



Test Report issued under the responsibility of:



TEST REPORT

IEC 60950-1

**Information technology equipment – Safety –
Part 1: General requirements**

Report Number..... : 30680243.023
Date of issue..... : August 6th, 2015
Total number of pages : 76+ attachments

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
 EN 60950-1:2006+A11+A1+A12+A2

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:

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Test item description	Switching power supplies and accessory racks-component for build-in
Trade Mark :	TDK-Lambda
Manufacturer :	TDK-Lambda Corp. Nagaoka Technical Center 2704-1 Settaya-machi Nagaoka-shi, Niigata, 940-1195 JAPAN
Model/Type reference	<p>Single Power Supply Modules:</p> <ol style="list-style-type: none"> 1) FPS1000-48xyz, -32xz, -24xz, -12xz (x="/P", "/S", "/PS", blank; y="/POE", blank; z="/CO, blank) 2) RFE1000-48xyz, -32xz, -24xz or -12xz (x="-Y", blank; y="/POE", blank; z="/CO, blank) 3) PSG1000-48. <p>Empty Racks:</p> <ol style="list-style-type: none"> 4) FPS-S1Uxy (x= "/P", "/PS" "/TB", blank; y-/CO, blank) 5) FPS-T1Uxy (x= "/P", "/PS", blank; y=/CO, blank) 6) FPS-TB <p>Triple Power Supply Modules (based on FPS-S1U empty rack):</p> <ol style="list-style-type: none"> 7) FPS3000-48x, -32x, -24x or -12x (x= "/P", "/PS", "/TB", blank) <p>Triple Power Supply Modules (based on FPS-T1U empty rack):</p> <ol style="list-style-type: none"> 8) FPS3000-48x, -32x, -24x or -12x (x= "/P", "/PS", blank)
Ratings	<p>1), 2), 3) Input= 100 - 240 Vac, 13-6.3 A, 50/60 Hz; Output: 1) (x= "/S", blank; y="/POE", blank) [-48 @ T=50°C]: V1= 48 Vdc, 21 A; V2= 12V dc, 0.25A; [-48 @ T=70°C]: V1= 48 Vdc, 11.55 A; V2= 12V dc, 0.25A; [-32 @ T=50°C]: V1= 32 Vdc, 31 A; V2= 12V dc, 0.25A; [-32 @ T=70°C]: V1= 32 Vdc, 17 A; V2= 12V dc, 0.25A; [-24 @ T=50°C]: V1= 24 Vdc, 40 A; V2= 12V dc, 0.25A; [-24 @ T=70°C]: V1= 24 Vdc, 22 A; V2= 12V dc, 0.25A; [-12 @ T=50°C]: V1= 12 Vdc, 72 A; V2= 12V dc, 0.25A; [-12 @ T=70°C]: V1= 12 Vdc, 39.6 A; V2= 12V dc, 0.25A;</p> <p>OR</p> <p>1) (x="/P", "/PS"; y="/POE", blank) [-48 @ T=50°C]: V1= 48 Vdc, 21 A; V2= 12V dc, 0.25A; [-48 @ T=60°C]: V1= 48 Vdc, 16.8 A; V2= 12V dc, 0.25A; [-32 @ T=50°C]: V1= 32 Vdc, 31 A; V2= 12V dc, 0.25A; [-32 @ T=60°C]: V1= 32 Vdc, 24.8 A; V2= 12V dc, 0.25A; [-24 @ T=50°C]: V1= 24 Vdc, 40 A; V2= 12V dc, 0.25A; [-24 @ T=60°C]: V1= 24 Vdc, 32 A; V2= 12V dc, 0.25A; [-12 @ T=50°C]: V1= 12 Vdc, 72 A; V2= 12V dc, 0.25A; [-12 @ T=60°C]: V1= 12 Vdc, 57.6 A; V2= 12V dc, 0.25A</p> <p>2) [-48 @ T=50°C]: V1= 48 Vdc, 21 A; V2= 12V dc, 0.25A; [-48 @ T=70°C]: V1= 48 Vdc, 11.55 A; V2= 12V dc, 0.25A; [-32 @ T=50°C]: V1= 32 Vdc, 31 A; V2= 12V dc, 0.25A; [-32 @ T=70°C]: V1= 32 Vdc, 17 A; V2= 12V dc, 0.25A; [-24 @ T=50°C]: V1= 24 Vdc, 40 A; V2= 12V dc, 0.25A; [-24 @ T=70°C]: V1= 24 Vdc, 22 A; V2= 12V dc, 0.25A; [-12 @ T=50°C]: V1= 12 Vdc, 72 A; V2= 12V dc, 0.25A;</p>

	<p>[-12 @ T=70°C]: V1= 12 Vdc, 39.6 A; V2= 12V dc, 0.25A;</p> <p>3) [-48 @ T=50°C]: V1= 48 Vdc, 21 A; V2= 12V dc, 0.25A; [-48 @ T=70°C]: V1= 48 Vdc, 11.55 A; V2= 12V dc, 0.25A;</p> <p>4), 7) (x= "/P", "/PS", blank) Input: (per each installed unit, up to 3 units): 100-240Vac, 13-6.3A, 50/60 Hz; Output: [-48 @ T=50°C]: V1= 48 Vdc, 63 A; V2= 12V dc, 0.75A; [-48 @ T=60°C]: V1= 48 Vdc, 50.4 A; V2= 12V dc, 0.75A; [-32 @ T=50°C]: V1= 32 Vdc, 93 A; V2= 12V dc, 0.75A; [-32 @ T=60°C]: V1= 32 Vdc, 74.4 A; V2= 12V dc, 0.75A; [-24 @ T=50°C]: V1= 24 Vdc, 120 A; V2= 12V dc, 0.75A; [-24 @ T=60°C]: V1= 24 Vdc, 96 A; V2= 12V dc, 0.75A. [-12 @ T=50°C]: V1= 12 Vdc, 216 A; V2= 12V dc, 0.75A; [-12 @ T=60°C]: V1= 12 Vdc, 172.8 A; V2= 12V dc, 0.75A.</p> <p>OR</p> <p>4), 7) (x= "/TB") Input: 100-240Vac, 39-18.9A, 50/60 Hz Outputs: [-48 @ T=50°C]: V1= 48 Vdc, 63 A; V2= 12V dc, 0.75A; [-48 @ T=70°C]: V1= 48 Vdc, 34.66 A; V2= 12V dc, 0.75A; [-32 @ T=50°C]: V1= 32 Vdc, 93 A; V2= 12V dc, 0.75A; [-32 @ T=70°C]: V1= 32 Vdc, 51 A; V2= 12V dc, 0.75A; [-24 @ T=50°C]: V1= 24 Vdc, 120 A; V2= 12V dc, 0.75A; [-24 @ T=70°C]: V1= 24 Vdc, 66 A; V2= 12V dc, 0.75A. [-12 @ T=50°C]: V1= 12 Vdc, 216 A; V2= 12V dc, 0.75A; [-12 @ T=70°C]: V1= 12 Vdc, 118.8 A; V2= 12V dc, 0.75A.</p> <p>5), 8) Input (per each installed unit): 100-240 Vac, 13-6.3 A, 50/60 Hz; Outputs (per each installed unit): [-48 @ T=50°C]: V1= 48 Vdc, 21 A; V2= 12V dc, 0.25A; [-48 @ T=60°C]: V1= 48 Vdc, 16.8 A; V2= 12V dc, 0.25A; [-32 @ T=50°C]: V1= 32 Vdc, 31 A; V2= 12V dc, 0.25A; [-32 @ T=60°C]: V1= 32 Vdc, 24.8 A; V2= 12V dc, 0.25A; [-24 @ T=50°C]: V1= 24 Vdc, 40 A; V2= 12V dc, 0.25A; [-24 @ T=60°C]: V1= 24 Vdc, 32 A; V2= 12V dc, 0.25A; [-12 @ T=50°C]: V1= 12 Vdc, 72 A; V2= 12V dc, 0.25A; [-12 @ T=60°C]: V1= 12 Vdc, 57.6 A; V2= 12V dc, 0.25A;</p> <p>6) Input: 100-240 Vac, 13-6.3 A, 50/60 Hz; Output: [-48 @ T=50°C]: V1= 48 Vdc, 21 A; V2= 12V dc, 0.25A; [-48 @ T=70°C]: V1= 48 Vdc, 11.55 A; V2= 12V dc, 0.25A; [-32 @ T=50°C]: V1= 32 Vdc, 31 A; V2= 12V dc, 0.25A; [-32 @ T=70°C]: V1= 32 Vdc, 17 A; V2= 12V dc, 0.25A; [-24 @ T=50°C]: V1= 24 Vdc, 40 A; V2= 12V dc, 0.25A; [-24 @ T=70°C]: V1= 24 Vdc, 22 A; V2= 12V dc, 0.25A; [-12 @ T=50°C]: V1= 12 Vdc, 72 A; V2= 12V dc, 0.25A; [-12 @ T=70°C]: V1= 12 Vdc, 39.6 A; V2= 12V dc, 0.25A</p>
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Testing procedure and testing location:		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	TÜV Rheinland of North America, Inc.
Testing location/ address.....:		1279 Quarry Lane, Ste. A, Pleasanton, CA 94566
<input type="checkbox"/>	Associated CB Testing Laboratory:	
Testing location/ address.....:		
Tested by (name + signature)		Duy Nguyen
Approved by (name + signature)		Hai Nguyen
<hr/>		
<input type="checkbox"/>	Testing procedure: TMP/CTF Stage 1:	
Testing location/ address.....:		
Tested by (name + signature)		
Approved by (name + signature)		
<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/>		
<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):

1. National Differences (31 pages)
2. Photos documentation (10 pages)

Summary of testing:	
<p>Tests performed (name of test and test clause):</p> <p>Clause 1.6.2 Power Input Measurements Clause 1.7.11 Durability of Marking Test Clause 2.1.1.1 Accessibility to Energized parts Clause 2.1.1.7 Capacitance Discharge Test Clause 2.2 SELV circuits – voltage measurements (normal and fault conditions) Clause 2.6.3 Resistance of earthing conductors and their terminations Clause 2.10 Measurement of creepage- and clearance distances, solid insulation Clause 4.1 Stability test Clause 4.2 Mechanical strength test Clause 4.5 Temperature rise measurements Clause 4.6 Measurement of enclosure openings Clause 5.1 Touch current and protective conductor current Clause 5.2 Electric strength measurements Clause 5.3 Abnormal operating and fault conditions</p> <p><i>testing during original evaluation according to report number 30680243.001/'.004', '.006', '.008' and '.010', no further testing was deemed necessary for this upgrade of standard</i></p>	<p>Testing location:</p> <p>TÜV Rheinland of North America, Inc. 1279 Quarry Lane, Ste. A, Pleasanton, CA 94566</p>
<p>Summary of compliance with National Differences</p> <p>List of countries addressed:</p> <p>EU Group Differences, EU Special National Conditions, CA, US.</p> <p>Explanation of used codes: CA = Canada, US = United States of America.</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of IEC 60950-1:2005 + Am 1:2009 + Am 2:2013; EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013</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.

TDK-Lambda
FPS1000- /

INPUT	OUTPUT
100 - 240V~ 13 - 6.3A 50/60Hz	V1: V V2: 12V 0.25A

CE cRU^{us} 10V Product Safety BAUART GEPRÜFT TYPE APPROVED MADE IN CHINA

TDK-Lambda
RFE1000-

INPUT	OUTPUT
100 - 240V~ 13 - 6.3A 50/60Hz	V1: V A V2: 12V 0.25A

CE cRU^{us} 10V Product Safety BAUART GEPRÜFT TYPE APPROVED MADE IN CHINA

TDK-Lambda
FPS-S1U/

INPUT:	OUTPUT:
100 - 240V~ 13 - 6.3A EACH INPUT 50/60Hz	MAX. OUTPUT POWER : 3000W 48V MODEL: 48V 3.1A (21A PER INSTALLED FPS1000-48 UNIT) 12V 0.25A (1.5A) (0.25A PER INSTALLED FPS1000-48 UNIT) 32V MODEL: 32V 3.1A (31A PER INSTALLED FPS1000-32 UNIT) 12V 0.25A (1.5A) (0.25A PER INSTALLED FPS1000-32 UNIT) 24V MODEL: 24V 3.1A (31A PER INSTALLED FPS1000-24 UNIT) 12V 0.25A (1.5A) (0.25A PER INSTALLED FPS1000-24 UNIT) 12V MODEL: 12V 3.1A (31A PER INSTALLED FPS1000-12 UNIT) 12V 0.25A (1.5A) (0.25A PER INSTALLED FPS1000-12 UNIT)

USE ONLY FPS SERIES POWER SUPPLIES OF THE SAME OUTPUT VOLTAGE RATING.

CE cRU^{us} 10V Product Safety BAUART GEPRÜFT TYPE APPROVED MADE IN CHINA

J1

PIN#	SIGNAL
1	V TRIM (B)
2	TEMP ALARM (B)
3	DC OK (B)
4	TEMP ALARM (A)
5	ON/OFF (A)
6	DC OK (A)
7	V TRIM (A)
8	+12V AUXILIARY
9	CUR. SHARE
10	V TRIM (C)
11	SIGNALS RETURN
12	DC OK (C)
13	+ SENSE
14	AC FAIL (B)
15	ON/OFF (B)
16	AC FAIL (A)
17	NC
18	NC
19	NC
20	SCL (I2C)
21	SDA (I2C)
22	-SENSE
23	TEMP ALARM (C)
24	AC FAIL (C)
25	ON/OFF (C)

TDK-Lambda
FPS-T1U

INPUT:	OUTPUT:
100 - 240V~ 13 - 6.3A EACH INPUT 50/60Hz	MAX. OUTPUT POWER : 3000W 48V MODEL: 48V 3.1A (PER INSTALLED FPS1000-48 UNIT) 12V 0.25A 32V MODEL: 32V 3.1A (PER INSTALLED FPS1000-32 UNIT) 12V 0.25A 24V MODEL: 24V 3.1A (PER INSTALLED FPS1000-24 UNIT) 12V 0.25A 12V MODEL: 12V 3.1A (PER INSTALLED FPS1000-12 UNIT) 12V 0.25A

USE ONLY FPS SERIES POWER SUPPLIES .

CE cRU^{us} 10V Product Safety BAUART GEPRÜFT TYPE APPROVED MADE IN CHINA

J1(A), J2(B), J3(C)

PIN#	SIGNAL
1	SDA (I2C)
2	SCL (I2C)
3	SIGNAL_RET
4	ON/OFF-2
5	DC_OK
6	V TRIM
7	-SENSE
8	+SENSE
9	+12V AUXILIARY
10	CUR. SHARE
11	AC FAIL
12	ON/OFF-1
13	ON/OFF LOGIC SELECT
14	TEMP ALARM
15	-LS
16	+LS

TDK-Lambda
FPS3000- /

INPUT:	OUTPUT:
100 - 240V~ 13 - 6.3A EACH INPUT 39 - 18.9A for /TB only 50/60Hz	MAX. OUTPUT POWER : 3000W V A 12V 0.75A

USE ONLY FPS SERIES POWER SUPPLIES OF THE SAME OUTPUT VOLTAGE RATING.

CE cRU^{us} 10V Product Safety BAUART GEPRÜFT TYPE APPROVED MADE IN CHINA

J1

PIN#	SIGNAL
1	V TRIM (B)
2	TEMP. ALARM (B)
3	DC OK (B)
4	TEMP. ALARM (A)
5	ON/OFF (A)
6	DC OK (A)
7	V TRIM (A)
8	+12V AUXILIARY
9	CUR. SHARE
10	V TRIM (C)
11	SIGNALS RETURN
12	DC OK (C)
13	+ SENSE
14	AC FAIL (B)
15	ON/OFF (B)
16	AC FAIL (A)
17	NC
18	NC
19	NC
20	SCL (I2C)
21	SDA (I2C)
22	-SENSE
23	TEMP. ALARM (C)
24	AC FAIL (C)
25	ON/OFF (C)

TDK-Lambda
FPS-TB

INPUT:	OUTPUT:
100 - 240V~ 13 - 6.3A 50/60Hz	MAX. OUTPUT POWER : 1000W 48V MODEL: 48V 2.1A (PER INSTALLED FPS1000-48 UNIT) 12V 0.25A 32V MODEL: 32V 3.1A (PER INSTALLED FPS1000-32 UNIT) 12V 0.25A 24V MODEL: 24V 4.0A (PER INSTALLED FPS1000-24 UNIT) 12V 0.25A 12V MODEL: 12V 7.2A (PER INSTALLED FPS1000-12 UNIT) 12V 0.25A

USE ONLY FPS SERIES POWER SUPPLIES .

CE cRU^{us} 10V Product Safety BAUART GEPRÜFT TYPE APPROVED MADE IN CHINA

J1

PIN#	SIGNAL
1	SDA (I2C)
2	SCL (I2C)
3	SIGNAL_RET
4	ON/OFF-2
5	DC_OK
6	V TRIM
7	-SENSE
8	+SENSE
9	+12V AUXILIARY
10	CUR. SHARE
11	AC FAIL
12	ON/OFF-1
13	ON/OFF LOGIC SELECT
14	TEMP ALARM
15	-LS
16	+LS

Test item particulars	
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 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 <i>NOTE: Connection to the mains is various, depends to model: refer to General Product Information</i>
Operating condition	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location	<input checked="" type="checkbox"/> operator accessible <i>NOTE:Only front side may be accessible for user in end-installation. Component for build-in.</i> <input 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	
Tested for IT power systems	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V)	
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)	±10%
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class	not rated
Altitude during operation (m)	max. 3000m
Altitude of test laboratory (m)	0
Mass of equipment (kg)	2kg for each FPS1000, RFE1000 power units and PSG1000-48; 0.5 kg for FRS-TB empty rack; 4 kg for FPS-T1U and FPS-S1U empty racks; 10 kg for the FPS3000 tripple power supplies.
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	<i>[receipt of test samples during original evaluations as stated below]</i> January 30, 2006 (30680243.001) March 28, 2007 (30680243.004) February 8, 2008 (30680243.006) July 23, 2009 (30680243.008) January 5, 2010 (30680243.010)
Date(s) of performance of tests	<i>[dates of performance of testing during original evaluations as stated below]</i> April 10, 2006 (30680243.001) April 3, 2007 (30680243.004) February 11, 2008 (30680243.006) July 28, 2009 (30680243.008)
General remarks:	
"(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 <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
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 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	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Not applicable
The units manufactured in each factory are fully identical. All tested samples are representing products from each factory.	
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)	1) TDK-Lambda Ltd. 56 Haharoshet St., P.O.B. 500 Karmiel Industrial Zone Karmiel 2161401, Israel. 2) WUXI TDK-LAMBDA ELECTRONICS CO LTD No.6, Xing Chuang Er Lu, Wuxi, Jiangsu Province, China
General product information:	
All products are component for build-in, Class I, designed for Installation Category II and Pollution Degree 2.	
FPS1000-48xyz, -32xz, 24xz and -12xz units intended for use in the complete set of the racks FPS-S1U, FPS-T1U and FPS-TB or separately in accordance with the "Conditions of Use".	
FPS1000 units followed by /P or /PS, the empty racks FPS-S1U (not followed by /TB), FPS-T1U and FPS3000 units (not followed by /TB) are Pluggable Type A.	
FPS1000, RFE1000, PSG100-48, FPS-TB, FPS-S1U (followed by /TB) and FPS3000 (followed by /TB) units: type of connection to the mains shall be specified in end-product.	
All outputs considered SELV and separated by reinforced insulation from primary mains. Outputs are unearthed and may or may not to be earthed during product installation.	
Disconnect Device: for FPS1000 units followed by /P or /PS, FPS-S1U, FPS-T1U, FPS-TB with installed FPS1000 units followed by /P or /PS, FPS-S1U (not followed by /TB) and FPS3000 (not followed by /TB) - appliance coupler(s).	
The FPS1000 and RFE1000 units followed by /S, -48/POE, -48/S/POE, RFE1000 units followed by /S, -48/POE, -48/S/POE, FPS-TB with installed FPS1000 units not followed or followed by /S, PSG100-48,	

FPS-S1U (followed by /TB) and FPS3000 units (followed by /TB) have no a disconnected device provided with unit. An appropriate disconnected device shall be provided by end-product.

Power supplies FPS3000 and empty racks FPS-S1U and FPS-T1U are comply with the fire and electrical enclosure requirements.

The maximum ambient operating temperature:

- for all units:
 - 50°C at 100% or less of rated output;
- for FPS1000 units with appliance inlet (followed by /P or /PS), FPS1000-48/P/POE, FPS1000-48/PS/POE, empty racks FPS-S1U, FPS-T1U and triple FPS3000:
 - 60°C at 80% or less of rated output;
- for FPS1000 units without appliance inlet (blank or followed by /S), FPS1000-48/POE, FPS1000-48/S/POE, PSG1000-48, and RFE1000 (blank or followed by /S), -48/POE, -48/S/POE, empty single rack FPS-TB:
 - 70°C at 55% or less of rated output.

Models differences:

1. FPS1000 units:

- Basic power supply module-without an AC inlet and secondary communication option;
- Followed by "/S"-with communication circuit (SELV circuit);
- Followed by "/P"-with AC inlet located on the front panel;
- Followed by "/PS"-with both options listed above.
- Followed by "/CO"-with conformal coating (used for environmental protection only)

RFE1000 units (modified FPS1000 units):

- Basic power supply module-without an "or-ing" diodes in the SELV output;
- Followed by "-Y"-with "or-ing" diodes in the SELV output to allow parallel connection of units.
- Followed by "/CO"-with conformal coating (used for environmental protection only)

FPS1000-48 and RFE1000-48 with or without suffixes and additionally followed by POE:

- has a different EMI capacitors between +/- SELV outputs and ground.

2. PSG1000-48:

- Modified FPS1000-48, provided with a separate I/O wires and connectors instead of the common I/O connector on the basic unit

3. Accessory Rack FPS-S1U, intended for installation of up to three FPS1000-xx units:

- Basic model: with 3 AC inlets on the rear side and common main and auxiliary outputs;
- Followed by "/P"-without AC inlets on the rear side (for installation of power supply modules with an appliance inlet on the front panel)
- Followed by "/S"-with secondary communication option (in SELV circuit);
- Followed by "/PS"-with both options listed above
- Followed by "/TB" or "/S/TB/"-for option with common AC input terminal block:
- Followed by "/CO"-with conformal coating (used for environmental protection only)

4. Accessory Rack FPS-T1U, intended for installation of up to three FPS1000 units:

- Basic model: with three AC inlets on the rear side and separate main and auxiliary outputs for each installed unit;
- Followed by "/P"-without AC inlets on the rear side (for installation of power supply modules with an appliance inlet on the front panel)
- Followed by "/S"-with secondary communication option (in SELV circuit);
- Followed by "/PS"-with both options listed above
- Followed by "/CO"-with conformal coating (used for environmental protection only)

5. Accessory Rack FPS-TB-intended for installation of single FPS1000 unit.

6. Power Supply FPS3000: accessory rack model FPS-S1U or FPS-T1U with three installed

FPS1000 units.

- Basic model-with three AC inlets on the rear side;
- Followed by “/P”-without AC inlets on the rear side (for installation of power supply modules with an appliance inlet on the front panel)
- Followed by “/S”-with secondary communication option (in SELV circuit);
- Followed by “/PS”-with both options listed above
- Followed by “/TB”-with common AC input terminal block.

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

Indicate used abbreviations (if any)

PRI-primary
 SEC-secondary
 Gnd-ground (protective)
 SELV

CONDITIONS OF USE:

1. All units shall be installed in compliance with the enclosure, mounting, spacing, casualty, segregation and other safety related requirements of the final application.
2. The main outputs (48VDC, 32VDC, 24VDC or 12VDC) have been investigated for SELV with energy hazardous level
3. Auxiliary output (12VDC) has been investigated for SELV with non-energy hazardous level
4. The all outputs are separated by reinforced insulation from supply mains and primary circuit. Outputs are unearthed and may or may not be earthed during product installation.
5. FPS1000, RFE1000 and PSG1000-48 units:
 The maximum working voltage measured between primary and secondary was 424 Vrms and the repetitive peak voltage was 883Vpk.
 The maximum working voltage measured between primary and earth was 428.6Vrms and the repetitive peak voltage was 825Vpk.
 Dielectric Strength Test for the end product should be based on these values.
6. A suitable Electrical and Fire enclosure shall be provided for FPS1000, RFE1000 and PSG1000-48 units by the end-product.
7. Power supplies FPS3000 and empty racks FPS-S1U, FPS-T1U are comply with the fire and electrical enclosure requirements.
8. The products shall be properly bonded to the protective earth termination in the end-product.
9. Disconnect Device. - for FPS1000 units followed by /P, /PS, /P/POE, /PS/POE, FPS-T1U(-T1U/P), FPS-S1U blank or followed by /P and FPS3000 blank or followed by /P - appliance coupler(s); - for FPS1000 units blank or followed by /S, /POE, S/POE, RFE1000 units, PSG1000-48, FPS-S1U/TB and FPS3000/TB have hot disconnected device provided with unit. An appropriate disconnected device shall be provided by end-product.
10. All units except for FPS-S1U/TB and FPS3000/TB were tested on a 20A branch circuit for each AC input. FPS-S1U/TB and FPS3000/TB were tested on a 50A branch circuit. If used on a branch

circuit greater than listed above, an additional testing may be necessary.

11. Power supplies are suitable for the maximum ambient operating temperature of:

- 50°C@ 100%, or less of rated output for all units;
- 60°C at 80% or less of rated output for FPS1000 units with appliance inlet; empty racks FPS-S1U, FPS-T1U and triple FPS3000 triple power supplies not followed by TB;
- 70°C@ 55% or less output power for FPS1000 units without appliance inlet, RFE1000 units, PSG1000-48, empty single rack FPS-TB, empty rack FPS-S1U/TB and triple power supply FPS3000/TB.

Report History:

- 30680243.001 – original CB report
- 30680243.004 – Addendum (A1) adds Model FPS-1000-12 (may be followed by /P, /S, or /PS) and FPS1000-48/POE (-48/P/POE, -48/S/POE or -48/PS/POE)
- 30680243.006 – Addendum (A2) adds new model FPS-TB
- 30680243.008 – Addendum (A3) adds new model RFE1000 Series
- 30680243.010 – Standard upgrade to IEC 60950-1:2005 2nd Edition & the following:
 - Company name changed from DENSEI-Lambda to TDK-Lambda
 - Factory name changed from WUXI Nemic-Lambda Electronics Co., Ltd. to TDK-Lambda Electronics Co. Ltd.
 - Trademark changed from NEMIC-LAMBDA or DENSEI-LAMBDA or TDK-Lambda to only TDK-Lambda
 - Model name changed from: Single Power Supply: RFE1000-48, -32, -24 or -12, may be followed by /S and S/POE, blank to RFE1000-48, -32, -24 or -12, may be blank or followed by " -Y". RFE1000-48 may also be followed by "/POE" in addition to the above suffixes.
 - Model name changed from: Empty rack: FPS-S1U, may be followed by "/P" to FPS-S1U may be followed by "/P" or "/TB". FPS-S1U/TB was tested.
 - Model name changed from: Triple Power Supply: FPS3000-48, -32, -24 or -12, may be followed by "/P" or "/S" or "/PS" to FPS3000-48, -32, -24 or -12, may be followed by "/P" or "/TB".
- 30680243.011 – Correction of the Applicant address. Testing not required.
- 30680243.013 – Alternate layout of SELV traces on PCB (new p/n CCB127). Add alternate varistors. No testing required
- 30680243.015 – minor editorial changes in the main body of the test report which doesn't require any further reevaluation or testing on the product itself
- 30680243.016 - Change applicant address from 2701 Togawa, Settaya Nagaoka-shi, Niigata, 9401195, Japan. Change factory name and address from TDK-Lambda Electronics Co. Ltd., Lot 107, Wuxi Singapore Ind. Park, Xing Chuang, Erlu, Jiangsu 214028 China. Report re-issued.
- 30680243.018 - Addendum (A1) to original certificate under file number 30680243.016 for an update of list of critical components to add alternate components for optocoupler and DC-fan as indicated in table 1.5.1. [full report issued]
- 30680243.020 - An upgrade of standard to list IEC 60950-1:2005+A1 and EN 60950-1:2006+A11+A12, addition of suffix 'PS' for model number under 4), 5), 7) and 8)
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- 30680243.023-New CB report covers the followings:
 - An upgrade of standard to IEC 60950-1:2005 + Am 1:2009 + Am 2:2013, EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013
 - An addition of suffix "y" for Empty Racks model FPS-S1Ux, FPS-T1Ux and suffix "z" for Single Power Supply Modules FPS1000-48xy, -32x, -24x, -12x and RFE1000-48xy, -32x, -24x, -12x. No additional testing is performed.