

CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC

Product
ProduitName and address of the applicant
Nom et adresse du demandeurName and address of the manufacturer
Nom et adresse du fabricantName and address of the factory
Nom et adresse de l'usineNote: When more than one factory, please report on page 2
Note: Lorsque il y a plus d'une usine, veuillez utiliser la deuxième pageRatings and principal characteristics
Valeurs nominales et caractéristiques principalesTrademark (if any)
Marque de fabrique (si elle existe)Type of Manufacturer's Testing Laboratories used
Type de programme du laboratoire d'essais constructeur
Model / Type Ref.
Ref. De typeAdditional information (if necessary may also be reported on page 2)
Les informations complémentaires (si nécessaire, peuvent être indiquées sur la deuxième page)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 laAs shown in the Test Report Ref. No. which forms part of this Certificate
Comme indiqué dans le Rapport des essais numéro de référence qui constitue partie de ce CertificatThis CB Test Certificate is issued by the National Certification Body
Ce Certificat de type OC est établi par l'Organisme National de Certification

DC-DC Switching Power Supply (DC-DC converter)

Bel Fuse Inc.
206 Van Vorst St.
Jersey City, NJ 07302
USABel Fuse Inc.
206 Van Vorst St.
Jersey City, NJ 07302
USABPS Asia Pacific Electronics (Shenzhen) Co., Ltd.
Building# 6, Nanming Road, Gongming Town Huahong
Xintong Industrial Park, Guangming District, Shenzhen,
518108
China☐ Additional information on page 2All models except FND300-12S152
Input: 40.5 - 72 Vdc, 10 - 5 A Output: 12 Vdc, 25 A
Model: FND300-12S152
Input: 40 - 72 Vdc, 10 - 5 A Output: 12 Vdc, 25 A

CTF Stage 2

SPACSCO-05, SPACSCO-18, SPDCSCO-29, SPACCTN-02,
FND300-1012, FND300-12S104, FND300-12S152

(Model may be followed by suffix H indicating hiccup current limitation or G indicating RoHS version or SXXX or SXXXG; where X indicates letters and/or numbers 0-9, denoting non-safety critical options)

☐ Additional information on page 2

IEC 62368-1:2018

378515

Philip Pedersen vei 11,
NO-1366 Lysaker, Norway

Date: 14-08-2019

Jiyea Gim

Signature: Jiyea Gim
Certification Department



TEST REPORT IEC 62368-1 Audio/video, information and communication technology equipment Part 1: Safety requirements	
Report Number.....	378515
Date of issue	2019 August 12
Total number of pages.....	70
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
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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..... :	DC-DC Switching Power Supply (DC-DC converter)	
Trade Mark..... :	 a bel group	
Manufacturer..... :	Same as applicant	
Model/Type reference..... :	SPACSCO-05, SPACSCO-18, SPDCSCO-29, SPACCTN-02, FND300-1012, FND300-12S104, FND300-12S152 (Model may be followed by suffix H indicating hiccup current limitation or G indicating RoHS version or SXXX or SXXXG; where X indicates letters and/or numbers 0-9, denoting non-safety critical options)	
Ratings..... :	All models except FND300-12S152 Input: 40.5 - 72 Vdc, 10 - 5 A Output: 12 Vdc, 25 A Model: FND300-12S152 Input: 40 - 72 Vdc, 10 - 5 A Output: 12 Vdc, 25 A	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒	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).. :		
☐	Testing procedure: CTF Stage 1:	
Testing location/ address..... :		
Tested by (name, function, signature)..... :		
Approved by (name, function, signature).. :		
☒	Testing procedure: CTF Stage 2:	
Testing location/ address..... :		BPS Pacific Electronics (Shenzhen) Co., Ltd. Building# 6, Nanming Road, Gongming Town Huahong Xintong Industrial Park Guangming District 518108 Shenzhen PEOPLE'S REPUBLIC OF CHINA
Tested by (name + signature)..... :		Editha Vergara (Customer Representative) 
Witnessed by (name, function, signature). :		Luis Gonzalez (Project Handler) 
Approved by (name, function, signature).. :		George Daverin (Verifier) 

☐	Testing procedure: CTF Stage 3:	
☐	Testing procedure: CTF Stage 4:	
Testing location/ address..... :		
Tested by (name, function, signature)..... :		
Witnessed by (name, function, signature). :		
Approved by (name, function, signature).. :		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment): Attachment 1: Europe Group National Differences and National Differences according to EN 62368-1:2014 +A11:2017 (9 pages) Attachment 2: National Differences: USA and Canada (5 pages), CSA/UL 62368-1:2014. Attachment 3: Photos (11 pages) Attachment 4: Miscellaneous Documentation (12 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.279704, CB Certificate Ref. No. NO86074 and NO86075). Additional testing was required for this evaluation. The equipment is a component, switch mode power supply with DC input (ES2/PS3) and DC voltage 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.	
Tests performed (name of test and test clause): 4.1.1 Connector Interruption test 5.2 Classification of electrical energy sources 5.4.1.8 Determination of working Voltage measurement 5.4.2, 5.4.3- Minimum clearances/creepage distance 5.4.8 Humidity 5.4.9 Electric Strength test 5.5.2.2 Stored discharge on capacitors 5.6.6 Resistance of protective conductors and terminations 5.7.4 Unearthed accessible parts 5.7.5 Earthed accessible conductive part 6.2.2 Electrical power sources (PS) measurement for classification 5.4.1.4, 9.3, B1.5, B.2.6 – Temperature	Testing location: BPS Asia Pacific Electronics (Shenzhen) Co., Ltd. Building #6, Nanming Road, Gongming Town Huahong Xintong Industrial Park Guangming District 518108 Shenzhen PEOPLE'S REPUBLIC OF CHINA

measurements B.2.5 Input B.3, B.4 Abnormal operating and fault condition tests T Mechanical and Stress Relief test	
Summary of compliance with National Differences (List of countries addressed): The list of countries recognizing the CB Scheme is actively updated on the iecee.org website. All CENELEC members according to EN 62368-1:2014 +A11:2017. 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. Canada/USA, CSA/UL 62368-1: 2014 ☒ The product fulfils the requirements of IEC/EN 62368-1:2014 +A11:2017	

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.



POWER SOLUTIONS & PROTECTION

α bel group



IS 13252(Part 1)/
IEC 60950-1

R-41055727
www.bis.gov.in



PO1-FND300-12S152G

开关电源 컴퓨터용전원공급장치
型号 **MODEL: FND300-12S152G**

INPUT 额定电压 额定电流 VOLTAGE: 40-72 V
输入 입력 额定电流 额定电压 CURRENT: 10-5 A

OUTPUT 12 V
输出 출력 25 A

仅适用于在海拔两千米及以下地区安全使用
Only apply to safety use on the area under altitude of 2000m

SERIAL NUMBER:

yydddBPGuuuu

Bbbbbbbbbb

中国制造 中国의 제조
Made in China

Factory: BPS Asia Pacific Electronics
(Shenzhen) Co. Ltd.

F5 P/N: PWR-0147-XX

REV:



POWER SOLUTIONS & PROTECTION

α bel group

开关电源

25



型号 **MODEL: SPDCSCO-29G A1**

INPUT 额定电压 额定电流 VOLTAGE: 40.5-72V
输入 额定电压 额定电流 CURRENT: 10 - 5 A

OUTPUT 12V
输出 25A

MODEL:

SERIAL NUMBER:

THIS UNIT SUITABLE FOR AN IT-POWER SYSTEM CONNECTION OF NORWAY (MAX.230V PHASE).

本标签只是用与中国大陆地区
仅适用于在海拔两千米及以下地区

产品编号 SERIAL NUMBER: LBVU
423026230010600001

L42 U00001 V106
B30262300 WD650

制造商
Bel Fuse, Inc.

中国制造
Made in China

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	☐ end product	☒ built-in component	
Classification of use by	☒ Ordinary person ☐ Children likely present ☒ Instructed person ☒ Skilled person		
Supply connection	☐ AC mains ☒ DC mains ☐ not mains connected: ☐ ES1 ☒ ES2 ☐ ES3		
Supply tolerance	☐ +10%/-10% ☐ +20%/-15% ☐ + %/- % ☒ None		
Supply connection – type	☐ pluggable equipment type A - ☐ non-detachable supply cord ☐ appliance coupler ☐ direct plug-in ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☒ mating connector ☒ other: DC powered		
Considered current rating of protective device	☒ 30 A Location: ☐ building ☒ equipment ☐ N/A		
Equipment mobility	☐ moveable ☐ hand-held ☐ transportable ☐ direct plug-in ☐ stationary ☒ for building-in ☐ wall/ceiling-mounted ☐ SRME/rack-mounted ☐ other:		
Overvoltage category (OVC)	☐ OVC I ☐ OVC II ☐ OVC III ☐ OVC IV ☒ other: DC powered		
Class of equipment	☒ Class I ☐ Class II ☐ Class III ☐ Not classified ☐		
Special installation location	☒ N/A ☐ restricted access area ☐ outdoor location		
Pollution degree (PD)	☐ PD 1 ☒ PD 2 ☐ PD 3		
Manufacturer's specified T_{ma}	55 °C ☐ Outdoor: minimum °C		
IP protection class	☒ IPX0 ☐ IP__		
Power systems	☐ TN ☐ TT ☐ IT - 230 V _{L-L} (Norway only) ☒ not AC mains		
Altitude during operation (m)	☐ 2000 m or less ☒ 3048 m		
Altitude of test laboratory (m)	☐ 2000 m or less ☒ 38 m		
Mass of equipment (kg)	0.9 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 : July 04, 2019 Date (s) of performance of tests..... : July 10, 2019 to July 11, 2019	
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 ☐ comma / ☒ point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IECCE 02:	
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..... :	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : BPS Asia Pacific Electronics (Shenzhen) Co., Ltd. Building #6, Nanming Road, Gongming Town Huahong Xintong Industrial Park Guangming District 518108 Shenzhen PEOPLE'S REPUBLIC OF CHINA	
General product information and other remarks: All models on this report are switching type power supplies for building-in. The units are provided with metal enclosure, cooling fan, DC input connector and handle. Output is considered as PS3 energy source. MODEL DIFFERENCES: SPACSCO-05 is base model. Model SPACSCO-18 is similar to SPACSCO-05 except for front panel silkscreen. Model SPACCTN-02 is similar to SPACSCO-05 except for the front panel colour. Model SPDCSCO-29 is exactly the same as approved model SPACSCO-05 except for airflow direction and minor changes on PWB, ES1 to ES1 circuit. Model FND300-1012 is similar to SPACSCO-05 except for the front panel colour. Model FND300-12S152 is similar to FND300-1012 except for Input Terminal Block and Input voltage rating. Model FND300-12S104 is exactly the same as FND300-1012 except for the input fuse rating, additional input components such as L3 choke, line to line caps C2 and C12, line to GND cap C13 and different PWB layout (input side only).	

Models with H option are the same as models without H option except for the hiccup current limitation instead latching over current limitation feature.

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

When installed in the end use equipment, the following are among the consideration to be made:

- 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 and sides panels have been evaluated and meet fire, 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, The Creepage values of PSU have been evaluated for material group IIIb, The Clearance values of PSU have been evaluated for an altitude of 3048 m, under IEC60664-1:1992 Table A.2 (altitude correction factor is 1.15)
- 5) The secondary output of PSU is Electrical energy source class 1 (ES1) and Power source class 3 (PS3).
- 6) The PSU was tested on a listed 30A branch circuit. If use on branch circuit greater than this, additional testing may be necessary, the ground path from the input connector to the PSU case meets protective bonding and has been evaluated at 60 A.
- 7) The Connector Current Interruption Test was performed on the input connector of model FND300-12S152, (XCFR2), Wago, Type 721-603, for 100 cycles (insertion/withdrawal), using mating (XCFR2) connector Wago, Type 721-103/026-000. Use of other than specified connectors shall be determined during end product evaluation. Testing for additional cycles shall be determined during the end product evaluation, depending on end product application.
- 8) The Output connector is not suitable for field wiring; it is only intended for connection to the mating connectors in the end system. The connector was evaluated and may be used for hot swap operation. Current Interruptions Test (200 cycles) was performed.
- 9) 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.