



Test Report issued under the responsibility of:



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

Report Number..... : 15077119 001

Date of issue..... : 2015-07-16

Total number of pages : 76

Applicant's name : TDK-Lambda Corp. Nagaoka Technical Center

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

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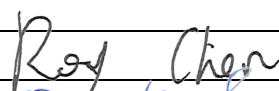
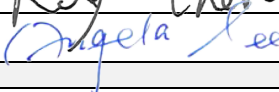
If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

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 : Switching Power Supply	
Trade Mark : TDK-Lambda	
Manufacturer : Same as applicant	
Model/Type reference : 1) DLP75-24-1x, DLP100-24-1x (x = blank, /E, /EJ, /CO, /ECO, /EJCO, /C2, /C2E or /C2EJ);	
2) DLP120-24-1y, DLP180-24-1y, DLP240-24-1y (y = blank, /E, /EJ, /CO, /ECO or /EJCO)	
3) DLP100-24-1/C2A	
Ratings : AC input: See the model list on pages 7-8 for details	
DC output: See the model list on pages 7-8 for details	
Testing procedure and testing location:	
<input checked="" type="checkbox"/>	CB Testing Laboratory: TÜV Rheinland (Shanghai) Co., Ltd.
Testing location/ address : B1-13/F, No.177, Lane 777, West Guangzhong Road, Zhabei District, Shanghai 200072, P. R. China	
<input type="checkbox"/>	Associated CB Testing Laboratory:
Testing location/ address :	
Tested by (name + signature) : Roy Chen 	
Approved by (name + signature) : Angela Lee 	
<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) :	

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

- ATTACHMENT 1 - Technical documentation (17 pages)
- ATTACHMENT 2 - Photo documentation (17 pages)
- ATTACHMENT 3 - National Differences (28 pages)

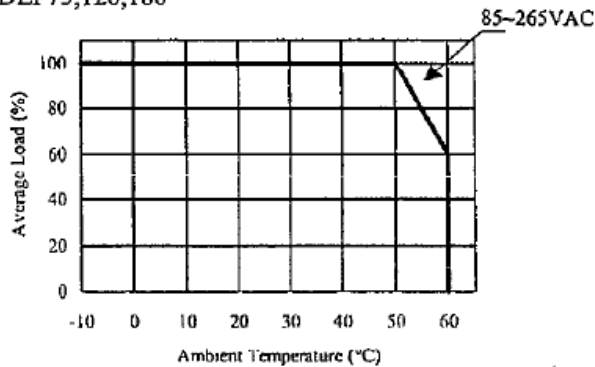
Note: Total number of pages in each attachment is indicated in individual attachment.

Summary of testing:

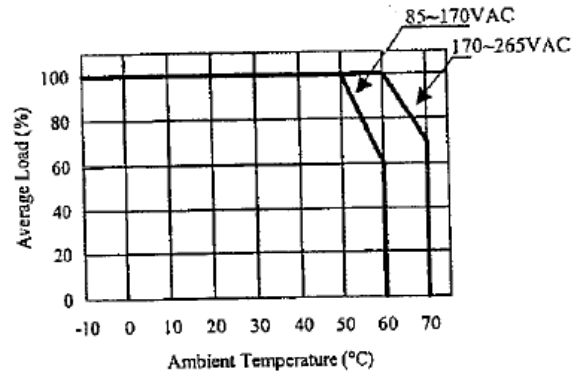
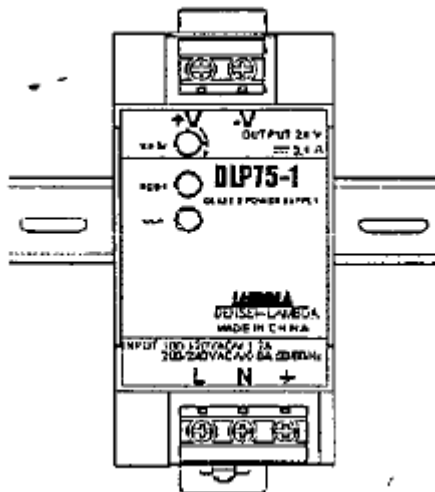
- Unless otherwise specified, tests were performed on model DLP75-24-1, DLP120-24-1, DLP180-24-1, DLP240-24-1 to representative other models.
- The maximum operating temperature was specified as +70°C max. for model DLP240-24-1y, +60°C max. for other models, detail information refer to output de-rating curve.
- Heating measurement were performed according to the maximum operating temperature and load conditions specified in instruction manual and output de-rating curve.

Output derating curve:

DLP75,120,180



DLP240

**Mounting direction:**

Tests performed (name of test and test clause):		Testing location:
Original Test Report: 15031957 001		TÜV Rheinland (Shanghai) Co., Ltd. No.2A/B building, Guangzhong Road West, Shanghai 200072, P.R. China
Clause	Test description	
1.6.2	Input Current	
1.7.11	Durability	
2.1.1.7	Discharge of Capacitors in equipment	
2.2.2	Voltages under normal conditions	
2.2.3	Voltages under fault conditions	
2.6.3.4	Resistance of earthing conductors and their terminations	
2.9.2	Humidity Conditioning - Electrical insulation	
2.10.2	Determination of working voltage	
2.10.3 & 2.10.4	Clearances, creepage distances	
4.5.2	Temperature tests	
4.5.5	Resistance to abnormal heat	
5.1.6	Touch current and protective conductor current	
5.2	Electric strength	
5.3	Abnormal operating and fault conditions	
Annex C	Transformers	
Test report: 15038877 001 No further testing performed.		TÜV Rheinland (Shanghai) Co., Ltd. 10-15/F, Huatsing Building, No.88, Lane 777, West Guangzhong Road, Zhabei District Shanghai 200072, China
Test Report: 15038877 002 No further testing performed.		TÜV Rheinland (Shanghai) Co., Ltd. 10-15/F, Huatsing Building, No.88, Lane 777, West Guangzhong Road, Zhabei District Shanghai 200072, China
Test Report: 15053451 001 No further testing performed.		TÜV Rheinland (Shanghai) Co., Ltd. B1-13/F, No.177, Lane 777, West Guangzhong Road, Zhabei District, Shanghai 200072, P.R. China
This Report: 15077119 001 No further testing performed for the Amendment 2		TÜV Rheinland (Shanghai) Co., Ltd. B1-13/F, No.177, Lane 777, West Guangzhong Road, Zhabei District, Shanghai 200072, P. R. China

Summary of compliance with National Differences

List of countries addressed:

EU Group Differences, EU Special National Conditions, CA, US.

Explanation of used codes:

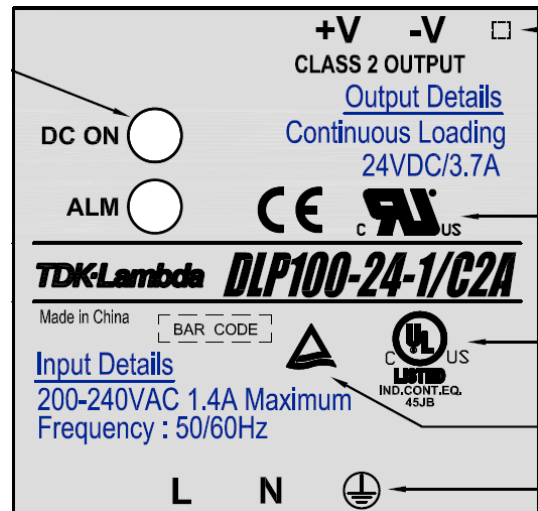
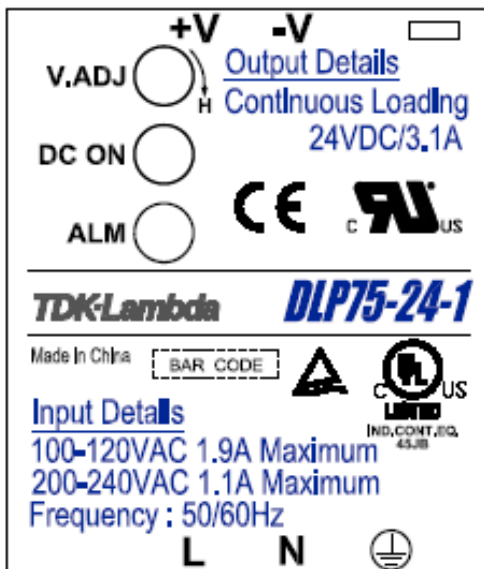
CA=Canada; US = United States of America.

The product fulfils the requirements of EN 60950-1:2006+A11+A1+A12+A2, UL 60950-1:2007 R10.14 and CAN/CSA C22.2 No. 60950-1-07+A1:2011+A2:2014.

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>



Test item particulars	: See below
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 checked="" type="checkbox"/> pluggable equipment <input 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
Operating condition	: <input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location	: <input type="checkbox"/> operator accessible <input checked="" type="checkbox"/> restricted access location
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	: -10%, +6%
Tested for IT power systems	: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
IT testing, phase-phase voltage (V)	: For Norway, 230V
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)	: 16 (20 for US/CSA)
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)	: Up to 2000
Altitude of test laboratory (m)	: Approx 50
Mass of equipment (kg)	: 0.46kg (DLP75-24-1) 0.53kg (DLP100-24-1, DLP120-24-1) 0.76kg (DLP180-24-1) 1.0kg (DLP240-24-1)
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	: 15031957 001 (2009-03-01) 15038877 001 (2010-07-10) 15038877 002 (No test) 15053451 001 (2012-07-01) 15077119 001 (2015-07-16)
Date(s) of performance of tests	: 15031957 001 (2009-06-01 to 2009-06-28) 15038877 001 (2010-07-10 to 2010-08-10) 15038877 002 (No test) 15053451 001 (2012-08-01 to 2012-08-30) 15077119 001 (2015-07-16)

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
 "(See ATTACHMENT #)" 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) :

1. Wuxi TDK-Lambda Electronics Co., Ltd.
No.6 Xing Chuang Er Lu, Wuxi, Jiangsu 214028, P.R. China
2. TDK-Lambda Malaysia Sdn. Bhd.
Lot 2 & 3, Batu 9 3/4 Kawasan Perindustrian, Bandar Baru Jaya Gading, 26070 Kuantan Pahang Malaysia
3. Zhangjiagang Hua Yang Electronics Co., Ltd.
Zhao Feng Industrial Zone, Leyu Town, Zhangjiagang, Jiangsu 215622, P.R. China
4. TDK-Lambda Corp.
Nagaoka Technical Center, 2704-1 Settayamachi, Nagaoka-shi, Niigata 940-1195, JAPAN
5. ALPS Logistics Facilities Co., Ltd.
36-1 Kasuminosato, Ami-machi Inashiki-gun, Ibaraki 300-0396, Japan

General product information:

The EUTs are switching power supply (building-in type) for the use in information technology equipment.

The product is a component intended for incorporation in information technology equipment, the overall compliance shall be investigated in the complete information technology equipment.

Models in each series are identical to basic models DLP75-24-1, DLP100-24-1, DLP120-24-1, DLP180-24-1 and DLP240-24-1 except for input/output terminal block, silicone material on the bottom of PCB and output current rating. For details, see definition of variables below.

DLP100-24-1 is identical to DLP120-24-1 except that the output power of DLP100-24-1 is limited to 100VA.

Model list:

Model	Input Rated Voltage (Vac)	Input Rated current (A)	Input frequency(Hz)	Rated Output Voltage (Vdc)	Rated Output Current(A)	Rated Output (VA)
DLP75-24-1x (x = blank, /E, /EJ, /CO, /ECO, /EJCO)	100-120	1.9	50/60	24.0	3.1	74.4
	200-240	1.1	50/60			

DLP75-24-1x (x =/C2, /C2E, /C2EJ)	100-120	1.9	50/60	24.0	2.5	60.0
	200-240	1.1	50/60			
DLP100-24-1x (x = blank, /E, /EJ, /CO, /ECO, /EJCO)	100-120	2.5	50/60	24.0	4.1	98.4
	200-240	1.4	50/60			
DLP100-24-1x (x =/C2, /C2E, /C2EJ)	100-120	2.5	50/60	24.0	3.7	88.8
	200-240	1.4	50/60			
DLP100-24-1/C2A	200-240	1.4	50/60	24.0	3.7	88.8
DLP120-24-1y	100-120	3.2	50/60	24.0	5.0	120
	200-240	1.6	50/60			
DLP180-24-1y	100-240	2.7	50/60	24.0	7.5	180
DLP240-24-1y	100-240	3.5	50/60	24.0	10.0	240

History of CB Test Report:

- 1) Test report No. 15031957 001: The test report was issued for TDK-Lambda Corp. and addressed model mentioned page 1 tested to IEC 60950-1:2005, 2nd Edition.
- 2) Test report No. 15038877 001 The test report was issued for TDK-Lambda Corp. and addressed model mentioned page 1 tested to IEC 60950-1:2005+A1:2009, 2nd Edition.
- 3) Test report No. 15038877 002 The test report was issued for TDK-Lambda Corp. to add alternative components and addressed model mentioned page 1 tested to IEC 60950-1:2005+A1:2009, 2nd Edition.
- 4) Test report No. 15053451.001 The test report issued for TDK-Lambda Corp. serves to combine and upgrade the above mentioned test reports. In this test report the model designation was added new model DLP100-24-1/C2A which is identical to DLP100-24-1/C2 except for input rating (see page 7). Additionally this test report updates Group and National Differences, and change the address of the applicant, the manufacturer and factories. This test report consolidates reports 15038877 001 and 15038877 002.
- 5) Test report No. 15077119 001: This test report issued for TDK-Lambda Corp. Nagaoka Technical Center serves to combine and upgrade the above mentioned test reports. In this test report updates Group and National Differences. However it is separate CB test report and it does not have to be used in conjunction with any of the previously issued, above mentioned CB test reports.

Additional Information:

- 6) The product is component type S.M.P.S., the overall compliance shall be investigated in the complete information technology equipment, in particular as Fire enclosure, Mechanical enclosure and Electrical enclosure.
- 7) Some components are **pre-certified**, which have been evaluated according to the relevant requirements of IEC 60950-1, are employed in this product. Their suitability of use has been checked according to subclauses 1.5.1 and 1.5.2.
- 8) The product is a **component** intended for incorporation in information technology equipment, the overall compliance shall be investigated in the complete information technology equipment
- 9) Tests were repeated with each alternative source of components with identical results unless otherwise specified.

Definition of variable(s):

Model: DLP75-24-1x, DLP100-24-1x, DLP120-24-1y, DLP180-24-1y, DLP240-24-1y

Variable:	Range of variable:	Content:
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x	blank, /E, /EJ, /CO, /ECO, /EJCO, /C2, /C2E or /C2EJ	Blank: stand for basic models; /E or E, /EJ or EJ: stand for different type of terminal block; /CO or CO: stands for silicon material on bottom of PCB; /C2 or C2: stands for lower output current rating for marketing purpose.																																												
y	blank, /E, /EJ, /CO, /ECO or /EJCO	Blank: stand for basic models; /E or E, /EJ or EJ: stand for different type of terminal block; /CO or CO: stands for silicon material on bottom of PCB																																												
<p>Abbreviations used in the report:</p> <table border="0"> <tr> <td>-Normal conditions</td> <td>N.C.</td> <td>-Single fault conditions</td> <td>S.F.C</td> </tr> <tr> <td>-Functional insulation</td> <td>OP</td> <td>-Basic insulation</td> <td>BI</td> </tr> <tr> <td>-Double insulation</td> <td>DI</td> <td>-Supplementary insulation</td> <td>SI</td> </tr> <tr> <td>-Between parts of opposite polarity</td> <td>BOP</td> <td>-Reinforced insulation</td> <td>RI</td> </tr> <tr> <td>-Short-circuited</td> <td>s-c</td> <td>-No component damage</td> <td>NCD</td> </tr> <tr> <td>-Open-circuited</td> <td>o-c</td> <td>-Component damage</td> <td>CD</td> </tr> <tr> <td>-Overloaded</td> <td>o-l</td> <td>-Test repeated, similar result</td> <td>RT</td> </tr> <tr> <td>-Internal protection operated</td> <td>IP</td> <td>-No indication of dielectric breakdown</td> <td>NB</td> </tr> <tr> <td>-Input</td> <td>i/p</td> <td>-Cheesecloth remained intact</td> <td>NC</td> </tr> <tr> <td>-Output</td> <td>o/p</td> <td>-Tissue paper remained intact</td> <td>NT</td> </tr> <tr> <td>-Constant temperatures were obtained</td> <td>CT</td> <td>-The unit can recover auto when removing the abnormal condition</td> <td>RA</td> </tr> </table> <p>Indicate used abbreviations (if any)</p>			-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	-Short-circuited	s-c	-No component damage	NCD	-Open-circuited	o-c	-Component damage	CD	-Overloaded	o-l	-Test repeated, similar result	RT	-Internal protection operated	IP	-No indication of dielectric breakdown	NB	-Input	i/p	-Cheesecloth remained intact	NC	-Output	o/p	-Tissue paper remained intact	NT	-Constant temperatures were obtained	CT	-The unit can recover auto when removing the abnormal condition	RA
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