



	Test Report issued under the responsibility of:	
UL International Demko A/S		
TEST REPORT IEC 60950-1:2005 (2nd Edition) Information technology equipment - Safety - Part 1: General requirements		
Report Reference No	E252373-A29-CB-1	
Date of issue	2010-01-18	
Total number of pages	20	
CB Testing Laboratory	Underwriters Laboratories Taiwan Co., Ltd.	
Address	260 Da-Yeh Road, 112 Peitou Taipei City, Chinese Taipei	
Applicant's name	TDK-LAMBDA SINGAPORE PTE LTD #06-01/08	
Address	1008 TOA PAYOH NORTH SINGAPORE 318996 SINGAPORE	
Test specification:		
Standard	IEC 60950-1:2005, Second Edition	
Test procedure	CB Scheme	
Non-standard test method	N/A	
Test Report Form No.	IECEN60950_1C	
Test Report Form originator	SGS Fimko Ltd	
Master TRF	2006-06	
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Test item description	Switching Power Supply for building-in
Trade Mark	TDK-Lambda
Model/Type reference	LS200-X / YYYY, where X can be 3.3 or 5 and / YYYY can be / L, / F, / CO, / CO2, / COL, / CO2L, / COF, / CO2F or blank. LS200-X / YYYYYY, where X can be 7.5,12, 15, 18, 24, 28, 36, 40, 48 or 56 and / YYYYYY can be / B, / BCO, / BCO2, / BCOL, / BCO2L, / BM, / BMCO, / BMCO2, / BMCOL, / BMCO2L, / BL, / BML, / L, / F, / CO, / CO2, / COL, / CO2L, / COF, / CO2F, / BF, / BMF, / BCOF, / BCO2F, / BMCOF, / BMCO2F or blank.
Manufacturer	TDK-LAMBDA SINGAPORE PTE LTD #06-01/08 1008 TOA PAYOH NORTH SINGAPORE 318996 SINGAPORE
Rating	Input: 100-240 V ac, 3.5 A, 50/60 Hz Output: LS200-3.3: 3.3 V dc, 40 A; LS200-5: 5 V dc, 40 A; LS200-7.5: 7.5 V dc, 26.7 A; LS200-12: 12 V dc, 16.7 A; LS200-15: 15 V dc, 13.4 A; LS200-18: 18 V dc, 11.2 A; LS200-24: 24 V dc, 8.4 A; LS200-28: 28V dc, 7.2 A; LS200-36: 36 V dc, 5.6 A; LS200-40: 40V dc, 5 A; LS200-48: 48 V dc, 4.2 A; LS200-56: 56 V dc, 3.6 A

Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB Testing Laboratory	
Testing location / address..... :	Underwriters Laboratories Taiwan Co., Ltd. 260 Da-Yeh Road, 112 Peitou Taipei City, Chinese Taipei
<input type="checkbox"/> Associated CB Test Laboratory	
Testing location / address..... :	
Tested by (name + signature) :	Chiang Shiau Hui
Approved by (+ signature) :	Randy Johnson
	 
<input type="checkbox"/> Testing Procedure: TMP	
Tested by (name + signature) :	_____
Approved by (+ signature) :	_____
Testing location / address..... :	_____
<input type="checkbox"/> Testing Procedure: WMT	
Tested by (name + signature) :	_____
Witnessed by (+ signature)..... :	_____
Approved by (+ signature) :	_____
Testing location / address..... :	_____
<input type="checkbox"/> Testing Procedure: SMT	
Tested by (name + signature) :	_____
Approved by (+ signature) :	_____
Supervised by (+ signature) :	_____
Testing location / address..... :	_____
<input type="checkbox"/> Testing Procedure: RMT	
Tested by (name + signature) :	_____
Approved by (+ signature) :	_____
Supervised by (+ signature) :	_____
Testing location / address..... :	_____

Issue Date: 2010-01-18
Correction 1 2010-01-26

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Report Reference #

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Summary of Testing:

No tests were conducted

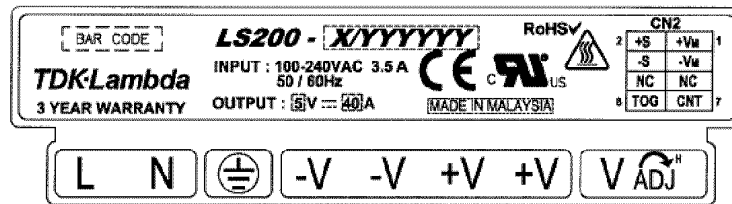
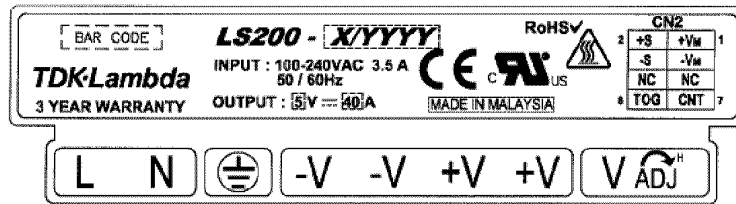
Summary of Compliance with National Differences:

AT, AU, BE, CA, CH, CZ, DE, DK, EU, FI, FR, GB, GR, HU, IT, JP, KR, NL, NO, PL, SE, SI, SK, US

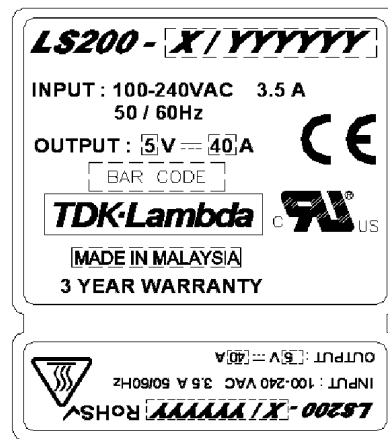
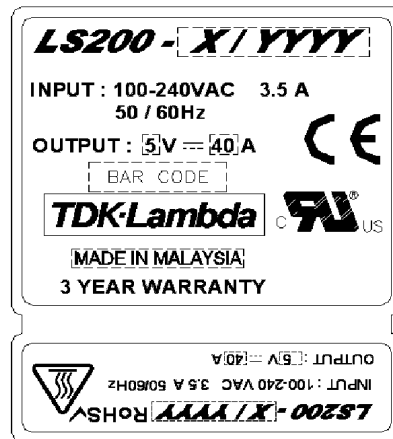
Copy of Marking Plate

LS200

For /F, /CO, /CO2, /BM, /B, /COF, /CO2F, /BMF, /BF, /BMCO, /BMCO2, /BCO, /BCO2, /BMCOF, /BMCO2F, /BCOF, /BCO2F or blank



For /L, /COL, /CO2L, /BML, /BL, /BMLCOL, /BMCO2L, /BCOL, /BMCO2L



Test item particulars :	
Equipment mobility	for building-in
Connection to the mains	N/A
Operating condition	continuous
Over voltage category	OVC II
Mains supply tolerance (%)	+10%, -10%
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	Class I (earthed)
Mass of equipment (kg)	Open frame: 0.60 kg, Metal enclosure with ventilation: 0.63, With Fan: 0.68
Pollution degree	PD 2
IP protection class	IP X0
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	N/A
General remarks:	
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 testing laboratory.	
"(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report.	
Throughout this report a point is used as the decimal separator.	
Refer to the Cover Page For Test Report for a list of all Factory Locations.	

GENERAL PRODUCT INFORMATION:
Report Summary
The original report was modified on 2010-01-26 to include the following changes/additions: The original report was modified on 2010-01-26 to include the following changes/additions: This test report shall be read in conjunction with the original report, number: E252373-A29-CB-1, issued 2010-01-18 with CB Certificate No. (DK-17869), issued 2010-01-18.
This report has been corrected, due to typo: 1) Model differences X change from 3.5 to 3.3

- 2) Table 1.5.1, TB1 type/ model from DT-45 series to DT-4 series
- 3) Table 1.5.1, L20 type/ model from JBL23801 to JLC23801
- 4) Table 5.3, T1 pin 1-2, 5-7, 11-12 and 9,10-13,14 temperature reading.
- 5) Change photo 3-04.

Product Description

Electronic components mounted on PWB and housed with metal enclosure.

Model Differences

All Models are similar to each other, except the following:-

- a) Output rating;
- b) Transformer (T1) Secondary winding;
- c) Model designation.

LS200-X / YYYY, where X can be 3.3 or 5 and / YYYY can be / L, / F, / CO, / CO2, / COL, / CO2L, / COF, / CO2F or blank.

LS200-X / YYYYYY, where X can be 7.5, 12, 15, 18, 24, 28, 36, 40, 48 or 56 and / YYYYYY can be / B, / BCO, / BCO2, / BCOL, / BCO2L, / BM, / BMCO, / BMCO2, / BMCOL, / BMCO2L, / BL, / BML, / L, / F, / CO, / CO2, / COL, / CO2L, / COF, / CO2F, / BF, / BMF, / BCOF, / BCO2F, / BMCOF, / BMCO2F or blank.

- 1) B => Input Connector (CN3) and Output connector (CN4) are from JST;
- 2) BM => Input Connector (CN3) and Output connector (CN4) are from Molex;
- 3) CO => PCB with one (1) side coating;
- 4) CO2 => PCB with two (2) sides coating;
- 5) L => Open frame (Cover removed);
- 6) blank => Input connector and output connector using terminal block TB1 and with fan
- 7) F => perforated cover, without fan

Additional Information

PWB type A and type B is differentiated by type of input and output connector used. PWB type A is using terminal block TB1, and PWB type B is using connector CN3 and CN4. (See table 1.5.1 for connector details).

The tests are based on +10% and -10% tolerance and considered in compliance with +6% and -10% tolerance.

The label is a draft of an artwork for marking plate pending approval by National Certification Bodies and it shall not be affixed to products prior to such an approval.

TDK-Lambda Singapore Pte Ltd confirms that products, manufactured in the Jiangsu/ China, Ho Chi Minh/ Vietnam production locations are identical to those produced in the Kuantan/ Malaysia facility.

Technical Considerations

The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: Forced Air - 50 °C, Conventional cooling - 30 °C

The product is intended for use on the following power systems: TN

The product was investigated to the following additional standards: IEC 60950-1 Second Edition & EN 60950-1:2006 (which includes all European national differences, including those specified in this test report).

The following accessible locations (with circuit/schematic designation) are within a limited current circuit: Secondary side of C50,

The following were investigated as part of the protective earthing/bonding: Printed wiring board trace (refer to Enclosure, Miscellaneous 7-03),

The combination pulse of 2.5kV/1.25kA is selected from sub-clause 2.3.6 of IEC 61051-2:1991 with Amendment 1:2009. --

Engineering Conditions of Acceptability

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

The following Production-Line tests are conducted for this product: Electric Strength, Earthing Continuity

The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-SELV: 438.656 Vrms, 783.203 Vpk, Primary-Earthed Dead Metal: 236.751 Vrms, 340.365 Vpk

The following secondary output circuits are SELV: LS200-3.3: 3.3 V dc; LS200-5: 5 V dc; LS200-7.5: 7.5 V dc; LS200-12: 12 V dc; LS200-15: 15 V dc; LS200-18: 18 V dc; LS200-24: 24 V dc; LS200-28: 28V dc; LS200-36: 36 V dc; LS200-40: 40V dc; LS200-48: 48 V dc; LS200-56: 56 V dc,

The following secondary output circuits are at non-hazardous energy levels: LS200-3.3: 3.3 V dc; LS200-5: 5 V dc,

The following secondary output circuits are Limited Current Circuits: Secondary side of C50

The following output terminals were referenced to earth during performance testing: T1 Pin 9, 10

The power supply terminals and/or connectors are: All models are suitable for factory wiring only

The maximum investigated branch circuit rating is: 20 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: Been conducted

The following input terminals/connectors must be connected to the end-product supply neutral: For model LS200-X /YYYY and LS200-X /YYYYYY, TB1 pin 2 or CN3 pin 2.

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): LS200-3.3; LS200-5; LS200-7.5; LS200-12; LS200-15; LS200-18; LS200-24; LS200-28; LS200-36; LS200-40; LS200-48; LS200-56: T1 (Class B)

The following end-product enclosures are required: Fire, Mechanical, Electrical

Power Supply Unit only evaluated at flat (bottom) on horizontal position for all test.