

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:	DC-DC Switching Power Supply for Building-in
Model:	DS1100TDC-3-XXX, DS1100TDC-3-413, DS1100TDC-3-405 where -XXX except -413 and -405 can be any alphanumeric character, symbol or blank that represents customer identity that do not affect safety.
Rating:	For model DS1100TDC-3-XXX Input: DC -44V - -60V; 32A max For model DS1100TDC-3-413 Input: DC -44V - -60V; 30A max For model DS1100TDC-3-405 Input: DC -44V - -60V; 32A max Output: DC +12V, 91.67A max.; DC +3.3Vsb, 3A max. Maximum Output Power: 1100W
Applicant Name and Address:	ASTEC INTERNATIONAL LTD 16TH FL LU PLAZA 2 WING YIP ST 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.

Issue Date: 2015-05-22
2016-01-29

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Report Reference #

E186249-A293-UL

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: Paul Wan

Reviewed by: Patty Li

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

This equipment is a DC-DC switching power supply intended for building-in as a component used in Information Technology Equipment which employs isolating transformers. Basic insulation is maintained between input circuit and Protective earth as well as between input and output circuits.

This equipment except models DS1100TDC-3-413 and DS1100TDC-3-405 are operating with forward and reverse fan airflow.

Forward fan direction refers to airflow direction from DC output connector going out to input connector. Models DS1100TDC-3-413 and DS1100TDC-3-405 are operating in forward fan airflow only.

Model Differences

Model DS1100TDC-3-413 is identical to model DS1100TDC-3-XXX except input current rating, input connector with forward fan airflow direction only.

Model DS1100TDC-3-405 is identical to model DS1100TDC-3-XXX except Front panel, input connector and fan airflow direction.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : not directly connected to the mains
- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : No direct connection
- 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) : N/A (Consider in end system)
- Pollution degree (PD) : PD 2

- IP protection class : IP X0
- Altitude of operation (m) : 3,048 (10,000ft)
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : less than 2 kg
- Clearance distance was evaluated for operating altitude of upto 3,048m (10,000ft) above sea level. IEC 60664-1, Table A.2, correction factor 1.15 was considered for the computation of clearance distance.
- DC input voltage is considered TNV-2.
- The Power Supply was evaluated to be connected to DC mains supply of -40V - -60Vdc including the consideration of -75V float voltage.
- Basic insulation is maintained between input circuit and Protective earth as well as between input and output circuits.
- The means of connection to the mains supply is: to be considered in end system.
- The product is intended for use on the following power systems: DC mains supply.
- The equipment disconnect device is considered to be: considered in the end system.
- 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 product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 +A1:2010 +A12:2011 +A2:2013.
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50°C

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:

- This unit contains secondary output (+12V) exceeding 240VA. When installing into the end system, care must be taken that such output and its connection wire must not be touched.
- No energy hazard (below 240VA exists in the power supply at the removed condition).
- 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-Earthed Dead Metal: 89.7 Vrms, 203 Vpk, Primary-SELV: 80.4 Vrms, 203 Vpk
- The following secondary output circuits are SELV: +12V and +3.3Vsb.
- The following secondary output circuits are at hazardous energy levels: +12V.
- The following secondary output circuits are at non-hazardous energy levels: +3.3Vsb.
- The power supply terminals and/or connectors are: Not investigated for field wiring.
- The investigated Pollution Degree is: 2.
- An investigation of the protective bonding terminals has: Not been conducted and must be considered in end system.
- The following end-product enclosures are required: Electrical, Fire, Mechanical