



Test Report issued under the responsibility of:



TEST REPORT
IEC 60950-1
Information technology equipment – Safety –
Part 1: General requirements

Report Number: 1510052STO-001
Date of issue: 26 October 2015
Total number of pages: 90 pages

Applicant's name: TDK-Lambda Corporation
Address: 2704-1 Settaya-machi, Nagaoka-shi, Niigata, 940-1195 JAPAN

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

Copyright © 2014 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

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.


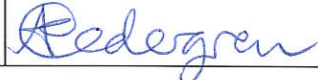
This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

TEST REPORT issued by an Accredited Testing Laboratory. Accredited by Swedac, no 1003, ISO/IEC 17025.

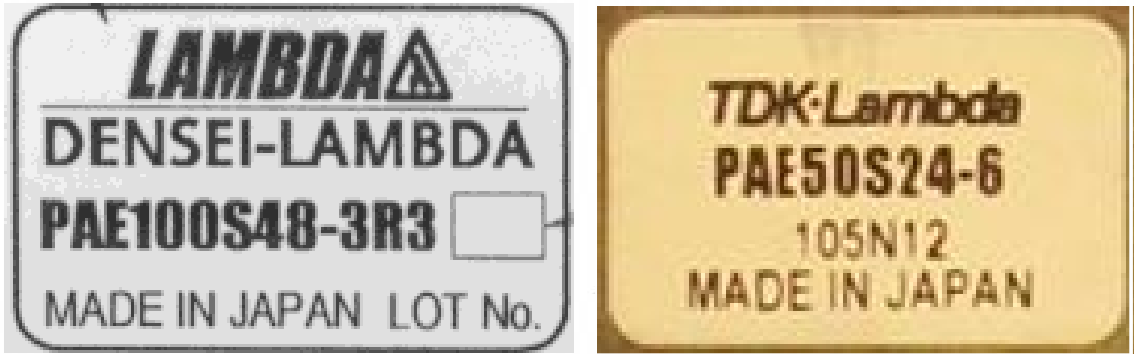
General disclaimer:

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.

Table with 2 columns: Test item description, Trade Mark, Manufacturer, Model/Type reference, Ratings and their corresponding values like DC-DC Converter, TDK-Lambda, etc.

Testing procedure and testing location:		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	Intertek Semko AB
Testing location/ address		Torshamnsgatan 43, P.O. Box 1103, SE-164 22 Kista, SWEDEN
<input type="checkbox"/>	Associated CB Testing Laboratory:	
Testing location/ address		
Tested by (name + signature).....		Bedran Nergiz 
Approved by (name + signature)		Anna Karin Cedergren 
<input type="checkbox"/>	Testing procedure: TMP/CTF Stage 1:	
Testing location/ address		
Tested by (name + signature).....		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: WMT/CTF Stage 2:	
Testing location/ address		
Tested by (name + signature).....		
Witnessed by (name + signature)		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: SMT/CTF Stage 3 or 4:	
Testing location/ address		
Tested by (name + signature).....		
Witnessed by (name + signature)		
Approved by (name + signature)		
Supervised by (name + signature).....		

TRF No. IEC60950_1F

Summary of testing:	
Tests performed (name of test and test clause): See test report	Testing location: See page 2
Summary of compliance with National Differences: <input checked="" type="checkbox"/> The product fulfils the requirements of EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013. Group- and national differences for the CENELEC countries have been considered during the testing.	
Copy of marking plate: (examples) 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	
	

Models included within the scope of this report				
Model	Input, DC		Output, DC	
	V	A _{max}	V	A _{max}
-				
PAE50S24-5	18-36	2.32 at 24V	5	10
PAE50S24-6	18-36	2.33 at 24V	6	8.4
PAE50S48-1R8	36-76	0.86 at 48V	1.8	20
PAE50S48-2R5	36-76	1.06 at 48V	2.5	18
PAE50S48-3R3	36-76	1.22 at 48V	3.3	16
PAE50S48-5	36-76	1.20 at 48V	5	10
PAE100S48-1R8	36-76	1.30 at 48V	1.8	30
PAE100S48-2R5	36-76	1.47 at 48V	2.5	25
PAE100S48-3R3	36-76	1.91 at 48V	3.3	25
PAE100S48-3R3/H	36-76	2.31 at 48V	3.3	30
PAE100S48-5	36-76	2.32 at 48V	5	20
The models listed above may include the suffix as shown below. /V = Auto restart.				

Test item particulars.....:	
Equipment mobility.....:	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
Connection to the mains.....:	<input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input checked="" 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
Operating condition.....:	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location	<input type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location <input checked="" type="checkbox"/> for building into a host equipment
Over voltage category (OVC)	<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:
Mains supply tolerance (%) or absolute mains supply values	Not applicable, Voltage range 36-76Vdc Max. Voltage range 18-36Vdc Max.
Tested for IT power systems	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A)	N/A (for building-in)
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class	IPX0
Altitude during operation (m)	<2000
Altitude of test laboratory (m)	<2000
Mass of equipment (kg)	<0.050
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.....	See "General remarks" below
Date of receipt of test item.....	See "General remarks" below
Date (s) of performance of tests.....	See "General remarks" below
General remarks:	
<p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. The test results and all data in this report are derived from previously issued Test Report No. 1218073 dated 29 August 2012; Test Report No. 1301225 dated 29 January 2013; Test Report No. 1301780 dated 8 February 2013 issued by Intertek Semko AB. A new report has been issued due to update of the standard IEC 60950-1, to include Am 2: 2013. No additional test has been conducted. Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>	

TRF No. IEC60950_1F

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"/> Yes <input type="checkbox"/> Not applicable
When differences exist; they shall be identified in the "General product information" section.	
Name and address of factories..... : TDK-Lambda (Malaysia) Sdn. Bhd. PLO33 Locked Bag No. 110 Kawasan Perindustrian Senai 81400 Senai Johor, Darul Takzim, MALAYSIA TDK-Lambda Corporation Nagaoka Technical Center 2704-1 Settaya-machi, Nagaoka, Niigata 940-1195 JAPAN Wuxi TDK-Lambda Electronics Co., Ltd. No.6 Xing Chuang Er lu Wuxi Jiangsu, 214028 CHINA	
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)	

This Test Report replaces previously issued, see table below.

REVISION TABLE

Date	Report ref.	Clause	Modification of the appliance
26 Oct. 2015	1510052STO-001	-	Basic Test Report

General Product Information:

- a) These products shall be installed in accordance with the requirements of IEC 60950-1:2005, EN 60950-1:2006 for the end use application.
- b) This product was assessed for Basic insulation, material group IIIb at working voltage between input and output. All faults testing across the barriers were conducted under all input and output earth combinations.
- c) As a component part, compliance with the standard will be based upon installation in the final application. This product must be installed within host equipment.
- d) All dynamic testing was conducted with the units loaded to their specified output current with the units mounted on a PWB, which was then mounted in five different orientations i.e. horizontal and four vertical positions. Subject to loading and de-rating curves, these products can be convection or forced air cooled.
- e) The input to the units must be isolated from the mains by reinforced insulation in accordance with IEC 60950-1:2005, EN 60950-1:2006 in order to maintain a SELV output.
- f) The input and output connectors are not acceptable for field wiring connections and are only intended for connection to a PCB inside the end use equipment.
- g) The input fuse used during testing was: - F6.3AH, 250V for the PAE50S24 and PAE100S48 models. The input fuse for the PAE50S48 model was: - F5AH, 250V.
The breaking capacity and voltage rating are subject to the end use application.
- h) These models have been evaluated at the maximum ambient allowed based on the temperature of components Q2, Q104 for the model PAE100S series and Q2, Q105 for the model PAE50S series. It must be ensured the temperature of these components does not exceed 120°C.

Testing Environment:

Ambient temperature: 15°C to 30°C

Relative humidity: 25% to 75%

Air pressure: 86 kPa to 106 kPa