

**List of test items:**

No.	Test Items	Requirement + Test	Result
1	IP67 Test	IEC60529:1989+A1:1999+A2:2013	Pass
2	Ambient Temperature: 25.3℃	Ambient Humidity: 56.3%	--
Subcontract Whether parts of tests for the product have been subcontracted to other labs: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, list the related test items and lab information: Test items: --- Lab information: --			
Testing location: Waltek Testing Group Co., Ltd. No. 77, Houjie Section, Guantai Road, Houjie Town, Dongguan City, Guangdong, China			
Remarks:			

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**Test Item :**

Tests for protection against dust-proof: IP6X

Test Method:

The tests should be carried out under the standard atmospheric condition.

The atmospheric conditions during tests are as follows:

Temperature range: 15 °C to 35 °C. Relative humidity: 25% to 75%.

The test is made using a dust chamber incorporating the basic principles shown in figure 2 where by 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 shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50µm and the nominal width of gap between wires 75 µm. The amount of talcum powder to be used is 2 kg per cubic meter of the test chamber volume. It shall not have been used for more than 20 tests.

Enclosures are of necessity in one of two categories:

Category 1: Enclosures where the normal working cycle of the equipment causes reductions in air pressure within the enclosure below that of the surrounding air, for example, due to thermal cycling effects.

The enclosure under test is supported inside the test chamber and the pressure inside the enclosure is maintained below the surrounding atmospheric pressure by a vacuum pump. In no event shall the depression exceed 2 KPa(20mbar) on the manometer shown in figure 2. If an extraction rate of 40 to 60 volumes per hour is obtained the duration of the test is 2h. The extraction rate is less than 40 volumes per hour, the test is continued until 80 volumes have been drawn through, or a period of 8h has elapsed.

Category 2: Enclosures where no pressure difference relative to the surrounding air is present.

The enclosure under test is supported in its normal operating position inside the test chamber, but is not connected to a vacuum pump. Any drain-hole normally open shall be left open for the duration of the test. The test shall be continued for a period of 8h.

The enclosure shall be deemed category 1, whether reductions in pressure below the atmospheric pressure are present or not.

The test wire of 1.0 mmφ insert into any openings of the enclosure with a force of 1N±10%.

Acceptance Conditions:

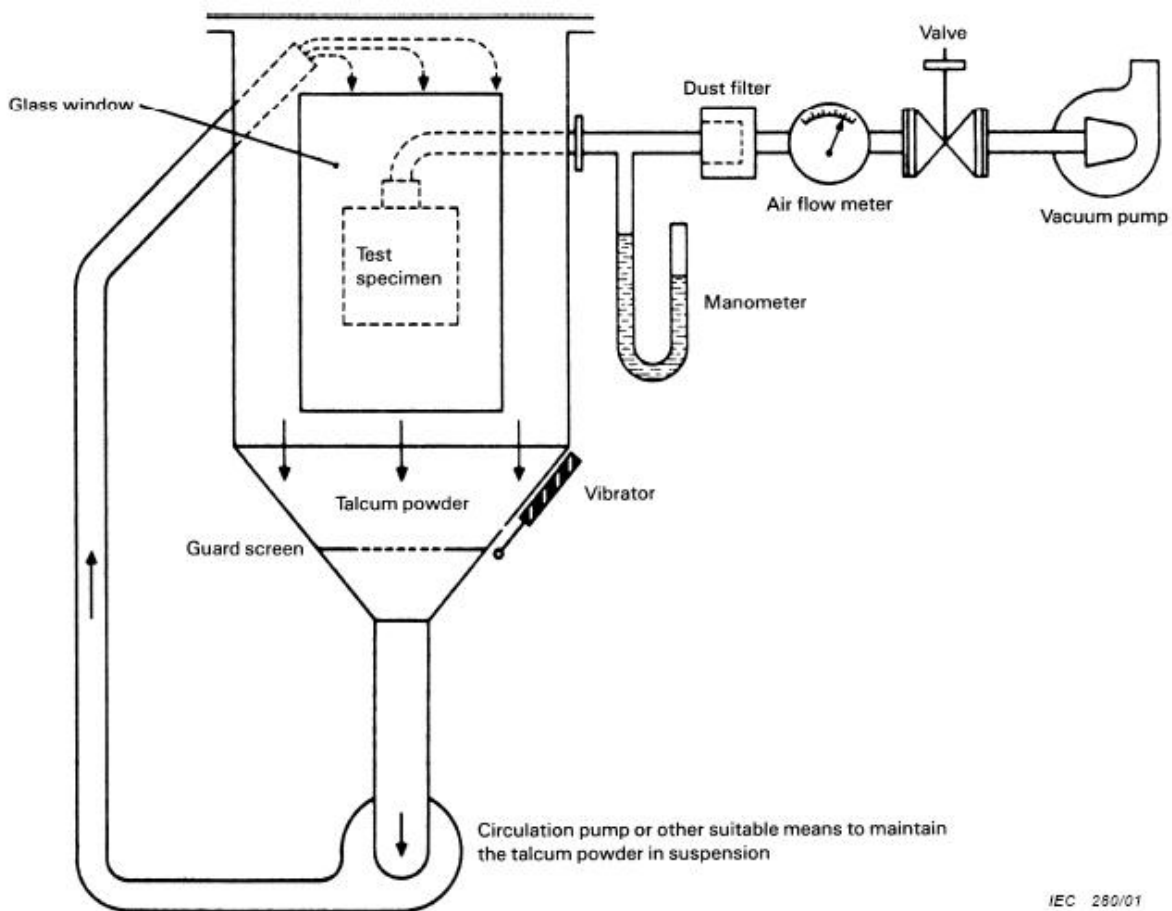
The protection is satisfactory if no deposit of dust is observable inside the enclosure at the end of the test.

The protection is satisfactory if adequate clearance is kept between the access probe and hazardous parts.

The protection is satisfactory if the access probe 1.0 mm diameter shall not pass through the any opening.

Test Result:

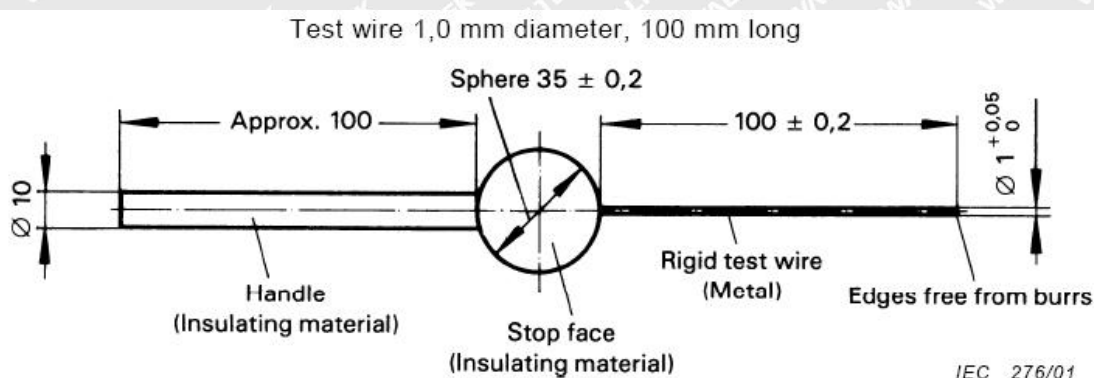
☒ Pass ☐ Fail



IEC 280/01

NOTE See IEC 60068-2-68, figure 2 valid for La2 only.

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



IEC 276/01

**Test Item :**

Tests for protection against ingress moisture: IPX7

Test Method:

The tests should be carried out under the standard atmospheric condition. The atmospheric conditions during tests are as follows:

Temperature range: 15 °C to 35 °C; Relative humidity: 25% to 75%.

1 4.2.7 Test for second characteristic numeral 7: temporary immersion between 0,1 5 m and 1 m.

The test is 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 is located 1 000 mm below the surface of the water;
- b) the highest point of enclosures with a height equal to or greater than 850 mm is located 1 50 mm below the surface of the water;
- c) the duration of the test is 30 min;
- d) the water temperature does not differ from that of the equipment by more than 5 K. However, a modified requirement may be specified in the relevant product standard if the tests are to be made when the equipment is energized and/or its parts in motion.

Acceptance Conditions:

After testing in accordance with the appropriate requirements, the enclosure shall be inspected for ingress of water.

It is the responsibility of the relevant Technical Committee to specify the amount of water which may be allowed to enter the enclosure and the details of a dielectric strength test, if any.

In general, if any water has entered, it shall not:

- be sufficient to interfere with the correct operation of the equipment or impair safety;
- deposit on insulation parts where it could lead to tracking along the creepage distances;
- reach live parts or windings not designed to operate when wet;
- accumulate near the cable end or enter the cable if any.

If the enclosure is provided with drain-holes, it should be proved by inspection that any water which enters does not accumulate and that it drains away without doing any harm to the equipment.

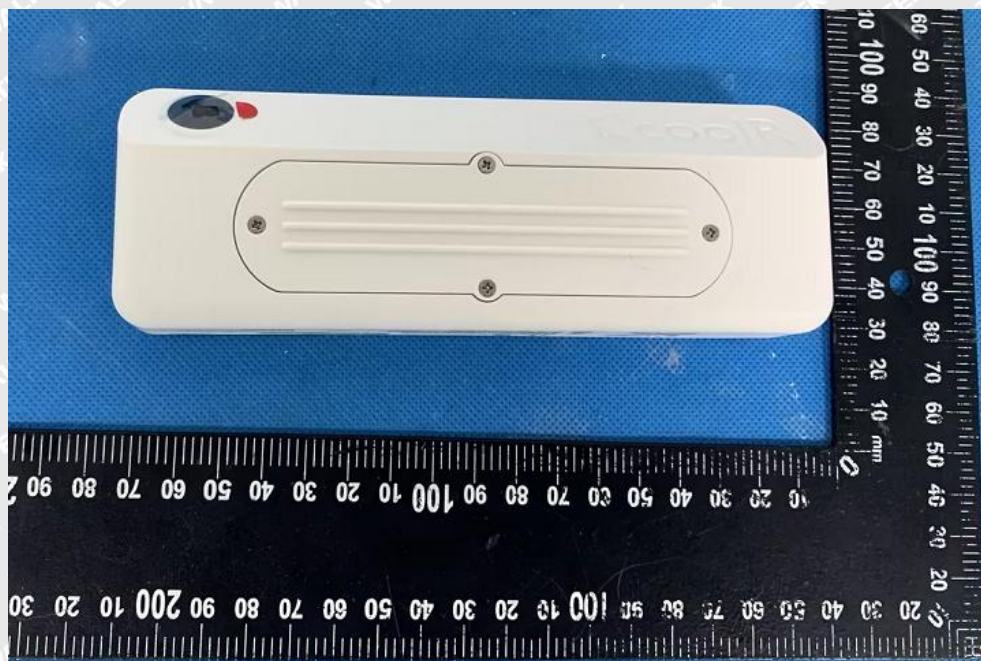
For enclosures without drain-holes, the relevant product standard shall specify the acceptance conditions if water can accumulate to reach live parts.

Test Result:

☒ Pass ☐ Fail



Photo Documentation :



External view



External view



Before the IP 6X test



Before the IP 6X test



During the IP 6X test



After the IP 6X test



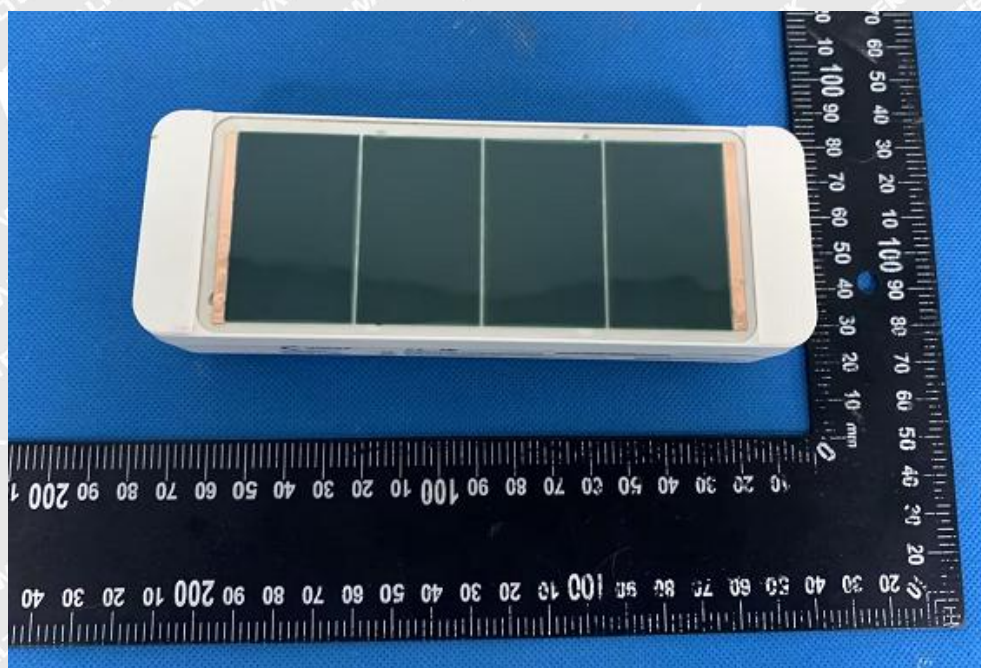
IP X7 water height 1m



During the IP X7 test



After the IP X7 test



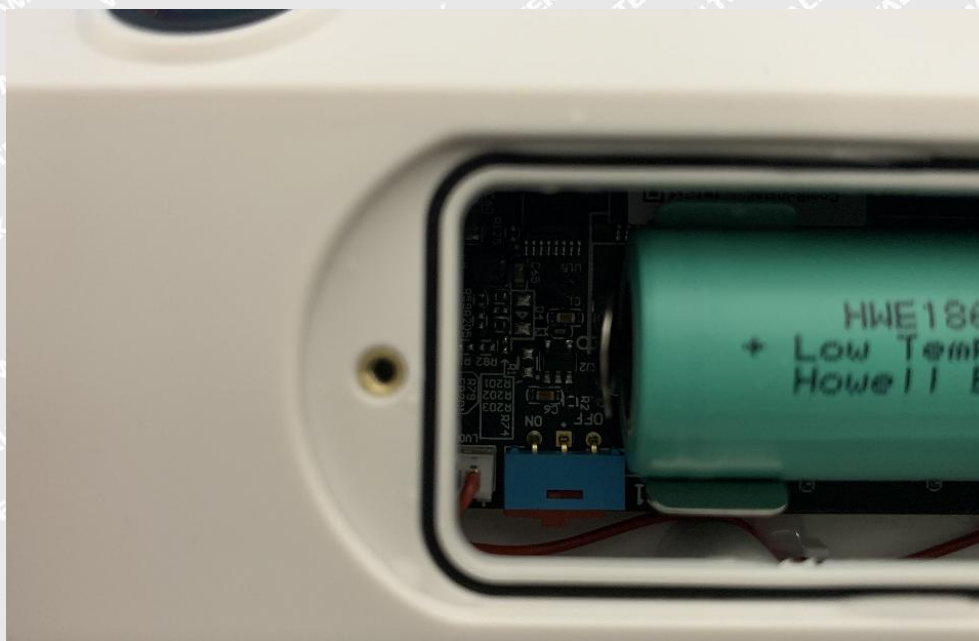
After the IP X7 test



After the IP 67 test, no deposit of dust and water is observable inside the enclosure



After the IP 67 test, no deposit of dust and water is observable inside the enclosure



After the IP 67 test, no deposit of dust and water is observable inside the enclosure



After the IP 67 test, no deposit of dust and water is observable inside the enclosure



Test equipment list

Equipment	Model/Type	Cal. Date	Due Date
Protection against water test device	IPX1- IPX8 FZ-9610	2023/11/20	2024/11/19
Dustproof chamber	IP5X- IP6X FZ-9617B	2023/11/20	2024/11/19
Hygrothermograph	DT-172	2023/11/09	2024/11/08
Timer	PC396	2023/05/31	2024/05/30

===== End of Report =====

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