

CB TEST CERTIFICATE CERTIFICAT D'ESSAI OCProduct
Produit

AC-DC Converter

Name and address of the applicant
Nom et adresse du demandeurBel Fuse Inc.
206 Van Vorst St.
Jersey City, NJ 07302
USAName and address of the manufacturer
Nom et adresse du fabricantBel Fuse Inc.
206 Van Vorst St.
Jersey City, NJ 07302
USAName and address of the factory
Nom et adresse de l'usineBel Power Solutions, s.r.o.
Areal ZTS 924
01841 Dubnica nad Vahom
SlovakiaNote: When more than one factory, please report on page 2
Note: Lorsque il y plus d'une usine, veuillez utiliser la deuxième page Additional information on page 2Ratings and principal characteristics
Valeurs nominales et caractéristiques principales

4 A 100-240 V~ 50-60 Hz

Trademark (if any)
Marque de fabrique (si elle existe)Type of Manufacturer's Testing Laboratories used
Type de programme du laboratoire d'essais constructeur

CTF Stage 3

Model / Type Ref.
Ref. De typeCPA200-4530G, CPA250-4530G, CPA250-4530S256G,
CPA250-4530S383GAdditional information (if necessary may also be reported on page 2)
Les informations complémentaires (si nécessaire, peuvent être indiqués sur la deuxième page)

DC output ratings see the test report. The model name may be followed by 'C' indicating PCB coating, 'A' for faceplate without company logo, L for output latch, 'G' indicating RoHS version or SXXX or combinations of the different options (X is alphanumeric character that denotes customer specific changes that do not impact safety requirements))

 Additional information on page 2

A sample of the product was tested and found to be in conformity with

Un échantillon de ce produit a été essayé et a été considéré conforme à la

IEC 62368-1:2018

As shown in the Test Report Ref. No. which forms part of this Certificate

404251

Comme indiqué dans le Rapport des essais numéro de référence qui constitue partie de ce Certificat


This CB Test Certificate is issued by the National Certification Body
Ce Certificat de test OC est établi par l'Organisme **National de Certification**Philip Pedersen vei 11,
NO-1366 Lysaker, Norway




Date: 19-08-2020

Signature: Juan Z. Saussey
Certification Department



TEST REPORT IEC 62368-1 Audio/video, information and communication technology equipment Part 1: Safety requirements	
Report Number.....	404251
Date of issue	18 August, 2020
Total number of pages	80
Name of Testing Laboratory preparing the Report	Nemko USA Inc.
Applicant's name	Bel Fuse Inc.
Address	206 Van Vorst St., Jersey City, NJ 07302, USA
Test specification:	
Standard	IEC 62368-1: 2018
Test procedure.....	CB Scheme
Non-standard test method.....	N/A
Test Report Form No.....	IEC62368_1C
Test Report Form(s) Originator....	UL(US)
Master TRF	Dated 2019-01-17
Copyright © 2019 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved. This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context. If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed. 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.	
General disclaimer:	
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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.	

Test item description:	AC-DC Converter
Trade Mark:	 <small>© bel group</small>
Manufacturer:	Same as Applicant
Model/Type reference:	CPA200-4530G, CPA250-4530G, CPA250-4530S256G, CPA250-4530S383G. (Model name may be followed by “C” indicating PCB coating, “A” for faceplate without company logo, L for output latch, “G” indicating RoHS version or SXXX or combinations of the different options (X is alphanumeric character that denotes customer specific changes that do not impact safety requirements))
Ratings:	4 A, 100-240 V~, 50-60 Hz, (See general Remarks for secondary DC Outputs)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	Nemko USA Inc.
Testing location/ address		2210 Faraday Ave. Suite 150, Carlsbad, CA 92008, USA
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
<hr/>		
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
<hr/>		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ..		
<hr/>		
<input checked="" type="checkbox"/>	Testing procedure: CTF Stage 3:	BPS Asia Pacific Electronics (Shenzhen) Co., Ltd.
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
Testing location/ address		Building# 6, Nanming Road, Gongming Town Huahong Xintong Industrial Park Guangming District 518108 Shenzhen PEOPLE'S REPUBLIC OF CHINA
Tested by (name, function, signature)		Editha Vergara (Customer Representative) 
Witnessed by (name, function, signature) . :		Jeff Busch (Project Engineer) 
Approved by (name, function, signature) ..		George Daverin (Verificator) 

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

Attachment 1: Europe Group National Differences and National Differences according to EN IEC 62368-1:2020+A11:2020 (22 pages)

Attachment 2: National Differences: USA and Canada (8 pages)

Attachment 3: Photos (7 pages)

Attachment 4: Miscellaneous Documentation, e.g. Installation Instructions, PWB layout, Schematic etc. (14 pages)

(Not for publication – Engineering use only)

Attachment 5: PWB Thermal cycling tests (29 pages)

(Not for publication – Engineering use only)

Summary of testing:

The test data referenced in this report was originally generated and published as part of a previous evaluation to IEC 60950-1:2005 +Am1:2009 +Am2:2013. (CB Report Ref. No. 305908, CB Certificate Ref. No.NO91738. Additional testing was required for this evaluation.

The equipment is a component, switch mode power supply with AC input (ES3/PS3) and DC output (ES1/PS3) for building-in.

Intended location: The equipment is to be installed in the end product where the suitability of installation is to be evaluated in the end product.

Safety Instructions: Instructions shall be supplied in a language suitable for the country into which the product is to be sold.

Maximum operating temperatures: Equipment for building-in. Heating test was conducted monitoring the internal components temperature. Accessibility to high component temperature must be considered on end system equipment.

PCBs used for this equipment have been separately evaluated and determined to comply with requirements for Printed Boards per G.13.4.







Equipment markings: Identification marking (trade-mark and model name) are marked on the equipment. However, the durability test was not considered because the equipment is a component level product for building-in. Therefore, the marked surface is not to be located in an external area where it is likely to be cleaned with cleaning solution, rubbed, etc.

The unit tested is a prototype with all possible options and worst case of the family models when necessary. The following tests have been performed with acceptable results.

<p>Tests performed (name of test and test clause):</p> <p>5.2 Classification of electrical energy sources</p> <p>5.4.1.8 Determination of working Voltage measurement</p> <p>5.4.2, 5.4.3 Minimum clearances/creepage distances</p> <p>5.4.8 Humidity</p> <p>5.4.9 Electric Strength tests</p> <p>5.5.2.2 Stored discharge on capacitors</p> <p>5.6.6 Resistance of protective conductors and terminations</p> <p>5.7.4 Unearthed accessible parts</p> <p>5.7.5 Earthed accessible conductive part</p> <p>6.2.2 Power source circuit classifications</p> <p>5.4.1.4, 9.3, B.1.5, B.2.6 – Temperature measurements</p> <p>B.2.5 Input</p> <p>B.3, B.4 Abnormal operating and fault condition tests</p> <p>R-Limit short circuit test</p> <p>T- Mechanical and Stress Relief test</p>	<p>Testing location:</p> <p>BPS Asia Pacific Electronics (Shenzhen) Co., Ltd.</p> <p>Building #6, Nanming Road, Gongming Town Huahong Xintong Industrial Park Guangming District 518108 Shenzhen PEOPLE'S REPUBLIC OF CHINA</p>
<p>Summary of compliance with National Differences (List of countries addressed):</p> <p>The list of countries recognizing the CB Scheme is actively updated on the iecee.org website.</p> <p>All CENELEC members according to EN IEC 62368-1:2020+A11:2020.</p> <p>All National Differences listed in the IECEE Online Bulletin are covered by the Common Modifications, Special National Conditions, National Differences, and the National Requirements noted above except for the following countries which are documented in National Differences Appendixes attached to this report.</p> <p>Canada/USA</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of IEC62368-1:2018/ EN IEC 62368-1:2020+A11:2020.</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.

AC-DC Converter		CPA250-4530G	
Input: \sim 100-240 V, 4 A, 50-60 Hz Output 1: --- 5 V, 40 A Output 2: --- 3.3 V, 40 A Output 3: --- 12 V, 5.5 A Output 4: --- -12 V, 2 A	max. 250 W		B zzzzzzzz U uuuuuu V vvv L xx W yyww Made in Slovakia
 POWER SOLUTIONS & PROTECTION a bel group			
		IP 20    	



- See instalation instruction before connecting.
- This power supply must be earthed.
- Do not open this power supply.
- Perform only recommended installation tests.
- Do not perform high voltage tests.

US patent no. 6,301,139, other patents pending.

- Voir les instructions d'installation avant toute connexion.
- Cette alimentation électrique doit impérativement être reliée à la terre.
- Ne pas ouvrir cette alimentation électrique.
- Ne réaliser que les tests d'installation prescrits.
- Ne pas effectuer de test haute tension.

Calibration	All instruments used in the tests given in this test report are calibrated and traceable to national or international standards. Further information about traceability will be given on request.
Measurement uncertainty	Measurement uncertainties are calculated for all instruments and instrument set-ups given in this report. Calculations are based on the principles given in the standard EA-4/02 (Dec. 1999), IEC Guide 115:2007, and other relevant internal Nemko-procedures. Further information about measurement uncertainties will be given on request.
Evaluation of results	If not explicitly stated otherwise in the standard, the test is passed if the measured value is equal to or below (above) the limit line, regardless of the measurement uncertainty. If the measured value is above (below) the limit line, the test is not passed - ref IEC Guide 115:2007. The instrumentation accuracy is within limits agreed by IEC EE-CTL.

Test item particulars:	
Product group	<input type="checkbox"/> end product <input checked="" type="checkbox"/> built-in component
Classification of use by	<input checked="" type="checkbox"/> Ordinary person (Front panel only) <input type="checkbox"/> Children likely present <input checked="" type="checkbox"/> Instructed person <input checked="" type="checkbox"/> Skilled person
Supply connection	<input checked="" type="checkbox"/> AC mains <input type="checkbox"/> DC mains (regulator source) <input type="checkbox"/> not mains connected: <input type="checkbox"/> ES1 <input type="checkbox"/> ES2 <input type="checkbox"/> ES3
Supply tolerance	<input checked="" type="checkbox"/> +10%/-10% <input type="checkbox"/> +20%/-15% <input type="checkbox"/> None
Supply connection – type	<input type="checkbox"/> pluggable equipment type A - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> direct plug-in <input type="checkbox"/> pluggable equipment type B - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> permanent connection <input checked="" type="checkbox"/> mating connector <input type="checkbox"/> other:
Considered current rating of protective device	<input checked="" type="checkbox"/> 16 A for Europe, 20 A for North America Location: <input checked="" type="checkbox"/> building <input type="checkbox"/> equipment <input type="checkbox"/> N/A
Equipment mobility	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> direct plug-in <input type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> wall/ceiling-mounted <input type="checkbox"/> SRME/rack-mounted <input type="checkbox"/> other:
Overvoltage 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:
Class of equipment	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified <input type="checkbox"/>
Special installation location	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> restricted access area <input type="checkbox"/> outdoor location <input type="checkbox"/>
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
Manufacturer's specified T_{ma}	50 °C at full load; 70 °C 50% of maximum load <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 checked="" type="checkbox"/> IT – 230V V _{L-L} (Norway only) <input type="checkbox"/> not AC mains
Altitude during operation (m)	<input type="checkbox"/> 2000 m or less <input checked="" type="checkbox"/> 3048 m
Altitude of test laboratory (m)	<input type="checkbox"/> 2000 m or less <input checked="" type="checkbox"/> 38 m
Mass of equipment (kg)	0.78 kg

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 2015, February 2020 Date (s) of performance of tests: May 2015, March 2016, February 2020 - June 2020	
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 IEC60068-2-1:	
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 type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) :	Bel Power Solutions, s.r.o. Areal ZTS Dubnica nad Vahom c.924 01841 Dubnica nad Vahom SLOVAKIA

General product information and other remarks:

CPA200 and CPA250 Series are AC to DC switching power supplies designed to be used in hot-plug applications in Compact PCI racks. The input/output connector is specifically designed for use in this application. The power supplies have four outputs that derive their power from two separate power sources.

The following PWB assemblies are provided: Main, Sub-Print, PFC board and Auxiliary. The main PWB is installed on chassis by screws. All other boards are vertically soldered on the main PWB. All power mosfets are mounted on heatsinks by clips. The heatsinks are soldered to PWB and secured to the top chassis by screws. Insulator is provided between the PWB and bottom chassis.

Model differences:

Model CPA250-4530G is the based model.

Model CPA200-4530G is exactly the same as CPA250-4530G except for lower output power.

Model CPA250-4530S256G is exactly the same as CPA250-4530G except for the model name.

Ratings:

Model	Input (AC)			Output (DC)		
	V	A	Hz	V	A	W
CPA200-4530G	100-240	4	50-60	5	40	200*)
				3.3	40	
				12	5.5	
				-12	2	
CPA250-4530G CPA250-4530S256G	100-240	4	50-60	5	40	250**)
				3.3	40	
				12	5.5	
				-12	2	
CPA250-4530S383G	100-240	4	50-60	5	20	250 **)
				3.3	20	
				12	5.5	
				-12	2	

*) Maximum total output 200 W with minimum 400 LFM airflow

***) Maximum total output 250 W with minimum 400 LFM airflow

Conditions of Acceptability:

The following must be evaluated at end use:

1. Equipment shall be installed only trained service personal, according to manufacturer installation instructions.
2. Suitability of the equipment enclosure as a Fire, Mechanical and Electrical Enclosure is to be determined in the end use installation. Front panel has been evaluated and meets electrical and mechanical enclosure.
3. The Power supply unit (PSU) has been evaluated for use in Class I equipment, Reliable connection to Protective Earth shall be provided in the end use installation.
4. The PSU has been evaluated for use in Pollution Degree 2 environment.
5. The Clearance values of PSU have been evaluated for an altitude of 3048m, under IEC60664-1:1992 Table A.2 (altitude correction factor is 1.15)

6. The Creepage values of PSU have been evaluated for material group IIIb.
7. The secondary outputs of PSU are Electrical energy source class 1 (ES1).
8. The secondary outputs of PSU are Power source class 3 (PS3).
9. The PSU has been evaluated for 50°C ambient temperature with maximum load and 70°C ambient at 50% load. Temperature tests shall be considered for specific installation conditions in the end system.
10. The PSU was tested on a listed 20A branch circuit. If use on branch circuit greater than this, additional testing may be necessary
11. The ground path from the input connector to the PSU case meets protective bonding and has been evaluated at 40 A
12. Safety isolating transformers TR10, TR20 employ an insulation system designated Class F, evaluated to UL 1446.
13. Installation instructions and equipment markings related to safety shall be provided in a language acceptable in the country in which the equipment is to be installed.