TÜV NORD
TE SIA "TUV Nord Baltik"
LVD TESTING LABORATORY

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LATAK -T-177

TEST REPORT
/ Testēšanas pārskats /

LVS EN 60598-2-5
Luminaires - Part 2-5: Particular requirements - Floodlights
/ Gaismekļi – 2. daļa: Īpašas prasības – 5. nodaļa: Prožektori /

Report Reference No. .....: 13118345061/45041/TR/15
/ Testēšanas pārskata Nr /

Tested by (Name + signature) .....: Marija Porubova .....
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Date of issue.....: 18 September 2015.
/ Izdošanas datums /

TE SIA "TUV Nord Baltik" * TÜV NORD TUV Nord Baltik * LVD un kalibrēšanas laboratorija

Testing Laboratory name.....: TUV NORD BALTIK, Ltd., LVD Testing Laboratory.
/Testēšanas laboratorijas nosaukums /

Address.....: Ganibu Dambis 7A, Riga, Latvia, LV-1045.
/ Adrese /

Applicant's name .....: International Center for Quality Certification – ICQC, Ltd.
/ Iesniedzēja nosaukums /

Address .....: Skolas str. 63-19, Jurmala, Latvia, LV-2016.
/ Adrese /

Standard .....: LVS EN 60598-2-5:2002 + AC
/ Standarts / used in conjunction with LVS EN 60598-1:2009

Test procedure .....: TUV NB 61172-EN60598-2-5
/ Testēšanas metodika /

Non-standard test method .....: None
/ Nestandarta testmetodes / / Nav /

Test report form.....: TUV NB 61172-EN60598-2-5-1/13
/ Testēšanas pārskata forma /

TRF originator.....: TUV Nord Baltik
/ Testēšanas pārskata formas iniciators /

Type of item tested .....: LED floodlight
/ Testēšanas objects / / LED prožektors /

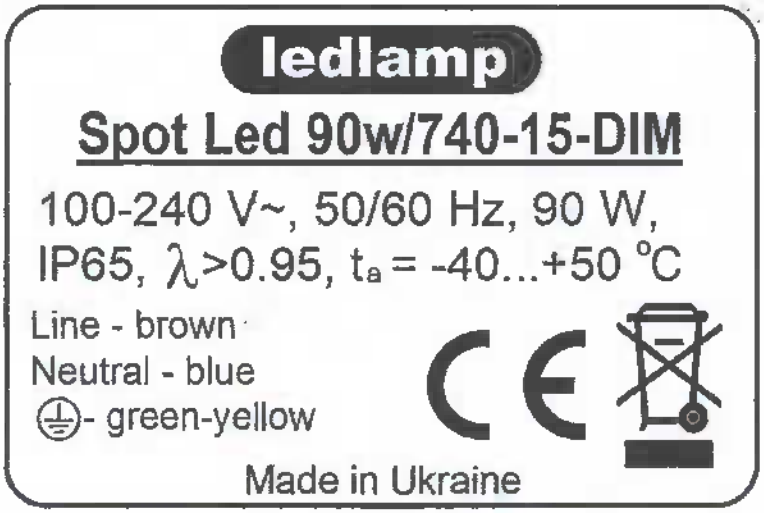
Trademark.....: ledlight
/ Zīmols /

Model/type reference .....: Spot Led 90w/740-15-DIM
/ Modelis / tips /

Manufacturer .....: PBM GAZ, LLC.
/Ražotājs / 165 082 office, 30 Preobrazhenskaya str., Odessa, Odessa region, Ukraine.

Rating(s) .....: 100-240 V~, 50/60 Hz, 90 W, Class I, IP65, t_a = -40...+50 °C
/ Tehniskie dati /

Copy of rating plate:
/ Marķējuma kopija /



Summary of testing:
/ Testēšanas kopsavilkums /

1. The tested item is found to be in conformity with the specified standard.
2. The user instructions shall be given in a language acceptable in a country where the appliance is intended to be used.
3. The luminaire is a Class I luminaire encased in a metallic enclosure all parts of which are reliably earthed.
4. The luminaire consists of two basic parts – LED-driver in its own enclosure and LED-module in its own enclosure, connected together. Additionaly mounting bracket is fixet to the luminaire.
5. The luminaire is ingress protected according to IP-code IP65 and fulfills the requirements for such protection. Enclosure of LED-driver is completely filled with seatant reliably protecting the electronics of the driver.
6. The luminaire is provided with connection leads for connection to mains. The supply cord of the luminaire is reliably anchored in the LED-driver and is capable to withstand outdoor conditions (SJTW cord – hard service cord with thermoplastic constructed jacket, weather resistant for outdoor use).
7. The luminaire does not reach excessive temperatures during tests. The enclosure and mounting bracket of the luminaire are sufficiently rigid to withstand forces expected during normal use.

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Test item particulars: / Testēšanas objekta raksturojums /	
Environmental rating: / Vides apstākļi /	–40...+50 °C
Equipment mobility: / Iekārtas pārvietojamība /	Stationary / Stacionārā /
Connection to mains supply: / Savienojums ar strāvas padevi /	Connection leads / Kontaktgali /
Operating conditions: / Ekspluatācijas apstākļi /	Continuous, unattended / Pastāvīga, bez uzraudzības /
Class of equipment: / Iekārtas klase /	Class I / I klase /
Marked degree of protection to IEC 60529: / Aizsardzības pakāpes marķējums saskaņā ar IEC 60529 /	IP65
Overall size of the equipment (L x W x H), mm: / Iekārtas izmērs /	190 x 155 x 240 (without mounting bracket) 190 x 220 x 300 (with mounting bracket)
Mass of the equipment, kg: / Iekārtas masa /	3.80 (with mounting bracket)
Accessories and detachable parts included in the evalution: / Piederumi un nonemamas daļas /	-
Options included: / Opcijas /	-

Test case verdicts:
/ Testa rezultāta apliecinājumi /

- test object does meet requirement .....: P (Pass)
  / testa objekts iztur testu /
- test case does not apply to the test object .....: N (Not applicable)
  / prasība nav piemērota /
- test object does not meet requirement.....: F (Fail)
  / testa objekts neiztur testu /

General remarks:
/ Vispārīgās piezīmes /

Throughout this report a point is used as the decimal separator.
/ Šajā pārskatā punkts atdala decimālo daļu /

The test results presented in this report relate only to the item tested.
/ Testēšanas rezultāti attiecas tikai uz konkrētajiem objektiem /

"(see Doc. #)" refers to an annex appended to the report.
/ atsauksme uz pārskata pielikumiem /

"(see appended table)" refers to a table appended to the report.
/ atsauksme uz pārskata tabulām /

"(XXX)" requirements LVS EN 60598-1 Sections and Clauses
/ LVS EN 60598-1 standarta punkta prasības/

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Test equipment list
/ Testiekārtu saraksts /

No. /Nr./	Type / Tips /	Equipment No. / Iekārtas Nr. /	Comments /Piezīmes /
1	GW INSTEK GDM-8246	CL811476	Digital Multimeter / Digitālais multimetrs /
2	GW INSTEK GDM-396	UL131181	Digital Multimeter / Digitālais multimetrs /
3	GW INSTEK GPT-815	EL833248	HV-Testing (0.2 ... 5 kV AC/DC, 500 VA) / Caursišanas iekārta /
4	GW INSTEK PSP-405	EK193100	Programmable Power Supply (0 ... 40 VDC) / Barošanas bloks /
5	FLUKE 6200 PAT	RO1714016	Multitester / Multitesteris /
6	ETECH PM300	2217	Energy meter (0 ... 3000 W, 0 ... 16 A) / Enerģijas mērītājs /
7	YTH-408-70-1P	04.2013/01	Temperature humidity chamber (- 70...+180 °C), / Temperatūras un mitruma kamera / (20...98 RH)
8	Rigid test-finger / Cietais testpirksts /	06.2011/07	According to EN 61032 Nr. 11.
9	Jointed test-finger / Lokanais testpirksts /	06.2011/06	According to EN 61032 Nr. B.
10	Pin D=4 mm / Zonde D=4 mm /	06.2011/08	According to EN 61032 Nr. 12.
11	Impact test-ball D = 50 mm (500g) / Trieciena testlode /	09.2011/15	According to EN 61010-1
12	Test hammer / Testēšanas āmurs /	06.2011/03	According to IEC 60068-2-75
13	Glow Wire tester / Testeris ar sakarsēto stiepli /	06.2011/05	According to IEC 60695-2-10
14	Ball-pressure test apparatus / Testa lodītes iespiešanas iekārta /	06.2011/04	According to IEC 2740/2000
15	VELLEMAN TC56A	5410329316327	Chronometer / Hronometrs /
16	STANDARD ST-882	06100682	Infrared Thermometer (- 50... + 550 °C) / Termometrs /
17	GREISINGER GMH 3250	06.2011/01	Digital Thermometer (- 199.9 ... + 999.9 °C), / Termometrs / type K
18	WERA 7440	A10-09-12541	Torque Driver (0.3 ... 1.2 Nm) / Dinamometriskais skrūvgriezis /
19	WERA 7441	B10-09-11888	Torque Driver (1.2 ... 3.0 Nm) / Dinamometriskais skrūvgriezis /
20	WERA 7442	C10-08-7748	Torque Driver (3.0 ... 6.0 Nm) / Dinamometriskais skrūvgriezis /
21	LUTRON FG-5020	H.80568	Force gauge 0 ... 110 N / Dinamometrs /
22	Thickness meter Kit / Spraugmēru komplekts /	1973	0.05 ... 1.00 mm; 20 pcs.
23	Vernier caliper / Bīdmērs /	5853604	0.1 mm; 0 ... 300 mm
24	ЛАТР-1М	09.2011/14	Variable transformer (0... 250 V~, 9 A) / Maināms transformators /
25	International Safety Analyzer 601 PRO / Elektrodrošības pārbaudes mēriekārta /	125255	0.0 ... 8000 µA; 0.00 ... 2.999 Ω; 0.0 ... 15.0 A; 0.5 ... 400.0 MΩ;

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Documents attached to this report:
/ Papildus dokumentu saraksts šim pārskatam /

Document No / Dokumenta Nr. /	Document description / Dokumenta apraksts /	Number of pages / Lappušu skaits /
1	Photos / Fotogrāfijas /	5
2	Manual / Ekspluatācijas instrukcija /	4

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LVS EN 60598-2-5:2002 + AC (LVS EN 60598-1:2009)			
Cl.	Requirement	Result-Remark	Verdict
5.5 (3)	**MARKING**		
5.5 (3.1)	General		
5.5 (3.2)	Marking on luminaires	See page 2	P
5.5 (3.2.1)	Mark of origin	ledlamp	P
5.5 (3.2.2)	Rated voltage	100-240 V~	P
5.5 (3.2.3)	Rated maximum ambient temperature t_a (if other 25 ^{0}C)	+50 °C	P
5.5 (3.2.4)	Symbol for class II		N
5.5 (3.2.5)	Symbol for class III		N
5.5 (3.2.6)	IP numbers	IP65	P
5.5 (3.2.7)	Model number or type	Spot Led 90w/740-15-DIM	P
5.5 (3.2.8)	Rated wattage	90 W	P
5.5 (3.2.9)	Mounting on flammable surfaces	Suitable	N
5.5 (3.2.10)	Information concerning special lamps	LEDs	N
5.5 (3.2.11)	Similar shape to "cool beam" lamps	LEDs	N
5.5 (3.2.12)	Terminations marking	Information on marking (for tails)	P
5.5 (3.2.13)	Minimum distance from lighted objects	Cannot overheat lighted objects	N
5.5 (3.2.14)	Rough service luminaires	Not rough service	N
5.5 (3.2.15)	Bowl mirror lamps	LEDs	N
5.5 (3.2.16)	Luminaires incorporating a glass protective shield	No protective shield	N
5.5 (3.2.17)	Maximum number of luminaries or maximum total current	Not intended for interconnection	N
5.5 (3.2.18)	Warning symbol or notice for luminaries with ignitors for double-ended (capped) lamps	Not intended for such lamps	N
5.5 (3.2.19)	Symbol for self-shielded tungsten halogen lamps	LEDs	N
5.5 (3.2.20)	Means of adjustment	Obvious (bracket)	N
5.5 (3.2.21)	Thermally insulated material	Suitable for covering	N
5.5 (3.2.22)	Symbol for internal replaceable fuses	No fuses	N
5.5 (3.3)	Additional information	See Doc. 1 and page 2	P
	Language of instructions	See page 2	P
5.5 (3.3.1)	Combination luminaries	Not such luminaire	N
5.5 (3.3.2)	Nominal frequency	50/60 Hz	P
5.5 (3.3.3)	Operating temperatures	Not applicable	N
5.5 (3.3.4)	Mounting on flammable surface	Suitable	N
5.5 (3.3.5)	Wiring diagram	Direct connection	N
5.5 (3.3.6)	Special conditions	No such conditions	N
5.5 (3.3.7)	Metal halide lamps	LEDs	N
5.5 (3.3.8)	Limitations for semi-luminaires	Not semi-luminaire	N

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LVS EN 60598-2-5:2002 + AC (LVS EN 60598-1:2009)			
Cl.	Requirement	Result-Remark	Verdict
5.5 (3.3.9)	Power factor and supply current		N
5.5 (3.3.10)	Suitability for use "indoors", ambient temperature	Suitable, –40...+50 °C	P
5.5 (3.3.11)	Luminaires with remote control gear	Not such gear	N
5.5 (3.3.12)	Clip-mounted luminaire	Not clip mounted	N
5.5 (3.3.13)	Protective shields	Not used	N
5.5 (3.3.14)	Symbol for nature of supply	~	P
5.5 (3.3.15)	Current and voltage declared for any socket outlet	No socket-outlets	N
5.5 (3.3.16)	Rough service luminaries:	Not rough service	
	- connection to IPX4 rated socket outlets;		N
	- correct mounting taking into account the temporary installation;		N
	- correct fixing to a stand		N
5.5 (3.3.17)	Information about type X, Y or Z attachments	Type Z	P
5.5 (3.3.18)	Information about the intended use (if PVC supply cord provided)	Thermoplastic jacket cord, weather resistant for outdoor use	N
5.5 (3.3.19)	Luminaries with protective conductor current > 10 mA	< 10 mA	N
5.5 (3.3.20)	Wall mounted and adjustable luminaries	Could be installed within arms reach	N
5.5 (3.4)	Test of marking	See appended table	P
5.5 (-)	Additional information		P

5.6 (4)	**CONSTRUCTION**		
5.6 (4.1)	General		
5.6 (4.2)	Replaceable components	No replaceable components	N
5.6 (4.3)	Wireways	No sharp edges etc.	P
5.6 (4.4)	Lampholders	No lampholders	
5.6 (4.4.1)	Integral lampholder		N
5.6 (4.4.2)	Connection of wiring to integral lampholders contacts		N
5.6 (4.4.3)	Lampholder for end-to-end mounting		N
5.6 (4.4.4)	Positioning		N
	Pressure test		N
	Bending test 2.0 Nm		N
5.6 (4.4.5)	Luminaries with ignitors, peak pulse voltage	No ignitors	N
5.6 (4.4.6)	Luminaires with ignitors incorporating Edison screw lampholders		N
5.6 (4.4.7)	Insulating parts of lampholders and plugs for rough service luminaires		N
5.6 (4.4.8)	Lamps connectors		N
5.6 (4.4.9)	Caps or bases for single-capped ELV lamps		N

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Cl.	Requirement	Result-Remark	Verdict
5.6 (4.5)	Starter holders	No starter holders	N
5.6 (4.6)	Terminal blocks	No terminal blocks, connection leads	N
	Installation test with block (10 x 20 x 25) mm	Connection outside the luminaire	N
5.6 (4.7)	Terminals and supply connections	No terminal blocks	
5.6 (4.7.1)	Contact to metal parts		N
5.6 (4.7.2)	Location stranded wires		N
	Test with 8 mm live flexible conductor		N
5.6 (4.7.3)	Terminals for supply conductors		N
5.6 (4.7.4)	Terminals other than supply connection		N
5.6 (4.7.5)	External wiring or supply cable (heat – resistant)		N
5.6 (4.7.6)	Multi-pole plug and socket		N
5.6 (4.8)	Switches	Not used	
	- adequate rating		N
	- adequate fixing		N
	- in flexible cords and switched lampholders		N
	- polarized supply		N
5.6 (4.9)	Insulating linings and sleeves	Not used	
5.6 (4.9.1)	Retaining in position		N
5.6 (4.9.2)	Mechanical, electrical and thermal strength		N
5.6 (4.10)	Double and reinforced insulation	Class I luminaire	
5.6 (4.10.1)	Metal encased class II luminaires		N
	Safe installation fixed luminaires		N
	Capacitors		N
	Interference suppression capacitors acc. to IEC 60384-14, connection acc. with 8.6 of IEC 60065		N
5.6 (4.10.2)	Assembly gap		N
	Test (probe 13 IEC 61032)		N
5.6 (4.10.3)	Parts of class II which serve as supplementary or reinforced insulation		N
5.6 (4.11)	Electrical connections and current-carrying parts		
5.6 (4.11.1)	Contact pressure	Considered	P
5.6 (4.11.2)	Use of self-tapping screws and thread-cutting screws	Not used	P
5.6 (4.11.3)	Screws and rivets	Secured	P
5.6 (4.11.4)	Current-carrying parts of copper	Considered	P
5.6 (4.11.5)	Contact with wood	Not in contact	P
5.6 (4.11.6)	Electro-mechanical contact systems	Not used	N
5.6 (4.12)	Screws and connections and glands		
5.6 (4.12.1)	Screws and connections	Considered	P
	Torque tests (Nm)	1.2, 2.5, 8.0, 17.0 Nm	P

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Cl.	Requirement	Result-Remark	Verdict
5.6 (4.12.2)	Screws having nominal diameter less than 3 mm	No such screws	N
5.6 (4.12.3)	(Not used)		
5.6 (4.12.4)	Locked connections	Secured	P
	Torque tests (Nm)		N
5.6 (4.12.5)	Screwed glands	Considered	P
	Torque tests (Nm)	2.5, 3.25 Nm	P
5.6 (4.13)	Mechanical strength		
5.6 (4.13.1)	Impact test, energy (Nm)	0.5 Nm; 0.7 Nm	P
5.6 (4.13.2)	Metal parts enclosing live parts	Considered	P
5.6 (4.13.3)	Test finger pressed against the surface, 30 N	Considered	P
5.6 (4.13.4)	Rough service luminaries	Not rough service luminaire	N
5.6 (4.13.5)	(Not used)		
5.6 (4.13.6)	Plug- ballast/transformers and socket-outlet – mounted luminaries have adequate mechanical strenght	Not such type of luminaire	N
5.6 (4.14)	Suspensions and adjusting devices		
5.6 (4.14.1)	Mechanical suspensions have adequate factors of safety	Considered	P
	Test A: (W x 4; 1 h)	+ 15.2 kg (3.80 kg x 4)	P
	Test B:	2.5 Nm, 1 min	P
	Test C:		N
	Test D:		N
	Test E:		N
5.6 (4.14.2)	The mass of the luminaries suspended by flexible cables or cord not exceed 5 kg	Not intended for such suspension	N
5.6 (4.14.3)	Adjusting devices	Safe for cords	P
	Number of cycles	45 cycles	P
	Strands broken (not more than 50 %)	≤ 50 %	P
	High voltage test (specified in section 10)	No breakdown	P
5.6 (4.14.4)	Telescopic tubes	Not used	N
5.6 (4.14.5)	Guide pulleys	Not used	N
5.6 (4.14.6)	Strain on socket-outlets	Not such type of luminaire	N
5.6 (4.15)	Flammable materials		
5.6 (4.15.1)	Flammable materials (covers, shades and similar parts) not having an insulation function spaced from heated parts	Shade, thermally resistant (acrylic glass)	N
5.6 (4.15.2)	Thermoplastic materials	Metallic enclosure, no applicable fault conditions	N
	a) construction		N
	b) temperature sensing control		N
	c) maximum surface temperature		N

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Cl.	Requirement	Result-Remark	Verdict
5.6 (4.16)	Luminaries for mounting on normally flammable surfaces	Electronic lamp control gear	N
5.6 (4.16.1)	Minimum distance		N
5.6 (4.16.2)	Temperature sensing control		N
5.6 (4.16.3)	The test of 12.6		N
5.6 (4.17)	Drain holes	Detachable cover	P
	Clearance at least 5 mm	No drain holes	N
5.6 (4.18)	Resistance to corrosion		
5.6 (4.18.1)	Ferrous parts	Considered	P
5.6 (4.18.2)	Parts of copper	Only wires	N
5.6 (4.18.3)	Parts of aluminum	Considered	P
5.6 (4.19)	Ignitors	Not used	N
5.6 (4.20)	Rough service luminaries	Not rough service luminaire	N
5.6 (4.21)	Protective shield	Not used, LEDs	
5.6 (4.21.1)	Tungsten halogen lamps		N
5.6 (4.21.2)	Lamp shattering		N
5.6 (4.21.3)	Openings in the luminarie		N
5.6 (4.21.4)	Tests of 4.13.1 un 13.3.2		N
5.6 (4.22)	Attachments to lamps	No attachments	N
5.6 (4.23)	Semi - luminaries comply class II	Not semi-luminaire	N
5.6 (4.24)	UV radiation	LEDs	N
5.6 (4.25)	Mechanical hazard	No sharp points or edges	P
5.6 (4.26)	Short-circuit protection		
5.6 (4.26.1)	Uninsulated accessible SELV parts	No such parts	N
5.6 (4.26.2)	Test with chain		N
5.6 (4.26.3)	Test chain		N
5.6 (4.27)	Terminal blocks with integrated screwless earthing contacts	No terminal blocks	N
5.6.1 (-)	At least IPX3	IP65	P
5.6.2 (-)	Lampholder brackets	No lampholders	N
5.6.3 (-)	Adjusting means	Only LEDs	N
5.6.4 (-)	Refractors, deflectors etc.	Not detachable	N
5.6.5 (-)	Fixing device	Adequately rigid	P
	Wind force test	Considered	P
5.6.6 (-)	Locking system	Rigid fixation	P
5.6.7 (-)	Vibration resistance	Considered	P
5.6.8 (-)	Glass cover	Acrylic glass	N

5.7 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		
5.7 (11.1)	General		

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LVS EN 60598-2-5:2002 + AC (LVS EN 60598-1:2009)			
Cl.	Requirement	Result-Remark	Verdict
5.7 (11.2)	Creepage distances and clearances		P
5.7 (11.2.1)	Compliance	See appended table	P
5.8 (7)	**PROVISION FOR EARTHING**		
5.8 (7.1)	General		
5.8 (7.2)	Provision for earthing		
5.8 (7.2.1)	Metal parts	Reliably earthed	P
5.8 (7.2.2)	Adjustable joints	With good electrical contact	P
5.8 (7.2.3)	Compliance with the requirements of 7.2.1 and 7.2.2		P
	Test 10 A, 12 V, resistance not exceed 0.5 Ω	0.026 Ω	P
5.8 (7.2.4)	Earthing terminals	No terminals	N
5.8 (7.2.5)	Earth contact as integral parts of the socket	No sockets	N
5.8 (7.2.6)	Earth terminal is adjacent to the mains terminal		N
5.8 (7.2.7)	Minimize the danger of electrolytic corrosion		N
5.8 (7.2.8)	Material of earth terminal, non-rusting surface		N
5.8 (7.2.9)	Compliance with the requirements of 7.2.5 - 7.2.8		N
5.8 (7.2.10)	Class II luminaire for looping-in, insulated from metal parts	Class I luminaire	N
5.8 (7.2.11)	Earthing core coloured green-yellow	Considered	P
	Current-carrying conductor becomes taut before the earthing conductor	LED-driver is completely filled with sealant, no movement of cord is possible	N
5.9 (14)	**SCREW TERMINALS**		
5.9 (14.1)	General	Not used. Connection leads.	
5.9 (14.2)	Definitions		
5.9 (14.2.1)	Pillar terminal		N
5.9 (14.2.2)	Screw terminal		N
5.9 (14.2.3)	Stud terminal		N
5.9 (14.2.4)	Saddle terminal		N
5.9 (14.2.5)	Lug terminal		N
5.9 (14.2.6)	Mantle terminal		N
5.9 (14.3)	General requirements and basic principles		
5.9 (14.3.1)	Terminals with screw clamping		N
5.9 (14.3.2)	Varied design		N
5.9 (14.3.2.1)	Range of conductors		N

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Cl.	Requirement	Result-Remark	Verdict
5.9 (14.3.2.2)	Preparation of conductor		N
5.9 (14.3.2.3)	Numerical classification		N
5.9 (14.3.3)	Cross-sectional area		N
5.9 (14.3.4)	Adequate connection		N
5.9 (14.4)	Mechanical tests		
5.9 (14.4.1)	Minimum distance		N
5.9 (14.4.2)	Cannot slip out		N
5.9 (14.4.3)	Special preparation		N
5.9 (14.4.4)	Mechanical strength		N
5.9 (14.4.5)	Resistance to corrosion		N
5.9 (14.4.6)	Terminals fixed		N
	Torque test		N
5.9 (14.4.7)	Terminals clamp the conductors between metal surfaces		N
	Pull test		N
5.9 (14.4.8)	Clamp without undue demage		N
5.9 (15)	**SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS**		
5.9 (15.1)	General	Not used. Connection leads.	
5.9 (15.2)	Definitions		
5.9 (15.2.1)	Screwless terminals		N
5.9 (15.2.2)	Permanent connections		N
5.9 (15.2.3)	Non-permanent connections		N
5.9 (15.2.4)	Lead assemblies		N
5.9 (15.2.5)	Non-prepared conductors		N
5.9 (15.2.6)	Test current		N
5.9 (15.3)	General requirements		
5.9 (15.3.1)	Parts for carrying current		N
5.9 (15.3.2)	Pressure		N
5.9 (15.3.3)	Terminals design		N
5.9 (15.3.4)	Terminals for lead assemblies		N
5.9 (15.3.5)	Pressure through insulating material		N
5.9 (15.3.6)	Connection and disconnection		N
5.9 (15.3.7)	Spring clamps		N
5.9 (15.3.8)	Fixed terminals		N
5.9 (15.3.9)	Mechanical, electrical and thermal strength		N
5.9 (15.3.10)	Sizes		N
5.9 (15.4)	General instructions on tests		

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TUV NORD BALTIK
LVD TESTING LABORATORY

TEST REPORT No. 13118345061/45041/TR/15

LVS EN 60598-2-5:2002 + AC (LVS EN 60598-1:2009)			
Cl.	Requirement	Result-Remark	Verdict
5.9 (15.4.1)	Preparation of samples		N
5.9 (15.4.2)	Test conductors		N
5.9 (15.4.3)	Multi-conductor terminal		N
5.9 (15.4.4)	Multi-way terminals		N
5.9 (15.4.5)	Test quantities		N
5.9 (15.5)	Terminals and connections for internal wiring		
5.9 (15.5.1)	Mechanical tests		N
5.9 (15.5.1.1)	Non-permanent connections		N
5.9 (15.5.1.1.1)	Spring-type terminals		N
5.9 (15.5.1.1.2)	Pin, tab and receptacle type connections		N
5.9 (15.5.1.2)	Permanent connections		N
5.9 (15.6)	Electrical tests		
5.9 (15.6.1)	Contact resistance test		N
5.9 (15.6.1.1)	Spring-type terminals		N
5.9 (15.6.1.2)	Pin, tab and receptacle type connections		N
5.9 (15.6.1.3)	Voltage drop		N
5.9 (15.6.2)	Heating tests		N
5.9 (15.6.2.1)	Ageing test		N
5.9 (15.6.2.2)	Voltage drop		N
5.9 (15.6.2.3)	Insulating material		N
5.9 (15.7)	Terminals and connections for external wiring		
5.9 (15.7.1)	Conductors		N
5.9 (15.8)	Mechanical tests		
5.9 (15.8.1)	Spring-type terminals		N
5.9 (15.8.2)	Pin, tab and receptacle type connections		N
5.9 (15.9)	Electrical tests		
5.9 (15.9.1)	Contact resistance test		N
5.9 (15.9.1.1)	Spring-type terminals		N
5.9 (15.9.1.2)	Pin, tab and receptacle type connections		N
5.9 (15.9.1.3)	Voltage drop		N
5.9 (15.9.2)	Heating tests		N
5.9 (15.9.2.1)	After having cooled		N

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LVS EN 60598-2-5:2002 + AC (LVS EN 60598-1:2009)			
Cl.	Requirement	Result-Remark	Verdict
5.9 (15.9.2.2)	Voltage drop		N
5.9 (15.9.2.3)	Ageing test		N
5.9 (15.9.2.4)	Voltage drop		N
5.9 (15.9.2.5)	Insulating material		N
5.10 (5)	**EXTERNAL AND INTERNAL WIRING**		
5.10 (5.1)	General		
5.10 (5.2)	Supply connection and other external wiring		
5.10 (5.2.1)	Means of connection	Connection leads	P
5.10 (5.2.2)	Flexible cables or cords	SJTW cord	P
	Nominal cross-sectional area (mm²)	18AWG 0.824 mm²	P
5.10 (5.2.3)	Non-detachable flexible cables, methods of connection	Type Z	P
5.10 (5.2.4)	Compliance with 5.2.1, 5.2.3	Considered	P
5.10 (5.2.5)	Non-rewirable luminaries (type Z attachment)	Soldered connections	P
5.10 (5.2.6)	Cable entries	Considered (supply cord preassembled at factory)	P
5.10 (5.2.7)	Cable entries through rigid material have rounded edges	Glands of insulating material	N
5.10 (5.2.8)	Insulating bushings	Glands of insulating material	P
5.10 (5.2.9)	Fixing of bushing	Glands are adequately fixed	P
5.10 (5.2.10)	Cord anchorage		
5.10 (5.2.10.1)	Compliance checking for type X	Type Z	N
5.10 (5.2.10.2)	Compliance checking for type Y and Z	Cord anchorage is adequate	P
5.10 (5.2.10.3)	Tests (pull, torque)	60 N, 0.25 Nm	P
	Displacement ≤ 2 mm	0.5 mm	P
5.10 (5.2.11)	External wiring passing into luminaire		P
5.10 (5.2.12)	Fixed luminaries for looping-in	Not for looping in	N
5.10 (5.2.13)	Ends of conductors	Tinned tips of stranded conductors	P
5.10 (5.2.14)	Mains plug same protection	No plug	N
5.10 (5.2.15)	(Void)		

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Cl.	Requirement	Result-Remark	Verdict
5.10 (5.2.16)	Incorporated appliance inlets	No inlets	N
5.10 (5.2.17)	Inter connecting cables	Not used	N
5.10 (5.2.18)	Plug in accordance with IEC 60083	No plug	N
5.10 (5.3)	Internal wiring	Only external wiring passing into the luminaire	
5.10 (5.3.1)	Cross-sections		N
5.10 (5.3.2)	Internal wiring protected		N
5.10 (5.3.3)	Tough bushing of insulating material		N
5.10 (5.3.4)	Joints and junctions in internal wiring		N
5.10 (5.3.5)	Internal wiring passes out		N
5.10 (5.3.6)	Wiring for adjustable luminaries		N
5.10 (5.3.7)	Ends of conductors		N
5.11 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		
5.11 (8.1)	General (Annex A)		P
5.11 (8.2)	Protection against electric shock		
5.11 (8.2.1)	Live parts not accessible	Considered	P
5.11 (8.2.2)	Portable luminaires	Fixed appliance	N
5.11 (8.2.3)	Class II luminaire	Class I luminaire	N
5.11 (8.2.4)	Portable luminaries	Fixed appliance	N
5.11 (8.2.5)	Compliance with the requirements 8.2.1, 8.2.4	Considered	P
	Test with test finger with force 10 N	Live parts not accessible	P
5.11 (8.2.6)	Covers have adequate strength and reliably secured	Considered	P
5.11 (8.2.7)	Luminaries incorporating a capacitor	No capacitors	N
	Discharging of capacitors (1min, < 50 V)		N
5.12 (12)	**ENDURANCE TEST AND THERMAL TEST**		
5.12 (12.1)	General		
5.12 (12.2)	Selection of lamps and ballasts	LEDs	N
5.12 (12.3)	Endurance test		
5.12 (12.3.1)	Test	(t_a(50) + 10) ± 2 °C, 240 h (10 x 24 h)	P
5.12 (12.3.2)	Compliance	Considered	P
5.12 (12.4)	Thermal test (normal operation)		
5.12 (12.4.1)	Test	As specified	P

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Cl.	Requirement	Result-Remark	Verdict
5.12 (12.4.2)	Compliance	See appended table	P
5.12 (12.5)	Thermal test (abnormal operation)		
5.12 (12.5.1)	Test		N
5.12 (12.5.2)	Compliance		N
5.12 (12.6)	Thermal test		
5.12 (12.6.1)	Test without thermal cut-outs		N
5.12 (12.6.2)	Test for luminaires with temperature sensing controls		N
5.12 (12.7)	Thermal test in regard to fault conditions in lamp control gear or electronic devices incorporated in thermoplastic luminaries		
5.12 (12.7.1)	Test without temperature sensing controls		N
5.12 (12.7.2)	Test with temperature sensing controls		N
5.12.1 (-)	Temperature reduction	Considered	P
5.13 (9)	**RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE**		
5.13 (9.1)	General		
5.13 (9.2)	Tests for ingress of dust, solid objects and moisture	IP65	P
5.13 (9.2.0)	Tests (B, C, D IEC 61032)		N
5.13 (9.2.1)	Dust-proof luminaries		N
5.13 (9.2.2)	Dust-tight luminaries		P
5.13 (9.2.3)	Drip-proof luminaries		N
5.13 (9.2.4)	Rain-proof luminaries		N
5.13 (9.2.5)	Splash-proof luminaries		N
5.13 (9.2.6)	Jet-proof luminaries		P
5.13 (9.2.7)	Watertight luminaries		N
5.13 (9.2.8)	Pressure watertight luminaries		N
5.13 (9.3)	Humidity test		
5.13 (9.3.1)	Humidity cabinet	93 % RH, 25 °C, 48 h No breakdown	P
5.14 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH, TOUCH CURRENT AND PROTECTIVE CONDUCTOR CURRENT**		
5.14 (10.1)	General		
5.14 (10.2)	Insulation resistance and electric strength		
5.14 (10.2.1)	Test-Insulation resistance	> 299 MΩ	P

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Cl.	Requirement	Result-Remark	Verdict
5.14 (10.2.2)	Test-Electric strength	1480 V~	P
5.14 (10.3)	Touch current, protective conductor current and electric burn	See appended table	P
5.15 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		
5.15 (13.1)	General	Enclosure of metal with acrylic glass shade	
5.15 (13.2)	Resistance to heat		P
5.15 (13.2.1)	Compliance		P
	Ball-pressure test	See appended table	P
5.15 (13.3)	Resistance to flame and ignition		P
5.15 (13.3.1)	Parts of insulating material retaining current-carrying parts	No such parts	N
	Needle flame test (10 s)	See appended table	N
5.15 (13.3.2)	Parts of insulating material which do not retain live parts		P
	Glow-wire test	See appended table	P
5.15 (13.4)	Resistance to tracking	No such parts	N
5.15 (13.4.1)	Compliance		N
5.15 (13.4.2)	Tracking test		N
- (6)	(Not used)		

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p. 5.5 (3.4)	TABLE: DURABILITY OF MARKINGS	P

Marking method (note):	Agent:
1) Thermotransferred printing / marking /	[A] Water
2)	B Isopropyl alcohol
3)	[C] Petroleum spirit
	D Specify agent
	E Specify agent

Marking location	Marking method (see above)
Identification	1)
Mains supply	1)
Double / reinforced equipment	-
Warning marking	-
Switches and breakers	-
Fuses	-
Addition marking	1)

Method	Test agent	Remains legible Verdict	Label loose Verdict	Curled edges Verdict	Comments
1)	A; C	P	P	P	Clear and legible
-					

p. 5.14 (10.2.1)	TABLE: INSULATION RESISTANCE	P

Insulation resistance between:	R MΩ	Required MΩ
Live parts of different polarity	-	-
Live parts and the mounting surface (covered with metal foil)	> 299	2
Live parts and metal parts of the luminaire	> 299	2
Live parts which can become of different polarity through action of a switch	-	-
Outer surface of a flexible cord or cable clamped in a cord anchorage and accessible metal parts	-	-
General comments: Fixed Class I luminaire.		

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p. 5.12 (12.4)	TABLE: MAXIMUM TEMPERATURES FOR PRINCIPAL PARTS OF LUMINAIRE (NORMAL OPERATION)	P
Operation condition:	Test voltage: 240 V Frequency: 50 Hz Power: 90 W Test duration: 240 h T_1 (°C): 21.2 °C T_2 (°C): 22.2 °C	

Part	Maximum temperature °C	Result °C
Lamp caps	As specified in the appropriate IEC lamp standard	LEDs
Windings in ballast or transformers	t_w	-
Case (of capacitors, starting device, electronic ballast, convertor etc.)	t_c 85	59.4
Windings in transformers, motors, etc. If acc. to IEC 60085	Acc. with class	-
Contacts of ceramic lampholders and insulating material of lampholders and starterholders	165	-
Switches	T marking or 55	-
Mounting surface		
Normally flammable surface	90	37.4
Non-combustible surface	Not measured	-
Means of adjustment and its surrounding space:		
metal parts	60	47.4
non-metal parts	75	-
Objects lighted by spotlights (see 12.4.1 j)	90	< 25
Mains socket-outlets-mounted-luminaire and plug-ballast/transformer:		
case parts intended to be gripped by hand	75	-
the plug/socket interface	70	-
all other parts	85	-
Replaceable glow-starting devices	80	-

General comments: Results given without the correction (10 °C).

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p. 5.14 (10.2.2)	TABLE: ELECTRIC STRENGTH TESTS	P

Insulation between:	Test voltage V	Breakdown
Live parts of different polarity	-	-
Live parts and the mounting surface (covered with metal foil)	1480	No
Live parts and metal parts of the luminaire	1480	No
Live parts which can become of different polarity through action of a switch	-	-
Outer surface of a flexible cord or cable clamped in a cord anchorage and accessible metal parts	-	-

General comments: Fixed Class I luminaire.

p. 5.14 (10.3)	TABLE: TOUCH CURRENT, PROTECTIVE CONDUCTOR CURRENT	P

Touch current	I mA	Max. allowed I mA
Normal polarity	0.191	3.5
Reversed polarity	0.188	3.5

General comments: Fixed Class I luminaire.

p. 5.7 (11.2)	TABLE: CLEARANCES AND CREEPAGE DISTANCES	P

Distances	PTI	Working voltage V	Creepage distances mm	Clearances mm	Comments
Basic insulation	< 600	240	> 3.0 (2.5*)	> 2.0 (1.5*)	-
Supplementary insulation	-	-	-	-	-
Reinforced insulation		-	-	-	-

General comments: -

NOTE: * required, min

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p. 5.12 (12.4)	TABLE: MAXIMUM TEMPERATURES FOR COMMON MATERIALS USED IN LUMINAIRE (NORMAL OPERATION)	P

Operation condition: Test voltage: 240 V Frequency: 50 Hz Power: 90 W
Test duration: 240 h
T_1 (°C): 21.2 °C T_2 (°C): 22.2 °C

Part	Maximum temperature °C	Result °C
Insulation of external wiring	T105	52.2
Thermoplastics	-	-
Thermosetting plastics	-	-
Enclosure		
Aluminum enclosure	-	71.4
Shade – acrylic glass	90	71.1
Others materials		
resin-bonded paper/fabric	125	-
silicone rubber (where NOT used for electrical insulation)	230	-
rubber (where NOT used for electrical insulation)	70	-
wood, paper, textiles and the like.	90	-

General comments: Results given without the correction (10 °C).

p. 5.15 (13)	TABLE: RESISTANCE TO HEAT, FIRE AND TRACKING							P

Component / manufacturer (model name)	Ballpress °C	Result	Needle flame s	Result	Glowwire °C	Result	PT 175 V	Result
Shade (acrylic glass)	100	1.1 mm	-	-	650	No flame	-	-
-	-	-	-	-	-	-	-	-

General comments: Luminaire with metallic enclosure with plastic frontal cover (shade).

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Document No.1
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PHOTOS
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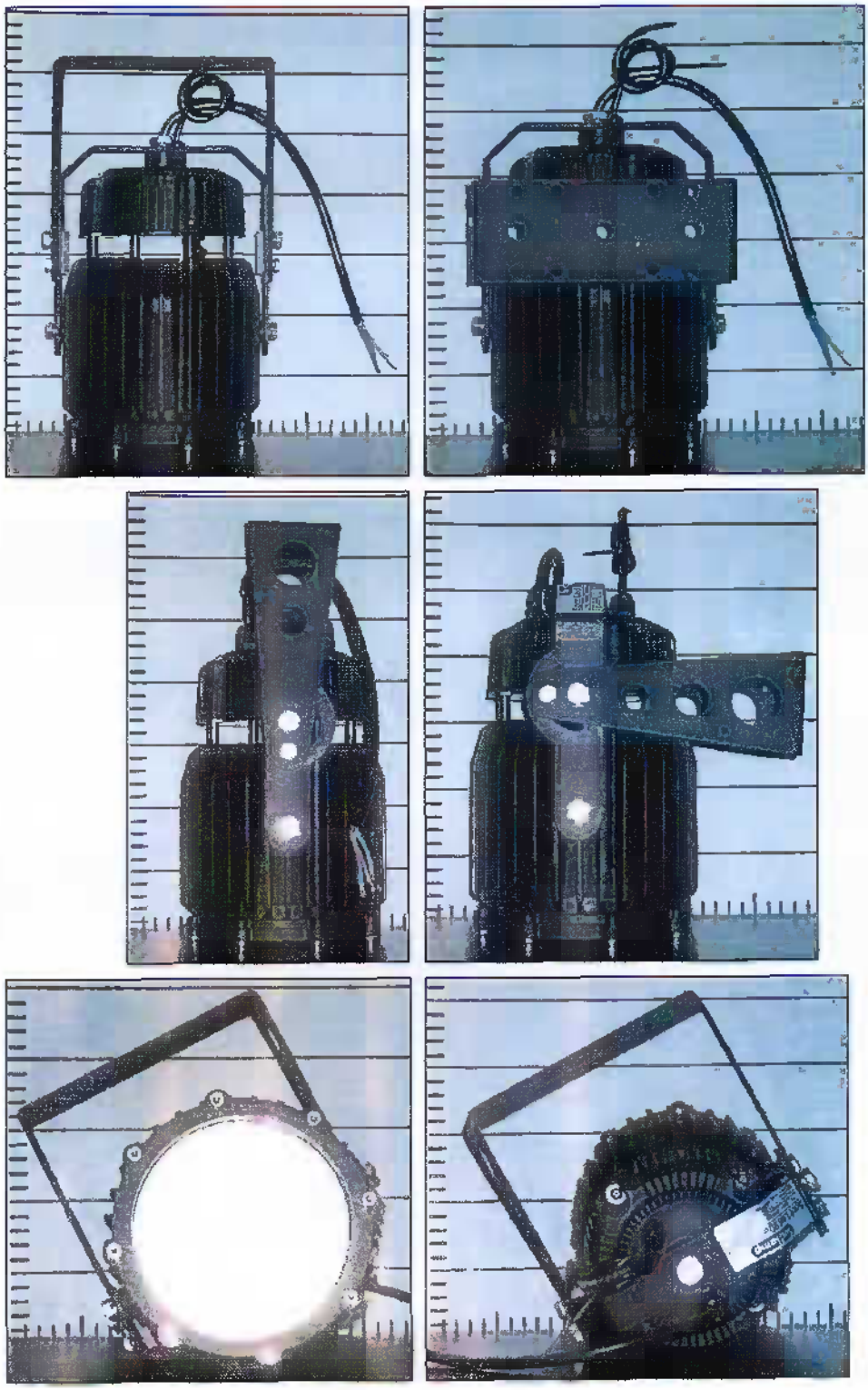
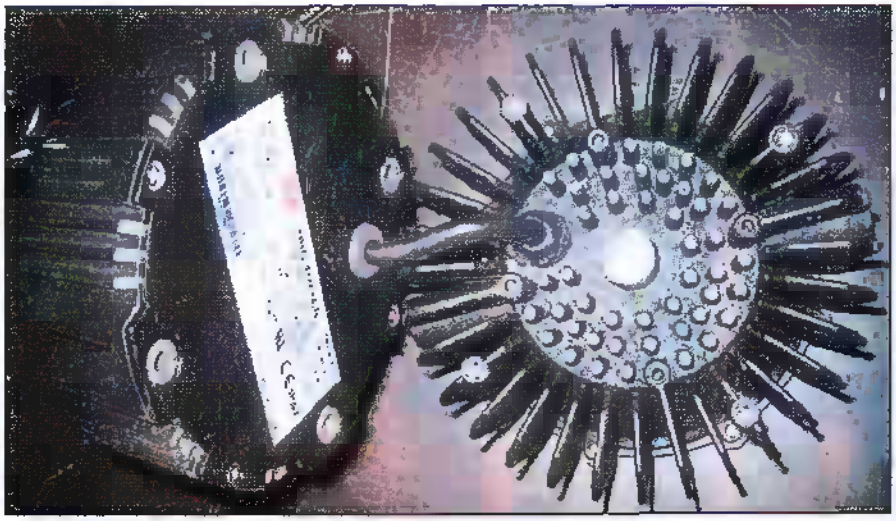
Photos of the appliance



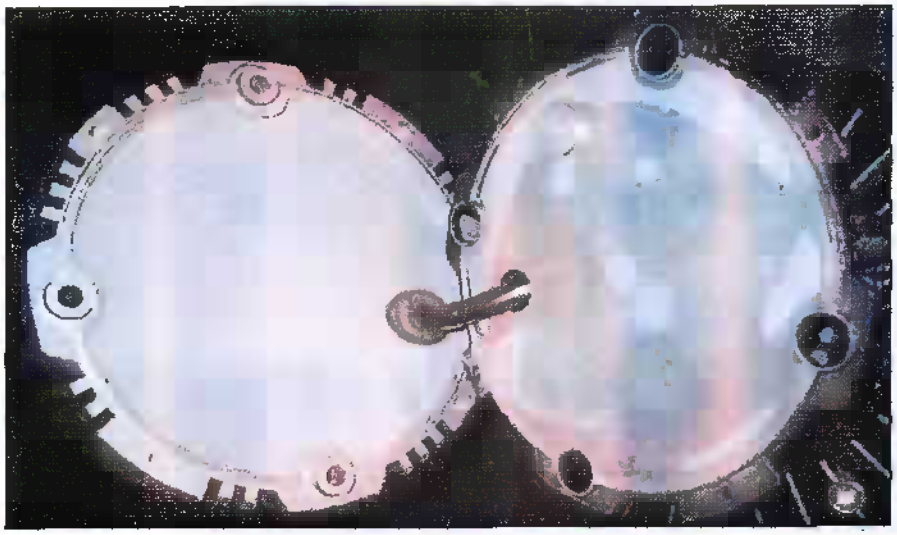
Views of the luminaire

Photos of the appliance



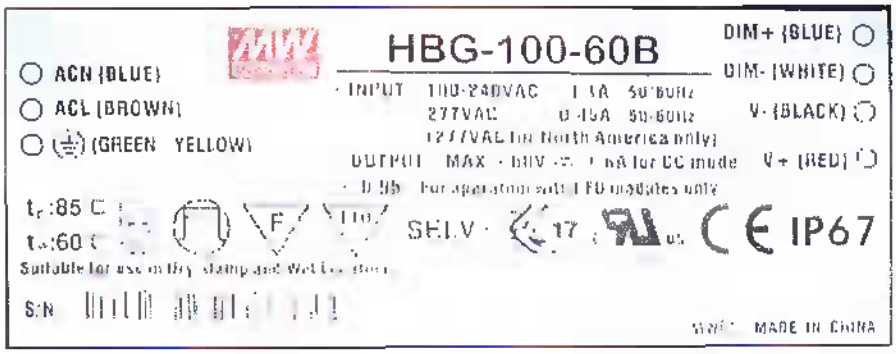
LED-driver (left) and LED-module block

Cable between LED-driver and LED-module block



Sealing of LED-driver inner compartment

Sealing of a gland where cable is entering LED-module block

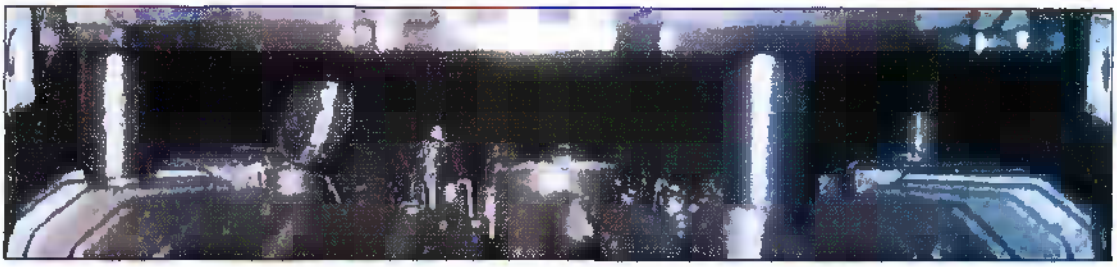


LED-driver marking

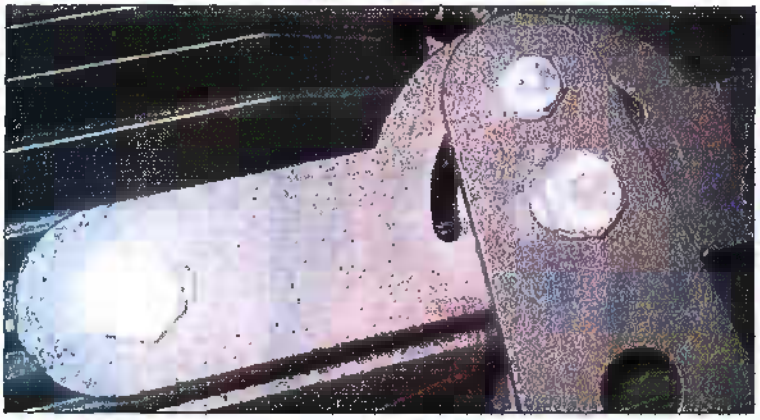
Photos of the appliance

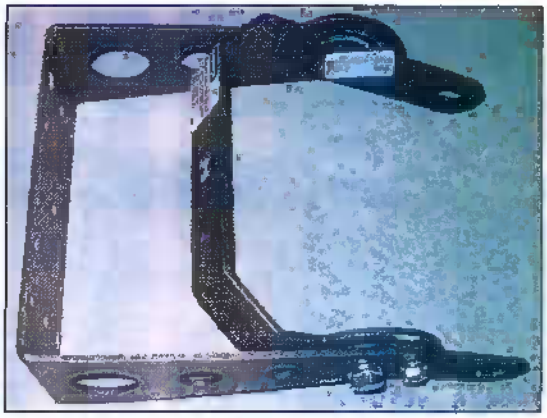
Views of the LED-module, its encasing and connections

Photos of the appliance



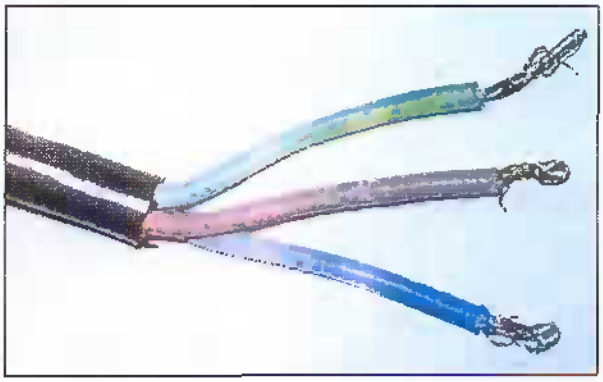
Cable arrangement between two part of the luminaire





Fixation and angle adjustment bracket

Glands of power cord
and cable for dimming operation



Supply cord leads (tinned tips)