



Test Report issued under the responsibility of:



TEST REPORT
IEC 60598-2-1
Luminaires
Part 2: Particular requirements
Section 1: Fixed general purpose luminaires

Report Number.....: 4789173543-5
Date of issue.....: 2019-12-16
Total number of pages.....: 112 including attachments

**Name of Testing Laboratory
preparing the Report.....:** UL International Italia S.r.l.

Applicant's name NERI S.p.A.

Address SS Emilia, 1622 – Longiano (FC) 47020 - Italy

Test specification:

Standard.....: IEC 60598-2-1:1979, AMD1:1987 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_1F

Test Report Form(s) Originator: Intertek Semko AB

Master TRF.....: Dated 2017-10

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and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.**

General disclaimer:

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Test item description	LED Luminaire	
Trade Mark	NERI	
Manufacturer	NERI S.p.A. SS Emilia, 1622 – Longiano (FC) 47020 - Italy	
Model/Type reference	Brenta model: W-S (see page 7 for variants)	
Ratings	220-240 V ~ 50/60 Hz 13 W Class II IP55 t_a 50°C (see page 7 for variants)	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/> CB Testing Laboratory:	UL International Italia S.r.l.	
Testing location/ address	Via delle Industrie, 5 & 6 -20061 Carugate (MI) Italy	
Tested by (name, function, signature)	Marco Caroli Project Handler	
Approved by (name, function, signature) ...	Walter Parmiani Reviewer	
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	NERI S.p.A..	
Testing location/ address	SS Emilia, 1622 – Longiano (FC) 47020 - Italy	
Tested by (name + signature)	Simone Zoffoli Tester	
Witnessed by (name, function, signature) :	Marco Caroli Project Handler	
Approved by (name, function, signature) ...	Walter Parmiani Reviewer	
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):				
European Group Differences and National deviation			:	(Enclosure 1): 2 pages
Evaluation of LED modules as integral components according to IEC 62031:2008 + A1 + A2; EN 62031:2008 + A1 + A2			:	(Enclosure 2): 16 pages
Evaluation according to Australia / New Zealand's National Differences.....			:	(Enclosure 3): 34 pages
Evaluations according to Regulatory Requirements and National Conditions for the Kingdom of Saudi Arabia			:	(Enclosure 4): 1 page
Manufacturer's Instructions			:	(Enclosure 5): 16 pages
Photos			:	(Enclosure 6): 4 pages
Equipment list			:	(Enclosure 7): 1 page
Summary of testing:				
Tests performed (name of test and test clause):				Testing location:
1.5	Marking	Applicable	Pass	NERI S.p.A. SS Emilia, 1622 Longiano (FC) 47020 Italy
1.6	Construction	Applicable	Pass	
1.7	Creepage distances and clearances	Applicable	Pass	
1.8	Provision for earthing	Not Applicable	N/A	
1.9	Screw terminals and screwless terminals and electrical connection	Applicable	Pass	
1.10	External and internal wiring	Applicable	Pass	
1.11	Protection against electric shock	Applicable	Pass	
1.12	Endurance test and thermal test	Applicable	Pass	
1.13	Resistance to dust and moisture (IPx5)	Applicable	Pass	
1.14	Insulation resistance and electric strength	Applicable	Pass	
1.15	Resistance to heat, fire and tracking	Not Applicable	N/A	UL International Italia S.r.l. Via delle Industrie, 5 & 6 -20061 Carugate (MI) Italy
1.13	Resistance to dust and moisture (IP5x)	Applicable	Pass	
TEST RESULTS WERE FAVOURABLE				
The measurement uncertainties stated in this Test Report are estimated according to the Quality Procedure MP02-A1. If requested, NERI S.p.A. will be able to estimate the uncertainty contribution for all the quantities stated in this Test Report				

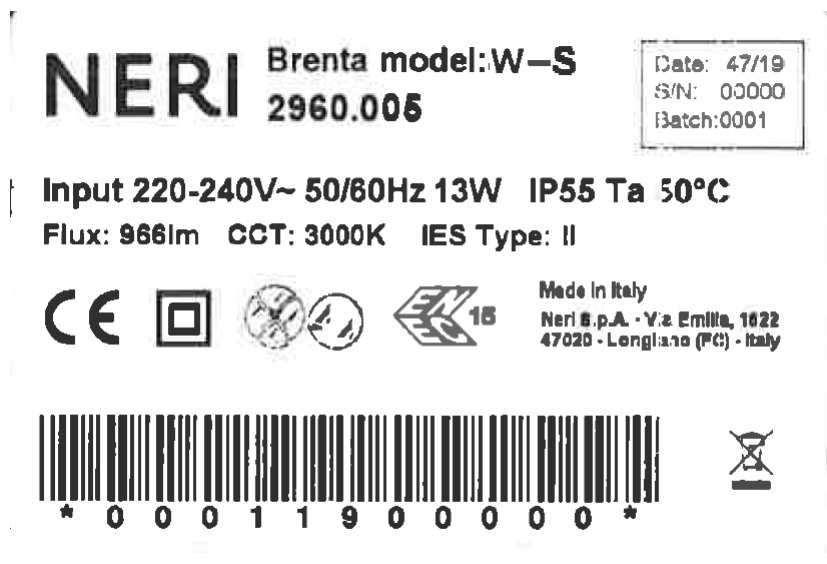
Summary of compliance with National Differences:**List of countries addressed:**

- **All countries member of CENELEC** (Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom) (see Enclosure 1)
- **Australia / New Zealand's** (see Enclosure 3)
- **Kingdom of Saudi Arabia** (see Enclosure 4)

☒ **The product fulfils the requirements of EN 60598-2-1:1989 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.



**Terminal block not included.
Installation must be performed
by a qualified person.**

On the package

Test item particulars	
Classification of installation and use Class II fixed LED luminaire	
Supply Connection tails	
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 : N/A (CTF stage 2) / 2019-12-06 (UL tests)	
Date (s) of performance of tests : 2019-07-11 to 2019-11-11 / 2019-12-13 (UL tests)	
General remarks:	
<p>"(See Enclosure #)" refers to additional information appended to the report.</p> <p>"(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</p> <p>Clause numbers between brackets refer to clauses in IEC 60598-1</p>	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 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:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) NERI S.p.A. Via delle Querce 4 – Longiano (FC) 47020 - Italy	

General product information:

Fixed luminaire provided with an integral LED module as light source and with a separately approved electronic LED control gear (constant current) providing a SELV output (<60 Vd.c.); intended for installation on a pole or on a wall.

The luminaire optical part is composed by an aluminium heatsink, closed with a tempered flat glass, which is also the fixing means of LED driver and internal wiring. The optical part is fixed by screws on the luminaire body made of concrete.

Rated 220-240 V~, 50/60 Hz, degree of protection IP55, construction in insulation Class II.

Additional Information:

The LED module and the product configuration are the same of the Luminaire that has been evaluated to check the photobiological effects in accordance with the standard IEC TR 62778:2014.

The results are laid down in the test reports No.:

- 4789173543.4-2 issued by UL International Italia S.r.l. on 2019-11-08.

The radiation hazard complies with the limit level for the group Risk 1 at a Dthr 0,79 m.

Variants

The main model:

- **Brenta model: W-S** – 220V-240V~ 50/60 Hz 13 W Class II IP55 t_a 50 °C

extends also the models series Light Brenta identified with the following codes:

- **Brenta model: B-M** – 220 V - 240 V~ 50/60 Hz 13 W Class II IP55 t_a 50 °C

- **Brenta model: B-S** – 220 V - 240 V~ 50/60 Hz 13 W Class II IP55 t_a 50 °C

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.2 (0)	GENERAL TEST REQUIREMENTS		—
1.2 (0.3)	More sections applicable	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Section/s:	—
1.2 (0.5)	Components	(see Annex 1)	—
1.2 (0.7)	Information for luminaire design in light sources standards		—
1.2 (0.7.2)	Light source safety standard	IEC 62031	—
	Luminaire design in the light source safety standard		P

1.4 (2)	CLASSIFICATION OF LUMINAIRES		—
1.4 (2.2)	Type of protection	Class II	—
1.4 (2.3)	Degree of protection	IP55	—
1.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces.....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
1.4 (2.5)	Luminaire for normal use	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

1.5 (3)	MARKING		P
1.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
1.5 (3.3)	Additional information		P
	Language of instructions		P
1.5 (3.3.1)	Combination luminaires		N/A
1.5 (3.3.2)	Nominal frequency in Hz	50/60 Hz	P
1.5 (3.3.3)	Operating temperature	t_a 50 °C	P
1.5 (3.3.5)	Wiring diagram		P
1.5 (3.3.6)	Special conditions		N/A
1.5 (3.3.7)	Metal halide lamp luminaire – warning		N/A
1.5 (3.3.8)	Limitation for semi-luminaires		N/A
1.5 (3.3.9)	Power factor and supply current		N/A
1.5 (3.3.10)	Suitability for use indoors		N/A
1.5 (3.3.11)	Luminaires with remote control		N/A
1.5 (3.3.12)	Clip-mounted luminaire – warning		N/A

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5 (3.3.13)	Specifications of protective shields		N/A
1.5 (3.3.14)	Symbol for nature of supply		P
1.5 (3.3.15)	Rated current of socket outlet		N/A
1.5 (3.3.16)	Rough service luminaire		N/A
1.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Y	P
1.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
1.5 (3.3.19)	Protective conductor current in instruction if applicable		N/A
1.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
1.5 (3.3.21)	Non replaceable and non-user replaceable light sources information provided		P
1.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
1.5 (3.3.23)	Luminaire without controlgear provided with necessary information for selection of appropriate component		N/A
1.5 (3.3.24)	If not supplied with terminal block, information on the packaging		P
1.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P

1.6 (4)	CONSTRUCTION		P
1.6 (4.2)	Components replaceable without difficulty	No replaceable components	N/A
1.6 (4.3)	Wireways smooth and free from sharp edges		P
1.6 (4.4)	Lampholders		N/A
1.6 (4.4.1)	Integral lampholder		N/A
1.6 (4.4.2)	Wiring connection		N/A
1.6 (4.4.3)	Lampholder for end-to-end mounting		N/A
1.6 (4.4.4)	Positioning		N/A
	- pressure test (N)		—
	After test the lampholder comply with relevant standard sheets and show no damage		N/A

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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
1.6 (4.4.5)	Peak pulse voltage		N/A
1.6 (4.4.6)	Centre contact		N/A
1.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
1.6 (4.4.8)	Lamp connectors		N/A
1.6 (4.4.9)	Caps and bases correctly used		N/A
1.6 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
1.6 (4.5)	Starter holders		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
1.6 (4.6)	Terminal blocks		P
	Tails		P
	Unsecured blocks		N/A
1.6 (4.7)	Terminals and supply connections		P
1.6 (4.7.1)	Contact to metal parts	Class II connection box defined in instruction	P
1.6 (4.7.2)	Test 8 mm live conductor	Class II connection box defined in instruction	P
	Test 8 mm earth conductor		N/A
1.6 (4.7.3)	Terminals for supply conductors		P
1.6 (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
1.6 (4.7.4)	Terminals other than supply connection		P
1.6 (4.7.5)	Heat-resistant wiring/sleeves		N/A

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
1.6 (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
1.6 (4.9)	Insulating lining and sleeves		N/A
1.6 (4.9.1)	Retainment		N/A
	Method of fixing.....:		N/A
1.6 (4.9.2)	Insulated linings and sleeves:		N/A
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C).....:		N/A
1.6 (4.10)	Double or reinforced insulation		P
1.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		P
	Safe installation fixed luminaires		P
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
1.6 (4.10.2)	Assembly gaps:		P
	- not coincidental		P
	- no straight access with test probe		N/A
1.6 (4.10.3)	Retainment of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
1.6 (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

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
1.6 (4.11)	Electrical connections and current-carrying parts		P
1.6 (4.11.1)	Contact pressure		N/A
1.6 (4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
1.6 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
1.6 (4.11.4)	Material of current-carrying parts		P
1.6 (4.11.5)	No contact to wood or mounting surface		P
1.6 (4.11.6)	Electro-mechanical contact systems		N/A
1.6 (4.12)	Screws and connections (mechanical) and glands		P
1.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part	1,2 Nm; M4– Screws fixing LED driver and wiring to concrete enclosure	P
	Torque test: torque (Nm); part	0,5 Nm; M3– Screws used for fixing LED module	P
1.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
1.6 (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
1.6 (4.12.5)	Screwed glands; force (Nm)		N/A
1.6 (4.13)	Mechanical strength		P
1.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm)	0,2	P
	- other parts; energy (Nm)	0,35	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.13.2)	Metal parts have adequate mechanical strength		P
1.6 (4.13.3)	Straight test finger	30 N	P
1.6 (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
1.6 (4.13.6)	Tumbling barrel		N/A
1.6 (4.14)	Suspensions, fixings and means of adjusting		P
1.6 (4.14.1)	Mechanical load:		P
	A) four times the weight	4 x 3,2 = 12,8 kg	P
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm)		N/A
	D) load track-mounted luminaires		N/A
	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
1.6 (4.14.2)	Load to flexible cables		N/A
	Mass (kg)		—
	Stress in conductors (N/mm ²)		N/A
	Mass (kg) of semi-luminaire		N/A
	Bending moment (Nm) of semi-luminaire		N/A
1.6 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles		N/A
	- strands broken		N/A
	- electric strength test afterwards		N/A
1.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
1.6 (4.14.5)	Guide pulleys		N/A
1.6 (4.14.6)	Strain on socket-outlets		N/A
1.6 (4.15)	Flammable materials		P

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- glow-wire test 650°C.....:	See Test Table 1.15 (13.3.2)	P
	- spacing ≥ 30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		P
	- thermal protection		N/A
	- electronic circuits exempted		N/A
1.6 (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
1.6 (4.16)	Luminaires for mounting on normally flammable surfaces		P
	No lamp control gear.....:	(compliance with Section 12)	N/A
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N/A
1.6 (4.16.1)	Lamp control gear spacing:		P
	- spacing 35 mm		P
	- spacing 10 mm		N/A
1.6 (4.16.2)	Thermal protection:		P
	- in lamp control gear		N/A
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear	See Annex 1	P
1.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
1.6 (4.17)	Drain holes		N/A
	Clearance at least 5 mm		N/A
1.6 (4.18)	Resistance to corrosion		P
1.6 (4.18.1)	- rust-resistance		N/A
1.6 (4.18.2)	- season cracking in copper		N/A
1.6 (4.18.3)	- corrosion of aluminium		P
1.6 (4.19)	Ignitors compatible with ballast		N/A
1.6 (4.20)	Rough service vibration		N/A
1.6 (4.21)	Protective shield		N/A

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
1.6 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
1.6 (4.21.3)	No direct path		N/A
1.6 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment	See Test Table 1.15 (13.3.2)	N/A
1.6 (4.22)	Attachments to lamps not cause overheating or damage		N/A
1.6 (4.23)	Semi-luminaires comply Class II		N/A
1.6 (4.24)	Photobiological hazards		P
1.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
1.6 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778		—
	Luminaires with E_{thr} :		P
	a) Fixed luminaires		P
	- distance x m, borderline between RG1 and RG2....:	0,79 m	P
	- marking and instruction according 3.2.23		P
	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
1.6 (4.25)	Mechanical hazard		P
	No sharp point or edges		P
1.6 (4.26)	Short-circuit protection		N/A
1.6 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N/A
1.6 (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
1.6 (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

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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
1.6 (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
1.6 (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
1.6 (4.30)	Luminaires with non-user replaceable light source		N/A
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N/A
	Minimum two fixing means	LED module SELV supplied	N/A
1.6 (4.31)	Insulation between circuits		P
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3	SELV LED controlgear	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
1.6 (4.31.1)	SELV circuits		P
	Used SELV source	SELV controlgear	P
	Voltage \leq ELV		P
	Insulating of SELV circuits from LV supply		P
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	SELV circuits insulated from accessible parts according Table X.1		P
	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
1.6 (4.31.2)	FELV circuits		N/A
	Used FELV source		N/A
	Voltage \leq 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
1.6 (4.31.3)	Other circuits		P
	Other circuits insulated from accessible parts according Table X.1		P
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N/A
	- conductive parts are connected together	No metal parts may have different potentials	N/A
	- test according 7.2.3		N/A
	- conductive part not cause an electric shock in case of an insulation fault		N/A
	- 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
1.6 (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

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Clause	Requirement + Test	Result - Remark	Verdict

1.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
1.7 (11.2.1)	Impulse withstand category (Normal category II)	Category II <input type="checkbox"/> Category III <input checked="" type="checkbox"/>	—
	Category III according Annex U		P
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
1.7 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 1.7 (11.2) I	P
	Creepage distances for frequency over 30 kHz:		N/A
	- Controlgear marked with \hat{U}_{OUT} and f_{UOUT} according IEC 61347-1, clause 7.1, item w	See Test Table 1.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 1.7 (11.2) II	N/A
1.7 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 1.7 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with U_P	See Test Table 1.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 1.7 (11.2) II	N/A

1.8 (7)	PROVISION FOR EARTHING		N/A
1.8 (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 groove		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
1.8 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N/A
1.8 (7.2.4)	Locking of clamping means		N/A
	Compliance with 4.7.3		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
1.8 (7.2.5)	Earth terminal integral part of connector socket		N/A
1.8 (7.2.6)	Earth terminal adjacent to mains terminals		N/A
1.8 (7.2.7)	Electrolytic corrosion of the earth terminal		N/A
1.8 (7.2.8)	Material of earth terminal		N/A
	Contact surface bare metal		N/A
1.8 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
1.8 (7.2.11)	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A

1.9 (14)	SCREW TERMINALS		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the luminaire	(see Annex 3)	N/A

1.9 (15)	SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS		P
	Separately approved; component list	(see Annex 1)	P
	Part of the luminaire	(see Annex 4)	N/A

1.10 (5)	EXTERNAL AND INTERNAL WIRING		P
1.10 (5.2)	Supply connection and external wiring		P
1.10 (5.2.1)	Means of connection.....	tails	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
1.10 (5.2.2)	Type of cable	H05RN-F	P
	Nominal cross-sectional area (mm ²).....	4 x 1,0 mm ²	P
	Cables equal to IEC 60227 or IEC 60245		P
1.10 (5.2.3)	Type of attachment, X, Y or Z	Y	P
1.10 (5.2.5)	Type Z not connected to screws		N/A
1.10 (5.2.6)	Cable entries:		N/A
	- suitable for introduction		N/A
	- adequate degree of protection		N/A
1.10 (5.2.7)	Cable entries through rigid material have rounded edges		P

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Clause	Requirement + Test	Result - Remark	Verdict
1.10 (5.2.8)	Insulating bushings:		N/A
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
1.10 (5.2.9)	Locking of screwed bushings		N/A
1.10 (5.2.10)	Cord anchorage:		P
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
1.10 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
1.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		P
1.10 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N):	80	P
	- torque test: torque (Nm):	0,35	P
	- displacement ≤ 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
1.10 (5.2.11)	External wiring passing into luminaire		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
1.10 (5.2.12)	Looping-in terminals		N/A
1.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
1.10 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
1.10 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard		N/A
1.10 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
1.10 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
1.10 (5.3)	Internal wiring		P
1.10 (5.3.1)	Internal wiring of suitable size and type	0,823 mm ² AWG18 (in secondary circuit)	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
1.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-sectional area (mm ²)	1,0 mm ² H05RN-F	P
	Insulation thickness (mm)		P
	Extra insulation added where necessary		P
1.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P
	Cross-sectional area (mm ²)		P
1.10 (5.3.1.3)	Double or reinforced insulation for class II		P
1.10 (5.3.1.4)	Conductors without insulation		N/A
1.10 (5.3.1.5)	SELV current-carrying parts		P
1.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
1.10 (5.3.2)	Sharp edges etc.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		N/A
1.10 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
1.10 (5.3.4)	Joints and junctions effectively insulated		P
1.10 (5.3.5)	Strain on internal wiring		P
1.10 (5.3.6)	Wire carriers		N/A
1.10 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
1.10 (5.4)	Test to determine suitability of conductors having a reduced cross-sectional area		N/A
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(see Annex 2)	N/A
	No damage to luminaire wiring after test		N/A

1.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
1.11 (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		N/A
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		P
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A
	Double-ended high-pressure discharge lamp		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
1.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
1.11 (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		P
1.11 (8.2.3.b)	BC lamp holder of metal in class I luminaires shall be earthed		N/A
1.11 (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
1.11 (8.2.4)	Portable luminaire has protection independent of supporting surface		N/A
1.11 (8.2.5)	Compliance with the standard test finger or relevant probe		N/A
1.11 (8.2.6)	Covers reliably secured		N/A
1.11 (8.2.7)	Luminaire other than below with capacitor > 0,5 μ F not exceed 50 V 1 min after disconnection		N/A
	Portable luminaire with capacitor > 0,1 μ F (0.25) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 μ F (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N/A
1.12 (12)	ENDURANCE TEST AND THERMAL TEST		P
1.12 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 1.13		—

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Clause	Requirement + Test	Result - Remark	Verdict
1.12 (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)	—
1.12 (12.3)	Endurance test		P
	a) mounting-position	Wall	—
	b) test temperature (°C)	60	—
	c) total duration (h)	240	—
	d) supply voltage (V)	1,1 x Vnom = 264 V	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A)	—	—
	e) luminaire ceases to operate	—	—
1.12 (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
1.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
1.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	P
1.12 (12.6)	Thermal test (failed lamp control gear condition):		N/A
1.12 (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
1.12 (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

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Clause	Requirement + Test	Result - Remark	Verdict
	- measured mounting surface temperature (°C)		N/A
	- track-mounted luminaires		N/A
1.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A
1.12 (12.7.1)	Luminaire without temperature sensing control		N/A
1.12 (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 1.15 (13.2.1)	N/A
1.12 (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 1.15 (13.2.1)	N/A
1.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
1.12 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	- manual reset cut-out	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	- auto reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions		—
	- highest measured temperature of fixing point/ exposed part (°C):		—
	Ball-pressure test:	See Test Table 1.15 (13.2.1)	N/A

1.13 (9)	RESISTANCE TO DUST AND MOISTURE		P
1.13 (-)	If IP > IP 20 the order of tests as specified in clause 1.12		P
1.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP	IP55	—
	- mounting position during test	Wall	—
	- fixing screws tightened; torque (Nm)	—	—
	- tests according to clauses	9.2.2 – 9.2.6	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		P
	b) no talcum in dust-tight luminaire		N/A
	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		N/A
	c.2) For luminaires with drain holes – no hazardous water entry		P
	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
	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
1.13 (9.3)	Humidity test 48 h		P

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Clause	Requirement + Test	Result - Remark	Verdict
1.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
1.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø	—	—
	Insulation resistance (MΩ)	—	—
	SELV		P
	- between current-carrying parts of different polarity :	> 100 MΩ (1 MΩ)	P
	- between current-carrying parts and mounting surface	> 100 MΩ (1 MΩ)	P
	- between current-carrying parts and metal parts of the luminaire	> 100 MΩ (1 MΩ)	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts	> 100 MΩ (1 MΩ)	P
	- Insulation bushings as described in Section 5		N/A
	Other than SELV		P
	- between live parts of different polarity	> 100 MΩ (2 MΩ)	P
	- between live parts and mounting surface	> 100 MΩ (4 MΩ)	P
	- between live parts and metal parts	> 100 MΩ (4 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 (2 MΩ)	P
	- Insulation bushings as described in Section 5		N/A
1.14 (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		P
	- between current-carrying parts of different polarity :	500 V	P
	- between current-carrying parts and mounting surface	500 V	P
	- between current-carrying parts and metal parts of the luminaire	500 V	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts	500 V	P
	- 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	P
	- between live parts and metal parts	2960 V	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	1480 V	P
	- Insulation bushings as described in Section 5		N/A
1.14 (10.3)	Touch current or protective conductor current (mA):	Touch current: 0,14 mA (lim. 0,7 mA)	P

1.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		N/A
1.15 (13.2.1)	Ball-pressure test	See Test Table 1.15 (13.2.1)	N/A
1.15 (13.3.1)	Needle-flame test (10 s)	See Test Table 1.15 (13.3.1)	N/A
1.15 (13.3.2)	Glow-wire test (650°C)	See Test Table 1.15 (13.3.2)	N/A
1.15 (13.4)	Proof tracking test (IEC 60112)	See Test Table 1.15 (13.4)	N/A

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Clause	Requirement + Test				Result - Remark		Verdict
1.7 (11.2)	TABLE I: Creepage distances and clearances						P
	Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages						P
	Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*						P
	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	> 3,9	3,0	U1	> 3,9	3,0 (#)	11.1.A
Working voltage (V)					240		—
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or U_P if applicable (kV)					—		—
Supplementary information: (#) 2,5 elevated to 3,0 as required by clause U.2							
Distance 2:	S	> 3,9	3,0	U1	> 3,9	3,0 (#)	11.1.A
Working voltage (V)					240		—
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or U_P if applicable (kV)					—		—
Supplementary information: (#) 2,5 elevated to 3,0 as required by clause U.2							
Distance 3:	R	>7,2	5,5	U.1	>7,2	5,5 (#)	11.1.A
Working voltage (V)					240		—
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or U_P if applicable (kV)					—		—
Supplementary information: (#) 5,0 elevated to 5,5 as required by clause U.2.							

No measurements have been performed on parts SELV supplied with working voltages below 25 V r.m.s. and 60 V d.c. as the test voltage of Table 10.2 is considered sufficient.

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

1.7 (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 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—

IEC 60598-2-1							
Clause	Requirement + Test					Result - Remark	Verdict
Peak value of the working voltage \hat{U}_{out} if applicable (kV)							—
Supplementary information:							
Distance 2:							
Working voltage (V)							—
Frequency if applicable (kHz)							—
PTI						< 600 <input type="checkbox"/> \geq 600 <input type="checkbox"/>	—
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 <input type="checkbox"/> \geq 600 <input type="checkbox"/>	—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)							—
Supplementary information:							

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

1.15 (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:				

1.15 (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:					

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict

1.15 (13.3.2)	TABLE: Glow-wire test (IEC 60695-2-11)				P
Glow wire temperature :			650°C		—
Object/ Part No./ Material	Manufacturer/ trademark		Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Plastic lenses on LED module, PMMA	LEDIL		No	0	P
Supplementary information:					
Test performed for clause 4.15					

1.15 (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:					

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1	TABLE: Critical components information						—
Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
Supply cable	A	SALCAVI	H05RN-F	300/500V 4 x 1 mm2	EN 50525-2- 21:2011	IMQ<HAR> Cert. n°: SN.P0009V	
Supply cable	A/D	SALCAVI	H05RN-F	300/500V 2 x 1 mm2	EN 50525-2- 21:2011	IMQ<HAR> Cert. n°: SN.P0009V	
Internal wiring for Secondary circuit (SELV)	A	BLF	Style 3135 C161	T105°C 18 AWG 300 V	IEC/EN 60598	Verified in luminaire also UL E155697	
Internal wiring for Secondary circuit (SELV)	A/D	COLOSIO	Style 3135 C161	T105°C 18 AWG 300 V	IEC/EN 60598	Verified in luminaire also UL E221012	
Terminals for primary and secondary circuit	A	WAGO	221-412 221-413	450 V, 32 A, 0,2 – 4 mm² 85°C	IEC/EN 60998-2- 2:2004 IEC/EN 60998- 1:2004	ENEC 05 Cert. n°: 71-104798	
Main Connector in primary circuit	A/D	TE	COOLSPLICE LW 16/18 - 16/18 AWG	15A max at 600V 105°C 0,75 - 1,5 mm2	IEC/EN 60998-2- 3:2004 IEC/EN 60998- 1:2004	KEMA-KEUR Cert. n°: 2195381.01	
Connector for Secondary circuit	A/D	TE	COOLSPLICE	5A – 450V 105°C 0,75 mm2	IEC/EN 60998-2- 3:2004 IEC/EN 60998- 1:2004	KEMA-KEUR Cert. n°: 2196797.01	
LED controlgear	B	EFORE	RTLD040- 1400-SA-RF	120-277Vac 50/60Hz Uout::20-43Vdc Iout:200-1400mA Tc 90°C	IEC/EN 61347- 1:2015 IEC/EN 61347-2- 13:2014+A1	ENEC 15 Cert. n°: ENEC-02164- M2	
Varistor (optional)	A	XI'AN XIWUER	MYG3 20K300 High Energy	300V-250J 10KA	IEC 61051- 1:2007 IEC 61051- 2:1991+A1 IEC 61051-2- 2:1991	VDE Cert.n° 40008528	

IEC 60598-2-1							
Clause	Requirement + Test				Result - Remark		Verdict
LED MODULE	C	NERI	B4590	2 LEDs	IEC/EN 62031	Tested in luminaire	
LED Chip	C	CREE	XHP50.2	1500mA max (at 12V) Max 4000K T _j 150°C	IEC/EN 62031	Tested in Luminaire	
LED module PWB	A	ITEQ	IT-859GTA	T110 – V0	IEC/EN 62031	Tested in luminaire also UL certified E178114	
LED module PWB	A/D	Ventec	VT-4B3	T130 – V0	IEC/EN 62031	Tested in luminaire also UL certified E214381	
LED modules terminal	A	WAGO	2060-452/998-404	250 V 9 A T105	IEC/EN 60838-1:2004+A1+A2 IEC/EN 60838-2-2:2006+A1	KEMA-KEUR Cert. n°: 2168246.01	
Supplementary information:							
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.							
The codes above have the following meaning:							
A - The component is replaceable with another one, also certified, with equivalent characteristics							
B - The component is replaceable if authorised by the test house							
C - Integrated component tested together with the appliance							
D - Alternative component							

IEC 60598-2-1							
Clause	Requirement + Test	Result - Remark	Verdict				
ANNEX 2	TABLE: Thermal tests of Section 12		—				
	Type reference..... :	Light Brenta W-S	—				
	Lamp used..... :	LED module 2 (@370mA)	—				
	Lamp control gear used..... :	EFORE RTLD-1400-SA-RF	—				
	Mounting position of luminaire..... :	Wall mounted	—				
	Supply wattage (W)..... :	10,5 W (240 V) 10,2 W (254 V)	—				
	Supply current (A)..... :	0,055 A (240 V) 0,056 A (254 V)	—				
	Temperatures in test 1 - 4 below are corrected for ta (°C)..... :	50	—				
	- abnormal operating mode..... :	Short circuit of secondary (*)	—				
1.12 (12.4)	- test 1: rated voltage..... :	240 V	—				
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current..... :	254,4 V	—				
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage..... :	—	—				
	Through wiring or looping-in wiring loaded by a current of A during the test..... :	—	—				
1.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current..... :	264 V	—				
Temperature measurements (°C)							
Part	Ambient	Cl. 12.4 – normal				Cl. 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
T.c. point of LED controlgear	48,8	84,3	-		90		
Power supply (under anchorage)	48,8		60,3		75		
LED chip solder point (Tsp)	48,8		72,5		145(**)		
LED module connector	48,8		65,8		105		
Supply connector	48,8		57,2		105		
Lens	48,8		68,7		90		
Internal air	48,8		60,9		(***)		
Internal glass	48,8		59,1		(***)		
External glass	48,8		58,5		(***)		
Mounting surface	48,8		55,5		90	(*)	130
Upper body	48,8		53,4		60		

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

(*) Led control-gear short circuit protected immediately operated

(**) limit calculated according to LED datasheet (T_{j-max} : 135 °C; Thermal res.: 1,2°C/W; PLED: ~4,1 W);
 $T_{sp} = 135 - (1,2 \times 4,1)$.

(***) For reference only

IEC 60598-2-1			
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) :	M	N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm) :		N/A
	Torque (Nm) :		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N) :		N/A
(14.4.8)	Without undue damage		N/A

IEC 60598-2-1			
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)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples) :		N/A
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples) :		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples) :		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples)..... :		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples)..... :		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples) :		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) :		N/A
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A
	Terminal size and rating		N/A

IEC 60598-2-1										
Clause	Requirement + Test						Result - Remark			Verdict
15.6.2	Mechanical tests									N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) :									N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N) :									N/A
(15.6.3)	Electrical tests									N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1									N/A
(15.6.3.1) (15.6.3.2)	TABLE: Contact resistance test / Heating tests									N/A
	Voltage drop (mV) after 1 h									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop of two inseparable joints									N/A
	Voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV) :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV) :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV) :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV) :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Supplementary information:										

Enclosure 1	European Group Differences		
IEC60598_2_1F ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<p align="center">ATTACHMENT TO TEST REPORT IEC 60598-2-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Luminaires Part 2: Particular requirements Section 1: Fixed general purpose luminaires</p>			
Differences according to: EN 60598-2-1:1989 used in conjunction with EN 60598-1:2015 + A1:2018			
Annex Form No. : EU_GD_IEC60598_2_1F Annex Form Originator : IMQ S.p.A. Master Annex Form : 2018-08-28			
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	CENELEC COMMON MODIFICATIONS (EN)	
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1.5 (3)	MARKING	P
1.5 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package	P

1.6 (4)	CONSTRUCTION	N/A
1.6 (4.11.6)	Electro-mechanical contact systems	N/A

1.10 (5)	EXTERNAL AND INTERNAL WIRING	P
1.10 (5.2.1)	Connecting leads	P
	- without a means for connection to the supply	N/A
	- terminal block specified	P
	- relevant information provided	P
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1	N/A
1.10 (5.2.2)	Cables equal to EN 50525	N/A
	Replace table 5.1 – Supply cord	N/A

1.12 (12)	ENDURANCE TESTS AND THERMAL TESTS	P
1.12 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring	P

Enclosure 1	European Group Differences
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ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		N/A
(3.3)	DK: power supply cords of class I luminaires with label	Class II fixed luminaire with functional earth wire (not required to be connected)	N/A
(4.5.1)	DK: socket-outlets		N/A
(5.2.1)	CY, DK, FI, GB: type of plug		N/A

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N/A
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N/A
	FR: Safety requirements for high buildings (Arrêté du 30 décembre 2011 portant règlement de sécurité pour la construction des immeubles de grande hauteur et leur protection contre les risques d'incendie et de panique; Section VIII; Article GH 48, Eclairage) Glow-wire test for outer parts of luminaires:		N/A
	- 850°C for luminaires in stairways and horizontal travel paths		N/A
	- 650°C for indoor luminaires		N/A
(13.3)	GB: Requirements according to United Kingdom Building Regulation		N/A

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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Clause	Requirement + Test	Result - Remark	Verdict
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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		N/A
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)	N/A

6	CLASSIFICATION		—
	Built-in module	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Independent module	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Integral module	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	For Integral module; Note to 1.2.1 in IEC 60598-1 applies.		—

7	MARKING		P
7.1	Mandatory markings for built-in or independent modules		P
	a) mark of origin		P
	b) model number, type reference	2 LEDs XHP50.2 Mod. B4590	P
	c1) constant voltage module; rated supply voltage and supply frequency		N/A
	c2) constant current module; rated supply current and supply frequency		P
	d) nominal power		N/A
	e) indication of connections, wiring diagram		N/A
	f) value of t_c and place on the module	Only for reference (if any)	P
	g) E_{thr} if required	D _{thr} declared in instructions	P
	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		P
	- marking of a), b), c) and f) on the modules		N/A

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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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		P
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 1)	N/A
	Part of the luminaire	(see Annex 3)	N/A
	Screwless terminals according section 15 of IEC 60598-1:		P
	Separately approved; component list	(see Annex 1 of main report)	P
	Part of the luminaire	(see Annex 4)	N/A
	Connectors according IEC 60838-2-2:		N/A
	Separately approved; component list	(see Annex 2)	N/A

9 (9)	PROVISION FOR PROTECTIVE EARTHING		N/A
- (9.1)	Provisions for protective earthing		N/A
	Terminal complying with clause 8		N/A
	Locked against loosening and not possible to loosen by hand		N/A
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	Earthing via means of fixing		N/A
	Earthing terminal only used for the earthing of the control gear		N/A
	All parts of material minimizing the danger of electrolytic corrosion		N/A
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A
- (9.2)	Provision for functional earthing		N/A
	Comply with clause 8 and 9.1		N/A
- (9.3)	Earth contact via the track on the printed board		N/A

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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Clause	Requirement + Test	Result - Remark	Verdict
	Test with a current of 25 A between earthing terminal and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$		N/A
- (9.4)	Earthing of built-in lamp controlgear		N/A
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N/A
	Earthing terminal only for earthing the built-in controlgear		N/A
- (9.5)	Earthing via independent controlgear		N/A
- (9.5.1)	Earth connection to other equipment		N/A
	Looping or through connection, conductor min. 1,5 mm ² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$		N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A

10 (10)	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		P
- (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		P
- (10.2)	Capacitors $> 0,5 \mu\text{F}$: voltage after 1 min (V): < 50 V		N/A

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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Clause	Requirement + Test	Result - Remark	Verdict
- (10.3)	Controlgear providing SELV		P
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear	SELV LED controlgear	P
	No connection between output circuit and the body or protective earthing circuit		P
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		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 (M Ω):		P
	For basic insulation ≥ 2 M Ω :	> 5 M Ω	P
	For double or reinforced insulation ≥ 4 M Ω :		N/A
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N/A

12 (12)	ELECTRIC STRENGTH		P
	Immediately after clause 11 electric strength test for 1 min		P

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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Clause	Requirement + Test	Result - Remark	Verdict
	Basic insulation for SELV, test voltage 500 V	500V	P
	Working voltage ≤ 50 V, test voltage 500 V		N/A
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		N/A
	Basic insulation, 2U + 1000 V		N/A
	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)	P
	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3		P
- (14.2)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N/A
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	N/A
- (14.5)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 M Ω	> 1 M Ω	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite	Tested in Luminaire	N/A
- (14.6)	Relevant fault condition tests with high-power supply		N/A

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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Clause	Requirement + Test	Result - Remark	Verdict
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13.2	Overpower condition		P
	Module withstands overpower condition >15 min.	1,5 x P _n = 12,6W	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 in main report)	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		N/A
16 (-)	Conductive accessible parts in compliance with applicable parts of IEC 60598-1	(see appended table in main report)	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		N/A
(4.11.1)	Contact pressure		N/A
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		P

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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Clause	Requirement + Test	Result - Remark	Verdict
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	Mechanical connections and glands		P
(4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part..... : 0,50; Ø 3 mm		P
	Torque test: torque (Nm); part..... :		N/A
	Torque test: torque (Nm); part..... :		N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm) :		N/A
	- lampholder; torque (Nm) :		N/A
	- push-button switches; torque 0,8 Nm :		N/A
(4.12.5)	Screwed glands; force (Nm)..... :		N/A

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
21.2	Heat-conducting foil and paste		N/A
	Heat-conducting foil delivered with the module if necessary		N/A

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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Clause	Requirement + Test	Result - Remark	Verdict
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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		P
22.3	Infrared radiation		N/A
	Requirements for infrared radiation when required		N/A

A	ANNEX A - TESTS		N/A
	All tests performed in accordance with the advice given in Annex H of IEC 61347-1, if applicable		N/A

13 (14)	TABLE: tests of fault conditions	
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LED MODULE 2 LEDs



n°	Schematic	Short circuit	Open circuit	Effects	Result
1	LED chip		X	The LED module does not operate. No hazard, No damage after restoring.	P
2	LED chip	X		LED module operates except the LED in short circuit. No hazard, No damage after short circuit removal.	P

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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Clause	Requirement + Test	Result - Remark	Verdict
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16 (16)	TABLES: Creepage distances and clearances						N/A
Table 3	Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages						N/A
RMS working voltage (V) not exceeding	50	150	250	500	750	1000	
Creepage distances							
Required basic insulation, PTI ≥ 600	0,6	0,8	1,5	3	4	5,5	
Measured							
Required basic insulation, PTI < 600	1,2	1,6	2,5	5	8	10	
Measured							
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							
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						N/A
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							

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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Clause	Requirement + Test	Result - Remark	Verdict
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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:				

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:					

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:					

18 (18.5)	TABLE: Proof tracking test				N/A
Test voltage PTI		175V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Supplementary information:					

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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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 <input type="checkbox"/> No <input type="checkbox"/>	—
	Class II	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	Class III	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	non-inherently short circuit proof controlgear	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	inherently short circuit proof controlgear	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	fail safe controlgear	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	non-short-circuit proof controlgear	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
(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

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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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 \geq specified values (mm)		N/A
	b) measured values \geq specified values (mm)		N/A
	c) measured values \geq specified values (mm)		N/A
	2. Insulation between input and output circuits, double or reinforced insulation:		N/A
	a) measured values \geq specified values (mm)		N/A
	b) measured values \geq specified values (mm)		N/A
	c) measured values \geq specified values (mm)		N/A
	3. Insulation between adjacent <u>output</u> circuits		N/A
	- measured values \geq specified values (mm)		N/A
	4. Insulation between terminals for external connection:		N/A
	- measured values \geq specified values (mm)		N/A
	5. Basic or supplementary insulation:		N/A
	a) measured values \geq specified values (mm)		N/A
	b) measured values \geq specified values (mm)		N/A
	c) measured values \geq specified values (mm)		N/A

- 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

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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Clause	Requirement + Test	Result - Remark	Verdict
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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).....	M	N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm)		N/A
	Torque (Nm)		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N).....		N/A
(14.4.8)	Without undue damage		N/A

Enclosure 2	Evaluation of LED modules as integral components according to IEC 62031:2008 + A1:2012 + A2:2014; EN 62031:2008 + A1:2013 + A2:2015
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Clause	Requirement + Test	Result - Remark	Verdict
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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

	Pull test pin or tab terminals (4 samples); pull (N)		N/A
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(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										N/A
		Voltage drop after 10th alt. 25th cycle									N/A	
		Max. allowed voltage drop (mV) :										—
terminal		1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)												
		Voltage drop after 50th alt. 100th cycle									N/A	
		Max. allowed voltage drop (mV) :										—
terminal		1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)												
		Continued ageing: voltage drop after 10th alt. 25th cycle									N/A	
		Max. allowed voltage drop (mV) :										—
terminal		1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)												
		Continued ageing: voltage drop after 50th alt. 100th cycle									N/A	
		Max. allowed voltage drop (mV) :										—
terminal		1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)												
Supplementary information:												

Enclosure 3	Australia/New Zealand's National Differences
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Clause	Requirement + Test	Result - Remark	Verdict
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Gap analysis between IEC 60598-1, Ed. 8.1 (2017) and IEC 60598-1, Ed. 8.0 (2014) to meet the IEC standard edition mentioned in AUSTRALIA/NEW ZEALAND National Differences			
0	GENERAL TEST REQUIREMENTS		—
0.1	Information for luminaire design considered	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Lamp standard:	—
0.3	More sections applicable	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Section/s:	—

11	CREEPAGE DISTANCES AND CLEARANCES		P
11.2	Creepage distances and clearances	See Table 11.2	P
	Impulse withstand category (Normal category II) (Category III Annex U, Table U.1)	Category II <input type="checkbox"/> Category III <input checked="" type="checkbox"/>	—

5	EXTERNAL AND INTERNAL WIRING		P
5.3.1.2	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Adequate cross-sectional area and insulation thickness		P

12	ENDURANCE TEST AND THERMAL TEST		P
12.3	Endurance test:		P
	- mounting-position	Wall	—
	- test temperature (°C)	60	—
	- total duration (h)	240	—
	- supply voltage: Un factor; calculated voltage (V) ...	1,1 x Vnom = 264 V	—
	- lamp used	Integral LED module	—

Enclosure 3	Australia/New Zealand's National Differences
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Clause	Requirement + Test	Result - Remark	Verdict
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TABLE 11.2: Creepage distances and clearances							P
	Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages						P
	Applicable part of IEC 60598-1 Table 11.1* and 11.2*						P
	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	> 3,9	3	U.1	> 3,9	3	U.1
Working voltage (V)					240 V		—
PTI					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV)					—		—
Supplementary information:							
Distance 2:	S	> 3,9	3	U.1	> 3,9	3	U.1
Working voltage (V)					240 V		—
PTI					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV)					—		—
Supplementary information:							
Distance 3:	R	>7,2	6	U.1	>7,2	6	U.1
Working voltage (V)					240 V		—
PTI					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV)					—		—
Supplementary information:							

No measurements have been performed on parts SELV supplied with working voltages below 25 V r.m.s. and 60 V d.c. as the test voltage of Table 10.2 is considered sufficient.

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

Enclosure 3	Australia/New Zealand's National Differences
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Clause	Requirement + Test	Result - Remark	Verdict
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ATTACHMENT TO TEST REPORT IEC 60598.2.1F (AUSTRALIA/NEW ZEALAND) NATIONAL DIFFERENCES (Luminaires) (Part 2.1 Particular requirements—Fixed General purpose luminaires)	
Differences according to	AS/NZS 60598.2.1:2014 + A2 AS/NZS 60598.1:2017
Attachment Form No.	AU_NZ_ND_IEC60598_2_1F
Attachment Originator	JAS-ANZ
Master Attachment	2019-07
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	NATIONAL DIFFERENCES	—
Appendix ZZ	Variations to IEC 60598-1 Ed 8.0 (2014) Normative	—
ZZ1	Scope This Appendix sets out variations between this Standard and IEC 60598-1, Ed. 8.0 (2014) and additional requirements to cover issues that have not been addressed by the International Standard (AS/NZS 60598.1:2017)	—
ZZ2	Variations	—
	Addition: AS/NZS 60598.2.1:2014 Amendment 1 incorporates requirements for double-capped LED lamps and include essential safety requirements for T8 to T5 lamp converters The objective of this revision is to include essential safety requirements for double-capped LED lamps Variations for double-capped LED lamps are provided in Appendix A. Variations for T8 to T5 lamp converters are provided in Appendix B. (AS/NZS 60598.2.1:2014 +A1)	—
(0.1)	SCOPE AND OBJECT	—
(0.1)	Addition Add the following text at the end of Clause 0.1 Where the term “lamp” is used in this Standard, it is taken to include electric light sources. LED light sources are subject to the same test parameters as “other discharge lamps”. (AS/NZS 60598.1:2017)	—
	NOTE Portable rechargeable battery operated luminaires should comply with Annex B, ‘Appliances powered by rechargeable batteries’ of AS/NZS 60335.1, Household and similar electrical appliances—Safety, Part 1: General requirements (IEC 60335-1 ED.	—

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	5, MOD). In addition, portable, rechargeable, battery-operated luminaires with lithium ion batteries should have overvoltage protection (AS/NZS 60598.1:2017)		
1	<p>Scope</p> <p>This Standard specifies requirements for fixed general purpose luminaires incorporating electric light sources for operation on supply voltages less than 1000V AC RMS or 1500V ripple-free DC (high voltage). It is to be read in conjunction with those sections of AS/NZS 60598.1 to which reference is made. This Standard also specifies requirements for double-capped LED lamps (Appendix A) and T8 to T5 lamp converters (Appendix B).</p> <p>Appendix A is to be read in conjunction with those sections of AS/NZS 60598.1 to which reference is made. Appendix B is to be read in conjunction with those sections of AS/NZS 60598.1 and AS/NZS 61347.2.3 or AS/NZS 61347.1 to which reference is made</p> <p>(AS/NZS 60598.2.1:2014 + A2)</p>		—
(0.2)	NORMATIVE REFERENCES		—
(0.2)	<p>Addition</p> <p>Add the following normative references:</p> <p>IEC 61048, Auxiliaries for lamps – Capacitors for use in tubular fluorescent and other discharge lamp circuits – General and safety requirements</p> <p>IEC 61049, Auxiliaries for lamps – Capacitors for use in tubular fluorescent and other discharge lamp circuits – Performance requirements</p> <p>IEC 61995-1, Devices for the connection of luminaires for household and similar purposes – Part 1: General</p> <p>ISO 8124-1, Safety of toys – Part 1: Safety aspects related to mechanical and physical properties</p> <p>AS/NZS 3112, Approval and test specification—Plugs and socket-outlets</p> <p>AS/NZS 3120, Approval and test specification—Cord extension sockets</p> <p>AS/NZS 3133, Approval and test specification—Air-break switches</p> <p>AS/NZS 3191, Electric flexible cords</p> <p>AS/NZS 60335.2.29, Household and similar electrical appliances—Safety, Part 2.29: Particular requirements for battery chargers</p> <p>AS/NZS 60669, Switches for household and similar fixed electrical installations (series)</p> <p>AS/NZS 60695.2.11, Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products (IEC 60695-2-11:2000, MOD)</p> <p>AS/NZS 60695.11.5, Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance</p> <p>AS/NZS 60884.1, Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</p>		—

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	AS/NZS 61058.1, Switches for appliances, Part 1: General requirements (IEC 61058-1, Ed.3.1 (2000), MOD) AS/NZS 61347, Lamp controlgear (series) AS/NZS 61558, Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V (series) (AS/NZS 60598.1:2017)		
(0.4)	GENERAL TEST REQUIREMENTS AND VERIFICATION		—
(0.4.2)	Addition After the first paragraph, <i>insert</i> the following text: In Australia, for equipment, other than class III equipment, that is intended for connection to the supply mains and not marked with: — a rated voltage of at least 240 V for single-phase equipment or a rated voltage of at least 415 V for three-phase equipment; or — a rated voltage range that includes 240 V for single-phase equipment and 415 V for three-phase equipment, the rated voltage is equal to 240 V for single-phase equipment and 415 V for three-phase equipment, and the upper limit of the voltage range is equal to 240 V for single-phase equipment and 415 V for three-phase equipment. (AS/NZS 60598.1:2017)		—
(0.5)	COMPONENTS OF LUMINAIRES		—
(0.5)	Addition <i>Insert</i> the following text as the first paragraph: Throughout this document, where there is a relevant Australian/New Zealand Standard, it replaces the IEC Standard unless otherwise specified (AS/NZS 60598.1:2017)		—
(2)	CLASSIFICATION OF LUMINAIRES		—
(2.2)	Addition At the end of Clause 2.2, <i>insert</i> the following text: Class 0 luminaires are not permitted in Australia or New Zealand (AS/NZS 60598.1:2017)		—
(3)	MARKING		P
(3.1)	Addition After the first paragraph, <i>insert</i> the following text: In Australia and New Zealand, instructions and other texts required by this Standard shall at least be written in English. Compliance is checked by inspection. (AS/NZS 60598.1:2017)		P

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
(3.2)	Variation <i>Delete</i> the second paragraph beginning with 'Marking may be on ballast provided...'. (AS/NZS 60598.1:2017)		N/A
(Table 3.1)	Variation 1. Second column, second row, delete Item 3.2.21. 2. Third column, second row, add the following new item: 3.2.21 The relevant symbol for luminaires not suitable for covering with thermally insulating material (AS/NZS 60598.1:2017)		N/A
(3.2.3)	Variation <i>Delete</i> the text ', if other than 25 °C'.		P
(3.2.12)	Addition At the end of the Clause, <i>insert</i> the following text: In Australia, luminaires for household use and similar with supply cords that are not fitted with a plug shall be marked with a cord tag with the symbol for "must be installed by a licensed electrician". (Refer to Figure ZZ1.) (AS/NZS 60598.1:2017)		P
(3.2.23)	Addition At the end of the Clause, <i>insert</i> the following text: The additional information shall include the symbol "Do not stare at the operating light source" (see Figure 1) along with an explanation of the symbol. (AS/NZS 60598.1:2017)		P
(3.3.7)	Variation <i>Delete</i> Clause 3.3.7 and <i>replace</i> with the following: 3.3.7 Luminaires for use with metal halide lamps shall be provided with instructions that state the substance of the following: To avoid potential unsafe lamp failure, the luminaire shall be switched off for at least 30 minutes at least once a week. In addition, the luminaire shall be operated: — complete with its protective shield; or — with a double jacketed lamp (AS/NZS 60598.1:2017)		N/A
(3.3.18)	Deletion <i>Delete</i> the text ', i.e. for indoor use only'.		N/A

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	(AS/NZS 60598.1:2017)		
(3.3.21)	Deletion <i>Delete</i> the text 'Caution, risk of electric shock' and the symbol. (AS/NZS 60598.1:2017)		P
6 (3)	The provisions of Section 3 of AS/NZS 60598.1 apply LED luminaires with G5 or G13 lampholders shall be marked with the following warning: WARNING: NOT FOR USE WITH ANY FLUORESCENT LAMP—FOR USE ONLY WITH TYPE A LED LAMPS The warning label shall be durable and the font size shall be a minimum of 5 mm for letters and numbers and 5 mm for symbols and shall be visible during lamp replacement (AS/NZS60598.2.1:2014+A2)		N/A
4	CONSTRUCTION		P
(4.7.2)	Variation <i>Delete</i> the first paragraph and <i>replace</i> with the following: 4.7.2 Terminals shall be located or shielded in such a way that, if a wire of a stranded conductor escapes from a terminal when the conductors are fitted, there is no risk of contact between live parts and metal parts that can be touched with the standard test finger, nor shall it be possible to touch a live free wire with the standard test finger when the luminaire is fully assembled for use or open for the replacement of replaceable light sources or starters. (AS/NZS 60598.1:2017)		P
(4.8)	Variation After the third paragraph, <i>insert</i> the following text: Switches shall comply with AS/NZS 3133, the AS/NZS 60669 series or AS/NZS 61058.1. Switches that indicate an off position shall have contacts with an air break and comply with AS/NZS 3133, AS/NZS 60669.1 or AS/NZS 61058.1.		N/A
	Fourth paragraph, <i>delete</i> the text 'IEC 61058-1' and replace with 'AS/NZS 60669.2.1 or IEC 61058-1 classified for 10,000 operating cycles'. (AS/NZS 60598.1:2017)		N/A
(4.10.4)	Variation First paragraph, <i>delete</i> the last sentence and replace with the following: If the working voltage does not exceed the rated voltage of the capacitor, accessible conductive parts		N/A

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	separated from live parts by double or reinforced insulation, as above, may be bridged by a single Y1 capacitor with qualification approval as specified in IEC 60384-14. (AS/NZS 60598.1:2017)		
(4.14.6)	After the first paragraph, insert the following text: A fixed socket-outlet complying with AS/NZS 3112 or AS/NZS 60884.1 is used for the following test. (AS/NZS 60598.1:2017)		N/A
(4.32)	Addition At the end of the Clause, <i>insert</i> the following text: Metal oxide varistors shall comply with the requirements of AS/NZS 3100 for metal oxide varistors incorporated in accessories. NOTE The test and assessment is conducted on any circuits connected between phases (between actives and between actives and neutral) and circuits connected between phases and earth (actives-to-earth and neutral-to-earth). (AS/NZS 60598.1:2017)		N/A
7(4)	Addition LED luminaires or new luminaires designed for T8 to T5 converters with G5 and G13 lampholders shall include a fuse to protect a fluorescent lamp that is inadvertently installed. Each fuse shall— be of the 250 V HBC type; have a 2 A max. quick-acting type rating; and be used to protect a maximum of two lamps. (AS/NZS 60598.2.1:2014 +A2)		N/A
(5.2.1)	Variation 1. <i>Delete</i> the first paragraph and <i>replace</i> with the following: Luminaires shall be provided with only one of the following means of connection and isolation to the supply. Fixed luminaires: — device for the connection of luminaires; — terminals; — plug for engagement with socket-outlets; — connecting lead (tails); in accordance with Clause 4.6 requirements; — supply cord — supply cord and plug; — adapter for engagement with supply tracks;		P

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	<ul style="list-style-type: none"> — appliance inlet; — installation coupler; — luminaire coupler; Portable luminaires: <ul style="list-style-type: none"> — supply cord with plug; — appliance inlet. — inlet plug complying with AS/NZS 3120. Track-mounted luminaires: <ul style="list-style-type: none"> — adaptor; — connector. 		
	<i>Delete</i> the second and third paragraph.		P
	3. <i>After</i> Note 3, <i>insert</i> the following text: In Australia, non-portable luminaires with a supply cord shall be fitted with a plug complying with AS/NZS 3112 or a coupler complying with its standard, except where the luminaire has markings and instructions that comply with Clause 3.2.12, in which case, a plug or coupler is not required. However, for other than portable luminaires a plug is not required if the luminaire has markings and instructions in accordance with Clause 3.2.12. The plug portion of a luminaire with integral pins shall comply with the relevant requirements of AS/NZS 3112. (AS/NZS 60598.1:2017)		P
(5.2.2)	Variation 1. <i>Delete</i> the first paragraph and <i>replace</i> with the following: Supply cords used as a means of connection to the supply, when supplied by the luminaire manufacturer, shall be at least equal in their mechanical and electrical properties to those specified in IEC 60227 and IEC 60245, as indicated in Table 5.1, or AS/NZS 3191, and shall be capable of withstanding, without deterioration, the highest temperature to which they may be exposed under normal conditions of use.		P
	2. <i>Delete</i> the third paragraph and <i>replace</i> with the following:		P

Enclosure 3		Australia/New Zealand's National Differences																													
Clause	Requirement + Test	Result - Remark	Verdict																												
	<p>To provide adequate mechanical strength, the nominal cross-sectional area of the conductors shall be not less than:</p> <ul style="list-style-type: none"> — 0,75 mm²; — 1,0 mm² for portable rough service luminaires. <p>(AS/NZS 60598.1:2017)</p>																														
Table 5.1	<p>Variation Delete Table 5.1 and replace with the following: Table 5.1 — Supply cord</p> <table border="1"> <thead> <tr> <th>Luminaire</th><th>Rubber</th><th>PVC</th><th>No Insulation</th></tr> </thead> <tbody> <tr> <td>Ordinary class 1 luminaires</td><td>60245 IEC 51 ^c</td><td>60227 IEC 52 ^c</td><td></td></tr> <tr> <td>Ordinary class II luminaires</td><td>60245 IEC 53 ^c</td><td>60227 IEC 52 ^c</td><td></td></tr> <tr> <td>Luminaires which are other than ordinary class I and II</td><td>60245 IEC 57 ^c</td><td>60227 IEC 53 ^c</td><td></td></tr> <tr> <td>Portable rough service luminaires</td><td>60245 IEC 66 ^c</td><td></td><td></td></tr> <tr> <td>Class III or with SELV circuits luminaires (up to 25 V a.c./60 V d.c.)</td><td colspan="2"></td><td>Un-insulated conductor ^b</td></tr> <tr> <td>Class III or with SELV circuits luminaires (above 25 V a.c./60 V d.c.), including 50 V a.c./120 V d.c.</td><td colspan="2">Unsheathed basic insulated conductor</td><td></td></tr> </tbody> </table> <p>a. For indoor use only. b. AS/NZS 3000 may restrict the use of un-insulated conductors in certain special installations. c For supply voltages greater than 250 V, higher voltage grade cables and cords than those given in the above table may be necessary</p> <p>(AS/NZS 60598.1:2017)</p>	Luminaire	Rubber	PVC	No Insulation	Ordinary class 1 luminaires	60245 IEC 51 ^c	60227 IEC 52 ^c		Ordinary class II luminaires	60245 IEC 53 ^c	60227 IEC 52 ^c		Luminaires which are other than ordinary class I and II	60245 IEC 57 ^c	60227 IEC 53 ^c		Portable rough service luminaires	60245 IEC 66 ^c			Class III or with SELV circuits luminaires (up to 25 V a.c./60 V d.c.)			Un-insulated conductor ^b	Class III or with SELV circuits luminaires (above 25 V a.c./60 V d.c.), including 50 V a.c./120 V d.c.	Unsheathed basic insulated conductor				P
Luminaire	Rubber	PVC	No Insulation																												
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(5.2.16)	<p>Addition</p> <p><i>At the end of the Clause, insert the following text:</i> Class II luminaires for fixed wiring incorporating an appliance coupler shall not have means to allow further luminaires to be connected by cascading including connection by looping-in.</p>		N/A																												

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Luminaire couplers incorporated with the luminaire shall comply with IEC 61995-1.</p> <p>Luminaires incorporating installation couplers may have means to allow further luminaires to be connected by cascading provided the through wiring is rated for the current rating of the installation coupler.</p> <p>(AS/NZS 60598.1:2017)</p>		
(5.2.18)	<p>Variation</p> <p><i>Delete</i> Clause 5.2.18 and <i>replace</i> with the following:</p> <p>5.2.18 All portable luminaires with a supply cord shall be fitted with a plug complying with AS/NZS 3112. Other luminaires with a supply cord shall be fitted with a plug complying with AS/NZS 3112, unless they have the warning specified by Clause 3.2.12.</p> <p>(AS/NZS 60598.1:2017)</p>		N/A
(5.3.1)	<p>Variation</p> <p>Delete the third paragraph and replace with the following:</p> <p>Internal wires coloured green, yellow or green/yellow combination shall be used for making protective earth connections only. Functional earth connections shall not be made by wires coloured green, yellow or green/yellow combination.</p> <p>NOTE 101 Internal wires of other colours are not precluded from making protective earthing connections.</p>		N/A
(5.3.1.3)	<p>Variation</p> <p><i>Delete</i> Clause and <i>replace</i> with the following:</p> <p>In class II luminaires, where the internal wiring has a live conductor and the wiring insulation may touch accessible metal parts under normal operating conditions, the insulation, at least at the places of contact, shall comply with the requirements for double or reinforced insulation, e.g. by applying sheathed cables or sleeves. (AS/NZS 60598.1:2017)</p>		P
(7)	PROVISION OF EARTHING		N/A
(7.2.11)	<p>Variation</p> <p><i>Delete</i> the third paragraph and <i>replace</i> with the following:</p>		N/A

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	All conductors, whether internal or external, coloured green, yellow or green/yellow combination, shall only be connected to an earthing terminal (AS/NZS 60598.1:2017)		
(8)	PROTECTION AGAINST ELECTRIC SHOCK		P
(8.2.1)	Variation Variation <i>Delete</i> the first two paragraphs including Note 1 and <i>replace</i> with the following: Luminaires shall be so constructed that their live parts and basic insulation are not accessible when the luminaire has been installed and wired as in normal use. Live parts shall not be accessible when the luminaire is opened as necessary for user cleaning or maintenance, or for replacement of lamps, replaceable light sources or (replaceable) starters, even if the operation cannot be achieved by hand. Luminaires with non-replaceable light sources are subjected to the tests of Clause 4.29 prior to applying the tests and inspections of Section 8 of this Standard. NOTE 1 Examples of parts with basic insulation are cables intended for internal wiring, controlgear for building-in, etc. This does not apply to the non-current-carrying parts of lamp caps that comply with the relevant IEC safety standard.		P
	<i>Delete</i> the ninth paragraph beginning with 'Covers in fixed luminaires that cannot be removed...' (AS/NZS60598.1:2017)		P
(9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
(9.2)	After Note 1, insert the following new Note: NOTE 101 A designation of IPX7 or IPX8 is considered unsuitable for exposure to water jets (designated by IPX5 or IPX6) and may not comply with requirements for second numeral 5 or 6 unless it is dual coded. (AS/NZS60598.1:2017)		N/A
14(9)	The provisions of Section 9 of AS/NZS 60598.1 apply. For luminaires with an IP classification greater than IP20 the order of the tests specified in Section 9 of AS/NZS 60598.1 shall be as specified in Clause 13 of this Standard (AS/NZS 60598.2.1:2014+A2)		P
(Table 10.3)	Deletion <i>Delete</i> the second row beginning with 'Class I luminaires rated up to and including 16 A...'		N/A
	First column, third row, <i>delete</i> the word 'Metal'.		N/A

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	(AS/NZS60598.1:2017)		
(12)	ENDURANCE TEST AND THERMAL TEST		P
(Table 12.1)	First column, first row, <i>delete</i> the text— 'Case (of capacitor, starting device, electronic ballast or convertor, etc.)' and replace with the following: 'Case (of control gear, capacitor, starting device, electronic ballast or convertor, etc.)'		P
	Addition <i>Add</i> the following new Note after Table 12.1 NOTE 101 Luminaire manufacturers should consider the maximum ambient air temperature in the vicinity of components such as starting devices and electronic ballasts or converters. Component performance specifications advise manufacturers to mark or supply life data as maximum ambient air temperature based on 50,000 h. This t-life is often marked as ta and is the temperature of the air in the vicinity of the component and is not related to the luminaire ta. As such, luminaire manufacturers should measure air temperature in the vicinity of such components, within the luminaire, as even those complying with their tc point measurements can still fail prematurely if t-life is exceeded. (AS/NZS 60598.1:2017)		P
13 (12)	ENDURANCE TESTS AND THERMAL TESTS The provisions of Section 12 of AS/NZS 60598.1 apply. Luminaires with an IP classification greater than IP20 shall be subjected to the relevant tests of Clauses 12.4, 12.5 and 12.6 of Section 12 of AS/NZS 60598.1 after the test(s) of Clause 9.2 but before the test(s) of Clause 9.3 of Section 9 of AS/NZS 60598.1 specified in Clause 14 of this Standard. (AS/NZS 60598.2.1:2014+A2)		P
(13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
(13.3)	Variation <i>Delete</i> Clause 13.3 and <i>replace</i> with the following: 13.3 Resistance to flame and ignition Parts of non-metallic material shall be resistant to flame and ignition.		N/A

Enclosure 3	Australia/New Zealand's National Differences		
Clause	Requirement + Test	Result - Remark	Verdict
	<p>For materials other than ceramic, compliance is checked by the tests of 13.3.1 and 13.3.2, and 13.3.3 as appropriate.</p> <p>This requirement does not apply to decorative trims, knobs, wiring insulation and other parts not likely to be ignited or to propagate flames from inside the luminaire.</p> <p>This Clause applies to all parts, including components, even if they have been tested to their own IEC or equivalent standard..</p>		
	<p>13.3.1 Parts of non-metallic material supporting connections that could become an ignition source, and parts of non-metallic material within a distance of 3 mm of such connections, shall withstand the glow wire test.</p> <p>Welded connections, soldered connections on printed circuit boards and other connections carrying less than 0.2 A during normal operation are not considered to be an ignition source.</p> <p>The test apparatus, test procedure and criteria shall be those specified in AS/NZS 60695.2.11.</p> <p>The glow wire is heated to 750 °C and applied to one sample for 30s</p>		N/A
	<p>13.3.2 All other parts of non-metallic material which do not support connections that could become an ignition source, but provide protection against electric shock or maintain creepage and clearances, shall withstand the glow wire test.</p> <p>The test apparatus, test procedure and criteria shall be those specified in AS/NZS 60695.2.11.</p> <p>The glow wire is heated to 650 °C and applied to one test sample for 30 s.</p>		N/A
	<p>13.3.3 During the application of the glow wire test of Clause 13.3.1 and 13.3.2, if a flame is produced that persists for longer than 2 s, the luminaire is further tested as follows:</p> <p>The needle-flame test of AS/NZS 60695.11.5 is applied to non-metallic parts that encroach within the envelope of a vertical cylinder having a</p>	All the components are enclosed between metal and concrete	N/A

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	<p>diameter of 20 mm and a height of 50 mm above the point of application of the glow wire.</p> <p>Parts shielded by a barrier that meets the needle-flame test of AS/NZS 60695.11.5 are not tested.</p> <p><i>NOTE This requires the needle flame to be applied to all parts likely to be impinged upon by the glow-wire flame within the hypothetical envelope of a vertical cylinder positioned above the point of application of the glow-wire. This applies to all parts unless there is a barrier that passes the needle-flame test and is within the cylinder and would protect the part from the glow-wire flame.</i></p>		
APPENDIX A	<p align="center">SAFETY REQUIREMENTS FOR DOUBLE-CAPPED LED LAMPS</p> <p align="center">Normative</p> <p align="center">(AS/NZS 60598.2.1:2014 +A2)</p>		N/A
A1.1	<p>Scope</p> <p>This Appendix specifies the safety and interchangeability requirements of double-capped LED lamps. This includes requirements to show compliance of double-capped LED lamps with—</p> <ul style="list-style-type: none"> G5 or G13 lamp caps intended for replacing, in existing luminaires, fluorescent lamps with corresponding G5 or G13 caps; other lamp cap types intended for replacing, in existing luminaires, incandescent, tungsten halogen or other lamp types with the corresponding lamp caps; and any lamp cap type, intended for inserting in new luminaires for double-capped lamps in lieu of fluorescent, incandescent, tungsten halogen or other lamp types. 		N/A
	<p>This Appendix includes requirements for double capped lamps for retrofit or new luminaires. These lamps may have integral, built-in or independent control gear</p>		N/A
A1.2	<p>Application</p> <p>This Appendix is to be read in conjunction with AS/NZS 60598.1, with all provisions applying unless varied herein. Where the term 'luminaire' is used in AS/NZS 60598.1, it shall be replaced with the term 'lamp'. The tests described in each</p>		N/A

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	appropriate section of AS/NZS 60598.1 shall be carried out in the order listed in this Appendix		
A1.3	Testing In general, all tests are carried out on each type of lamp or, where a range of similar lamps is involved, for each power in the range or on a representative selection from the range.		N/A
A1.4	Specific requirements of this Appendix A lamp(s) shall be deemed to comply with this Appendix only if it complies with all the appropriate requirements of this Appendix and passes the relevant tests specified herein		N/A
A1.5	Requirements of relevant test specifications Equipment and components incorporated in a lamp that is safety dependant shall comply with the appropriate requirements of any relevant test specification, unless such requirements are varied herein		N/A
A1.6	LED lamp connection types This Appendix applies to all double-capped LED lamps. For double-capped LED lamps with G5 lamp cap and T5 lamp configuration, or G13 lamp caps and T8 lamp configuration, for use as replacement of fluorescent lamps, all Paragraphs of this Appendix apply. Standard lamp caps (including G5 and G13) are shown in IEC 60061 and fluorescent lamps (including T5 and T8) are shown in IEC 60081. For double-capped LED lamps with other lamp cap types, or lamp configuration, or alternate supply connections other than the lamp cap, all Paragraphs of this Appendix apply, except for the following: Paragraph A4.2. Paragraphs A5.2(h), A5.2(i), A5.3 and A5.4. Paragraph A6.1(b). Paragraph A7.4. Paragraph A8.		N/A
A3	DEFINITION		N/A
A3.1	For the purposes of this Appendix, the following definition applies: Double-capped LED lamp		N/A

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Tubular LED light source which may be used as a replacement for another type of lamp.</p> <p>NOTE: Typical types of lamps that may be replaced include linear fluorescent lamps</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		
A4	CLASSIFICATION of LAMP(S)		N/A
A4.1	<p>Class</p> <p>Lamps shall be classified in accordance with the provisions of Section 2 of AS/NZS 60598.1. Lamps shall be classified as class II or class III for protection against electric shock.</p> <p>A class III lamp shall have class II construction and comply with all of the requirements for protection against electric shock for a class II lamp at a nominal rating of 240 V a.c.</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		N/A
A.4.2	<p>Type</p> <p>LED lamps shall be classified as Type A.</p> <p>Type A LED lamps shall be constructed such that one end of the lamp has the lamp cap pins electrically bridged and the other end of the lamp has the line and neutral supply connected to the pins of that lamp cap.</p> <p>NOTE: Lamps formerly referred to as Type B LED lamps, that were constructed such that one end of the lamp has the lamp cap pins electrically isolated from each other and the other end of the lamp has the line and neutral supply connected to the pins of that lamp cap, no longer conform with this Standard</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		N/A
A5	MARKING		N/A
A5.1	<p>General</p> <p>The Test of Marking of Clause 3.4 of AS/NZS 60598.1 shall be used to determine the durability of the markings specified in A5.2 to A5.4.</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		N/A
A5.2	<p>Marking on the lamp</p> <p>Lamps shall be clearly and durably marked with the following markings, the size of which shall be a minimum of 2 mm:</p> <p>(a) Mark of origin (this may take the form of a trademark, or be the manufacturer's name or the name of the responsible vendor).</p> <p>(b) Rated supply voltage or voltage range (marked 'V' or 'volts').</p> <p>(c) Rated wattage (marked 'W' or 'watts').</p> <p>(d) Rated frequency (marked in 'Hz').</p>		N/A

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	<p>(e) A value for allowable case temperature t_c and a marked point of measurement.</p> <p>(f) Model number.</p> <p>(g) IP rating if greater than IP20.</p> <p>(h) Markings to identify the line and neutral supply connections of the lampholder</p> <p>(i) The lamp type shall be marked with the text 'Type A', as per the appropriate subfigure of Figure A1, to indicate the lamp cap configuration.</p>		
	<p>For LED lamps that have lamp caps not on the ends of the lamp, and are only for use with a luminaire that has a means of automatic double pole disconnection operative when the lamp is replaced, the following warning shall be marked on the lamp body:</p> <p>WARNING: This lamp is only for use with a luminaire that has a means of automatic double-pole disconnection operative when the lamp is replaced.</p> <p>NOTE: An example of this type of connection would be a LED lamp with S14 lampholder Connections</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		N/A
A5.3	<p>Warning label for the luminaire</p> <p>The following warning label shall be supplied with the lamp:</p> <p>WARNING: NOT FOR USE WITH ANY FLUORESCENT LAMP—FOR USE ONLY WITH TYPE A LED LAMPS</p> <p>The warning label shall be durable and the font size shall be a minimum of 5 mm for letters and numbers and 5 mm for symbols.</p> <p>The instructions for the warning label shall state that the installer, when installing the lamp, is to ensure that this label is placed in a prominent position on the luminaire and visible when the lamp is installed</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		N/A
A5.4	<p>Marking of associated components</p> <p>If lamps need to be used with a component which replaces the starter, the component to replace the starter shall be marked as shown in Figure A2</p> <p>d</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		N/A
A6	INSTRUCTIONS		N/A
A6.1	Information to be supplied with the lamp		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>The following information shall be supplied with the lamp:</p> <p>(a) Special conditions or restrictions to be observed for lamp operation. For example, operation in dimming circuits' high frequency circuits. Where lamps are not suitable for dimming, the following symbol (Figure A3) may be Used.</p> <p>(b) <i>Wiring diagram for converter installation</i> Wiring diagrams for which the converter is suitable shall be provided</p> <p>(c) Information on the specification and compatibility of control gear with which the lamp can be used.</p> <p>(d) The ambient operating temperature range of the lamp if other than 10 to 30°C.</p> <p>(e) The type of lamp it replaces, including lamp length, lamp cap configuration and IP rating</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		
A6.2	<p>Information to be supplied for emergency luminaires</p> <p>If lamps are not suitable for use in emergency luminaires, the instructions shall include the following statement: 'This lamp is not suitable for use in emergency luminaires designed for double-capped fluorescent lamp(s)'. Lamps suitable for use in emergency luminaires shall be marked to identify the specific luminaires that they are suitable for use in.</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		N/A
A6.3	<p>Information about additional components</p> <p>If lamps need to be used with a component which replaces the starter, the instructions shall indicate the 'type reference' of the component to replace the starter.</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		N/A
A6.4	Warnings		N/A
	<p>The instructions for lamps intended for use in an existing luminaire that requires modification other than replacement of the lamp or starter shall include the following warnings:</p> <p>WARNING: The manufacturer of the original luminaire will no longer be responsible for the compliance of the modified product. Any modifications made to the original luminaire may alter the safety aspects of the original luminaire; hence compliance assessments of the original luminaire may no longer be applicable to the modified luminaire.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>WARNING: The supplied warning sticker shall be placed on the luminaire and shall be visible during lamp replacement.</p> <p>WARNING: A fuse shall be used to protect a fluorescent lamp that is inadvertently installed against short circuits. Each fuse shall— (a) be of the 250 V HBC type; (b) have a 2 A max. quick-acting type rating; and (c) be used to protect a maximum of two lamps. NOTE: A quick-acting type fuse is defined in the IEC 60127 series as 'Type F'. The luminaire shall have a fuse replacement rating label.</p> <p>WARNING: The rating of the lamp shall not exceed the maximum wattage of the lamp that it is intended to replace or the total wattage of the replacement lamps shall not exceed the maximum wattage of the luminaire.</p>		
	<p>The instructions for lamps intended for use in a new luminaire shall include the following warnings: WARNING: The supplied warning sticker shall be placed on the luminaire and shall be visible during lamp replacement.</p> <p>WARNING: A fuse shall be used to protect a fluorescent lamp that is inadvertently installed against short circuits. Each fuse shall— (a) be of the 250 V HBC type; (b) have a 2 A max. quick-acting type rating; and (c) be used to protect a maximum of two lamps. The luminaire shall have a fuse replacement rating label.</p> <p>WARNING: The rating of the lamp shall not exceed the maximum wattage of the lamp that it is intended to replace or the total wattage of the replacement lamps shall not exceed the maximum wattage of the luminaire.</p> <p>NOTE: Manufacturers should specify minimum requirements for the operations of their lamps, including spacing, enclosure design and temperature limitations.</p>		N/A
A6.5	<p>Additional information Installation instructions shall be provided. The instructions shall give adequate guidance to safely perform the retrofit or modification. Graphical instructions, describing all necessary steps for the replacement of the fluorescent lamp with a lamp, such as replacement of the</p>		N/A

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	<p>starter, may be used.</p> <p>The instruction manual shall be written in English and provided with the lamp.</p> <p>If the lamp requires additional mechanical support then instructions for fitting shall be supplied.</p> <p>For eye protection, the appropriate warnings and instructions as indicated in AS/NZS IEC 62471.2, as relevant to the risk type listed in that Standard, shall be placed on the packaging or in the instructions, or on the lamp itself if required by AS/NZS IEC 62471.2 (i.e. high risk group product requirements).</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		
A7	CONSTRUCTION		N/A
A7.1	<p>General</p> <p>Lamp Replacement</p> <p>Protection against electric shock</p> <p>Corrosion protection</p> <p>Internal Wiring</p>		N/A
A7.2	<p>Components that replace the starter</p> <p>a component that replaces the starter, the component shall have an internal 250 V HBC 2 A max. quick-acting fuse.</p> <p>If required, supplied</p>		N/A
A7.3	<p>Emergency lamps</p> <p>Lamps suitable for use in emergency luminaires shall comply with the requirements of</p> <p>AS 2293.3 in that specific luminaire.</p>		N/A
A7.4	<p>Compatibility of electrical supply to the lamp</p> <p>Lamps shall be constructed such that one end of the lamp has the lamp cap pins electrically bridged (Type A) and the other end of the lamp has the line and neutral supply connected to the pins of that lamp cap.</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		N/A
A8	<p>INTERCHANGEABILITY</p> <p>Interchangeability shall be ensured by the use of lamp caps in accordance with IEC 60061-1 and gauges in accordance with IEC 60061-3.</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		N/A
A9	<p>MASS</p> <p>The entire mass of a lamp shall not exceed 500 g for a G13-capped lamp or 200 g for a lamp with another type of end cap.</p> <p>(AS/NZS 60598.2.1:2014 +A2)</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
A10	DIMENSIONS Lamps shall have the dimensions of the corresponding lamps they are replacing in accordance with the relevant data sheets. (AS/NZS 60598.2.1:2014 +A2)		N/A
A11	MECHANICAL REQUIREMENTS AND TESTS FOR CAPS		N/A
A11.1	Construction and assembly Caps shall be so constructed and assembled that they remain attached to the tubes during and after operation. Compliance shall be checked		N/A
A11.2	Torque test A torque test shall be applied to the lamp contact pins,		N/A
A11.3	Heat treatment and secure fixing test Lamp caps shall be securely fixed in position and the lamp cap fixing shall not be affected by heat. (AS/NZS 60598.2.1:2014 +A2)		N/A
A12	CREEPAGE DISTANCES AND CLEARANCES The provisions of Section 11 of AS/NZS 60598.1 apply. (AS/NZS 60598.2.1:2014 +A2)		N/A
A13	PROVISION FOR EARTHING The provisions of Section 7 of AS/NZS 60598.1 are not applicable. (AS/NZS 60598.2.1:2014 +A2)		N/A
A14	TERMINALS The provisions of Section 14 and 15 of AS/NZS 60598.1 apply to supply terminals only; they are not applicable to lamp caps. (AS/NZS 60598.2.1:2014 +A2)		N/A
A15	EXTERNAL AND INTERNAL WIRING The provisions of Section 5 of AS/NZS 60598.1 apply. (AS/NZS 60598.2.1:2014 +A2)		N/A
A16	General The provisions of Section 8 of AS/NZS 60598.1 apply along with the following.		N/A
A16.2	Protection against electric shock The lamp shall be so constructed that, without any additional enclosure in the form of a luminaire, no internal metal parts, basic insulated external metal parts (other than caps), or		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	live metal parts of the lamp cap or of the lamp itself are accessible when the lamp is installed in a lampholder in accordance with the relevant IEC lampholder data sheet.		
A16.3	Discharge capacitors Lamps incorporating a capacitor of capacitance exceeding 0.1 μ F shall be provided with an internal discharge device, so that 1 s after disconnection the voltage between the pins of the lamp does not exceed 34 V.		N/A
A16.4	Electrical continuity Lamp caps do not ensure the insertion of both ends of the lamp simultaneously; for this reason, there shall be no electrical continuity between the two ends of the lamp during the insertion. (AS/NZS 60598.2.1:2014 +A2)		N/A
A17	ENDURANCE TEST AND THERMAL TESTS		N/A
A17.1	General The provisions of Section 12 of AS/NZS 60598.1 apply, together with the requirements of Paragraphs A17.2 to A17.5.		N/A
A17.2	Endurance test The duration of the endurance test of Clause 12.3 of AS/NZS 60598.1 shall be 240 h		N/A
17.3	Thermal test (normal operation) During the thermal test of Clause 12.4 of AS/NZS 60598.1, no accessible surface of the lamp shall exceed 70°C for metallic surfaces or 85°C for non-metallic surfaces.		N/A
17.4	Thermal test compliance The surface temperature of inaccessible parts of the lamp cap shall not exceed 120°C.		N/A
17.5	Thermal test (abnormal operation) for class III lamps Class III lamps shall, in addition, be subject to the abnormal operation test of Clause 12.5 of AS/NZS 60598.1 for a 240 V a.c. rating. The lamp shall not become unsafe during this test. (AS/NZS 60598.2.1:2014 +A2)		N/A
A18	POWER REQUIREMENT For LED lamps intended to replace fluorescent lamps, the measured power of the combined LED lamp and any associated circuitry shall not be greater than 0.75 times the rated power of the fluorescent lamp being replaced.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For LED lamps intended to replace other types of lamps, the measured power of the combined LED lamp and any associated circuitry shall not be greater than 1.0 times the rated power of the lamp being replaced. (AS/NZS 60598.2.1:2014 +A2)		N/A
A19	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE Where the lamp is marked with an IP rating in accordance with Paragraph A5.2(g), the tests of Section 9 of AS/NZS 60598.1 shall be conducted on the lamp at its marked rating. (AS/NZS 60598.2.1:2014 +A2)		N/A
A20	INSULATION RESISTANCE AND ELECTRIC STRENGTH The provisions of Section 10 of AS/NZS 60598.1 apply. (AS/NZS 60598.2.1:2014 +A2)		N/A
A21	RESISTANCE TO HEAT, FIRE AND TRACKING The provisions of Section 13 of AS/NZS 60598.1 apply.		N/A
	In addition, double or reinforced insulation material shall be subject to the following needle flame test (AS/NZS 60598.2.1:2014 +A2)		N/A
A22	PHOTOBIOLOGICAL HAZARD The lamp shall not exceed the photobiological hazard ratings for Risk Group 1 (low risk), in accordance with Clause 6.1.2 of AS/NZS IEC 62471:2011. (AS/NZS 60598.2.1:2014 +A2)		N/A
A23	FAULT CONDITIONS The fault condition requirements of AS/NZS 61347.1 apply, including the following. For single-phase supply mains operated LED lamps, the tests are conducted at— (a) 264 V; and (b) 170 V, or 85 V if the wiring diagrams includes series lamp circuits. (AS/NZS 60598.2.1:2014 +A2)		N/A
A24	SURGE TEST A surge generator in according with IEC 61000-4-5 using a 1.2/50 combination wave generator is required. There shall show no risk of fire or electric shock. (AS/NZS 60598.2.1:2014 +A2)		N/A
APPENDIX B	SAFETY REQUIREMENTS FOR T8 TO T5 LAMP CONVERTERS (Normative)		N/A

Enclosure 3		Australia/New Zealand's National Differences	
Clause	Requirement + Test	Result - Remark	Verdict
	(AS/NZS 60598.2.1:2014 +A2)		
B1.1	Scope of Appendix This Appendix specifies the safety and interchangeability requirements of T8 to T5 lamp converters		N/A
B1.2	The Appendix shall be read in conjunction with AS/NZS 60598.1 and AS/NZS 61347.1, with all provisions applying unless varied herein.		N/A
B1.3	Testing In general, all tests are carried out on each type of converter		N/A
B1.4	Specific requirements of this Appendix A converter shall be deemed to comply with this Appendix only if it complies with all the appropriate requirements of this Appendix and passes the relevant tests specified herein.		N/A
B1.5	Requirements of relevant test specifications Equipment and components incorporated in a converter that is safety dependant shall comply with the appropriate requirements of any relevant test specification, unless such requirements are varied herein. (AS/NZS 60598.2.1:2014 +A2)		N/A
B3	DEFINITIONS		N/A
B3.1	T8 to T5 (T8–T5) converter A device to support and operate a tubular fluorescent lamp with G5 caps and can be used as a replacement for a tubular fluorescent lamp with G13 caps. (AS/NZS 60598.2.1:2014 +A2)		N/A
B4	CLASSIFICATIONS OF CONVERTER(S) Converters shall be classified in accordance with the provisions of Section 2 of AS/NZS 60598.1. Converters shall be classified as class II for protection against electric shock, IP rating and for normal use. Requirements for direct mounting on normally flammable surfaces do not apply. Converters shall be classified as independent control gear in accordance with AS/NZS 61347.1. (AS/NZS 60598.2.1:2014 +A2)		N/A
B5	MARKING		N/A
B5.1	General The test of marking of Clause 3.4 of AS/NZS 60598.1 shall be used to determine the		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	durability of the markings specified in Paragraphs A5.2 to A5.4.		
B5.2	Marking on the converter Converters shall be clearly and durably marked with the following markings, the size of which shall be a minimum of 2 mm: (a) Mark of origin (this may take the form of a trademark, or be the manufacturer's name or the name of the responsible vendor). (b) Rated voltage range (marked 'V' or 'volts'). (c) Rated wattage (marked 'W' or 'watts'). Both the lamp wattage of the existing lamp and the replacement lamp shall be specified. (d) Rated frequency (marked in 'Hz'). (e) A value for allowable case temperature t_c and a marked point of measurement. (f) Model number. (g) IP rating. (h) Wattage/lamp restriction due to interchangeability shall be specified. For example, 'For use with 28 W HE (high efficiency) T5 lamp only. Not for use with 54 W HO (high output) T5 (same length) lamp'.		N/A
B5.3	Warning label for the luminaire Warning label shall be supplied with the converter: WARNING: : Not for use with any fluorescent lamp without T8–T5 converter installed		N/A
B5.4	Marking of associated components If the converter requires a component which replaces the starter, the component shall be clearly marked. (AS/NZS 60598.2.1:2014 +A2)		N/A
B6	INSTRUCTIONS		N/A
B6.1	Information to be supplied with the converter The following information shall be supplied with the converter: (a) Special conditions or restrictions		N/A
	(b) <i>Wiring diagram for converter installation</i>		N/A
	(c) ambient operating temperature range of the lamp,		N/A
	type of lamp it replaces, including lamp length, lamp cap configuration and IP AS/NZS 60598.2.1:2014 +A2)		N/A
B6.2	Information to be supplied for emergency luminaires		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Instructions shall state converters shall not be used in any lamp position within an emergency luminaire		
B6.3	Information about additional components If the converter requires a component that replaces the starter, the instructions shall indicate the 'type reference' of the component to replace the starter. (AS/NZS 60598.2.1:2014 +A2)		N/A
B7	CONSTRUCTION		N/A
B7.1	General Converters shall be so designed and constructed that in normal use they function reliably and cause no danger to the user or surroundings., use of tools, protection against electric shock, non-corrosive, internal wiring?		N/A
B7.2	Components that replace the starter If the converter needs to operate in combination with a component that replaces the starter, this component shall be supplied together with the converter. No HBC fuse shall be used (for starter replacement).		N/A
B7.3	Emergency lamps Converters are not suitable for use in emergency luminaires. (AS/NZS 60598.2.1:2014 +A2)		N/A
B8	INTERCHANGEABILITY converter shall be interchangeable with both the replaced and new lamp (AS/NZS 60598.2.1:2014 +A2)		N/A
B9	MASS entire mass of a converter and lamp combination shall not exceed 500 g. (AS/NZS 60598.2.1:2014 +A2)		N/A
B10	DIMENSIONS converter, lamp combination shall have dimensions of the corresponding lamps they are replacing (AS/NZS 60598.2.1:2014 +A2)		N/A
B11	MECHANICAL REQUIREMENTS AND TESTS FOR CAPS		N/A
B11.1	Construction and assembly		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Caps shall be so constructed and assembled that they remain attached to the converter during and after operation		
B11.2	Torque test A torque test shall be applied to the converter contact pins, the sample shall comply with the requirements of Paragraph B16		N/A
B11.3	Heat treatment and secure fixing test Caps shall be securely fixed in position and not be affected by heat (AS/NZS 60598.2.1:2014 +A2)		N/A
B12	CREEPAGE DISTANCES AND CLEARANCES The provisions of Section 11 of AS/NZS 60598.1 apply (AS/NZS 60598.2.1:2014 +A2)		N/A
B13	PROVISION FOR EARTHING The provisions of Section 7 of AS/NZS 60598.1 are not applicable. (AS/NZS 60598.2.1:2014 +A2)		N/A
B14	TERMINALS The provisions of Sections 14 and 15 of AS/NZS 60598.1 apply to supply terminals only; they are not applicable to lamp caps. (AS/NZS 60598.2.1:2014 +A2)		N/A
B15	EXTERNAL AND INTERNAL WIRING The provisions of Section 5 of AS/NZS 60598.1 apply. (AS/NZS 60598.2.1:2014 +A2)		N/A
B16	PROTECTION AGAINST ELECTRIC SHOCK		N/A
B16.1	General The provisions of Section 8 of AS/NZS 60598.1 apply along with the following		N/A
B16.2	Protection against electric shock Accessibility shall be checked with test probe B of IEC 61032		N/A
B16.3	Discharge capacitors Lamps incorporating a capacitor of capacitance exceeding 0.1 μF shall be provided with an internal discharge device (AS/NZS 60598.2.1:2014 +A2)		N/A
B17	ENDURANCE TEST AND THERMAL TESTS		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B17.1	General The provisions of endurance and thermal tests of AS/NZS 60598.1 apply, together with the requirements of Paragraphs B17.2 to B17.5.		N/A
B17.2	duration of the endurance test of AS/NZS 60598.1 shall be 240 h		N/A
B17.3	Thermal test (normal operation) During the normal operation thermal test of AS/NZS 60598.1, no accessible surface of the lamp shall exceed 70°C for metallic surfaces or 85°C for non-metallic surfaces. The surface temperature of inaccessible parts of the cap shall not exceed 120°C.		N/A
B17.4	Thermal test (abnormal operation) The requirements of the abnormal operation thermal test of AS/NZS 60598.1 apply		N/A
B17.5	Thermal test—Fault conditions The tests of Clauses 12.6 and 12.7 are not applied. (AS/NZS 60598.2.1:2014 +A2)		N/A
B18	POWER REQUIREMENT The measured power of the converter and T5 lamp combination with any associated circuitry shall not be greater than the rated power of the T8 lamp being replaced. (AS/NZS 60598.2.1:2014 +A2)		N/A
B19	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE The tests of Section 9 of AS/NZS 60598.1 apply. (AS/NZS 60598.2.1:2014 +A2)		N/A
B20	INSULATION RESISTANCE AND ELECTRIC STRENGTH The provisions of Section 10 of AS/NZS 60598.1 apply (AS/NZS 60598.2.1:2014 +A2)		N/A
B21	RESISTANCE TO HEAT, FIRE AND TRACKING The provisions of Section 13 of AS/NZS 60598.1 apply. (AS/NZS 60598.2.1:2014 +A2)		N/A
B22	FAULT CONDITIONS The fault condition requirements of AS/NZS 61347.1 apply, including the following. Tests are conducted at— (a) 264 V; and		N/A


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Clause	Requirement + Test	Result - Remark	Verdict
	(b) 170 V, or 85 V if the wiring diagrams includes series lamp circuits. (AS/NZS 60598.2.1:2014 +A2)		
B23	BEHAVIOUR OF THE CONTROL GEAR AT END OF LAMP LIFE The behaviour of the control gear at end of lamp life requirements of AS/NZS 61347.2.3 apply, except the test voltages applied shall be 264 V and either of: (a) Where the converter is marked as only suitable for use with ferromagnetic control gear and type HE T5 lamps above 14 W 170 V. (b) For other converters, such as 18 W T8 series circuits 85 V. (AS/NZS 60598.2.1:2014 +A2)		N/A
B24	SURGE TEST A surge generator in according with IEC 61000-4-5 using a 1.2/50 combination wave generator The sample shall show no risk of fire or electric shock (AS/NZS 60598.2.1:2014 +A2)		N/A
Bibliography	Addition <i>Add the following new informative references:</i> <i>IEC 60252, AC motor capacitors (all parts)</i> <i>AS/NZS 60335.1, Household and similar electrical appliances—Safety, Part 1: General requirements (IEC 60335-1 Ed. 5, MOD)</i> (AS/NZS 60598.1:2017)		N/A

	Special national conditions (if any)		
(0.5.101)	After Clause 0.5.4, add new Clause 0.5.101 as follows: 0.5.101 Capacitors Capacitors shall be of a type to ensure that any capacitor failure results in a failsafe outcome (i.e. the capacitor type will fail in the open-circuit mode only and is protected against fire or shock hazard). Capacitors (other than those incorporated in control gear that comply with the relevant standard) shall comply with one of the following:		N/A
	<ul style="list-style-type: none"> Capacitors likely to be permanently subjected to the supply voltage, used for radio interference suppression or for voltage dividing shall comply with IEC 60384-14 		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<ul style="list-style-type: none"> Other capacitors shall be not less than Type B capacitors with metal body and break action protection in accordance with IEC 61048 and IEC 61049. A capacitor complying with EIA-456-A, Metallized Film Dielectric Capacitors for Alternating Current Applications, shall comply with IEC 61049 and IEC 61048:2006 excluding the endurance test of 18.1.1. <p>NOTE Capacitors of Class S2 (formerly referred to as P2) of IEC 60252 (all parts) do not meet the safety requirements of a Type B capacitor. (AS/NZS 60698.1:2017)</p>		N/A
(0.5.102)	<p>After Clause 0.5.101, add new Clause 0.5.102 as follows:</p> <p>0.5.102 Control gear</p> <ul style="list-style-type: none"> Power supplies shall comply with the relevant part 2 of the AS/NZS 61558 series 		N/A
	<ul style="list-style-type: none"> Control gear shall comply with the relevant part 2 of the AS/NZS 61347 series 		P
	<ul style="list-style-type: none"> Battery chargers used for lighting other than emergency lighting shall comply with AS/NZS 60335.2.29. 		N/A
	<p>Sensor switches and similar control circuits, including those incorporated in other equipment, are considered electronic switches (see Clause 4.8). (AS/NZS 60598.1:2017)</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
(1.2.101)	<p>After Clause 1.2.91, add the following definitions:</p> <p>1.2.101 installation coupler connecting device consisting of an installation female connector and an installation male connector provided with retaining means for permanent connection not intended to be engaged or disengaged under load nor to be engaged or disengaged other than during first installation, during maintenance of the wiring system or during re-configuration of the wiring system</p> <p>1.2.103 installation male connector load side portion of an installation coupler which contains the male contacts</p> <p>1.2.104 installation female connector supply side portion of an installation coupler which contains the female contacts</p> <p>1.2.105 installation coupler system family of installation couplers consisting of one or more installation female connectors compatible by mechanical coding features with one or more installation male connectors, with the same ratings produced according to the specification of one manufacturer (AS/NZS 61058.1:2017)</p>		N/A
(3.3.101)	<p>Addition</p> <p>After Clause 3.3.22, <i>add</i> new Clauses 3.3.101 and 3.3.102 as follows:</p> <p>3.3.101 The instructions shall contain details of the components in the luminaire that require replacement as part of a maintenance program.</p>		P
(3.3.102)	<p>3.3.102 The instructions for luminaires, including for remotes or other accessories containing coin/button cell batteries and batteries designated R1, shall include the safety warnings below.</p> <p>Equipment containing one or more coin/button cell/R1 batteries shall have the safety warnings in the instructions accompanying the equipment.</p> <p>The safety warnings are not required where these batteries are not intended to be replaced or are only accessible after damaging the equipment.</p> <p>The safety warnings shall be as follows:</p>		N/A
	<p>– CAUTION: Do not ingest battery—Chemical burn hazard [or equivalent wording].</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<ul style="list-style-type: none"> – [The remote control supplied with] this product contains a coin/button cell battery. If the coin/button cell battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death. – Keep new and used batteries away from children. – If the battery compartment does not close securely, stop using the product and keep it away from children. – If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention. <p>NOTE 1 Coin/button cell batteries are small, single cell devices having a diameter greater than their height.</p> <p>NOTE 2 Battery designations are specified in IEC 60086-2.</p> <p>(AS/NZS 60598.1:2017)</p>		
(4.101)	<p>Addition</p> <p>After Clause 4.32, add new Clauses as follows:</p> <p>4.101.1 Small batteries</p> <p>Batteries that fit wholly within the small parts cylinder as specified in Clause 5.2 of ISO 8124-1 shall not be removable without the aid of a tool.</p> <p>Luminaires intended for children under the age of three, or parts of such luminaires that contain batteries, shall not fit wholly within the small parts cylinder as specified in Clause 5.2 of ISO 8124-1.</p> <p>For luminaires or parts of luminaires containing batteries that fit wholly within the small parts cylinder as specified in Clause 5.2 of ISO 8124-1, the batteries shall not be accessible without the aid of a tool.</p>		N/A
	<p>Compliance is checked by inspection and by the following test.</p> <p>A force is applied without jerks for 10 s in the most unfavourable direction to parts likely to be weak. The force is as follows:</p> <ul style="list-style-type: none"> – push force, 50 N; – pull force; 30 N; – if the shape of the part is such that the fingertips cannot easily slip off, 50 N; – if the projection of the part that is gripped is less than 10 mm in the direction of removal, 30 N. <p>The push force is applied by test probe 11 of IEC 61032. The pull force is applied by a suitable means, such as a suction cup, so that the test results are not affected. While the force is being applied, the test fingernail of Figure 7 of AS/NZS 60335.1 is inserted in any aperture or joint with a force of 10 N. The fingernail is then slid sideways</p>		N/A

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Clause	Requirement + Test		Result - Remark	Verdict
	with a force of 10 N but is not twisted or used as a lever.			
	<p>If the shape of the part is such that an axial pull is unlikely, the pull force is not applied but the test fingernail is inserted in any aperture or joint with a force of 10 N and is then pulled for 10 s by means of the loop with a force of 30 N in the direction of removal.</p> <p>If the part is likely to be twisted, the following torque is applied at the same time as the pull or push force:</p> <ul style="list-style-type: none"> –2 Nm, for major dimensions up to 50 mm. –4 Nm, for major dimensions over 50 mm. <p>This torque is also applied when the test fingernail is pulled by means of the loop. If the projection of the part that is gripped is less than 10 mm, the torque is reduced by 50 %.</p> <p>NOTE The types and dimensions of batteries are specified in IEC 60086-2.</p> <p>(AS/NZS 60598.1:2017)</p>			N/A
(4.101.2)	<p>Addition</p> <p>4.101.2 Battery compartment fasteners</p> <p>If screws or similar fasteners are used to secure a door or cover providing access to the battery compartment, the screw or similar fastener shall be captive to ensure that it remains with the door, cover or equipment.</p> <p>Compliance is checked by inspection and by the following test.</p> <p>A force of 20 N is applied to the screw or similar fastener without jerks for a duration of 10 s in any direction.</p> <p>(AS/NZS 60598.1:2017)</p>			N/A
Figure ZZ1	 <p>Figure ZZ1 Must be installed by a licensed electrician (AS/NZS 60598.1:2013)</p>			P

Enclosure 4	Evaluations according to Regulatory Requirements and National Conditions for the Kingdom of Saudi Arabia
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Clause	Requirement + Test	Result - Remark	Verdict
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RATED VOLTAGE AND FREQUENCY			—
	Rated voltage or rated voltage range, for equipment intended to be connected to the supply mains, shall cover:		—
	- for single-phase: 220 V, or 230 V, or 127 V for spare parts and components only	Rated 220-240 V	P
	- for multi-phase: 380 V or 400 V		N/A
	Rated frequency or frequency range shall cover 60 Hz	Rated 50/60 Hz	P
POWER CORDS AND PLUGS			—
	Where applicable, electrical equipment shall be supplied with the following plug type:		—
	IEC Type G plugs configurations in conformity with SASO 2203 and/or BS 1363		N/A
MARKING AND INSTRUCTIONS			—
	All products must bear an un-removable fixed indication for the country of origin. Acceptable wordings are "Made in..." or "Manufactured in..."	"Made in Italy" on the label	P
	Markings on the name plate shall be either in Arabic or English language or both.		P
	When provided, the instructions for installation and user manuals shall be in Arabic <u>and</u> English for all equipment intended for household and similar use.		N/A
	When provided, the instructions for installation and user manuals shall be in Arabic <u>or</u> English for all non-household equipment intended for use by trained professionals.	Will be provided also in Arabic	P
	Any pictures, text or objects that are offensive to the Islamic religion shall not appear on the product, markings or accompanying instructions.		P
	Pictures, text or objects that are offensive to the Islamic religion shall not appear on the product packaging too, but packages are not in scope of the present investigation.		

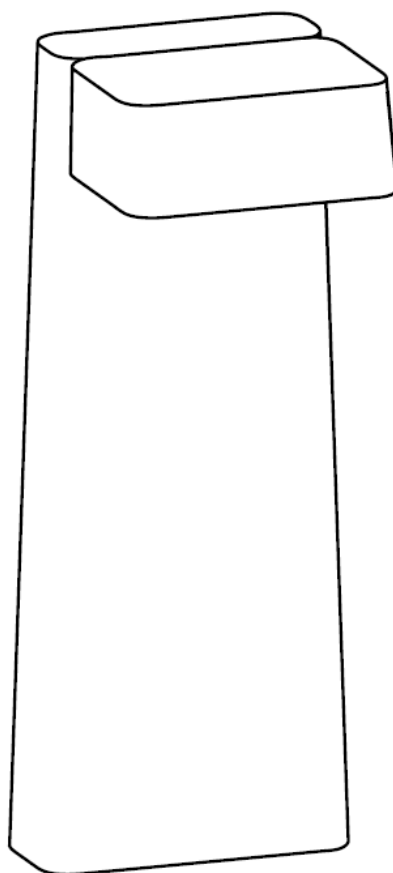
Enclosure 5	Manufacturer's Instructions
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NERI

Brenta bollards

LED

REV.00 - 2019/11/14



GUIDA ALL'INSTALLAZIONE

INSTALLATION GUIDES

GUIDE D'INSTALLATION

INSTALLATIONSANLEITUNG

GUÍA DE INSTALACIÓN

Enclosure 5	Manufacturer's Instructions
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IT – Questo manuale va letto e conservato con molta attenzione.
EN – This manual should be read with attention and kept with great care.
FR – Ce manuel doit être lu très attentivement et soigneusement conservé.
DE – Die Anleitung sollte mit großer Aufmerksamkeit gelesen und aufbewahrt werden.
ES – Este manual se debe leer con detenimiento y conservar cuidadosamente.

Enclosure 5 Manufacturer's Instructions

INTRODUZIONE
INTRODUCTION
INTRODUCTION
EINLEITUNG
INTRODUCCIÓN

IT – Neri SpA è impegnata costantemente nella ricerca e progettazione di prodotti di alta qualità, lunga durata e sicurezza. Questo manuale intende presentare le metodiche di installazione corrette dei corpi illuminanti, ponendosi come guida nei confronti di installatori professionali. A tale scopo questo manuale va letto con molta attenzione.

EN – Neri SpA is constantly committed to research and design for products of high quality, durability and safety. This manual aims to present correct installation procedures for light fixtures as a guide for professional installers. To this end the manual should be read with extreme attention.

FR – Neri SpA a toujours eu pour objectif la recherche et la conception de produits de haute qualité, offrant longévité et sécurité. Ce manuel, qui présente les modes d'installation corrects des armatures d'éclairage, est un guide à l'adresse des installateurs professionnels. Il doit donc être lu très attentivement.

DE – Die Neri SpA ist konstant um Forschung und Entwicklung zeitbeständiger und sicherer Produkte von hoher Qualität bemüht. Dieses Handbuch stellt die korrekten Installationsmethoden für die Leuchtkörper bereit und bietet sich gegenüber professionellen Installateuren als ein Ratgeber an. Deswegen sollte dies Handbuch sehr aufmerksam gelesen werden.

ES – Neri SpA trabaja de continuo en el estudio y proyección de productos de alta calidad, larga duración y seguridad. Este manual presentará los métodos de instalación correcta de los cuerpos de iluminación, siendo una guía para instaladores profesionales. Por ello, este manual debe leerse con gran detenimiento.

SIMBOLI
SYMBOLS
SYMBOLLES
SYMBOLE
SÍMBOLOS

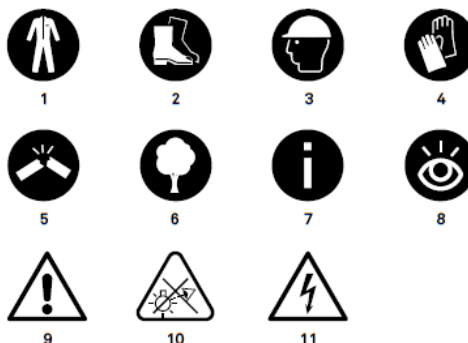
IT – 1. Abbigliamento da lavoro/ 2. Scarpe antinfortunistiche/ 3. Casco obbligatorio/ 4. Guanti da lavoro/ 5. Danni ai componenti/ 6. Inquinamento ambientale/ 7. Nota informativa/ 8. Verifica tecnica/ 9. Pericolo per l'operatore/ 10. Rischio fotobiologico/ 11. Rischio di shock elettrico.

EN – 1. Work apparel/ 2. Safety shoes/ 3. Obligatory helmet/ 4. Work gloves/ 5. Damage to components/ 6. Environmental pollution/ 7. Informative note/ 8. Technical check/ 9. Danger for the operator/ 10. Photobiological risk/ 11. Risk of electric shock.

FR – 1. Vêtements de travail/ 2. Chaussures de sécurité/ 3. Casque obligatoire/ 4. Gants de travail/ 5. Dommages aux composants/ 6. Pollution de l'environnement/ 7. Note d'information/ 8. Vérification technique/ 9. Danger pour l'opérateur/ 10. Risque photobiologique/ 11. Risque de choc électrique.

DE – 1. Arbeitskleidung/ 2. Schutzschuhe/ 3. Helmpflicht/ 4. Arbeitshandschuhe/ 5. Schäden an den Komponenten/ 6. Umweltverschmutzung/ 7. Informationsblatt/ 8. Technische Kontrolle/ 9. Gefahr für den Techniker/ 10. Photobiologische Risiko/ 11. Stromschlaggefahr.

ES – 1. Ropa de trabajo obligatoria/ 2. Calzado de seguridad obligatorio/ 3. Casco de seguridad obligatorio/ 4. Guantes de seguridad obligatorios/ 5. Daños a los componentes/ 6. Contaminación del medio ambiente/ 7. Nota informativa/ 8. Comprobación técnica/ 9. Peligro para el operador/ 10. Riesgo fotobiológico/ 11. Riesgo de descarga eléctrica.

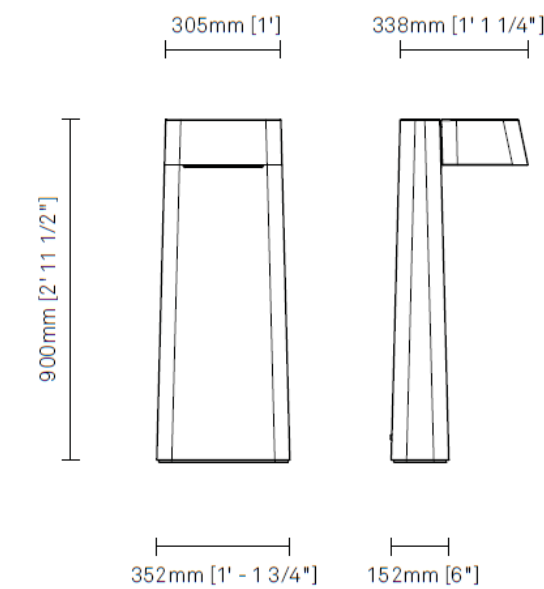


Enclosure 5

Manufacturer's Instructions

Brenta bollard XL
LED

2960.001 (CE)



Superficie esposta al vento / Surface exposed to wind / Surfaces exposées au vent /
Windangriffsfläche / Superficie expuesta al viento

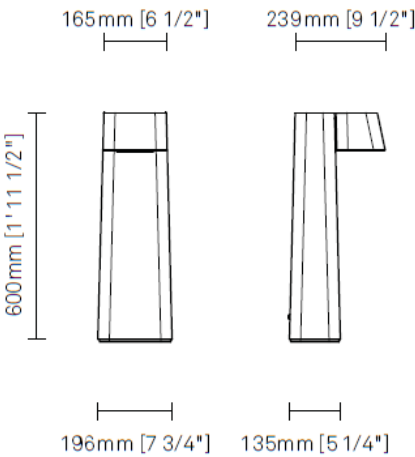
Area laterale / Side area / Zone latérale / Seitlicher Bereich / Área lateral	0,140m² [1.506ft²]
Area frontale / Front area / Zone frontale / Bereich vorn / Área frontal	0,3m² [3.22ft²]
Area superiore / Top area / Zone supérieure / Oberer Bereich / Área superior	0,11m² [1.184ft²]
EPA	-
Peso / Weight / Poids / Gewicht / Peso	61kg [134.48lb]
d _{br}	0,93m [3,05ft]

Enclosure 5

Manufacturer's Instructions

Brenta bollard M
LED

2960.005 (CE)



Superficie esposta al vento / Surface exposed to wind / Surfaces exposées au vent /
Windangriffsfläche / Superficie expuesta al viento

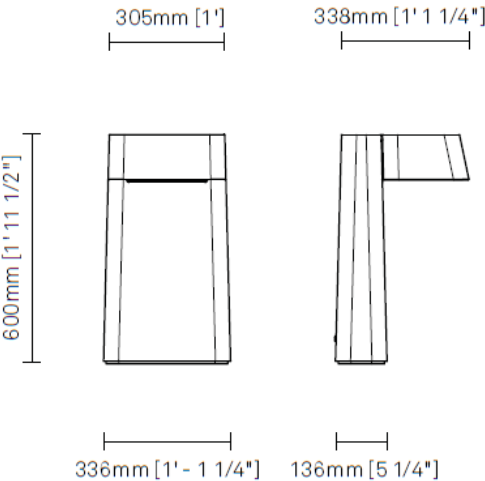
Area laterale / Side area / Zone latérale / Seitlicher Bereich / Área lateral	0,08m² [0.861ft²]
Area frontale / Front area / Zone frontale / Bereich vorn / Área frontal	0,108m² [1.16ft²]
Area superiore / Top area / Zone supérieure / Oberer Bereich / Área superior	0,04m² [0.430ft²]
EPA	-
Peso / Weight / Poids / Gewicht / Peso	19kg [41.89lb]
d _{br}	0,79m [2.59ft]

Enclosure 5

Manufacturer's Instructions

Brenta bollard L
LED

2960.003 (CE)



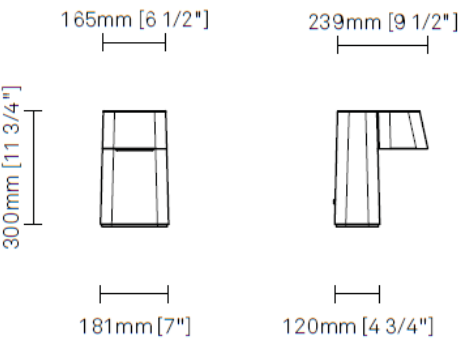
Superficie esposta al vento / Surface exposed to wind / Surfaces exposées au vent / Windangriffsfläche / Superficie expuesta al viento	
Area laterale / Side area / Zone latérale / Seitlicher Bereich / Área lateral	0,1m² [1.076ft²]
Area frontale / Front area / Zone frontale / Bereich vorn / Área frontal	0,3m² [3.22ft²]
Area superiore / Top area / Zone supérieure / Oberer Bereich / Área superior	0,11m² [1.184ft²]
EPA	-
Peso / Weight / Poids / Gewicht / Peso	43kg [94.79lb]
d _{br}	0,93m [3.05ft]

Enclosure 5

Manufacturer's Instructions

Brenta bollard S
LED

2960.007 (CE)



Superficie esposta al vento / Surface exposed to wind / Surfaces exposées au vent / Windangriffsfläche / Superficie expuesta al viento	
Area laterale / Side area / Zone latérale / Seitlicher Bereich / Área lateral	0,045m² [0,484ft²]
Area frontale / Front area / Zone frontale / Bereich vorn / Área frontal	0,052m² [0,55ft²]
Area superiore / Top area / Zone supérieure / Oberer Bereich / Área superior	0,04m² [0,430ft²]
EPA	-
Peso / Weight / Poids / Gewicht / Peso	11kg [24,25lb]
d _{br}	0,79m [2,59ft]

Enclosure 5 Manufacturer's Instructions

GUIDA ALL'INSTALLAZIONE

IT

AVVERTENZE PER L'INSTALLAZIONE

Eseguire l'installazione secondo le norme in vigore nel paese d'installazione.

L'apparecchio deve essere utilizzato solo se completo dello schermo di protezione. Se lo schermo risulta danneggiato o rotto, l'apparecchio non va utilizzato.

Ripristinare le condizioni originali prima di riutilizzarlo.

L'apparecchio è in CL II (o CL I) d'isolamento elettrico, fare attenzione che durante l'installazione, parti metalliche esposte non vadano in contatto elettrico con parti dell'installazione elettrica collegate ad un conduttore di protezione.

Questo apparecchio deve essere destinato solo all'uso per il quale è stato progettato, e cioè l'illuminazione di ambienti esterni. Ogni altro uso è considerato improprio e pericoloso, ed il costruttore non può essere considerato responsabile per danni derivanti da un uso improprio e irragionevole.

Per maggiori informazioni, si invita a consultare le istruzioni supplementari presenti sul sito alla pagina www.neri.biz/guidainstallazione.



Movimentare i prodotti con estrema attenzione in quanto gli urti possono rovinare il cemento in modo evidente. Per la posa del bollard misura XL è necessario l'intervento di almeno due persone.

Installazione**Fase 1**

Controllare le misure e i modelli per le flange di fissaggio. Le misure sono come mostrato nel disegno (Fig. 1).

Fase 2

Fissare la flangia avvitando due viti (M8) con una forza di 20Nm e far passare i cavi di alimentazione attraverso i due buchi della flangia (Fig. 2).

Connessione elettrica

Connettere i cavi tenendo il prodotto steso sul terreno (Fig. 3-4-5).

Se il cavo o il cavo flessibile esterno di questo apparecchio è danneggiato, deve essere sostituito esclusivamente dal produttore o dal suo agente di servizio o da una persona qualificata simile per evitare pericoli.

Solleva il prodotto e inseriscilo sul telaio in ferro, facendo attenzione ad allineare i perni (Fig. 4 e Fig. 5). Fissa il bollard con le due viti sul retro con una forza di 20Nm (S-M), 35Nm (L-XL) (Fig. 8).

Ogni taglia dei bollard Brenta si installa con la medesima modalità.

ATTENZIONE!

Non sedersi sul bollard!



Enclosure 5

Manufacturer's Instructions

INSTALLATION PROCEDURE

EN

INSTALLATION INFORMATION

Installation must be carried out in accordance with national standards. The fixture must only be used when complete with safety screen. If the screen is damaged or broken, the fixture must not be used. Restore the original conditions before reusing.

The fixture is installed under CL II protection standards, particular care must be taken while assembling to ensure that exposed metal parts do not come into electrical contact with parts of the electrical installation connected to a protection conductor. This light fixture must be installed only for the use for which it was designed, namely for the illumination of outdoor spaces.

Any other use must be considered to be improper and dangerous, and the manufacturer cannot be held liable for any damage caused by improper and unreasonable use.

For more information, please see the supplementary instructions on the website at www.neri.biz/installationguides.



Handle the products with extreme care as impact can cause visible damage.

To install the XL size bollard, at least two people are needed.

Installation

Phase 1

Check the measurements and the models for the fixing flanges. The measurements are as illustrated in the drawing (Fig. 1).

Phase 2

Secure the flange, screwing in two screws (M8) with a force of 20Nm and run the power supply cables through the two holes in the flange (Fig. 2).

Electrical connection

Connect the cables with the product lying

on the ground (Fig. 3-4-5).

If the external flexible cable or cord of this luminaire is damaged, it shall be exclusively replaced by the manufacturer or his service agent or a similar qualified person in order to avoid a hazard.

Lift the product and insert it on the iron frame, taking care to align the pins (Fig. 4 and Fig. 5). Secure the bollard with the two screws on the back with a force of 20Nm (S-M), 35Nm (L-XL) (Fig. 8).

Every Brenta bollard size is installed the same way.

WARNING!
Do not sit on the bollard!



Enclosure 5 Manufacturer's Instructions

GUIDE D'INSTALLATION

FR

AVERTISSEMENTS POUR L'INSTALLATION

Effectuer l'installation selon les normes en vigueur dans le pays d'installation. L'appareil doit être utilisé uniquement s'il est complété de l'écran de protection. Si l'écran est endommagé ou cassé, l'appareil ne doit pas être utilisé. Restaurer les conditions d'origine avant de l'utiliser à nouveau. L'appareil est en CL II d'isolation électrique ; s'assurer que, durant l'installation, les pièces métalliques exposées n'entrent pas en contact électrique avec les parties de l'installation électrique reliées à un conducteur de protection. Cet appareil doit être destiné uniquement à l'usage pour lequel il a été conçu, c'est-à-dire l'éclairage d'environnements extérieurs. Toute autre utilisation est considérée impropre et dangereuse, et le fabricant ne peut être tenu responsable des dommages causés par une utilisation incorrecte et déraisonnable.

Pour en savoir plus, veuillez consulter les instructions supplémentaires publiées sur le site Internet à la page www.neri.biz/guideinstallation.



Manipuler les produits avec le plus grand soin. Les chocs peuvent endommager le béton de façon visible. Il faut au moins deux personnes pour installer le bollard de taille XL.

Installation**Étape 1**

Vérifier les dimensions et les modèles pour les brides de fixation. Les dimensions sont celles indiquées sur le dessin (fig. 1).

Étape 2

Fixer la bride en vissant deux vis (M8) avec un couple de 20 Nm et faire passer les câbles d'alimentation dans les deux trous de la bride (fig. 2).

Connexion électrique

Connecter les câbles en maintenant le produit au sol (Fig. 3-4-5). Si le câble ou le cordon souple externe de ce luminaire est endommagé, il doit être remplacé exclusivement par le fabricant, son agent de service ou une personne qualifiée similaire, afin d'éviter tout risque.

Soulever le produit et l'insérer sur le châssis en fer en prenant soin d'aligner les broches (fig. 4 et fig. 5). Fixer le bollard en vissant les deux vis à l'arrière avec un couple de x N m (fig. 8).

Chaque taille du bollard Brenta s'installe de la même manière.

ATTENTION !

Ne pas s'asseoir sur le bollard.



Enclosure 5 Manufacturer's Instructions

INSTALLATIONSANLEITUNG

DE

INSTALLATIONSANLEITUNG

Führen Sie die Installation gemäß den geltenden Normen im Einsatzland durch. Die Vorrichtung darf nur einschließlich der Schutzabdeckung verwendet werden. Wenn die Schutzabdeckung beschädigt oder nicht funktionstüchtig ist, darf die Vorrichtung nicht verwendet werden. Stellen Sie den ursprünglichen Zustand vor der erneuten Verwendung wieder her. Die Vorrichtung entspricht der Schutzklasse II (Schutz durch doppelte oder verstärkte Isolierung). Achten Sie während der Installation drauf, dass freiliegenden Metallteile nicht in elektrischem Kontakt mit Teilen der elektrischen Anlage gelangen, die mit einem Schutzleiter verbunden sind. Diese Vorrichtung darf nur für den Zweck verwendet werden, für den diese konzipiert wurde, nämlich für die Außenbeleuchtung. Jede andere Verwendung gilt als unsachgemäß und gefährlich, der Hersteller haftet nicht für Schäden, die durch unsachgemäße und unvernünftig Verwendung verursacht werden.

Für weitere Informationen lesen Sie bitte in den zusätzlichen Anweisungen nach, die Sie auf der Webseite www.neri.biz/installationguides.



Handhaben Sie die Produkte mit äußerster Vorsicht, da Stöße den Zement sichtbar beschädigen können. Für die Installation der Leuchtsäule der Größe XL sind wenigstens zwei Personen notwendig.

Installation

Fase 1

Überprüfen Sie die Abmessungen und Modelle der Befestigungsflansche. Die Abmessungen entsprechen der Darstellung (Abb. 1).

Fase 2

(M8) Befestigen Sie den Flansch durch Anschrauben der beiden Schrauben mit einer Kraft von 20 Nm und führen Sie die beiden Stromkabel durch die beiden Löcher des Flansches (Abb. 2).

Elektrische Verbindung

Legen Sie das Produkt flach auf den Boden (Abb. 3-4-5) und schließen Sie die Kabel an.

Wenn das externe flexible Kabel oder Kabel dieser Leuchte beschädigt ist, darf es ausschließlich vom Hersteller oder seinem Servicevertreter oder einer ähnlich qualifizierten Person ausgetauscht werden, um eine Gefährdung zu vermeiden.

Stellen Sie das Produkt auf und führen Sie es in den Eisenrahmen ein; achten Sie darauf, die Stifte entsprechend auszurichten (Fig. 6 und Fig. 7). Schrauben Sie die Leuchtsäule mithilfe der beiden Schrauben an der Rückseite mit einer Kraft von 20 Nm (S-M), 35 Nm (L-XL) fest (Abb. 8).

Unabhängig von der Größe werden sämtliche Leuchtsäulen von Brenta auf dieselbe Art installiert.

VORSICHT!

Setzen Sie sich nicht auf die Leuchtsäule!



Enclosure 5 Manufacturer's Instructions

GUÍA DE INSTALACIÓN

ES

ADVERTENCIAS PARA LA INSTALACIÓN

Llevar a cabo la instalación de acuerdo con las normas vigentes en el país de instalación. El aparato debe utilizarse únicamente si incluye la pantalla de protección. Si la pantalla se encuentra dañada o rota, el aparato no debe ser utilizado. Restablecer las condiciones originales antes de su reutilización. El aparato es de CL II en lo que respecta a su aislamiento eléctrico; durante la instalación debe prestarse atención para que las partes metálicas expuestas no entren en contacto eléctrico con partes de la instalación eléctrica conectadas a un conductor de protección. Este aparato debe utilizarse exclusivamente para el uso para el que fue diseñado, es decir, la iluminación de ambientes externos. Cualquier otro uso es considerado inadecuado y peligroso, y el fabricante no puede ser considerado responsable de daños derivados de un uso indebido o inapropiado.

Para obtener más información, consulte las instrucciones adicionales en el sitio en www.neri.biz/installationguides.



Manejar los productos con extremo cuidado, ya que los golpes pueden dañar el cemento considerablemente. Para la instalación del bolardo XL se necesitan al menos dos personas.

Instalación**Fase 1**

Comprobar las medidas y modelos de las bridas de fijación. Las medidas son las que se muestran en el dibujo (Fig. 1).

Fase 2

Fijar la brida apretando dos tornillos (M8) con un par de apriete de 20Nm y pasar los cables de alimentación a través de los dos orificios de la brida (Fig. 2).

Conexión eléctrica

Conectar los cables con el producto colocado en el suelo (Fig. 3-4-5). Si el cable o el cable flexible externo de esta luminaria está dañado, deberá ser reemplazado exclusivamente por el fabricante o su agente de servicio o una persona calificada similar para evitar riesgos.

Levantar el producto e insertarlo en el marco de hierro, comprobando la alineación de los pernos (Fig. 4 y Fig. 5). Fijar el bolardo con los dos tornillos de la parte posterior con un par de apriete de 20Nm (S-M), 35Nm (L-XL) (Fig. 8).

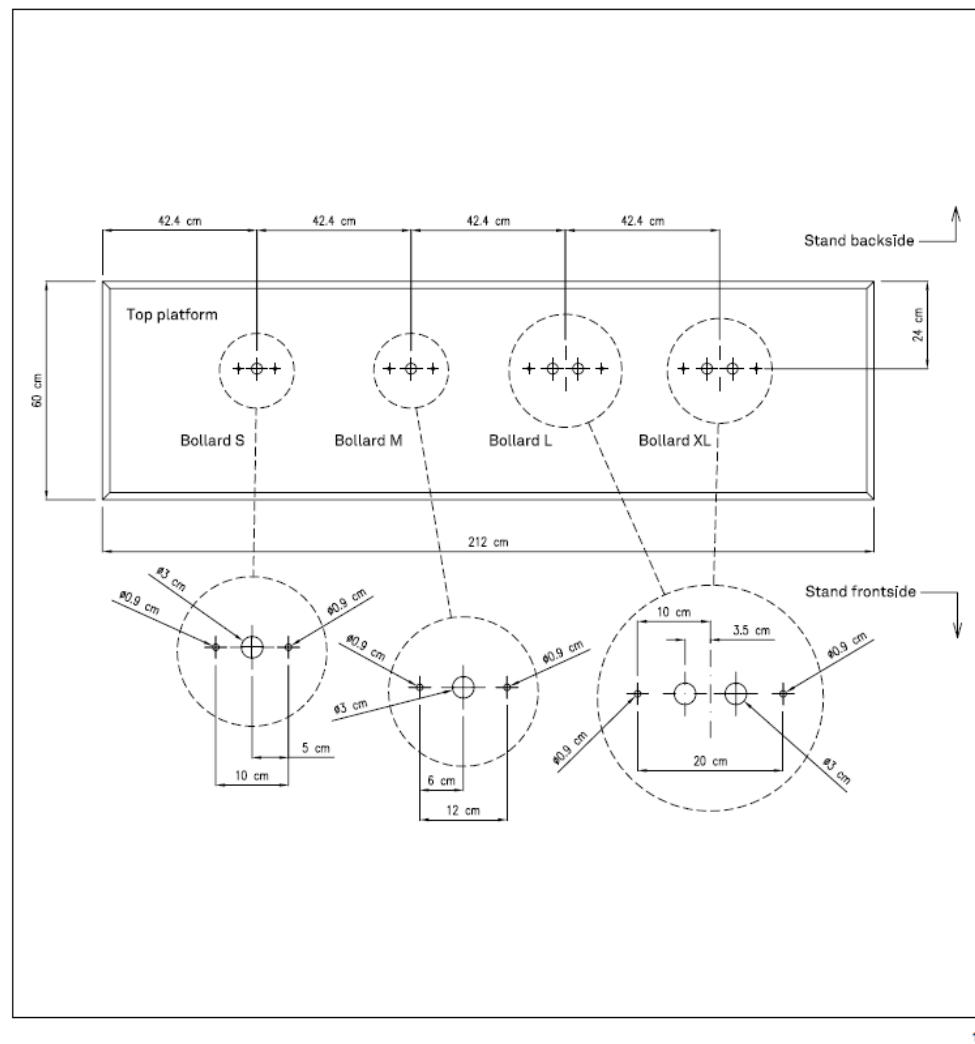
Todos los tamaños del bolardo Brenta se instalan de la misma manera.

¡ATENCIÓN!
¡No sentarse sobre el bolardo!



Enclosure 5 **Manufacturer's Instructions**

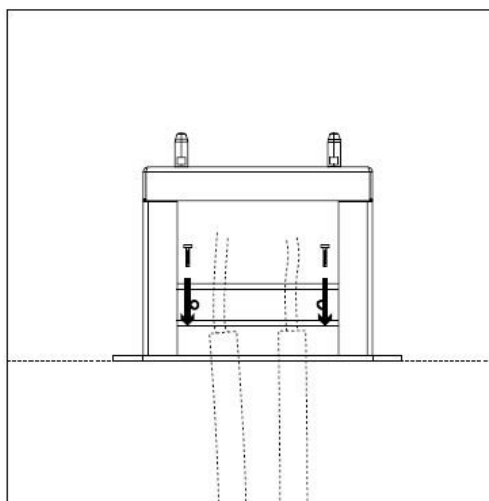
INSTALLAZIONE
INSTALLATION
FIXATION
MONTAGE
MONTAJE



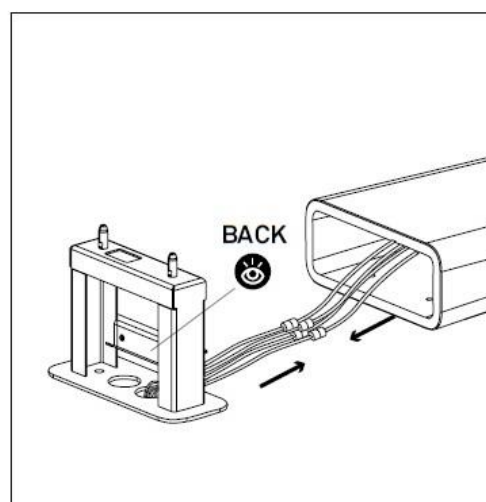
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Enclosure 5	Manufacturer's Instructions
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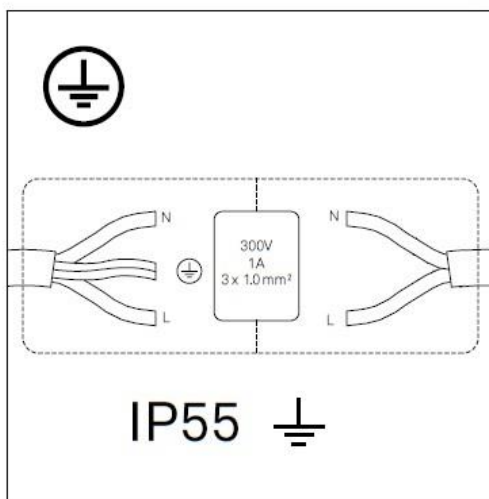
INSTALLAZIONE
 INSTALLATION
 FIXATION
 MONTAGE
 MONTAJE



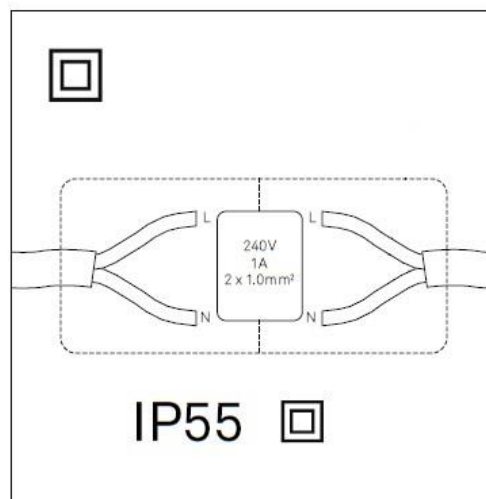
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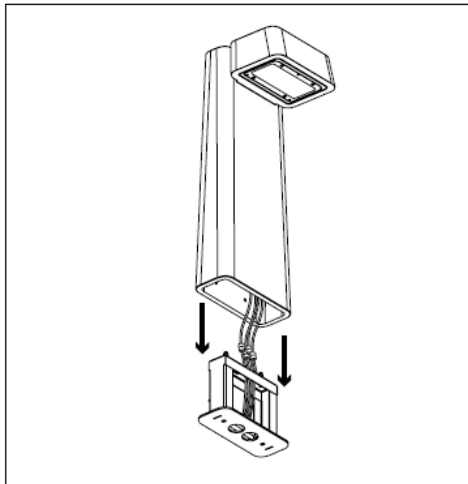
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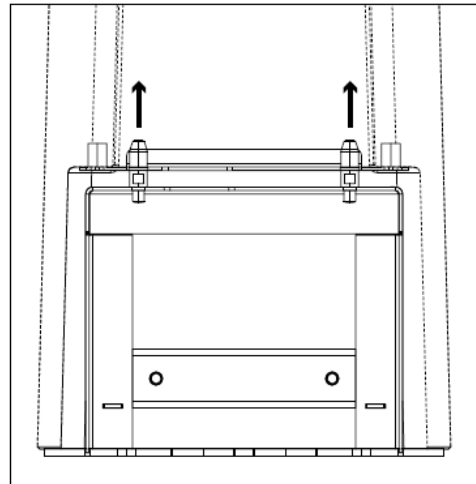
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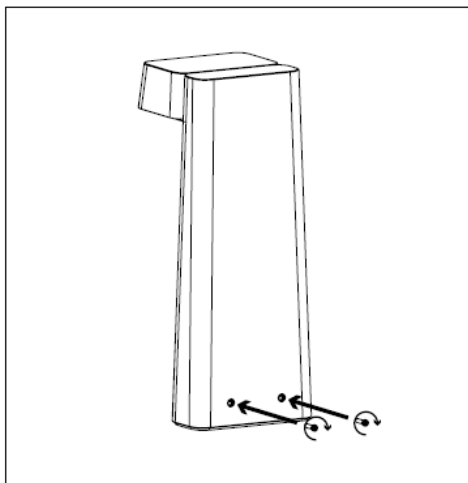
5

Enclosure 5 **Manufacturer's Instructions**

6



7



8

Enclosure 5	Manufacturer's Instructions
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Enclosure 6	Photos
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Photograph No. 1 Bottom view of the luminaire



Photograph No.2 Side view of the luminaire



Enclosure 6	Photos
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Photograph No. 3 Rear view of the luminaire



Photograph No. 4 Internal view of luminaire body



Enclosure 6 Photos**Photograph No. 5 View of internal wiring****Photograph No. 6 View of the LED module (2 LEDs)**

Enclosure 6	Photos
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Photograph No. 7 Connections and cord anchorage



Photograph No. 8 LED module supply terminals



Enclosure 7	Equipment List
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Clause	Measurement	Testing / measuring equipment / materials used	Range used	Calibration Date [Year-Month-Day]	
				Last	Due
4.12	Construction	LAB001 - Dynamometric wrench	0-12 Nm	2019-02-20	2020-03-20
4.12	Construction	LAB002 - Dynamometric driver	100-500 cNm	2018-09-20	2020-09-20
4.12	Construction	LAB003 – Dynamometric screwdriver	20-120 cNm	2018-09-20	2020-09-20
8.2	Protection against electric shock	LAB004 – Test finger	Ø 50 mm (max)	2017-08-07 2019-08-16	2019-08-07 2021-08-16
12	Endurance test and thermal test	LAB010- DMM Yokogawa 7552	0-1000mA 0-200Vdc	2018-11-29	2019-11-29
4.12	Construction	LAB012 – Digital scale	0-30 kg	2019-02-06	2021-02-06
12	Endurance test and thermal tests	LAB018 – Thermal test room and acquisition system	0-300 °C	2018-12-15	2019-12-15
12	Endurance test and thermal tests	LAB019 – Endurance test room and acquisition system	0-300 °C	2018-12-15	2019-12-15
10	Insulation resistance and electric strength	LAB017 – Electrical safety tester GLP-2e (2051)	0-5 kV 0-100 mA 0-10 MΩ	2018-11-30	2019-11-30
4.12	Construction	LAB026 - Caliper	0-200 mm	2019-06-19	2020-06-19
4.12	Construction	LAB033 – Hammer spring	0,2 – 1 Nm	2019-04-05	2021-04-05
12	thermal tests and input-test	LAB030 - Wattmeter	0-300V ac/dc 0-2A ac/dc 0-300W ac/dc 0-60Hz	2018-09-21 2019-10-04	2019-09-21 2020-10-04
9.2	Resistance to dust, solid objects and moisture	LAB053 – Flow meter	10-120 l/m	2019-07-08	2021-07-08