

UL TEST REPORT AND PROCEDURE

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| Standard: | UL 62368-1, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements) |
| Certification Type: | Component Recognition |
| CCN: | QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment) |
| Complementary CCN: | N/A |
| Product: | Switching Power Supply |
| Model: | 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) |
| Rating: | Input: See the model list on enclosure 7-01 for details Output: See the model list on enclosure 7-01 for details |
| Applicant Name and Address: | TDK-LAMBDA (CHINA) ELECTRONICS CO LTD NO.95, ZHUJIANG RD, XINWU DISTRICT WUXI JIANGSU SHENG 214028 CHINA |

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

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UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared By: Star Gu / Project Handler

Reviewed By: Xing Liu / Reviewer

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
- i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
 - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
 - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

The PSU is a component type switching mode power supplies intended for use with the 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 Differences

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 Enclosed Miscellaneous 7-01 (Model Different List) 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.

Test Item Particulars

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|--|--|
| Product group | built-in component |
| Classification of use by | Instructed person Skilled person |
| Supply Connection | AC Mains |
| Supply tolerance | +10%/-10% |
| Supply connection – type | permanent connection mating connector Terminal block |
| Considered current rating of protective device | 20 A; Location: building |
| Equipment mobility | for building-in |
| Over voltage category (OVC) | OVC II |
| Class of equipment | Class I |
| Special installation location | restricted access area |

| | |
|-----------------------------------|--|
| Pollution degree (PD) | PD 2 |
| Manufacturer's specified Tma (°C) | Up to +70°C (operating temperature depending on equipment's load, mounting position, Refer to Enclosure 6-01 for details). |
| IP protection class | IPX0 |
| Power systems | TN |
| Altitude during operation (m) | 5000 m |
| Altitude of test laboratory (m) | 2000 m or less |
| Mass of equipment (kg) | Approx. 0.85kg for CUS1000M series Approx. 0.81kg for CUS800M series |

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : Up to +70°C (Ambient) (operating temperature depending on equipment's load, mounting position, Refer to Enclosure 6-01 for details).
- The product is intended for use on the following power systems : TN
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply : +10%/-10%
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- The product can be operated sea level up to 5000 m; the minimum clearance multiplied by the factor given in Table A.2 of IEC 60664-1: 1.48.
- The input circuit includes one fuse (F1A) in the Line conductor and the other fuse (F1B) is optional in neutral conductor. Overall consideration need to re-checked 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 Clause F.3.5.3 of the standard.
- 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.
- Mounting Direction: Mounting A be used to represent others.

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following product-line tests are conducted for this product : Earthing Continuity, Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary – Earthed Dead Metal: 364 Vrms/ 584 Vpk, Primary-Secondary: 364 Vrms/ 584 Vpk
- The following output circuits are at ES1 energy levels : All output
- The following output circuits are at PS3 energy levels : All output
- The maximum investigated branch circuit rating is : 20 A
- The investigated Pollution Degree is : 2
- Proper bonding to the end-product main protective earthing termination is : Required
- An investigation of the protective bonding terminals has : been conducted
- The following input terminals/connectors must be connected to the end-product supply neutral : N
- The following end-product enclosures are required : Mechanical, Electrical, Fire
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C) : T1, T2 (Class F)
- The equipment is suitable for direct connection to : AC mains supply
- The power supply was evaluated to be used at altitudes up to : 5,000 m
- LIMITED SHORT-CIRCUIT TEST (Annex R) is to be evaluated in end products.
- BD1.2 Earthing Continuity Test is to be evaluated in end products.

Additional Information

Trademark: See Enclosed Miscellaneous 7-02 (Trademark) for details.
 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.

Additional Standards

The product fulfills the requirements of: N/A

Markings and Instructions

| Clause Title | Marking or Instruction Details |
|--|---|
| Equipment identification marking – Manufacturer identification | Listee’s or Recognized Company’s name, Trade Name, Trademark or File Number |
| Equipment identification marking – model identification | Model Number |
| Equipment rating marking – ratings | "Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)" |
| Fuses – replaceable by ordinary or instructed person | (component ID: __F1A, F1B_optional__), '250V, F16AH' located on or adjacent to fuse or fuseholder or in service manual. |

Special Instructions to UL Representative

Inspect the transformer(s) listed in Production-Line Testing Requirements (Electric Strength Test Special Constructions) per BD1.1. When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in Production-Line Testing Requirements (Electric Strength Test Special Constructions) be conducted at the component manufacturer.
 The earthing continuity shall be done on 100% of production with acceptable results.

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)

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).

| 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). | | | | | | | |

| 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). | | | | | | | |