



TEST REPORT

Report No...... : P17021-17

Tested by (name and signature)

..... : Beep Gao / *Beep Gao*

Approved by (name and signature)

..... : Bruce Wang / *Bruce Wang*

Date of issue : 2017-10-27

Total number of pages : Total 12 pages, including 5 pages of Annex A

Testing Laboratory : A Plus Safety Consulting Co., Ltd.

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221, Taiwan

Applicant's name : FSP Group Inc.

Address : No. 22, Jianguo E., Rd, Taoyuan, Taiwan.

Test specification:

Standard..... : IEC 60529 (Edition 2.2)

Test procedure..... : N/A

Non-standard test method..... : N/A

Test item description..... : LED Controlgear

Model/Type reference : FSP120-FZAE1(230)MGXX, FSP120-FZAE1(250)MGXX,
FSP120-FZAE1(290)MGXX, FSP120-FZAE1(340)MGXX,
FSP120-FZAE1(400)MGXX, FSP120-FZAE1(500)MGXX,
FSP120-FZAE1(600)MGXX, FSP120-FZAE1(800)MGXX,
FSP120-FZAE1(1000)MGXX, FSP120-FZAE1-24MGXX,
FSP120-FZAE1-30MGXX, FSP120-FZAE1-36MGXX,
FSP120-FZAE1-48MGXX, FSP120-FZAE1-54MGXX,
FSP120-FZAE1-24GXX, FSP120-FZAE1-30GXX,
FSP120-FZAE1-36GXX, FSP120-FZAE1-48GXX,
FSP120-FZAE1-54GXX, FSP120-FZAE1(230)RG54XX,
FSP120-FZAE1(250)RG48XX, FSP120-FZAE1(290)RG42XX,
FSP120-FZAE1(340)RG36XX, FSP120-FZAE1(400)RG30XX,
FSP120-FZAE1(500)RG24XX, FSP120-FZAE1(600)RG20XX,
FSP120-FZAE1(800)RG15XX, FSP120-FZAE1(1000)RG12XX
(each X can be 0 – 9 or blank for marketing purpose.)

IP Code : IP67

Testing.....:

Date of receipt of test item: 2017-09-06

Date (s) of performance of tests.....: 2017-09-08 to 2017-10-03

General remarks:

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

General product information:

1. All models are identical except for model designation.
2. The measured overall dimensions of model FSP120-FZAE1(230)MG with box are approximately 42.0 mm (H) x 69.0 mm (W) x 196.0 mm (L)
3. The definition of "enclosure" is including outer box and intimal potting compound according to the client's information.
4. See Annex A for photographs.

Summary of testing:

The tested samples were pre-production models without the serial numbers.

Unless otherwise specified, all tests were conducted at model FSP120-FZAE1(230)MG to represent other models.

Tests to be conducted			
Test No.	Test Name	Clause	Results
1	Dust Test for First Characteristic Numerals 6	12.2, 13.4, 13.6	P
2	Test for Second Characteristic Numeral 7: Temporary Immersion between 0.15 m and 1 m	14.2.7, 14.3	P

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)

Unless specified otherwise in the individual methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be recorded at the time the test is conducted.

Ambient Temperature : 25 °C ± 10 °C, Relative Humidity: 50 % ± 25 %. Air pressure: 86 kPa to 106 kPa

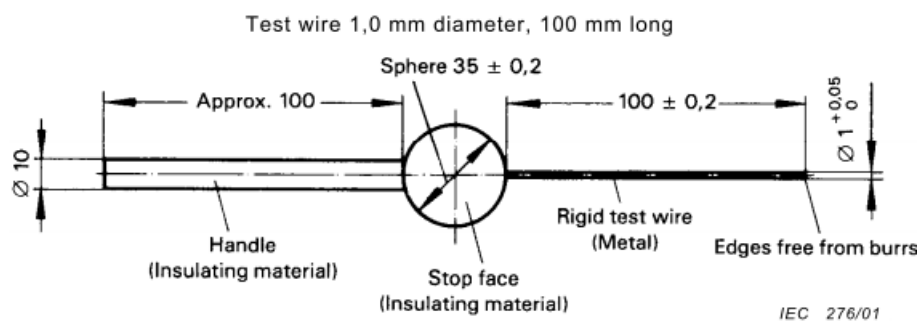
※ **Test Sample Identification**

The table below is provided to correlation of sample numbers and specific product related information. Refer to this table when a test identifies a test sample by "Sample No." only.

Sample Card No.	Date Received	Test No.	Sample No.	Product Identification
P17170906	2017-09-06	1	3	LED Controlgear
		2	4	Model: FSP120-FZAE1(230)MG

Dust test for first characteristic numeral 6:**CL. 12.2, CL. 13.4, CL. 13.6****TEST METHOD****Step 1:**

Use specified test probe below with a force of $1\text{ N} \pm 10\%$ to push against any opening of the enclosure.

**TEST RESULT**

The test result was considered acceptable since the access probe did not touch hazardous live parts.

Test Record:

Model	Sample No.	Observations
FSP120-FZAE1(230)MG	3	The access probe did not touch hazardous live parts.

Dust test for first characteristic numeral 6: (CONT'D)**CL. 12.2, CL. 13.4, CL. 13.6****Step 2:**

The test was made using a dust chamber incorporating the basic principles shown in figure 2 whereby the powder circulation pump may be replaced by other means suitable to maintain the talcum powder in suspension in a closed test chamber.

The talcum powder used is able to pass through a square-meshed sieve the nominal wire diameter of which is 50 μm and the nominal width of a gap between wires 75 μm .

The amount of talcum powder to be used was 2 kg per cubic metre of the test chamber volume. It hasn't been used for more than 20 tests.

The object of the test was to draw into the enclosure, by means of depression, a volume of air 80 times the volume of the sample enclosure tested without exceeding the extraction rate of 60 volumes per hour.

The depression did not exceed 2 kPa (20 mbar) on the manometer shown in figure 2.

The extraction rate of 40 to 60 volumes per hour was obtained, and the duration of the test was 2 h.

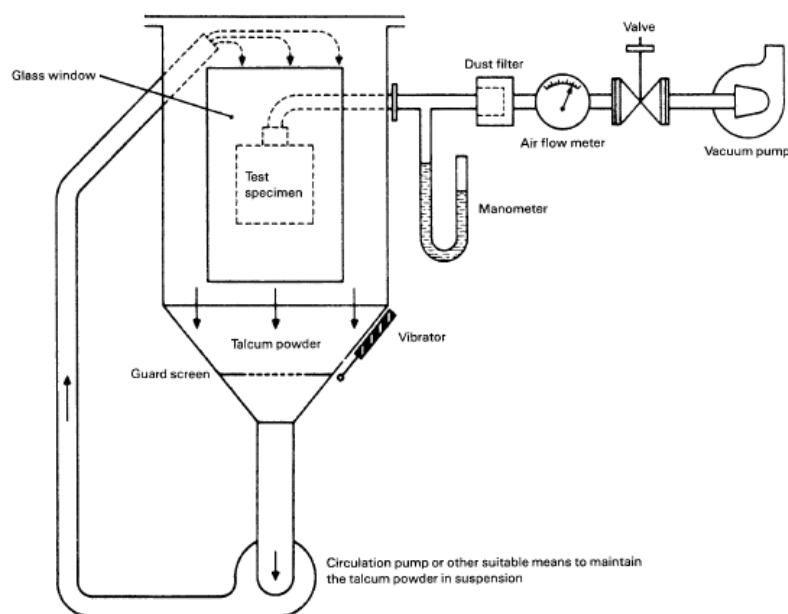


Figure 2 – Test device to verify protection against dust (dust chamber)

Dust test for first characteristic numeral 6: (CONT'D)**CL. 12.2, CL. 13.4, CL. 13.6****TEST RESULT**

The test result was considered acceptable since the dust was not found in the cord or on components after test.

Test Record:

Model	Sample No.	Observations
FSP120-FZAE1(230)MG	3	The dust was found between outer box and internal potting compound, but was not found in the cord or on components

Test for Second Characteristic Numeral 7: Temporary Immersion between 0.15 m and 1 m:**CL 14.2.7, CL 14.3****Test Method**

The test was made by completely immersing the enclosure in water in its service position as specified by the manufacturer so that the following conditions are satisfied:

- a) the lowest point of enclosures with a height less than 850 mm was located 1 000 mm below the surface of the water.
- b) the duration of the test was 30 min;
- c) the water temperature did not differ from that of the equipment by more than 5 K.

Test Result

The test result was considered acceptable since

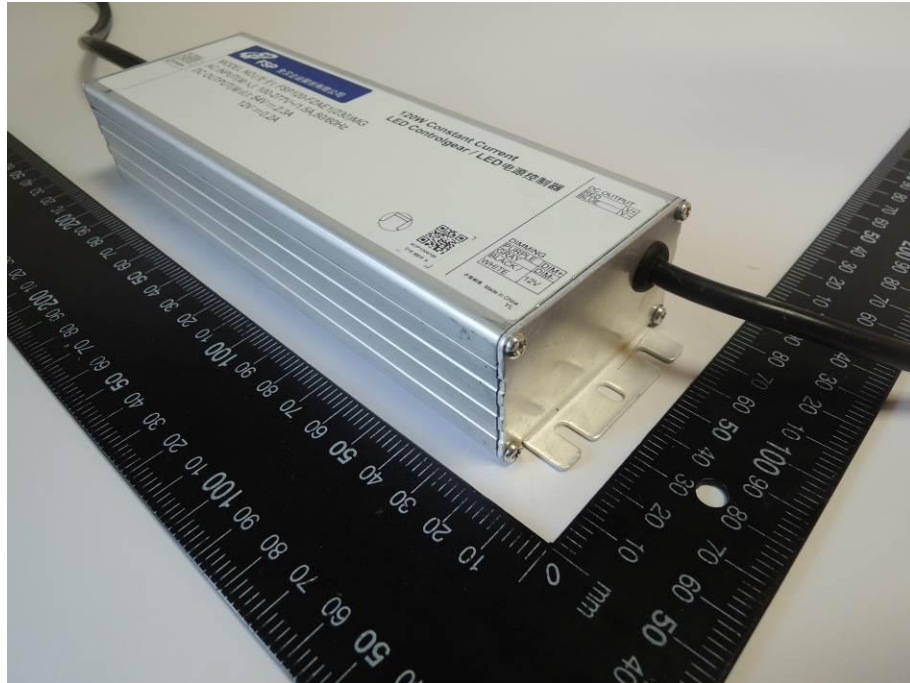
1. No sufficient to impair safety,
2. The water did not deposit on insulation parts where it could lead to tracking along the creepage distances,
3. The water did not reach live parts or windings

Test Record:

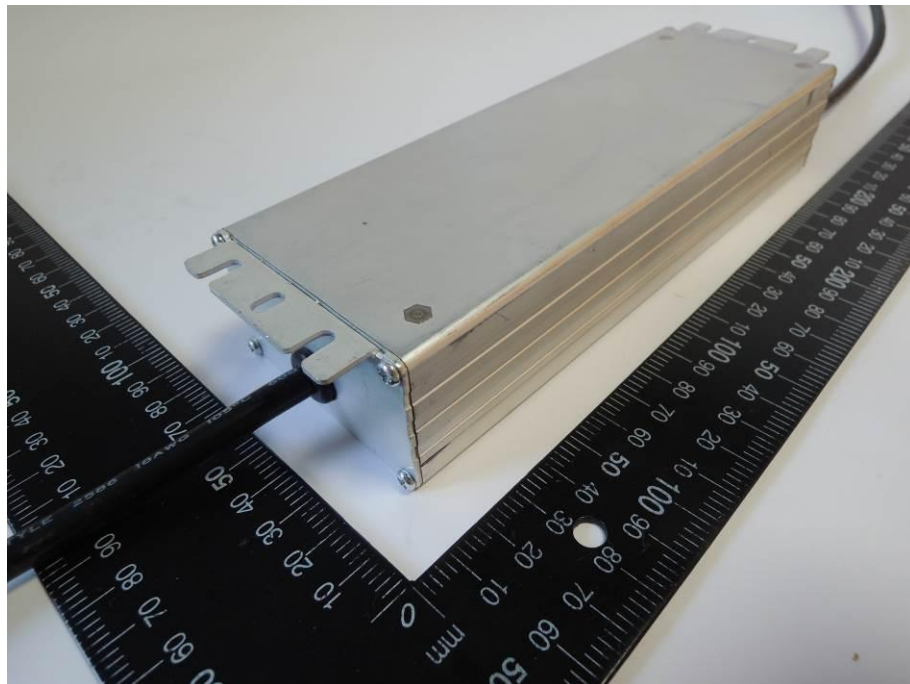
Model	Sample No.	Observations
FSP120-FZAE1(230)MG	4	The water was found between outer box and internal potting compound, but was not found in the cord or on components



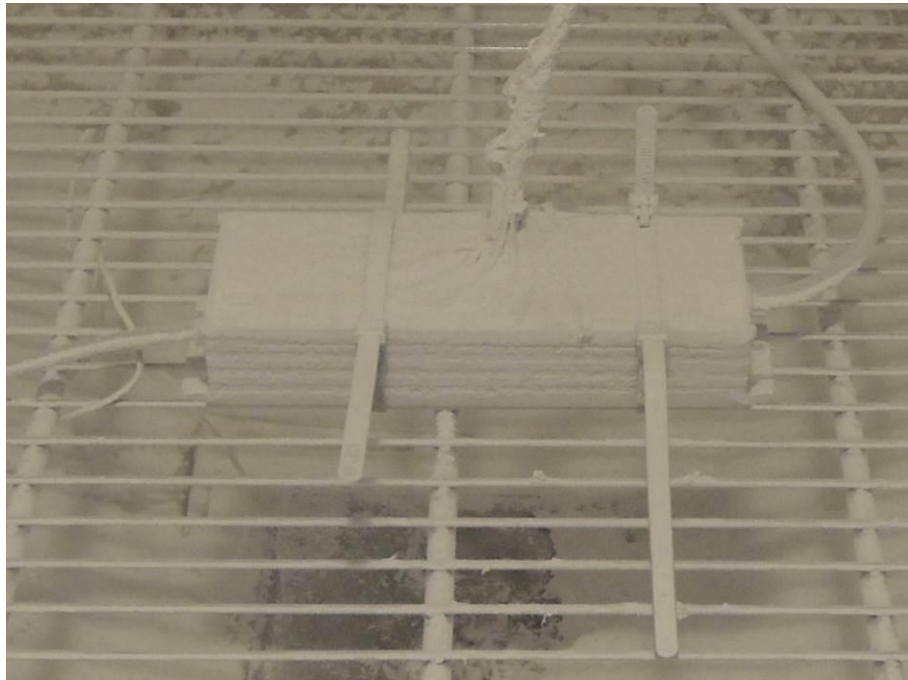
Annex A – Photographs:



Overall View 1 of model FSP120-FZAE1(230)MG



Overall View 2 of Model FSP120-FZAE1(230)MG



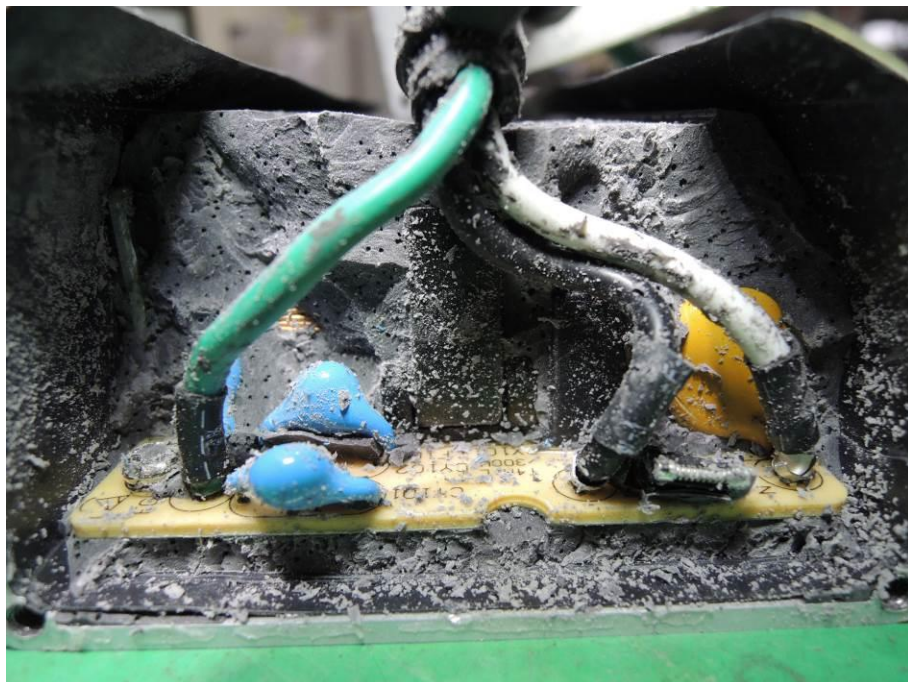
View of Model FSP120-FZAE1(230)MG under IP6X Testing



View of Dust Found on Outer Box and Internal Potting Compound of Model FSP120-FZAE1(230)MG after IP6X Testing



Internal View 1 of Model FSP120-FZAE1(230)MG after IP6X Testing



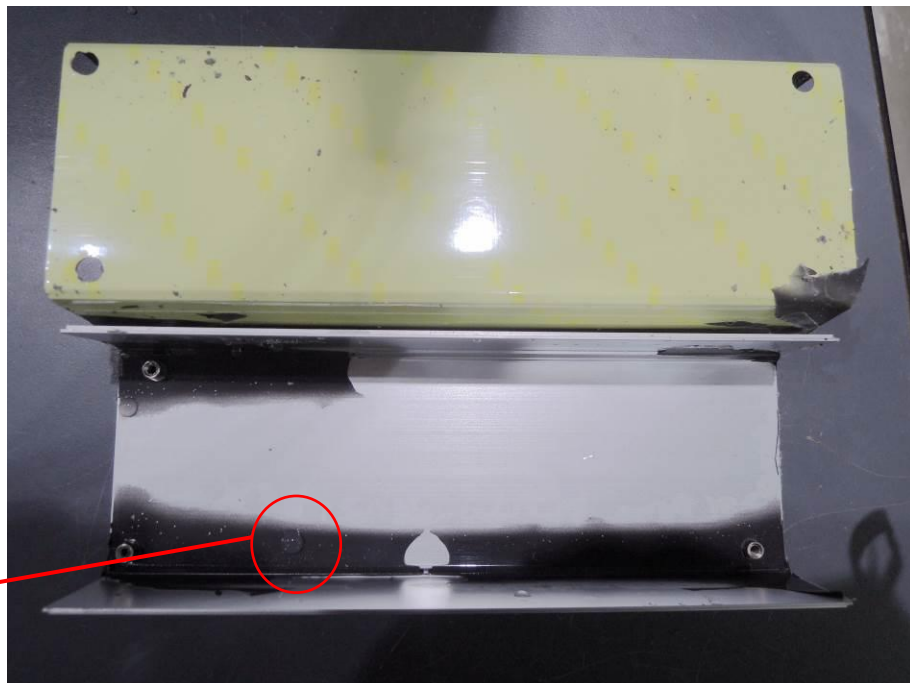
Internal View 2 of Model FSP120-FZAE1(230)MG after IP6X Testing



View of Model FSP120-FZAE1(230)MG under IPX7 Testing



1 m Depth from The Bottom of Chamber to Water Surface



Ingress of Water

Internal View of Ingress of Water between Outer Box and Internal Potting Compound Model FSP120-FZAE1(230)MG after IPX7 Test



Internal View 2 Model FSP120-FZAE1(230)MG after IPX7 Test



Internal View 3 of Model FSP120-FZAE1(230)MG after IPX7 Test