

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	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)
<b>Certification Type:</b>	Listing
<b>CCN:</b>	QQGQ, QQGQ7 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	AC-DC Power Supply
<b>Model:</b>	GENESYS+5000W series a) Gxxx-yyy-z-v-u-w (xxx=010-600; yyy=8.5-500; z=1-3; v=1-3; u=1-2; w=1-2): Ordinary unit. b) GBxxx-yyy-z-v-u-w (xxx=010-600; yyy=8.5-500; z=1-3; v=1-3; u=1-2; w=1-2): Blank unit c) GSSxxx-yyy-z-v-u-w (xxx=010-600; yyy=8.5-500; z=1-3; v=1-3; u=1-2; w=1-2): Buster unit Note: see "General product information" and "Definition of variables" in Model Differences section for details
<b>Rating:</b>	Input: Option 1: AC 190-240V; 3W + PE, 50/60Hz, 18.5A max.; Option 2: AC 380-415V; 3W + PE, 50/60Hz, 9.2A max.; Option 3: AC 380-480V; 3W + PE, 50/60Hz, 9.2A max.; Output: DC 0-10V/500A to DC 0-600V/8.5A, 5200 Watt max.
<b>Applicant Name and Address:</b>	TDK-LAMBDA LTD 56 HAHAROSHET STREET P.O.B. 500 KARMIEL INDUSTRIAL ZONE 2161401 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 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.

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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 GENESYS+5000W series is a family of power supplies having rated output from 0-10VDC/0-500A up to 0-600VDC/0-8.5A with total output power 5200 Watt maximum.

The GENESYS+5000W series is divided into three types of front panels and operation modes:

- a) Ordinary (full panel) units come with display, on/off switch and may be operated independently or in parallel with another Ordinary, Blank or Buster unit by manual or remote control mode.
- b) Blank units come without display, with on/off switch, and may be operated independently or in parallel with another Blank or Buster unit by remote control mode only.
- c) Buster units come without on/off switch, display and are operated by master unit only (Ordinary or Blank).

The following parts are factory installed (or may be installed - optional parts) inside enclosures:

Common parts:

Input board IA764 for input 190-240V or IA765 for inputs 380-415V and 380-480V, that includes:

- Input SELV module IA814 for input 190-240V or IA850 for inputs 380-415V and 380-480V;
- Input control module IA815 for input 190-240V or IA849 for inputs 380-415V and 380-480V;
- Input STBY module IA818 for inputs 380-415V and 380-480V.

Power factor control board (PFC) IA766 for input 190-240V, IA767 for inputs 380-415V and 380-480V.

Three DC/DC converter boards connected in parallel-IA768 for output 10V-30V, IA769 for output 300V or IA851 for output 600V, each board includes:

- DC/DC slave module IA771.

Control board IA806.

Output filter board-IA787 for output 10-100V, IA809 for output 150-300V or IA788 for output 400-600V.

Interface board-IA770.

Connect board-IA789.

Display-IA772.

Optional parts:

GPIB (IEEE) board IA834.

Anybus board IA790.

**Model Differences**

Definition of variable(s): Model configuration code

GENESYS+5000W series  
Gxxx-yyy-z-v-u-w – ordinary unit  
GBxxx-yyy-z-v-u-w – blank unit  
GSSxxx-yyy-z-v-u-w – buster unit

for xxx, yyy, z, v, u, w values see Enclosure: Miscellaneous-01

#### Technical Considerations

- Equipment mobility : movable
- Connection to the mains : pluggable B, permanent connection
- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10%
- Tested for IT power systems : Yes (Norway only)
- IT testing, phase-phase voltage (V) : 230 V
- Class of equipment : Class I (earthed)
- Considered current rating of protective device as part of the building installation (A) : 30 A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : Less than 3000 m
- Altitude of test laboratory (m) : Less than 2000 m
- Mass of equipment (kg) : 7.5 kg max
- The product was submitted and evaluated for use at the maximum ambient temperature (T<sub>ma</sub>) permitted by the manufacturer's specification of: 50°C with the following deratings: , Units with output 0-10VDC/0-500A: up to T<sub>ma</sub>=40°C, or 0-10VDC/0-450A up to T<sub>ma</sub>=50 °C; All units which include GPIB module are limited up to T<sub>ma</sub>=40°C.
- The means of connection to the mains supply is: Pluggable B or, Permanently connected (field wired)
- The product is intended for use on the following power systems: TN, TT, IT (Norway only)
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): Data ports
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual
- Units with output rated up to (but not including) 60VDC are considered to be SELV output units.
- Units with output rated 60VDC and higher are considered to be Secondary Hazardous voltage output units.
- The power I/O connectors are suitable for factory and field wiring.
- The units are suitable for maximum operational altitude up to 3000m with the following derating:  
Units with output 0-10VDC/0-500A: temperature derating is 2°C/100m or output current derating is 2%/100m (above 2000 m)

#### Additional Information

Component's description (see also Enclosure: Diagram-01):

#### 1. Input boards

The input board is constructed of UL Recognized input connector, EMI filter, inrush current protection, diode rectifier, SELV BIAS, FAN BIAS and Main BIAS.

There are two types of input boards:

- 3 phase, for units rated 190-240VAC
- 3 phase, for units rated 380-480VAC

The input board provides the DC voltage for the PFC (Power Factor Control) board.

#### 2. Power factor control (PFC) board

The PFC board includes a Power Factor Correction circuit

There are two types of PFC board:

- For 3 phase units rated 190-240VAC
- For 3 phase units rated 380-480VAC

The PFC board provides 380VDC voltage for the DC/DC boards and internal BIASs.

#### 3. Connection board

Distribute power from PFC to DC/DC boards

#### 4. DC/DC boards

The DC/DC board includes a DC/DC converter

There are three types of DC/DC boards:

- For units having output voltage from 10Vdc up to (and including) 30Vdc
- For units having output voltage 300Vdc
- For units having output voltage 600Vdc

In each unit there are three DC/DC boards which are assembled in parallel to provide full output power up to 5200W

Each type of the DC/DC board is the same besides the mains transformer construction and winding ratio.

#### 5. Control board

The control board is the same for all models.

The control board includes the control and adjusts circuits for maintenance of functioning of power supply.

#### 6. Output filter board

There are three types of the output filter boards:

- For units having an output voltage from 10Vdc up to (and including) 100Vdc
- For units having an output voltage from 150Vdc up to (and including) 300Vdc
- For units having an output voltage from 400Vdc up to (and including) 600Vdc

The output filter board 10-100Vdc has bus-bar type of output terminals.

The output filter boards 150-300Vdc and 400-600Vdc has a UL Recognized connector intended for factory and field wiring.