



Test Report issued under  
the responsibility of:



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

**Report Reference No** ..... : E135494-A66-CB-3

Date of issue ..... : 2015-10-28

Total number of pages ..... : 57

**CB Testing Laboratory** ..... : UL International Demko A/S

Address ..... : Borupvang 5A, 2750 Ballerup, Denmark

**Applicant's name** ..... : TDK-LAMBDA UK LTD

Address ..... : KINGSLEY AVE  
ILFRACOMBE  
DEVON  
EX34 8ES UNITED KINGDOM

**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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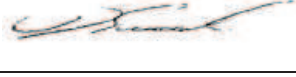
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<b>Test item description</b> .....	Switch Mode Power Supply
Trade Mark .....	TDK-Lambda 
Manufacturer .....	TDK-LAMBDA UK LTD KINGSLEY AVE ILFRACOMBE DEVON EX34 8ES UNITED KINGDOM
Model/Type reference .....	CPFE500F-12 CPFE500F-24 CPFE500F-28 CPFE500F-48  May be followed by alpha-numeric characters denoting non safety-related model differences.
Ratings .....	Input 100-240Vac nom, 8.2A rms max, 50-60Hz.  CPFE500F-12 output: (9.6 to 14.4 Vdc), 42A max, 504W max. CPFE500F-24 output: (22.4 to 33.6 Vdc), 18A max, 504W max. CPFE500F-28 output: (22.4 to 33.6 Vdc), 18A max, 504W max. CPFE500F-48 output: (38.4 to 57.6 Vdc), 10.5A max, 504W max.

<b>Testing procedure and testing location:</b>	
<input type="checkbox"/> <b>CB Testing Laboratory</b>	Testing location / address .....
<input type="checkbox"/> <b>Associated CB Test Laboratory</b>	Testing location / address .....
	Tested by (name + signature) .....
	Approved by (name + signature).....
<input type="checkbox"/> <b>Testing Procedure: TMP/CTF Stage 1</b>	Testing location / address .....
	Tested by (name + signature) .....
	Approved by (name + signature).....
<input type="checkbox"/> <b>Testing Procedure: WMT/CTF Stage 2</b>	Testing location / address .....
	Tested by (name + signature) .....
	Witnessed by (name + signature) ..
	Approved by (name + signature).....
<input checked="" type="checkbox"/> <b>Testing Procedure: SMT/CTF Stage 3 or 4</b>	Testing location / address .....: TDK-LAMBDA UK LTD, KINGSLEY AVE, ILFRACOMBE, DEVON, EX34 8ES UNITED KINGDOM
	Tested by (name + signature) .....: T. Burgess 
	Approved by (name + signature).....: K.P. Tizzard 
	Supervised by (name + signature) .: David Snook 
<input type="checkbox"/> <b>Testing Procedure: RMT</b>	Testing location / address .....
	Tested by (name + signature) .....
	Approved by (name + signature).....
	Supervised by (name + signature) .:

<b>List of Attachments</b>
National Differences (51 pages)
Enclosures (64 pages)
<b>Summary of Testing:</b>
All Applicable tests according to the referenced standard(s) have been carried out
<b>Summary of Compliance with National Differences:</b>

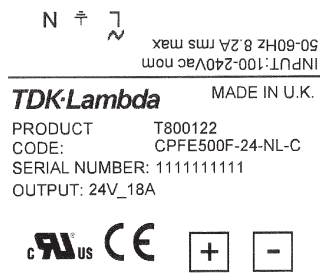
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List of countries addressed: AR, AT, AU, BE, BG, BY, CA, CH, CS, CZ, DE, DK, ES, EU, FI, FR, GB, GR, HU, IE, IL, IN, IT, JP, KR, MY, NL, NO, NZ, PL, PT, RO, SA, SE, SI, SK, UA, US, ZA

The product fulfills the requirements of: CSA C22.2 No. 60950-1-07 + A2:2014, UL 60950-1 2nd Ed. Revised 2014-10-14, EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013

**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.



<b>Test item particulars :</b>	
Equipment mobility .....	for building-in
Connection to the mains .....	for building-in
Operating condition .....	continuous
Access location .....	for building-in
Over voltage category (OVC) .....	OVC II
Mains supply tolerance (%) or absolute mains supply values .....	+10%, -10%
Tested for IT power systems .....	Yes (Norway only)
IT testing, phase-phase voltage (V) .....	230V
Class of equipment .....	Class I (earthed)
Considered current rating of protective device as part of the building installation (A) .....	20A
Pollution degree (PD) .....	PD 2
IP protection class .....	IP X0
Altitude of operation (m) .....	2000m
Altitude of test laboratory (m) .....	64m
Mass of equipment (kg) .....	1.4kg
<b>Possible test case verdicts:</b>	
- 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)
<b>Testing:</b>	
Date(s) of receipt of test item .....	2010-04-13, 2010-04-20, 2010-04-21
Date(s) of Performance of tests .....	2010-04-13 to 2010-06-03
<b>General remarks:</b>	
<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>	
<b>Manufacturer's Declaration per Sub Clause 4.2.5 of IEC60950-1:</b>	
	Yes
<p>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 .....</p> <p>When differences exist, they shall be identified in the General Product Information section.</p>	
<b>Name and address of Factory(ies):</b>	TDK-LAMBDA UK LTD KINGSLEY AVE ILFRACOMBE DEVON EX34 8ES UNITED KINGDOM

PANYU TRIO MICROTRONIC CO. LTD  
 SHIJI INDUSTRIAL ESTATE  
 DONGYONG  
 NANSHA  
 GUANGZHOU GUANGDONG CHINA

## GENERAL PRODUCT INFORMATION:

### Report Summary

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

### Product Description

CPFE500F Range. Switch mode power supply for building into an end equipment.

### Model Differences

All models share a common enclosure and PWB but use different component values to provide different output voltages.

CPFE500F model as described below:

Unit Configuration Code:

CPFE500F-a-b-c-d-e

(may be prefixed by NS - # / or - where # may be up to any four letters and may be followed by - \$ where \$ may be any number between 000 to 999, indicating non-safety related model differences.

Where:

a = Output Voltage (see output voltage table below).  
 b = D for Oring diode. N for no Oring diode.  
 c = L for supplied with cover. N for no cover supplied.  
 d = C for protective coating. N for no protective coating.  
 e = V for Vertical connector or nothing.

Maybe followed by alpha-numeric characters denoting non-safety related model differences.

The PSU may additionally be marked with T8x where x can be any letters and/or numbers between 0 and 9 indicating non-safety related model differences

### Output Voltage Cross Reference

Designation	Output Voltage
12	9.6 - 14.4V
24	22.4 - 33.6V
28	22.4 - 33.6V
48	38.4 - 57.6V

### Input Parameters

Standard

Nominal input voltage	100 - 240 Vac
Input voltage range	85 - 264Vac*
Input frequency range	45 - 63Hz*
Maximum input current	8.2A rms

\* In cases where conformance to various specs (UL, EN) are required, input voltage range will be 100-240Vac (50-60Hz)

#### Output Parameters

Voltage designation	Adjustment Range (V)	Output Current (A)	Maximum Power (W)
12	9.6 - 14.4V	42	504
24	22.4 - 33.6V	18	504
28	22.4 - 33.6V	18	504
48	38.4 - 57.6V	10.5	504

#### Additional Information

The CPFE500F range comprises of previously certified AC to DC converters with additional input filter, boost voltage and secondary circuitry. The PFE500F series of power supplies used within these products have been approved to IEC60950-1:2005+A1+A2.

This report is a re-issue of CBTR Ref. No. E135494-A66-CB-2 including amendments and corrections with CB Test Certificate Ref. No. DK-27889-UL dated 2012-09-04 to upgrade to IEC 60950-1 2nd Edition + Amd 2. Based on the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, it has been determined that the product continues to comply with the standard.

No tests were deemed necessary as all required tests were carried out under the original investigation under the SMT program. The report was also modified to include the following changes/additions:-

1. Correction/addition to critical component list
2. Revised marking label
3. Enclosures updated
4. Adds alpha-numeric characters nomenclature denoting non safety-related model differences to model numbers.
5. Change of factory name from Trio Engineering Co Ltd to Panyu Trio Microtronic Co. Ltd

#### Technical Considerations

- The attached Marking Label is representative of all models. --
- The product is intended for use on the following power systems: TN --
- The product was investigated to the following additional standards: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013 (which includes all European national differences, including those specified in this test report). --
- The following were investigated as part of the protective earthing/bonding: Printed wiring board trace (refer to Enclosure - Schematics + PWB for layouts) --
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual --
- The equipment disconnect device is considered to be: provided by the host equipment. --

#### Engineering Conditions of Acceptability

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



- In the final application the baseplate temperature must remain below the following limits. Horizontal orientation input 90-149V baseplate temperature limited to 75°C. Horizontal orientation input 150V or greater baseplate temperature limited to 85°C. All other orientations baseplate temperature limited to 85°C. With the top cover removed, any orientation is permitted limited to 85°C baseplate temperature. --
- The 48Vdc output must not be accessible to an operator as the output can be Non SELV under a single fault condition. --
- 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: 417 Vrms, 490Vpk Primary-Earthed Dead Metal: 312Vrms, 435Vpk --
- The following secondary output circuits are SELV: 12V, 24V and 28V outputs only. --
- The following secondary output circuits are at hazardous energy levels: All --
- The power supply terminals and/or connectors 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 end-product enclosures are required: Fire, Electrical --
- The following input terminals/connectors must be connected to the end-product supply neutral: N --

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)