

## DESCRIPTION

## PRODUCT COVERED:

Component - Linear Power Supplies, Models HE12-10.2, HE15-9, HE24-7.2, HE28-6, HE48-4, HE5-18/OVP, HDD15-5, followed by -A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9. **Model name may be followed by "G" or SXXX or SXXXG where X indicates letters and/or number 0-9.**

## ELECTRICAL RATINGS:

Model	Input		Output, (dc)			W@
	V	A	Hz	V	A	
HE12-10.2-A	100/120/220/230/240	3/3/1.5/1.5/1.5	50/60	12	10.2	122
HE15-9-A	100/120/220/230/240	3/3/1.5/1.5/1.5	50/60	15	9.0	135
HE24-7.2-A, HE24-502	100/120/220/230/240	4/4/2/2/2	50/60	24	7.2	172.8
HE28-6-A	100/120/220/230/240	3/3/1.5/1.5/1.5	50/60	28	6.0	168
HE48-4-A	100/120/220/230/240	4/4/2/2/2	50/60	48	4.0	192
HE5-18/OVP-A, HE5-505, HE5-503, HE5-560	100/120/220/230/240	3/3/1.5/1.5	50/60	5	18	90
HE48-700	100/120/220/230/240	4/4/2/2/2	50/60	48	4	192
HDD15-5-A	100/120/220/230/240	3/3/1.5/1.5/5	50/60	12/15 or -12/-15	5	150

## GENERAL:

Power supplies in this Section are Complementary Recognized to Components, Power Supplies, Specialty (QQIJ2).

## ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Use - For use only in (or with) complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

Special Considerations - The following items are considerations that were used when evaluating this product.

**USR/CNR indicates investigation to the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment, CAN/CSA C22.2, No. 60950-1/UL 60950-1, First Edition, April 1, 2003.**

The component was submitted by the manufacturer for use in a maximum air ambient of 50°C.

The equipment is for building in, Class I (earthed), pluggable Types A and B, intended for use on a TN, power system.

Conditions of Acceptability - When installed in the end product, consideration shall be given to the following:


1. **This component has been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, CSA/UL 60950-1, First Edition, dated April 1, 2003, Sub-clause 2.10, which would cover the component itself if submitted for Listing.**
2. The products were tested on a 20 A branch circuit. If used on a branch circuit greater than this, additional testing may be necessary.
3. The secondary output circuits are ELV and are hazardous energy levels. They are not to be user accessible.
4. The secondary output circuits exceed 240 VA at a potential of 2 V or more.

5. The terminals and connectors are suitable for factory wiring only.
6. The power supply shall be properly bonded to the main protective earthing termination in the end product.
7. Magnetic device (e.g. transformer, inductor) T1 employs an Unlisted Component (OBJY3) Electrical Insulation System designated Class B.
8. The equipment has been evaluated for use in a Pollution Degree 2 environment.
9. A suitable Electrical and Fire enclosure shall be provided.
10. An external fuse rated 250 V, 2 A was used during Abnormal Test for HE24-7.2-A and HE48-4-A. An external fuse rated 250 V, 1.5 A, was used during abnormal testing for power supply HDD15-5-A, HE5-18/OVP-A, HE12-10.2-A, HE15-9-A and HE28-6-A.

11. These power supplies have been evaluated for use in a 25, 250 and 70°C ambient in accordance with the manufacturer's specifications. The units were loaded to 100% normal rated load for 25 and 50°C ambient and 40% of normal load for 70°C ambient. At 50°C, the following units required forced air cooling in order to comply with standard requirements.

<u>Model</u>	<u>Required LFM</u>
HE5-18/OVP-A	70
HE12-10.2-A	120
HE15-9-A	100
HE24-7.2-A	120
HE28-6-A	100
HE48-4-A	100
HDD15-5-A	80

12. All models have been evaluated to requirements in the Seventeenth Edition of the Standard for Electric Industrial Control Equipment (UL 508).
13. Secondary circuits have not been investigated for secondary interconnection or user accessibility.
14. The device shall be installed in compliance with the enclosure, mounting, spacing, casualty, markings, and segregation requirements of the end-use application.
15. The need for conducting Leakage Current Tests is to be determined as part of the end-product evaluation.
16. This power supply has only been evaluated for use in commercial and industrial, controlled environment applications. Spacings evaluation assumes a pollution degree 2 environment.
17. The input and output connectors including terminal blocks are not acceptable for field connections and are only intended for connection to mating connectors of internal wiring inside the end-use product. The acceptability of these and the mating connectors relative to secureness, insulating materials, and temperature shall be considered.
18. The secondary circuits of these power supplies were not subjected to component fault testing as part of this investigation.

Product	Linear AC/DC power supply
Applicant	Bel Fuse Inc. 206 Van Vorst St. Jersey City, NJ 07302 USA
Manufacturer	Bel Fuse Inc. 206 Van Vorst St. Jersey City, NJ 07302 USA
Factory	BPS Asia Pacific Electronics (Shenzhen) Co., Ltd. Building# 6, Nanming Road, Gongming Town Huahong Xintong Industrial Park Guangming District, Shenzhen 518108 China <input type="checkbox"/> See next page(s)
Ratings	1.5 A or 3.0 A 100/120 Vac or 220/230/240 Vac 50/60 Hz
Trade mark	 a bel group
Model / Type Ref.	HE5-18/OVP, HE12-10.2, HE15-9, HE28-6, HDD15-5, HDD15-5-AS307G
Principal characteristics	Open frame power supply for building-in. The model name may be followed by suffix -A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9. Model name may be followed by "G" or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options. <input type="checkbox"/> See next page(s)
A sample of the product was tested and found to be in conformity with	OFF EN 60950-1:2006;A11;A1;A12;A2
Validity	This certificate documents conformity with the standards shown, and also applies as license for use of Nemkos name and certification mark. The certificate and license is valid as long as the applicable conditions are complied with, and provided that any changes to the product are notified to Nemko for acceptance prior to implementation. New standards or amendments to the standards may imply that the product design must be updated and/or that re-testing and re-certification is necessary.
Additional information	<input type="checkbox"/> See next page(s)  The abovementioned certified equipment complies with current regulatory requirements regarding electrical safety in Norway and other EU/EEA member states, as far as this can be checked. Compliance with requirements regarding building-in, protection against electric shock and

Date of issue 07-07-2015



Juan Z. Kleppenes  
Certification Department

### Nemko AS

Gaustadalléen 30, P.O. Box 73 Blindern, 0314 Oslo, Norway  
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ENTERPRISE NUMBER NO974404532

Electromagnetic Compatibility (EMC) must be checked when the equipment is built-in a completed product or forms a part of a complete system.

Additional model(s)

See next page(s)

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ENTERPRISE NUMBER NO974404532

Product	Linear AC/DC power supply
Pos. No	1
Model / Type Ref.	HE24-7.2, HE48-4
Trade mark (if different from page 1)	
Rating	2.0 A or 4.0 A 100/120 Vac or 220/230/240 Vac 50/60Hz
Principal characteristics	Open frame power supply for building-in. The model name may be followed by suffix -A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9. Model name may be followed by "G" or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options.

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ENTERPRISE NUMBER NO974404532

**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 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 constructeurModel / Type Ref.  
Ref. De typeAdditional information (if necessary may also be reported on page 2)  
Les informations complémentaires (si nécessaire, peuvent être indiqués 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 la

As 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 Certificat

This CB Test Certificate is issued by the National Certification Body  
Ce Certificat de essai OC est établi par l'Organisme **National de Certification**

Linear AC/DC power supply

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 2

2.0 A or 4.0 A 100/120 Vac or 220/230/240 Vac 50/60 Hz



HE24-7.2, HE48-4

Open frame power supply for building-in. The model name may be followed by suffix -A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9. Model name may be followed by "G" or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options.

 Additional information on page 2

IEC 60950-1(ed.2);am1;am2

289465



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Nom et adresse du demandeurName and address of the manufacturer  
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Xintong Industrial Park  
Guangming District, Shenzhen 518108  
China Additional information on page 2

Input: 1.5 A or 3.0 A 100/120 Vac or 220/230/240 Vac 50/60Hz



HE5-18/OVP, HE12-10.2, HE15-9, HE28-6, HDD15-5, HDD15-5-AS307G

Open frame power supply for building-in. The model name may be followed by suffix -A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9. Model name may be followed by "G" or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options.


 Additional information on page 2



IEC 60950-1(ed.2);am1;am2

289465



<p><b>TEST REPORT</b>  <b>IEC 60950-1</b>  <b>Information technology equipment – Safety –</b>  <b>Part 1: General requirements</b></p>	
<b>Report Number.....:</b>	289465
<b>Date of issue.....:</b>	2 July 2015
<b>Total number of pages.....:</b>	50
<b>Applicant's name .....</b>	Bel Fuse Inc.
<b>Address .....</b>	206 Van Vorst St., Jersey City, NJ 07302
<b>Test specification:</b>	
<b>Standard .....</b>	IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
<b>Test procedure.....:</b>	CB-Scheme
<b>Non-standard test method .....</b>	N/A
<b>Test Report Form No. ....:</b>	IEC60950_1F
<b>Test Report Form(s) Originator.....:</b>	SGS Fimko Ltd
<b>Master TRF.....:</b>	Dated 2014-02
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<b>General disclaimer:</b>	
<p>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.</p>	

<b>Test item description</b> .....:	Linear AC/DC power supply
Trade Mark .....	 <small>a bel group</small>
Manufacturer.....:	Same as Applicant
Model/Type reference .....	HE5-18/OVP, HE12-10.2, HE15-9, HE24-7.2, HE28-6, HE48-4, HDD15-5 and HDD15-5-AS307G (may be followed by suffix -A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9. Model name may be followed by "G" or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options.
Ratings .....	Input:
HE5-18/OVP.....:	100 / 120 Vac, 3.0 A, 50/60 Hz, 220 / 230 / 240 Vac, 1.5 A, 50/60 Hz
HE12-10.2.....:	100 / 120 Vac, 3.0 A, 50/60 Hz, 220 / 230 / 240 Vac, 1.5 A, 50/60 Hz
HE15-9.....:	100 / 120 Vac, 3.0 A, 50/60 Hz, 220 / 230 / 240 Vac, 1.5 A, 50/60 Hz
HE28-6.....:	100 / 120 Vac, 3.0 A, 50/60 Hz, 220 / 230 / 240 Vac, 1.5 A, 50/60 Hz
HDD15-5 & HDD15-5-AS307G .....	100 / 120 Vac, 3.0 A, 50/60 Hz, 220 / 230 / 240 Vac, 1.5 A, 50/60 Hz
HE24-7.2.....:	100 / 120 Vac, 4.0 A, 50/60 Hz, 220 / 230 / 240 Vac, 2.0 A, 50/60 Hz
HE48-4.....:	100 / 120 Vac, 4.0 A, 50/60 Hz, 220 / 230 / 240 Vac, 2.0 A, 50/60 Hz

<b>Testing procedure and testing location:</b>		
<b>CB Testing Laboratory:</b>	Nemko USA Inc.	
Testing location/ address .....	2210 Faraday Ave. Suite 150, Carlsbad, CA 92008, USA	
<b>Associated CB Testing Laboratory:</b>		
Testing location/ address .....		
Tested by (name + signature).....:	Eli Madrigal	
Approved by (name + signature).....:	Jeff Busch	

<b>Report History:</b>
Original report

<b>List of Attachments (including a total number of pages in each attachment):</b>	
Attachment 1: European Group Differences and National Deviations .....	76 pages
Documented deviations contain individual national documents for several European countries that are included in the European Group Deviations. The European Group Difference: EN60950:2006/A11:2009/A:2010/A12:2011/A2:2013 are considered "Normative". The individual national documents (Denmark, Finland, Germany, Ireland, Norway, Spain, Sweden, Switzerland and United Kingdom) are considered "informative" and included at the manufacturer's request.	
Attachment 2: Miscellaneous Documentation, e.g. Photos, User's Manual, Schematics etc. ....	21 pages
(Not for publication – Engineering use only)	

<b>Summary of testing</b>	
General	All comments relate to all models, unless specifically stated.
Power supply	These equipment are open frame, Class I AC/DC Linear power supplies with universal AC input and single DC voltage output for building-in. This report covers multiple models and all comments / tests apply to all models unless otherwise indicated. Testing was conducted on various models as indicated.
1.5, 3.2.5; Power supply cord set.	A power supply cord set is not provided with the power supply. A power supply cord set, complying with the national regulations of the country in which the product is to be sold, shall be provided with the end-use equipment.
1.7.2; Safety instructions.	Instructions and equipment markings related to safety are to be provided in a language, which is acceptable in the country in which the equipment is to be sold. English language verified.
1.7.2.4; IT power distribution systems.	The equipment complies with the requirements for connection to the Norwegian IT power systems. The following information should be given (but is not required) in the installation instruction: "This product is also designed for IT power system with Phase to Phase voltage 230V."
2.7.4; Number and location of protective devices.	In Norway, IT power distribution system is used. Equipment with a single protective device is accepted in Norway. Other countries may have additional requirements.
2.7.6; Warning to service personnel.	After operation of the protective device, the equipment is still under voltage if it is connected to an IT-power system. A warning is required for service personnel. Norway does not require this warning.
5.2: Electric Strength test	Increased test voltages for Basic insulation applied to the equipment, based on measured working voltages.

<b>Summary of testing:</b>	
<b>Tests performed</b> (name of test and test clause): 1) Input Test ..... 1.6.2 2) Durability Test ..... 1.17.11 3) SELV Reliability Test ..... 2.2 4) Protective Bonding Test ..... 2.6.3.4 5) Humidity Test ..... 2.9.2 6) Working Voltage Measurement ..... 2.10.2 7) Hazardous Voltage Measurement ..... 2.10.2 8) Heating Test ..... 4.5.1 9) Touch Current Test ..... 5.1 10) Electric Strength Test ..... 5.2.2 11) Component Failure Test ..... 5.3 12) Abnormal Operation Test ..... 5.3 13) PS Output Overload and Short Test ..... 5.3 14) Transformer Overload Test ..... 5.3, Annex C	<b>Testing location:</b> <b>See page 2</b>

<b>Summary of compliance with National Differences:</b>
<b>List of countries addressed</b> Australia (AU), Canada (CA), Denmark (DK), Finland (FI), Germany (DE), Ireland (IE), Japan (JP), Israel (IS), Korea (KR), Norway (NO), Singapore (SI), Spain (ES), Sweden (SE), Switzerland (CH), United Kingdom (GB), United States of America (US), Ukraine (UK)
Additional National Differences not published by the IECEE: Singapore: Consumer Protection Information Booklet, 2002 Edition, (Ver. 4.1).
Austria (AT) and Slovenia (SI) have been considered per European Group Differences and National Differences.
<input checked="" type="checkbox"/> <b>The product fulfils the requirements of:</b> EN 60950-1:2006 + A11:2009 + A1:2010 + 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 Certification Bodies that own these marks.

**bel** POWER SOLUTIONS & PROTECTION  
a bel group

HE5-18/OVP-AG  
OUTPUT: 5VDC AT 18A W/OVP

Q4 Q1 Q2 Q3

SCRI CR3

EXTERNAL FUSE REQUIRED

FOR USE AT	AC INPUT, 50/60Hz			
	100	120	220	230/240
JUMPER	1&3 2&4	1&3 2&4	2&3	2&3
APPLY AC	1&5	1&4	1&5	1&4
MAX CURRENT/ FUSE RATING	3A		1.5A	

**bel** POWER SOLUTIONS & PROTECTION  
a bel group

HE12-10.2 - AG  
OUTPUT: 12VDC AT 10.2A

Q1 Q2 Q3 Q4

CR3 CR2

EXTERNAL FUSE REQUIRED

FOR USE AT	AC INPUT, 50/60Hz			
	100	120	220	230/240
JUMPER	1&3 2&4	1&3 2&4	2&3	2&3
APPLY AC	1&5	1&4	1&5	1&4
MAX CURRENT/ FUSE RATING	3A		1.5A	

Copy of marking plate: (continued)

**bel** POWER SOLUTIONS & PROTECTION  
a bel group

HE15-9-AG  
OUTPUT: 15VDC AT 9A

Q1 Q2 Q3 Q4

CR3 CR2

EXTERNAL FUSE REQUIRED  
! EXT

FOR USE AT	AC INPUT, 50/60Hz			
	100	120	220	230/240
JUMPER	1&3, 2&4	1&3, 2&4	2&3	2&3
APPLY AC	1&5	1&4	1&5	1&4
MAX CURRENT/ FUSE RATING	3A		1.5A	

**bel** POWER SOLUTIONS & PROTECTION  
a bel group

HE24-7.2-A  
OUTPUT: 24VDC AT 7.2A

Q1 Q2 Q3 Q4

CR3 CR2

EXTERNAL FUSE REQUIRED  
! EXT

FOR USE AT	AC INPUT, 50/60Hz			
	100	120	220	230/240
JUMPER	1&3, 2&4	1&3, 2&4	2&3	2&3
APPLY AC	1&5	1&4	1&5	1&4
MAX CURRENT/ FUSE RATING	4A		2A	

Copy of marking plate: (continued)

**bel** POWER SOLUTIONS & PROTECTION  
a bel group

**HE28-6-AG**  
OUTPUT: 28VDC AT 6A

Q1 Q2 Q3 Q4

CR3 CR2

EXTERNAL FUSE REQUIRED  
EXT

AC INPUT FOR USE AT	90/80Hz		
	100	120	220/230/240
JUMPER	1A3 2&4	1A3 2&3	2&3
APPLY AC	1&5	1&4	1&5
MAX CURRENT/ FUSE RATING	3A	1.5A	

**bel** POWER SOLUTIONS & PROTECTION  
a bel group

**HDD15-15-AS307G**  
OUTPUT:  $\pm 15$ VDC OR  $\pm 12$ VDC AT 5 A  
FOR  $\pm 12$ VDC AT 5A MOVE WIRES AT  
TRANSFORMER PINS B-B TO A - A AND ADJUST R26 & R29

Q2 Q1 Q5 Q3 Q6

EXTERNAL FUSE REQUIRED  
EXT

AC INPUT FOR USE AT	90/80Hz		
	100	120	220/230/240
JUMPER	1A3 2&4	1A3 2&3	2&3
APPLY AC	1&5	1&4	1&5
MAX CURRENT/ FUSE RATING	3A	1.5A	



<b>Test item particulars:</b>	
Equipment mobility .....	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
Connection to the mains.....	<input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input checked="" type="checkbox"/> not directly connected to the mains Evaluated for 2000m, Class I Switch mode power supply for building-in. To be evaluated in the end use.
Operating condition .....	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location .....	<input type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
Over voltage 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:
Mains supply tolerance (%) or absolute mains supply values .....	-10%, +6%
Tested for IT power systems .....	<input checked="" type="checkbox"/> Yes (Norway only) <input type="checkbox"/> No
IT testing, phase-phase voltage (V) .....	230
Class of equipment .....	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A) .....	To be evaluated at end use
Pollution degree (PD) .....	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class .....	IP20
Altitude during operation (m) .....	2000 m
Altitude of test laboratory (m) .....	94m, sea level
Mass of equipment (kg) .....	4.5 kg
Temperature, Ambient (°C).....	50°C maximum

<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 of receipt of test item .....	June 2015
Date (s) of performance of tests.....	June 2015

<p><b>General remarks:</b></p> <p>"(See Enclosure #)" refers to additional information appended to the report.          "(See appended table)" refers to a table appended to the report.  <b>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</b></p>
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<p><b>Manufacturer's Declaration per sub-clause 6.2.5 of IECEE 02:</b></p>	
<p>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 . :</p>	<p><input type="checkbox"/> <b>Yes</b>  <input checked="" type="checkbox"/> <b>Not applicable</b></p>
<p><b>When differences exist; they shall be identified in the General product information section.</b></p> <p><b>Name and address of factory (ies) .....</b></p> <p>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</p>	

<p><b>General product information:</b></p> <p>This test report is based on a TUV SUD test report Ref. No. SI1300016113-000 with appended CB cert Ref. No. DE 3 -500232; evaluated to the requirements of IEC 60950-1: 2005 2<sup>nd</sup> ed. +A1:2009.</p> <p>This test report includes addition evaluation of the power supply to the requirements of IT power systems and an engineering evaluation of the Leakage at the output of the PSU.          The test report also includes an upgrade to IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013.</p> <p>For continuity, data from the original TUV report is included in this report, along with the additional evaluation referenced.</p> <p>These linear power supply models are open frame AC to DC power supplies. They have been evaluated for use in a maximum ambient of 50°C. The units were loaded to 100% of normal rated load for 25 and 50°C ambient. Maximum load is de-rated by 10% at 50 Hz input operation.</p> <p>All models may require forced air cooling with an ambient between 25°C and 50°C in order to comply with standard requirement; compliance at end use. Input voltages of 230 Vac and 240 Vac have the same transformer configuration. No tests done at 230 Vac.</p> <p>Evaluated power supply do not include any mains circuitry other than the transformer. All Mains connections, Mains to ground (Basic) and Mains to secondary (Reinforced), shall be evaluated in the end use system.</p> <p><b><u>MODEL DIFFERENCES:</u></b></p> <p>Model HDD-15-5-AS307G is exactly the same as HDD15-5 except for higher over current protection limit.</p>
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**ADDITIONAL RATINGS INFORMATION:**

Model:	Required input fuse	Input (AC)			Output:		Required airflow (linear feet per minute) lfm
		A	Vac	A	Hz	Vdc	
HE5-18/OVP	3.0 1.5	100 / 120 220 / 230 / 240	3.0 1.5	50/60	5	18.0	70
HE12-10.2	3.0 1.5	100 / 120 220 / 230 / 240	3.0 1.5	50/60	12	10.2	120
HE15-9	3.0 1.5	100 / 120 220 / 230 / 240	3.0 1.5	50/60	15	9.0	100
HE24-7.2	4.0 2.0	100 / 120 220 / 230 / 240	4.0 2.0	50/60	24	7.2	120
HE28-6	3.0 1.5	100 / 120 220 / 230 / 240	3.0 1.5	50/60	28	6.0	100
HE48-4	4.0 2.0	100 / 120 220 / 230 / 240	4.0 2.0	50/60	48	4.0	100
HDD15-5, HDD15-5- AS307G	3.0 1.5	100 / 200 220 / 230 / 240	3.0 1.5	50/60	12 or 15	5.0	60

Model HE48-4: The output is considered as non-SELV.

**CONDITIONS OF ACCEPTABILITY:**

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

The unit requires:

- 1) A reliable ground (protective earth) connection at end product.
- 2) A suitable electrical and fire enclosure at end use.
- 3) External fusing as specified in the Installation Instructions.

**Abbreviations used in the report:**

- normal conditions .....N.C.	- single fault conditions ..... S.F.C
- functional insulation .....OP	- basic insulation.....BI
- double insulation..... DI	- supplementary insulation.....SI
- between parts of opposite polarity ..... BOP	- reinforced insulation .....RI

Indicate used abbreviations (if any): ..... None