



Test Report issued under the responsibility of:



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

Report Number .....: 210282-CI3-3 CB DE1-56460  
Date of issue .....: 2015-11-25  
Total number of pages..... 161

Applicant's name.....: TDK-Lambda Americas Inc.  
Address .....: 3320 Matrix Drive; Suite 100; RICHARDSON TX 75082; USA

**Test specification:**

Standard .....: IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013  
Test procedure .....: VDE, CB Scheme  
Non-standard test method.....: DIN EN 60950-1 (VDE 0805-1):2014-08  
EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013

Test Report Form No.....: IEC60950\_1F  
Test Report Form(s) Originator.....: SGS Fimko Ltd  
Master TRF .....: Dated 2014-02

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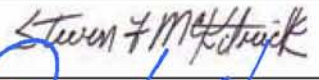
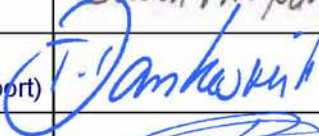

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

**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.

<b>Test item description</b> ..... :	Power supply for IT-Equipment / DC/DC-Converter
<b>Trade Mark</b> ..... :	 and/or <b>TDK-Lambda</b>
<b>Manufacturer</b> .....	TDK-Lambda Americas Inc.; 3320 Matrix Drive; Suite 100; RICHARDSON TX 75082; USA
<b>Model/Type reference</b> .....	iBD series (see model matrix – Appendix 3)
<b>Ratings</b> .....	The DC-DC Converters are not internally fused. An external input line n fuse with a max. value of 15 A is required.
10003893 Rated voltage..... :	DC 6 V – 14 V (SELV) or DC 9.6 V – 14 V (SELV)
10003951 Output voltages and currents..... :	DC 0.8 V - 5.5 V (SELV), max. 7 A
10004092 Max. ambient temperature..:	Max. 105 °C at Q1
Supplementary information: The above listing was introduced only for internal VDE administration process.	

<b>Testing procedure and testing location:</b>		
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	VDE Prüf- und Zertifizierungsinstitut GmbH VDE <i>Testing and Certification Institute</i>
<b>Testing location/ address.....:</b>		Merianstrasse 28, D-63069 Offenbach, Germany
<input type="checkbox"/>	<b>Associated CB Testing Laboratory:</b>	
<b>Testing location/ address.....:</b>		
<b>Tested by (name + signature).....:</b>		(authorization of test report)
<b>Approved by (name + signature).....:</b>		
<hr/>		
<input type="checkbox"/>	<b>Testing procedure: TMP/CTF Stage 1:</b>	
<b>Testing location/ address.....:</b>		
<b>Tested by (name + signature).....:</b>		(authorization of test report)
<b>Approved by (name + signature).....:</b>		
<hr/>		
<input checked="" type="checkbox"/>	<b>Testing procedure: WMT/CTF Stage 2:</b>	
<b>Testing location/ address.....:</b>		TDK-Lambda Americas Inc. 3320 Matrix Drive, Suite 100, Richardson, Texas 75082, USA CTF Stage 2 (TDAP under File No. 2520400-9501-0001)
<b>Tested by (name + signature).....:</b>		Steve McKitrick 
<b>Witnessed by (name + signature).....:</b>		Thomas Dankesreiter (authorization of test report) 
<b>Approved by (name + signature).....:</b>		Frank Richter 
<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>		

<b>List of Attachments (including a total number of pages in each attachment):</b>		
<b>Appendix No.</b>	<b>Description</b>	<b>Page(s)</b>
1	Photos	148 – 149
2	Rating label	150
3	Model matrix	151 – 152
4	Schematics	153
5	Layout	154 – 159
6	Data sheet	160 – 161
<b>Summary of testing:</b>		
<b>Tests performed (name of test and test clause):</b>		<b>Testing location:</b>
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 4.1 Stability 4.2 Mechanical strength 4.3 Design and construction 4.5 Thermal requirements 4.7 Resistance to fire 5.2 Electric strength 5.3 Abnormal operating and fault conditions  Tests were done under VDE File 2520400-3336-0022		TDK-Lambda Americas Inc. 3320 Matrix Drive, Suite 100, Richardson, Texas 75082, USA CTF Stage 2 (TDAP under File No. 2520400-9501-0001)

<b>Summary of compliance with National Differences:</b>				
<b>List of countries addressed</b>				
The product has been tested according to standard IEC 60950-1:2005 (2 <sup>nd</sup> Edition); am1:2009; am2:2013 / EN 60950-1:2006; A11:2009; A1:2010; A12:2011; A2:2013 and those deviations taken into account of				
<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b><input checked="" type="checkbox"/> CB Bull. NATIONAL DIFFERENCES IEC 60950-1:2005 (2nd Edition)</b>				
<input checked="" type="checkbox"/> Switzerland	<input checked="" type="checkbox"/> Finland	<input checked="" type="checkbox"/> Norway	<input checked="" type="checkbox"/> USA	<input type="checkbox"/> Japan
<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 checked="" type="checkbox"/> Korea	<input checked="" type="checkbox"/> Canada	<input type="checkbox"/> New Zealand	<input type="checkbox"/>
<input checked="" type="checkbox"/> <b>The product fulfils the requirements of</b> 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				

**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.**

Refer to Appendix 2 of report

<b>Test item particulars</b> .....:	
<b>Equipment mobility</b> .....:	<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
<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 checked="" type="checkbox"/> not directly connected to the mains
<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 <input checked="" type="checkbox"/> to be determined in the end use equipment
<b>Over voltage category (OVC)</b> .....	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input checked="" type="checkbox"/> other: DC supplied
<b>Mains supply tolerance (%) or absolute mains supply values</b> .....	N/A; not directly connected to the mains. see page 2 for input voltage range.
<b>Tested for IT power systems</b> .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>IT testing, phase-phase voltage (V)</b> .....	N/A
<b>Class of equipment</b> .....	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input checked="" type="checkbox"/> Not classified
<b>Considered current rating of protective device as part of the building installation (A)</b> .....	N/A
<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> .....	IP---
<b>Altitude during operation (m)</b> .....	≤ 2000 m
<b>Altitude of test laboratory (m)</b> .....	app. 179 m
<b>Mass of equipment (kg)</b> .....	< 18 kg

<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> .....	2015-11-10
<b>Date (s) of performance of tests</b> .....	2015-11-10 (visible check)
<b>General remarks:</b>	
"(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.	

<b>Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:</b>	
TDK-Lambda Americas Inc.; 3320 Matrix Drive; Suite 100; RICHARDSON TX 75082; USA 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 checked="" type="checkbox"/> <b>Yes</b> <input type="checkbox"/> <b>Not applicable</b>
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies) .....</b>	TDK-Lambda Americas Inc.; 3320 Matrix Drive Suite 100; RICHARDSON TX 75082; USA / Reference 30014661  TDK-Lambda Malaysia Sdn. Bhd.; PLO 33 Kawasan Perindustrian Senai Locked Bag No. 110; 81400 SENAI, JOHOR; Johor; Malaysia / Reference 30017287



**General product information:****The label includes:**

Optional "-R" appended to product code to indicate ROHS compliance. eg. iBDXXXXXXXXXX-### -R Series

The iBD Series offers a 35W power module in the industry's standard SIP footprint. The iBD 12 Vin series offers an ultra wide input voltage range of 6.0 - 14.0 V. It is highly suitable for use in conjunction with 4:1 and 5:1 unregulated bus converters as well as with fully regulated 8 V, 9.6 V or 12 V bus converters. The open-frame, compact design provides flexibility by performing local voltage conversion of a 12 V bus. The single inline package is well suited for almost any manufacturing environment.

**General product information: / Conditions of Installation:**

DC-DC Power Supply for building-in, ratings see page 2.

The units were tested with a maximum continuous output.

The DC/DC converter are not internally fused. An external input line normal blow fuse with a maximum value of 15 A is required.

The Electrical and Fire Enclosures are to be provided by the end product.

The equipment shall be installed in compliance with the enclosure, mounting, spacing, casualty and segregation requirements of the end-use application.

Units are components within customer's end-use system. Input to converters is DC 6 – 14 V (SELV).

The power supply series provides functional insulation, between input and output.

**Model Differences:**

See attached model matrix (Appendix 3)

The label includes: Optional "-R" appended to product code to indicate ROHS compliance.


eg. iBDXXXXXX-### -R Series

Tests were done under VDE File 2520400-3336-0022

**Abbreviations used in the report:**

- 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>

**Indicate used abbreviations (if any)**

Information to test report reference No. :	<b>210282-CI3-3</b>		
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:	Power supply for IT-Equipment / DC/DC-Converter		
Made by :	TDK-Lambda Americas Inc.; 3320 Matrix Drive; Suite 100; RICHARDSON TX 75082; USA		
Trade mark :			
Model/type ref. :	iBD -Series		
Rated :	Input: DC 6 V – 14 V (SELV) or DC 9.6 V – 14 V (SELV) Output: DC 0.8 V - 5.5 V (SELV), max. 7 A, 35 W		
Commission received from	Steve.Mc Kitrick	Date:	2015-11-08
<b>Modification on the appliance:</b>			
1.	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		

<b>Test Report History:</b>			
Date: (jjjj-mm-dd)	VDE-Certificate: CB-Ref. No.:	VDE File No.: Test Report Number	Modifications:
2015-11-25	40025515 DE1-56460	2520400-3336-0022 210282-CI3-3	Origin Test Report DC / DC converters iBD -Series