

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:	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	Switching power supply
Model:	DS1100PED-3 & DS1100PED-3-A
Rating:	Model DS1100PED-3 AC Input: 12A 100-240V 50/60Hz DC-outputs: +12V 91.6A, +12Vsb 3.0A, Total output power not to exceed 1100W at 100-240Vac input Model DS1100PED-3-A AC Input: 6.5A 200-240V 50/60Hz DC-outputs: +12V 91.6A, +12Vsb 3.0A, Total output power not to exceed 1100W at 200-240Vac input
Applicant Name and Address:	ASTEC INTERNATIONAL LIMITED 16TH FLOOR, LU PLAZA 2 WING YIP STREET, KWUN TONG, KOWLOON, HONG KONG

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: Tony Yeung

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 is switching power supply, intended for building in as a component used in information technology equipment which employs with isolating transformers. Reinforced insulation is provided between primary and secondary. Basic insulation is provided between primary and PE (Protective Earth).

Model Differences

Models DS1100PED-3-A is identical to model DS1100PED-3 except for the input rating and AC inlet.

Model DS1100PED-3 employed SS-120B AC inlet and have Input Rating: 12A 100-240V 50/60Hz while model DS1100PED-3-A employed SS-120 AC inlet and have Input Rating: 6.5A 200-240V 50/60Hz.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : pluggable A
- Operating condition : continuous
- Access location : To be considered 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) : 20A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : 3048 meters
- Altitude of test laboratory (m) : less than 2000 meters
- 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: Model DS1100PED-3 (Forward Fan Airflow) 50°C for 1100 W; 55°C for 800 W; 60°C for 600 W Model DS1100PED-3 (Reverse Fan Airflow) 40°C for 1050 W at 90 Vac input or 1100 W at 100-240 Vac input; 50°C for 950 W at 90 Vac input & 1000 W

at 100-240 Vac input; 55°C for 800 W at 100-240 Vac input; 60°C for 600 W at 100-240 Vac input; 65°C for 400 W at 100-240 Vac input Model DS110PED-3-A (Forward and Reverse Fan Airflow) 50°C for 1100 W; 55°C for 800 W; 60°C for 600 W

- The means of connection to the mains supply is: Pluggable A, no cord set provided
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Appliance inlet
- 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
- The power supply in this equipment was: Investigated to IEC 60950-1. As part of the investigation of this product, the power supply and its test report were reviewed and found to comply with IEC 60950-1.
- The class of laser product is: Class 1 (I)

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 creepage and clearance distances have additionally been assessed for suitability up to 3048 meters.
- The secondary output connector has not been evaluated for field connections.
- The power supply has been evaluated for use in Class 1 equipment as defined in UL 60950-1 Second edition and CAN/CSA C22.2 No. 60950-1-07. An additional evaluation shall be made if the power supply is intended for use in other than Class 1 equipment.
- The following Production-Line tests are conducted for this product: Electric Strength ,
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-SELV: 483 Vrms, 851 Vpk , Primary-Earthed Dead Metal: 481 Vrms, 851 Vpk
- The following secondary output circuits are SELV: +12V, +12Vsb
- The following secondary output circuits are at hazardous energy levels: +12V
- The following secondary output circuits are at non-hazardous energy levels: +12Vsb
- The power supply terminals and/or connectors are: Not investigated for field wiring except AC inlet
- 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 OBJY2 insulation system with the indicated rating greater than Class A (105°C): examples: T111 and T110 (Class F)
- The following end-product enclosures are required: Mechanical , Fire , Electrical
- The equipment is suitable for direct connection to: AC mains supply
- The maximum investigated branch circuit rating is: 30 A ,
- No energy hazard (below 240VA) exists at the PSU outputs in the removed condition.
- Forward fan airflow direction is blowing from Output to Input while Reverse fan airflow direction is blowing from Input to Output side of the power supply.
- The following Production-Line tests are conducted for this product: Earthing Continuity, Electric

Strength

- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-SELV: 486 Vrms, 866 Vpk, Primary-Earthed Dead Metal: 485 Vrms, 866 Vpk
- The following secondary output circuits are SELV: +12V, +12Vsb
- The following secondary output circuits are at hazardous energy levels: +12V
- The following secondary output circuits are at non-hazardous energy levels: +12Vsb
- The power supply terminals and/or connectors are: Not investigated for field wiring except AC inlet
- The maximum investigated branch circuit rating is: 30 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 OBJY2 insulation system with the indicated rating greater than Class A (105°C): examples: T111, T112 and T110 (Class F)
- The following end-product enclosures are required: Mechanical, Fire, Electrical
- The equipment is suitable for direct connection to: AC mains supply