


# TEST REPORT

Applicant: Mean Well Enterprises Co., Ltd.  
No. 28, Wu-Chuan 3<sup>rd</sup> Road, Wu Ku Ind. Park, Taipei Hsien, Taiwan, 248

Product: Switching Power Supply

Model: LPx-35-y (see Page 2)

Trade Name: 

Rating: Input: 100-240Vac, 50/60Hz, 1.1A  
Output: See Page 2

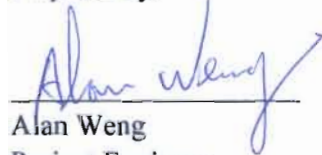
Sample Description: The product covered by this report is a switching power supply for use under dust-tight and water jets conditions. Photos of the tested sample are attached on the Appendix.

Testing Standard: Sub-clauses 13.4, 13.6 and 14.2.7, 14.3 of IEC 60529: 1989 +A1: 1999 degrees of protection provided by enclosures (IP67).


Conclusion: From the results of our testing on the submitted sample(s), we are of the opinion that the submitted sample(s) **COMPLY WITH** the above testing standard.

Remark: All models are identical except for the output rating difference, the details see Page 2.

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- 6) When determining the test conclusion, the Measurement Uncertainty of test has been considered.

**Explanation of model designation of LPx-35-y**

x=V or C; "V" stand for voltage, "C" stand for current;

y=5, 12, 15, 24, 36, 700, 1050, 1400

**Output ratings:**

5Vdc/6A (for LPV-35-5)

12Vdc/3A (for LPV-35-12)

15Vdc/2.4A (for LPV-35-15)

24Vdc/1.5A (for LPV-35-24)

36Vdc/1A (for LPV-35-36)

48Vdc/0.7A (for LPC-35-700)

30Vdc/1.05A (for LPC-35-1050)

24Vdc/1.4A (for LPC-35-1400)

**IP6X Test (sub-clause 13.4 and 13.6 of IEC 60529):****Test Method:**

1. The test is 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 shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50  $\mu$  m and the nominal width of a gap between wires 75  $\mu$  m. The amount of talcum powder to be used is 2 kg per cubic metre of the test chamber volume. It shall not have been used for more than 20 tests.
2. 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, e.g., due to thermal cycling effects.  
Category 2: Enclosures where no pressure difference relative to the surrounding air is present.
3. Category 1 enclosures:  
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. The suction connection shall be made to a hole specially provided for this test. If not otherwise specified in the relevant product standard, this hole shall be in the vicinity of the vulnerable parts.
4. If it is impracticable to make a special hole, the suction connection shall be made to the cable inlet hole. If there are other holes (for example, more cable inlet holes or drain-holes) these shall be treated as intended for normal use on site.
5. The object of the test is 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. In no event shall the depression exceed 2 kPa (20 mbar) on the manometer shown in figure 2.
6. If an extraction rate of 40 to 60 volumes per hour is obtained the duration of the test is 2 h. If, with a maximum depression of 2 kPa (20 mbar), 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 8 h has elapsed.
7. Category 2 enclosures:  
The enclosure under test is supported in its normal operating position inside the test chamber,

**IP6X Test (sub-clause 13.4 and 13.6 of IEC 60529):****Test Method:**

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 8 h.

**8. Category 1 and category 2 enclosures:**

If it is impracticable to test the complete enclosure in the test chamber, one of the following procedures shall be applied:

- Testing of individually enclosed sections of the enclosure;
- Testing of representative parts of the enclosure, comprising components such as doors, ventilation openings, joints, shaft seals, etc., in position during test;
- Testing of a smaller enclosure having the same full-scale design details.

In the last two cases, the volume of air to be drawn through the enclosure under test shall be the same as for the whole enclosure in full scale.

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

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



**IPX7 Test (sub-clause 14.2.7 and 14.3 of IEC 60529):****Test Method:**

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 150 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.

**Compliance criteria:**

1. After the test, the enclosure shall comply with the requirements of sub-clause 14.3. The enclosure shall be inspected for ingress of water. 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.

**Test Result:**

13.4, 13.6, 14.2.7, 14.3	IP67 Test	Pass
Result		
1. After the test, the function of the switching power supply is functioning as normal.		

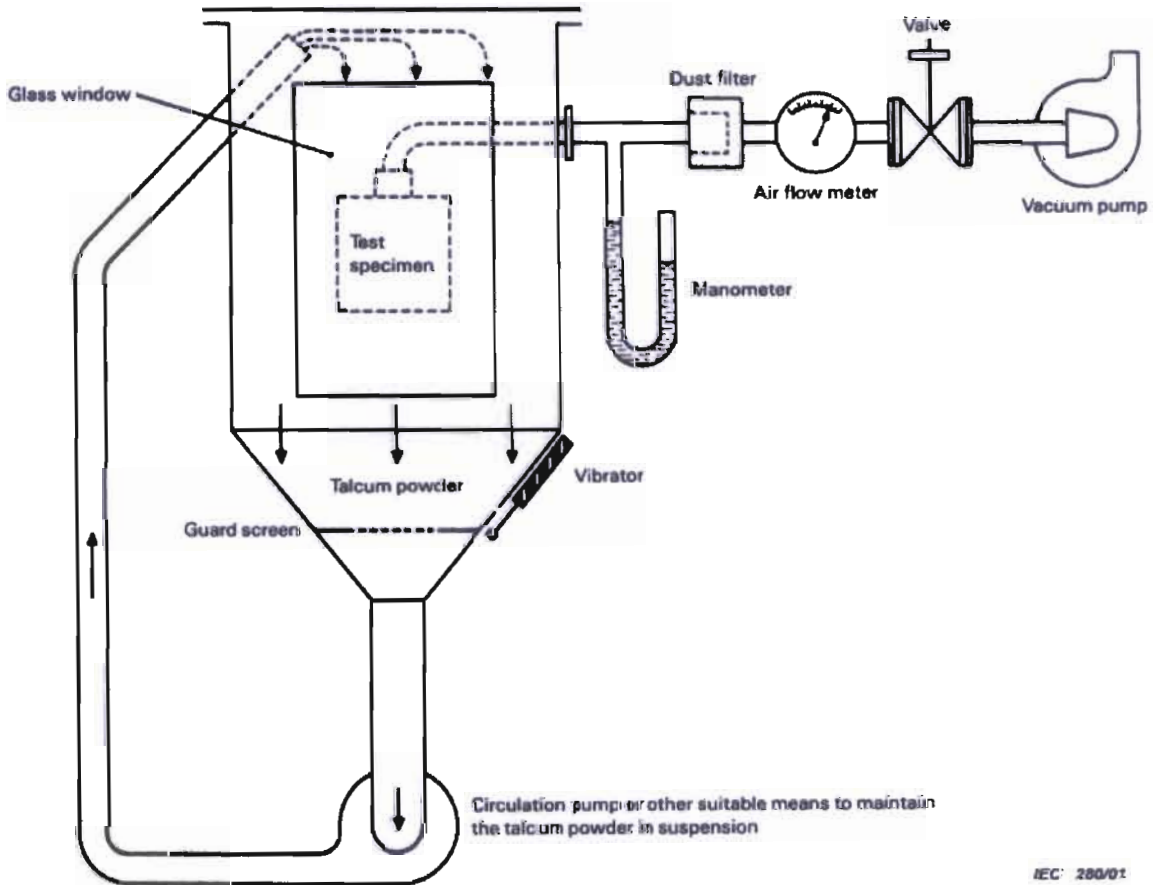
**APPENDIX 1:****Table VII— Test means for the tests for protection against solid foreign objects**

First characteristic numeral	Test means (object probes and dust chamber)	Test force	Test conditions, see
6	Dust chamber Figure 2, with underpressure	—	13.4 + 13.6

**Table VIII— Test means and main test conditions for the tests for protection against water**

Second characteristic numeral	Test means	Water flow rate	Duration of test	Test conditions, see
7	Immersion tank Water-level on enclosure: 0, 15 m above top 1 m above bottom	—	30 min	14.2.7

## APPENDIX 1:



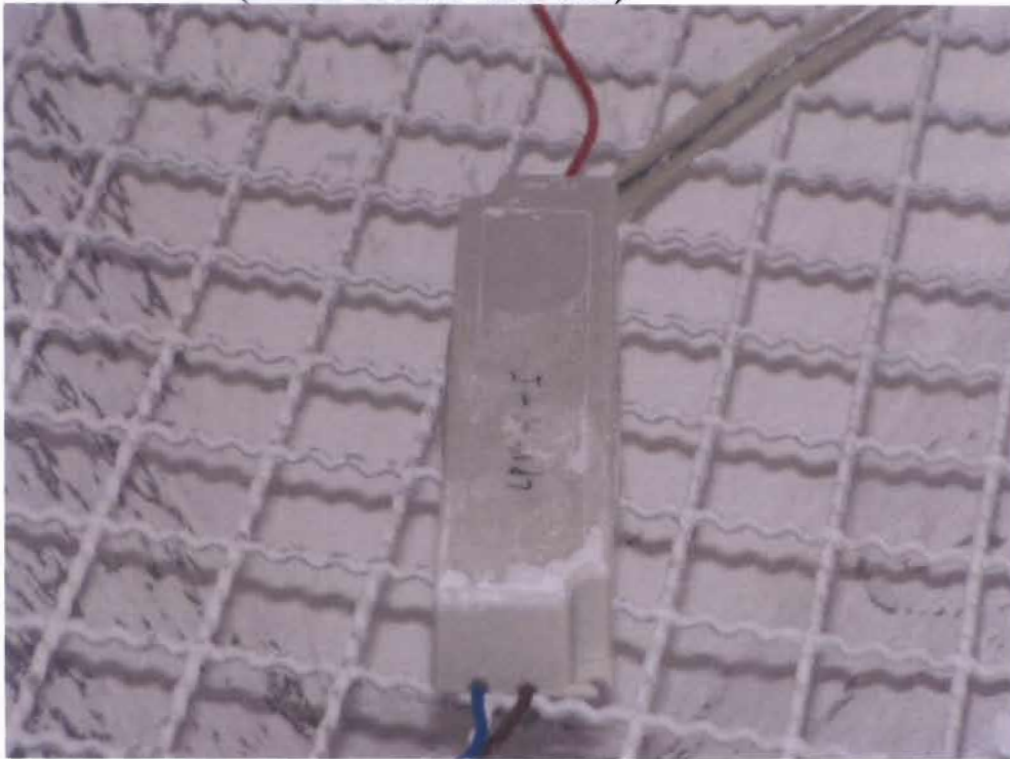
IEC: 280/01

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

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

**APPENDIX2:**

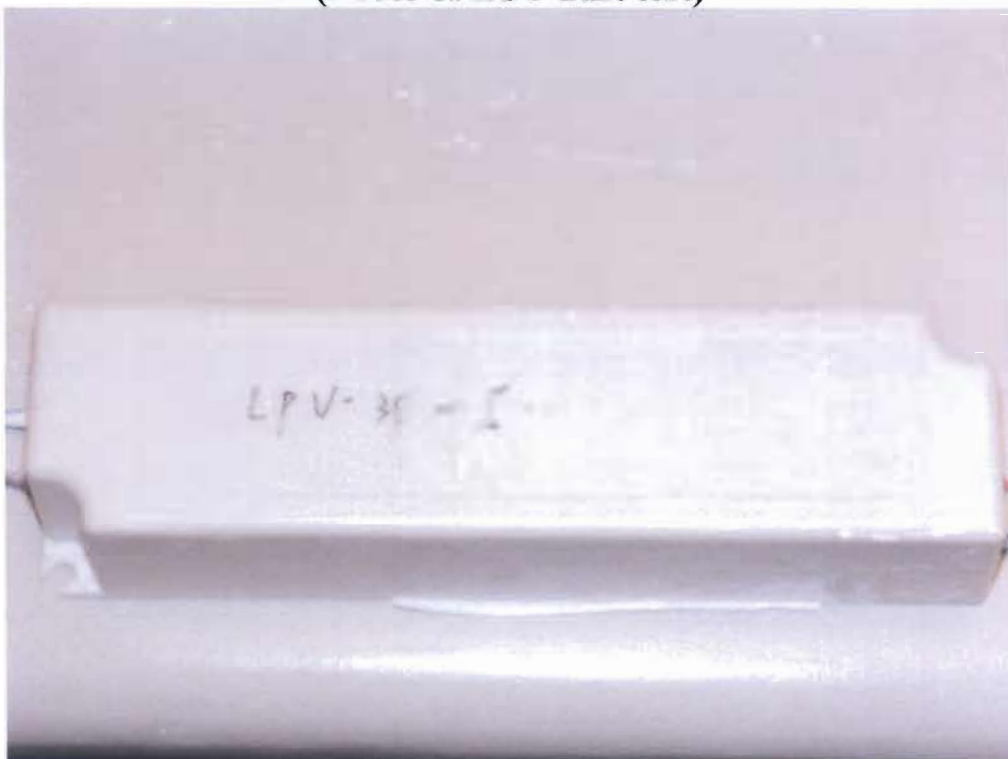
**(Photo of EUT dust test)**





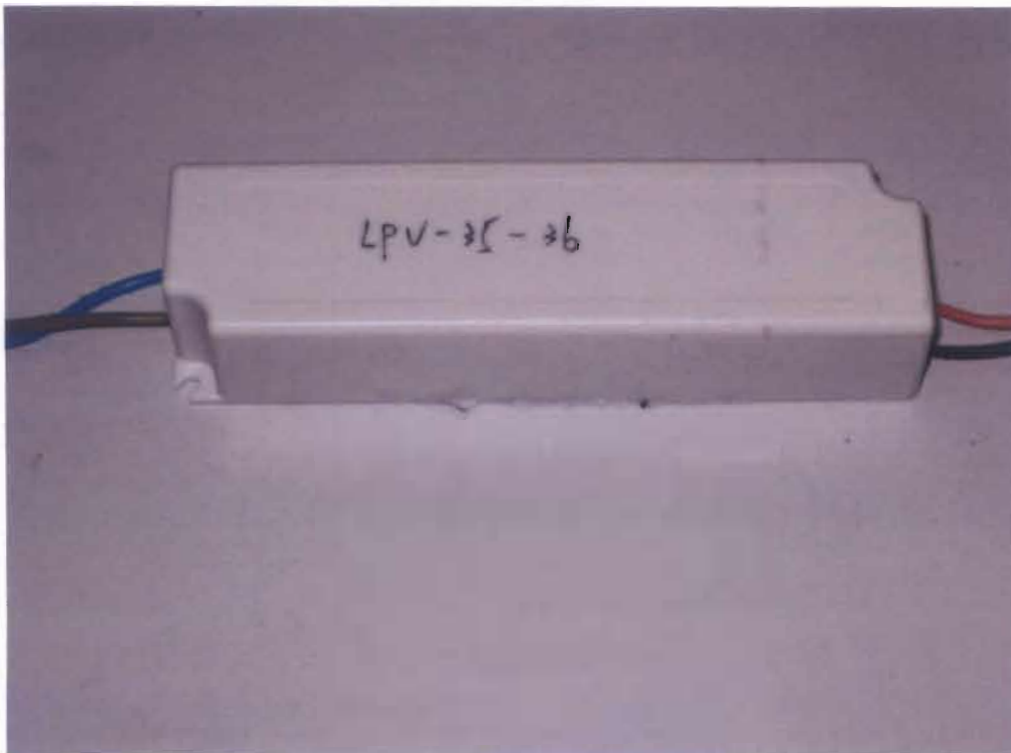
**APPENDIX2:**

**(Photo of EUT dust test)**



**APPENDIX2:**

**(Photo of EUT Water test)**



**APPENDIX2:**

**(Photo of EUT Water test)**

