

Test Report issued under the responsibility of:



TEST REPORT

IEC 60950-1

Information technology equipment – Safety – Part 1: General requirements

Date of issue 2015-08-06

Total number of pages...... 191

Applicant's name..... TDK-Lambda Americas Inc.

Test specification:

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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General disclaimer:

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VDE File No: 2520400-3336-0048/212475

Trade Mark....:

Component DC DC Converter for use with IT Equipment

And/or

TDK-Lambda

TDK-Lambda Americas Inc.
3320 Matrix Drive, Suite 100, Richardson, Texas 75082, USA

Model/Type reference

iEH series (See model matrix below)

Ratings....:

Input: DC 36 - 75 V, 10.5 A max,
See model Matrix below
Output: DC 9.6 – 12.0 V, max. 42 A, max. 480 W (SELV)
See model Matrix below

MODEL No.	Input Voltage	Max Input Current (1)	Output Voltage (2)	Output Current	Max. Output Power
iEH48025A120V-xxx(-R)	36-75 V	9.0 A	12 V	25 A	300 W
iEH48020A120V-xxx(-R)	36-75 V	7.5 A	12 V	20 A	240 W
iEH4N028A108V-xxx(-R)	51-55 V	6.5 A	10.8 V	28 A	302 W
iEH4N033A096V-xxx(-R)	38-55 V	8.5 A	9.6 V	33.3 A	320 W
iEH4N031A096V-xxx(-R)	38-55 V	8.0 A	9.6 V	31.3 A	300 W
iEH4N040A120V-xxx(-R)	49.5- 55.5 V	10.5 A	12 V	40 A	480 W
iEH4N042A108V-xxx(-R)	49.5- 55.5 V	9.8 A	10.8 V	42 A	454 W

Supplementary information:

VDE File No: 2520400-3336-0048/212475

Test	ing procedure and testing location:			
		VDE Prüf- und Zertifizierungsinstitut GmbH VDE Testing and Certification Institute		
Test	ing location/ address:	Merianstrasse 28, D-63069	Offenbach, Germany	
	Associated CB Testing Laboratory:			
Test	ing location/ address:			
Tested by (name + signature):		(authorization of test report)		
Арр	roved by (name + signature):			
	Testing procedure: TMP/CTF Stage 1:			
Test	ing location/ address:			
Test	ed by (name + signature):	(authorization of test report)		
App	roved by (name + signature):		2	
\boxtimes	Testing procedure: WMT/CTF Stage 2:			
Testing location/ address:		TDK-Lambda Americas Inc. 3320 Matrix Drive, Suite 100, Richardson,		
		Texas 75082, USA WMT/CT (TDAP, VDE File No. 25204		
Test	ed by (name + signature):	Steve McKitrick	Steven 7 M Kitruik	
Witn	essed by (name + signature):	Thomas Dankesreiter (authorization of test report)	T. Jankweit	
App	roved by (name + signature):	Holger Kreuzer	I Kurens	
	■ Notice ■ Construction of the Construction	T T		
	Testing procedure: SMT/CTF Stage 3 or 4:			
Test	ing location/ address:			
Tested by (name + signature):				
Witnessed by (name + signature)				
App	roved by (name + signature):			
Sup	ervised by (name + signature):			
	<u> </u>			

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Test data, drawings, schematics	131 - 191
	Test data, drawings, schematics

Summary of testing:

Tests performed (name of test and test clause):	Testing location:
 1.5 Components 1.6 Power interface 4.5 Thermal requirements 5.3 Abnormal operating and fault conditions See Appendix 	TDK-Lambda Americas Inc. 3320 Matrix Drive, Suite 100, Richardson, Texas 75082, USA WMT/CTF Stage 2 (TDAP, VDE File No. 2520400-9501-0001)

VDE File No: 2520400-3336-0048/212475

Summary of compliance with National Differences:						
List of countries addressed						
mmon modifications	□ United Kingdom					
□ Denmark						
□ Germany	⊠ Spain					
Switzerland						
IONAL DIFFERENCE	ES IEC 60950-1:2005 (2	nd Edition)				
		⊠USA				
□ United Kingdom	⊠ Sweden	⊠ Israel				
	☐ Group Differences					
		New Zealand				
For national and cenelec differences refer to main test report						
☐ The product fulfils the requirements of						
IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013						
	been tested according /A11:2009/A1:2010/A mmon modifications Denmark Germany Switzerland IONAL DIFFERENCE Finland United Kingdom Ireland Korea d cenelec difference fulfils the requirement EN	been tested according to standard IEC 60950- /A11:2009/A1:2010/A12:2011/A2:2013 and the mmon modifications Denmark Ireland Germany Symitzerland IONAL DIFFERENCES IEC 60950-1:2005 (2) Finland Norway United Kingdom Norway United Kingdom Sweden Ireland Group Differences Korea Canada Cenelec differences refer to main test representations of DIN EN 60950-1:2006 +A11:2006 EN 60950-1:2006 +A11:2006	been tested according to standard IEC 60950-1:2005 (2 nd Edition); am1/A11:2009/A1:2010/A12:2011/A2:2013 and those deviations taken into mmon modifications United Kingdom Denmark Ireland Spain Switzerland USA Israel Israel Israel Israel Israel Ireland Ireland Israel Ireland Israel Ireland Ireland			

Test item particulars:			
Equipment mobility	[] movable [] hand-held [] transportable [] stationary [x] for building-in [] direct plug-in		
Connection to the mains:	[] pluggable equipment [] type A [] type B [] permanent connection [] detachable power supply cord [] non-detachable power supply cord [x] not directly connected to the mains		
Operating condition:	[x] continuous [] rated operating / resting time:		
Access location:	[] operator accessible [] restricted access location		
Over voltage category (OVC):	[] OVC I [] OVC II [] OVC III [] OVC IV [X] other: DC supplied		
Mains supply tolerance (%) or absolute mains			
supply values	N/A, not connected to the mains		
Tested for IT power systems:			
IT testing, phase-phase voltage (V)			
Class of equipment:	[] Class I [] Class II [X] Class III [] Not classified		
Considered current rating of protective device as part of the building installation (A)	N/A		
Pollution degree (PD):	[] PD 1 [x] PD 2 [] PD 3		
IP protection class	IPX0		
Altitude during operation (m):	≤ 2000 m		
Altitude of test laboratory (m):	app. 180 m		
Mass of equipment (kg):	< 18 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:	2015-02-17		
Date (s) of performance of tests:	2015-02-17 to 2015-05-22		
General remarks:			
"(See Enclosure #)" refers to additional information ap "(See appended table)" refers to a table appended to the			
Throughout this report a ☐ comma / ☒ point is u	sed as the decimal separator.		

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 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 see VDE construction form 131:	✓ Yes☐ Not applicable (one factory)				
When differences exist; they shall be identified in the	he 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:

The product is a component type DC/DC power module, intended to be used as a component in an end-user's power system. This device is a DC-DC power supply with open frame for building-in.

The Cooleta (iEH) 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 operating voltage ranges is from 36 V – 75 Vdc. The output voltage range will be between 9.6 V and 12 V depending upon the model number.

The iEH product is available in one mechanical configuration using the same transformer core set and output filter inductor geometry except for the air gap and number of turns used in the inductor. Only one (1) house-keeping transformer (bias transformer) is used in iEH platform, which is similar to AT00131 used in TDK iQLs and iQGs platforms with the exception of one (1) additional secondary auxiliary winding and higher temperature rated wires used for class F (130C) insulation. The control circuit is based on the secondary side, and the PWB traces are used for the output load current sensing and over-load protection. A digital isolator is used to deliver the drive pulses to cross the isolation boundary to the primary side.

Conditions of Installation:

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

Operating Conditions:

Units are components within customers end-use system.

The DC-DC power supply input is protected by fuse, provided by the end product.

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Abbreviations used in the report:

normal conditions
 functional insulation
 double insulation
 DI
 single fault conditions
 basic insulation
 supplementary insulation
 SI

between parts of opposite polarityBOPreinforced insulationRI

Indicate used abbreviations (if any)

VDE File No: 2520400-3336-0048/212475

Information to test report reference No. :	
VDE Test- and Certification Institute GmbH Merianstrasse 28	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
D - 63069 Offenbach	, ,

Test item description: Component DC DC Converter for use with IT Equipment

Made by: TDK-Lambda Americas Inc.

3320 Matrix Drive, Suite 100, Richardson, Texas 75082, USA

Trade mark:

ATDK and/or IN/OVETA

and/or TDK·Lambda

Model/type ref. : iEH series

Rated: Input: DC 36 - 75 V, 10.5 A max,

See model Matrix below

Output: DC 9.6 - 12.0 V, max. 42 A, max. 480 W (SELV)

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iEH4N042A108V-xxx(-R)	49.5- 55.5 V	9.8 A	10.8 V	42 A	454 W

Commission received from Steve, Mc Kitrick Date: 2015-03-16

Modification on the appliance:

1. Add model iEH4N040A120V-xxx(-R) and iEH4N042A108V-xxx(-R) to iEH series

VDE File No: 2520400-3336-0048/212475

Test Report History:				
This report may consist of more than one report and is valid only with additional or previous issued reports:				
Date: (jjjj-mm-dd)	VDE-Certificate: CB-Ref. No.:	VDE File No.: Test Report Number	Modifications:	
2015-08-06	40037572 CB DE1-52299/A1/M1	2520400-3336-0048/ 212475-Cl3-1	additional Test Report (this Test Report) add models iEH4N040A120V-xxx(-R) and iEH4N042A108V-xxx(-R)	
2015-03-17	40037572 CB DE1-52299/A1	2520400-3336-0048/207809	additional 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	
2013-05-22	40037572 CB DE1-52299	2520400-3336-0048/104493	Origin Test Report DC / DC converters iEH - series	