



Test Report issued under the responsibility of:



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

Report Reference No	4786910624-4
Date of issue	2015-09-09
Total number of pages	140
CB Testing Laboratory	UL Japan, Inc.
Address	4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan
Applicant's name	TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER
Address	R&D DIV 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA 940-1195 JAPAN
Test specification:	
Standard	IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013
Test procedure	CB Scheme
Non-standard test method	N/A
Test Report Form No.	IEC60950_1F
Test Report Form originator	SGS Fimko Ltd
Master TRF	Dated 2014-02

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Test item description	: Switching Power Supply
Trade Mark	: TDK or TDK-Lambda
Manufacturer	: TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER R&D DIV 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA 940-1195 JAPAN
Model/Type reference	: RTWx-y (RTW50W series) RTWx-y# (RTW50W series) RTWx-y* (RTW50W series) (see 2) Differences between the models for details)
Ratings	: Input: AC 100-240V, 50-60Hz, 0.6-0.3A (Output Voltage Type A) AC 100-240V, 50-60Hz, 0.7-0.35A (Other models) Output: (See Model Differences)

Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB Testing Laboratory Testing location / address: UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan <input type="checkbox"/> Associated CB Test Laboratory Testing location / address: Tested by (name + signature): Ayano Matsumoto Approved by (name + signature).....: Tetsuo Iwasaki	<div style="margin-top: 20px;"><i>A. Matsumoto</i></div> <hr style="width: 100%;"/> <div style="margin-top: 5px;">Tetsuo Iwasaki</div>
<input type="checkbox"/> Testing Procedure: TMP/CTF Stage 1 Testing location / address: Tested by (name + signature): Approved by (name + signature).....:	<hr/> <hr/> <hr/>
<input type="checkbox"/> Testing Procedure: WMT/CTF Stage 2 Testing location / address: Tested by (name + signature): Witnessed by (name + signature) ..: Approved by (name + signature).....:	<hr/> <hr/> <hr/> <hr/>
<input type="checkbox"/> Testing Procedure: SMT/CTF Stage 3 or 4 Testing location / address: Tested by (name + signature): Approved by (name + signature).....: Supervised by (name + signature) .:	<hr/> <hr/> <hr/> <hr/>
<input type="checkbox"/> Testing Procedure: RMT Testing location / address: Tested by (name + signature): Approved by (name + signature).....: Supervised by (name + signature) .:	<hr/> <hr/> <hr/> <hr/>

<p>List of Attachments</p> <p>National Differences (24 pages)</p> <p>Enclosures (58 pages)</p>
<p>Summary Of Testing</p> <p>Unless otherwise indicated, all tests were conducted at UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan.</p>

Tests performed (name of test and test clause)	Testing location / Comments
Input: Single-Phase (1.6.2)	
Capacitance Discharge (2.1.1.7)	
SELV Reliability Test Including Hazardous Voltage Measurements (2.2.2, 2.2.3, 2.2.4)	
Protective Bonding II (2.6.3.4, 2.6.1)	
Humidity (2.9.1, 2.9.2, 5.2.2)	
Determination of Working Voltage; Working Voltage Measurement (2.10.2)	
Transformer and Wire /Insulation Electric Strength (2.10.5.13)	
Heating (4.5.1, 1.4.12, 1.4.13)	
Ball Pressure (4.5.5, 4.5)	
Touch Current (Single-Phase; TN/TT System) (5.1, Annex D)	
Electric Strength (5.2.2)	
Component Failure (5.3.1, 5.3.4, 5.3.7)	
Abnormal Operation (5.3.1 - 5.3.9)	
Transformer Abnormal Operation (5.3.3, 5.3.7b, Annex C.1)	
Power Supply Output Short-Circuit/Overload (5.3.7)	
<p>Summary of Compliance with National Differences:</p> <p>Countries outside the CB Scheme membership may also accept this report.</p> <p>List of countries addressed: CA, DE, DK, EU, FI, GB, SE, SI, US</p> <p>The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013</p>	

Copy of Marking Plate - Refer to Enclosure titled Marking Plate for copy.

Test item particulars :	
Equipment mobility	for building-in
Connection to the mains	not directly connected to the mains
Operating condition	continuous
Access location	restricted access location
Over voltage category (OVC)	OVC II
Mains supply tolerance (%) or absolute mains supply values	-10%, +6%
Tested for IT power systems	Yes
IT testing, phase-phase voltage (V)	230V
Class of equipment	Not classified
Considered current rating of protective device as part of the building installation (A)	Considered for 16A
Pollution degree (PD)	PD 2
IP protection class	Not rated, indoor use only.
Altitude of operation (m)	≤ 2000 m
Altitude of test laboratory (m)	< 1000 m
Mass of equipment (kg)	Approx. 0.3kg
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(s) of receipt of test item	N/A
Date(s) of Performance of tests	2005-10-18 – 2005-10-19
General remarks:	
<p>"(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a point is used as the decimal separator.</p>	
Manufacturer's Declaration per Sub Clause 4.2.5 of IEC60950-1:	
The application for obtaining a CB Test Certificate includes more than one factory 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
When differences exist, they shall be identified in the General Product Information section.	
Name and address of Factory(ies):	TDK-LAMBDA MALAYSIA SDN BHD PLO33 KAWASAN PERINDUSTRIAN SENAI

81400 SENAI MALAYSIA

TDK-LAMBDA MALAYSIA SDN BHD
LOT 2 & 3, BATU 9 3/4
KAWASAN PERINDUSTRIAN
BANDAR BARU JAYA GADING
26070 KUANTAN MALAYSIA

ALPS LOGISTICS FACILITIES CO LTD
593-1 NISHIOHASHI
TSUKUBA-SHI
IBARAKI-KEN 305-0831 JAPAN

GENERAL PRODUCT INFORMATION:

Report Summary

All applicable tests according to the referenced standard(s) have been carried out.

Product Description

Built-in type switching power supply for use in general office equipment (host equipment is not specified).

Model Differences

RTWx-y (RTW50W series), RTWx-y# (RTW50W series), RTWx-y*(RTW50W series)

All models are essentially the same except for the rating, switching transformer, secondary circuits not affecting safety (see below):

= A, B, D, J, L, M or U indicating various options, option combinations and future unspecified options not affecting safety.

* = C, E, G, H, N, S, T or V indicating various options, option combinations and future unspecified options not affecting safety.

x = 1 to 999 and may include a period after the first or second digit (if more than one digit).
x indicates the rated output voltage as shown in the table below.

y = 1 to 999 may include a period after the first or second digit (if more than one digit). or the letter R and which may be followed by the letter K.
y indicates the rated output current as shown in the table below.

For possible combinations see table below.

Cover installation:

Models designated RTWx-y and RTWx-y# are not equipped with a cover.
Models designated RTWx-y* are equipped with a cover.

Differences between Output Voltage Types A, B, C, D, E, F and G:

Transformer (T3)

Installation or non-installation of secondary components for adjusting the Output Voltage Ratings:

Output type	Input current	Output	Transformer T3
A	0.6 – 0.3A	DC 2.6-4.0V , 12.5A max, 41.25W max	SRW2014PQ-T01V015
B	0.7 – 0.35A	DC 4.0-5.8V, 10A max, 50W max	SRW2014PQ-T01V015
C	0.7 – 0.35A	DC 9.6-13.2V, 4.3A max, 51.6W max	SRW2014PQ-T02V015
D	0.7 – 0.35A	DC 12.0-16.5V, 3.5A max, 52.5W max	SRW2014PQ-T10V015
E	0.7 – 0.35A	DC 19.2-26.4V, 2.2A max, 52.8W max	SRW2014PQ-T03V014
F	0.7 – 0.35A	DC 22.4-30.8V, 1.8A max, 50.4W max	SRW2014PQ-T11V014
G	0.7 – 0.35A	DC 38.4-52.8V, 1.1A max, 52.8W max	SRW2014PQ-T04V014

Voltage adjustments within the respective voltage ranges of Types A, B, C, D, E, F, G are made by means of voltage adjusting components within the secondary circuit.

Terminal Block:

Suffix "L" models: 3JT1AG092 (L-shaped terminal)
 Other models: 3JT0AG092

Examples of the relationship between Type Designation and Power Supply characteristics:

RTW03-12R

Output Voltage: DC 3V
 Output Current: 12A
 Cover: Not equipped
 Terminal: Normal

RTW48-1R1C

Output Voltage: DC 48V
 Output Current: 1.1A
 Cover: Equipped
 Terminal: Normal

RTW24-2R2L

Output Voltage: DC 24V
 Output Current: 2.2A
 Cover: Not equipped
 Terminal: L-shaped

RTW03-12RH

Output Voltage: DC 3V
 Output Current: 12A
 Cover: Equipped
 Terminal: L-Shaped

RTW12-4R3L

Output Voltage: DC 12V
 Output Current: 4.3A
 Cover: Not equipped
 Terminal: L-shaped

RTW03-12B

Output Voltage: DC 3V
 Output Current: 12A
 Cover: Not equipped
 Terminal: Normal

Additional Information

This report is a reissue of CBTR Ref. No.: 12027296 001, CB Test Certificate Ref. No.JPTUV-048671. Based on the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, has been determined that the product continues to comply with the standard.

Sample Received date is 2003-07-09.
 Construction review was conducted on 2003-07-09.

Abbreviations used in the report.
 - built-in application: B/I

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer’s specification of: 50°C (models without cover), 40°C (models with cover).
- The product is intended for use on the following power systems: TN, IT (for Norway)
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (which includes all European national differences, including those specified in this test report).

Engineering Conditions of Acceptability

When installed in an end-product, consideration must be given to the following:

- The end-product Electric Strength Test is to be based upon a maximum working voltage of: max working voltage: 503 Vrms, 940 Vpk
- The following secondary output circuits are SELV: All output
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- The maximum investigated branch circuit rating is: 16 A
- The investigated Pollution Degree is: 2
- Proper bonding to the end-product main protective earthing termination is: Required
- An investigation of the protective bonding terminals has: Not been conducted
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C): T3 (Class B)
- The following end-product enclosures are required: Fire, Electrical

Abbreviations used in the report:

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