

APPLICATION FOR LOW VOLTAGE DIRECTIVE

On Behalf of

SMART-GROUP

(Dongguan Shima Electronics Co., Ltd.)

Lighting & Dimming Controls

Model: SB-DIM2c6A-DN, SB-DIM4c3A-DN, SB-DIM6c2A-DN,
SB-DIM8c1A-DN, SB-DIM1c10A-DN, SB-Zmix20-DN, SB-CC25x1-WL

Prepared For : **SMART-GROUP**
(Dongguan Shima Electronics Co., Ltd.)
No.135, Huancheng Road, Mawu Village, Qiaoli Management
Community, Changping Town, Dongguan City, Guangdong
Province, China

Prepared By : **Shenzhen Anbotek Compliance Laboratory Limited**
1/F., Building 1, SEC Industrial Park, No. 0409 Qianhai Road,
Nanshan District, Shenzhen, Guangdong, China
Tel: (86)755-26066544
Fax: (86)755-26014772

Date of Test: Jan. 16, 2017 to Feb. 07, 2017

Date of Report: Feb. 07, 2017

Report Number: R0117011393S

TEST REPORT
EN 61347- 2-11

Part 2: Particular requirements:
Section Eleven – Miscellaneous electronic circuits used with luminaires

Report

Report reference No. : R0117011393S
 Compiled by : Toya Zhang
 Approved by : Luson Xiao
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Testing laboratory

Name : Shenzhen Anbotek Compliance Laboratory Limited
 Address : 1/F., Building 1, SEC Industrial Park, No. 0409 Qianhai Road,
 Nanshan District, Shenzhen, Guangdong, China
 Testing location : Same as above

Applicant

Name : SMART-GROUP
 (Dongguan Shima Electronics Co., Ltd.)
 Address : No.135, Huancheng Road, Mawu Village, Qiaoli Management
 Community, Changping Town, Dongguan City, Guangdong
 Province, China

Test specification

Standard : EN 61347-1:2015
 EN 61347-2-11:2001
 Test procedure : N.A.
 Non-standard test method : N.A.

Test item Description

Product name : Lighting & Dimming Controls
 Trademark :  SMART-BUS
 SMART-BUS/ PREUSSEN/ S-MESH
 Manufacturer : SMART-GROUP
 (Dongguan Shima Electronics Co., Ltd.)
 Address : No.135, Huancheng Road, Mawu Village, Qiaoli Management
 Community, Changping Town, Dongguan City, Guangdong
 Province, China
 Factory : SMART-GROUP
 (Dongguan Shima Electronics Co., Ltd.)
 Model and/or type reference : SB-DIM2c6A-DN, SB-DIM4c3A-DN, SB-DIM6c2A-DN, SB-DIM8c1A-
 DN, SB-DIM1c10A-DN, SB-Zmix20-DN, SB-CC25x1-WL
 Rating(s) : 110-260V~, 50Hz, 10Amax

Test item particulars

Classification of installation and use..... Built-in controlgear
Supply connection..... Welding

Test case verdicts

- test case does not apply to the test object..... N (N.A.)
- test object does meet the requirement..... P (Pass)
- test object does not meet the requirement..... F (Fail)

Testing

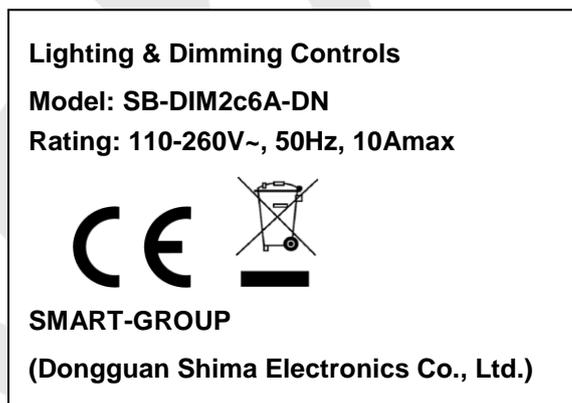
Date of receipt of test item Jan. 16, 2017
Date(s) of performance of tests Jan. 16, 2017 to Feb. 07, 2017

General remarks

This test report shall not be reproduced except in full without the written approval of the testing laboratory.
The test results presented in this report relate only to the item tested.
"(see remark #)" refers to a remark appended to the report.
"(see appended table)" refers to a table appended to the report.
Throughout this report a comma is used as the decimal separator.
According to the EU directives which have been aligned with EU NLF (new legislative framework), both of manufacturer and importer's name and address shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on the EU market.

Copy of marking plate(s)

Formed as following:



Remark:

Rating label is attached on the top enclosure of Light Control Module (Size: height of WEEE mark at least 7mm, height of other marks at least 5mm, height of letters and numbers at least 2mm)

EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
4 (4)	GENERAL REQUIREMENTS		---
- (4)	Insulation materials according requirements in Annex N of IEC 61347-1	(see Annex N)	P
- (4)	Compliance of independent controlgear enclosure with EN 60598-1		P
- (4)	Built-in magnetic ballast with double or reinforced insulation comply with Annex I of IEC 61347-1		N
- (4)	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N
- (4)	SELV controlgear comply with Annex L of IEC 61347-1	(see Annex L)	P
6 (6)	CLASSIFICATION		---
	Independent controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	---
	Built-in controlgear	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	---
	Integral controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	---
7	MARKING		---
7.1 (7.1)	Mandatory markings (other than integral miscellaneous electronic circuits)		P
	- mark of origin		P
	- model number, type reference		P
	- correlation between interchangeable parts and ballast marked		P
	- rated supply voltage(V)		P
	supply frequency (Hz)		P
	supply current (A)		N
	- earthing symbol		P
	- wiring diagram		N
	- value of t_c		N
7.1 (-)	- control terminals identified, if applicable		P
- (7.2)	Marking durable and legible		P
	Rubbing 15 s water, 15 s petroleum; marking legible		P
7.2 (7.1)	- information to be provided, if applicable		P

EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
	- declaration on protection against accidental contact		N
	- cross-section of conductors (mm ²):		N
	- number, type and wattage of lamp(s)		P
- (7.2)	Marking durable and legible		P
	Rubbing 15 s water, 15 s petroleum; marking legible		P

8 (10)	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		---
- (10.1)	Controlgear protected against accidental contact with live parts.		P
- (A2)	Voltage measured with 50 kΩ□	(see Annex A)	N
- (A3)	Voltage > 35 V r.m.s. or > 60 V d.c. or protective impedance device	(see Annex A)	N
- (10.1)	Lacquer or enamel is not used for protection or insulation		P
	Adequate mechanical strength on parts providing protection		P
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50 V:		P
- (10.3)	Controlgear providing SELV		N
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		N
	No connection between output circuit and the body or protective earthing circuit		N
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		N
	SELV outputs separated by at least basic insulation		N
	ELV conductive parts insulated as live parts		N
	Tests according Annex L of IEC 61347-1		P
- (10.4)	Accessible conductive parts in SELV circuits		N
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		N

EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
	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
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N
	Y1 or Y2 capacitors comply with IEC 60384-14		N
	Resistors comply with test (a) in 14.1 of IEC 60065		N

9 (8)	TERMINALS		---
- (8)	Screw terminals according section 14 of IEC 60598-1:		N
	Separately approved; component list	(see Annex 1)	N
	Part of the controlgear	(see Annex 2)	N
	Screwless terminals according section 15 of IEC 60598-1:		N
	Separately approved; component list	(see Annex 1)	N
	Part of the controlgear	(see Annex 2)	N

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

EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
	Comply with clause 8 and 9.1		N
- (9.3)	Earth contact via the track on the printed board		P
	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: $< 0,5\Omega$	0.032 Ω	P
- (9.4)	Earthing of built-in lamp controlgear		N
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N
	Earthing terminal only for earthing the built-in controlgear		N
- (9.5)	Earthing via independent controlgear		P
- (9.5.1)	Earth connection to other equipment		N
	Looping or through connection, conductor min. 1,5 mm ² and of copper or equivalent		N
	Protective earthing wires in line with 5.3.1.1 and clause 7		N
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		P
	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
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N

11 (11)	MOISTURE RESISTANCE AND INSULATION		---
	After storage 48 h at 91-98% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (M Ω): > 2 M Ω :		P
	≥ 2 M Ω for basic insulation	Between different polarity measured: more than 10 M Ω	P
	≥ 4 M Ω for double or reinforced insulation	Between live parts and output circuits measured: more than 10 M Ω	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P

12 (12)	ELECTRIC STRENGTH	---
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EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		P
	Working voltage ≤ 50 V, test voltage 500 V		N
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, 2U + 1000V	2x240 +1000V	P
	Supplementary insulation, 2U + 1000V	2x240 +1750V	P
	Double or reinforced insulation, test voltage (V) : 4U+2000V:	4x240 +2750V	P
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		P

14 (14)	FAULT CONDITIONS		P
- (14)	When operated under fault conditions the controlgear:		---
	- 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
	Fault conditions: capacitors resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P
- (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		N
- (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		N
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	P

EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
- (14.5)	After the tests has been carried out on three samples:		P
	The insulation resistance $\geq 1 \text{ M}\Omega$: 500M 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		P
- (14.6)	Relevant fault condition tests with high-power supply		P

15 (15)	CONSTRUCTION		---
(15.1)	Wood, cotton, silk, paper and similar fibrous material		P
	Wood, cotton, silk, paper and similar fibrous material shall not be used as insulation		P
(15.2)	Printed circuits		P
	Printed circuits used as internal connections complies with clause 14		
(15.3)	Plugs and socket-outlets used in SELV or ELV circuits		N
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N
	Plugs and socket-outlets for SELV $\leq 3 \text{ A}$, $\leq 25 \text{ V r.m.s.}$ or $\leq 60 \text{ V d.c.}$ and $\leq 72 \text{ W}$ comply with IEC 60906-3 and IEC 60884-2-4 or:		N
	- plugs not able to enter socket-outlets of other standardised system		N
	- socket-outlets not admit plugs of other standardised system		N
	- socket-outlets without protective earth		N

16 (16)	CREEPAGE DISTANCES AND CLEARANCES		---
	Creepage distances and clearances according to Table 3 and 4, as appropriate	(see appended table)	P
	Controlgears providing SELV comply with L.1 in Annex L		P
	Insulating lining of metallic enclosures		N

EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
	Basic insulation on printed boards tested according to clause 14		N
	Distances subjected to both sinusoidal voltage as non-sinusoidal pulses not less than value in either Table 3 or 4		N
	Creepage distances not less than minimum clearance		P

17 (17)	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		---
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		---
(4.11)	Electrical connections		P
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		---
	- self-tapping screws		N
	- thread-cutting screws		N
(4.11.3)	Screw locking:		---
	- spring washer		N
	- rivets		N
(4.11.4)	Material of current-carrying parts	Copper > 50%	P
(4.11.5)	No contact to wood	No wood used	P
(4.12)	Mechanical connections and glands		P
(4.12.1)	Mechanical stress		P
	Screws not made of soft metal		P
	Screws of insulating material		N
	Torque test: part; torque (Nm)	0.6Nm for fixed enclosure	P
	Torque test: part; torque (Nm)		N
	Torque test: part; torque (Nm)		N
(4.12.2)	Screw diameter < 3mm screwed into metal		N
(4.12.4)	Locked connections		N
	- fixed arms; torque (Nm)		N
	- lampholder; torque (Nm).....		N
	- push-button switches; torque 0,8 Nm		N
(4.12.5)	Screwed glands: force (N)		N

EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
18 (18)	RESISTANCE TO HEAT, FIRE AND TRACKING		---
(18.1)	Parts of insulating material retaining live parts in position, ball-pressure test:		--
	- part; test temperature (°C)	125°C, 1 hour conducted: for bobbin of T1, 1,1 mm < 2 mm	P
	- part; test temperature (°C)	125°C, 1 hour conducted: for bobbin of T1, 1,1 mm < 2 mm	P
	- part; test temperature (°C)		P
(18.2)	Test of printed boards:		P
	- part; test temperature (°C)		N
	- part; test temperature (°C)		N
(18.3)	Glow-wire test (650C):		P
	- part; test temperature (°C)	PCB	P
	- part; test temperature (°C)	Enclosure	P
(18.4)	Needle flame test (10 s):		---
	- part; test temperature (°C)		N
	- part; test temperature (°C)		N
(18.5)	Tracking test		N
	- part; test temperature (°C)		N
	- part; test temperature (°C)		N
19 (19)	RESISTANCE TO CORROSION		---
	- test according 4.18.1 of IEC 60598-1		N
	- adequate varnish on the outer surface		N
-(20)	ANNEXES		N
	Comply with appropriate annexes of IEC 61347-1		N

EN 61347-2-11							
Clause	Requirement - Test	Result - Remark					Verdict
16 (16)	TABLE: CREEPAGE DISTANCES AND CLEARANCES						P
--	Minimum distances for a.c. (50/60Hz) sinusoidal voltages						---
RMS working voltage (V) not exceeding		50	150	250	500	750	1000
1 minimum distances between live parts of different polarity. Specify the value measured.		N	N	N	See below	N	N
2 minimum distances between live parts and accessible parts which are permanently fixed to the ballast, including screws or devices for fixing covers or fixing the ballst to its support. Specify the value measured.		N	N	N	See below	N	N
- required creepage distances (mm), insulation PTI ≥ 600		0,6	1,4	1,7	3	4	5,5
- required creepage distances (mm), insulation PTI < 600		1,2	1,6	2,5	5	8	10
- required clearances (mm)		0,2	1,4	1,7	3	4	5,5
3 minimum distances between live parts and a flat supporting surface or a loose metal cover, if any, if the construction does not ensure that the values under 2 above are maintained under the most unfavourable circumstances		N	N	N	N	N	N
- requied clearances (mm)		2	3,2	3,6	4,8	6	8
Minimum distances for non-sinusoidal pulse voltages						---	
Rated pulse voltage (peak kV)		2,0	2,5	3,0	4,0	5,0	6,0
Required minimum distances, clearances (mm)		1,0	1,5	2	3	4	5,5
Specify the value measured		N	N	N	N	N	N
Rated pulse voltage (peak kV)		10	12	15	20	25	30
Required minimum distances, clearances (mm)		11	14	18	25	33	40
Specify the value measured		N	N	N	N	N	N
Rated pulse voltage (peak kV)		50	60	80	100	--	--
Required minimum distances, clearances (mm)		75	90	130	170	--	--
Specify the value measured		N	N	N	N	N	N

EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
A	ANNEX A (NORMATIVE), TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK		---
A.1	Comply with A.2 or A.3		N
A.2	Voltage ≤ 35 V peak or ≤ 60 V d.c. :		P
A.3	If voltage > 35 V peak or > 60 V d.c. or protective impedance device; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. :		N
	Comply with Annex G of IEC 60598-1		N
C	ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING		N
C3	GENERAL REQUIREMENTS		N
C3.1	Thermal protection means integral with the controlgear, protected against mechanical damage		N
	Renewable only by means of a tool		N
	If function depending on polarity, for cordconnected equipment protection means in both leads		N
	Thermal links comply with IEC 60691		N
	Electrical controls comply with IEC 60730-2-3		N
C3.2	No risk of fire by breaking (clause C7)		N
C5	CLASSIFICATION		---
	a) automatic resetting type		---
	b) manual resetting type		---
	c) non-renewable, non-resetting type		---
	d) renewable, non-resetting type		---
	e) other type of thermal protection; description		N
C6	MARKING		---
C6.1	Symbol for temperature declared thermally protected ballasts		N
C6.2	Declaration of the type of protection provided		N
C7	LIMITATION OF HEATING		---
C7.1	Preselection test		N
	Test sample placed for at least 12 h in an oven having temperature (tc – 5) K		N

EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
	No operation of the protection device		N
C7.2	Functioning of protection means		N
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (tc +0; -5) °C is obtained		N
	No operation of the protection device		N
	Introducing of the most onerous test condition determined during test of clause 14		N
	Output of windings connected to the mains supply short-circuited, and other part of the controlgear operated under normal conditions		N
	Increasing of the current through the windings continuously until operation of the protection means		N
	Continuous measuring of the highest surface temperature		N
	Controlgear according to C5 a) or C5 e) operated until stable conditions are achieved		N
	Automatic-resetting thermal protectors working 3 times		N
	Controlgear according to C5 b) working 6 times		N
	Controlgear according to C5 c) and C5) d) working once		N
	Highest temperature does not exceed the marked value		N
	Any overshoot of 10% over the marked value within 15 min		N
D	ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR		N
	Tests in C7 performed in accordance with Annex D, if applicable		N
E	ANNEX E – USE OF CONSTANT S OTHER THAN 4500 IN tw TESTS		N
	Comply with tests according Annex E, if applicable		N
F	ANNEX F – DRAUGHT-PROOF ENCLOSURE		P

EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		N
H	ANNEX H – TESTS		N
	All tests performed in accordance with the advise given in Annex H, if applicable		N
I	ANNEX I - ADDITIONAL REQUIREMENTS FOR BUILT-IN MAGNETIC BALLASTS WITH DOUBLE OR REINFORCED INSULATION		N
	Comply with tests according Annex I, if applicable		
L	ANNEX L: PARTICULAR ADDITIONAL REQUIREMENTS FOR CONTROLGEARS PROVIDING SELV		---
L.3	Classification		---
	Class I	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	---
	Class II	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	---
	Class III	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	---
	non-inherently short circuit proof controlgear	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	---
	inherently short circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	---
	fail safe controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	---
	non-short-circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	---
L.4	Marking		---
	Adequate symbols are used		P
L.5	Protection against electric shock		---
	Comply with 9.2 of IEC 61558-1		P
L.6	Heating		---
	No excessive temperatures in normal use		P
	Value if capacitor tc marked		---
	Winding insulation classified as Class	B	P
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		P
L.7	Short-circuit and overload protection		---

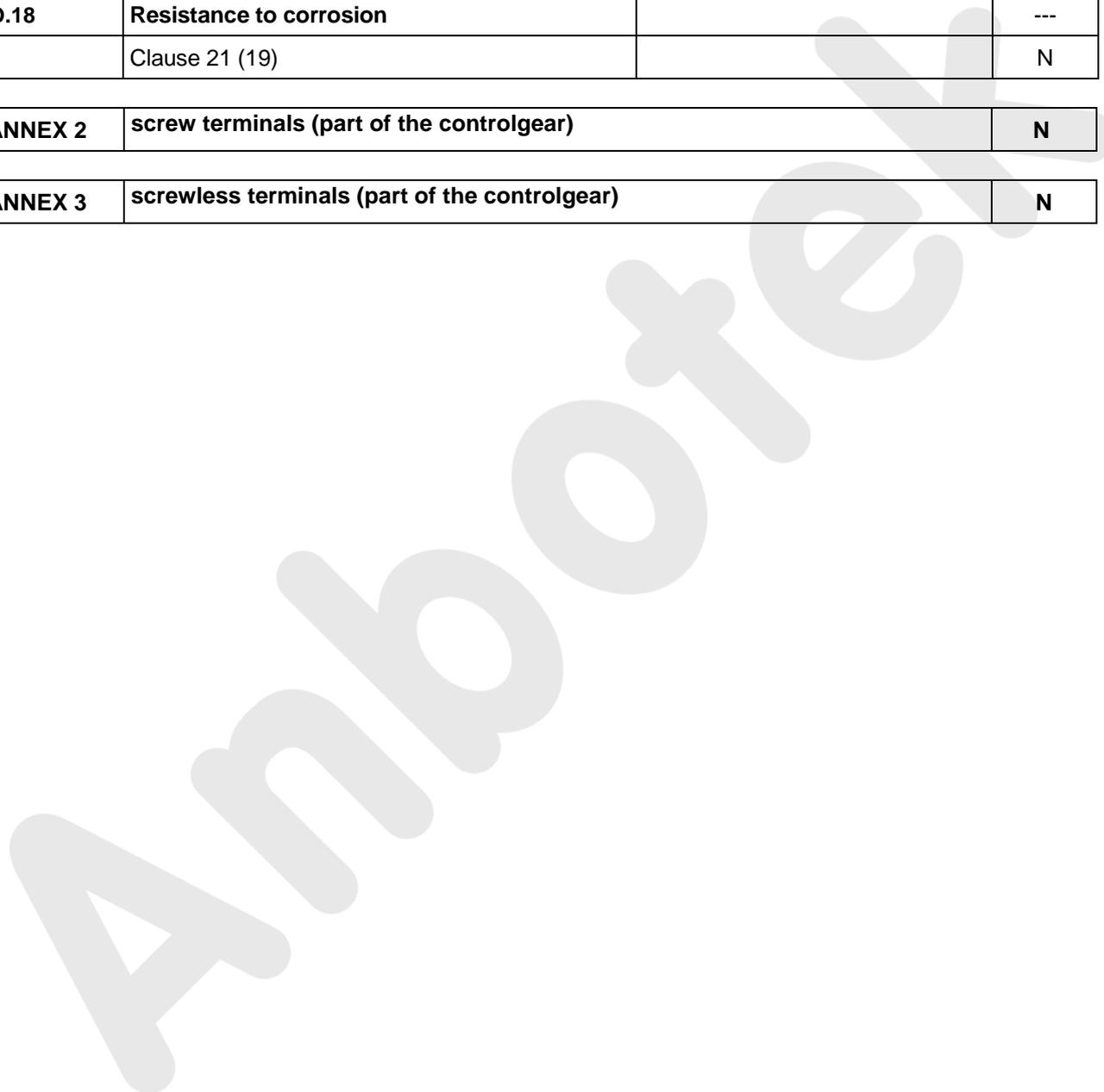
EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		N
L.8	Insulation resistance and electric strength		---
L.8.1	Conditioned 48 h between 91 % and 95 %		P
L.8.2	Insulation resistance		P
	Between input- and output circuits not less than 5 MΩ		P
	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ		N
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ		N
L.8.3	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits	3000V	P
	2) Over basic or supplementary insulation between:		N
	a) live parts having different polarity		N
	b) live parts and body if intended to be connected to protective earth		N
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord		N
	d) live parts and an intermediate metal part		N
	e) intermediate metal parts and the body		N
	f) each input circuit and all other input circuits ...		N
	3) Over reinforced insulation between the body and live parts		N
L.9	Construction		---
L.9.1	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		P
	HF transformer comply with 19 of IEC 61558-2-16		P
L.10	Components		---
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		N
L.11	Creepage distances and clearances		---
	1. Insulation between input and output circuits, basic insulation:		N

EN 61347-2-11			
Clause	Requirement - Test	Result - Remark	Verdict
	a) measured values > specified values (mm)		N
	b) measured values > specified values (mm)		N
	c) measured values > specified values (mm)		N
	2. Insulation between input and output circuits, double or reinforced insulation:		P
	a) measured values > specified values (mm)	Cl = cr > 5 mm	P
	b) measured values > specified values (mm)		N
	c) measured values > specified values (mm)		N
	3. Insulation between adjacent input circuits		N
	- measured values > specified values (mm)		N
	3. Insulation between adjacent output circuits		N
	- measured values > specified values (mm)		N
	4. Insulation between terminals for external connection:		N
	- measured values > specified values (mm)		N
	5. Basic or supplementary insulation:		P
	a) measured values > specified values (mm)	Cl = cr > 2,5 mm	P
	b) measured values > specified values (mm)		N
	c) measured values > specified values (mm)		N
	d) measured values > specified values (mm)		N
	e) measured values > specified values (mm)		N
	6. Reinforced insulation or insulation:		P
	Between body and output circuit: measured values > specified values (mm)	Cl = cr > 5 mm	P
	Between body and output circuit if provision against transient voltages: measured values > specified values (mm)		N
	7. Distance through insulation:		P
	a) measured values > specified values (mm)		N
	b) measured values > specified values (mm)	Two layer of insulation sheet between primary and secondary winding, totally 0,1 mm thick	P
	c) measured values > specified values (mm)		N
M	ANNEX M: DIELECTRIC STRENGTH TEST VOLTAGES FOR CONTROLGEAR INTENDED FOR USE IN IMPULSE WITHSTAND CATEGORY III		N
	Comply with tests according Annex M, if applicable		N

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Clause	Requirement - Test	Result - Remark	Verdict
N	ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION		---
N.4	General requirements		N
N.4.1	Material comply with IEC 60085 and IEC 60216 series		N
N.4.2	Solid insulation		N
	Electric strength test at least 5 kV or 1,35 x test voltage in Table N.1		N
	If not classified according IEC 60085 and IEC 60216 series: Electric strength test increased 10 % of 5,5 kV or 1,5 x test voltage in Table N.1		N
N.4.3	Thin sheet insulation		N
N.4.3.1	Thickness and composition of thin sheet insulation		N
	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance		N
	- Non-separated layers: Min. 3 layers and fulfil mandrel test of 150N		N
	- Separated layers: Min. 2 layers and each layer fulfil mandrel test of 50N		N
	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N		N
N.4.3.2	Mandrel test (electric strength test during mechanical stress)		N
	Electric strength test after mandrel test:		N
	- Non-separated layers: min. 5 kV or 1,35 x test voltage in Table N.1		N
	- 2/3 of min. 3 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N
	- one of 2 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N
	No flashover or breakdown occurred		N
O	ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION		---
O.6	Marking		---
	Marking according clause 7 (7)		N
	Special symbol		N

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Clause	Requirement - Test	Result - Remark	Verdict
	Meaning of the special symbol explained in catalogue		N
O.7	Protection against accidental contact with live parts		---
	Requirements of clause 8 (10)		N
	Test finger not possible to make contact with basic insulated metal parts		N
O.8	Terminals		---
	Clause 9 (8)		N
O.9	Provision for earthing		---
	Functional earthing terminals comply with clause 9 of part 1		N
	No protective earthing terminal		N
O.10	Moisture resistance and insulation		---
	Clause 11 (11)		N
O.11	Electric strength		---
	Clause 12 (12)		N
O.13	Fault conditions		---
	Clause 14 (14)		N
	End of test, between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface comply with dielectric strength test reduced to 35 % of values according Table 1 in part 1		N
	Insulation resistance according to O.10 between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface not less than 4 MΩ		N
O.14	Construction		---
	Clause 17 (15)		N
	Accessible metal parts insulated from live parts by double or reinforced insulation		N
	Live part insulated from supporting surface in contact with external faces by double or reinforced insulation		N
O.15	Creepage distances and clearances		---
	Clause 18 (16)		N
	Comply with corresponding values for luminaries in IEC 60598-1		N

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Clause	Requirement - Test	Result - Remark	Verdict
O.16	Screws, current-carrying parts and connections		---
	Clause 19 (17)		N
O.17	Resistance to heat and fire		---
	Clause 20 (18)		N
O.18	Resistance to corrosion		---
	Clause 21 (19)		N
ANNEX 2	screw terminals (part of the controlgear)		N
ANNEX 3	screwless terminals (part of the controlgear)		N



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Clause	Requirement - Test	Result - Remark	Verdict

TABLE: Thermal requirements			P
	Supply voltage (V)	See below	---
Tested part and location of sensor:		Temperature rise (K)	Limit
Input voltage	99V/50Hz	260V/60Hz	---
Input wier	22,9	22,5	115
L1 coil	32,5	28,8	95
T1 winding	57,4	55,8	75
T1 core	49,7	48,1	75
E-bulk capacitr (C9)	48,2	43,4	70
PCB near Q1	59,4	56,1	95

COMPONENTS LIST					P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
PCB	Various	Various	V-0, 130°C	UL 796	UL
Fuse (F1)	Various	Various	250V, 1A	IEC/EN 60127-2, UL 248	VDE, UL
Transformer (T1)	Various	Various	Class B	EN 61347-1	Tested with appliance
E-bulk cap. (C9, C10)	Various	Various	50V, 220/470µF	---	---

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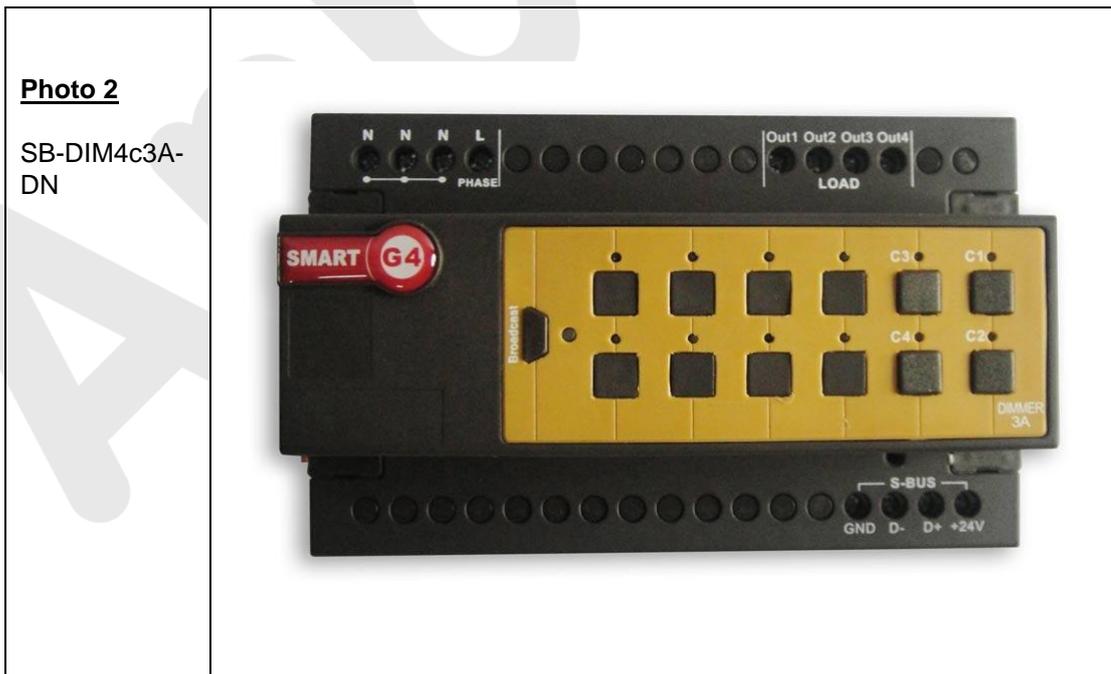
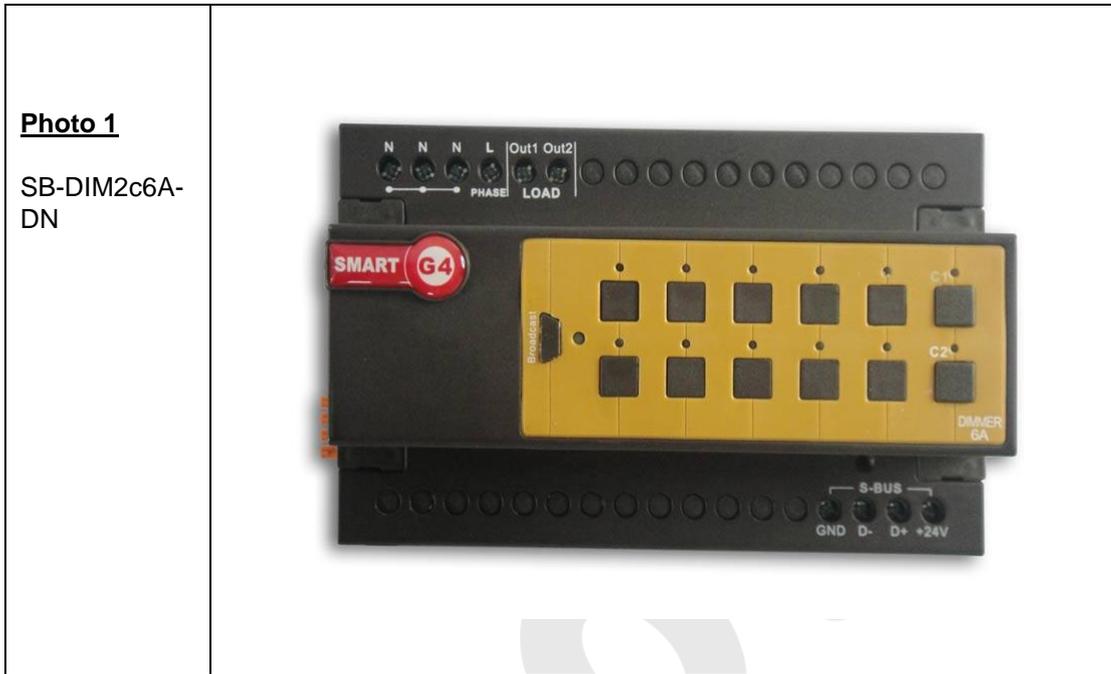


Photo Documentation

