




Test Report issued under the responsibility of:



TEST REPORT IEC 60950-1 Information technology equipment – Safety – Part 1: General requirements		
Report Number	207809-CI3-1	CB DE1-49345/A4/M1
Date of issue	2015-11-03	
Total number of pages	127	
Applicant's name	TDK-Lambda Americas Inc.	
Address	3320 Matrix Drive, Richardson, TX, 75082	
Test specification:		
Standard	DIN EN 60950-1 (VDE 0805-1):2014-08 EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013 IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013	
Test procedure	VDE ÜG, 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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<p>Test item description..... :</p> <p>Trade Mark..... :</p> <p>Manufacturer</p>	<p>Component DC DC Converter for use with IT Equipment</p> <p> and/or</p> <p>TDK-Lambda</p> <p>TDK-Lambda Americas Inc. 3320 Matrix Drive, Richardson, TX, 75082</p>
<p>Model/Type reference</p>	<p>iQG serie</p> <p>iPAQGxxxx is a iQG48***A%%V-xxx or iQG4N***A%%V-xxx, (See model matrix)</p>
<p>10004095 Structure of type name.....:</p> <p>10004560 Type differences.....:</p>	<p>where xxxx is a four digit number or alphanumeric character indicating a mechanical function, such as addition of Heatsink See Model matrix, page 3</p> <p>See model Matrix, page 3</p>
<p>Ratings</p> <p>10003893 Rated voltage.....:</p> <p>10004017 Rated current.....:</p> <p>10004112 Rated power.....:</p> <p>10004029 Rated frequency.....:</p> <p>10003951 Output voltages and currents.....:</p> <p>Max. baseplate temperature..:</p>	<p>DC 36V - 75V (TNV) or DC 36V - 60V Input or 38 - 56V (SELV) See model Matrix, page 3</p> <p>Max. 12,5 A, See model Matrix, page 3</p> <p>Max. Output Power 540 W, See model Matrix, page 3</p> <p>DC</p> <p>max. DC 8.0V – 11.4V, 33A - 50A, 540 W (SELV) See model Matrix, page 3</p> <p>max. 125 °C at PWB near T1 Core.</p>
<p>Supplementary information: The above listing was introduced only for internal VDE administration process.</p>	

Model Matrix iQG serie

iPAQGxxxx is a iQG48*A%%V-xxx or iQG4N***A%%V-xxx**

where xxxx is a four digit number or alphanumeric character indicating a mechanical function, such as addition of Heatsink

iQG48***A%%V-xxx

Input: 36 - 75V dc, 10A max,

Output: 8.0 - 12V dc, 25A - 36A, 300W max.

iQG48***A%%V-xxx

Input: 36 - 75V dc, 11.5A max,

Output: 8.0 - 12.4V dc, 30A - 40A, 400W max.

iQG48***A%%V-xxx

Input: 36 - 75V dc, 12A max,

Output: 8.0 - 10.8V dc, 33A - 50A, 480W max.

iQG48***A%%V-xxx

Input: 36 - 75V dc, 15A max,

Output: 8.0 - 12V dc, 33A - 50A, 504W max.

iQG4N***A%%V-xxx

Input: 38 - 56V dc, 12.5A max,

Output: 8.0 – 11.4V dc, 33A - 50A, 540W max.

Testing procedure and testing location:		
<input type="checkbox"/>	CB Testing Laboratory:	VDE Prüf- und Zertifizierungsinstitut GmbH VDE <i>Testing and Certification Institute</i>
Testing location/ address.....:		Section CI3 Merianstrasse 28, D-63069 Offenbach, Germany
<input type="checkbox"/>	Associated CB Testing Laboratory:	
Testing location/ address.....:		
Tested by (name + signature)		(authorization of test report)
Approved by (name + signature)		
<hr/>		
<input type="checkbox"/>	Testing procedure: TMP/CTF Stage 1:	
Testing location/ address.....:		
Tested by (name + signature)		
Approved by (name + signature)		
<hr/>		
<input checked="" type="checkbox"/>	Testing procedure: WMT/CTF Stage 2:	
Testing location/ address.....:		TDK-Lambda Americas Inc. 3320 Matrix Drive, Suite 100, Richardson, Texas 75082, USA WMT (TDAP, VDE File No. 2520400-9501-0001)
Tested by (name + signature)		Steve McKitrick <i>Steve McKitrick</i>
Witnessed by (name + signature).....:		Günter Straube <i>G. Straube</i>
Approved by (name + signature)		Patrick Möbs <i>P. Hallmann</i>
<hr/>		
<input type="checkbox"/>	Testing procedure: SMT/CTF Stage 3 or 4:	
Testing location/ address.....:		
Tested by (name + signature)		
Witnessed by (name + signature).....:		
Approved by (name + signature)		
Supervised by (name + signature)		
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List of Attachments (including a total number of pages in each attachment):		
Appendix No.	Description	Page(s)
1	Photos	126 - 127
Summary of testing:		
Tests performed (name of test and test clause):		Testing location:
1.5 Components 1.6 Power interface 1.7 Marking and instructions 2.2 SELV circuits 2.9 Electrical insulation 2.10 Clearances, creepage distances and distances through insulation 3.1 General 4.3 Design and construction 4.4 Protection against hazardous moving parts 4.5 Thermal requirements 4.7 Resistance to fire 5.2 Electric strength 5.3 Abnormal operating and fault conditions See main test report		TDK-Lambda Americas Inc. 3320 Matrix Drive, Suite 100, Richardson, Texas 75082, USA WMT (TDAP under File No. 2520400-9501-0001)

Summary of compliance with National Differences:				
List of countries addressed				
The product has been tested according to standard IEC 60950-1:2005 (2 nd Edition); am1:2009 / EN 60950-1:2006/A11:2009/A1:2010/A12:2011 and those deviations taken into account of				
<input type="checkbox"/> CENELEC common modifications	<input checked="" type="checkbox"/> United Kingdom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Finland	<input checked="" type="checkbox"/> Denmark	<input checked="" type="checkbox"/> Ireland	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Sweden	<input checked="" type="checkbox"/> Germany	<input checked="" type="checkbox"/> Spain	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Norway	<input checked="" type="checkbox"/> Switzerland	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> CB Bull. NATIONAL DIFFERENCES IEC 60950-1:2005 (2nd Edition)				
<input checked="" type="checkbox"/> Switzerland	<input checked="" type="checkbox"/> Finland	<input checked="" type="checkbox"/> Norway	<input checked="" type="checkbox"/> USA	<input type="checkbox"/>
<input checked="" type="checkbox"/> Germany	<input checked="" type="checkbox"/> United Kingdom	<input checked="" type="checkbox"/> Sweden	<input type="checkbox"/> Israel	<input type="checkbox"/>
<input checked="" type="checkbox"/> Denmark	<input checked="" type="checkbox"/> Ireland	<input checked="" type="checkbox"/> Group Differences	<input type="checkbox"/> Australia	<input type="checkbox"/>
<input checked="" type="checkbox"/> Spain	<input type="checkbox"/> Korea	<input checked="" type="checkbox"/> Canada	<input type="checkbox"/> New Zealand	<input type="checkbox"/>
For national and cenelec differences refer to main test report				
<input checked="" type="checkbox"/> The product fulfils the requirements of				
DIN EN 60950-1 (VDE 0805-1):2014-08				
EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013				
IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013				

Test item particulars.....:	
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
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	
Tested for IT power systems	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V)	
Class of equipment	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input checked="" type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A)	
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class	IPX0
Altitude during operation (m)	≤ 2000 m
Altitude of test laboratory (m)	app. 180m
Mass of equipment (kg)	<18kg




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	2015-02-17
Date (s) of performance of tests	2015-02-17 to 2015-03-11
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 IEC60950-1:	
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 see VDE construction form 131	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Not applicable (one factory)
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)	30014661 TDK-Lambda Americas Inc. 3320 Matrix Drive, Suite 100, Richardson, Texas 75082, USA 30017287 TDK-Lambda Malaysia Sdn. Bhd. PLO 33 Kawasan Perindustrian Senai; Locked Bag No. 110; SENAI, JOHOR 81400; Johor; Malaysia
General product information:	
<p>The label includes: Optional "-R" appended to product code to indicate ROHS compliance. eg. iCGXXXXXXXXXX-### -R Series</p> <p>Operating Conditions: Units are components within customers end-use system. Input to converters is DC 36 – 75 V The units were tested with a maximum continuous output. The Electrical and Fire Enclosures are to be provided by the end product.</p> <p>Product Overview: The Asceta (iQG) product family consists of high density DC-DC power converter modules intended to be purchased and used as a component in an end-user's power system. The input voltage range is from 36 – 75Vdc input. The output voltage range will be between 8.0 V and 12 V depending upon the model number.</p> <p>The iQG product is available in one mechanical configuration using the same transformer core set and inductor core set except for the air gap used in the inductor. The house-keeping transformers used for the bias supply, current sensing, and gate drive purposes are also the same for all iQG codes.</p> <p>The DC-DC Converters are not internally fused. An external input line fuse is required.</p> <p>–XDX option for Droop circuit, Output Voltage at higher than nominal and decreasing as Output Current increases to rated current, see manufacturers data sheet for details.</p> <p>Maximum input current will be a data sheet parameter telling the customer the maximum current the power module will draw from 0Vin to Vin,max. The typical current draw will be lower. The power modules are not internally fused. An external input line fuse with a maximum value of 20A is required.</p> <p>The output voltage can be adjusted in iQG products when the trim pin is populated (optional).</p>	

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)

Information to test report reference No. :	
VDE Test- and Certification Institute GmbH Merianstrasse 28 D - 63069 Offenbach	DIN EN 60950-1 (VDE 0805-1):2014-08 EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013 IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
Test item description:	Component DC-DC Converters for building-in in IT-equipment
Made by :	TDK-Lambda Americas Inc. 3320 Matrix Drive, Richardson, TX, 75082
Trade mark :	  and/or 
Model/type ref. :	iQG serie iPAQGxxxx is a iQG48***A%%V-xxx or iQG4N***A%%V-xxx, where xxxx is a four digit number or alphanumeric character indicating a mechanical function, such as addition of Heatsink.
Rated :	Input: DC 36V - 75V (TNV) or DC 36V - 60V Input or 38 - 56V (SELV) See model Matrix, page 3 Output: max.DC 8.0V – 11.4V, 33A - 50A, 540 W (SELV) See model Matrix, page 3
Commission received from	Steve.Mc Kitrick
Date:	2015-01-16
Modification on the appliance:	
1.	Testing to: DIN EN 60950-1 (VDE 0805-1):2014-08 EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013 IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013

Test Report History:			
This report may consist of more than one report and is valid only with additional or previous issued reports: VDE license: 40025513			
Date: 2015-03-11	VDE- Certificate: CB- No. DE1- 49345/A4/M1	Test Report Number 2520400-3336-0023/207809	Modifications: this test report Upgrade to: DIN EN 60950-1 (VDE 0805-1):2014-08 EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013 IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
Date: 2013-06-13	VDE- Certificate: CB- No. DE1-49345/A3	Test Report Number 2520400-3336-0023/193814	Additional Test Report Revision of model matrix.
Date: 2012-09-12	VDE- Certificate: CB- No. DE1-49345/A2	Test Report Number 2520400-3336-0023/172854	Additional Test Report (this report). add model iQG48***A%%V-xxx
2012-06-04	VDE- Certificate: CB- No. DE1-49345/A2	2520400-3336-0023/168899	Additional Test Report. Revision of component list.
2012-04-19	VDE- Certificate: CB- No. DE1-49345/A2	2520400-3336-0023/160105	Origin Test Report