



Ref. Certif. No.

JPTUV-153417

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Switching Power Supply
Name and address of the applicant	TDK-Lambda (China) Electronics Co., Ltd. No.95, Zhujiang Road, Xinwu District Wuxi, 214028 Jiangsu, P.R. China
Name and address of the manufacturer	TDK-Lambda (China) Electronics Co., Ltd. No.95, Zhujiang Road, Xinwu District Wuxi, 214028 Jiangsu, P.R. China
Name and address of the factory	See additional page(s)
Ratings and principal characteristics	Rated Input: 100-240 Vac, 50-60 Hz, for CUS800My-zxxxxxxx, CME800Ay-zxxxxxxx: 8.0 A or 9.5 A for CUS1000My-zxxxxxxx, CME1000Ay-zxxxxxxx: 9.5 A or 11.8 A
Trademark (if any)	TDK-Lambda
Customer's Testing Facility (CTF) Stage used	N/A
Model / Type Ref.	CUS800My-zxxxxxxx, CME800Ay-zxxxxxxx, CUS1000My-zxxxxxxx, CME1000Ay-zxxxxxxx (y = blank; z = 12,24,36,48; xxxxxxx = /CO, /CO2, /G, /SF, /CQC other alphanumeric character, symbol or blank)
Additional information (if necessary may also be reported on page 2)	For output ratings, refer to the test report for details. For model difference, refer to the test report.
A sample of the product was tested and found to be in conformity with	IEC 62368-1:2018
As shown in the Test Report Ref. No. which forms part of this Certificate	CN23X04F 001

This CB Test Certificate is issued by the National Certification Body



TÜV Rheinland Japan Ltd.
Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku
Yokohama 224-0021, Japan
Phone + 81 45 914-3888
Fax + 81 45 914-3354
Mail: info@jpn.tuv.com
Web : www.tuv.com

Date: 2023-11-01

Signature:

Mark Chen

1. TDK-Lambda (China) Electronics
Co., Ltd.
No.95, Zhujiang Road, Xinwu District
Wuxi
214028 Jiangsu, P.R. China
2. TDK-Lambda Malaysia Sdn. Bhd.
PLO 33, Kawasan Perindustrian Senai
81400 Senai, Johor
Malaysia

Additional information (if necessary)

Report Ref. No. : CN23X04F 001

Date: 2023-11-01

Signature:

Mark Chen





Test Report issued under the responsibility of:



TEST REPORT

IEC 62368-1

**Audio/video, information and communication technology equipment
Part 1: Safety requirements**

Report Number..... : CN23X04F 001
Date of issue : 2023-10-31
Total number of pages..... : 118 (excluding report attachments, see page 3)

Name of Testing Laboratory preparing the Report : TÜV Rheinland (Shanghai) Co., Ltd.

Applicant's name : **TDK-Lambda (China) Electronics Co., Ltd.**

Address..... : No. 95, Zhujiang Road, Xinwu District, Wuxi 214028 Jiangsu, P.R. China

Test specification:

Standard..... : IEC 62368-1:2018

Test procedure..... : CB Scheme

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

TRF template used..... : IECEE OD-2020-F801:2021, Ed.1.4

Test Report Form No. : IEC62368_1E

Test Report Form(s) Originator.... : UL(US)

Master TRF : Dated 2022-04-14

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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.

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(s)	TDK-Lambda	
Manufacturer :	Same as applicant	
Model/Type reference	CUS800My-zxxxxxxx, CME800Ay-zxxxxxxx, CUS1000My-zxxxxxxx, CME1000Ay-zxxxxxxx (y = blank; z = 12,24,36,48; xxxxxx = /CO, /CO2, /G, /SF, /CQC other alphanumeric character, symbol or blank)	
Ratings :	See the model list on page 7-8 for details	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	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)	James Zhang / Technical Expert	
Approved by (name, function, signature).. :	Roy Chen / Technical Reviewer	
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	N/A
Testing location/ address :		
Tested by (name, function, signature)		
Approved by (name, function, signature).. :		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	N/A
Testing location/ address :		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature).. :		
<input type="checkbox"/>	Testing procedure: CTF Stage 3:	N/A
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	N/A
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 – National Differences (31 pages)
- ATTACHMENT – AU/NZ National Differences (32 pages)
- ATTACHMENT – JAPAN National Differences (5 pages)
- ATTACHMENT – Photo Documentation (16 pages)

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

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

All applicable tests as described in Test Case and Measurement Sections performed on models CUS1000M-12, CUS1000M-24, CUS1000M-36, CUS1000M-48, CUS800M-12, CUS800M-24, CUS800M-36, and CUS800M-48 to represent others.

The equipment has been evaluated for ambient temperature up to 70 °C.

Specified ambient temperature for operation is according to manufacturer's specification.

The load conditions used during testing: Maximum normal load for this equipment is the operation with the maximum specified DC load with maximum power condition according to the manufacturer specified.

Mounting Direction: Mounting A be used to represent others.

The test samples are pre-production without serial numbers.

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):

EU Group Differences, EU Special National Conditions, US, CA, SG.

Explanation of used codes: US=United States of America, CA=Canada, SG=Singapore

 The product fulfils the requirements of

IEC 62368-1:2018

EN IEC 62368-1:2020+A11:2020

CSA/UL 62368-1:2019.

Other National Differences

AU, NZ, JP

Explanation of used codes: AU=Australia, NZ=New Zealand, JP= JAPAN.

 The product fulfils the requirements of

AS/NZS 62368.1:2022

J62368-1(2023)

Use of uncertainty of measurement for decisions on conformity (decision rule) :

No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty (“simple acceptance” decision rule, previously known as “accuracy method”).

Other:... (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:

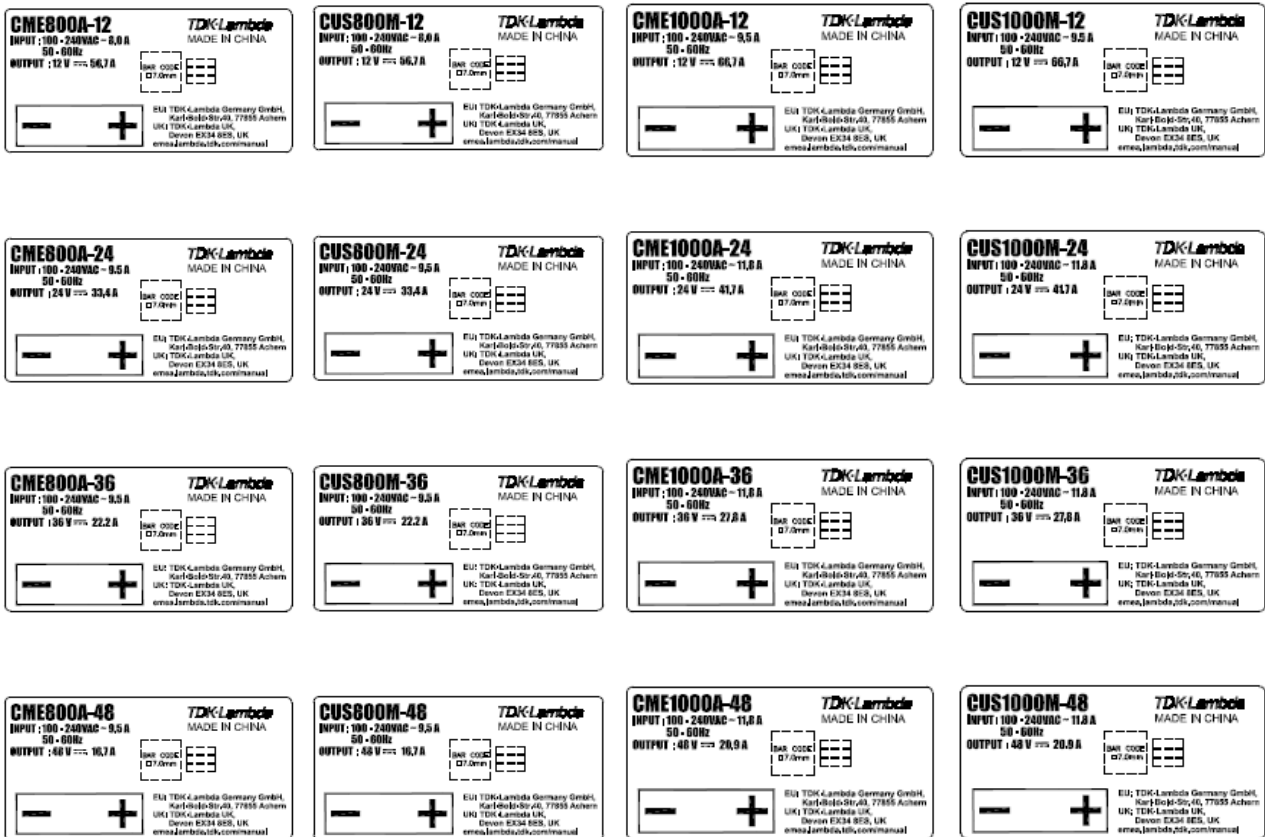
The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECCE.

IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECCE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

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 >

Test item particulars:	
Product group	<input type="checkbox"/> end product <input checked="" type="checkbox"/> built-in component
Classification of use by	<input type="checkbox"/> Ordinary person <input type="checkbox"/> Children likely present <input checked="" type="checkbox"/> Instructed person <input checked="" type="checkbox"/> Skilled person
Supply connection	<input checked="" type="checkbox"/> AC mains <input type="checkbox"/> DC mains <input type="checkbox"/> not mains connected: <input type="checkbox"/> ES1 <input type="checkbox"/> ES2 <input type="checkbox"/> ES3
Supply tolerance	<input checked="" type="checkbox"/> +10%/-10% <input type="checkbox"/> +20%/-15% <input type="checkbox"/> None
Supply connection – type	<input type="checkbox"/> pluggable equipment type A - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> direct plug-in <input type="checkbox"/> pluggable equipment type B - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input checked="" type="checkbox"/> permanent connection <input checked="" type="checkbox"/> mating connector <input checked="" type="checkbox"/> other: Terminal Block
Considered current rating of protective device	<input checked="" type="checkbox"/> 16 or 20 A (for US/CSA); Location: <input checked="" type="checkbox"/> building <input type="checkbox"/> equipment <input type="checkbox"/> N/A
Equipment mobility	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> direct plug-in <input type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> wall/ceiling-mounted <input type="checkbox"/> SRME/rack-mounted <input type="checkbox"/> other:
Overvoltage 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:
Class of equipment	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified <input type="checkbox"/>
Special installation location	<input type="checkbox"/> N/A <input checked="" type="checkbox"/> restricted access area <input type="checkbox"/> outdoor location <input type="checkbox"/>
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
Manufacturer's specified T_{ma}	70 °C <input type="checkbox"/> Outdoor: minimum °C
IP protection class	<input checked="" type="checkbox"/> IPX0 <input type="checkbox"/> IP
Power systems	<input checked="" type="checkbox"/> TN <input type="checkbox"/> TT <input checked="" type="checkbox"/> IT - 230 V _{L-L} <input type="checkbox"/> not AC mains
Altitude during operation (m)	<input type="checkbox"/> 2000 m or less <input checked="" type="checkbox"/> up to 5000 m
Altitude of test laboratory (m)	<input checked="" type="checkbox"/> 2000 m or less <input type="checkbox"/> m
Mass of equipment (kg)	Approx. 0.85kg for CUS1000M series Approx. 0.81kg for CUS800M series

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 : 2023-09-01

Date (s) of performance of tests..... : 2023-09-02 to 2023-09-28

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 IEC 60364-4-41:**

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. TDK-Lambda (China) Electronics Co., Ltd.
No. 95, Zhujiang Road, Xinwu District, Wuxi 214028 Jiangsu, P.R. China

2. TDK-Lambda Malaysia Sdn. Bhd
PLO33, Kawasan Perindustrian Senai, 81400 Senai Johor Malaysia

General product information and other remarks:

The PSU is a component type switching mode power supplies intended for use with the earthed construction or non-earthed construction of IT/AV equipment.

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

Model CME800Ay-zxxxxxxx is identical to model CUS800My-zxxxxxxx except for model name.

Model CME1000Ay-zxxxxxxx is identical to model CUS1000My-zxxxxxxx except for model name.

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

CUS800M series and CUS1000M series have same PCB and circuit topology. Compared to CUS1000M series, CUS800M series have no additional heatsink on PFC heatsink for D1 and SCR1 and no additional busbar on bottom side. CUS800M series and CUS1000M series have different heatsinks for output rectifier components.

Additional application considerations – (Considerations used to test a component or sub-assembly)

- Some components are **pre-certified**, which have been evaluated according to the relevant requirements of IEC 62368-1, are employed in this product. Their suitability of use has been checked according to subclause 4.1.1 and 4.1.2.
- The product is to be operated up to 5000m above sea level, the minimum clearances were multiplied by the factor given in Table A.2 of IEC 60664-1: 1.48.

Tests were repeated with each alternative source of components with identical results unless otherwise specified.

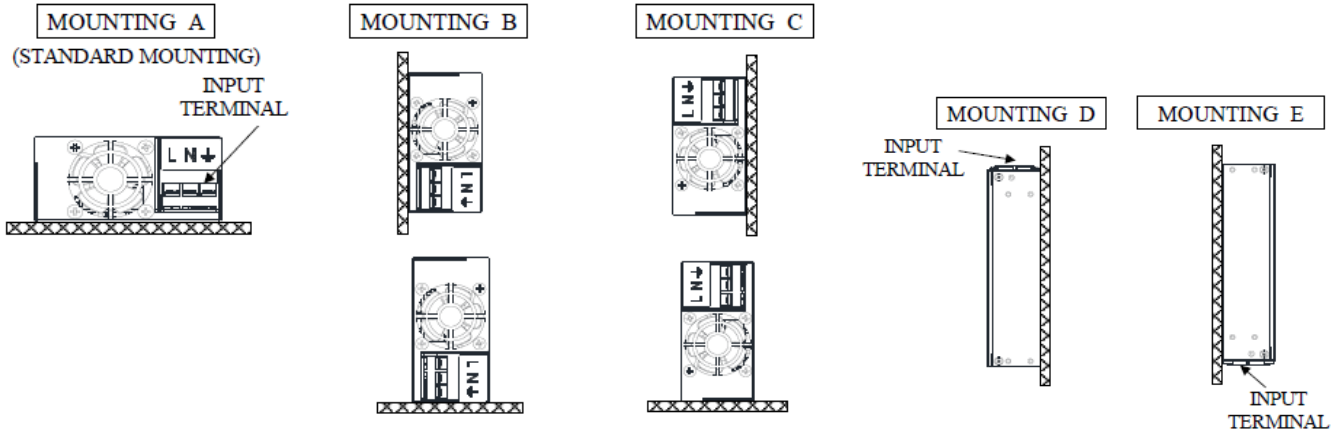
For rating differences between the models see below tables:

Series Model	I/p voltage (Vac)	Freq (Hz)	I/p current (A)	Output Channel	Minimal output	Rated output (typical)	Maximum output
Forced air by build-in intake fan							
CUS800M-12xxxxxxx CME800A-12xxxxxxx	100-240	50-60	8.0	Main output	10.8Vdc	12Vdc	12.6 Vdc
					10.8Vdc~12.6Vdc, Normal: 56.7A & 680.4W max. Peak: 66.7A & 800.4W max. (Dynamic)		
				Standby mode power (optional)	4.8Vdc	5Vdc	5.2Vdc
					2A	2A	1.9A
CUS800M-24xxxxxxx CME800A-24xxxxxxx	100-240	50-60	9.5	Main output	21.6 Vdc	24Vdc	25.9 Vdc
					21.6Vdc~25.9Vdc , Normal: 33.4A & 801.6W max.		
				Standby mode power (optional)	4.8Vdc	5Vdc	5.2Vdc
					2A	2A	1.9A
CUS800M-36xxxxxxx CME800A-36xxxxxxx	100-240	50-60	9.5	Main output	32.4 Vdc	36 Vdc	38.8Vdc
					32.4Vdc~38.8Vdc , Normal: 22.2A & 799.2W max.		
				Standby mode power (optional)	4.8Vdc	5Vdc	5.2Vdc
					2A	2A	1.9A
CUS800M-48xxxxxxx CME800A-48xxxxxxx	100-240	50-60	9.5	Main output	43.2Vdc	48 Vdc	51.8Vdc
					43.2Vdc~51.8Vdc , Normal: 16.7A & 801.6W max.		
				Standby mode power (optional)	4.8Vdc	5Vdc	5.2Vdc
					2A	2A	1.9A
Remark 1: Operating temp.: up to +70°C (operating temperature depending on equipment's load, mounting position, for details refer to instruction manual).							

For rating differences between the models see below tables:

Series Model	I/p voltage (Vac)	Freq (Hz)	I/p current (A)	Output Channel	Minimal output	Rated output (typical)	Maximum output
Forced air by build-in intake fan							
CUS1000M-12xxxxxxx CME1000A-12xxxxxxx	100-240	50-60	9.5	Main output	10.8Vdc	12Vdc	12.6 Vdc
					10.8Vdc~12.6Vdc , Normal: 66.7A & 800.4W max. Peak: 83.4A & 1000.8W max. (Dynamic)		
				Standby mode power (optional)	4.8Vdc	5Vdc	5.2Vdc
					2A	2A	1.9A
CUS1000M-24xxxxxxx CME1000A-24xxxxxxx	100-240	50-60	11.8	Main output	21.6 Vdc	24Vdc	25.9 Vdc
					21.6Vdc~25.9Vdc , Normal: 41.7A & 1000.8W max.		
				Standby mode power (optional)	4.8Vdc	5Vdc	5.2Vdc
					2A	2A	1.9A
CUS1000M-36xxxxxxx CME1000A-36xxxxxxx	100-240	50-60	11.8	Main output	32.4 Vdc	36 Vdc	38.8Vdc
					32.4Vdc~38.8Vdc , Normal: 27.8A & 1000.8W max.		
				Standby mode power (optional)	4.8Vdc	5Vdc	5.2Vdc
					2A	2A	1.9A
CUS1000M-48xxxxxxx CME1000A-48xxxxxxx	100-240	50-60	11.8	Main output	43.2Vdc	48 Vdc	51.8Vdc
					43.2Vdc~51.8Vdc , Normal: 20.9A & 1003.2W max.		
				Standby mode power (optional)	4.8Vdc	5Vdc	5.2Vdc
					2A	2A	1.9A
Remark 1: Operating temp.: up to +70°C (operating temperature depending on equipment's load, mounting position, for details refer to instruction manual).							

Mounting position:

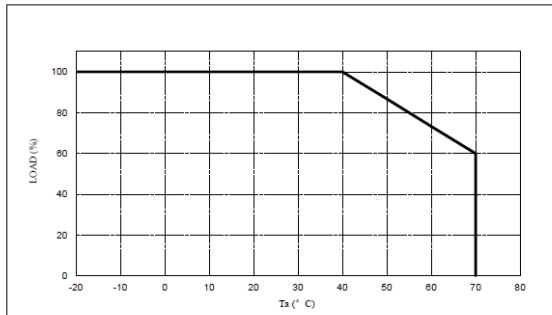


Derating Curve:

Model: CUS800M-12/24/36/48

MODEL: CUS800M-12/24/36/48

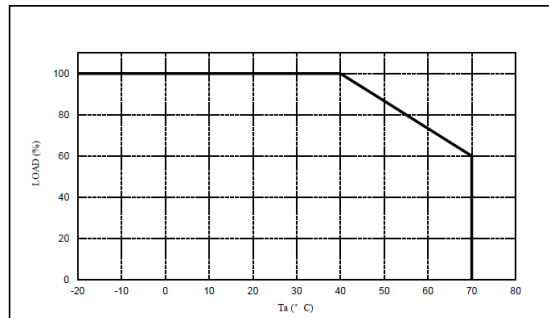
Ta (°C)	LOAD (%)
-20 ~ +40	100
50	85.7
60	73.3
70	60



Model: CUS1000M-12/24/36/48

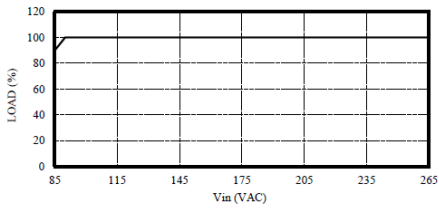
MODEL: CUS1000M-12/24/36/48

Ta (°C)	LOAD (%)
-20 ~ +40	100
50	85.7
60	73.3
70	60



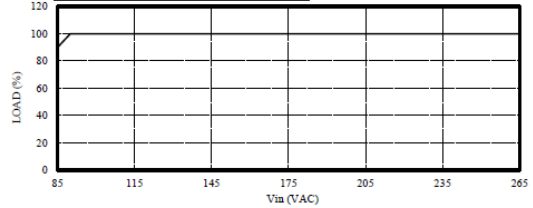
OUTPUT DERATING VERSUS INPUT VOLTAGE

INPUT VOLTAGE (VAC)	LOAD (%)
85	90
90~265	100



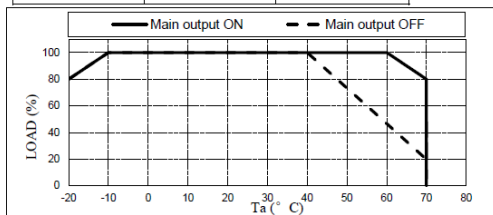
OUTPUT DERATING VERSUS INPUT VOLTAGE

INPUT VOLTAGE (VAC)	LOAD (%)
85	90
90~265	100



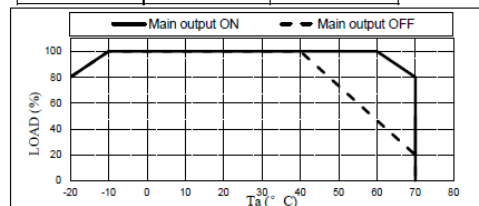
STANDBY SUPPLY OUTPUT DERATING VERSUS OPERATING AMBIENT TEMPERATURE (Ta)

Ta (°C)	LOAD (%)	
	Main output ON	Main output OFF
-20	80	80
-10	100	100
-10 ~ +40	100	100
60	100	46.7
70	80	20



STANDBY SUPPLY OUTPUT DERATING VERSUS OPERATING AMBIENT TEMPERATURE (Ta)

Ta (°C)	LOAD (%)	
	Main output ON	Main output OFF
-20	80	80
-10	100	100
-10 ~ +40	100	100
60	100	46.7
70	80	20



Additional Information:

- The product is a component type switching power supply, the overall compliance shall be investigated in the complete end system/equipment, in particular as:
 - Fire enclosure
 - Mechanical enclosure
 - Electrical enclosure
- The label is draft of artwork for marking plates pending approval by National Certification Bodies and it shall not be affixed to products prior to such an approval.
- The input circuit includes one fuse (F1A) in the Line conductor and the other fuse (F1B) is optional in neutral conductor. Overall consideration needed to re-check in the end-use product regarding addition of the second fuse having the same or better characteristics in order to comply with fusing requirements of the standard.
- The power supply cord set is not evaluated together with the equipment. The suitable certified power supply cord set need to provide in the country where the equipment sold.

Definition of various:

Variable:	Suffix	Description
y	blank	Denotes for standard model
z	12,24,36,48	Denotes for output voltage
xxxxxxx	blank	Denotes for standard model
	/CO	Denotes for single side PWB Coating
	/CO2	Denotes for double side PWB Coating
	/SF	Denotes for single fuse
	/G	Denotes for low earth Leakage current
	/CQC	Denotes for CQC approval
	other alphanumeric character, symbol	For market purposes, no construction differences and no safety impact.

Note: These suffixes may be used together (e.g. /G, /GCO).

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES3: Primary circuits	Instructed person, Skilled person	Bleeding resistors or ICX, Certified X-Capacitor & Y-Capacitors, Insulation sheet	Earthed Protectively bonding chassis	Isolating Transformers and certified Optocouplers
ES1: Secondary circuit		N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 st S	2 nd S
PS3: > 100 Watt circuits (All circuits)	Combustible materials	See 6.3.1 (a) (N)	See 6.4.6 (N, A, S)	N/A
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: Sharp edges and corners	Instructed person, Skilled person	--	--	--
MS1: Equipment mass – mass < 7 kg		--	--	--
MS3: Moving parts (DC fan, plastic fan blade)		(see F.4 described, applies to commercial or industrial equipment)		
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
To be determined by end-product use	--	--	--	--
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
--	--	--	--	--
Supplementary Information: “B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard				

ENERGY SOURCE DIAGRAM

Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems.

Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings

See OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS

ES PS MS TS RS