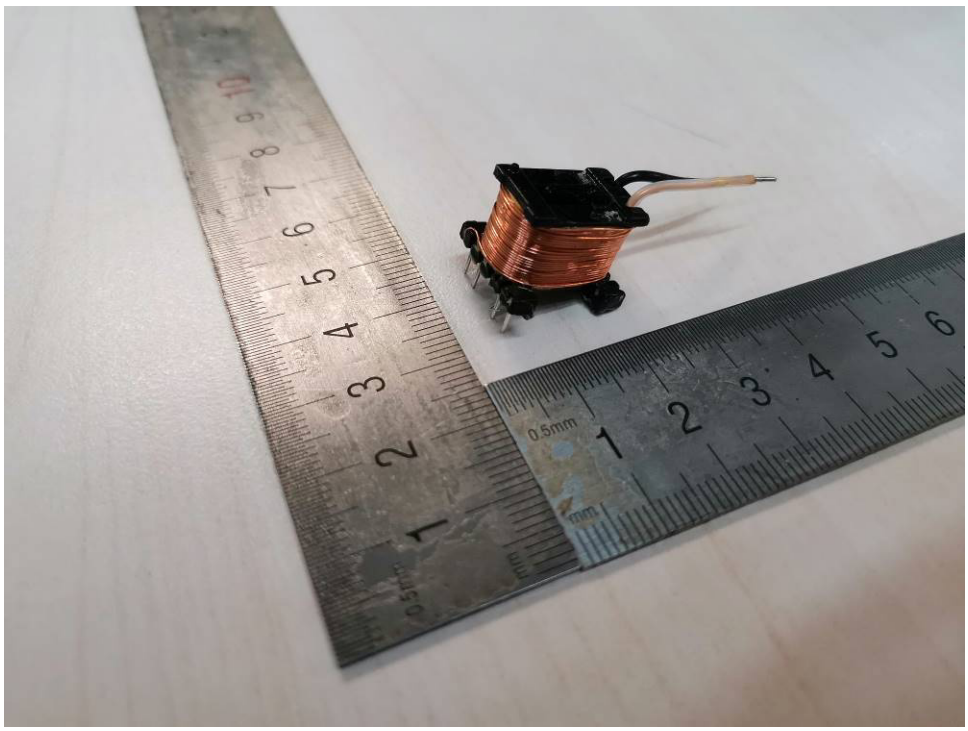
Picture 6. Bottom view of PCB of model NE-16-24-ACV



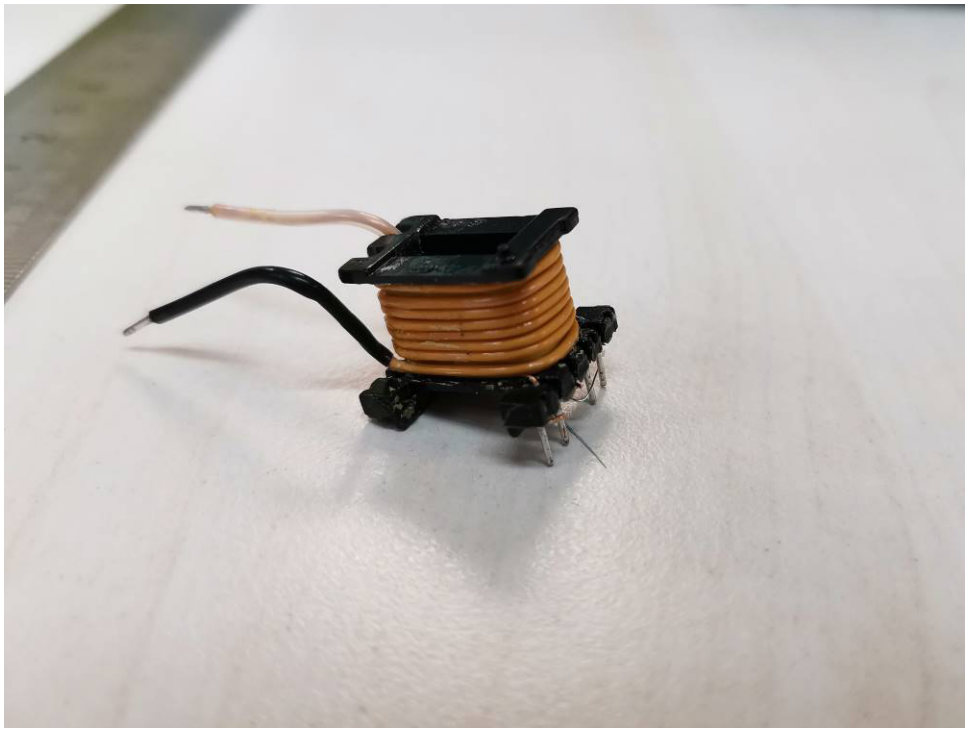
Picture 7. Overview of transformer for NE-16-24-ACV



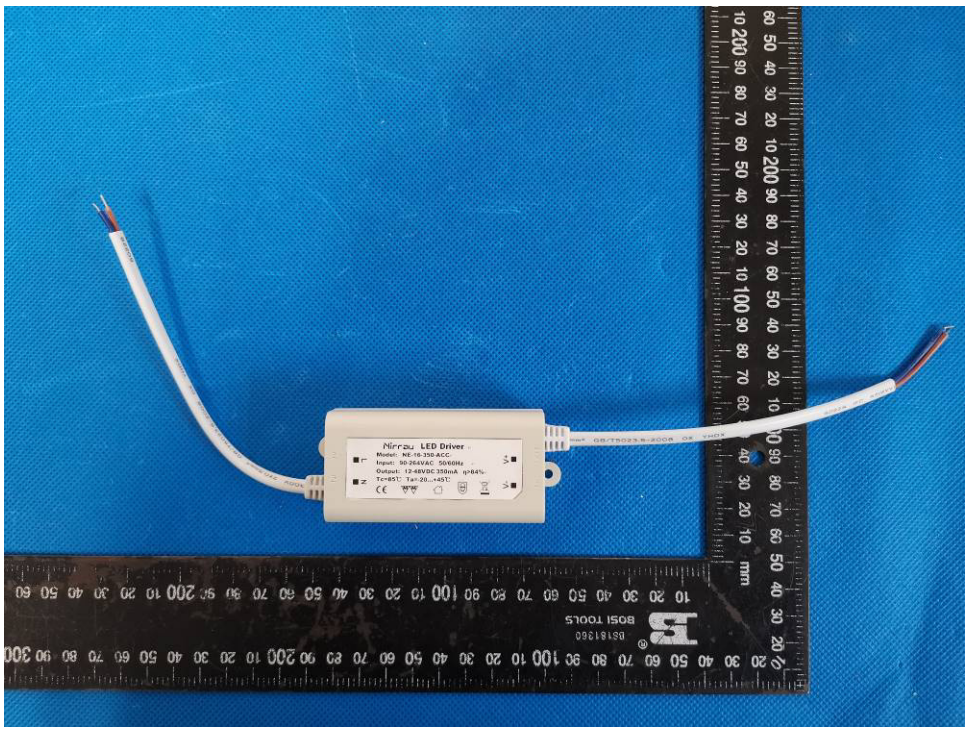
Picture 8. Bottom view of transformer for NE-16-24-ACV



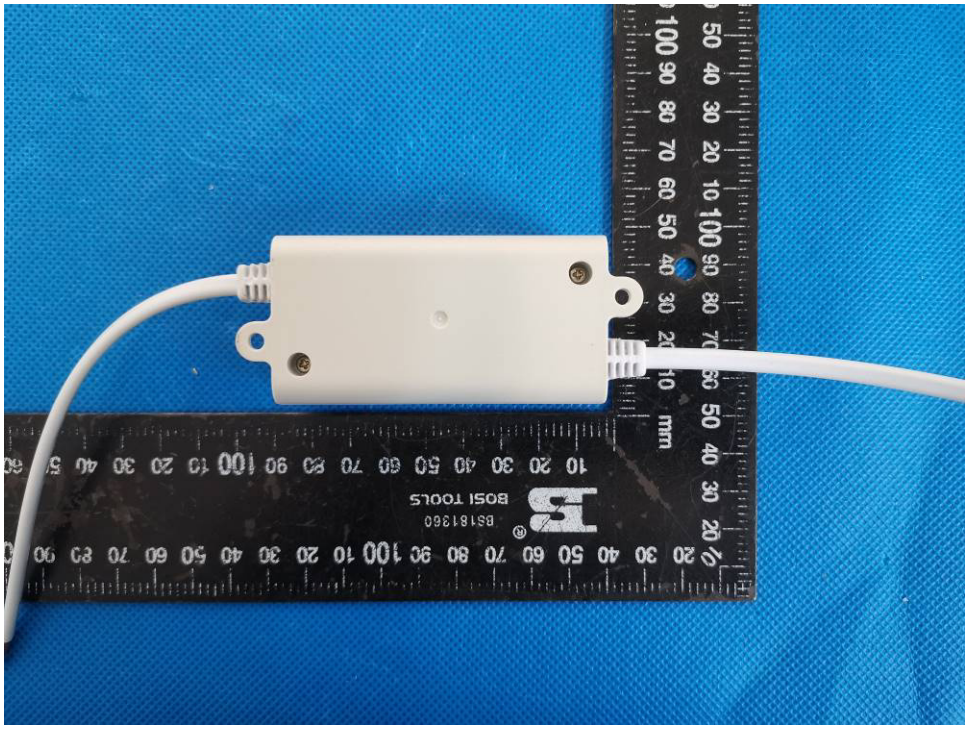
Picture 9. Primary winding of transformer for NE-16-24-ACV



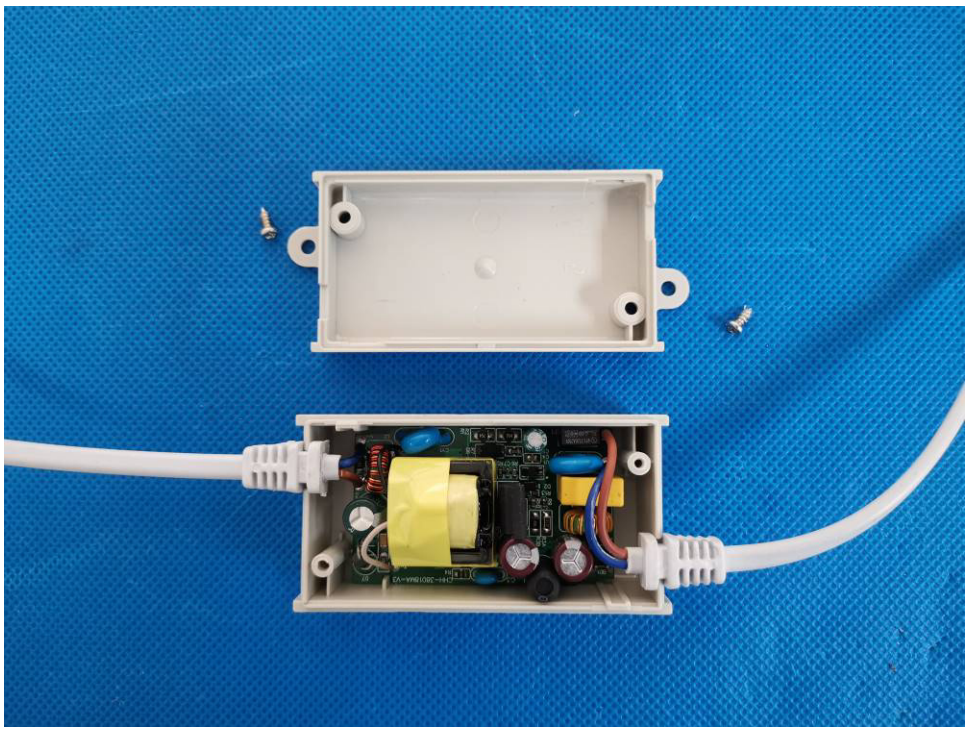
Picture 10. Secondary winding of transformer for NE-16-24-ACV



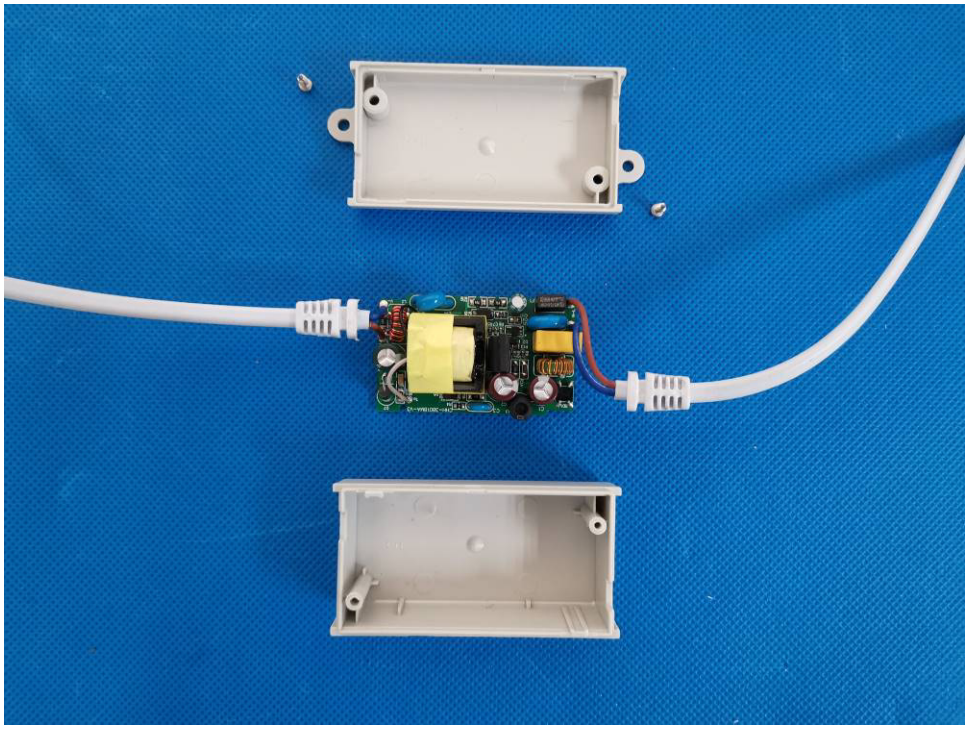
Picture 11. Overview of model NE-16-350-ACC, also for other series 2 models
(This marking only for indicating location, product information see copy of marking plate for details)



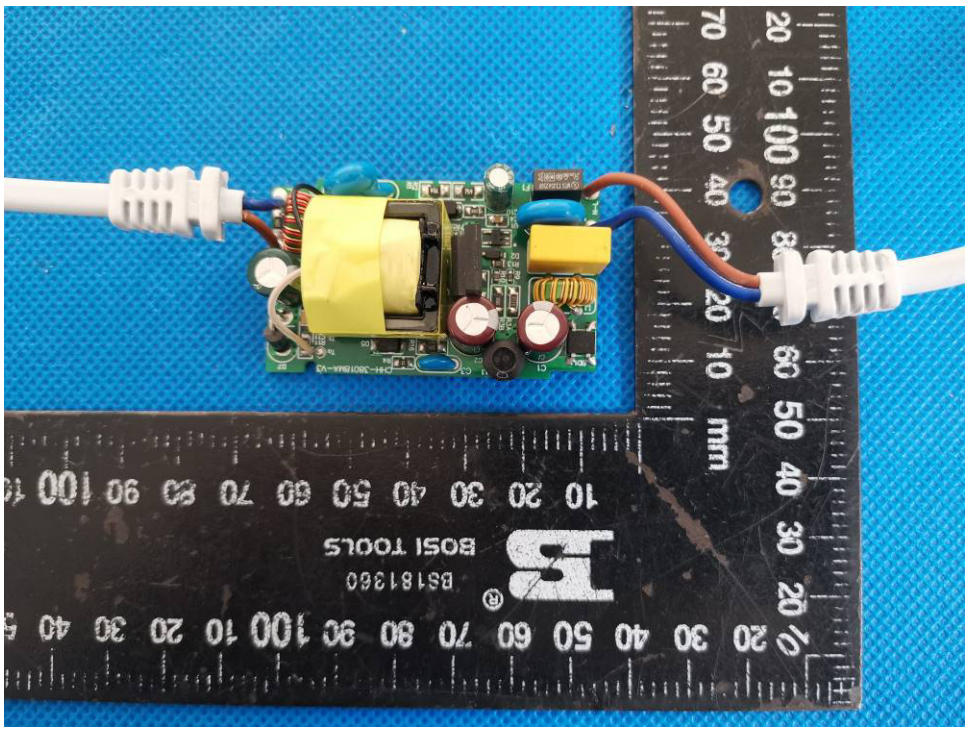
Picture 12. Bottom view of model NE-16-350-ACC, also for other series 2 models



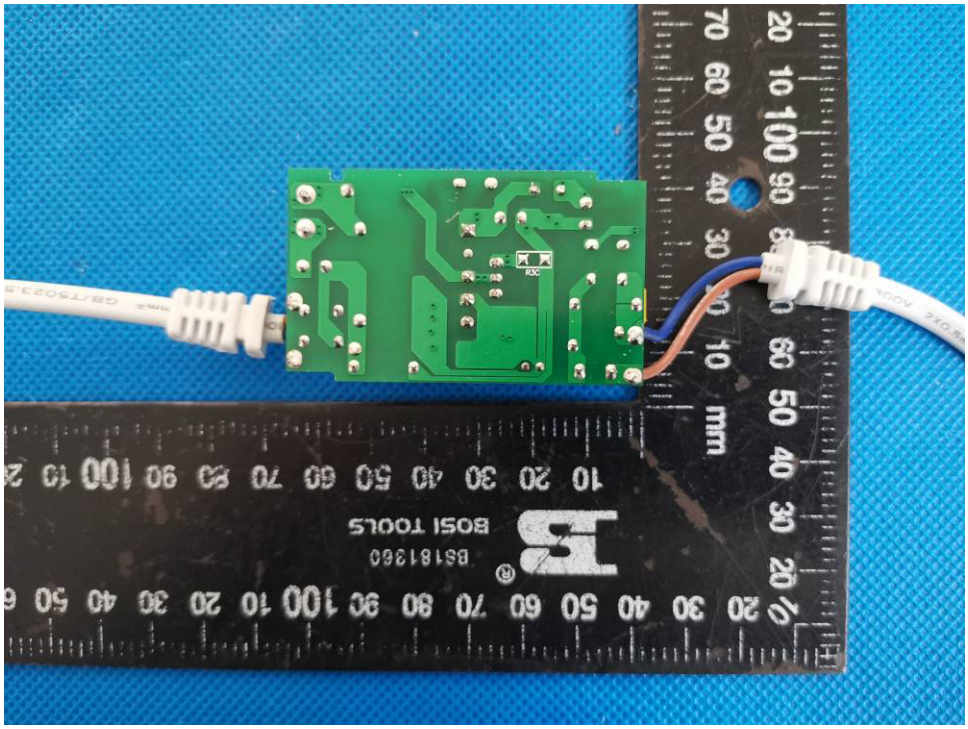
Picture 13. Internal view of model NE-16-350-ACC



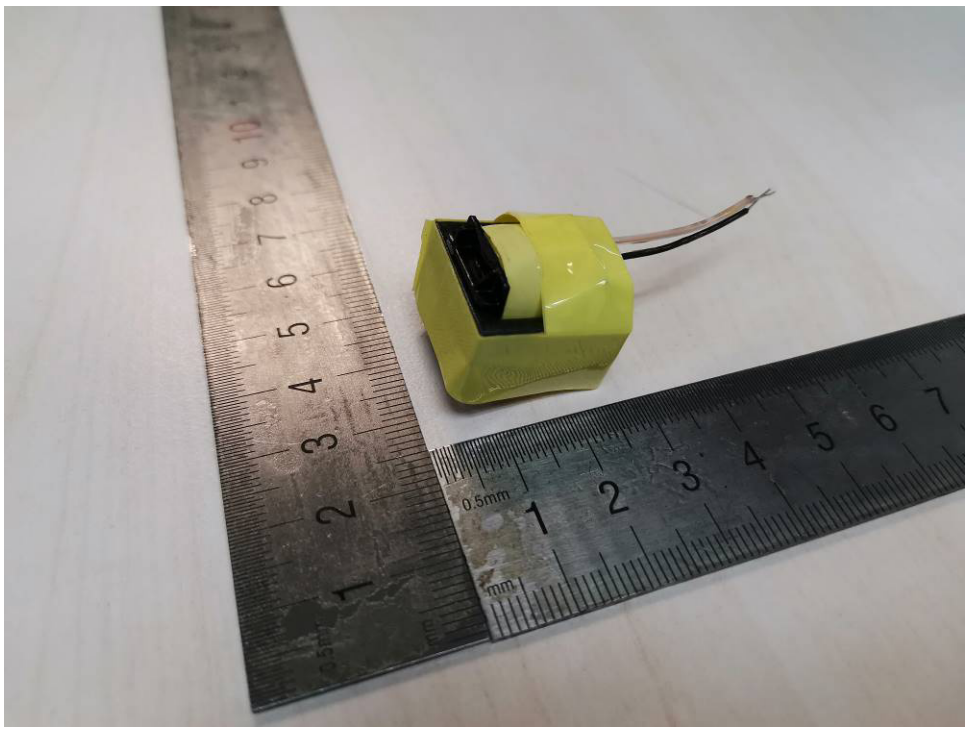
Picture 14. Internal view of model NE-16-350-ACC



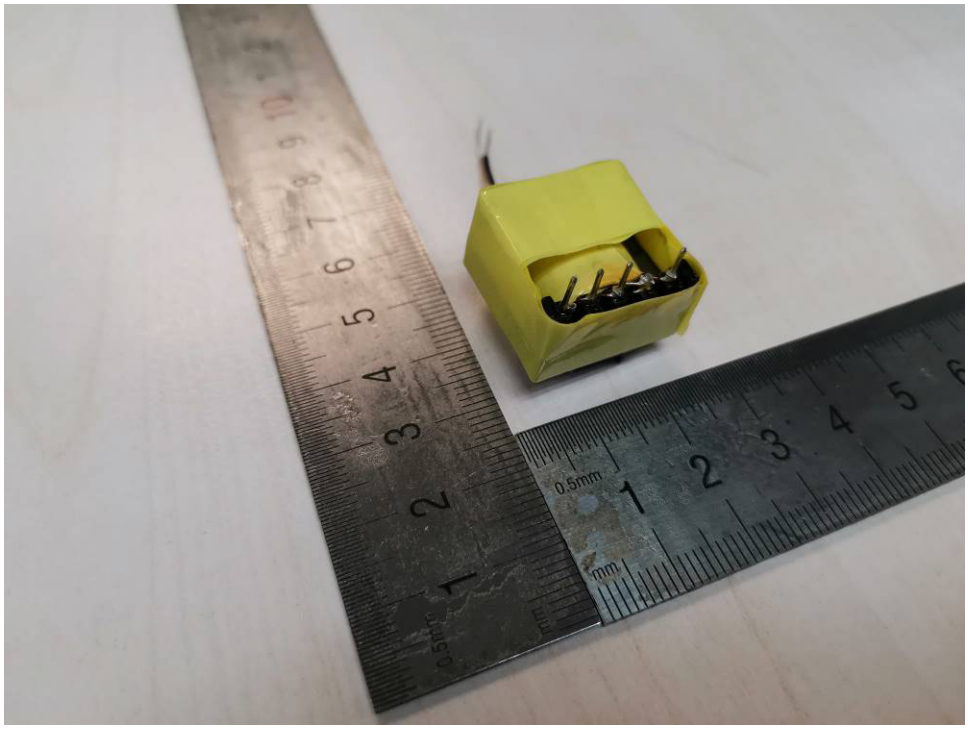
Picture 15. Top view of PCB of model NE-16-350-ACC



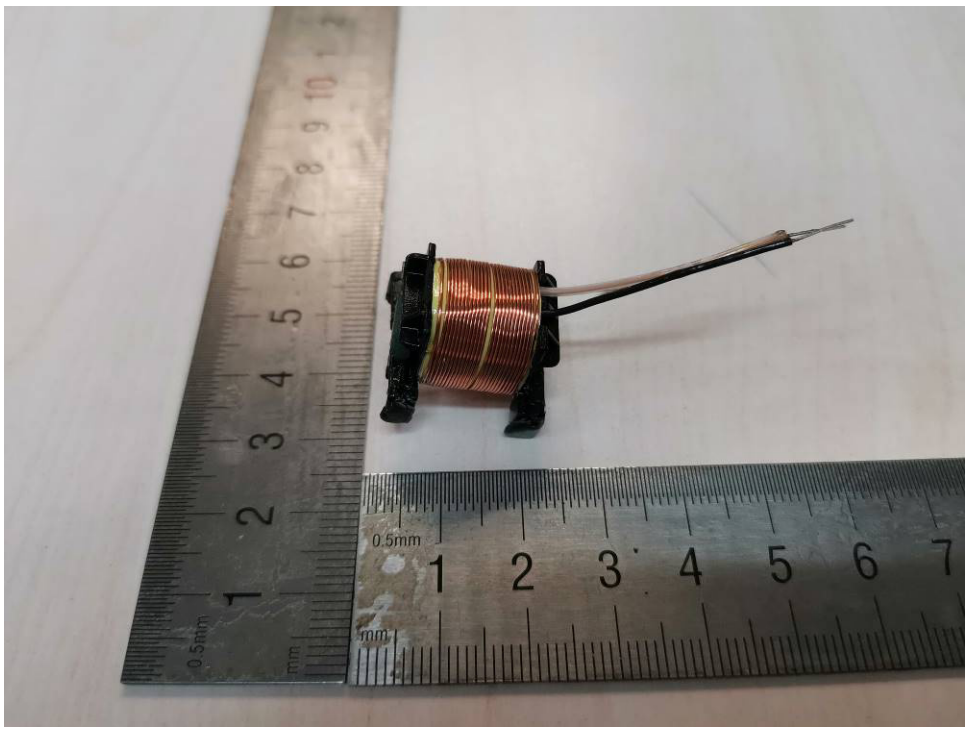
Picture 16. Bottom view of PCB of model NE-16-350-ACC



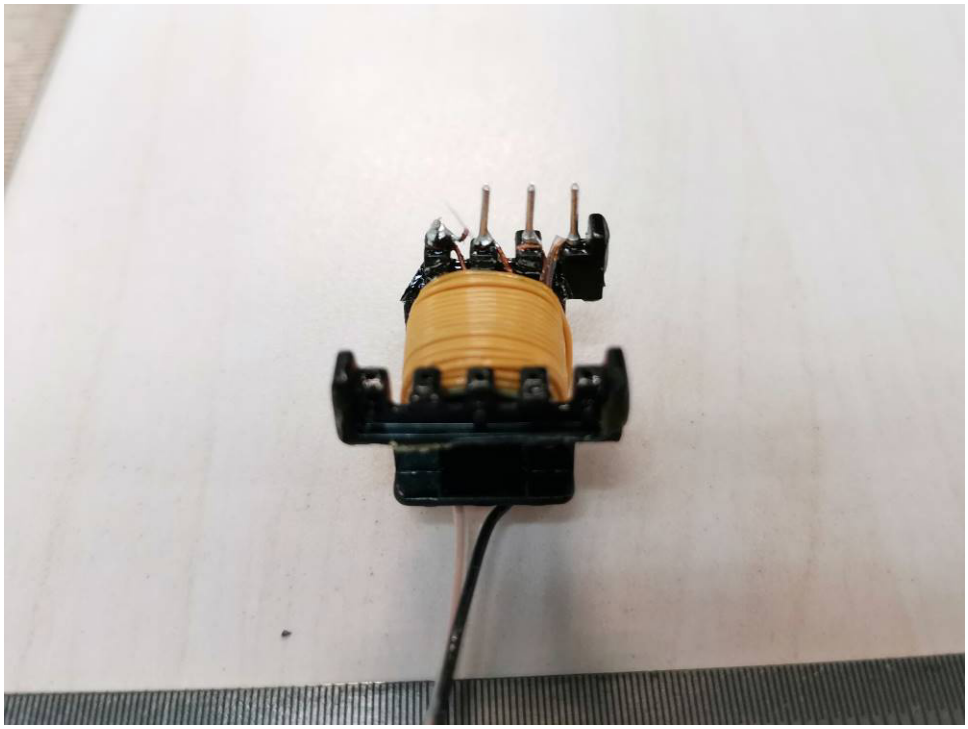
Picture 17. Overview of transformer for NE-16-350-ACC



Picture 18. Bottom view of transformer for NE-16-350-ACC



Picture 19. Primary winding of transformer for NE-16-350-ACC



Picture 20. Secondary winding of transformer for NE-16-350-ACC