

UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 3rd Ed, Issued: 2019-12-13 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, Issued: 2019-12-13 (Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Component Recognition
CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	AC/DC Power Supply
Model:	CPFE1000FI-12/XY CPFE1000FI-28/XY CPFE1000FI-48/XY where X maybe blank, /C, /P or /H where Y maybe blank or /H blank - with U channel C - with cover P - without U channel H - with conformal coating
Rating:	CPFE1000FI-12/XY Input: 100-240 Vac, 12A, 50-60 Hz Input Power: 1000W Output: 9.6-14.4Vdc, 60A, 720W CPFE1000FI-28/XY Input: 100-240 Vac, 16A, 50-60 Hz Input Power: 1300W Output: 22.4-33.6Vdc, 36A, 1008W CPFE1000FI-48/XY Input: 100-240 Vac, 16A, 50-60 Hz Input Power: 1300W Output: 38.4-57.6Vdc, 21A, 1008W
Applicant Name and Address:	TDK-LAMBDA AMERICAS INC 401 MILE OF CARS WAY, SUITE 325 NATIONAL CITY CA 91950

UNITED STATES

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared By: Chris Starke / Project Handler

Reviewed By: Gregory Ray / Reviewer

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
 - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
 - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
 - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

The equipment is a Class I, AC/DC Open Frame Power Supply intended for building-in as a component used in information technology equipment.

The equipment provides basic and reinforced insulation between Primary and Protective Earth (PE) and Primary and Secondary Circuits respectively.

Model Differences

All models are similar except for components and component ratings as noted in Table 4.1.2, transformer windings and minor changes to secondary circuits.

Test Item Particulars

Product group	built-in component
Classification of use by	Instructed person
Supply Connection	AC Mains
Supply tolerance	+10%/-10%
Supply connection – type	provided in the end system
Considered current rating of protective device	20 A;
Equipment mobility	for building-in
Over voltage category (OVC)	OVC II
Class of equipment	Class I
Special installation location	for building-in
Pollution degree (PD)	PD 2
Manufacturer's specified T _{ma} (°C)	Max ambient 60°C and 70°C (Max A1 baseplate temperature: 85°C)
IP protection class	IPX0
Power systems	TN
Altitude during operation (m)	3000 m
Altitude of test laboratory (m)	2000 m
Mass of equipment (kg)	1.26 Kg

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : Model CPFE1000FI-12/XY: Max ambient 70°C (Max A1 baseplate temperature: 85°C), Model CPFE1000FI-28/XY, Model CPFE1000FI-48/XY: Max ambient 60°C and 70°C (Max A1 baseplate temperature: 85°C), See Output Matrix for Temp testing for details, enclosure 07-01.
- The product is intended for use on the following power systems : TN
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply : +10%/-10%
- The equipment disconnect device is considered to be : to be determined by the end product.
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS) : J2 and J3. Connectors J4, J5, J6 and J7 assumed to not be accessible in the end product.
- The following were investigated as part of the protective earthing/bonding : Chassis, Cover

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following product-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-Earthed Dead Metal: 240 Vrms, 632 Vpk, Primary-SELV: 240 Vrms, 632 Vpk
- The following output circuits are at ES1 energy levels : All
- The following output circuits are at PS3 energy levels : All
- 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, to be repeated in the end product. Limited Short Circuit Test (Annex R) will be required to consider the GND terminal in the inlet (J1) as a bonding conductor. Otherwise, in the end-product the EUT chassis must be connected to reliable protective earthing
- The following end-product enclosures are required : Mechanical, Fire, Electrical
- The following components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing : All models, A1 Max Baseplate Temperature limit is 85°C. This temperature should be monitored in the end-product evaluation, additional cooling or derating maybe required to maintain this baseplate limit while considering the overall unit Tma (60°C-70°C).
- The equipment is suitable for direct connection to : to be evaluated in the end product
- The power supply was evaluated to be used at altitudes up to : 3,000 m
- The equipment was not evaluated for end system mounting. When installed in the end system, proper evaluation should be considered that all relevant standards must be fulfilled.
- The power supply has been evaluated for use in Class I equipment as defined in UL 62368-1 Third Edition and CAN/CSA C22.2 No. 62368-1-19. An additional evaluation shall be made if the power supply is intended for use in other than Class 1 equipment.
- Prospective Touch Current and Voltage testing to be conducted in the end-product evaluation.
- The power supplies in this report have been subject to Capacitance Discharge testing. Additional testing should not be needed if directly connected to mains e.g. using an appliance inlet, wiring terminals, etc.
- Additional evaluation is required to ensure no combustible end-product enclosures are mounted within 13mm of Varistors (V1, V2) in this equipment.
- The output of Model PFE1000FA-48 is assigned as ES3, and is isolated from mains at isolation transformers by double or reinforced insulation. Considerations should be made in end-product use to isolate users from this circuit.

Additional Information

NA	
Additional Standards The product fulfills the requirements of: --	
Markings and Instructions	
Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listee's or Recognized Company's name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	Input Ratings (voltage, frequency/dc, current/power) Output Ratings (voltage, frequency/dc, current/power)
Fuses – replaceable by ordinary or instructed person	(component ID: F1), Ratings (20A/250V HBC) and (symbol of required characteristics) located on or adjacent to fuse or fuseholder
Special Instructions to UL Representative N/A	