Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT

IEC 60335-1

Safety of household and similar electrical appliances

Report Number. .....:	**50088666 001**
Date of issue .....:	2017-09-05
Total number of pages.....:	112 (excluding attachments listed on page 3)
Name of Testing Laboratory preparing the Report.....:	TÜV Rheinland Shanghai Co. Ltd. No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai, China
Applicant's name.....:	TDK-Lambda Corp. Nagaoka Technical Center
Address .....:	2704-1 Settaya-machi, Nagaoka-shi, NIIGATA 940-1195, JAPAN
Test specification:	
Standard.....:	IEC 60335-1:2010/COR1:2010/COR2:2010 /AMD1:2013/COR1:2014/AMD2:2016/COR1:2016
Test procedure.....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC60335_1X
Test Report Form(s) Originator.....:	Nemko AS
Master TRF.....:	Dated 2016-10

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.

Test item description ..... :	Switching Power Supply
Trade Mark ..... :	TDK·Lambda
Manufacturer..... :	Same as applicant
Model/Type reference ..... :	CUS30M-**zzxxxxxxx**; CME30A-**zzxxxxxxx** (**zz** = 12,15,18,24,36 or 48; **xxxxxxx** = A, U, ADJ, M, CO, SF or other alphanumeric character) Refer to page 8 for definition of variables
Ratings ..... :	AC input: See the model list on page 7 for details DC output: See the model list on page 7 for details

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

☒ **CB Testing Laboratory:**	TÜV Rheinland Shanghai Co., Ltd.	
Testing location/ address ..... :	No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai, China	
Tested by (name, function, signature) ..... :	Sunny Sun	
Approved by (name, function, signature) .. :	Xu Min	
☐ **Testing procedure: CTF Stage 1:**		
Testing location/ address ..... :		
Tested by (name, function, signature) ..... :		
Approved by (name, function, signature) .. :		
☐ **Testing procedure: CTF Stage 2:**		
Testing location/ address ..... :		
Tested by (name + signature)..... :		
Witnessed by (name, function, signature). :		
Approved by (name, function, signature) .. :		
☐ **Testing procedure: CTF Stage 3:**		
☐ **Testing procedure: CTF Stage 4:**		
Testing location/ address ..... :		
Tested by (name, function, signature) ..... :		
Witnessed by (name, function, signature). :		
Approved by (name, function, signature) .. :		
Supervised by (name, function, signature) :		

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

- ATTACHMENT 1 – Photo documentation (7 pages)
- ATTACHMENT 2 – Annex BB of IEC 61558-2-16 (28 pages)
- ATTACHMENT 3 – Technical Documentation (31 pages)

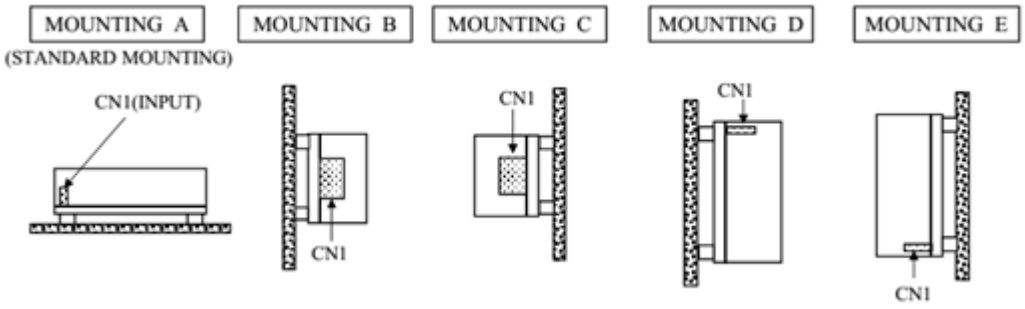
Note: Total number of pages in each attachment is indicated in individual attachment.

Summary of testing:

All applicable tests as described in Test Case and Measurement Sections were performed.
The maximum specified operation ambient temperature is 70°C.
Specified ambient temperature for operation is according to manufacturer's specification.(see chart of convection cooling on below on below)
Unless otherwise specified, throughout this report, all tests were performed on models CUS30M-12/ADJ, CUS30M-18/ADJ, CUS30M-48/ADJ and perform construction check on models CUS30M-48 to represent other similar models.

Describe load conditions used during testing.

Mounting position:



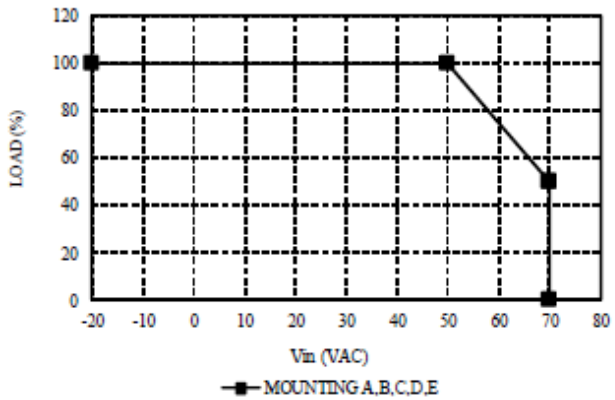
Derating Curve:

For CUS30M (excluding CUS30M-/A) series

(1) 12V,15V,24V,36V model

Convection Cooling: Mounting A,B,C,D,E

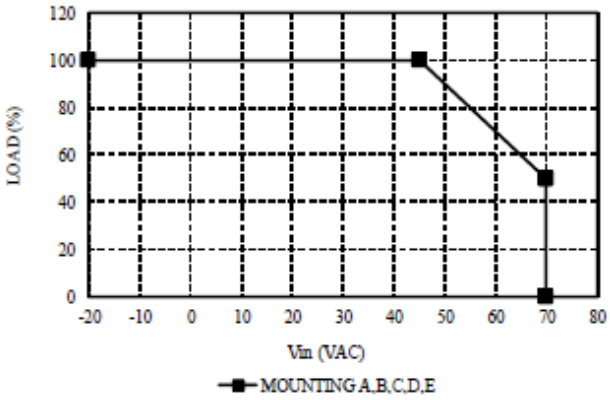
Ta (°C)	Load (%)
-20 - +50	100
70	50



(2)18V,48V model

Convection Cooling: Mounting A,B,C,D,E

Ta (°C)	Load (%)
-20 - +45	100
70	50

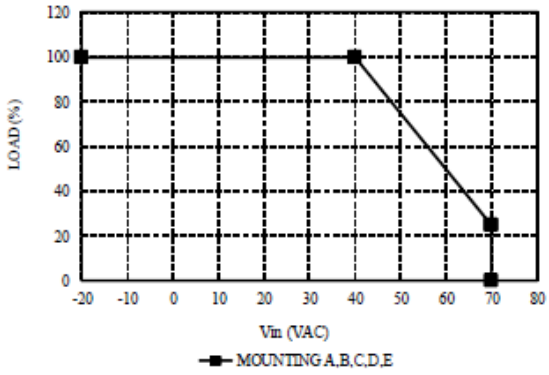


For CUS30M-/A series

(1) 12V,15V,24V,36V model

Convection Cooling: Mounting A,B,C,D,E

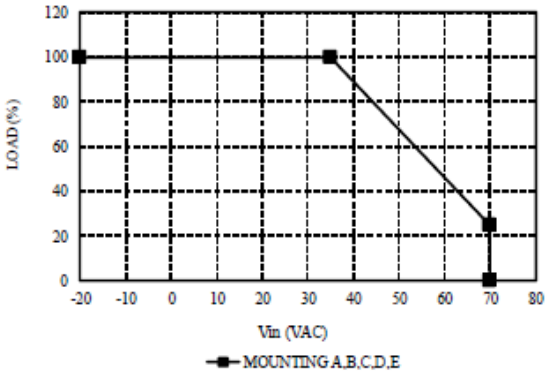
Ta (°C)	Load (%)
-20 - +40	100
70	25



(2)18V,48V model

Convection Cooling: Mounting A,B,C,D,E

Ta (°C)	Load (%)
-20 - +35	100
70	25



The equipment is operated up to 5000m above sea level as declared by manufacturer. Clearances have been evaluated according to IEC 60664-1 table A.2 with a multiplication factor of 1.48 throughout this report.

Tests performed (name of test and test clause):

Clause	Test description
7.14	Durability
10.2	Current deviation
11.8	Heating
13.2	leakage current at operating temperature
13.3	Electric strength at operating temperature
15.3	Humidity test
16.2	Leakage current
16.3	Electric strength
17	Overload protection of transformers and associated circuits
19.11.2 & 19.12	Abnormal operation of electronic circuits
19.13	Electric strength tests after abnormal operation
29.1	Clearances distances
29.2	Creepage distances
30.1	Ball pressure test
30.2	Glow wire test
Annex E	Needle flame test

Testing location:

TÜV Rheinland Shanghai Co., Ltd.

No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai, China

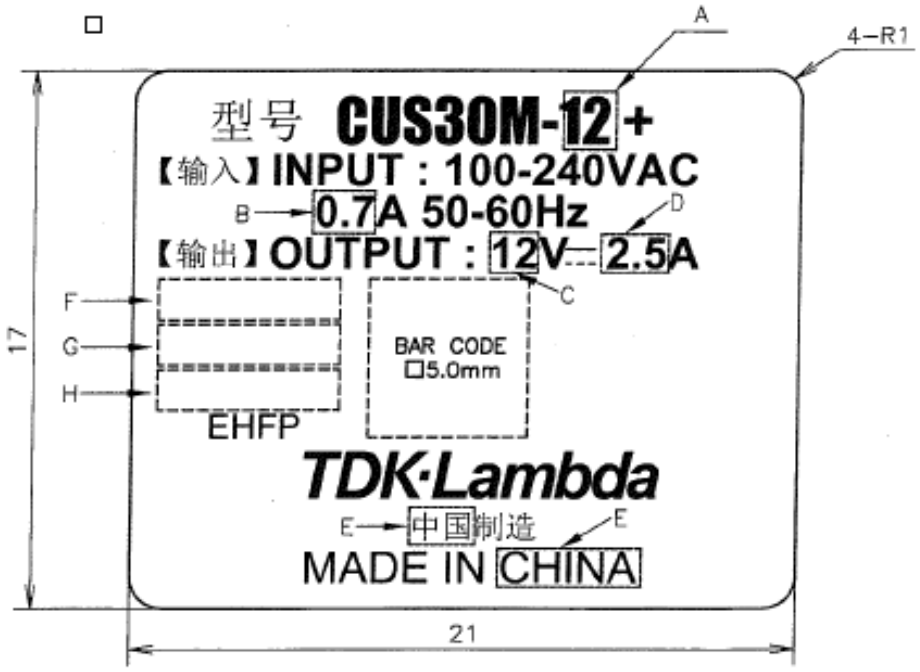
Summary of compliance with National Differences (List of countries addressed):

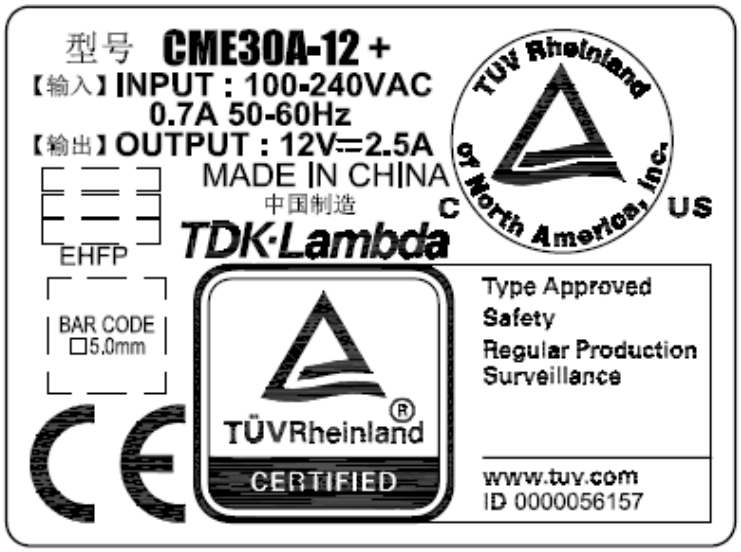
N/A

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.

<Representative>





Remark: The rating labels of all models have the same design except for the model designation and input or output ratings.

Test item particulars ..... :	See below
Classification of installation and use ..... :	Built-in appliance
Supply Connection..... :	N/A
..... :	
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 .....:	2017-05-22
Date (s) of performance of tests.....:	2017-05-27 to 2017-06-30

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 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 ..... :	☒ **Yes** ☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies).....:

1. Wuxi TDK-Lambda Electronics Co., Ltd.
   No. 6 Xing Chuang Er Lu, Wuxi, Jiangsu 214028, P.R. China
2. Zhangjiagang Hua Yang Electronics Co., Ltd.
   Zhao Feng Industrial Zone, Leyu Town, Zhangjiagang, Jiangsu 215622, P.R. China
3. Sendan Electronics Mfg. Co., Ltd.
   1010 Habushin Nanto-shi, Toyama 939-1756 JAPAN
4. ALPS Logistics Facilities Co., Ltd.
   593-1 Nishi-Ohashi, Tsukuba-shi, Ibaraki, 305-0831, JAPAN
5. TDK-Lambda Corp. Nagaoka Technical Center
   2704-1 Settaya-machi, Nagaoka-shi, Niigata 940-1195, JAPAN

General product information:

The EUT is a component type switching mode power supplies intended for the earthed construction or non-earthed construction of Household and similar electrical appliances.

-For earthed construction (Class I), the SMPS need to be reliably earthed and professionally installed and fixed with metal screws.

-For non-earthed construction (Class II), no earthing connection is required. The SMPS need to be fixed so, that it is insulated from any unearthed accessible conductive part by reinforced insulation.

Model CME30A-**zzxxxxxxx** is identical to model CUS30MB-**zzxxxxxxx** except for model name.

All models are identical, except of the optional chassis, cover, turns of Transformer and the rating of some components which results in different output ratings. See Model List below for details.

For rating differences between the models see below tables:

Series Model	I/p voltage (Vac)	Freq (Hz)	I/p current (A)	Minimal output	Rated output (typical)	Maximum output
CUS30M-12**xxxxxxx** CME30A-12**xxxxxxx**	100-240	50-60	0.7	11.7Vdc	12Vdc	12.3Vdc
				2.5A	2.5A	2.44A
CUS30M-15**xxxxxxx** CME30A-15**xxxxxxx**	100-240	50-60	0.7	14.63Vdc	15Vdc	15.38Vdc
				2A	2A	1.95A
CUS30M-18**xxxxxxx** CME30A-18**xxxxxxx**	100-240	50-60	0.7	17.55Vdc	18Vdc	18.45Vdc
				1.7A	1.7A	1.66A
CUS30M-24**xxxxxxx** CME30A-24**xxxxxxx**	100-240	50-60	0.7	23.4Vdc	24Vdc	24.6Vdc
				1.25A	1.25A	1.22A
CUS30M-36**xxxxxxx** CME30A-36**xxxxxxx**	100-240	50-60	0.7	35.1Vdc	36Vdc	36.9Vdc
				0.84A	0.84A	0.82A
CUS30M-48**xxxxxxx** CME30A-48**xxxxxxx**	100-240	50-60	0.7	46.8Vdc	48Vdc	49.2Vdc
				0.63A	0.63A	0.61A
CUS30M-12/ADJ CME30A-12/ADJ	100-240	50-60	0.7	10.8Vdc	12Vdc	13.2Vdc
				2.5A	2.5A	2.27A
CUS30M-15/ADJ CME30A-15/ADJ	100-240	50-60	0.7	13.5Vdc	15Vdc	16.5Vdc
				2A	2A	1.82A
CUS30M-18/ADJ CME30A-18/ADJ	100-240	50-60	0.7	16.2Vdc	18Vdc	19.8Vdc
				1.7A	1.7A	1.55A
CUS30M-24/ADJ CME30A-24/ADJ	100-240	50-60	0.7	21.6Vdc	24Vdc	26.4Vdc
				1.25A	1.25A	1.14A
CUS30M-36/ADJ CME30A-36/ADJ	100-240	50-60	0.7	32.4Vdc	36Vdc	39.6Vdc
				0.84A	0.84A	0.76A
CUS30M-48/ADJ CME30A-48/ADJ	100-240	50-60	0.7	43.2Vdc	48Vdc	52.8Vdc
				0.63A	0.63A	0.57A
Remark: Operating temp.: Up to +70ºC (operating temperature depending on equipment's load, mounting position, for details refer to instruction manual).						

Additional information:

1. Secondary output circuit is separated form mains by reinforced insulation and rated SELV, the output does not provide hazard energy level.
2. In case the power supply is used as earthed construction, the power supply shall be properly bonded to the main protective bonding termination in the end product. The earth leakage current is within the specified limits.
3.The transformer T1 provides reinforced insulation and it is built up to fulfil the requirements of insulation Class B.(see list of critical components for details)
4. The equipment has been evaluated for use in a Pollution Degree 2 and overvoltage category II environment and a maximum altitude of 5000m.
5. A suitable Electrical and Fire enclosure shall be provided in the end equipment.

Definition of variable(s):

CUS30M-**zzxxxxxxx;** CME30A-**zzxxxxxxx**
(**zz** = 12, 15, 18, 24, 36 or 48; **xxxxxxx** = A, U, ADJ, M, CO, SF or other alphanumeric character)
Note: Suffix options would be used shown below or used together.

Variable:	Range of variable:	Content:
zz	12, 15, 18, 24, 36 or 48	Denotes for output voltage
xxxxxxx	/A	Denotes for chassis & cover
	/U	Denotes for U shape chassis
	/ADJ	Denotes for output adjust
	/M	Denotes for Molex connector
	/CO	Denotes for PWB coating
	/SF	Denotes for single fuse
	other alphanumeric character	For market purposes, no construction differences and no safety impact.