

	<p>Test Report issued under the responsibility of:</p>	
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<p>TEST REPORT IEC 60950-1 Information technology equipment - Safety - Part 1: General requirements</p>	
Report Reference No	4786910624-1
Date of issue	2015-09-08
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CB Testing Laboratory	UL Japan, Inc.
Address	4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan
Applicant's name	TDK-LAMBDA CORP
Address	NAGAOKA TECHNICAL CENTER 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·Lambda
Manufacturer	TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER R&D DIV 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA 940-1195 JAPAN
Model/Type reference	1) CN100A24-xyz 2) CN50A24-xyz (x = 5, 12, 15, 24 for output voltage, y = / or blank, z = LT, CO, LTCO or blank)
Ratings	Input: 1) 14.4-36Vdc, 11.0A 2) 14.4-36Vdc, 5.5A Output: 1) 5Vdc, 20A 2) 5Vdc, 10A 12Vdc, 8.4A 12Vdc, 4.2A 15Vdc, 6.7A 15Vdc, 3.4A 24Vdc, 4.2A 24Vdc, 2.1A

Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB Testing Laboratory	UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan Testing location / address
<input type="checkbox"/> Associated CB Test Laboratory	Testing location / address Tested by (name + signature).....: Ayano Matsumoto <i>A. Matsumoto</i>
	Approved by (name + signature).....: Tetsuo Iwasaki Tetsuo Iwasaki
<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).....: _____ Approved by (name + signature).....: _____ Supervised by (name + signature) .: _____
<input type="checkbox"/> Testing Procedure: RMT	Testing location / address Tested by (name + signature).....: _____ Approved by (name + signature).....: _____ Supervised by (name + signature) .: _____

List of Attachments National Differences (24 pages) Enclosures (29 pages)
Summary Of Testing Unless otherwise indicated, all tests were conducted at UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan.

Tests performed (name of test and test clause)	Testing location / Comments
Input: Single-Phase (1.6.2)	
Energy Hazard Measurements (2.1.1.5, 2.1.2, 1.2.8.10)	
SELV Reliability Test Including Hazardous Voltage Measurements (2.2.2, 2.2.3, 2.2.4)	
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)	
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)	
125 mm (500 W) Flame / 20 mm (50W) Flame (Annex A.1, A.2)	
<p>Summary of Compliance with National Differences: Countries outside the CB Scheme membership may also accept this report. List of countries addressed: CA, DE, DK, EU, FI, GB, KR, SE, SI, US 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	N/A
Over voltage category (OVC)	OVC II
Mains supply tolerance (%) or absolute mains supply values	N/A
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	Not classified
Considered current rating of protective device as part of the building installation (A)	N/A
Pollution degree (PD)	PD 2
IP protection class	Not rated, indoor use only
Altitude of operation (m)	≤ 2000 m
Altitude of test laboratory (m)	< 2000 m
Mass of equipment (kg)	0.1 (approx.)
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	2011-04-18, 2011-06-13 2013-04-10 – 2013-05-10
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:	
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 CORP

2704-1 SETTAYA-MACHI
NAGAOKA-SHI
NIIGATA-KEN 940-1195 JAPAN

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

GENERAL PRODUCT INFORMATION:

Report Summary

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

Product Description

The product tested is built-in type DC-DC Switching Power supply for use in office environment.

Access to the product by operator shall be prevented by final application.

Aluminum base single layer PCB plate is used for mounting power components and external heatsink. In order to maintain SELV output, the baseplate must be protectively earthed by final application.

The product has been assessed under the assumption that the d.c. input is not isolated from a.c. mains up to 115Vac. For d.c. input derived from a.c. mains above 115Vac up to 250Vac, suitable isolation shall be provided by final application.

Installation requires following external components.

- Input Fuse, rated 250V, 15A (for CN100A24-x, CN100A24-x/LT), rated 250V, 8A (for CN50A24-x, CN50A24-x/LT)
- Electrolytic Capacitor(s) for the rectifying circuits of primary
- Smoothing electrolytic capacitor(s) for output circuits
- Heatsink (to be secured on the product)

Relevant tests were performed in the most severe condition allowed by the installation instruction. the outputs were operated at rated load.

Model Differences

Model / Function	CN100A24-5 CN100A24-5/LT	CN100A24-12 CN100A24-12/LT	CN100A24-15 CN100A24-15/LT	CN100A24-24 CN100A24-24/LT
Output Voltage / Current	5Vdc / 20A	12Vdc / 8.4A,	15Vdc / 6.7A	24Vdc / 4.2A
Output Voltage range	-10%, +20% (4.5Vdc – 6Vdc)	± 10%(10.8Vdc – 13.2Vdc)	± 10% (13.5Vdc – 16.5Vdc)	± 10% (21.6Vdc – 26.4Vdc)
Main Transformer (reinforced)	T102 with control winding of FET	T102	T102	T102
Control Transformer (reinforced)	T1	--	--	--
Max. output power	100W	100.8W	100.5W	100.8W

Model / Function	CN50A24-5 CN50A24-5/LT	CN50A24-12 CN50A24-12/LT	CN50A24-15 CN50A24-15/LT	CN50A24-24 CN50A24-24/LT
Output Voltage / Current	5Vdc / 10A	12Vdc / 4.2A,	15Vdc / 3.4A	24Vdc / 2.1A
Output Voltage range	-10%, +20% (4.5Vdc – 6Vdc)	± 10%(10.8Vdc – 13.2Vdc)	± 10% (13.5Vdc – 16.5Vdc)	± 10% (21.6Vdc – 26.4Vdc)
Main Transformer (reinforced)	T102 with control winding of FET	T102	T102	T102
Control Transformer (reinforced)	T1	--	--	--
Max. output power	50W	50.4W	51W	50.4W

Differences between the models with and without the suffix ' /LT'

They are identical except for followings.

- model name
- inductors (L1, L2).
- pattern layout for Inductors (L1, L2)

Definition of variable(s):		
Variable:	Range of variable:	Content:
x	5, 12, 15, 24	Output voltage
y	/ or blank	Separator
z	LT, CO, LTCO or blank	LT: Inductors (L1, L2), type LQH32PN101MN0L provided instead of type CY3H-101-DLS. Pattern layout for Inductors are also different. CO: PCBs coated with "Humi Seal 1B58LU-60" LTCO: "LT" + "CO" (see above)

Additional Information

This report is a reissue of CBTR Ref. No.:12027331 001, 12027331 002, CB Test Certificate Ref. No.JPTUV-045995, JPTUV-045995-M1. 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 2011-05-17.
Construction review was conducted on 2011-07-01.

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: 100°C at the baseplate PCB
- 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: 288Vpeak, 75Vrms (pri-sec, for CN100A24)
- The following secondary output circuits are SELV: All output
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- 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 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

Indicate used abbreviations (if any)