TEST REPORT
IEC 60598-2-3
Luminaires
Part 2: Particular requirements
Section 3: Luminaires for road and street lighting

Report Number. ..... :	377848
Date of issue ..... :	2020-02-28
Total number of pages ..... :	78 (included attachments)
Name of Testing Laboratory preparing the Report ..... :	Nemko S.p.A.
Applicant's name ..... :	**Relco Srl**
Address ..... :	Via delle Azalee 6/A - 20090 Buccinasco (MI) - Italy
Test specification:	
Standard ..... :	IEC 60598-2-3:2002, AMD1:2011 used in conjunction with IEC 60598-1:2014, AMD1:2017
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC60598_2_3L
Test Report Form(s) Originator .... :	Intertek Semko AB
Master TRF ..... :	Dated 2018-03-09

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.
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Test item description..... :	LED Streetlight
Trade Mark..... :	Relco (Since 1967 Relco Components & Lighting)
Manufacturer ..... :	same as Applicant
Model/Type reference..... :	LED MAXISEMPIONE Cod. 36251; LED MAXISEMPIONE Cod. 36251/3K; LED MAXISEMPIONE Cod. 36250; LED MAXISEMPIONE Cod. 36250/3K (see page 9 for variants)
Ratings..... :	210 or 160 W, 220-240 V~, 50/60 Hz, Cl.II, IP66, IK09, 4000 K, t_a 40 °C, distance from lighted objects 1 m (see page 9 for variants)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

☒	**CB Testing Laboratory:**	Nemko S.p.A.	
Testing location/ address ..... :		Via del Carroccio, 4 – 20853 Biassono (MB) – Italy	
Tested by (name, function, signature)..... :		Cristian Simone (Project Handler)	Simone Cristian
Approved by (name, function, signature) .. :		Tore Ledaal (Verifier)	Tore Ledaal
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address ..... :			
Tested by (name, function, signature)..... :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address ..... :			
Tested by (name + signature)..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address ..... :			
Tested by (name, function, signature)..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
Supervised by (name, function, signature) :			

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

ATTACHMENT 1: European Group Differences and National Differences (1 pages)
ATTACHMENT 2: Additional tests for integral LED module according to EN 62031:2008+A1:2013+A2:2015 (12 pages)
ATTACHMENT 3: Photo documentation (8 pages)
ATTACHMENT 4: Best Measurement capability (3 pages)

Summary of testing:

Photo-biological tests according IEC/EN 62471 were performed and the luminaire has been classified as Exempt Group. See test report 377848TRFHO for details.
Blue light hazard tests according to IEC TR 62778 were performed and the luminaire were classified as Risk Group 1 unlimited, see test report 377848-4TRFPHO.

Mechanical impact test according to EN 62262 were performed and the luminaire fulfilled the requirement of rating IK09, see test report 387146-3TRFEnvEx.

EMC test report test according to EN 55015 (2013) + A1 (2015) – EN 61547 (2009) + EN 61000-3-2 (2014) – EN 61000-3-3 (2013) were performed and the luminaire fulfilled the requirement, see test report 377848TRFEMC

Tests performed (name of test and test clause):

All relevant tests performed on model:

LED MAXISEMPIONE Cod 36251

Partially tests performed on models:

LED MAXISEMPIONE Cod. 36250

LED SEMPIONE Cod. 36200

LED MINISEMPIONE Cod. 36001

The following Nemko technical procedures were also applied during testing:

- WML0177: General routines for using instruments at Nemko.
- WML1002: Measurement Uncertainty – Policy and Statement.

Equipment used for testing is recorded and saved into the company archive as file 377848INS. It will be made available on request.

Unless different values are declared in the test case, following ambient conditions apply for the tests:

- Ambient temperature 18-30 °C
- Relative Humidity: 30-70 %
- Atmospheric Pressure: 860-1060 hPa

Statement of the measurement uncertainty:

See attachment 4 for best measurement capability.

Testing location:

Nemko S.p.A.
Via del Carroccio, 4 - 20853 Biassono (MB) – Italy

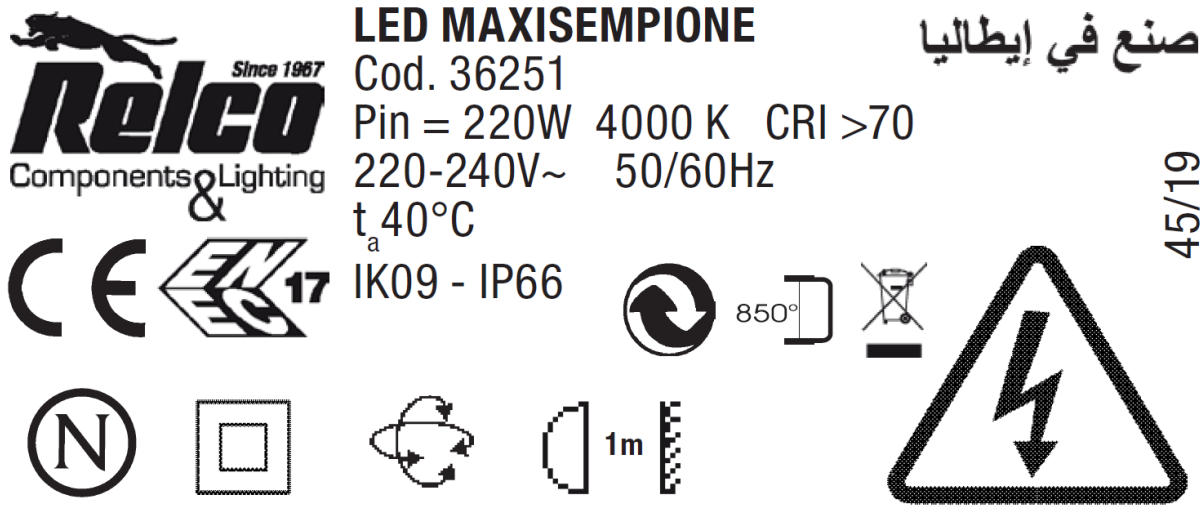
Summary of compliance with National Differences:

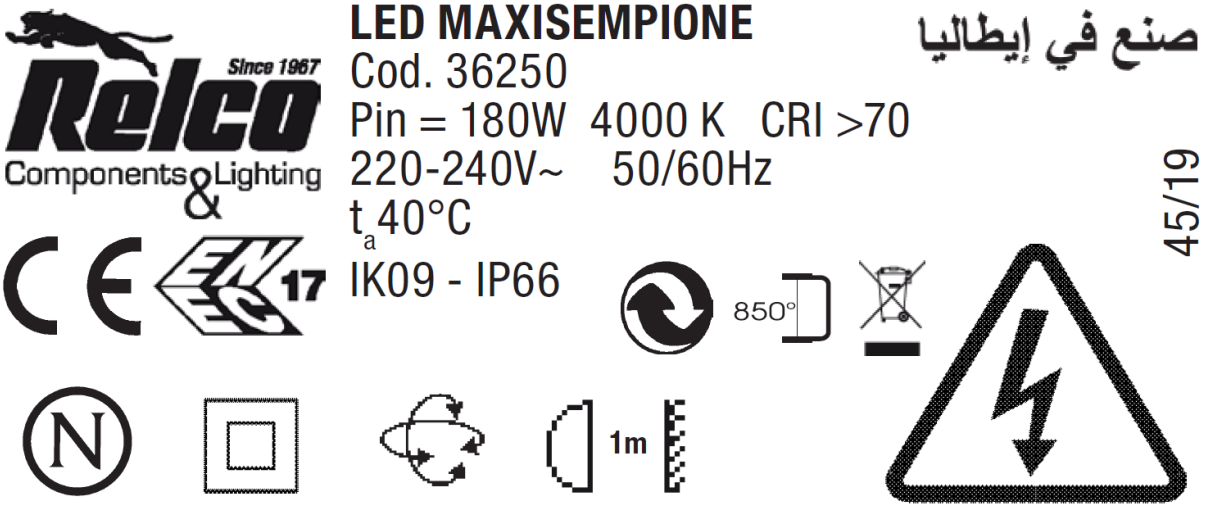
List of countries addressed:
All CENELEC member countries.

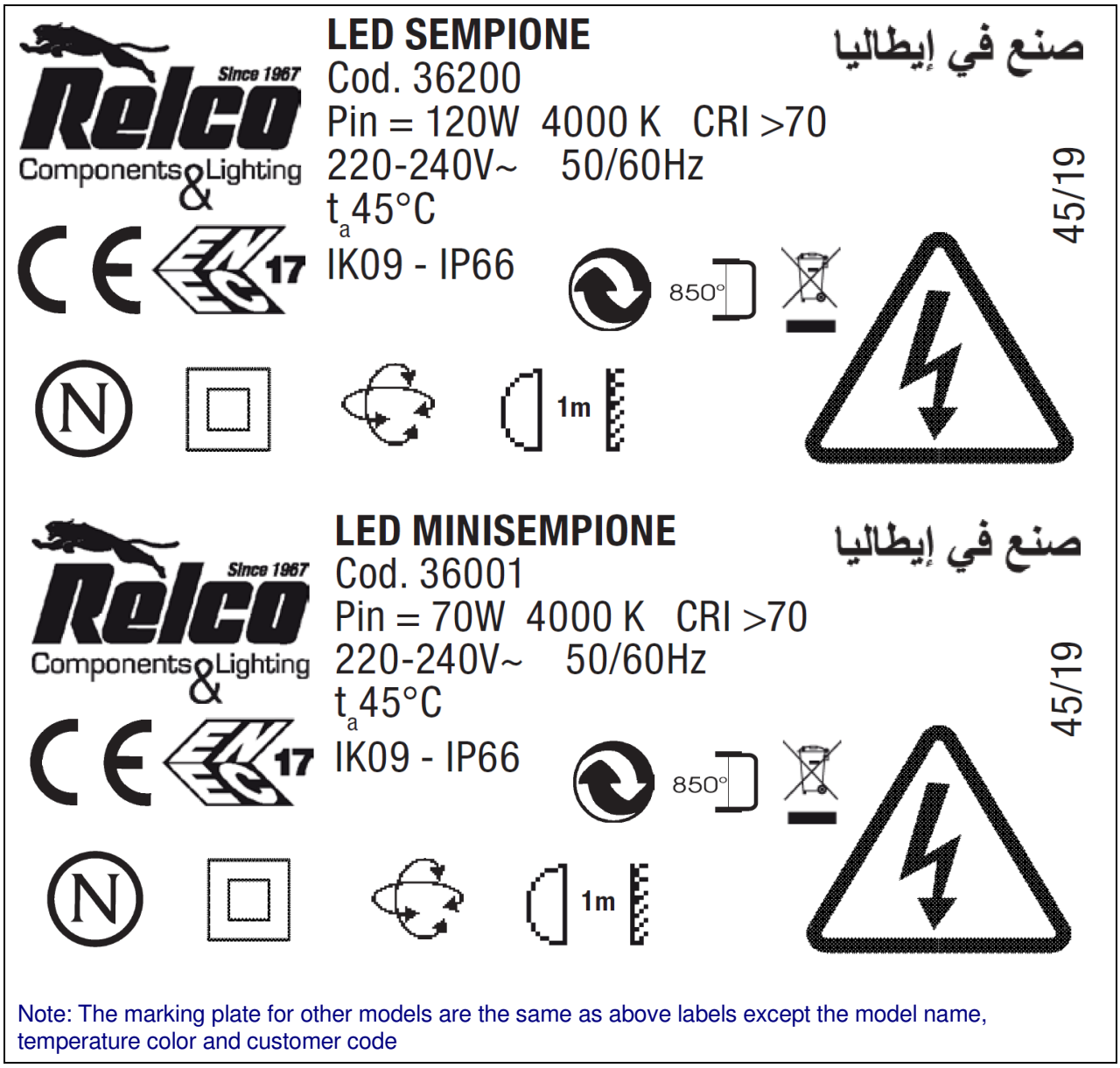
☒ The product fulfils the requirements of EN 60598-2-3: 2003 + A1:2011 used in conjunction with EN 60598-1:2015 + A1:2018

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.







Note: The marking plate for other models are the same as above labels except the model name, temperature color and customer code

Calibration	All instruments used in the tests given in this test report are calibrated and traceable to national or international standards. Further information about traceability will be given on request.
Measurement uncertainty	The measurement uncertainty was calculated for each test and quantity listed in this test report, according to IEC Guide 115 and other specific test standard and is documented in Nemko Spa working manual WML1002.
Assessment of conformity	The assessment of conformity for each test performed on the equipment is performed not taking into account the measurement uncertainty. The two following possible verdicts are stated in the report: P (Pass) - The measured values of the equipment respect the specification limit at the points tested. The specific risk of false accept is up to 50% when the measured result is close to the limit. F (Fail) - One or more measured values of the equipment do not respect the specification limit at the points tested. The specific risk of false reject is up to 50% when the measured result is close to the limit.

Test item particulars..... :	LED streetlight
Classification of installation and use..... :	Fixed on a mast arm or post top for normal outdoors use
Supply Connection ..... :	Supply cord (type Y attachment) incorporating connector
..... :	
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 ..... :	2019-10-01
Date (s) of performance of tests..... :	2019-10-01-2019-10-30

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.
The phase of sampling/collection is carried out by manufacturer
Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Clause numbers between brackets refer to clauses in IEC 60598-1

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) ..... :	Nextronics S.A.R.L. Lot n. 6 Z.I. El Agba, 2087 Tunis, Tunisia

General product information:

The LED streetlight under test consist of:

- Light source: integral LED matrix;
- Controlgear: built-in type with double/reinforced insulation input to output, constant current
- body: steel structure incorporating aluminium heatsink;
- Glazing: tempered glass.
- Mast arm or post top

List of models and their differences:

Model	Product code	Rated Wattage (W)	Control gears	Type of LED	Ambient temperature (°C)	Output current setting (mA)
LED MAXISEMPIONE	36251	210	2 x Xitanium 150W 0,70A 1-10V 230V S240 sXt or SIRIO 150/300-1050 BILEVEL BI 220-240 Vac 50-60 Hz	LH508A	t_a 40	900
LED MAXISEMPIONE	36251/3K	210	2 x Xitanium 150W 0,70A 1-10V 230V S240 sXt or SIRIO 150/300-1050 BILEVEL BI 220-240 Vac 50-60 Hz	LH508A	t_a 40	900
LED MAXISEMPIONE	36250	160	Xitanium 150W 0.2-0,70A 1-10V 230V S240 sXt or TCI MILANO IN LED 165 W/350-1050 4P	LM301 H	t_a 40	660
LED MAXISEMPIONE	36250/3K	160	Xitanium 150W 0.2-0,70A 1-10V 230V S240 sXt or TCI MILANO IN LED 165 W/350-1050 4P	LM301 H	t_a 40	660
Variants:						
LED SEMPIONE	36200	120	TCI MILANO 1 PN 110 W Cod. 145003 or SIRIO 150/300-1050	LH508A	t_a 45	800

			BILEVEL BI 220-240 Vac 50-60 Hz			
LED SEMPIONE	36200/3K	120	TCI MILANO 1 PN 110 W Cod. 145003 or SIRIO 150/300-1050 BILEVEL BI 220-240 Vac 50-60 Hz	LH508A	t_a 45	800
LED SEMPIONE	36100	95	TCI MILANO 1 PN 110 W Cod. 145003 or SIRIO 150/300-1050 BILEVEL BI 220-240 Vac 50-60 Hz	LM301 H	t_a 45	650
LED SEMPIONE	36100/3K	95	TCI MILANO 1 PN 110 W Cod. 145003 or SIRIO 150/300-1050 BILEVEL BI 220-240 Vac 50-60 Hz	LM301 H	t_a 45	650
LED MINISEMPIONE	36001	75	TCI MILANO 1 PN 75 W Cod. 145002 or Xitanium 75 W 1-10 V 230 V C165 Sxt	LM301 H	t_a 45	700
LED MINISEMPIONE	36001/3K	75	TCI MILANO 1 PN 75 W Cod. 145002 or Xitanium 75 W 1-10 V 230 V C165 Sxt	LM301 H	t_a 45	700
LED MINISEMPIONE	36000	50	TCI MILANO 1 PN 75 W Cod. 145002 or Xitanium 75 W 1-10 V 230 V C165 Sxt	LM301 H	t_a 45	500
LED MINISEMPIONE	36000/3K	50	TCI MILANO 1 PN 75 W Cod. 145002 or Xitanium 75 W 1-10 V 230 V C165 Sxt	LM301 H	t_a 45	500
LED MINISEMPIONE	36001/60	60	TCI MILANO 1 PN 75 W Cod. 145002	LM301 H	t_a 45	630

			or Xitanium 75 W 1-10 V 230 V C165 Sxt			
LED MINISEMPIONE	36000/40	40	TCI MILANO 1 PN 75 W Cod. 145002 or Xitanium 75 W 1-10 V 230 V C165 Sxt	LM301 H	t_a 45	410
LED MINISEMPIONE	36000/30	30	TCI MILANO 1 PN 75 W Cod. 145002 or Xitanium 75 W 1-10 V 230 V C165 Sxt	LM301 H	t_a 45	325
LED MINISEMPIONE	36000/20	20	TCI MILANO 1 PN 75 W Cod. 145002 or Xitanium 75 W 1-10 V 230 V C165 Sxt	LM301 H	t_a 45	220

S/n of models tested:

LED MAXISEMPIONE Cod 36251: 1/8 Assigned by Nemko Spa
LED MAXISEMPIONE Cod. 36250: 3/8 Assigned by Nemko Spa
LED SEMPIONE Cod. 36200: 7/8 Assigned by Nemko Spa
LED MINISEMPIONE Cod. 36001: 4/8 Assigned by Nemko Spa

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

3.2 (0)	**GENERAL TEST REQUIREMENTS**		P
3.2 (0.3)	More sections applicable..... :	Yes ☒ No ☐ Section/s:	—
3.2 (0.5)	Components	(see Annex 1)	—
3.2 (0.7)	**Information for luminaire design in light sources standards**		—
3.2 (0.7.2)	Light source safety standard ..... :	IEC 62031	—
	Luminaire design in the light source safety standard		P

3.4 (2)	**CLASSIFICATION OF LUMINAIRES**		P
3.4 (2.2)	Type of protection .....:	Class II	P
3.4 (2.3)	Degree of protection .....:	IP66	—
3.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces.....:	Yes ☒ No ☐	—
3.4 (2.5)	Luminaire for normal use .....:	Yes ☒ No ☐	—
	Luminaire for rough service .....:	Yes ☐ No ☒	—
3.4 (-)	Modes of installation of road or street lighting		—
	a) on a pipe	Yes ☐ No ☒	—
	b) on a mast arm	Yes ☒ No ☐	—
	c) on a post top	Yes ☒ No ☐	—
	d) on span or suspension wires	Yes ☐ No ☒	—
	e) on a wall	Yes ☐ No ☒	—

3.5 (3)	**MARKING**		P
3.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
3.5 (3.3)	Additional information	Instruction manual	P
	Language of instructions	Italian and English versions checked	P
3.5 (3.3.1)	Combination luminaires		N/A
3.5 (3.3.2)	Nominal frequency in Hz	50/60 Hz	P
3.5 (3.3.3)	Operating temperature	t_a 40 °C (for all models MAXISEMPIONE) t_a 45 °C (for all models SEMPIONE and MINISEMPIONE)	P
3.5 (3.3.5)	Wiring diagram		N/A

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.5 (3.3.6)	Special conditions	In instruction manual.	P
3.5 (3.3.7)	Metal halide lamp luminaire – warning		N/A
3.5 (3.3.8)	Limitation for semi-luminaires		N/A
3.5 (3.3.9)	Power factor and supply current		N/A
3.5 (3.3.10)	Suitability for use indoors		P
3.5 (3.3.11)	Luminaires with remote control		N/A
3.5 (3.3.12)	Clip-mounted luminaire – warning		N/A
3.5 (3.3.13)	Specifications of protective shields		N/A
3.5 (3.3.14)	Symbol for nature of supply	~ IEC 60417-5032 symbol marked on label.	P
3.5 (3.3.15)	Rated current of socket outlet		N/A
3.5 (3.3.16)	Rough service luminaire		N/A
3.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		P
3.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
3.5 (3.3.19)	Protective conductor current in instruction if applicable	Class II	N/A
3.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
3.5 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided	Non- user replaceable	P
3.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
3.5 (3.3.23)	Luminaire without controlgear provided with necessary information for selection of appropriate component		N/A
3.5 (3.3.24)	If not supplied with terminal block, information on the packaging		N/A
3.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
3.5 (-)	Additional information in instruction leaflet		P
	a) Design attitude	Post top or on a mast arm	P
	b) Weight	7 kg	P
	c) Overall dimensions	676 mm x 347 mm x 112 mm	P
	d) Maximum projected area if applicable	0.37 m^2	P
	e) Cross-sectional area of wires if applicable		N/A

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	f) Suitability for indoors use		N/A
	g) Dimensions of the compartment		N/A
	h) Torque setting to be applied to bolts or screws	In instruction manual for details	P
	i) Maximum mounting height	Up to 15 m	P
3.6 (4)	**CONSTRUCTION**		P
3.6 (4.2)	Components replaceable without difficulty	Replacement by manufacturer or hid service agent only	P
3.6 (4.3)	Wireways smooth and free from sharp edges		P
3.6 (4.4)	**Lampholders**		N/A
3.6 (4.4.1)	Integral lampholder		N/A
3.6 (4.4.2)	Wiring connection		N/A
3.6 (4.4.3)	Lampholder for end-to-end mounting		N/A
3.6 (4.4.4)	Positioning		N/A
	- pressure test (N) .....:		—
	After test the lampholder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N/A
	- bending test (N) .....:		—
	After test the lampholder have not moved from its position and show no permanent deformation		N/A
3.6 (4.4.5)	Peak pulse voltage		N/A
3.6 (4.4.6)	Centre contact		N/A
3.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
3.6 (4.4.8)	Lamp connectors		N/A
3.6 (4.4.9)	Caps and bases correctly used		N/A
3.6 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
3.6 (4.5)	**Starter holders**		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
3.6 (4.6)	**Terminal blocks**		N/A
	Tails		N/A
	Unsecured blocks		N/A
3.6 (4.7)	**Terminals and supply connections**		N/A

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.7.1)	Contact to metal parts		N/A
3.6 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		N/A
3.6 (4.7.3)	Terminals for supply conductors		P
3.6 (4.7.3.1)	Welded method and material		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.6.2		N/A
	- electrical test according to 15.6.3		N/A
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N/A
3.6 (4.7.4)	Terminals other than supply connection	Approved connector used in LED module part	P
3.6 (4.7.5)	Heat-resistant wiring/sleeves		N/A
3.6 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
3.6 (4.8)	**Switches**		N/A
	- adequate rating		N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
3.6 (4.9)	**Insulating lining and sleeves**		P
3.6 (4.9.1)	Retainment	Only for mechanical use	P
	Method of fixing.....:	Heating shrinkable tubing covered tied cable	P
3.6 (4.9.2)	Insulated linings and sleeves:		P
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength	a)>100 MΩ (2 MΩ) c) 1480 V	P
	b) Ageing test. Temperature (°C).....:	50 °C + 20 °C	P
3.6 (4.10)	**Double or reinforced insulation**		**P**
3.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		P

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Safe installation fixed luminaires		P
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
3.6 (4.10.2)	Assembly gaps:		P
	- not coincidental		P
	- no straight access with test probe		P
3.6 (4.10.3)	Retainment of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		P
	- lining in lampholder		N/A
3.6 (4.10.4)	Protective impedance device		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
3.6 (4.11)	**Electrical connections and current-carrying parts**		**P**
3.6 (4.11.1)	Contact pressure		P
3.6 (4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
3.6 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
3.6 (4.11.4)	Material of current-carrying parts		P
3.6 (4.11.5)	No contact to wood or mounting surface		P
3.6 (4.11.6)	Electro-mechanical contact systems		N/A
3.6 (4.12)	**Screws and connections (mechanical) and glands**		**P**
3.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		P
	Torque test: torque (Nm); part .....:	7.85 mm: 8.0; screws at system adjusting pipe and pole fixing screws	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Torque test: torque (Nm); part .....:	4.0 mm; 1.2; screws at glass frame and knife switch switch	P
	Torque test: torque (Nm); part .....:	3.0 mm; 0.5; screws used for fixing LED module and cord anchorage	P
	Torque test: torque (Nm); part .....:		N/A
3.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
3.6 (4.12.4)	Locked connections:		P
	- fixed arms; torque (Nm) .....:	2.5 Nm	P
	- lampholder; torque (Nm).....:		N/A
	- push-button switches; torque 0,8 Nm .....:		N/A
3.6 (4.12.5)	Screwed glands; force (Nm) .....:	M 16; 5 (plastic material)	P
3.6 (4.13)	**Mechanical strength**		**P**
3.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm) .....:	Glass protection; 0.5	P
	- other parts; energy (Nm).....:	Metal enclosure; 0.7	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
3.6 (4.13.2)	Metal parts have adequate mechanical strength		P
3.6 (4.13.3)	Straight test finger	30 N	P
3.6 (4.13.4)	Rough service luminaires		N/A
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
3.6 (4.13.6)	Tumbling barrel		N/A
3.6 (4.14)	**Suspensions, fixings and means of adjusting**		**P**
3.6 (4.14.1)	Mechanical load:		P
	A) four times the weight	4 x 7 kg = 24 kg	P
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm) .....:		N/A
	D) load track-mounted luminaires		N/A

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) .....:		N/A
	Metal rod. diameter (mm) .....:		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
3.6 (4.14.2)	Load to flexible cables		N/A
	Mass (kg) .....:		—
	Stress in conductors (N/mm²) .....:		N/A
	Mass (kg) of semi-luminaire .....:		N/A
	Bending moment (Nm) of semi-luminaire .....:		N/A
3.6 (4.14.3)	Adjusting devices:		P
	- flexing test; number of cycles .....:	45	P
	- strands broken .....:	No strand broken	P
	- electric strength test afterwards		P
3.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
3.6 (4.14.5)	Guide pulleys		N/A
3.6 (4.14.6)	Strain on socket-outlets		N/A
3.6 (4.15)	**Flammable materials**		N/A
	- glow-wire test 650°C.....:		N/A
	- spacing ≥30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		N/A
	- thermal protection		N/A
	- electronic circuits exempted		N/A
3.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N/A
	a) construction		N/A
	b) temperature sensing control		N/A
	c) surface temperature		N/A
3.6 (4.16)	**Luminaires for mounting on normally flammable surfaces**		**P**
	No lamp control gear.....:	Electronic controlgear (compliance with Section 12)	P
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N/A
3.6 (4.16.1)	Lamp control gear spacing:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
3.6 (4.16.2)	Thermal protection:		N/A
	- in lamp control gear		N/A
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear		N/A
3.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
3.6 (4.17)	**Drain holes**		N/A
	Clearance at least 5 mm		N/A
3.6 (4.18)	**Resistance to corrosion**		**P**
3.6 (4.18.1)	- rust-resistance		P
3.6 (4.18.2)	- season cracking in copper		P
3.6 (4.18.3)	- corrosion of aluminium		N/A
3.6 (4.19)	Ignitors compatible with ballast		N/A
3.6 (4.20)	Rough service vibration		N/A
3.6 (4.21)	**Protective shield**		N/A
3.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
3.6 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
3.6 (4.21.3)	No direct path		N/A
3.6 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment .....:	See Test Table 3.15 (13.3.2)	N/A
3.6 (4.22)	Attachments to lamps not cause overheating or damage		N/A
3.6 (4.23)	Semi-luminaires comply Class II		N/A
3.6 (4.24)	**Photobiological hazards**		**P**
3.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
3.6 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778 .....:	RG1 unlimited	—
	Luminaires with E_{thr} :		N/A
	a) Fixed luminaires		N/A
	- distance x m, borderline between RG1 and RG2...:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- marking and instruction according 3.2.23		N/A
	b) Portable and handheld luminaires		N/A
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N/A
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N/A
3.6 (4.25)	**Mechanical hazard**		**P**
	No sharp point or edges		P
3.6 (4.26)	**Short-circuit protection**		N/A
3.6 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N/A
3.6 (4.26.2)	Short-circuit test with test chain according 4.26.3		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
3.6 (4.27)	**Terminal blocks with integrated screwless earthing contacts**		N/A
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
3.6 (4.28)	**Fixing of thermal sensing control**		N/A
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material (°C) .....:		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
3.6 (4.29)	**Luminaires with non-replaceable light source**		N/A
	Not possible to replace light source		N/A
	Live part not accessible after parts have been opened by hand or tools		N/A
3.6 (4.30)	**Luminaires with non-user replaceable light source**		**P**

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Clause	Requirement + Test	Result - Remark	Verdict
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		P
	Minimum two fixing means		P
3.6 (4.31)	**Insulation between circuits**		**P**
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A
3.6 (4.31.1)	SELV circuits		N/A
	Used SELV source		N/A
	Voltage ≤ ELV		N/A
	Insulating of SELV circuits from LV supply		N/A
	Insulating of SELV circuits from other non SELV circuits		N/A
	Insulating of SELV circuits from FELV		N/A
	Insulating of SELV circuits from other SELV circuits		N/A
	SELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Plugs and socket-outlets does not have protective conductor contact		N/A
3.6 (4.31.2)	FELV circuits		N/A
	Used FELV source		N/A
	Voltage ≤ ELV		N/A
	Insulating of FELV circuits from LV supply		N/A
	FELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets does not have protective conductor contact		N/A
3.6 (4.31.3)	Other circuits		P
	Other circuits insulated from accessible parts according Table X.1		P

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Clause	Requirement + Test	Result - Remark	Verdict

	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		P
	- conductive parts are connected together		P
	- test according 7.2.3		P
	- conductive part not cause an electric shock in case of an insulation fault		P
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A
	- slave luminaire constructed as class I		N/A
3.6 (4.32)	**Overvoltage protective devices**		N/A
	Comply with IEC 61643-11		N/A
	External to controlgear and connected to earth:		N/A
	- only in fixed luminaires		N/A
	- only connected to protective earth		N/A
3.6.1 (-)	At least IP X3 or X5 respectively. IP .....:		P
	Column-integrated luminaires:		N/A
	- parts below 2,5 m. IP .....:		N/A
	- parts above 2,5 m. IP .....:		N/A
3.6.2 (-)	Suspension on span wires		N/A
3.6.3 (-)	Means for attaching the luminaire or external parts to its support appropriate to the weight		P
3.6.3.1 (-)	Static load test		P
	- drag coefficient .....:	1.2	P
	- loaded area (m^2) .....:	In instruction manual. 0.37	P
	- used load (N) .....:	735 N	P
	- measured deformation (cm/m) .....:	No deformation	P
	- no rotation	No rotation	P
3.6.4 (-)	Adjustable lampholders		N/A
3.6.5 (-)	Luminaires installed above 5 m, glass covers shall be:		P
	a) glass that fractures into small pieces (test according to 3.6.5.1), or		N/A
	b) glass having a high impact shock resistance (test according to 3.6.5.2), or		P
	c) protected by any means to retain glass fragments		N/A
	For tunnel luminaires 3.6.5.1 apply		N/A
	Method of protection declared by the manufacturer		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.6.5.1 (-)	Protection by the use of glass that fractures into small pieces		N/A
	- number of particles is more than 40 .....:		N/A
3.6.5.2 (-)	Protection by the use of high impact resistant glass		P
3.6.5.2.1 (-)	Glass covers have high mechanical strength		P
	Test according IEC 62262 with test apparatus according IEC 60068-2-75 with impact energy of 5J on preconditioned sample		P
3.6.5.2.2 (-)	Glass covers not break into large pieces		P
	- test according 3.6.5.1, number of particles is more than 20 .....:	By the use of high impact resistant glass. IK09, particles measured = 60	P
3.6.6 (-)	Connection compartment of column-integrated luminaire		N/A
	- provides adequate space		N/A
	- means for attachment		N/A
	- means for attachment of metal corrosion-resistant		N/A
3.6.7 (-)	Compliance with ISO standard or other.....:		N/A
3.6.8 (-)	Doors of column-integrated luminaires:		N/A
	- corrosion-resistant		N/A
	- opening only possible for an authorized person		N/A
	- impact test 5 Nm		N/A
	- sample show no damage		N/A
3.6.9 (-)	Column-integrated luminaire:		N/A
	- dimension of the cable entry slot (mm).....:		N/A
	- cable path from the slot to the connection compartment (mm) .....:		N/A
	- cable path free from obstruction that might cause abrasion of the cable		N/A

3.7 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		P
3.7 (11.2.1)	Impulse withstand category (Normal category II)	Category II ☒ Category III ☐	—
	Category III according Annex U		P
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		P
3.7 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 3.7 (11.2) I	P
	Creepage distances for frequency over 30 kHz:		P
	- Controlgear marked with $\hat{U}_{OUT}$ and f_{UOUT} according IEC 61347-1, clause 7.1, item w	Frequencies above 30 kHz only inside separately approved controlgear.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 3.7 (11.2) II	N/A
3.7 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 3.7 (11.2) I	N/A
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with U_P	Frequencies above 30 kHz only inside separately approved controlgear.	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 3.7 (11.2) II	N/A

3.8 (7)	**PROVISION FOR EARTHING**		N/A
3.8 (7.2.1 + 7.2.3)	Accessible metal parts		N/A
	Metal parts in contact with supporting surface		N/A
	Resistance < 0,5 Ω .....:		N/A
	Self-tapping screws used		N/A
	Thread-forming screws		N/A
	Thread-forming screw used in a grove		N/A
	Earth makes contact first		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
	Protective earthing of the luminaire not via built-in control gear		N/A
3.8 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N/A
3.8 (7.2.4)	Locking of clamping means		N/A
	Compliance with 4.7.3		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
3.8 (7.2.5)	Earth terminal integral part of connector socket		N/A
3.8 (7.2.6)	Earth terminal adjacent to mains terminals		N/A
3.8 (7.2.7)	Electrolytic corrosion of the earth terminal		N/A
3.8 (7.2.8)	Material of earth terminal		N/A
	Contact surface bare metal		N/A
3.8 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
3.8 (7.2.11)	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.8.1 (-)	Attachment prevented from rotation		N/A
3.9 (14)	**SCREW TERMINALS**		P
	Separately approved; component list	Installation coupler, see Annex 1	P
	Part of the luminaire	Knife switch, see Annex 3	P
3.9 (15)	**SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS**		
	Separately approved; component list .....:	Connector of LED, see Annex 1	P
	Part of the luminaire.....:	(see Annex 4)	N/A
3.10 (5)	**EXTERNAL AND INTERNAL WIRING**		P
3.10 (5.2)	**Supply connection and external wiring**		**P**
3.10 (5.2.1)	Means of connection.....:	Supply cable with separately approved connector. (see Annex 1)	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		N/A
3.10 (5.2.2)	Type of cable .....:	H05RN-F	P
	Nominal cross-sectional area (mm^2).....:	2 x 1 mm^2	P
	Cables equal to IEC 60227 or IEC 60245	60245IEC 66	P
3.10 (5.2.3)	Type of attachment, X, Y or Z	Type Y	P
3.10 (5.2.5)	Type Z not connected to screws		N/A
3.10 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
3.10 (5.2.7)	Cable entries through rigid material have rounded edges		N/A
3.10 (5.2.8)	Insulating bushings:		P
	- suitably fixed	Plastic gland	P
	- material in bushings		P
	- material not likely to deteriorate		P
	- tubes or guards made of insulating material		N/A
3.10 (5.2.9)	Locking of screwed bushings		P
3.10 (5.2.10)	Cord anchorage:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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
3.10 (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
	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
3.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	Type Y	P
3.10 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) .....:	60	P
	- torque test: torque (Nm).....:	0.25	P
	- displacement ≤ 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
3.10 (5.2.11)	External wiring passing into luminaire		P
3.10 (5.2.12)	Looping-in terminals		N/A
3.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
3.10 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

3.10 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard	Connector in compliance with IEC 61984	P
3.10 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
3.10 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
3.10 (5.3)	**Internal wiring**		**P**
3.10 (5.3.1)	Internal wiring of suitable size and type	FEP + FEP, 0.5 and 0.75 mm², double insulation	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
3.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm²) .....:		N/A
	Insulation thickness (mm) .....:		N/A
	Extra insulation added where necessary		N/A
3.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Cross-sectional area (mm²) .....:		N/A
3.10 (5.3.1.3)	Double or reinforced insulation for class II		N/A
3.10 (5.3.1.4)	Conductors without insulation		N/A
3.10 (5.3.1.5)	SELV current-carrying parts		N/A
3.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
3.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Telescopic tubes etc.		N/A
	No twisting over 360°		N/A
3.10 (5.3.3)	Insulating bushings:		P
	- suitable fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- cables with protective sheath		N/A
3.10 (5.3.4)	Joints and junctions effectively insulated		N/A
3.10 (5.3.5)	Strain on internal wiring		N/A
3.10 (5.3.6)	Wire carriers		N/A
3.10 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		P
3.10 (5.4)	**Test to determine suitability of conductors having a reduced cross-sectional area**		**P**
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	see Annex 2	P
	No damage to luminaire wiring after test		P
3.10.1 (-)	Cord anchorage if applicable		P
	- pull test: 25 times; pull (N) .....:	60	P
	- torque test: torque (Nm).....:	0.25	P

3.11 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		P
3.11 (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		N/A
	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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Double-ended high-pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
3.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
3.11 (8.2.3.a)	Class II luminaire:		P
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		P
	- glass protective shields not used as supplementary insulation		N/A
3.11 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N/A
3.11 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load (V) .....:		N/A
	- no-load voltage (V) .....:		N/A
	- 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
3.11 (8.2.4)	Portable luminaire has protection independent of supporting surface		N/A
3.11 (8.2.5)	Compliance with the standard test finger or relevant probe		N/A
3.11 (8.2.6)	Covers reliably secured		P
3.11 (8.2.7)	Luminaire other than below with capacitor > 0,5 µF not exceed 50 V 1 min after disconnection		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

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Clause	Requirement + Test	Result - Remark	Verdict

3.12 (12)	**ENDURANCE TEST AND THERMAL TEST**		P
3.12.2 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 3.13		—
3.12 (12.2)	**Selection of lamps and ballasts**		**—**
	Lamp used according Annex B	(Lamp used see Annex 2)	—
	Controlgear if separate and not supplied	(Controlgear used see Annex 2)	—
3.12 (12.3)	**Endurance test**		**P**
	a) mounting-position .....:	Post top	—
	b) test temperature (°C) .....:	50 for all models MAXISEMPIONE 55 for all models SEMPIONE and MINISEMPIONE	—
	c) total duration (h) .....:	240	—
	d) supply voltage (V) .....:	1.1 x 240 V = 264 V	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A) .....:		—
	e) luminaire ceases to operate		—
3.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
3.12 (12.4)	**Thermal test (normal operation)**	(see Annex 2)	P
3.12 (12.5)	**Thermal test (abnormal operation)**	(see Annex 2)	P
3.12 (12.6)	**Thermal test (failed lamp control gear condition):**		N/A
3.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) .....:		—
	- case of abnormal conditions.....:		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un .....:		—
	- measured mounting surface temperature (°C) at 1,1 Un .....:		N/A
	- calculated mounting surface temperature (°C) .....:		N/A
	- track-mounted luminaires		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

3.12 (12.6.2)	Temperature sensing control		N/A
	- case of abnormal conditions.....:		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C) .....:		N/A
	- track-mounted luminaires		N/A
3.12 (12.7)	**Thermal test (failed lamp control gear in plastic luminaires):**		N/A
3.12 (12.7.1)	Luminaire without temperature sensing control		N/A
3.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A
	Test method 12.7.1.1 or Annex W .....:		—
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions.....:		—
	- Ballast failure at supply voltage (V) .....:		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		N/A
	- case of abnormal conditions.....:		—
	- measured winding temperature (°C): at 1,1 Un.....:		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....:		—
	- calculated temperature of fixing point/exposed part (°C).....:		—
	Ball-pressure test.....:	See Test Table 3.15 (13.2.1)	N/A
3.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- case of abnormal conditions.....:		—
	- measured winding temperature (°C): at 1,1 Un.....:		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....:		—
	- calculated temperature of fixing point/exposed part (°C).....:		—
	Ball-pressure test.....:	See Test Table 3.15 (13.2.1)	N/A
3.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- case of abnormal conditions.....:		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
3.12 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link .....:	Yes ☐ No ☐	—
	- manual reset cut-out.....:	Yes ☐ No ☐	—
	- auto reset cut-out.....:	Yes ☐ No ☐	—
	- case of abnormal conditions.....:		—
	- highest measured temperature of fixing point/ exposed part (°C):.....:		—
	Ball-pressure test:.....:	See Test Table 3.15 (13.2.1)	
3.12.1 (-)	Temperature reduction if for outdoor use only		P
3.12.2 (-)	(See above)		—
3.12.3 (-)	Glass covers used within the thermal limits declared by the glass manufacturer	280 °C	P

3.13 (9)	**RESISTANCE TO DUST AND MOISTURE**		P
3.13.1 (-)	If IP > IP 20 the order of tests as specified in clause 3.12		P
3.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP .....:	IP66	—
	- mounting position during test.....:	As the normal use	—
	- fixing screws tightened; torque (Nm) .....:	cable used for test is indicated in manual instruction	—
	- tests according to clauses .....:	9.2.2; 9.2.7	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		P
	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)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		N/A
	g) no damage of protective shield or glass envelope		P
3.13 (9.3)	Humidity test 48 h	95°C 25 %	P
3.14 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		P
3.14 (10.2.1)	Insulation resistance test		
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø .....:	Cable covered by metal foil.	—
	Insulation resistance (MΩ) .....:	> 4 MΩ	—
	SELV		N/A
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface .....:		N/A
	- between current-carrying parts and metal parts of the luminaire .....:		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....:		N/A
	- Insulation bushings as described in Section 5 .....:		N/A
	Other than SELV		P
	- between live parts of different polarity .....:	> 100 MΩ	P
	- between live parts and mounting surface .....:	> 100 MΩ	P
	- between live parts and metal parts .....:	> 100 MΩ	P
	- between live parts of different polarity through action of a switch .....:		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....:	> 100 MΩ	P
	- Insulation bushings as described in Section 5 ..... :	> 100 MΩ	P
3.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A
	Luminaires with manual ignitors		N/A
	Test voltage (V) .....:		N/A
	SELV		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface .....:		N/A
	- between current-carrying parts and metal parts of the luminaire .....:		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....:		N/A
	- Insulation bushings as described in Section 5 .....:		N/A
	Other than SELV		P
	- between live parts of different polarity .....:	1480 V	P
	- between live parts and mounting surface .....:	2960 V (Primary to accessible parts) 3280 V (Secondary to accessible)	P
	- between live parts and metal parts .....:	2960 V (Primary to metal parts) 1640 V (Secondary to metal parts)	P
	- between live parts of different polarity through action of a switch .....:		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....:		N/A
	- Insulation bushings as described in Section 5 .....:		N/A
3.14 (10.3)	Touch current or protective conductor current (mA).:	0.339 mA_{peak} (limit: 0.7 mA_{peak})	P

3.15 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		P
3.15 (13.2.1)	Ball-pressure test ..... :	See Test Table 3.15 (13.2.1)	N/A
3.15 (13.3.1)	Needle-flame test (10 s)..... :	See Test Table 3.15 (13.3.1)	N/A
3.15 (13.3.2)	Glow-wire test (650°C) ..... :	See Test Table 3.15 (13.3.2)	N/A
3.15 (13.4)	Proof tracking test (IEC 60112) ..... :	See Test Table 3.15 (13.4)	N/A

5.7 (11.2)	**TABLE: Creepage distances and clearances**						**P**
	Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages						
	Applicable part of IEC 60598-1 Table 11.1* and 11.2*						
	Insulation type **	**Measured clearance**	**Required**		**Measured creepage**	**Required**	
			clearance	***Table**		**creepage**	***Table**

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Clause	Requirement + Test	Result - Remark	Verdict

Distance 1:	B	3.7	1.5	11.1	5.1	2.5	11.1
Working voltage (V) ..... :					240		—
PTI ..... :					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV) ..... :							—
Supplementary information: Current-carrying parts of different polarity							
Distance 2:	B	3.7	1.5	11.1	5.1	2.5	11.1
Working voltage (V) ..... :					240		—
PTI ..... :					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV) ..... :							—
Supplementary information: Current-carrying parts (input circuits) and accessible parts							
Distance 3:	B	3.7	1.5	11.1	5.1	2.5	11.1
Working voltage (V) ..... :					240		—
PTI ..... :					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV) ..... :							—
Supplementary information: Output circuits and accessible parts							
Distance 4:	R	7.2	3	11.1	8.8	5	11.1
Working voltage (V) ..... :					320 V (max output of the controlgear)		—
PTI ..... :					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV) ..... :							—
Supplementary information: Between input and output							

** Insulation type: B – Basic; S – Supplementary; R – Reinforced. See also IEC 60598-1 Annex M.

3.7 (11.2)	TABLE II: Creepage distances and clearances						N/A
Minimum distances (mm) for a.c. higher than 30 kHz sinusoidal voltages							
Applicable part of IEC 61347-1 Table 7 and 8* or IEC 60664-4 Table 1 and 2							
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**	
			clearance	***Table**		**creepage**	***Table**
Distance 1:							
Working voltage (V) ..... :							—
Frequency if applicable (kHz) ..... :							—
PTI ..... :					< 600 ☐ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :							—
Supplementary information:							

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Clause	Requirement + Test	Result - Remark	Verdict

Distance 2:							
Working voltage (V).....:							—
Frequency if applicable (kHz).....:							—
PTI.....:	< 600 ☐ ≥ 600 ☐						—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....:							—
Supplementary information:							
Distance 3:							
Working voltage (V).....:							—
Frequency if applicable (kHz).....:							—
PTI.....:	< 600 ☐ ≥ 600 ☐						—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....:							—
Supplementary information:							

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

3.15 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics		N/A
Allowed impression diameter (mm) .....:		2	—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
Supplementary information:			

3.15 (13.3.1)	TABLE: Needle-flame test (IEC 60695-11-5)				N/A
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Supplementary information:					

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

3.15 (13.3.2)	TABLE: Glow-wire test (IEC 60695-2-11)			N/A
Glow wire temperature .....:	650°C			—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Supplementary information:				

3.15 (13.4)	TABLE: Proof tracking test (IEC 60112)				N/A
Test voltage PTI .....:	175 V				—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Supplementary information:					

EN 60598-2-3			
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**
LED MAXISEMPIONE						
Supply connector	A	STUCCHI	3702/V-2P	16 A, 250 V, T110, IP66/68	EN 61984	IMQ
External cable	A	ELETTROBRESCIA	H05RN-F	300/500 V 2 x 1 mm^2 T90	EN 50525-2-21	IMQ DAT95003177
Gland	C	WKK	M16 B	M16 x 1.5 T90	IEC/EN 60598-1 IEC/EN 60598-2-3	Tested in appliance
Internal wiring (Controlgear – Knife switch)	C	EMC COLOSIO	TD17	FEP+FEP 300/300 V 0.75 mm^2 T180	IEC/EN 60598-1 IEC/EN 60598-2-3	Tested in appliance
Sleeves for mechanical protection	C	RTE	GVS series	Silicon glass, diameter 4 mm,1500 V, T250	IEC/EN 60598-1 IEC/EN 60598-2-3	Tested in appliance
Internal wiring (LED)	C	EMC COLOSIO	TE10	FEP+FEP 300/300 V 0.5 mm^2 T180	IEC/EN 60598-1 IEC/EN 60598-2-3	Tested in appliance
Cord anchorage	C	L.C. RELCO	62002000	Polycarbonate	IEC/EN 60598-1 IEC/EN 60598-2-3	Tested in appliance
Knife switch	C	SINEYi	M29M	450 V, 16 A, T110 Class II	IEC/EN 61984	TUV SUD Cert. No.:B150992724002

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

LED Control Gear	B	Philips Lighting B.V	Xitanium 150W 0.70A 1-10V 230V S240 sXt	Input: Max. 150 W 220-240 Vac 0.8-0.67A 50/60 Hz. Output: 100-214 V, 700mA, Uout max 320 V tc 85 °C ta +55 °C Built-in control gear with protective separation (reinforced insulation between input and output)	EN 61347-1 EN 61347-2-13 EN 62384	ENEC 05 Cert. No.:219366 201
LED Control Gear	B	T.C.I	SIRIO 150/200-700 BILEVEL BI 220-240 Vac 50-60 Hz	Input: Max. 121 W 220-240 Vac 0.77A 50/60 Hz. Output:150 W Uout max= 290 V, 200-700mA, max tc 80 °C Built-in control gear with protective separation (reinforced insulation between input and output)	EN 61347-1 EN 61347-2-13 EN 62384	ENEC 05 Cert. No.:81-108919

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

LED Control Gear	D	TCI	TCI MILANO IN LED 165 W/350-1050 4P	Input: 220-240 Vac 1 50/60 Hz. Output:165 W Uout max= 300 V, 120-1050 mA, max tc 85 °C Built-in control gear with protective separation (reinforced insulation between input and output)	EN 61347-1 EN 61347-2-13 EN 62384	ENEC 10 Cert. No.:DE1-61295
LEDs Matrix	C	SAMSUNG	LH508A+	Forward Current: 880 mA @ Forward Voltage: 6.4 Vmax, T100,3000/4000 K	IEC/EN 62031 IEC/EN 60598-1 IEC/EN 60598-2-3 IEC/EN 62471 IEC/TR 62778	Tested as component by Nemko Spa See test report 377848-2TRFPHOand test report 377848-3TRFPHO
LEDs Matrix	C	SAMSUNG	LM301H	Forward Current: 200 mA Forward Voltage: 2.7 Vmax, T85, 3000/4000 K	IEC/EN 62031 IEC/EN 60598-1 IEC/EN 60598-2-3 IEC/EN 62471 IEC/TR 62778	Tested as component by Nemko Spa See test report 377848-2TRFPHOand test report 377848-3TRFPHO
PCB for LED module	C	Finest Printed Circuit Board Ltd	LDT-AL	Min Thickness 1.6 mm, V-0, T90	IEC/EN 60598-1 IEC/EN 60598-2-3 UL 796	*UL (E337137), Tested in appliance

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

Connector for the LED module	B	WAGO	2060-402	130 V, 9 A, 0.75 mm² rigid and flexible, T105	IEC/EN 60998-1 IEC/EN 60998-2-2 IEC/EN 60598-1	KEMA-KEUR
Glass cover	C	PALEARI FRATELLI	Soda lime silicate float glass	Thickness 4 mm T280	IEC/EN 60598-1 IEC/EN 60598-2-3	Tested in appliance
LED SEMPIONE (only components differents)						
LED Control Gear	B	TCI	MILANOinLED 110W/200-1050 4PN	Input: 220-240 Vac 50/60 Hz. Output:110 W Uout max= 250 V, 200-1050 mA, max tc 85 °C Built-in control gear with protective separation (reinforced insulation between input and output)	EN 61347-1 EN 61347-2-13 EN 62384	ENEC 10 Cert. No.:DE1-61294
LED Control Gear	D	T.C.I	SIRIO 150/300-1050 BILEVEL BI 220-240 Vac 50-60 Hz	Input: 220-240 Vac 0.77A 50/60 Hz. Output:150 W Uout max= 290 V, 300-1050 mA, max tc 80 °C Built-in control gear with protective separation (reinforced insulation between input and output)	EN 61347-1 EN 61347-2-13 EN 62384	ENEC 05 Cert. No.:81-108919
LED MINSEMPIONE						

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Clause	Requirement + Test	Result - Remark	Verdict

LED Control Gear	B	Philips Lighting B.V	Xitanium 75W 0.7A 1-10V 230V C165 sXt	Input: Max. 84 W 220-240 Vac 0.4-0.34A 50/60 Hz. Output:75 W 52-107 V, 700mA, max 160 V tc 85 °C ta +55 °C Built-in controlgear with protective separation (reinforced insulation between input and output)	EN 61347-1 EN 61347-2-13 EN 62384	ENEC 05 Cert. No.:219707 801
LED Control Gear	B	TCI	MILANOinLED 110W/200-1050 4PN	Input: 220-240 Vac 50/60 Hz. Output:110 W Uout max= 250 V, 200-1050 mA, max tc 85 °C Built-in control gear with protective separation (reinforced insulation between input and output)	EN 61347-1 EN 61347-2-13 EN 62384	ENEC 10 Cert. No.:DE1-61294

Supplementary information:

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

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2a	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference ..... :	**LED MAXISEMPIONE** (Cod. 36251)	—
	Lamp used ..... :	Enclosed LEDs	—
	Lamp control gear used ..... :	2 x Xitanium 150W 0,70A 1-10V 230V S240 sXt	—
	Mounting position of luminaire ..... :	Pipe mounted	—
	Supply wattage (W) ..... :	test 1: 218.3 test 2: 217.2	—
	Supply current (A) ..... :	test 1: 0.961 test 2: 0.951	—
	Calculated power factor ..... :	test 1: 0.942 test 2: 0.923	—
	Table: measured temperatures corrected for ta = 40°C:		P
	- abnormal operating mode ..... :	LED controlgear output short circuited	—
	- test 1: rated voltage ..... :	240 V	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage ..... :	254.4 V	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :	—	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage ..... :	264 V	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	—	—

Temperature measurements (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
tc LED Control gear	40	70	72	—	85	—	—
Disconnecting switch	40	39	39	—	110	—	—
External wire	40	49	50	—	90	—	—
LED	40	96	97	—	100	—	—
LED's cable	40	73	75	—	180	—	—
Connector for LED module	40	77	78	—	105	—	—

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Clause	Requirement + Test	Result - Remark	Verdict

Internal wire T180 (CG – knife switch)	40	51	53	—	180	—	—
Sleeves	40	49	50		250	—	
PCB	40	87	88	—	90	—	—
Lighted surface (0.5 m)	40	35	35	—	90	—	—
Mounting surface	40	36	36	—	90	—	—

Supplementary information:

*) For all the measured temperatures indicated in this table, it has been applied the reduction of 10°C foreseen in § 3.12.1 of IEC/EN 60598-2-3.

The controlgear unit is protected when subjected to the s-c of the output, therefore there is no further temperature was measured.

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2b	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference ..... :	LED MAXISEMPIONE Cod. 36250	—
	Lamp used ..... :	Enclosed LEDs	—
	Lamp control gear used ..... :	MILANOinLED 110W/200-1050 4PN	—
	Mounting position of luminaire ..... :	Pipe mounted	—
	Supply wattage (W) ..... :	test 1: 176.1 test 2: 171.3	—
	Supply current (A) ..... :	test 1: 0.76 test 2:0.71	—
	Calculated power factor ..... :	test 1: 0.963 test 2: 0.947	—
	Table: measured temperatures corrected for ta = 45°C:		P
	- abnormal operating mode ..... :	LED controlgear output short circuited	—
	- test 1: rated voltage ..... :	240 V	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage ..... :	254.4 V	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :	—	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage ..... :	264 V	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	—	—

Temperature measurements (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
tc LED Control Gear	45	60	63	—	85	—	—
Disconnecting switch	45	38	39	—	110	—	—
External wire	45	47	49	—	90	—	—
LED	45	93	94	—	100	—	—
LED's cable	45	72	74	—	180	—	—
Connector for LED module	45	74	77	—	105	—	—

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Clause	Requirement + Test	Result - Remark	Verdict

Internal wire T180 (CG – knife switch)	45	50	52	—	180	—	—
Sleeves	45	47	48		250	—	
PCB	45	71	74	—	90	—	—
Lighted surface (1 m)	45	33	34	—	90	—	—
Mounting surface	45	34	34	—	90	—	—

Supplementary information:

*) For all the measured temperatures indicated in this table, it has been applied the reduction of 10°C foreseen in § 3.12.1 of IEC/EN 60598-2-3.

The controlgear unit is protected when subjected to the s-c of the output, therefore there is no further temperature was measured.

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2c	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference ..... :	LED SEMPIONE Cod. 36200	—
	Lamp used ..... :	Enclosed LEDs	—
	Lamp control gear used ..... :	SIRIO 150/200-700 BILEVEL BI 220-240 Vac 50-60 Hz	—
	Mounting position of luminaire ..... :	Pipe mounted	—
	Supply wattage (W) ..... :	test 1: 116.3 test 2: 115	—
	Supply current (A) ..... :	test 1: 0.52 test 2:0.49	—
	Calculated power factor ..... :	test 1: 0.928 test 2: 0.906	—
	Table: measured temperatures corrected for ta = 45°C:		P
	- abnormal operating mode ..... :	LED controlgear output short circuited	—
	- test 1: rated voltage ..... :	240 V	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage ..... :	254.4 V	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :	—	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage ..... :	264 V	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	—	—

Temperature measurements (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
tc LED Control Gear	45	64	66	—	80	—	—
Disconnecting switch	45	35	36	—	110	—	—
External wire	45	44	46	—	90	—	—
LED	45	73	74	—	100	—	—
LED's cable	45	62	64	—	180	—	—
Connector for LED module	45	64	67	—	105	—	—

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Clause	Requirement + Test	Result - Remark	Verdict

Internal wire T180 (CG – knife switch)	45	50	52	—	180	—	—
Sleeves	45	45	46		250	—	
PCB	45	61	64	—	90	—	—
Lighted surface (1 m)	45	33	34	—	90	—	—
Mounting surface	45	34	34	—	90	—	—

Supplementary information:

*) For all the measured temperatures indicated in this table, it has been applied the reduction of 10°C foreseen in § 3.12.1 of IEC/EN 60598-2-3.

The controlgear unit is protected when subjected to the s-c of the output, therefore there is no further temperature was measured.

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2d	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference ..... :	LED SEMPIONE Cod. 36200	—
	Lamp used ..... :	Enclosed LEDs	—
	Lamp control gear used ..... :	MILANOinLED 110W/200-1050 4PN	—
	Mounting position of luminaire ..... :	Pipe mounted	—
	Supply wattage (W) ..... :	test 1: 118.3 test 2: 115.1	—
	Supply current (A) ..... :	test 1: 0.52 test 2:0.50	—
	Calculated power factor ..... :	test 1: 0.923 test 2: 0.903	—
	Table: measured temperatures corrected for ta = 45°C:		P
	- abnormal operating mode ..... :	LED controlgear output short circuited	—
	- test 1: rated voltage ..... :	240 V	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage ..... :	254.4 V	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :	—	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage ..... :	264 V	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	—	—

Temperature measurements (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
tc LED Control Gear	45	58	61	—	85	—	—
Disconnecting switch	45	34	36	—	110	—	—
External wire	45	44	45	—	90	—	—
LED	45	73	75	—	100	—	—
LED's cable	45	65	66	—	180	—	—
Connector for LED module	45	64	67	—	105	—	—

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

Internal wire T180 (CG – knife switch)	45	50	52	—	180	—	—
Sleeves	45	46	47		250	—	
PCB	45	70	71	—	90	—	—
Lighted surface (1 m)	45	33	34	—	90	—	—
Mounting surface	45	34	34	—	90	—	—

Supplementary information:

*) For all the measured temperatures indicated in this table, it has been applied the reduction of 10°C foreseen in § 3.12.1 of IEC/EN 60598-2-3.

The controlgear unit is protected when subjected to the s-c of the output, therefore there is no further temperature was measured.

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2e	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference ..... :	LED MINISEMPIONE Cod. 36001	—
	Lamp used ..... :	Enclosed LEDs	—
	Lamp control gear used ..... :	Xitanium 75W 0.7A 1-10V 230V C165 sXt	—
	Mounting position of luminaire ..... :	Pipe mounted	—
	Supply wattage (W) ..... :	test 1: 69 test 2: 68	—
	Supply current (A) ..... :	test 1: 0.52 test 2:0.50	—
	Calculated power factor ..... :	test 1: 0.923 test 2: 0.913	—
	Table: measured temperatures corrected for ta = 45°C:		P
	- abnormal operating mode ..... :	LED controlgear output short circuited	—
	- test 1: rated voltage ..... :	240 V	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage ..... :	254.4 V	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :	—	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage ..... :	264 V	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	—	—

Temperature measurements (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
tc LED Control Gear	45	61	65	—	85	—	—
Disconnecting switch	45	34	36	—	110	—	—
External wire	45	44	45	—	90	—	—
LED	45	69	71	—	100	—	—
LED's cable	45	61	63	—	180	—	—
Connector for LED module	45	62	63	—	105	—	—

EN 60598-2-3							
Clause	Requirement + Test				Result - Remark		Verdict
Internal wire T180 (CG – knife switch)	45	49	50	—	180	—	—
Sleeves	45	47	48		250	—	
PCB	45	71	74	—	90	—	—
Lighted surface (1 m)	45	33	34	—	90	—	—
Mounting surface	45	32	33	—	90	—	—
Supplementary information: *) For all the measured temperatures indicated in this table, it has been applied the reduction of 10°C foreseen in § 3.12.1 of IEC/EN 60598-2-3. The controlgear unit is protected when subjected to the s-c of the output, therefore there is no further temperature was measured.							

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 3	**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 (mm^2) ..... :		—
(14.3.3)	Conductor space (mm) ..... :		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread)..... :		N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm) ..... :		N/A
	Torque (Nm)..... :		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N)..... :		N/A
(14.4.8)	Without undue damage		N/A

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 4	**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
(15.5.1)	Terminals internal wiring		N/A
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples) ..... :		N/A
(15.5.1.2)	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 external wiring		N/A
	Terminal size and rating		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) ..... :		N/A

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

	Pull test pin or tab terminals (4 samples); pull (N) ..... :										N/A
(15.6.3.1)	**TABLE: Contact resistance test**										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										
	Voltage drop after 10th alt. 25th cycle										
	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										
	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										
	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										
	Max. allowed voltage drop (mV) .....:										—
terminal		1	2	3	4	5	6	7	8	9	10
voltage drop (mV)											
Supplementary information: None											

(15.6.3.1) **(15.6.3.2)**	**TABLE: Contact resistance test / Heating tests**										
	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										
	Voltage drop after 10th alt. 25th cycle										
	Max. allowed voltage drop (mV) .....:										—
terminal		1	2	3	4	5	6	7	8	9	10

EN 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									
	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									
	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									
	Max. allowed voltage drop (mV).....:									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										

IEC60598_2_3L ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT 1TO TEST REPORT **IEC 60598-2-3** **EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES** Luminaires Part 2: Particular requirements Section 3: Luminaires for road and street lighting			
Differences according to..... EN 60598-2-3:2003, AMD1:2011 used in conjunction with EN 60598-1:2015, AMD1:2018			
Annex Form No...... EU_GD_IEC60598_2_3L **Annex Form Originator**..... Intertek Semko AB **Master Annex Form**..... 2018-12-07			
	CENELEC COMMON MODIFICATIONS (EN)		
3.6 (4)	**CONSTRUCTION**		
3.6 (4.11.6)	Electro-mechanical contact systems		
3.10 (5)	**EXTERNAL AND INTERNAL WIRING**		
3.10 (5.2.2)	Cables equal to EN 50525		
	Replace table 5.1 – Supply cord		
3.12 (12)	**ENDURANCE TESTS AND THERMAL TESTS**		
3.12 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		
(3.3)	DK: power supply cords of class I luminaires with label		
(4.5.1)	DK: socket-outlets		
(5.2.1)	CY, DK, FI, GB: type of plug		
ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		
(4 & 5)	FR: Shuttered socket-outlets 10/16A		
	FR: Safety requirements for high buildings *(Decree of 30 December 2011 on safety regulations for the construction of high-rise buildings and their protection against fire and panic risks; Section VIII; Article GH 48, Lighting)* Glow-wire test for outer parts of luminaires:		
	- 850°C for luminaires in stairways and horizontal travel paths		
	- 650°C for indoor luminaires		
	GB: Requirements according to United Kingdom Building Regulation		

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT 2: Additional tests for integral LED module according to IEC 62031:2008+A1:2012+A2:2014

4	**GENERAL REQUIREMENTS**		P
4.4	Integral modules tested assembled in the luminaire		P
4.5	Independent modules complies with requirements in IEC 60598-1		N/A

5	**GENERAL TEST REQUIREMENTS**		**P**
5.5	SELV-operated LED modules comply with Annex I of IEC 61347-2-13	(see Annex 1)	N/A
	General conditions for tests in Annex A	(see Annex A)	P

6	**CLASSIFICATION**		**P**
	Built-in module .....:	Yes ☐ No ☒	—
	Independent module .....:	Yes ☐ No ☒	—
	Integral module .....:	Yes ☒ No ☐	—
	For Integral module; Note to 1.2.1 in IEC 60598-1 applies.		—

7	**MARKING**		N/A
7.1	**Mandatory markings for built-in or independent modules**		N/A
	a) mark of origin		N/A
	b) model number, type reference		N/A
	c1) constant voltage module; rated supply voltage and supply frequency		N/A
	c2) constant current module; rated supply current and supply frequency		N/A
	d) nominal power		N/A
	e) indication of connections, wiring diagram		N/A
	f) value of t_c and place on the module		N/A
	g) *E*thr if required		N/A
	h) symbol for built-in modules		N/A
	i) heat transfer temperature t_d		N/A
	j) power for heat-conduction P_d		N/A
	k) working voltage for insulation		N/A
7.2	**Location of marking**		N/A
	- marking of a), b), c) and f) on the modules		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- marking of d), e), g), h), i) and j) on the modules or data sheet		N/A
	- marking of k) in manufactures literature		N/A
	- integral modules a) to g) in literature		N/A
7.3	**Durable and legibility of marking**		N/A
	- marking of a), b), c) and f) legible after test with water		N/A
	- marking of d) to j) inspection of compliance		N/A
8	**TERMINALS**		**P**
	Screw terminals according section 14 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 2)	N/A
	Part of the luminaire	(see Annex 3)	N/A
	Screwless terminals according section 15 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 2)	N/A
	Part of the luminaire	(see Annex 4)	N/A
	Connectors according IEC 60838-2-2:		P
	Separately approved; component list	LED module connector, see annex 1	P
9 (9)	**PROVISION FOR PROTECTIVE EARTHING**		**N/A**
10 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS** **Note: It is relied on the luminaire for protection.**		**N/A**
- (10.1)	Controlgear protected against accidental contact with live parts		N/A
- (A2)	The current flowing between the part concerned and earth is measured and does not exceed 0,7 mA (peak) or 2 mA d.c. .....:		N/A
- (A2)	For frequencies above 1 kHz, the current does not exceed 0,7 mA (peak) multiplied by the value of the frequency in kilohertz or 70 mA (peak) .....:		N/A
- (A3)	The voltage between the part concerned and any accessible part is measured and does not exceed 34 V (peak).....:		N/A
- (10.1)	Lacquer or enamel not used for protection or insulation		N/A
	Adequate mechanical strength on parts providing protection		N/A

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
- (10.2)	Capacitors > 0,5 µF: voltage after 1 min (V): < 50 V .....:		N/A
- (10.3)	Controlgear providing SELV		N/A
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		N/A
	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		N/A
- (10.4)	Accessible conductive parts in SELV circuits		N/A
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		N/A
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0.7 mA (peak) or 2 mA d.c. .....:		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A

11 (11)	**MOISTURE RESISTANCE AND INSULATION**		**P**
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ):		P
	For basic insulation ≥ 2 MΩ .....:	>100 MΩ	P
	For double or reinforced insulation ≥ 4 MΩ .....:		N/A
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N/A

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

12 (12)	**ELECTRIC STRENGTH**		**P**
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		N/A
	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	1640 V	P
	Supplementary insulation, 2U + 1000 V		N/A
	Double or reinforced insulation, 4U + 2000 V		N/A
	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

13 (14)	**FAULT CONDITIONS**		**P**
- (14)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	N/A
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)	(see appended table)	N/A
	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3		N/A
- (14.2)	Short-circuit or interruption of semiconductor devices	LED	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N/A
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	N/A
- (14.5)	After the tests has been carried out on three samples:		N/A
	The insulation resistance ≥ 1 MΩ .....:	> 100 MΩ	P
	No flammable gases		P
	No accessible parts have become live		N/A

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		N/A
- (14.6)	Relevant fault condition tests with high-power supply		N/A
13.2	**Overpower condition**		N/A
	Module withstands overpower condition >15 min.	P measured= 208.7 W (177.4+127.2) Vdc 0.695 A); 1.5 x Pn =1.5 x 208.7 W = 312 W	P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		N/A
	No fire, smoke or flammable gas is produced		P
	Molten material does not ignite tissue paper, spread below the module		P
15	**CONSTRUCTION**		**P**
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
16 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
- (16)	Creepage and distances and clearances in compliance with IEC 61347-1	(see appended table)	P
	Insulating lining of metallic enclosures		N/A
	Basic insulation on printed boards tested according to clause 14		N/A
	Distances subjected to both sinusoidal voltage as non-sinusoidal pulses not less than value in Table 16		N/A
	Creepage distances not less than minimum clearance		P
16 (-)	Conductive accessible parts in compliance with applicable parts of IEC 60598-1		P
17 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		**P**
	Cl. 17 refer to Cl. 17 of IEC 61347-1 which refer to Cl. 4.11 and 4.12 of IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		—
(4.11)	**Electrical connections**		P
(4.11.1)	Contact pressure		N/A
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	**Mechanical connections and glands**		N/A
(4.12.1)	Screws not made of soft metal		N/A
	Screws of insulating material		N/A
	Torque test: torque (Nm); part ..... :		N/A
	Torque test: torque (Nm); part ..... :		N/A
	Torque test: torque (Nm); part ..... :		N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm) ..... :		N/A
	- lampholder; torque (Nm) ..... :		N/A
	- push-button switches; torque 0,8 Nm ..... :		N/A
(4.12.5)	Screwed glands; force (Nm) ..... :		N/A

18 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**N/A**
- (18.1)	Ball-pressure test ..... :	See Test Table 18 (18.1)	N/A
- (18.3)	Glow-wire test (650°C) ..... :	See Test Table 18 (18.3)	N/A
- (18.4)	Needle-flame test (10 s) ..... :	See Test Table 18 (18.4)	N/A
- (18.5)	Proof tracking test ..... :	See Test Table 18 (18.5)	N/A

19 (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

20	**INFORMATION FOR LUMINAIRE DESIGN**		**N/A**
	Information in Annex D (informative)		—

21	**HEAT MANAGEMENT**		**N/A**
21.1	**General**		N/A
	Exchangeability is safeguarded by cap or base		N/A

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
21.2	**Heat-conducting foil and paste**		N/A
	Heat-conducting foil delivered with the module if necessary		N/A
22	**PHOTOBIOLOGICAL SAFETY**		**P**
22.1	**UV radiation**		N/A
	Luminous radiation not exceed 2mW/klm		N/A
22.2	**Blue light hazard**		**P**
	Assessed according to IEC TR 62778	See Nemko test report 377848-2TRFPHO	P
22.3	**Infrared radiation**		N/A
	Requirements for infrared radiation when required		N/A
A	**ANNEX A - TESTS**		**P**
	All tests performed in accordance with the advice given in Annex H of IEC 61347-1, if applicable		P

13 (14)	**TABLE: tests of fault conditions**	**P**
Part	**Simulated fault**	**Hazard**
LED	Short-circuited: the equipment goes on working normally, LEDs are drive with constant current, no hazards	NO
LED	Open-circuited: in case of o-c of LED, the LEDs matrix stopped working. The rest of equipment works normally.	NO

16 (16)	**TABLES: Creepage distances and clearances**					**P**
Table 3	**Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages**					**P**
RMS working voltage (V) not exceeding	50	150	250	500	750	1000
Creepage distances						

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

Required basic insulation, PTI ≥ 600	0,6	0,8	1,5	3	4	5,5
Measured						
Required basic insulation, PTI < 600	1,2	1,6	2,5	5	8	10
Measured				5.5[1)] 5.5[2)]		
Required supplementary insulation PTI ≥ 600	-	0,8	1,5	3	4	5,5
Measured						
Required supplementary insulation PTI < 600	-	1,6	2,5	5	8	10
Measured						
Required reinforced insulation	-	3,2	5	6	8	11
Measured						
Clearances						
Required basic insulation	0,2	0,8	1,5	3	4	5,5
Measured				5.1[1)] 5.1[2)]		
Required supplementary insulation	-	0,8	1,5	3	4	5,5
Measured						
Required reinforced insulation	-	1,6	3	6	8	11
Measured						

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

[1)] Current-carrying parts of different polarity
[2)] Current-carrying parts and accessible parts:
Double/reinforced insulation considered between input and output of LED control gear, so only a basic insulation has been considered between current currying parts of LED module and accessible parts/supporting surface according to Annex X of IEC 60598-1, since accessible metal parts are connected together by means of equipotential bonding.

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

18 (18.1)	TABLE: Ball Pressure Test of Thermoplastics			N/A
Allowed impression diameter (mm) .....:				—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Supplementary information: None				

18 (18.3)	TABLE: Glow-wire test					N/A
Glow wire temperature .....:		650°C				—
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)		Verdict
Any flame or glowing of the sample extinguished within 30 s of withdrawing the glow-wire, and any burning or molten drop did not ignite the underlying parts (Yes/No).....:						
Supplementary information: None						

18 (18.4)	TABLE: Needle-flame test				N/A
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Supplementary information: None					

18 (18.5)	TABLE: Proof tracking test				N/A
Test voltage PTI .....:		175 V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Supplementary information: None					

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1	**SELV-operated LED modules**		**N/A**
	Cl. 5.5 refer to ANNEX I of IEC 61347-2-13 which refer to ANNEX L of IEC 61347-1 (clause numbers between parentheses refer to ANNEX L of IEC 61347-1)		—
(L.3)	**Classification**		N/A
	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**		N/A
	Adequate symbols are used		N/A
(L.5)	**Protection against electric shock**		N/A
	Comply with 9.2 of IEC 61558-1		N/A
(L.6)	**Heating**		N/A
	No excessive temperatures in normal use		N/A
	Value if capacitor tc marked ..... :		—
	Winding insulation classified as Class ..... :		—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		N/A
(L.7)	**Short-circuit and overload protection**		N/A
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		N/A
(L.8)	**Insulation resistance and electric strength**		N/A
(L.8.1)	Conditioned 48 h between 91 % and 95 %		N/A
(L.8.2)	Insulation resistance		N/A
	Between input- and output circuits not less than 5 MΩ ..... :		N/A
	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 ..... :		N/A
(L.8.3)	Electric strength		N/A

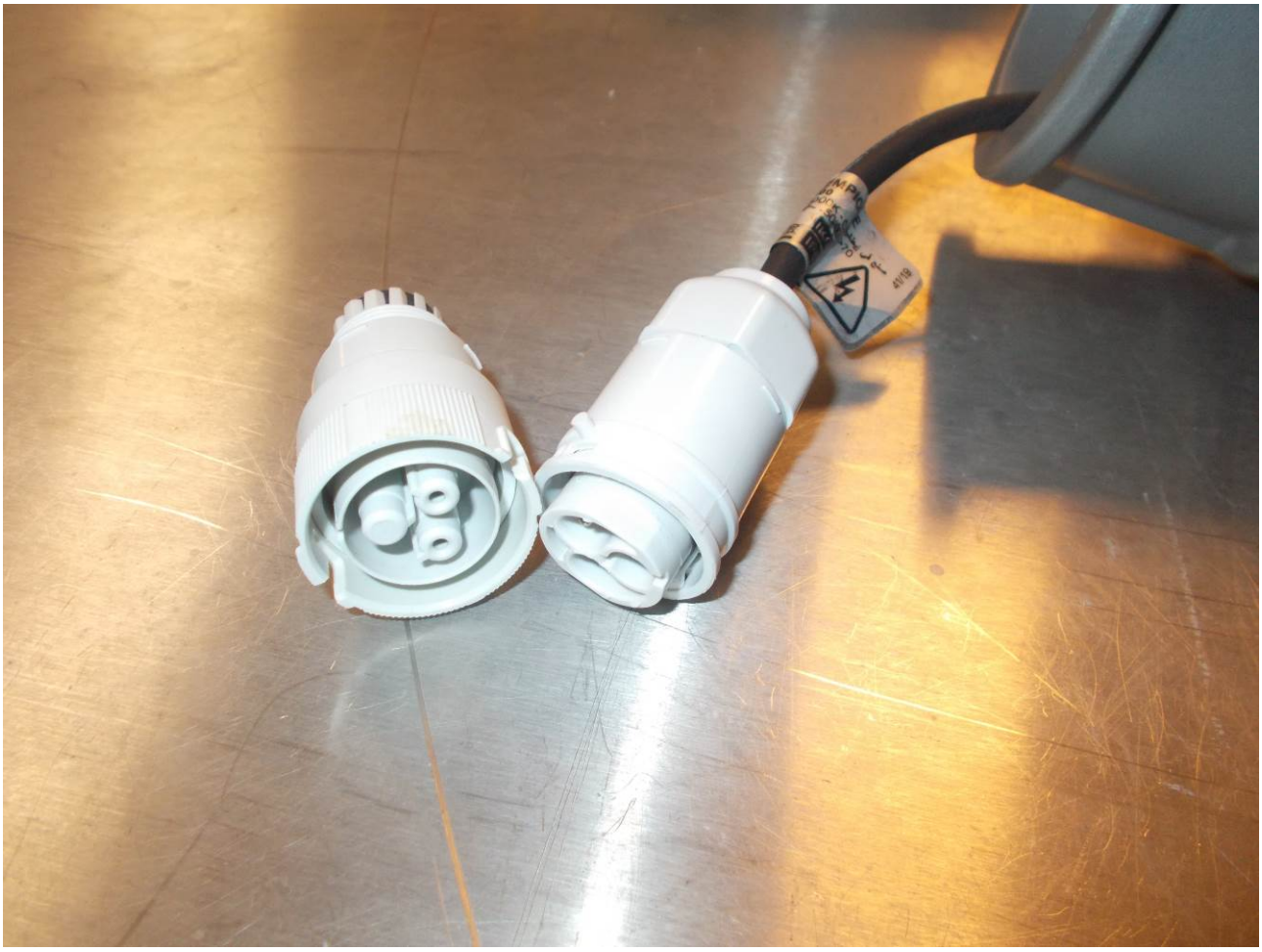
IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
	1) Between live parts of input circuits and live parts of output circuits ..... :		N/A
	2) Over basic or supplementary insulation between:		N/A
	a) live parts having different polarity ..... :		N/A
	b) live parts and body if intended to be connected to protective earth ..... :		N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord ..... :		N/A
	d) live parts and an intermediate metal part ..... :		N/A
	e) intermediate metal parts and the body ..... :		N/A
	f) each input circuit and all other input circuits ..... :		N/A
	3) Over reinforced insulation between the body and live parts ..... :		N/A
(L.9)	**Construction**		N/A
(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		N/A
(L.10)	**Components**		N/A
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		N/A
(L.11)	**Creepage distances and clearances**		N/A
	1. Insulation between input and output circuits, basic insulation:		N/A
	a) measured values ≥ specified values (mm) ..... :		N/A
	b) measured values ≥ specified values (mm) ..... :		N/A
	c) measured values ≥ specified values (mm) ..... :		N/A
	2. Insulation between input and output circuits, double or reinforced insulation:		N/A
	a) measured values ≥ specified values (mm) ..... :		N/A
	b) measured values ≥ specified values (mm) ..... :		N/A
	c) measured values ≥ specified values (mm) ..... :		N/A
	3. Insulation between adjacent output circuits		N/A
	- measured values ≥ specified values (mm) ..... :		N/A
	4. Insulation between terminals for external connection:		N/A
	- measured values ≥ specified values (mm) ..... :		N/A
	5. Basic or supplementary insulation:		N/A
	a) measured values ≥ specified values (mm) ..... :		N/A
	b) measured values ≥ specified values (mm) ..... :		N/A
	c) measured values ≥ specified values (mm) ..... :		N/A

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
	d) measured values ≥ specified values (mm) ..... :		N/A
	e) measured values ≥ specified values (mm) ..... :		N/A
	6. Reinforced insulation or insulation:		N/A
	Between body and output circuit: measured values ≥ specified values (mm) ..... :		N/A
	Between body and output circuit if provision against transient voltages: measured values ≥ specified values (mm) ..... :		N/A
	7. Distance through insulation:		N/A
	a) measured values ≥ specified values (mm) ..... :		N/A
	b) measured values ≥ specified values (mm) ..... :		N/A
	c) measured values ≥ specified values (mm) ..... :		N/A

ATTACHMENT 3: Photo documentation

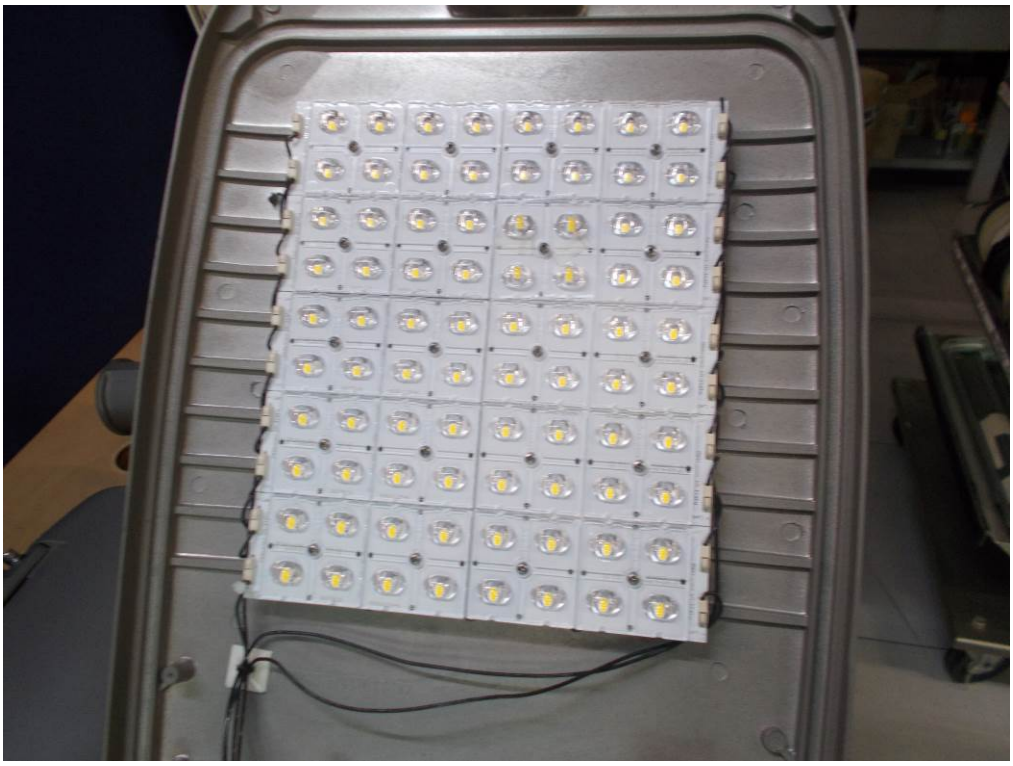
LED MAXISEMPIONE Cod 36251:

Pic.1: Front view

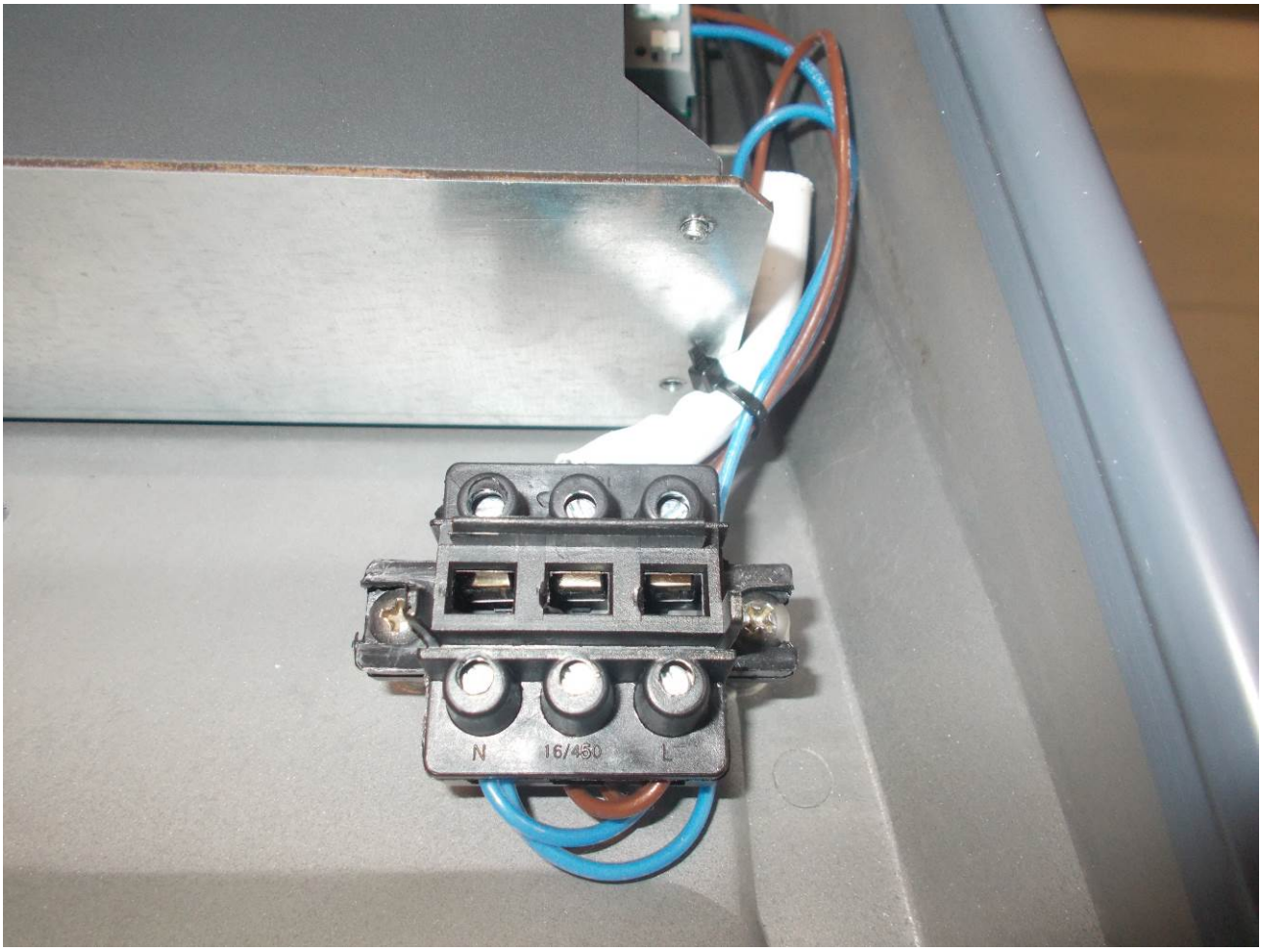


Pic.2: installation coupler

Pic.3: internal view



Pic.4: internal view



Pic.5: knife switch

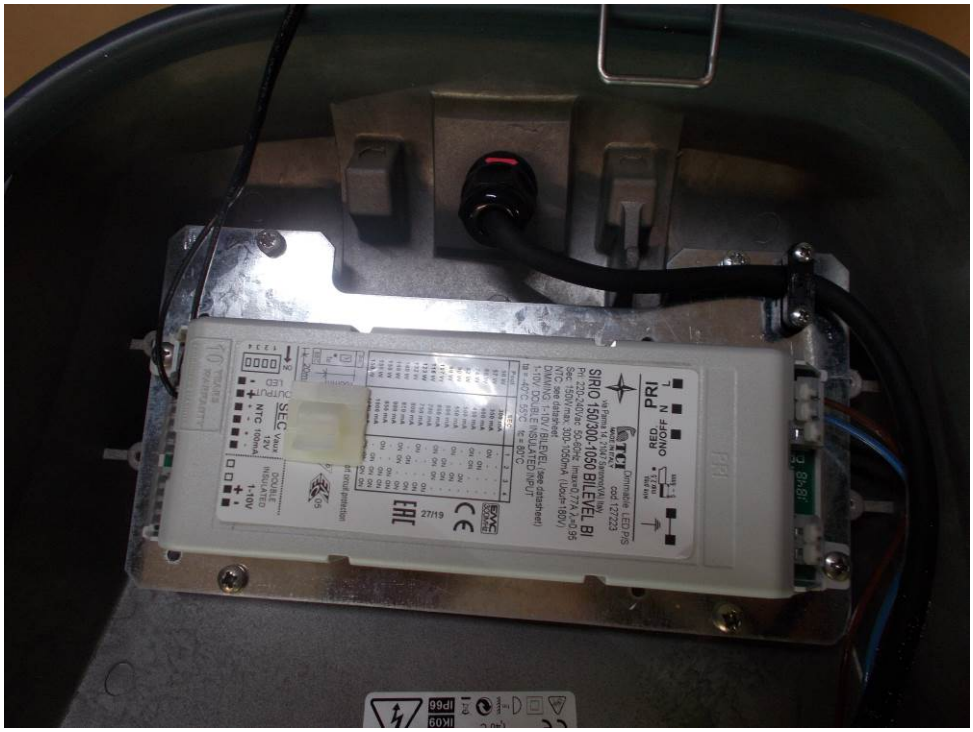
Pic.6: gland

Pic.7: controlgear

LED MAXISEMPIONE Cod. 36250:

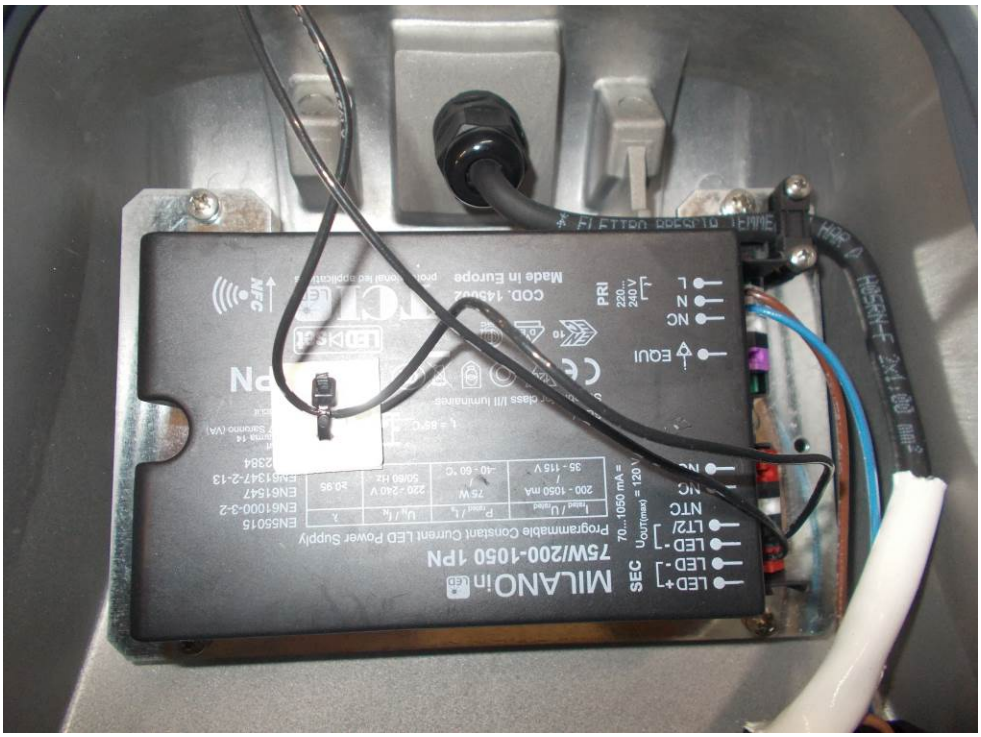
Pic.8: internal view

LED SEMPIONE Cod. 36200:



Pic.9: internal view

LED MINISEMPIONE Cod. 36001



Pic.10: internal view

LED MINISEMPIONE Cod. 36000:

Pic.11: internal view

ATTACHMENT 4: Best Measurement capability

Measurement uncertainty for Environmental and Safety testing

Test	Range	Measurement Uncertainty	Note
Environmental testing	Temperature -70 °C ÷ 180 °C	1.8 °C	(1)
	Relative Humidity 10 % ÷ 98 %	6 %	(1)
IP protection	Water flow 0.5 l/min ÷ 100 l/min	5 %	(1)
	Air flow	5 %	(1)
	Force 50 N, 30 N, 3 N, 1 N	10 %	(1)
	Dimensions 50 mm, 12.5 mm, 2.5 mm, 1 mm	0.05 mm	(1)
Construction verifications	AC/DC Voltage 10 mV ÷ 1000 V up to 5 kHz	1.5·%	(1)
	AC/DC Voltage 10 mV ÷ 1000 V 5÷100 kHz	2.5·%	(1)
	AC/DC Current 0.1 mA ÷ 5 A up to 1 kHz	1.5·%	(1)
	AC/DC Current 5 A ÷ 400 A up to 1 kHz	2.5·%	(1)
	Resistance 100 mΩ ÷ 10 MΩ	2.0·%	(1)
	Active/Apparent Power 200 mW ÷ 1 W	20 mW	(1)
	Active/Apparent Power 1 W ÷ 6 kW	3.0 %	(1)
	Power factor	0.05	(1)
	Frequency	0.2 %	(1)
	Dimensions 0 ÷ 200 mm	0.05 mm	(1)
	Dimensions 0.2 ÷ 200 m	0.5 %	(1)
	Force 0.2 ÷ 2.5 kN	3 %	(1)
	Torque 0.2 ÷ 200 Nm	5 %	(1)
	Weight 1 g ÷ 2 kg	1.0 % or 0.1 g	(1)
	Weight 2 kg ÷ 100 kg	2 %	(1)
Heating	Temperature 20 °C ÷ 400 °C	4.5 °C	(1)
Pressure measurement	Pressure -0.5 bar ÷ 700 bar	1.0·%	(1)
Temperature measurement	Temperature -40 °C ÷ 300 °C	2.0 °C	(1)
Protection against access to live parts	Dimensions 1 ÷ 1000 mm	0.08 mm or 0.3 %	(1)
	Force 0.2 ÷ 1000 N	3%	(1)
Power input and current	Active/Apparent Power 0.2 W ÷ 6 kW	20 mW or 3 %	(1)
	AC/DC Current 1 mA ÷ 5 A up to 1kHz	1.5 %	(1)
Leakage current	AC Current 0.01 mA ÷ 200 mA up to 5kHz	3.0 %	(1)
	AC Current 0.01 mA ÷ 200 mA 5kHz to 1MHz	10.0 %	(1)
Earth impedance	Impedance 1 mΩ ÷ 10 kΩ	3 mΩ or 4 %	(1)
Continuity resistance	AC 10 mΩ ÷ 2 Ω, 5A ÷ 32A	3 mΩ or 5 %	(1)
	AC 2 Ω ÷ 100 Ω, 100 mA or 200 mA	5 %	(1)
	DC 1 mΩ ÷ 1 kΩ, 0.01 A ÷ 10 A	5 %	(1)
Insulation resistance	10 kΩ ÷ 200 GΩ, 10 V ÷ 1000 V	3.0·%	(1)
	200 GΩ ÷ 1000 GΩ, 500 V ÷ 1000 V	10·%	(1)
Dielectric strength	AC Voltage 0.1 kV ÷ 5 kV (50 Hz or 60 Hz)	3.0 %	(1)
	DC Voltage 0.1 kV ÷ 6 kV	3.0 %	(1)
	AC/DC Current 0.1 mA ÷ 200 mA up to 1 kHz	5 %	(1)
Transients	Pulse voltage	10·%	(1)
Tracking test	Voltage, Current	1.5 %	(1)
	Drops - count	7	(1)

NOTES:
(1) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2 which has been derived from the assumed normal probability distribution with infinite degrees of freedom and for a coverage probability of 95 %.

Test	Range	Measurement Uncertainty	Note
Moisture resistance	See Environmental testing and IP protection		(1)
Overload protection	See Construction verifications and Heating		(1)
Abnormal operation	See Construction verifications and Heating		(1)
Mechanical strength Impact energy	Force 0.2 ÷ 2.5 kN Length 1 ÷ 1000 mm	See Construction verifications	(1)
Resistance to heat and fire(Ball pressure test)	See Environmental testing and Construction verifications		(1)
Resistance to heat and fire (Glow wire test)	Glow wire temperature	3 °C	(1)
Time Measurements	10 ms ÷ 8 h	1 %	(1)
Velocity Measurements	0 ÷ 5 m/s	5 %	(1)
Salt mist	See 60068-2-11	(2)	(1)
Vibration	5 Hz ÷ 2 kHz	5.0 %	(1)
Sound power/pressure level	31 Hz ÷ 4 kHz	3.0 dB	(1)
	4 kHz ÷ 10 kHz	6.0 dB	(1)
	A-weighted, C-weighted	2.0 dB	(1)

NOTES:
(1) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2 which has been derived from the assumed normal probability distribution with infinite degrees of freedom and for a coverage probability of 95 %.
(2) The instruments used for this test is according to the tolerances requested by the standard 60068-2-11

Test	Range	Measurement Uncertainty	Note
Radiance Blue light, Retinal thermal, Retinal thermal weak visual stimulus	0 ÷ 0.1 MW/(sr·m^2) 300 ÷ 1400 nm	7.0 %	(1) (4)
	0.1 ÷ 100 MW/(sr·m^2) 300 ÷ 1400 nm	8.0 %	
Luminance	0 ÷ 0.1 Mcd/m^2	7.0 %	(1)
	0.1 ÷ 100 Mcd/m^2	8.0 %	
Irradiance Actinic UV, Near UV, Blue light small source, IR radiation, eye	0 ÷ 0.1 MW/(m^2) 200 ÷ 300 nm	9.2 %	(1) (5)
	0.1 ÷ 100 MW/(m^2) 200 ÷ 300 nm	10.0 %	
	0 ÷ 0.1 MW/(m^2) 300 ÷ 3000 nm	6.4 %	
	0.1 ÷ 100 MW/(m^2) 300 ÷ 3000 nm	7.2 %	
Illuminance	0 ÷ 20 klx	4.0 %	(1)
Spectral Radiance	0 ÷ 0.1 MW/(sr·m^2·nm) 300 ÷ 1400 nm	6.2 %	(1)
	0.1 ÷ 1 MW/(sr·m^2·nm) 300 ÷ 1400 nm	7.0 %	
Spectral Irradiance	0 ÷ 0.1 MW/(m^2·nm) 200 ÷ 300 nm	8.6 %	(1)
	0.1 ÷ 1 MW/(m^2·nm) 200 ÷ 300 nm	9.2 %	
	0-0.1 MW/(m^2·nm) 300 ÷ 3000nm	5.4 %	
	0.1 ÷ 1 MW/(m^2·nm) 300 ÷ 3000 nm	6.4 %	
Radiant power Laser radiation Output power	350 ÷ 400 nm 950 ÷ 3000 nm 30 uW ÷ 30 W	9.0 %	(1), (2), (3)
	400 ÷ 950 nm 50 nW ÷ 3 W	4.6 %	(1), (2), (3)
Radiant energy Laser radiation	350 ÷ 400 nm 950 ÷ 3000 nm 20 uJ ÷ 2 J	9.0 %	(1), (2)
	400 ÷ 950 nm 20 uJ ÷ 2 J	4.6 %	(1), (2)
Wavelength	200 ÷ 3000 nm	4.5 %	(1)
Length in optical measurement	0 ÷ 20 mm	0.5 mm	(1)
	20 ÷ 200 mm	2 mm	
	0.2 ÷ 200 m	0.5 %	

NOTES:

(1) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$ which has been derived from the assumed normal probability distribution with infinite degrees of freedom and for a coverage probability of 95 %

(2) In the standard 60825-1 laser radiation can indicate radiant power or radiant energy

(3) In the standard 60825-1 the radiant power can be called also output power

(4) The uncertainty value expressed in W/(m^2) is the maximum value between the value measured and the limit stated in the standard (see IEC/EN62471) multiplied to the measurement uncertainty stated in the table

(5) The uncertainty value expressed in W/(sr·m^2) is the maximum value between the value measured and the limit stated in the standard (see IEC/EN62471) multiplied to the measurement uncertainty stated in the table