

Description**UL TEST REPORT AND PROCEDURE**

Standard:	UL 60601-1, 1st Edition, 2006-04-26 , CSA CAN/CSA-C22.2 No. 601.1-M90 (R2005)
Certification Type:	Component Recognition
CCN:	QQHM2 / QQHM8
Complementary CCNs:	
Product:	Component Power Supply
Model:	HWS600-5/ME HWS600-12/ME HWS600-15/ME HWS600-24/ME HWS600-48/ME HWS600-24/MESC
Rating:	All Models (Except Model HWS600-24/MESC): Input Rated: 100-240V~, 50/60Hz 8.2A Model HWS600-24/MESC: Input Rated: 100-240V~, 50/60 Hz, 9.0A Output Rated: HWS600-5/ME - as above except: Output: 5V (4-6V) 120A DC HWS600-12/ME - as above except: Output: 12V (9.6-14.4V) 53A DC HWS600-15/ME - as above except: Output: 15V (12-18V) 43A DC HWS600-24/ME - as above except: Output: 24V (19.2-28.8V) 27A DC HWS600-48/ME - as above except: Output: 48V (38.4-52.8V) 13A DC HWS600-24/MESC - as above except: Output: 24V (19.2-28.8V) 27A DC
Applicant Name and Address:	TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER R&D DIV 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA 940-1195, JAPAN

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 as applicable.

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

Prepared by: Atsushi Fuchita, Project Reviewed by: Thorsten Creter, Reviewer

Handler

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

Component Power Supplies

Refer to the Report Modifications page for any modifications made to this report.

Model Differences

All models with the Model HWS600/ME Series are identical with exception transformer winding ratios and secondary components that account for the differences in the output voltage and current ratings.

Model HWS600-24/MESC is identical to the Model HWS600/ME series with exception to a different Fan and output de-rating curve.

Additional Information

The original investigation of the Model HWS600/ME Series was based upon a CB Test Report issued by BSI. The evaluation of Model HWS600-24/MESC was based upon similarities to Model HWS600/ME Series.

Technical Considerations

- The product was investigated to the following additional standards: CAN/CSA C22.2 No. 601.1-M90 (R1997), CAN/CSA C22.2 No. 601.1S1-94, and CAN/CSA C22.2 No. 601.1B-98 (National Differences for Canada)
- The following additional investigations were conducted: None
- The product was not investigated to the following standards or clauses: Clause 52.1, Programmable Electronic Systems (IEC 601-1-4), Clause 48, Biocompatibility (ISO 10993-1), Clause 36, Electromagnetic Compatibility (IEC 601-1-2)
- The following accessories were investigated for use with the product: None
- The product is Classified only to the following hazards: Shock, Fire, Casualty
Software is relied upon for meeting safety requirements related to mechanical, fire and shock: No
The product is suitable for use in the presence of a flammable anesthetics mixture with air or oxygen or with nitrous oxide: No

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:

- During the BSI CB investigation the item tested was Model HWS600-24/ME. The measurements recorded in this Report (other than results taken from the above TUV Reports) only relate to the tested item detailed above and demonstrate conformity with the stated specifications.

It should be noted that the power supply has been assessed as a component part. It installer's responsibility to ensure that the final installation is in accordance with the Densei Lambda HWS 300o600/ME Series Instruction Manual, the relevant specifications sheets and that it is in compliance with IEC 60601-1.

The residual voltage retained by internal components was found to drop below the limit 60V dc 1 minute 30 seconds after disconnection of the supply. Access time, for a service engineer, must therefore be taken into consideration for the installation, to ensure compliance with IEC 60601-1/EN 60601-1 Sub-clause 15c.

The power supply detailed in this Report was rated, by the Client, for basic insulation requirements between the mains input and DC outputs, with respect to IEC 60601-1/EN 60601-1/UL 60601-1 applications.

Although the equipment was not marked with the following a label drawing was provided show:

1. The symbol.
2. The word 'max' adjacent to the current consumption.
7. The suffix ME is used to identify the medical versions of these power supplies and is shown on the rating label, the instruction manual (Version Dwg no: A231-04-80/ME) and on the specifications page.

The leakage current test results as per section 19 were accepted incorporating 19.5DV.1. The power supplies MUST be enclosed within a nonconductive material.

The equipment has been classified by the manufacturer for installation into a plastic enclosure to meet the leakage requirements of 19.5DV.1.

Only equipment incorporating all of the above modifications can be considered to comply.

Double pole fusing was not provided within the range of Power Supplies. The need for double pole fusing shall be evaluated as part of the end-installation.

Markings and instructions	
Clause Title	Marking or Instruction Details
Company identification	Classified or Recognized company's name, Trade name, Trademark or File
Model	Model number
Supply Connection	Voltage range, ac/dc, phases if more than single phase
Direct current	— — —
Power Input	Amps, VA, or Watts
Output	Rated output voltage, power, frequency.
Mode of Operation	Duty Cycle __ On __ Off

Special Instructions to UL Representative

N/A

Production-Line Testing Requirements**Test Exemptions** - The following models are exempt from the indicated test

Test	Exemption Specifics	Details
Grounding Continuity	The following models are exempt from the indicated test:	N/A
Dielectric Voltage Withstand	The following models are exempt from the indicated test:	N/A
Patient Circuit Dielectric Voltage Withstand	The following models are exempt from the indicated test:	All models
Solid-State Components	The following solid-state components may be disconnected from the remainder of the circuitry during either Dielectric Voltage Withstand Test:	N/A

Sample and Test Specifics for Follow-Up Tests at UL

The following tests shall be conducted in accordance with the Generic Inspection Instructions

Plastic Enclosure or Part	Test	Sample(s)	Test Specifics
None	N/A	N/A	N/A