

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:	73-936-0XXX where XXX can be 125 or 048 or 080 or 250 or 024 or 012 or 200 or 32
Rating:	Input: 395Vdc \pm 5V, 8.5A Model 73-936-0125 Output: +125Vdc, 24A Max Maximum Output Power is 3000W Model 73-936-0048 Output: +48Vdc, 62.5A Max Maximum Output Power is 3000W Model 73-936-0080 Output: +80Vdc, 37.5A Max Maximum Output Power is 3000W Model 73-936-0250 Output: +250Vdc, 12A Max Maximum Output Power is 3000W Model 73-936-0024 Output: +24Vdc, 120A Max Maximum Output Power is 2880W Model 73-936-0012 Output: +12Vdc, 200A Max Maximum Output Power is 2400W Model 73-936-0200 Output: +200Vdc, 15A Max Maximum Output Power is 3000W Model 73-936-0032 Output: +32Vdc, 90A Max Maximum Output Power is 2880W Output: +36Vdc, 83.33A Max Maximum Output Power is 3000W
Applicant Name and Address:	ASTEC INTERNATIONAL LTD 16TH FL LU PLAZA

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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: Brian Wong / Project Handler

Reviewed by: Tony Yeung / Project Reviewer

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

Model 73-936-0XXX series is a component type building in power supply intended for use in Class I application.

Reinforced insulation is provided between primary and secondary circuits and basic insulation is provided between primary circuits and earth as well as secondary circuit and earth.

Model Differences

Model 73-936-0125 is exactly the same as model 73-936-0048 except for output ratings, Power transformer (TX100, TX200, TX300), Mini-Aux transformer, secondary PWB and molded plastic insulator in control board.

Model 73-936-0080 and 73-936-0250 are exactly the same as model 73-936-0125 except for output ratings and Power transformers (TX100, TX200, TX300).

Model 73-936-0024 is exactly the same as model 73-936-0048 except for PWB (Sync_rect, Output board) output ratings and Power transformers (TX100, TX200, TX300).

Model 73-936-0012 is exactly the same as model 73-936-0024 except for output ratings and Power transformers (TX100, TX200, TX300) with minor change in non-safety critical secondary components.

Model 73-936-0200 is exactly the same as model 73-936-0250 except for output ratings and Power transformers (TX100, TX200, TX300) with minor change in non-safety critical secondary components.

Model 73-936-0032 is exactly the same as model 73-936-0024 except for output ratings and Power transformers (TX100, TX200, TX300) with minor change in non-safety critical secondary components.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : to be considered in end use
- Operating condition : continuous
- Access location : to be considered in end use
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : 395Vdc \pm 5V
- 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) : 5000m
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : <3
- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 50°C full load. Output power decreases at 2.5% per °C from 50°C to 70°C ambient temperature.
- The means of connection to the mains supply is: to be considered on end use
- The product is intended for use on the following power systems: DC mains supply
- The equipment disconnect device is considered to be: Input Connector
- 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 secondary output of 73-936-0048, 73-936-0024, 73-936-0012 and 73-936-0032 are SELV while 73-936-0125, 73-936-0250, 73-936-0200 and 73-936-0080 are Non-SELV.
- These power supplies contain output exceeding 240VA, when installing into end system, care must be taken that the output and associated wire(s) may not be touched.
- All tests were performed with Forced Air Cooling with 22.8CFM airflow blowing towards the power supply module.
- Additional spacing construction requirement from marketing and product design were considered on these power supplies. Refer to attached Spacing Construction Requirement document
- All 73-936-0XXX model series shall solely be used for iHP Rack power supply model 73-959-0001 or 73-958-0001 (end system rack)
- These products have been investigated only as a component part for use in equipment where the suitability of the combination is subject to end product investigation.

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
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Refer to enclosure Electric Strength Test Requirement document
- The following secondary output circuits are SELV: +48Vdc for 73-936-0048, +24Vdc for 73-936-0024, +12Vdc for 73-936-0012 and +32Vdc for 73-936-0032
- The following secondary output circuits are at hazardous energy levels: +125Vdc (73-936-0125), +48Vdc (73-936-0048), +80Vdc (73-936-0080), +250Vdc (73-936-0250), +12Vdc (73-936-0012),

+200Vdc (73-936-0200), +32Vdc (73-936-0032)

- 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
- An investigation of the protective bonding terminals has: to be considered on end system
- 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): Power Transformers TX100, TX200, TX300 (Class F) and Gate Drive Transformers TX800, TX801, TX802 (Class F)
- The maximum continuous power supply output (Watts) relied on forced air cooling from: 24000W (73-936-0012), 2880W (73-936-0024), 3000W (all other models), fan at 22.8cfm airflow blowing towards the power supply
- The equipment is suitable for direct connection to: DC mains supply
- The following secondary output circuits are SELV accessible in an outdoor location: +48V, +24V, +12V, +32V
- Additional evaluation has been considered on output ratings for model 73-936-0125: 150V, 20A ; for model 73-936-0048: 57.6V, 52.09A; for model 73-936-0080: 96V, 31.25A; for model 73-936-0024: 28.8V, 100A; for model 73-936-0250: 300V, 10A; for model 73-936-0012: 14.4V, 166.67A; for model 73-936-0200: 240V, 12.5A, for model 73-936-0032: 38.4V, 78.13A
- When these power supplies installed in Class I application: Earthing connection and continuity test shall be checked in end product.
- Front panel and Handle temperature must be considered in end-system application.