



TEST REPORT IEC 62368-1 Audio/video, information and communication technology equipment Part 1: Safety requirements	
Report Number :	7212322735
Date of issue	December 8, 2022
Total number of pages	205
Name of Testing Laboratory preparing the Report	The Standards Institution of Israel
Applicant's name	TDK-Lambda Ltd.
Address	56 Haharoshet St., P.O.Box 500, Karmiel Industrial Zone, Karmiel 2161401, Israel
Test specification:	
Standard	IEC 62368-1:2018
Test procedure	CB Scheme
Non-standard test method	N/A
TRF template used	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No.	IEC62368_1E
Test Report Form(s) Originator	UL(US)
Master TRF	Dated 2022-04-14
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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.	
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Test item description	Switching power supplies and accessory racks – component for build-in
Trade Mark(s)	TDK·Lambda
Manufacturer	TDK Lambda Ltd. 56 Haharoshet St., P.O.Box 500, Karmiel Industrial Zone, Karmiel 2161401, Israel
Model/Type reference	<p>Single Power Supply Modules:</p> <p>1). FPS1000-48xz/mmmmm or FPS1000-48xz-mmmmm FPS1000-32xz/mmmmm or FPS1000-32xz-mmmmm FPS1000-24xz/mmmmm or FPS1000-24xz-mmmmm FPS1000-12xz/mmmmm or FPS1000-12xz-mmmmm (x = "/P", "/S", "/PS, blank; z=/CO, blank; m=A-Z, 0-9, blank)</p> <p>2). RFE1000-48xz/mmmmm or RFE1000-48xz-mmmmm RFE1000-32xz/mmmmm or RFE1000-32xz-mmmmm RFE1000-24xz/mmmmm or RFE1000-24xz-mmmmm (x = "-Y", blank; z=/CO, blank; m=A-Z, 0-9, blank)</p> <p>Empty Racks:</p> <p>3). FPS-S1Uxy/mmmmm or FPS-S1Uxy-mmmmm (x = "/P", "/S", "/PS", "/TB", blank; y-/CO, blank; m=A-Z, 0-9, blank)</p> <p>4). FPS-T1Uxy/mmmmm or FPS-T1Uxy-mmmmm (x = "/P", "/S", "/PS", blank; y=/CO, blank; m=A-Z, 0-9, blank)</p> <p>Triple Power Supply Modules (based on FPS-S1U empty rack):</p> <p>5). FPS3000-48x/mmmmm or FPS3000-48x-mmmmm FPS3000-32x/mmmmm or FPS3000-32x-mmmmm FPS3000-24x/mmmmm or FPS3000-24x-mmmmm FPS3000-12x/mmmmm or FPS3000-12x-mmmmm (x = "/P", "/S", "/PS", "/TB", blank; m=A-Z, 0-9, blank)</p>
Ratings	<p>1). FPS1000-48xz, -32xz, -24xz, -12xz:</p> <p>1.a) x= "/S", blank; Input: 100-240 Vac, 13-6.3 A, 50/60 Hz; Output: [-48 @ T=50°C]: V1 = 48 Vdc, 21 A; V2 = 12 Vdc, 0.25 A; [-48 @ T=70°C]: V1 = 48 Vdc, 11.55 A; V2 = 12 Vdc, 0.25 A; [-32 @ T=50°C]: V1 = 32 Vdc, 31 A; V2 = 12 Vdc, 0.25 A; [-32 @ T=70°C]: V1 = 32 Vdc, 17.05 A; V2 = 12 Vdc, 0.25 A; [-24 @ T=50°C]: V1 = 24 Vdc, 40 A; V2 = 12 Vdc, 0.25 A; [-24 @ T=70°C]: V1 = 24 Vdc, 22 A; V2 = 12 Vdc, 0.25 A; [-12 @ T=50°C]: V1 = 12 Vdc, 72 A; V2 = 12 Vdc, 0.25 A; [-12 @ T=70°C]: V1 = 12 Vdc, 39.6 A; V2 = 12 Vdc, 0.25 A;</p> <p>1.b) x= "/P", "/PS"; Input: 100-240 Vac, 13-6.3 A, 50/60 Hz; Output: [-48 @ T=50°C]: V1 = 48 Vdc, 21 A; V2 = 12 Vdc, 0.25 A; [-48 @ T=60°C]: V1 = 48 Vdc, 16.8 A; V2 = 12 Vdc, 0.25 A; [-32 @ T=50°C]: V1 = 32 Vdc, 31 A; V2 = 12 Vdc, 0.25 A; [-32 @ T=60°C]: V1 = 32 Vdc, 24.8 A; V2 = 12 Vdc, 0.25 A; [-24 @ T=50°C]: V1 = 24 Vdc, 40 A; V2 = 12 Vdc, 0.25 A; [-24 @ T=60°C]: V1 = 24 Vdc, 32 A; V2 = 12 Vdc, 0.25 A; [-12 @ T=50°C]: V1 = 12 Vdc, 72 A; V2 = 12 Vdc, 0.25 A; [-12 @ T=60°C]: V1 = 12 Vdc, 57.6 A; V2 = 12 Vdc, 0.25 A</p>

2). RFE1000-48xz, -32xz, -24xz:

Input= 100-240 Vac, 13-6.3 A, 50/60 Hz;

Output:

[-48 @ T=50°C]: V1 = 48 Vdc, 21 A; V2 = 12 Vdc, 0.25 A;

[-48 @ T=70°C]: V1 = 48 Vdc, 11.55 A; V2 = 12 Vdc, 0.25 A;

[-32 @ T=50°C]: V1 = 32 Vdc, 31 A; V2 = 12 Vdc, 0.25 A;

[-32 @ T=70°C]: V1 = 32 Vdc, 17.05 A; V2 = 12 Vdc, 0.25 A;

[-24 @ T=50°C]: V1 = 24 Vdc, 40 A; V2 = 12 Vdc, 0.25 A;

[-24 @ T=70°C]: V1 = 24 Vdc, 22 A; V2 = 12 Vdc, 0.25 A

3). FPS-S1Uxy:

Input: 100-240Vac, 39-18.9 A, 50/60 Hz per unit, for full rack.

Output:

[-48 @ T=50°C]: V1 = 48 Vdc, 63 A; V2 = 12 Vdc, 0.75 A;

[-48 @ T=70°C]: V1 = 48 Vdc, 34.66 A; V2 = 12Vdc, 0.75 A;

[-32 @ T=50°C]: V1 = 32 Vdc, 93 A; V2 = 12Vdc, 0.75 A;

[-32 @ T=70°C]: V1 = 32 Vdc, 51.15 A; V2 = 12Vdc, 0.75 A;

[-24 @ T=50°C]: V1 = 24 Vdc, 120 A; V2 = 12Vdc, 0.75 A;

[-24 @ T=70°C]: V1 = 24 Vdc, 66 A; V2 = 12Vdc, 0.75 A;

[-12 @ T=50°C]: V1 = 12 Vdc, 216 A; V2 = 12Vdc, 0.75 A;

[-12 @ T=70°C]: V1 = 12 Vdc, 118.8 A; V2 = 12Vdc, 0.75 A

4). FPS-T1Uxy:

Input: 100-240 Vac, 13-6.3 A, 50/60 Hz per unit, up to 3 units;

Outputs (per each installed unit):

[-48 @ T=50°C]: V1 = 48 Vdc, 21 A; V2 = 12 Vdc, 0.25 A;

[-48 @ T=70°C]: V1 = 48 Vdc, 11.55 A; V2 = 12 Vdc, 0.25 A;

[-32 @ T=50°C]: V1 = 32 Vdc, 31 A; V2 = 12 Vdc, 0.25 A;

[-32 @ T=70°C]: V1 = 32 Vdc, 17.05 A; V2 = 12 Vdc, 0.25 A;

[-24 @ T=50°C]: V1 = 24 Vdc, 40 A; V2 = 12 Vdc, 0.25 A;

[-24 @ T=70°C]: V1 = 24 Vdc, 22 A; V2 = 12 Vdc, 0.25 A;

[-12 @ T=50°C]: V1 = 12 Vdc, 72 A; V2 = 12 Vdc, 0.25 A;

[-12 @ T=70°C]: V1 = 12 Vdc, 39.6 A; V2 = 12 Vdc, 0.25 A

5). FPS3000-48x, -32x, -24x or -12x:

Input: 100-240Vac, 39-18.9 A for /TB only and 13-6.3 each input, 50/60 Hz for full rack;

Outputs:

[-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

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input type="checkbox"/>	CB Testing Laboratory:	
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ..		
<input checked="" type="checkbox"/>	Testing procedure: CTF Stage 3:	
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
Testing location/ address		56 Haharoshet St., P.O.Box 500, Karmiel Industrial Zone, Karmiel 2161401, Israel
Tested by (name, function, signature)		Boris Gorinshtein <i>Boris G.</i>
Witnessed by (name, function, signature) . :		Vladimir Chernikh <i>V. Chernikh</i> <i>Chernikh</i>
Approved by (name, function, signature) ..		Vladimir Chernikh <i>V. Chernikh</i>
Supervised by (name, function, signature) :		Irina Antonov <i>Irina Antonov</i>

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

Attachment 1 National differences – 54 pages

Attachment 2 Photos – 11 pages

Attachment 3 Schematics – 7 pages

Attachment 4 PCB – 11 pages

Attachment 5 Magnetics – 12 pages

Attachment 6 Wire harness – 9 pages

Attachment 7: Additional test data – 2 page

Summary of testing:**Tests performed (name of test and test clause):****The tests performed for SII CB Report No.: 9912328257 (IL1509) (August 28, 2020):**

5.2.2 ES Classification
 5.4.1.10.3 Ball Pressure test
 5.4.9 Electric Strength test
 5.5.2.2 Capacitance discharge test
 5.6.6.2 Resistance of the protective bonding system
 5.7 Prospective touch voltage, touch current and protective conductor current
 6.2.2 PS Classification

The tests performed for TUV CB Report No.: 30680243.001, CB Certificate US-TUVR-3051:

5.2.2 ES Classification
 5.2.2, 5.4.1.8 Working voltage measurement test, ES1 reliability tests
 5.4.1.4.3 Temperature test
 5.4.1.10.3 Ball Pressure test
 5.4.2 Determination of clearances
 5.4.3 Determination of creepage distances
 5.4.9 Electric strength test
 9.2.6 Accessible temperature limits test
 B.2.5 Input test
 B.2.6 Heating test
 B.3.2 Abnormal condition – blocked vents test
 B.3.5 Abnormal condition – overload of outputs test
 B.4.4 Single fault condition – functional insulation
 B.4.3 Motor tests
 B.4.5 Single fault condition – Short-circuit and interruption of electrodes in tubes and semiconductors
 B.4.6 Single fault condition – short-circuit or disconnection of passive components
 F.3.10 Marking durability test
 G.5.3.2, G.5.3.3 Transformer insulation and overload tests
 G.7.6.2.2 Stranded wire 8mm test
 P.2.2 Openings in enclosure measurement
 Q LPS evaluation for communication circuitry
 T.2 Steady force 10N
 T.5 Steady force 250N
 T.6 Impact test
 V Accessibility tests

Testing location:

TDK-Lambda Ltd.
 56 Haharoshet St.,
 P.O.Box 500,
 Karmiel Industrial Zone,
 Karmiel 2161401, Israel

**The tests performed for TUV CB Report No.: 30680243.004
(FPS1000-12), CB Certificate US-TUVR-3051-A1:**

- 5.4.1.4.3 Temperature test
- 5.4.2 Determination of clearances
- 5.4.3 Determination of creepage distances
- 5.4.9 Electric strength test
- B.2.5 Input test
- B.3.2 Abnormal condition – blocked vents test
- B.3.5 Abnormal condition – overload of outputs test
- B.4.4 Single fault condition – functional insulation
- B.4.5 Single fault condition – Short-circuit and interruption of electrodes in tubes and semiconductors.

**The tests performed for TUV CB Report No.: 30680243.008
(RFE1000),**

CB Certificate US-TUVR-3051-A3:

- 5.2.2.3 Capacitance Limits
- 5.4.9 Electric strength tests
- 5.5.2.2 Capacitance discharge test
- 5.6.6. Resistance of protective conductors and terminations

**The tests performed for TUV CB Report No.: 30680243.010
(FPS-S1U/TB), CB Certificate US-TUVR-5420:**

- 5.4.9 Electric strength tests
- 5.7.4, 5.7.2.2 Earthed accessible conductive part

Summary of compliance with National Differences (List of countries addressed):

EU Group Differences, EU Special National Conditions, EU A-Deviations, Austria (AT), Australia (AU), Belgium (BE), Canada (CA), Switzerland (CH), Czech Republic (CZ), Germany (DE), Denmark (DK), Spain (ES), Finland (FI), France (FR), United Kingdom (GB), Hungary (HU), Italy (IT), Netherlands (NL), New Zealand (NZ), Poland (PL), Saudi Arabia (SA), Sweden (SE), Slovenia (SI), Slovakia (SK), United States (US)

- The product fulfils the requirements of EN IEC 62368-1:2020 + A11:2020, BS EN IEC 62368-1:2020 + A11:2020, UL 62368-1:2019, CSA C22.2 No. 62368-1:2019, AS/NZS 62368.1:2022, SASO-IEC-62368-1**

Use of uncertainty of measurement for decisions on conformity (decision rule) :

- No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").
- Other:... (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.

IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

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

FPS-T1U

INPUT:	100 - 240V~ 13 - 6.3A EACH INPUT 50/60Hz
OUTPUT:	MAX. OUTPUT POWER : 3000W 48V MODEL: 48V $\overline{\text{---}}$ 21A (PER INSTALLED FPS1000-48 UNIT) 12V $\overline{\text{---}}$ 0.25A 32V MODEL: 32V $\overline{\text{---}}$ 31A (PER INSTALLED FPS1000-32 UNIT) 12V $\overline{\text{---}}$ 0.25A 24V MODEL: 24V $\overline{\text{---}}$ 40A (PER INSTALLED FPS1000-24 UNIT) 12V $\overline{\text{---}}$ 0.25A 12V MODEL: 12V $\overline{\text{---}}$ 72A (PER INSTALLED FPS1000-12 UNIT) 12V $\overline{\text{---}}$ 0.25A

USE ONLY FPS SERIES POWER SUPPLIES .

Regular Production
Supervision
Type Approved
Safety
www.tuv.com
ID: 021730209

MADE IN CHINA

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

16								9
8								1

PIN# SIGNAL

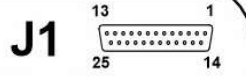
- 1 SDA (I²C)
- 2 SCL (I²C)
- 3 SIGNAL_RET.
- 4 ON/OFF-2
- 5 DC_OK
- 6 V TRIM
- 7 -SENSE
- 8 +SENSE
- 9 +12V AUXILIARY
- 10 CUR. SHARE
- 11 AC FAIL
- 12 ON/OFF-1
- 13 ON/OFF LOGIC SELECT
- 14 TEMP. ALARM
- 15 -LS
- 16 +LS

TDK-Lambda


FPS-S1U

INPUT:
 100 - 240V~
 13 - 6.3A EACH INPUT
 39 - 18.9A for /TB only
 50/60Hz

OUTPUT:
 MAX. OUTPUT POWER : 3000W
 48V MODEL: 48V --- 63A (21A PER INSTALLED FPS1000-48 UNIT)
 12V --- 0.75A (0.25A PER INSTALLED FPS1000-48 UNIT)
 32V MODEL: 32V --- 93A (31A PER INSTALLED FPS1000-32 UNIT)
 12V --- 0.75A (0.25A PER INSTALLED FPS1000-32 UNIT)
 24V MODEL: 24V --- 120A (40A PER INSTALLED FPS1000-24 UNIT)
 12V --- 0.75A (0.25A PER INSTALLED FPS1000-24 UNIT)
 12V MODEL: 12V --- 216A (72A PER INSTALLED FPS1000-12UNIT)
 12V --- 0.75A (0.25A PER INSTALLED FPS1000-12 UNIT)




- 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 (I ² C) |
| 21 | SDA (I ² C) |
| 22 | -SENSE |
| 23 | TEMP. ALARM (C) |
| 24 | AC FAIL (C) |
| 25 | ON/OFF (C) |





C **UL** US

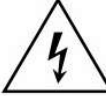
USE ONLY FPS SERIES POWER SUPPLIES OF THE SAME OUTPUT VOLTAGE RATING.




CE
EAC UK CA









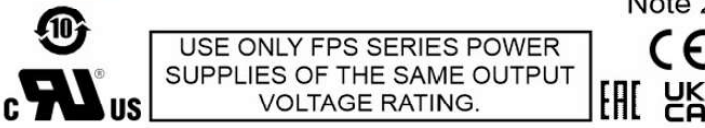
MADE IN CHINA

Regular Production Surveillance Type Approved Safety
 www.lvc.com
 ID 0217008296

TDK·Lambda



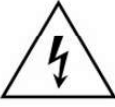


FPS3000-XX/PS

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



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

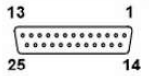
Note 2

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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 (I ² C)
21	SDA (I ² C)
22	-SENSE
23	TEMP. ALARM (C)
24	AC FAIL (C)
25	ON/OFF (C)

TDK·Lambda

RFE1000-XX-Y

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




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FPS 1000-XX/PS

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





Regular Production Surveillance
Type Approved Safety
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MADE IN CHINA

<i>TDK-Lambda</i> FPS 1000- XX/PS		    
INPUT	OUTPUT	
100 - 240V~ 13 - 6.3A 50/60Hz	V1: XXV==XXA V2: 12V==0.25A	 Regular Production Surveillance Type Approved Safety <small>www.tuv.com ID 0217008298</small> MADE IN ISRAEL

Risk Of Electrical Shock

Before touching output terminals, disconnect AC input and discharge each output terminal to chassis ground.

TDK-Lambda		 
FPS1000-48/S		
INPUT	OUTPUT	 <small>Type Approved Safety Regular Production Surveillance</small> <small>www.tuv.com ID 2000000000</small>
100-240V~ 13-6.3A 50/60Hz	V1: 48V \equiv 21A V2: 12V \equiv 0.25A	
		 
Made in China/ 中國製造/ 中国制造		

<p>商標/ 商标: TDK-Lambda</p> <p>型號/ 型号: FPS1000-48/S</p> <p>產品: AC/DC開關電源/ 产品: 开关电源</p> <p>輸入/ 输入: 100-240V~, 13-6.3A, 50/60Hz</p> <p>輸出/ 输出: V1:\equiv 48V/21A; V2:\equiv 12V/0.25A</p> <p>仅适用于在海拔2000m以下地区安全使用</p> <p>仅适用于在非热带气候条件下安全使用</p> <p>製造商: 東電化蘭達長岡技術中心/ 制造商: 东电化兰达长冈技术中心</p> <p>东电化兰达 (中国) 电子有限公司/ 東電化蘭達 (中國) 电子有限公司</p>

Pollution degree (PD)	<input type="checkbox"/> PD 1	<input checked="" type="checkbox"/> PD 2	<input type="checkbox"/> PD 3
Manufacturer's specified T_{ma}	for all units: 50°C at 100% or less of rated output; - for FPS1000 units with appliance inlet (followed by /P or /PS), FPS3000: 60°C at 80% or less of rated output power; - for FPS1000 units without appliance inlet (blank or followed by /S), RFE1000 (blank or followed by /S), -, single rack FPS-T1U, FPS-S1U (blank or followed by /TB): 70°C at 55% or less of rated output power. °C <input type="checkbox"/> Outdoor: minimum °C		
IP protection class	<input checked="" type="checkbox"/> IPX0	<input type="checkbox"/> IP__	
Power systems	<input checked="" type="checkbox"/> TN	<input checked="" type="checkbox"/> TT	<input type="checkbox"/> IT - V _{L-L} <input type="checkbox"/> not AC mains
Altitude during operation (m)	<input type="checkbox"/> 2000 m or less	<input checked="" type="checkbox"/> 3000 m	
Altitude of test laboratory (m)	<input checked="" type="checkbox"/> 2000 m or less	<input type="checkbox"/> m	
Mass of equipment (kg)	FPS1000, RFE1000 power units max 2 FPS-T1U and FPS-S1U populated racks max 10 FPS3000 power supplies. max 10		

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: May 07, 2020	
Date (s) of performance of tests: August 28, 2020	
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 <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p> <p><input type="checkbox"/> This Test Report Form contains requirements according to IEC/ISO Standard dated and includes Corrigendum dated</p> <p>(Note: The above text maybe removed if not applicable)</p>	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60300-2-1:	
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
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) TDK-Lambda (China) Electronics Co., Ltd. No.95, Zhujiang Road, Xinwu District, Wuxi, Jiangsu 214028, P.R. China

General product information and other remarks:

All products are components for build-in, Class I, designed for Over voltage Category II, Pollution Degree 2.

FPS1000-48xz, -32xz, 24xz and -12xz (FPS1000 series) are a family of front-end (component) power supplies for built-in use. All units provide a handle on the front side for plugging/unplugging the unit to/from the rack. The rear panel contains a connector with AC pins, output DC pins and signal pins.

Only the front panel is accessible for an ordinary person.

FPS1000 with suffix /P or /PS contains a standard appliance inlet on the front panel.

The FPS1000 series is intended for accessory racks. The FPS1000 units may be used in the complete set of accessory racks FPS-S1U, FPS-T1U or separately from TDK-Lambda Ltd. designed accessory racks, in accordance with the "Additional application considerations".

RFE1000-48xz, -32xz, -24xz or -12xz (RFE1000 series) are a family of front-end (component) power supplies for built-in use, which is the same as the FPS1000 series and have minor differences due to using a separate input terminal block (TB) on the rear panel only, separate signals connectors and output bus-bars instead of a common I/O connector used in the modules.

RFE1000 is a power supply series intended to be used separately from TDK-Lambda Ltd designed accessory racks.

For RFE1000 and FPS1000 series units used separately from TDK-Lambda Ltd designed accessory racks, the means of connection to the mains shall be specified in the end-installation.

Accessory racks FPS-S1U and FPS-T1U are intended for use with up to three FPS1000 power supply modules. In the FPS-S1U and FPS3000 units all outputs are connected in parallel. In FPS-T1Uxy units, each output is separated from the other.

Accessory racks FPS3000 followed by /TB and FPS-T1U followed by /TB are connected to AC mains by means of a single terminal block and from there the supply is distributed to each FPS1000 unit. Accessory racks FPS3000, FPS-S1U and FPS-T1U without suffix /TB are provided with a connection to the AC mains for each FPS1000 unit separately by means of a standard appliance inlet.

FPS1000 units followed by /P or /PS, the accessory racks FPS-S1U (not followed by /TB), FPS-T1U and FPS3000 units (without suffix /TB) are Pluggable Type A.

FPS1000, RFE1000, FPS-S1U (followed by /TB) and FPS3000 (followed by /TB) units: type of connection to the AC mains shall be specified in end-product.

All outputs considered ES1 and separated by reinforced insulation from primary mains. Outputs are unearthed and may or may not be earthed during product installation.

Disconnect device:

Appliance coupler(s):

FPS1000 units followed by /P or /PS, FPS-T1U;

FPS-S1U (not followed by /TB);

FPS3000 (not followed by /TB)

Without disconnect device:

FPS1000 and RFE1000 units followed by /S;

RFE1000 units followed by /S;

FPS3000 units (followed by /TB)

(An appropriate disconnect device shall be provided by the end-product.)

For the FPS1000, RFE1000 series power supplies an appropriate Electrical and Fire Enclosure shall be provided in the end product.

For the FPS-S1U and FPS-T1U accessory racks, designed by TDK-Lambda Ltd, and FPS3000 series triple power supplies an appropriate Electrical and Fire enclosure shall be provided in the end product.

The FPS1000, FPS3000, RFE1000 series power supplies and accessory racks FPS-S1U and FPS-T1U designed by TDK-Lambda Ltd should only be installed in a Restricted Access Area. Access should be available to service personnel only.

Model Differences –

1. FPS1000 units:

- Basic power supply module-without an AC inlet and secondary communication option;
- Followed by "/S"-with communication circuit (ES1 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)
- Followed by "m=A-Z, 0-9"- not safety relevant modifications

RFE1000 units (modified FPS1000 units):

- Basic power supply module-without an "or-ing" diodes in the ES1 output;
- Followed by "-Y"-with "or-ing" diodes in the ES1 output to allow parallel connection of units;
- Followed by "/CO"-with conformal coating (used for environmental protection only)
- Followed by "m=A-Z, 0-9"- not safety relevant modifications

2. 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 "/TB" -for option with common AC input terminal block:
- Followed by "m=A-Z, 0-9"- not safety relevant modifications

3. 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 ES1 circuit);
- Followed by "/PS"-with both options listed above
- Followed by "/CO"-with conformal coating (used for environmental protection only)
- Followed by "m=A-Z, 0-9"- not safety relevant modifications

4. 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 ES1 circuit);
- Followed by "/PS"-with both options listed above;
- Followed by "/TB"-with common AC input terminal block.
- Followed by "m=A-Z, 0-9"- not safety relevant modifications

Additional application considerations – (Considerations used to test a component or sub-assembly) –

CONDITIONS OF USE:

1. All units shall be installed in compliance with the enclosure, mounting, spacing, segregation and other safety related requirements of the final application.
2. The main outputs (48VDC, 32VDC, 24VDC or 12VDC) have been investigated for ES1, PS3.
3. Auxiliary output (12VDC) has been investigated for ES1, PS2.
4. 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:
The maximum working voltage measured between primary and secondary was 359 Vrms and the repetitive peak voltage was 695Vpk.
The maximum working voltage measured between primary and earth was 416Vrms and the repetitive peak voltage was 780Vpk.
Dielectric Strength Test for the end product should be based on these values considering that secondary can be earthed in the end-application.
6. A suitable Electrical and Fire enclosure shall be provided for FPS1000, RFE1000 by the end-product.

7. A suitable Mechanical enclosure shall be provided for FPS1000 by the end-product.
8. Power supplies FPS3000 and accessory racks FPS-S1U, FPS-T1U: an appropriate Electrical and Fire enclosure shall be provided in the end product.
9. For FPS1000, FPS3000 series power supplies and accessory racks FPS-S1U and FPS-T1U designed by TDK-Lambda Ltd: the products shall be properly bonded to the protective earth termination in the end-product.
10. For RFE1000, the products shall be properly bonded by screw through the end-equipment's chassis to the power supply chassis, that would connect the power supply to an electrical ground
11. Disconnect Device.
FPS1000 units followed by /P, /PS, FPS-T1U(-T1U/P), FPS-S1U blank or followed by /P and FPS3000 blank or followed by /P: appliance coupler(s);
FPS1000 units blank or followed by /S, RFE1000 units, FPS-S1U/TB and FPS3000/TB do not employ a disconnect device. An appropriate disconnect device shall be provided by the end-product.
12. All units, except for FPS-S1U/TB and FPS3000/TB, were tested with a 20A circuit breaker for each AC input. FPS-S1U/TB and FPS3000/TB were tested with a 60A circuit breaker. If used with a circuit breaker greater than listed above, additional testing may be necessary.
13. 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; accessory racks FPS-S1U, FPS-T1U and FPS3000 triple power supplies not followed by TB;
 - 70°C@ 55% or less output power for FPS1000 units without appliance inlet, RFE1000 units, accessoryrack FPS-S1U/TB and triple power supply FPS3000/TB

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES3: Primary circuitry	Ordinary (Front side only)	Basic insulation towards enclosure	Earthing of enclosure	Equipment Enclosure or reinforced insulation
ES3: Primary circuitry	Ordinary (Output ES1 circuits)	N/A	N/A	Reinforced insulation
ES3: Primary circuitry	Skilled/Instructed	Basic insulation towards enclosure	Earthing of enclosure	Equipment Enclosure or reinforced insulation
ES3: AC mains, Pins of appliance inlet	Ordinary	N/A	N/A	Evaluated per Clause 5.5.2.2
ES3: AC mains, Terminal block for AC main	Skilled	N/A	N/A	N/A
ES2: Secondary side of transformers output windings (T101, T102, T103). see ENERGY SOURCE DIAGRAM	Ordinary (Enclosure)	Equipment Enclosure connected to PE	N/A	N/A
ES2: Secondary side of transformers output windings (T101, T102, T103). see ENERGY SOURCE DIAGRAM	Ordinary (Secondary outputs)	ES1 reliability test	N/A	N/A
ES1: Output main (V+ to V-) originated from T101, T102	Ordinary	N/A	N/A	N/A
ES1: Output Auxiliary (12Vdc) originated from T103	Ordinary	N/A	N/A	N/A
ES1: Data communication connectors	Ordinary	N/A	N/A	N/A
ES1: Enclosure	Ordinary	N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 st S	2 nd S
PS3: All primary and secondary circuits inside the equipment enclosure	All combustible materials within power supply modules	Equipment Safeguard 6.4.3 (Limitation of the temperature under normal, abnormal conditions)	6.4.4 Selection of materials with suitable flam rating	A suitable Electrical and Fire enclosure shall be provided by end-product
PS3: All primary and secondary circuits inside the equipment enclosure (for FPS-S1U, FPS-T1U, FPS3000)	All combustible materials within racks	Equipment Safeguard (Limitation of the temperature under normal, abnormal)	Selection of materials with suitable flam rating	Fire enclosure
PS3: Output main (V+ to V-)	Interconnected equipment	Information	Equipment	N/A

originated from T101, T102		for final product	meant for building-in – fire enclosure shall be provided by end-product for interconnected equipment.	
PS2: Output Auxiliary (12Vdc) originated from T103	Interconnected equipment	N/A	N/A	Equipment Suitable to interconnection to PS2 circuits
PS2: Data communication circuitry	Interconnected equipment	N/A	N/A	Equipment suitable to interconnection to PS2 circuits
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: Sharp edges and corners	Ordinary	N/A	N/A	N/A
MS3: Fan blades	Ordinary	N/A	N/A	Enclosure
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1: Accessible surfaces-chassis	Ordinary (Front side only)	N/A	N/A	N/A
TS3 internal parts	Ordinary	N/A	N/A	Enclosure
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
RS1:LED signal diode (indicator)	Ordinary	N/A	N/A	N/A
Supplementary Information: “B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard				

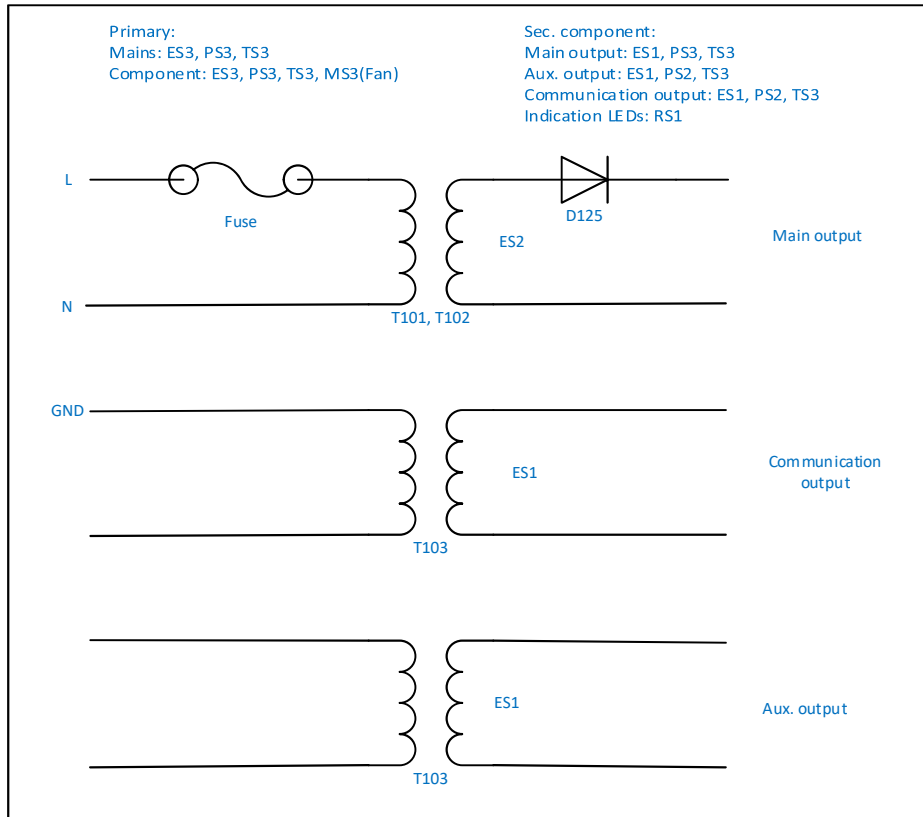
ENERGY SOURCE DIAGRAM

Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems.

Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings

☒ ES ☒ PS ☒ MS ☒ TS ☒ RS

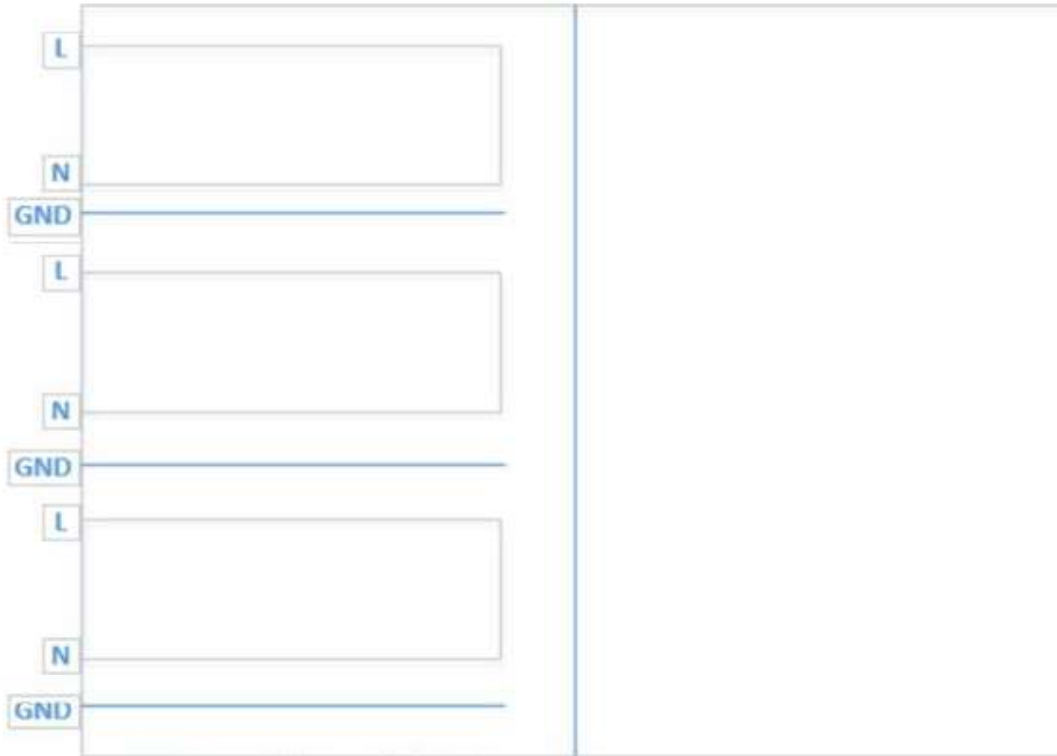
Single Power Supply Module:



Accessory Rack:

Primary:
ES3, PS3, TS3

Secondary:
ES1, PS3, TS3



Enclosure : (sharp edge): MS1
Weight : MS1(MS3 for FPS3000)
Accessible parts : TS1, ES1, PS1