



Test Report issued under the responsibility of:



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

Report Number .....: 30581080.014

Date of issue .....: 02/12/2016

Total number of pages..... 141

Applicant's name.....: TDK-Lambda Ltd.

Address .....: 56 Haharoshet St., P.O.B. 500 Karmiel Industrial Zone Karmiel  
2161401, Israel

**Test specification:**

Standard .....: IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013

Test procedure .....: CB Scheme

Non-standard test method.....: N/A

Test Report Form No.....: IEC60950\_1F

Test Report Form(s) Originator.....: SGS Fimko Ltd

Master TRF .....: Dated 2014-02

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**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.

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<b>Test item description</b> ..... :	Programmable Power Supplies
<b>Trade Mark</b> ..... :	TDK-Lambda, <b><i>TDK-Lambda</i></b>
<b>Manufacturer</b> .....	Same as applicant
<b>Model/Type reference</b> .....	GEN3300W series, PU3300W series Models GENwww-xxx-y-z-u-CO-o, PUwww-xxx-y-z-u-CO-o, where www = from 008 to 600 xxx = from 005 to 400 y = LAN, MD, IEEE, IEMD, IS420, IS510, USB, or blank z = 1P230, 3P208, 3P400; u = U or blank CO = -CO or blank o = -1683, -1690, -1704, -1706, -171X (X=0-9), -1733, -1737, -174X-174X (X=4-9), blank)
<b>Ratings</b> .....	Input: 1. Single phase units: 190-240V, 50/60Hz, 22A; 2. Three phase units (option 1): 190-240V; 3W+ , 50/60Hz, 12.5A; 3. Three phase units (option 2): 380-415V; 3W+ , 50/60Hz, 6.5A; Output: From 0-8VDC/max. 400A up to 0-600VDC/max. 5.5A, with output power 3300 Watt max.

<b>Testing procedure and testing location:</b>		
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	TUV Rheinland of North America, Inc.
<b>Testing location/ address.....:</b>		1279 Quarry Lane, Ste. A, Pleasanton, CA 94566
<input type="checkbox"/>	<b>Associated CB Testing Laboratory:</b>	
<b>Testing location/ address.....:</b>		
<b>Tested by (name + signature) .....</b>		Justin Lewis
<b>Approved by (name + signature).....:</b>		Rahul Mehta
<hr/>		
<input type="checkbox"/>	<b>Testing procedure: TMP/CTF Stage 1:</b>	
<b>Testing location/ address.....:</b>		
<b>Tested by (name + signature) .....</b>		
<b>Approved by (name + signature).....:</b>		
<hr/>		
<input type="checkbox"/>	<b>Testing procedure: WMT/CTF Stage 2:</b>	
<b>Testing location/ address.....:</b>		
<b>Tested by (name + signature) .....</b>		
<b>Witnessed by (name + signature).....:</b>		
<b>Approved by (name + signature).....:</b>		
<hr/>		
<input type="checkbox"/>	<b>Testing procedure: SMT/CTF Stage 3 or 4:</b>	
<b>Testing location/ address.....:</b>		
<b>Tested by (name + signature) .....</b>		
<b>Witnessed by (name + signature).....:</b>		
<b>Approved by (name + signature).....:</b>		
<b>Supervised by (name + signature) .....</b>		
<hr/>		

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

Attachment 1: National and Group Differences ( 31 pages)

Attachment 2: Photo documentation (7 pages)

**Summary of testing:****Tests performed (name of test and test clause):**

Clause 1.6.2 Power Input Measurements  
 Clause 1.7.11 Durability of Marking Test  
 Clause 2.1.1.1 Accessibility to Energized parts  
 Clause 2.1.1.7 Capacitor discharge test  
 Clause 2.2 SELV circuits – voltage measurements (normal and fault conditions)  
 Clause 2.6.3.4 Protective earthing trace earth fault current; Earthing test  
 Clause 2.10.2 Determination of working voltage  
 Clause 4.2 Mechanical strength test  
 Clause 4.4 Hazardous moving parts  
 Clause 4.5 Temperature rise measurements  
 Clause 5.1 Touch current measurements  
 Clause 5.2 Dielectric strength test  
 Clause 5.3 Abnormal operating and fault Conditions

*testing during original evaluation according to report number 30581080.001, no further testing was deemed necessary for this upgrade of standard*

**Testing location:**

TUV Rheinland of North America, Inc.  
 1279 Quarry Lane, Ste. A, Pleasanton, CA 94566

**Summary of compliance with National Differences:****List of countries addressed**

EU Group Differences, EU Special National Conditions, DK, IT, SE, US

Explanation of used codes: DK = Denmark, IT = Italy, SE = Sweden, US = United States of America

**The following national differences were considered to IEC 60950-1:2005 (2nd Edition) + Am 1:2009:**

List of countries addressed: CA, DE, IL, KR

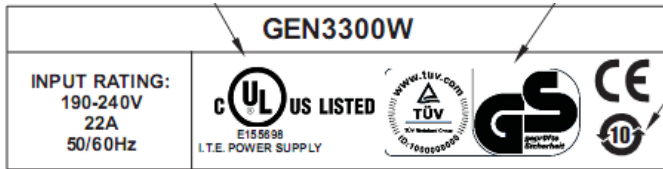
Explanation of used codes: CA = Canada, DE = Germany, IL = Israel, KR = Republic of Korea

**The product fulfils the requirements of IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013 and EN 60950-1:2006+A11+A1+A12+A2.**

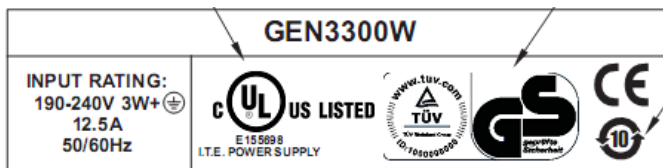
**Copy of marking plate:**

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.

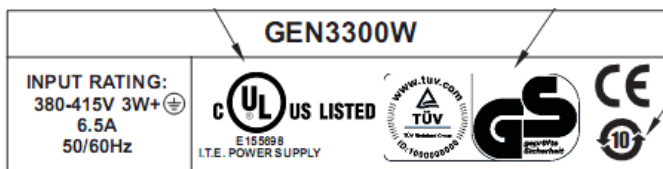
One phase units (option 1)



Three phase units (option 2)



Three phase units (option 3)



*[representative labels showing GEN3300 series]*

Additional Information underneath the main label for all models:

EU representative: TDK-Lambda UK Limited  
Kingsley Avenue, Ilfracombe, Devon EX34 8ES, UK

<b>Test item particulars.....:</b>	
<b>Equipment mobility.....:</b>	<input checked="" type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
<b>Connection to the mains.....:</b>	<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 type="checkbox"/> not directly connected to the mains <i>(NOTE: Connection to the mains is depends on the final installation )</i>
<b>Operating condition.....:</b>	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
<b>Access location .....</b>	<input type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location <i>NOTE:depends to model-operator accessible (SELV models), restricted access locations (non-SELV models)</i>
<b>Over voltage category (OVC) .....</b>	<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:
<b>Mains supply tolerance (%) or absolute mains supply values .....</b>	+10%/-10%
<b>Tested for IT power systems .....</b>	<input checked="" type="checkbox"/> Yes ( Norway only) <input type="checkbox"/> No
<b>IT testing, phase-phase voltage (V) .....</b>	230VAC
<b>Class of equipment .....</b>	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified
<b>Considered current rating of protective device as part of the building installation (A) .....</b>	20
<b>Pollution degree (PD) .....</b>	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
<b>IP protection class .....</b>	IP20
<b>Altitude during operation (m) .....</b>	3000
<b>Altitude of test laboratory (m) .....</b>	
<b>Mass of equipment (kg) .....</b>	13kg max.

<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>	
<b>Date of receipt of test item .....</b>	10 August, 2005 <i>[date of receipt of test item during original testing according to report number 30581080.001]</i>
<b>Date (s) of performance of tests .....</b>	28 November, 2005 <i>[date of performance of testing during original evaluation according to report number 30581080.001, no further testing was deemed necessary for this upgrade of standard]</i>

**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 IEC60950:**

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) .....**

TDK-Lambda Ltd.  
 56 Haharoshet St., P.O.B. 500 Karmiel Industrial  
 Zone Karmiel 2161401, Israel

**General product information:**

The GEN3300W/PU3300W series is a family of power supplies having rated output from 0-8VDC/400A up to 0-600VDC/5.5A with total output power 3300 Watt maximum or less.

The units evaluated for use in TN, TT and IT power systems.

The units are Class I, evaluated for use in Overvoltage Category II and Pollution Degree 2 environments.

The units have Hazardous Energy Level output and intended to be installed in RAL.

All units may be adjusted by operator to 105% of the rated output voltage.

Units with output rated up to (and including) 40VDC considered as SELV output units.

Units with output rated 60VDC and more considered as Secondary Hazardous voltage output units.

The units consist of an aluminium box-type frame enclosure and cover.

The following common parts installed (or may be installed-optional parts) inside of enclosure:

Common parts.....

Input board with soldered input connector (1 phase-IA616; 3 phase-IA617; 3 phase-IA618).

Power factor control (PFC) board (IA608 or IA619) .....

BIAS board (IA620) .....

Two DC/DC converter boards connected in parallel(IA613 for output 8V-100V or IA614 for output 150V-600V).

Control board(IA615) .....

Output filter assembly(IA623 for output 8-100V or IA624 for output 150-600V).

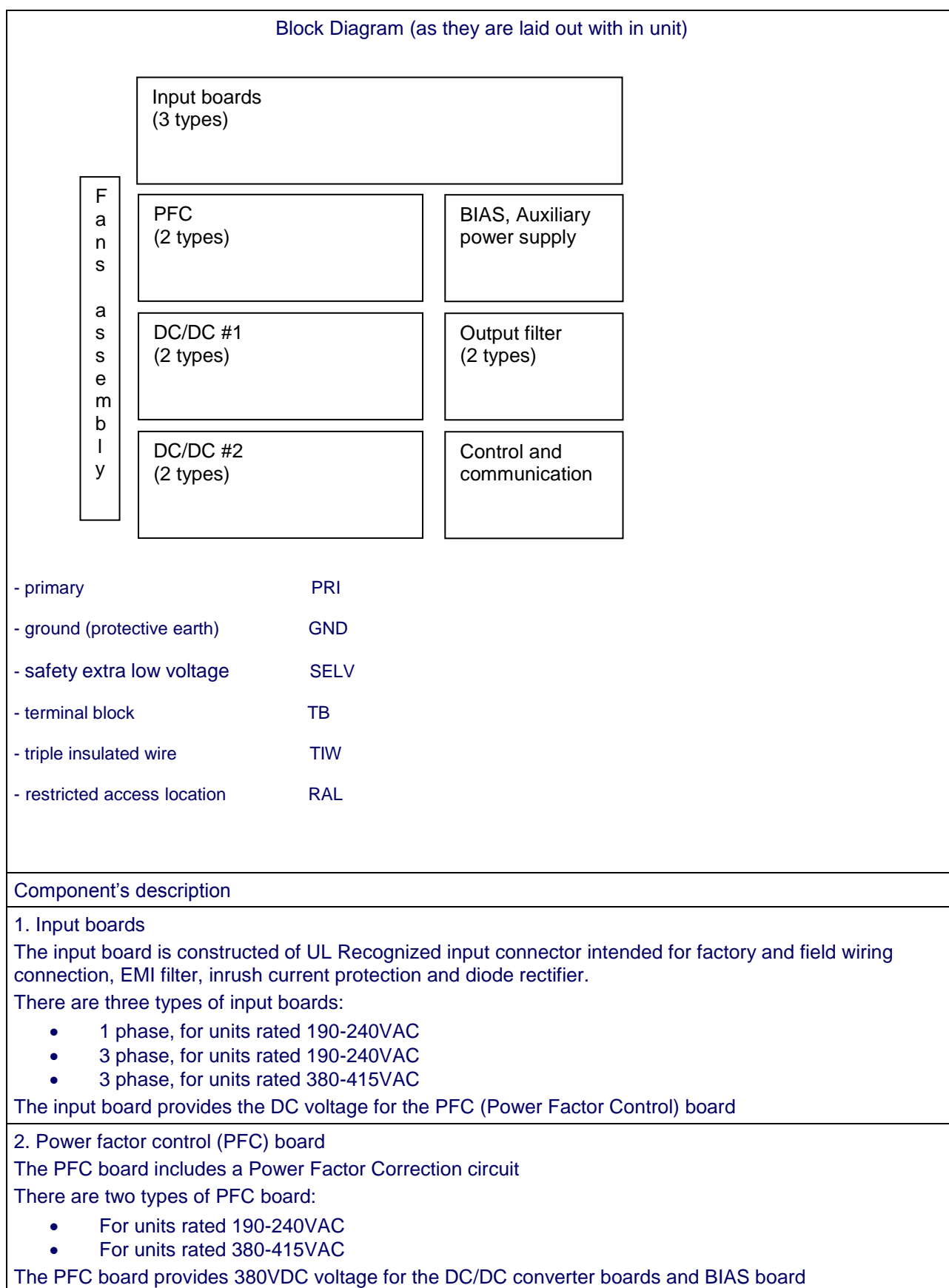
Display assembly(IA621) .....

Fans assembly (board IA622 and three fans)



<p>Optional parts</p> <p>Isolated analog control board (IA631)</p> <p>GPIB board (IA630)</p> <p>LAN board (IA672)</p> <p>USB board.</p> <p>The models constructed of 1 phase input board may be connected to Line and Neutral in case of single phase power system or between two lines in case of multiphase power system.</p> <p>The power I/O connectors are suitable for factory and field wiring.</p> <p>The units are suitable for maximum ambient operating temperature 50°C at maximum load.</p> <p>The units are suitable for maximum operational altitude up to 3000m.</p> <p><b>CB-Test Report History:</b></p> <p>30581080.001 Original CB-Report</p> <p>30581080.003 Addition of the alternate diode that is installed on positions D606, D607, D609, D610, D612, D613, D615, D616 of the DC/DC board IA614 and rated: 300V min., 5A min. The alternate diode is used on the 150V board only.</p> <p>30581080.005 Addition of an optional module – LAN communication card (IA672).</p> <p>30581080.009 New CB-report for an upgrade of standard to list IEC 60950-1:2005</p> <p>30581080.011 New CB-report / this report for an upgrade of standard to list IEC 60950-1:2005+A1 and EN 60950-1:2006+A11+A1+A12 and introduction of new model series PU3300W</p> <p><b>30581080.014 New CB-report / this report for an upgrade of standard to list IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013 and EN 60950-1:2006+A11+A1+A12+A2. Removal of various from table 1.5.1 (List of critical components). Addition of table "Definition of Variables". Model nomenclature suffix "CO" and "o" added. No testing deemed necessary.</b></p>		
<b>Definition of Variables</b>		
Variable:	Range of variable:	:
www	008 - 600	min/max output voltage range in VDC
xxx	005 - 400	min/max output current range in A
y	<ol style="list-style-type: none"> <li>1. LAN</li> <li>2. MD</li> <li>3. IEEE</li> <li>4. IEMD</li> <li>5. IS420</li> <li>6. IS510</li> <li>7. USB</li> <li>8. blank</li> </ol>	<p>Optional suffix, not safety related</p> <ol style="list-style-type: none"> <li>1. LAN card installed</li> <li>2. Software enabled multi drop</li> <li>3. IEEE card installed</li> <li>4. IEEE installed card and multidrop</li> <li>5. Isolated Analog Module (Current Control) Installed</li> <li>6. Isolated Analog Module (Voltage Control) Installed</li> <li>7. USB Card</li> <li>8. Basic module</li> </ol>

z	<ol style="list-style-type: none"> <li>1. 1P230</li> <li>2. 3P208</li> <li>3. 3P400</li> </ol>	<p>Input supply voltage options</p> <ol style="list-style-type: none"> <li>1. Single phase: ~ 190-240 V, 50/60 Hz, 22 A</li> <li>2. Three phase (option 1): ~ 190-240 V, 3 W+, 50/60 Hz, 12.5 A</li> <li>3. Three phase (option 2): ~ 380-415 V, 3W+, 50/60 Hz, 6.5 A</li> </ol>																
u	<ol style="list-style-type: none"> <li>1. U</li> <li>2. blank</li> </ol>	<ol style="list-style-type: none"> <li>1. shipped with standard US power cable</li> <li>2. shipped without power cable</li> </ol>																
CO	<ol style="list-style-type: none"> <li>1. CO</li> <li>2. blank</li> </ol>	<ol style="list-style-type: none"> <li>1. Conformal coating used (for environmental protection only).</li> <li>2. Without conformal coating.</li> </ol>																
o	<ol style="list-style-type: none"> <li>1. 1683</li> <li>2.1690</li> <li>3. 1704</li> <li>4. 1706</li> <li>5. 1710 to 1719</li> <li>6. 1733</li> <li>7.1737</li> <li>8. 1744 to 1749</li> <li>9. Blank</li> </ol>	<ol style="list-style-type: none"> <li>1. LAN programming (Optional)</li> <li>2. Alternate OVP Programming</li> <li>3. Indicates models with different LAN programming, not affecting safety.</li> <li>4. Indicates models with additional label/label requirements, not affecting safety.</li> <li>5. Indicates models with different software modifications, not affecting safety.</li> <li>6. Indicates different LAN software programming not affecting safety.</li> <li>7. Indicates different remote sensing not affecting safety.</li> <li>8. Indicates logo/labelling change or removal not affecting safety.</li> <li>9. Basic model.</li> </ol>																
<p><b>Abbreviations used in the report:</b></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 33%;">- normal conditions</td> <td style="width: 33%;"><b>N.C.</b></td> <td style="width: 33%;">- single fault conditions</td> <td style="width: 33%;"><b>S.F.C</b></td> </tr> <tr> <td>- functional insulation</td> <td><b>OP</b></td> <td>- basic insulation</td> <td><b>BI</b></td> </tr> <tr> <td>- double insulation</td> <td><b>DI</b></td> <td>- supplementary insulation</td> <td><b>SI</b></td> </tr> <tr> <td>- between parts of opposite polarity</td> <td><b>BOP</b></td> <td>- reinforced insulation</td> <td><b>RI</b></td> </tr> </table> <p><b>Indicate used abbreviations (if any)</b></p>			- normal conditions	<b>N.C.</b>	- single fault conditions	<b>S.F.C</b>	- functional insulation	<b>OP</b>	- basic insulation	<b>BI</b>	- double insulation	<b>DI</b>	- supplementary insulation	<b>SI</b>	- between parts of opposite polarity	<b>BOP</b>	- reinforced insulation	<b>RI</b>
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- double insulation	<b>DI</b>	- supplementary insulation	<b>SI</b>															
- between parts of opposite polarity	<b>BOP</b>	- reinforced insulation	<b>RI</b>															



### 3. DC/DC boards

The DC/DC board includes a DC/DC converter

There are two types of DC/DC boards:

- For units having output voltage from 8VDC up to (and including) 100VDC
- For units having output voltage from 150VDC up to (and including) 600VDC

In each unit there are two DC/DC boards which are assembled in parallel to provide full output power 3300W (Each board 1650W)

Each type of the DC/DC converter is the same besides the mains transformer construction and winding ratio.

### 4. BIAS

The BIAS board is the same for all models.

The BIAS board includes an auxiliary switching power supply providing the DC voltage for the internal circuits.

The BIAS power supply provides three output circuits. One output is connected to the SELV control (RS232) circuits. The other two outputs are connected to the control circuits. Control circuits are regarded as SELV for units up to 40V output and Secondary Hazardous for all other power supply models.

### 5. Control board

The control board is the same for all models.

The control board includes the control and adjusts circuits for maintenance of functioning of DC/DC boards.

### 6. Output filter assembly

The output filter assembly includes an output filter and output current sense (shunt)

There are two types of the output filter assembly:

- For units having an output voltage from 8VDC up to (and including) 100VDC
- For units having an output voltage from 150VDC up to (and including) 600VDC

The first type of output filter assembly has bus-bar type of output terminals.

The second type of output filter assembly has a UL Recognized connector intended for factory and field wiring.

### 7. Display assembly

The display assembly is same for all models

The display assembly includes a digital display and components for management of the power supply

### 8. Fans assembly

The fans assembly is the same for all units

The fans assembly consists of fans bracket, three identical fans and a fans distribution board