

UL TEST REPORT AND PROCEDURE

Standard: UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements)
CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)

Certification Type: Component Recognition

CCN: QQQQ2, QQQQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)

Product: Switching Power Supply for Building-in

Model: DS2000-3, DS2000-3-002

Rating: Model DS2000-3

INPUT:

AC 100-200 V, 50/60 Hz, 15 A Max
AC 200-240 V, 50/60 Hz, 15 A Max

OUTPUT:

1200 W at AC 100-200 V
+12 V 97.5 A Max
+3.3Vsb 9.0 A Max

2000 W at AC 200-240 V
+12 V 164.2 A Max
+3.3 Vsb 9.0 Max

Model DS2000-3-002

INPUT:

AC 100-200 V, 50/60 Hz, 15 A Max
AC 200-240 V, 50/60 Hz, 15 A Max

OUTPUT:

1200 W at AC 100-200 V
+12 V 97.5 A Max
+5 Vsb 6.0 A Max

2000 W at AC 200-240 V
+12 V 164.2 A Max
+5 Vsb 6.0 Max

Maximum continuous output power at AC 100-200 V (wide range input voltage) is 1200 W.

Maximum continuous output power at AC200-240 V high line input voltage is 2000 W.

Applicant Name and Address:	ASTEC INTERNATIONAL LTD - PHILIPPINE BRANCH 16TH FL LU PLAZA 2 WING YIP ST KWUN TONG KOWLOON HONG KONG
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This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: Suki Kwong

Reviewed by: Brian Wong

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
 - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
 - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
 - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

The equipment are Class I power supply for building-in provided with metal enclosure and ventilated by two fans. For use in Information Technology Equipment.

Model Differences

Model DS2000-3-002 is identical to Model DS2000-3 except for the stand-by output. The output ratings of Model DS2000-3 is +3.3 Vsb, 9.0 A; while the output ratings of Model DS2000-3-002 is +5.0 Vsb, 6.0 A.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : pluggable A
- Operating condition : continuous
- Access location : To be determined in end system
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10%
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Class I (earthed)
- Considered current rating of protective device as part of the building installation (A) : 15A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : 3048
- Altitude of test laboratory (m) : <2000
- Mass of equipment (kg) : < 18
- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 50°C
- The means of connection to the mains supply is: Pluggable A. Cord set not provided with the equipment.
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Appliance inlet
- The class of laser product is: Class 1 (I)
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (which includes all European national differences, including those specified in this test report).
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual
- LEDs provided in the product are considered low power devices: Yes
- This equipment is intended to operate in a "normal" environment (offices and homes).
- This equipment is not an electromedical equipment intended to be physically connected to a patient.
- The Clearances and Creepage Distances have additionally been assessed for suitability up to maximum 10,000 ft (3048m) elevation. Clearance distances are calculated according to IEC60661-1

table A-2, multiplier factor is 1.15.

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following Production-Line tests are conducted for this product: Electric Strength, Earthing Continuity
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-SELV: 361 Vrms, 521 Vpk, Primary-Earthed Dead Metal: 359 Vrms, 521 Vpk
- The following secondary output circuits are SELV: All output(s)
- The following secondary output circuits are at hazardous energy levels: +12V
- The following secondary output circuits are at non-hazardous energy levels: +3.3Vsb (for Model DS2000-3), +5.0 Vsb (for Model DS2000-3-002)
- The power supply terminals and/or connectors are: Not investigated for field wiring
- The maximum investigated branch circuit rating is: 20 A
- The investigated Pollution Degree is: 2
- Proper bonding to the end-product main protective earthing termination is: Required
- An investigation of the protective bonding terminals has: Been conducted
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJ2 insulation system with the indicated rating greater than Class A (105°C): T5 and T6 Class 155 (F) designated 155-10C
- The following end-product enclosures are required: Mechanical, Fire, Electrical
- The maximum continuous power supply output (Watts) relied on forced air cooling from: min. 7.92 W fan (2 provided) at min. 19.75 cfm each located beside the EMI PWB and with airflow direction blowing air out of the front panel.
- The equipment is suitable for direct connection to: AC mains supply
- This power supply has a secondary output (+12V) exceeding 240VA. When installing into the end system care must be taken that this secondary output and the appropriate wires may not be touched.
- The disconnection from the line must be considered in the end system.
- This equipment is classified as Level 6 as defined by UL 60950-1, Second Edition and CAN/CSA-C22.2 No.60950-1-07.
- This equipment was not evaluated for end system mounting. When installed in the end system, the proper evaluation should be considered.
- The following cautionary markings shall be provided in the servicing instructions: Caution: Double Pole / Neutral fusing.
- This power supply is not equipped with a power cord. A safety agency approved power cord and plug with appropriate wire gauge for the rated input current must be provided by the end system manufacturer.
- Fan airflow direction is reversible (air flows towards the inside of the power supply) at derated maximum continuous output power of 1730W up to 50 °C ambient. This condition applies only for Fan Type 9GV3612P3J03 manufactured by Sanyo Denki Co Ltd.
- Fan airflow direction is reversible at maximum continuous output power of 2000W at derated ambient of 25 °C. This condition applies only for Fan Type 9GV3612P3J03 manufactured by Sanyo Denki Co Ltd.