



Test Report issued under the responsibility of:



<b>TEST REPORT</b> <b>IEC 60950-1</b> <b>Information technology equipment – Safety –</b> <b>Part 1: General requirements</b>	
<b>Report Number</b> .....	30680241.015
<b>Date of issue</b> .....	02/04/2016
<b>Total number of pages</b> .....	147
<b>Applicant's name</b> .....	TDK-Lambda Ltd.
<b>Address</b> .....	56 Haharoshet St., P.O.B. 500 Karmiel Industrial Zone Karmiel 2161401, Israel
<b>Test specification:</b>	
<b>Standard</b> .....	IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
<b>Test procedure</b> .....	CB Scheme
<b>Non-standard test method</b> .....	N/A
<b>Test Report Form No.</b> .....	IEC60950_1F
<b>Test Report Form(s) Originator</b> ....	SGS Fimko Ltd
<b>Master TRF</b> .....	Dated 2014-02
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<b>General disclaimer:</b>	
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<b>Test item description</b> ..... :	Programmable Power Supply
<b>Trade Mark</b> ..... :	TDK-Lambda, <b>TDK-Lambda</b>
<b>Manufacturer</b> .....	TDK-Lambda Ltd., 56 Haharoshet St., P.O.B. 500 Karmiel Industrial Zone Karmiel 2161401, Israel
<b>Model/Type reference</b> .....	1. GENw-x-y-u-z 2. GENHw-x-y-u-z where w=6-600 (max. output voltage in VDC); x=1.3-200 (max. output current in A) y= blank or LAN, IEEE, IS420, IS510 (not safety relevant options) u= blank or U (not safety relevant options) z = blank, 1744-1749 z,y,u = not safety-relevant Customer model(s): GEN30-50/R
<b>Ratings</b> ..... :	Input: AC 100-240V 50/60Hz 9.5A or 19A. Output: From DC 0-6V up to DC 0-600V, from 0-200A down to 0-1.3A, 750 or 1500 Watt max. (see "Additional Information" on page 4 for details)

**Testing procedure and testing location:**

<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	
<b>Testing location/ address</b> ..... :		TÜV Rheinland of North America, Inc. 1279 Quarry Lane, Suite A, Pleasanton, CA 94566
<input type="checkbox"/>	<b>Associated CB Testing Laboratory:</b>	N/A
<b>Testing location/ address</b> ..... :		
<b>Tested by (name + signature)</b> .....		Justin Lewis
<b>Approved by (name + signature)</b> ..... :		Rahul Mehta
<input type="checkbox"/>	<b>Testing procedure: TMP/CTF Stage 1:</b>	N/A
<b>Testing location/ address</b> ..... :		
<b>Tested by (name + signature)</b> .....		
<b>Approved by (name + signature)</b> ..... :		
<input type="checkbox"/>	<b>Testing procedure: WMT/CTF Stage 2:</b>	N/A
<b>Testing location/ address</b> ..... :		
<b>Tested by (name + signature)</b> .....		
<b>Witnessed by (name + signature)</b> ..... :		
<b>Approved by (name + signature)</b> ..... :		
<input type="checkbox"/>	<b>Testing procedure: SMT/CTF Stage 3 or 4:</b>	N/A
<b>Testing location/ address</b> ..... :		

<b>Tested by (name + signature) .....</b> :		
<b>Witnessed by (name + signature).....</b> :		
<b>Approved by (name + signature).....</b> :		
<b>Supervised by (name + signature) .....</b> :		

<p><b>List of Attachments (including a total number of pages in each attachment):</b></p> <p>Attachment 1- National Differences (45 pages)</p> <p>Attachment 2- Photographs of Test Sample (6 pages)</p>	
<p><b>Summary of testing:</b></p>	
<p><b>Tests performed (name of test and test clause):</b></p> <p>Clause 1.6.2      Power Input Measurements</p> <p>Clause 1.7.11     Durability of Marking Test</p> <p>Clause 2.1.1.1    Accessibility to Energized parts</p> <p>Clause 2.1.1.7    Capacitor discharge test</p> <p>Clause 2.2        SELV circuits – voltage measurements (normal and fault conditions)</p> <p>Clause 2.6.3.4    Protective earthing trace earth fault current; Earthing test</p> <p>Clause 2.10.2     Determination of working voltage</p> <p>Clause 4.2        Mechanical strength test</p> <p>Clause 4.4        Hazardous moving parts</p> <p>Clause 4.5        Temperature rise measurements</p> <p>Clause 5.1        Touch current measurements</p> <p>Clause 5.2        Dielectric strength test</p> <p>Clause 5.3        Abnormal operating and fault Conditions</p> <p><i>testing during original evaluation according to report number 30680241.001, no further testing was deemed necessary for this upgrade of standard</i></p> <p><b>30680241.015      N/A</b></p>	<p><b>Testing location:</b></p> <p>TÜV Rheinland of North America, Inc. 1279 Quarry Lane, Suite, Pleasanton, CA 94566</p>

**Summary of compliance with National Differences:****List of countries addressed:**

Summary of compliance with National Differences to IEC 60950-1:2005+A1:2009+A2:2013 (for explanation of codes see below):

List of countries addressed: AT, DK, IT, SE, GB, US

Explanation of used codes: AT = Austria, DK = Denmark, IT = Italy, SE = Sweden, GB = United Kingdom, US = United States of America

Summary of compliance with National Differences to IEC 60950-1:2005 (2nd Edition) + A1:2009 and EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 for explanation of codes see below):

EU Group Differences, EU Special National Conditions, CA, DE, FI, IL, KR, US.

Explanation of used codes: CA = Canada, DE = Germany, FI = Finland, IL = Israel, KR = Republic of Korea, US = United States of America.

**The product fulfils the requirements of IEC 60950-1:2005 + Am 1:2009 + Am 2:2013 and EN60950-1:2006+A11+A1+A12+A2**

**Additional information:**

model	Input (A)	Output	
		V	A
GEN6-100	9.5	0-6	0-100
GEN6-200	19	0-6	0-200
GEN8-90	9.5	0-8	0-90
GEN8-180	19	0-8	0-180
GEN12.5-60	9.5	0-12.5	0-60
GEN12.5-120	19	0-12.5	0-120
GEN20-38	9.5	0-20	0-38
GEN20-76	19	0-20	0-76
GEN30-25	9.5	0-30	0-25
GEN30-50	19	0-30	0-50
GEN30-50/R	19	0-30	0-40
GEN40-19	9.5	0-40	0-19
GEN40-38	19	0-40	0-38
GEN50-30	19	0-50	0-30
GEN60-12.5	9.5	0-60	0-12.5
GEN60-25	19	0-60	0-25
GEN80-9.5	9.5	0-80	0-9.5
GEN80-19	19	0-80	0-19
GEN100-7.5	9.5	0-100	0-7.5
GEN100-15	19	0-100	0-15
GEN150-5	9.5	0-150	0-5
GEN150-19	19.5	0-150	0-19
GEN300-2.5	9.5	0-300	0-2.5
GEN300-5	19.5	0-300	0-5
GEN600-1.3	9.5	0-600	0-1.3
GEN600-2.6	19.5	0-600	0-2.6
GENH8-90	9.5	0-8	0-90
GENH20-38	9.5	0-20	0-38
GENH40-19	9.5	0-40	0-19
GENH60-12.5	9.5	0-60	0-12.5
GENH80-9.5	9.5	0-80	0-9.5
GENH150-5	9.5	0-150	0-5
GENH300-2.5	9.5	0-300	0-2.5
GENH6-100	9.5	0-6	0-100
GENH12.5-60	9.5	0-12.5	0-50
GENH30-25	9.5	0-30	0-25
GENH100-7.5	9.5	0-100	0-7.5
GENH600-1.3	9.5	0-600	0-1.3

**MODULES COMMONALITY TABLE Series GEN750 and GEN1500**

Part	GEN750 (rated 9.5A max.)	GEN1500 (rated 19A max.)	Remarks
Enclosure	Common to all 9.5A and 19 A rated inputs		
Front panel (Display)	Common to all 9.5 A and 19 A rated inputs		
Input board (EMI filter, bias supply)	Common to all 9.5 A rated inputs	Common to all 19 A rated inputs	See Notes

AC/DC board	Single board	Two boards	See Notes
Control board	Common to all 9.5 A and 19A rated inputs		
Output filter			See Notes
Isolated analog control (optional)	Common to all 9.5A and 19 A rated inputs		
GPIB (optional)	Common to all 9.5 A and 19 A rated inputs		
LAN (optional)	Common to all 9.5 A and 19 A rated inputs		
<b>Notes</b>			
<b>1. Input boards</b>			
The input board includes EMI filter, internal bias supply and inrush current protection (soft start).			
There are two types of input boards, one for the 9.5 A rated input models and the other for the 19 A rated input models. The difference between boards is mainly the EMI filter which uses very similar schematic but different chokes because of the different input currents. The internal bias supply is identical as well as the inrush current protection which differs only in the resistance and the relay current rating.			
<b>2. AC/DC board:</b>			
The AC/DC board is a 750W converter including PFC circuit and DC/DC converter on one board. Models with output voltage from 0-6V up to 0-150V use the same board with changes only in the output section components (rectifier diodes, output capacitors etc ) The transformers are constructed with the same bobbin / core and differ only by the turns ratio and wires thickness. 300V and 600V models have a different AC/DC board due to the higher output voltage and lower current. The primary side of the high voltage boards (PFC, switching mosfet's circuit) is identical to the lower voltage board, the transformer are constructed of the same bobbin / core as the low voltage, but differ by the turns ratio and the wires thickness.			
The difference between 19 A rated input models and 9.5A rated input models is by the number of AC/DC boards. The 9.5 A rated input models use a single board in a power supply while the 19 A rated input models use two identical boards connected in parallel.			
<b>3. Output Filter</b>			
There are four types of output filter boards used in both the 9.5 A and 19 A rated input models			
1. 0-6V up to 0-60V models.			
2. 0-80V up to 0-150V models.			
3. 0-300V model.			
4. 0-600V model.			













<b>MODULES COMMONALITY TABLE Series GENH</b>		
Part	GEN H 9.5 A input models	Remarks
Enclosure	Common to all GENH series	
Front panel (Display)	Common to all GENH series	
Input board (EMI filter, bias supply)	Common to all GENH series	See Notes
AC/DC board	One board	See Notes
Control board	Common to all GENH series	
Output filter		See Notes
Isolated analog control (optional)	Common to all GENH series	
GPIB board (optional)	Common to all GENH series	
LAN (optional)	Common to all GENH series	
<b>Notes</b>		
<b>1. Input boards</b>		
The input board includes EMI filter, internal bias supply and inrush current protection (soft start). Models GENH series input circuits are divided into two PCBs.		
<b>2. AC/DC board:</b>		
The AC/DC board is same with GEN750/1500 models correspondingly		
<b>3. Output Filter</b>		
There are four types of output filter board:		
1. 0-6V up to 0-60V models (all outputs, excluding 60V model, are regarded as SELV)		
2. 0-80V up to 0-150V models		
3. 0-300V		
4. 0-600V		



**Copy of marking plate:**

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Representative

GEN1500W	
INPUT RATING: 100-240V ~19A 50/60Hz	   
E155698 I.T.E. POWER SUPPLY	
GEN750W	
INPUT RATING: 100-240V ~9.5A 50/60Hz	   
E155698 I.T.E. POWER SUPPLY	
GENH750W	
INPUT RATING: 100-240V ~9.5A 50/60Hz	   
E155698 I.T.E. POWER SUPPLY	

Additional Information underneath the main label for all models:

EU representative:

TDK-Lambda UK Limited  
Kingsley Avenue, Ilfracombe, Devon  
EX34 8ES, UK

<b>Test item particulars</b> .....:	
<b>Equipment mobility</b> .....:	<input checked="" type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
<b>Connection to the mains</b> .....:	<input checked="" type="checkbox"/> pluggable equipment <input checked="" type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input type="checkbox"/> not directly connected to the mains <i>(NOTE: Connection to the mains considered for GENH and GEN750 models only. For GEN1500 depends to the final installation )</i>
<b>Operating condition</b> .....:	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
<b>Access location</b> .....	<input type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location <i>NOTE:depends to model-operator accessible (SELV models), restricted access locations (non-SELV models)</i>
<b>Over voltage category (OVC)</b> .....	<input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other:
<b>Mains supply tolerance (%) or absolute mains supply values</b> .....	+10%/-10%
<b>Tested for IT power systems</b> .....	<input checked="" type="checkbox"/> Yes (Norway only) <input type="checkbox"/> No
<b>IT testing, phase-phase voltage (V)</b> .....	230VAC
<b>Class of equipment</b> .....	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified
<b>Considered current rating of protective device as part of the building installation (A)</b> .....	16 or 25
<b>Pollution degree (PD)</b> .....	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
<b>IP protection class</b> .....	<b>IP20</b>
<b>Altitude during operation (m)</b> .....	3000
<b>Altitude of test laboratory (m)</b> .....	50
<b>Mass of equipment (kg)</b> .....	1. Approx.8.1kg;    2. Approx 4.3kg

<b>Possible test case verdicts:</b>	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
<b>Testing</b> .....:	
<b>Date of receipt of test item</b> .....	09/28/2010
	<i>[date of receipt of test item during original testing according to report number 30680241.001]</i>
	<b>30680241.015 – N/A</b>

**Date (s) of performance of tests** ..... : 09/28/2010 – 09/30/2010  
*[date of performance of testing during original evaluation according to report number 30680241.001, no further testing was deemed necessary for this upgrade of standard]*  
**30680241.015 – N/A**

**General remarks:**

The test results presented in this report relate only to the object tested.  
 This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.  
 "(See Enclosure #)" refers to additional information appended to the report.  
 "(See appended table)" refers to a table appended to the report.

Throughout this report a  comma /  point is used as the decimal separator.

**Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60950-1:**

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	<input checked="" type="checkbox"/> <b>Yes</b> <input type="checkbox"/> <b>Not applicable</b>  Applicable for internal modules only.  Final assembly carried out at one factory location: TDK-Lambda Ltd. The internal modules manufactured at each factory are fully identical. Internal modules in all tested samples are representing products from each factory.
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**When differences exist; they shall be identified in the General product information section.**

**Name and address of factory (ies)** ..... : 1. TDK-Lambda Ltd.  
 56 Haharoshet St., P.O.B. 500  
 Karmiel Industrial Zone Karmiel 2161401, Israel  
  
 2. Wuxi TDK-Lambda Electronics Co., Ltd.  
 No.6,Xing Chuang Er Lu, Wuxi,  
 Jiangsu Province, China

**General product information:**

The products are standalone, Programmable Switching Power Supplies. They are categorized as 750W models and 1500W models. Within this test report the products may be described as e.g. 'GEN750' or 'GEN1500' with the meaning of 750W or 1500W models not necessarily describing a model according to the model number nomenclature according to page 4 / 'additional information'. Please refer also to below for description of model series:

modelα	Input-(A)α	Outputα			Seriesα
		Vα	Aα	Wα	
GEN6-100α	9.5α	0-6α	9.5α	600α	<b>GEN750α</b>
GEN6-200α	19α	0-6α	19α	1200α	<b>GEN1500α</b>
GEN8-90α	9.5α	0-8α	9.5α	720α	<b>GEN750α</b>
GEN8-180α	19α	0-8α	19α	1440α	<b>GEN1500α</b>
GENH8-90α	9.5α	0-8α	9.5α	720α	<b>GENH750α</b>
α	α	α	α	α	α
GEN600-1.3α	9.5α	0-600α	9.5α	720α	<b>GEN750α</b>
GEN600-2.6α	19.5α	0-600α	19.5α	1206α	<b>GEN1500α</b>
GENH600-1.3α	9.5α	0-600α	9.5α	720α	<b>GENH750α</b>

The units are Class I, evaluated for use in OVC II and Pollution Degree 2 environment.

The units are evaluated for use in TN, TT and IT (Norway) power systems.

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

The unit's enclosure meets to applicable requirements of the Standard for Fire, Electrical and Mechanical enclosure.

The power supplies are suitable for the maximum altitude up to 3000 m.

The power supplies are suitable for the maximum ambient operating temperatures 50°C.

#### Abbreviations used in the report:

- normal conditions	<b>N.C.</b>	- single fault conditions	<b>S.F.C</b>
- functional insulation	<b>OP</b>	- basic insulation	<b>BI</b>
- double insulation	<b>DI</b>	- supplementary insulation	<b>SI</b>
- between parts of opposite polarity	<b>BOP</b>	- reinforced insulation	<b>RI</b>

#### Indicate used abbreviations (if any)

History of report:	
30680241.001	Original CB-Report / Lambda Americas, Inc. (USA)
30680241.005	Addition of "Model GEN30-50/R" under GEN1500W
30680241.007	New CB-report for an upgrade of standard to list IEC 60950-1:2005
30680241.011	New CB-report for an upgrade of standard to list IEC 60950-1:2005+A1 and change of model number nomenclature
30680241.013	New CB-report covers an upgrade of standard to IEC 60950-1:2005 + Am 1:2009 + Am 2:2013, an addition of new model suffix "z" to models 1 and 2, and an update to critical components list in table 1.5.1. No testing was performed or deemed necessary for the above changes.
<b>30680241.015</b>	<b>First Amendment: This report covers the addition of IP20 rating to all models within report. No additional testing required.</b>
Note: Gaps in the report numbering were reserved for TÜV internal use, not related to the CB report.	