

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2007-03-27 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Power Supplies for Information Technology Equipment Including Electrical Business Equipment
CCN:	QQGQ, QQGQ7
Product:	Programmable Power Supply
Model:	GEN3300W Series - Models GEN8-400, GEN 10-330, GEN15-220, GEN20-165, GEN30-110, GEN40-85, GEN60-55, GEN80-42, GEN100-33, GEN150-22, GEN200-16.5, GEN300-11, GEN600-5.5 PU3300W Series - Models PU8-400, PU10-330, PU15-220, PU20-165, PU30-110, PU40-85, PU60-55, PU80-42, PU100-33, PU150-22, PU300-11, PU600-5.5
Rating:	Input: 1. Single phase units: 190-240V, 50/60Hz, 22A; 2. Three phase units (option 1): 190-240V; 3W+ , 50/60Hz, 12.5A; 3. Three phase units (option 2): 380-415V; 3W+ , 50/60Hz, 6.5A; Output: From 0-8VDC/400A up to 0-600VDC/5.5A, 3300 Watt max.
Applicant Name and Address:	NEMIC-LAMBDA LTD INDUSTRIAL ZONE P O BOX 500 20101 KARMIEL ISRAEL

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 Underwriters Laboratories Inc. ('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.

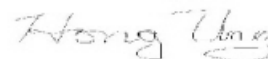
The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

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

Issue Date: 2007-11-28 Page 2 of 29
2010-11-23

Report Reference # E155698-A5-UL

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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 GEN3300W series is a family of power supplies having rated output from 0-8VDC/400A up to 0-600VDC/5.5A with total output power 3300 Watt maximum or less.

The units evaluated for use in TN power systems.

The units are Class I, evaluated for use in Installation Category II and Pollution Degree 2 environments.

The units have Hazardous Energy Level output and intended to be installed in RAL.

All units may be adjusted by operator to 105% of the rated output voltage.

Units with output rated up to (and including) 40VDC considered as SELV output units.

Units with output rated 60VDC and more considered as Secondary Hazardous voltage output units.

The units consist of an aluminum box-type frame enclosure and cover.

The following common parts installed (or may be installed-optional parts) inside of enclosure:common parts:-

Input board with soldered input connector (1 phase IA616; 3phase IA617; 3 phase IA618)-

Power factor control (PFC) board (IA608 or IA619)-

BIAS board (IA620)-

Two DC/DC converter boards connected in parallel(IA613 for output 8V-100V or IA614 for output 150V-600V)-

Control board(IA615)-

Output filter assembly(IA623 for output 8-100V or IA624 for output 150-600V)-

Display assembly(IA621 and indication voltage and current outputs)-

Fans assembly (board IA622 and three fans)

optional parts:-Isolated analog control board (IA631), GPIB board (IA630) and LAN board (IA672)

The models constructed of 1 phase input board may be connected to Line and Neutral in case of single phase power system or between two lines in case of multiphase power system.

The power connectors are UL certified for field wiring.

The units are suitable for maximum ambient operating temperature 50°C at maximum load.

The units are suitable for maximum operational altitude up to 3000m.

Model Differences

The GEN3300W series is a family of power supplies having:

Three possible configuration of the Input board

1 phase, rated 190-240VAC

3 phase, rated 190-240VAC (phase-to-phase)

3 phase, rated 380-415VAC (phase-to-phase)

Output differences of models from 0-8VDC/400A (GEN8-400) up to 0-600VDC/5.5A (GEN600-5.5)

Models from PU3300W series are identical in electrical and mechanical construction to respective models

from GEN3300W except model names.

Technical Considerations

- Equipment mobility : permanent connection
- Connection to the mains : permanent connection
- Operating condition : continuous
- Access location : restricted access location
- 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 (A) : 20A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 3000
- Altitude of test laboratory (m) : below 2000
- Mass of equipment (kg) : < 18
- The product is suitable for use up to 3000 m altitude.
- 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: Permanently connected (field wired)
- The product is intended for use on the following power systems: TN

- The following are available from the Applicant upon request: Specific data sheets for LED indicators that are class I and operate at wavelength in the 400-710 nm range. Installation (Safety) Instructions / Manual

Additional Information

1. Input boards
The input board are constructed of UL approved input connector intended for factory and field wiring connection, EMI filter, inrush current protection and diode rectifier. There are three types of input boards:

1 phase, for units rated 190-240VAC

3 phase, for units rated 190-240VAC

3 phase, for units rated 380-415VAC
Input board provide DC voltage for PFC (Power Factor Control) board

2. Power factor control (PFC) board

The PFC board includes Power Factor Correction circuit
There are two types of PFC board:

For 1 phase and 3 phase units rated 190-240VAC

For 3 phase units rated 380-415VAC
The PFC board provides 380VDC voltage for DC/DC converter boards and BIAS board

3. DC/DC boards

The DC/DC board includes DC/DC converter
There are two types of DC/DC board:

For units having output voltage from 8VDC up to (and including) 100VDC

For units having output voltage from 150VDC up to (and including) 600VDC
In each unit two DC/DC boards are assembled in parallel to provide full output power 3300W (Each board 1650W)
Each type of the DC/DC converter are the same besides the mains transformer construction and winding ratio.

4. BIAS

The BIAS board is same for all models.
The BIAS board includes auxiliary switching power supply providing DC voltage for internal circuits.
BIAS power supply provides three output circuits. One output is connected to SELV control (RS232) circuits. The other two outputs are connected to control circuits. Control circuits are regarded as SELV for units up to 40V output and Secondary Hazardous for all other power supply models.
Bias board provides reinforced insulation between the SELV output and the other two output which may be connected to Hazardous circuits in the non SELV output models.

5. Control board

The control board is same for all models.
The control board includes control and adjust circuits for maintenance of functioning of DC/DC boards. The control board provides reinforced insulation between RS232/RS485 I/O circuits and the different power supply modules.

6. Output filter assembly

The output filter assembly includes output filter and output current sense (shunt)
There are two types of output filter assembly:

For units having output voltage from 8VDC up to (and including) 100VDC

For units having output voltage from 150VDC up to (and including) 600VDC
The first type of output filter assembly has bus-bar type of output terminals.

The second type of output filter assembly has UL approved connector intended for field wiring connection.

7. Display assembly

The display assembly is same for all models

The display assembly include digital display and components for management of the power supply.

8. Fans assembly

The fans assembly is same for all units

The fans assembly consists of fans bracket, three same fans and fans distribution board.

This UL Test Report is a reissue of UL Test Report Ref No. E155698-A5-UL-1 due to upgrading the Test Report from UL 60950-1 1st Edition to UL 60950-1 2nd Ed. Some clauses are addressed with comments as well as "Pass" or "N/A" verdicts.

In addition to the standard upgrade the following revisions were made to the UL Test Report:

- Addition of alternates surge absorber to the critical component table..

Markings and instructions

Clause Title	Marking or Instruction Details
1.7.1 Power rating - Ratings	Ratings (voltage, frequency/dc, current)
1.7.1 Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
1.7.1 Power rating - Model	Model Number
1.7.6 Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
2.7.6 Warning to service personnel	"CAUTION: Double pole/neutral fusing"

Special Instructions to UL Representative

N/A