Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT

IEC 60950-1

Information technology equipment – Safety – Part 1: General requirements

Report Number. .....:	31282706.003
Date of issue .....:	22nd March, 2016
Total number of pages.....:	85 pages
Applicant's name.....:	TDK-Lambda Ltd.
Address .....:	56 Haharoshet St., P.O.B. 500, Industrial Zone Karmiel 2161401, Israel
Test specification:	
Standard .....:	IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
Test procedure.....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC60950_1F
Test Report Form(s) Originator.....:	SGS Fimko Ltd
Master TRF.....:	Dated 2014-02

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description .....:	Programmable Power Supplies Components
Trade Mark:	TDK-Lambda,
Manufacturer:	Same as Applicant
Model/Type reference:	EVA150-16, EVA300-8, EVA600-4
Ratings:	Input: 190-240V, 16.6A max., 50/60Hz (all models) Output: Main output - EVA150-16: 15-150VDC/16A, max. power 2400W; - EVA300-8: 30-300VDC/8A, max. power 2400W; - EVA600-4: 60-600VDC/4A, max. power 2400W. Auxiliary 1: 5VDC/0.2A (all models). Auxiliary 2: 15VDC/0.2A (all models).

Testing procedure and testing location:			
☐	**CB Testing Laboratory:**		
Testing location/ address ..... :			
☐	**Associated CB Testing Laboratory:**		
Testing location/ address ..... :			
Tested by (name + signature)..... :			
Approved by (name + signature)..... :			
☐	**Testing procedure: TMP/CTF Stage 1:**		
Testing location/ address ..... :			
Tested by (name + signature)..... :			
Approved by (name + signature)..... :			
☐	**Testing procedure: WMT/CTF Stage 2:**		
Testing location/ address ..... :			
Tested by (name + signature)..... :			
Witnessed by (name + signature) ..... :			
Approved by (name + signature)..... :			
☒	**Testing procedure: SMT/CTF Stage 3 or 4:**		
Testing location/ address ..... :		TDK-Lambda Ltd., 56 Haharoshet St., P.O.B. 500 Industrial Zone Karmiel 2161401, Israel	

Tested by (name + signature)..... :	V. Rodionov	
Witnessed by (name + signature) ..... :		
Approved by (name + signature)..... :	Duy Nguyen	
Supervised by (name + signature)..... :	Ronald Younan	

List of Attachments (including a total number of pages in each attachment):

- Attachment 1, Photo documentation (pages 67-72)
- Attachment 2, National Differences (pages 73-85)

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
1.2.2.1-Maximum output voltage, current, and volt-ampere measurement 1.6.2-Input Current 1.7.11-Durability of marking test 2.1.1.5-Energy hazard measurements 2.1.1.7-Capacitance discharge test 2.2.2-SELV reliability test 2.6.3.4-Protective earthing trace earth fault current 2.6.3.4-Earthing test 2.9.1-Humidity 2.10.2-Determination of working voltage-working voltage measurement 4.5.1-Heating test 5.1-Touch current test 5.2.2-Electric strength test 5.3.1, 5.3.4, 5.3.7-Component failure test 5.3.1 - 5.3.8.2-Abnormal operation tests 5.3.3, 5.3.6b-Transformer abnormal operation test 5.3.7-Power supply output short-circuit/overload test; overload of operator accessible connector test *Testing during original evaluation according to report number 31282706.001, no further testing was deemed necessary for this upgrade of standard.*	All necessary tests as described in Test Case and Measurement Sections were performed at the laboratory described on page 2

Summary of compliance with National Differences to IEC 60950-1:2005+A1:2009+A2:2013

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 = USA

Summary of compliance with National Differences to IEC 60950-1:2005+A2:2013

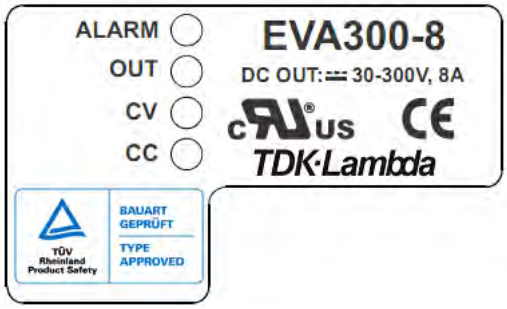
List of countries addressed: CA

Explanation of used codes: CA = Canada

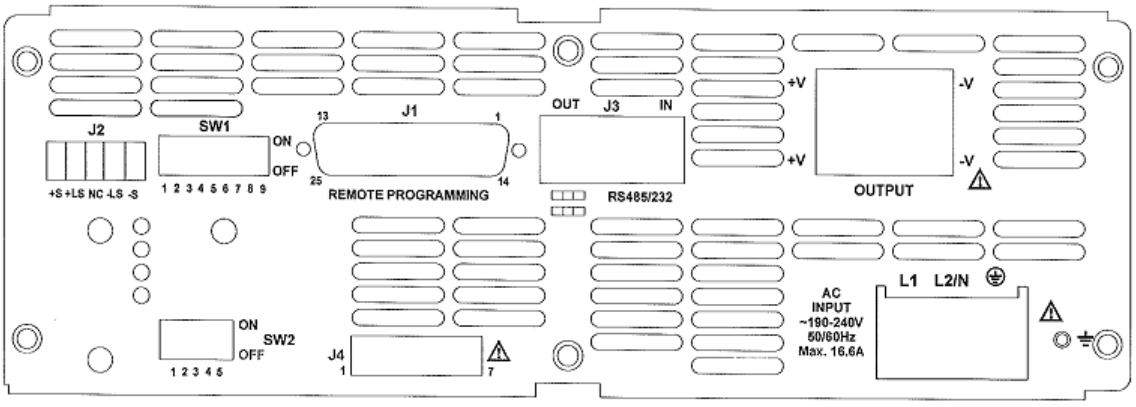
☒ **The product fulfils the requirements of EN60950-1:2006+A11+A1+A12+A2**

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.



Copy of screening:



Test item particulars.....:	
Equipment mobility.....:	[] movable [] hand-held [] transportable [] stationary [x] for building-in [] direct plug-in
Connection to the mains.....:	[] pluggable equipment [] type A [] type B [] permanent connection [] detachable power supply cord [] non-detachable power supply cord [] not directly connected to the mains *Note: means of connection to the mains depends to the end-product*
Operating condition.....:	[x] continuous [] rated operating / resting time:
Access location .....:	[] operator accessible [] restricted access location
Over voltage category (OVC) .....:	[] OVC I [x] OVC II [] OVC III [] OVC IV [] other:
Mains supply tolerance (%) or absolute mains supply values .....:	±10%
Tested for IT power systems .....:	[x] Yes [] No
IT testing, phase-phase voltage (V) .....:	230
Class of equipment .....:	[x] Class I [] Class II [] Class III [] Not classified
Considered current rating of protective device as part of the building installation (A) .....:	30A max
Pollution degree (PD) .....:	[] PD 1 [x] PD 2 [] PD 3
IP protection class .....:	IPX0
Altitude during operation (m) .....:	3000m max.
Altitude of test laboratory (m) .....:	~360m
Mass of equipment (kg) .....:	9.5 max.
Possible test case verdicts:	
- 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)
Testing.....:	
Date of receipt of test item.....:	03/05/2012 (31282706.001) **N/A (31282706.003)**
Date(s) of performance of tests .....:	03/06/2012 – 04/24/2012 (31282706.001) **N/A (31282706.003)**
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 IECEE 02:

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.....:

☐ **Yes**

☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) .....: TDK-Lambda Ltd. 56 Haharoshet St., P.O.B. 500 Industrial Zone Karmiel 2161401, Israel

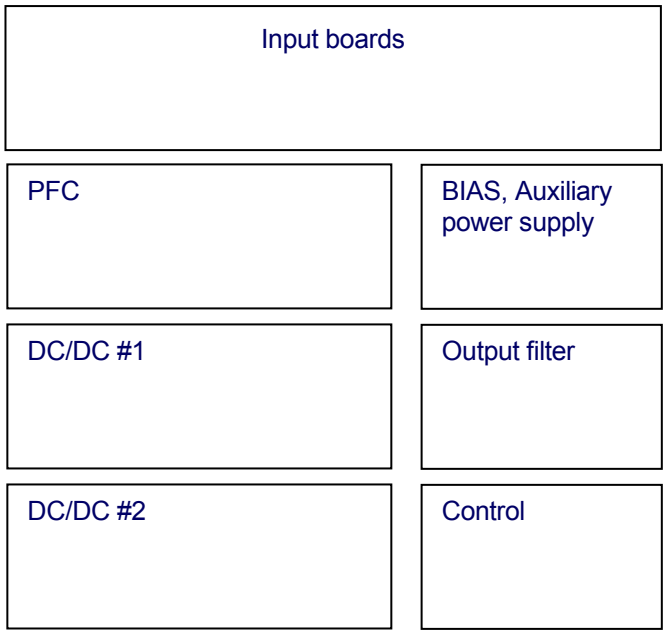
General product information:

The EVA series is a family of power supplies (component for build-in) having rated output 15-150VDC/16A, 30-300VDC/8A and 60-600/4A with total output power 2400 Watt maximum or less.

- All units are evaluated for use in TN, TT and IT (Norway only) power systems.
- All units are Class I, evaluated for use in OVC II and Pollution Degree 2 environments.
- The main outputs are considered „Hazardous Energy Level" outputs.
- The main outputs are considered „Secondary Hazardous Voltage" outputs.
- The auxiliary outputs AUX1 and AUX2 are considered „SELV" outputs.
- The enclosure of the units consists of a steel box-type frame enclosure and steel cover.
- The following parts are installed inside of the enclosure:
  - Input board with soldered input connector (IA663)
  - Power factor control (PFC) board (IA660)
  - BIAS board (IA667)
  - Two DC/DC converter boards connected in parallel (IA662)
  - Control board (IA668)
  - Output filter assembly (IA758)

The units are suitable for maximum ambient operating temperature 70ºC at maximum load.
The units are suitable for maximum operational altitude up to 3000m.

Block Diagram



Abbreviations used in the report:

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

Indicate used abbreviations (if any)
PRI-primary
SEC-secondary (hazardous)
Gnd-ground (protective)
SELV- Safety Extra Low Voltage

History of report:	
31282706.001	**Original CB Report issuance.**
31282706.003	**New CB Report 31282706.003 covers an upgrade of standard to IEC 60950-1:2005 + Am 1:2009 + Am 2:2013. No additional testing is required for this upgrade of standard.**

Note: Gaps in the report numbering were reserved for TUV internal use, not related to the CB report.