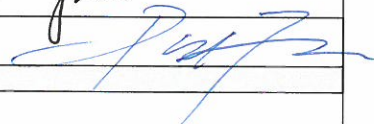




Test Report issued under the responsibility of:



TEST REPORT IEC 60950-1 Information technology equipment – Safety – Part 1: General requirements
Report Number : 15087741 001 Date of issue : 2015-12-15 Total number of pages : 85 (excluding attachments, see page 3)
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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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		SWS50-xv, SWS75-yv, SWS100-yv, SWS150-zv (x = 3, 5, 12, 15, 18 or 24; y = 3, 5, 15 or 24; z = 3, 5, 12, 15, 18, 24, 28, 15/DSX, 28/DSX, 24/T1 or 12/96; v = blank, CO2 or /CO2)	
Ratings		AC input: See the model list on page 8-9 for details DC output: See the model list on page 8-9 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)		Sunny Sun	
Approved by (name + signature)		Paul Zhang	
<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).....			

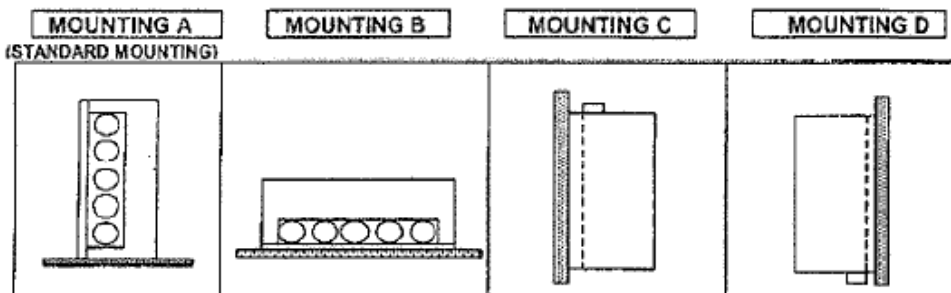
List of Attachments (including a total number of pages in each attachment):

- ATTACHMENT 1 - Technical documentation (41 pages)
- ATTACHMENT 2 - Photo documentation (10 pages)
- ATTACHMENT 3 - National Differences (56 pages)

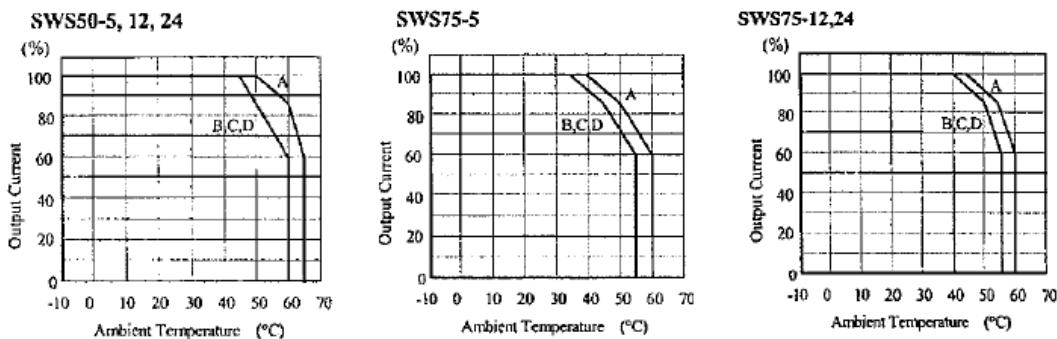
Summary of testing:

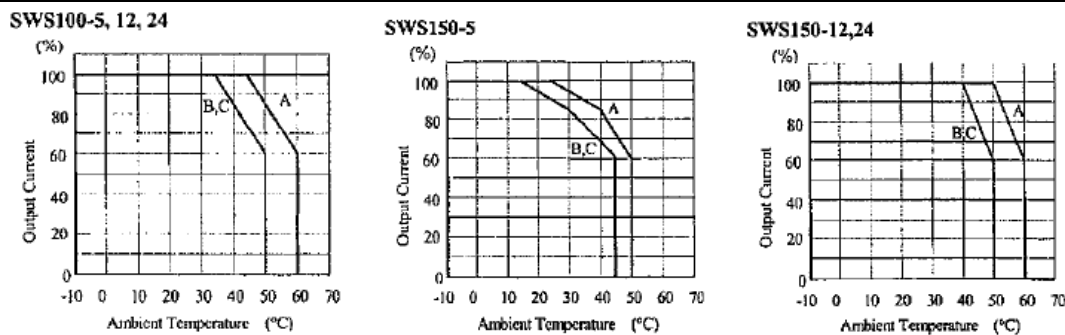
- All models in each series are identical except for output rating, secondary winding of transformer and rating of minor components.
- Unless otherwise specified, all tests were performed on base models SWSx-5 and SWSx-24 to represent the worst case condition for the respective tests according to max. output voltage, max. output current or max. output power reasons.
- Operating temperature of 15°C to 70°C specified in instruction manual depending on mounting direction, cooling type and load condition defined in output derating curve.
- External forced air cooling of minimum air velocity is 1.2m/s specified in the instruction manual, flow through the component side of power supply.
- Heating measurement were performed according to the maximum operating temperature, operating position or mounting direction, convection cooling or forced air cooling, maximum load conditions specified in instruction manual and output derating curve.

MOUNTING DIRECTIONS

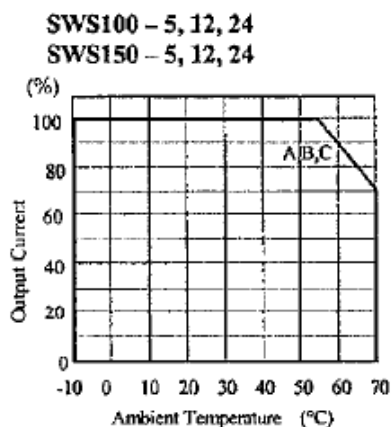
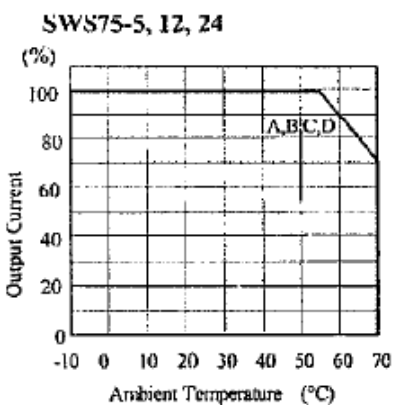


Output derating curve (convection cooling):





Output derating curve (forced air cooling):



Tests performed (name of test and test clause):

Tested in original CB report 15039859 001

Clause	Test description
1.6.2	Input Current
1.7.11	Durability
2.1.1.5	Energy Hazards
2.1.1.7	Discharge of Capacitors in equipment
2.2	SELV
2.6.3.4	Resistance of Earthing Circuit
2.9.2	Humidity Conditioning
2.10.2	Working Voltage measurement
2.10.3 & 2.10.4	Clearances, creepage distances
4.5.2	Temperature Tests
4.5.5	Resistance to abnormal heat
5.1	Touch Current and PE current
5.2	Electric Strength Test
5.3	Abnormal Operating and Fault Condition Test
Annex C	Transformer

Testing location:

TÜV Rheinland (Shanghai) Co., Ltd.
B1-13/F, No.177, Lane 777, West Guangzhong Road, Zhabei District, Shanghai 200072, P. R. China

<p>For this report 15087741 001:</p> <p>Testing during original evaluation according to report number 15039859 001, no further testing was deemed necessary for this upgrade of standard.</p>	<p>TÜV Rheinland (Shanghai) Co., Ltd. B1-13/F, No.177, Lane 777, West Guangzhong Road, Zhabei District, Shanghai 200072, P. R. China</p>
<p>Summary of compliance with National Differences</p> <p>List of countries addressed:</p> <p>EU Group Differences, EU Special National Conditions, AR, AU, AT, BH, BY, BE, BR, BG, CA, CN, CO, HR, CZ, DK, FI, FR, DE, GR, HU, IN, ID, IE, IL, IT, JP, KE, KR, LR, MY, MX, AN, NZ, NG, NO, PK, PL, PT, RU, RO, SA, RS, SG, SK, SI, ZA, ES, SE, CH, TH, TR, UA, AE, GB, US, VN</p> <p>Explanation of used codes:</p> <p>AR = Argentina**; AU = Australia**; AT = Austria*; BH = Bahrain**; BY = Belarus**; BE = Belgium*/**; BR = Brazil**; BG = Bulgaria*/**; CA = Canada; CN = China**; CO = Colombia**; HR = Croatia**; CZ = Czech Republic*/**; DK = Denmark*; FI = Finland*/**; FR = France*/**; DE = Germany*/**; GR = Greece*/**; HU = Hungary*/**; IN = India**; ID = Indonesia**; IE = Ireland*/**; IL = Israel**; IT = Italy*; JP = Japan**; KE = Kenya**; KR = Korea, Republic Of**; LR = Libya**; MY = Malaysia**; MX = Mexico**; AN = Netherlands Antilles*/**; NZ = New Zealand**; NG = Nigeria**; NO = Norway*/**; PK = Pakistan**; PL = Poland*/**; PT = Portugal*/**; RU = Russian Federation**; RO = Romania*/**; SA = Saudi Arabia**; RS = Serbia Republic Of**; SG = Singapore**; SK = Slovakia*/**; SI = Slovenia*/**; ZA = South Africa**; ES = Spain*/**; SE = Sweden*; CH = Switzerland*/**; TH = Thailand**; TR = Turkey*/**; UA = Ukraine**; AE = United Arab Emirates**; GB = United Kingdom*; US = United States of America; VN = Vietnam**</p> <p>Note(s):</p> <p>Countries outside the CB Scheme membership may also accept this report. * Only applicable for Group Differences (if any). See attachment 3 for details. ** No National Differences Declared</p> <p>Germany, Denmark, Finland, United Kingdom, Israel, Republic of Korea, Sweden and Slovenia National differences to IEC 60950-1:2005 (Second Edition) + Am 1:2009 evaluated.</p> <p>Australia, China, Switzerland, Spain, Ireland and Norway National differences to IEC 60950-1:2005 evaluated.</p> <p>Japan National differences to IEC 60950-1:2001 evaluated.</p> <p>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.</p>	

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>

BAR CODE	SWS50-5	TDK·Lambda	INPUT: 100-240VAC ~ 1.5 A 50/60Hz	UL ^C US CE
MADE IN CHINA	V ADJ H	OUTPUT: 5 V \Rightarrow 10 A	+V -V \perp L N	

BAR CODE	SWS75-5	TDK·Lambda	INPUT: 100-240VAC ~ 1.9 A 50/60Hz	UL ^C US CE
MADE IN CHINA	V ADJ H	OUTPUT: 5 V \Rightarrow 15 A	+V -V \perp L N	

BAR CODE	SWS100-5	TDK·Lambda	INPUT: 100-240VAC ~ 1.5 A 50/60Hz	UL ^C US CE
MADE IN CHINA	V ADJ H	OUTPUT: 5 V \Rightarrow 20 A	+V +V -V -V \perp L N	

BAR CODE	SWS150-5	TDK·Lambda	INPUT: 100-240VAC ~ 2.1 A 50/60Hz	UL ^C US CE
MADE IN CHINA	V ADJ H	OUTPUT: 5 V \Rightarrow 30 A	+V +V -V -V \perp L N	

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 checked="" type="checkbox"/> type A <input checked="" 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%, +10% (for SWS150-15/DSX, SWS150-18, SWS150-28, SWS150-28/DSX) -10%, +6% (for other models)
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)	: Less than 2000
Mass of equipment (kg)	: 0.4kg (SWS50 series), 0.5kg (SWS75 series), 0.7kg (SWS100 series), 0.9kg (SWS150 series)
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	: 2010-10-01 (for original report 15039859 001) 2015-12-11 (for this report)
Date(s) of performance of tests	: 2010-10-08 to 2010-10-30 (for original report 15039859 001) 2015-12-11 (construction check for this report)
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 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..... : **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 Settaya-machi, Nagaoka-shi, Niigata 940-1195, JAPAN

5. ALPS Logistics Facilities Co., Ltd.
593-1 Nishi-Ohashi, Tsukuba-shi, Ibaraki 305-0831, JAPAN

General product information:

The equipment is a switching power supply (open frame built-in type) for DC supply of information technology equipment.

All models in each series are identical except for output rating, secondary winding of transformer and related minor components

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

The test samples are production samples without serial number.

Model list:

Model	Input Rated Voltage (V)	Input Rated current (A)	Input frequency (Hz)	Rated Output Voltage (V)	Rated Output Current(A)	Rated Output (VA)
SWS50-3v	100-240	1.0	50/60	3.3	10.0	33
SWS50-5v	100-240	1.5	50/60	5.0	10.0	50.0
SWS50-12v	100-240	1.5	50/60	12.0	4.3	51.6
SWS50-15v	100-240	1.5	50/60	15.0	3.5	52.5
SWS50-18v	100-240	1.5	50/60	18.0	2.8	50.4
SWS50-24v	100-240	1.5	50/60	24.0	2.1	50.4
SWS75-3v	100-240	1.5	50/60	3.3	15.0	49.5
SWS75-5v	100-240	1.9	50/60	5.0	15.0	75.0

SWS75-12v	100-240	1.9	50/60	12.0	6.3	75.6
SWS75-15v	100-240	1.9	50/60	15.0	5.0	75.0
SWS75-24v	100-240	1.9	50/60	24.0	3.2	76.8
SWS100-3v	100-240	1.2	50/60	3.3	20.0	66
SWS100-5v	100-240	1.5	50/60	5.0	20.0	100.0
SWS100-12v	100-240	1.5	50/60	12.0	8.5	102.0
SWS100-15v	100-240	1.5	50/60	15.0	6.7	100.5
SWS100-24v	100-240	1.5	50/60	24.0	4.3	103.2
SWS150-3v	100-240	1.7	50/60	3.3	30.0	99
SWS150-5v	100-240	2.1	50/60	5.0	30.0	150.0
SWS150-12v	100-240	2.1	50/60	12.0	12.5	150.0
SWS150-15v	100-240	2.1	50/60	15.0	10.0	150.0
SWS150-24v	100-240	2.1	50/60	24.0	6.3	151.2
SWS150-24/T1v	100-240	2.1	50/60	24.0	6.3	151.2
SWS150-12/96v	100-240	2.1	50/60	9.6	12.5	120.0
SWS150-15/DSXv	100-240	2.1	50/60	15.9	9.4	149.5
SWS150-18v	100-240	2.1	50/60	18	8.4	151.2
SWS150-28v	100-240	2.1	50/60	28	5.4	151.2
SWS150-28/DSXv	100-240	2.1	50/60	29.5	5.1	150.5

Additional Information

- The product is component type power supply., the overall compliance shall be investigated in the complete information technology equipment, in particular as:
 - Fire enclosure
 - Mechanical enclosure
 - Electrical enclosure
- 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.
- The product is a **component** intended for incorporation in information technology equipment, the overall compliance shall be investigated in the complete information technology equipment
- The label is draft of artwork for marking plates pending approval by National Certification Bodies and it shall not be affixed to products prior to such an approval.
- Tests were repeated with each alternative source of components with identical results unless otherwise specified.

Definition of variable(s):

SWS50-xv, SWS75-yv, SWS100-yv, SWS150-zv

Variable:	Range of variable:	Content:
x	3, 5, 12, 15, 18, 24	Stand for output voltage.
y	3, 5, 12, 15, 24	Stand for output voltage.

z	3, 5, 12, 15, 18, 24, 28, 15/DSX, 28/DSX, 24/T1, 12/96	Stand for output voltage.	
v	blank, CO2 or /CO2	Blank means no coating material on PWB. CO2 or /CO2 means additional coating material on the PWB.	
History of CB Test Report:			
<p>1) Test report No. 15029398 001: The test report was issued by TÜV Rheinland (Shanghai) Co., Ltd. for TDK-Lambda Corp. Nagaoka Technical Center and addressed model mentioned page 2 tested to IEC IEC 60950-1: 2005 (2nd Edition).</p> <p>2) Test report No. 15039859 001: The test report was issued by TÜV Rheinland (Shanghai) Co., Ltd. for TDK-Lambda Corp. Nagaoka Technical Center and addressed model mentioned page 2 tested to IEC IEC 60950-1: 2005 (2nd Edition); Am 1: 2009.</p> <p>3) Test report No. 15057215 001: The test report was issued by TÜV Rheinland (Shanghai) Co., Ltd. for TDK-Lambda Corp. Nagaoka Technical Center to combine 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.</p> <p>4) Test report No. 15087741 001: This test report issued for TDK-Lambda Corp. Nagaoka Technical Center serves to upgrade test requirement to IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013 and combine the above mentioned test reports and update national difference. 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.</p>			
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
-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
Indicate used abbreviations (if any)			