



Test Report issued under  
the responsibility of:



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

**Report Reference No** .....: E141988-A35-CB-4

Date of issue .....: 2016-06-30

Total number of pages .....: 64

**CB Testing Laboratory** .....: UL Japan, Inc.

Address .....: 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan

**Applicant's name** .....: KAGA COMPONENTS CO LTD

Address .....: 20 KANDAMATSUNAGACHO

Address .....: CHIYODA-KU

TOKYO 101-0023 JAPAN

**Test specification:**

Standard .....: IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013

Test procedure .....: CB Scheme

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

**Test Report Form No.** .....: IEC60950\_1F

Test Report Form originator .....: SGS Fimko Ltd

Master TRF .....: Dated 2014-02

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<b>Test item description</b> .....	Component - Switching Power Supply
Trade Mark .....	TRACO POWER
Manufacturer .....	TRACO ELECTRONIC AG SIHLBRUGGSTRASSE 111 CH-6340 BAAR SWITZERLAND
Model/Type reference .....	TMS15105, TMS15112, TMS15115, TMS15124, TMS15212, TMS15215, TMS15105F, TMS15112F, TMS15115F, TMS15124F, TMS15212F, TMS15215F, TMS15105C, TMS15112C, TMS15115C, TMS15124C, TMS15212C, TMS15215C
Ratings .....	Input: 115-230 Vac, 50/60 Hz, 0.29-0.17 A Output for Models TMS15105, TMS15105F and TMS15105C: 5 Vdc, 3.0 A Output for Models TMS15112, TMS15112F and TMS15112C: 12 Vdc, 1.3 A Output for Models TMS15115, TMS15115F and TMS15115C: 15 Vdc, 1.0 A Output for Models TMS15124, TMS15124F and TMS15124C: 24 Vdc, 0.65 A Output for Models TMS15212, TMS15212F and TMS15212C: $\pm 12$ Vdc, 0.65 A Output for Models TMS15215, TMS15215F and TMS15215C: $\pm 15$ Vdc, 0.5 A

<b>Testing procedure and testing location:</b>	
<input checked="" type="checkbox"/> <b>CB Testing Laboratory</b>	Testing location / address .....: UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan
<input type="checkbox"/> <b>Associated CB Test Laboratory</b>	Testing location / address .....
	Tested by (name + signature) .....: Toshiyuki Suzuki, Project Handler <span style="float: right;"><i>Toshiyuki Suzuki</i></span>
	Approved by (name + signature).....: Masatomo Takiyama, Reviewer <span style="float: right;"><i>M. Takiyama</i></span>
<input type="checkbox"/> <b>Testing Procedure: TMP/CTF Stage 1</b>	Testing location / address .....: Tested by (name + signature) .....: Approved by (name + signature).....:
<input type="checkbox"/> <b>Testing Procedure: WMT/CTF Stage 2</b>	Testing location / address .....: Tested by (name + signature) .....: Witnessed by (name + signature) ..: Approved by (name + signature).....:
<input type="checkbox"/> <b>Testing Procedure: SMT/CTF Stage 3 or 4</b>	Testing location / address .....: Tested by (name + signature) .....: Approved by (name + signature).....: Supervised by (name + signature) ..:
<input type="checkbox"/> <b>Testing Procedure: RMT</b>	Testing location / address .....: Tested by (name + signature) .....: Approved by (name + signature).....: Supervised by (name + signature) ..:

<b>List of Attachments</b>	
National Differences (27 pages)	
Enclosures (76 pages)	
<b>Summary Of Testing</b>	
Unless otherwise indicated, all tests were conducted at UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan.	
<b>Tests performed (name of test and test clause)</b>	<b>Testing location / Comments</b>

Input: Single-Phase (1.6.2)  
Durability of Marking (1.7.11)  
Energy Hazard Measurements (2.1.1.5, 2.1.2, 1.2.8.10)  
Capacitance Discharge (2.1.1.7)  
SELV Reliability Test Including Hazardous Voltage Measurements (2.2.2, 2.2.3, 2.2.4, Part 22 6.1)  
Humidity (2.9.1, 2.9.2, 5.2.2)  
Determination of Working Voltage; Working Voltage Measurement (2.10.2)  
Transformer and Wire /Insulation Electric Strength (2.10.5.13)  
Heating (4.5.1, 1.4.12, 1.4.13)  
Ball Pressure (4.5.5, 4.5)  
Touch Current (Single-Phase; TN/TT System) (5.1, Annex D)  
Electric Strength (5.2.2)  
Component Failure (5.3.1, 5.3.4, 5.3.7)  
Transformer Abnormal Operation (5.3.3, 5.3.7b, Annex C.1)  
Power Supply Output Short-Circuit/Overload (5.3.7)

**Summary of Compliance with National Differences:**

Countries outside the CB Scheme membership may also accept this report.

List of countries addressed: CA, DE, DK, EU, FI, GB, KR, SE, SK, US

The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013

**Copy of Marking Plate** - Refer to Enclosure titled Marking Plate for copy.

<b>Test item particulars :</b>	
Equipment mobility .....	for building-in
Connection to the mains .....	for building-in
Operating condition .....	continuous
Access location .....	operator accessible
Over voltage category (OVC) .....	OVC II
Mains supply tolerance (%) or absolute mains supply values .....	+10%, -10%
Tested for IT power systems .....	No
IT testing, phase-phase voltage (V) .....	N/A
Class of equipment .....	Class I (earthed)
Considered current rating of protective device as part of the building installation (A) .....	20
Pollution degree (PD) .....	PD 2
IP protection class .....	IP X0
Altitude of operation (m) .....	Up to 2000
Altitude of test laboratory (m) .....	Approx. 10 to 20
Mass of equipment (kg) .....	< 0.5 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>	
Date(s) of receipt of test item .....	2006-12-18, 2006-12-15, 2006-12-20, 2006-12-21, 2006-12-28, 2007-01-18, 2007-01-23, 2007-01-29
Date(s) of Performance of tests .....	2006-12-22, 2006-12-26 to 2007-01-30
<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 point is used as the decimal separator.	
<b>Manufacturer's Declaration per Sub Clause 4.2.5 of IEC 60950-1:</b>	
The application for obtaining a CB Test Certificate includes more than one factory 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 .....	
When differences exist, they shall be identified in the General Product Information section.	
<b>Name and address of Factory(ies):</b>	KAGA COMPONENTS CO LTD NIIGATA PLANT 1194-3 MOKKOSHIN-MACHI HIGASHI-KU NIIGATA-SHI NIIGATA-KEN 950-0807

JAPAN

DONGGUAN POWERTEK ELECTRONICS CO LTD  
CHILING INDUSTRIAL ESTATE HOUIE ZHEN DONGGUAN  
CITY GUANGDONG CHINA

## GENERAL PRODUCT INFORMATION:

### Report Summary

All applicable tests according to the referenced standard(s) have been carried out.

### Product Description

These models covered in this report were component power supply intended for use in Information Technology Equipment.

### Model Differences

There are three different input/output terminal types. Those with "F" suffix have flat tab terminals extending above case. Those with "C" suffix have terminal blocks beside case. Those without "F" or "C" suffix have terminal pins protruding below case.

Models TMS151xx, TMS151xxF and TMS151xxC are single(+) output DC power supply unit.

Models TMS152xx, TMS152xxF and TMS152xxC are dual( $\pm$ ) output DC power supply unit.

The "xx" in model designation indicate output voltage of power supply unit.

24 V output models are identical to  $\pm 12$  V output models, except for output terminal. The circuit of 24 V output models is the same to  $\pm 12$  V output model's.

Each model is identical, except for output ratings, minor differences in the secondary circuit components and the number of turns of secondary winding in the Transformer (T1).

Transformer (T1) type mounted on each model is as follows.

- TMS15105, TMS15105F and TMS15105C: B15-05
- TMS15112, TMS15112F and TMS15112C: B15-12
- TMS15115, TMS15115F and TMS15115C: B15-15
- TMS15124, TMS15124F and TMS15124C: B15-122
- TMS15212, TMS15212F and TMS15212C: B15-122
- TMS15215, TMS15215F and TMS15215C: B15-153

### Additional Information

Maximum normal load: Rated output load.

(CB Only)

This report is a reissue of CBTR Ref. No. E141988-A35-CB-3, CB Test Certificate Ref. Nos. JP-10720-UL and JP-10721-UL due to the following modifications:

1. Upgrade of standard from IEC 60950-1, 2nd edition + Amendment 1 to IEC60950-1, 2nd edition + Amendment 1 + Amendment 2.
2. Deletion of Models KB15-05S, KB15-12S, KB15-15S, KB15-24S, KB15-122D, KB15-153D, KB15F-05S, KB15F-12S, KB15F-15S, KB15F-24S, KB15F-122D, KB15F-153D, KB15C-05S, KB15C-12S, KB15C-15S, KB15C-24S, KB15C-122D and KB15C-153D.
3. Deletion of Manufacturer "KAGA COMPONENTS CO LTD".

4. Update of address of Applicant and Manufacturer.
5. Change of Manufacturer of Thermistor (TH1), from "Ishizuka Electronics Corp" to "SEMITEC Corp".
6. Change of Manufacturer of X-Capacitor (C1, C2) from "Panasonic Electronic Devices Japan Co., Ltd." to "Panasonic Corp. Automotive & Ind. System Company Device Solutions Business Division."
7. Change of Manufacturer of Control IC (IC1), from "Semiconductor Co., Panasonic Corp." to "Panasonic Semiconductor Solutions Co., Ltd."

Based on the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, it has been determined that the product continues to comply with the standard.

National difference of Japan (J60950-1(H22)) has been evaluated (see Enclosure - Miscellaneous #7-08).  
National difference of China (GB4943.1-2011) has been evaluated (see Enclosure - Miscellaneous #7-09).

#### Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T<sub>ma</sub>) permitted by the manufacturer's specification of: 40 °C
- The product is intended for use on the following power systems: TN
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (which includes all European national differences, including those specified in this test report).

#### Engineering Conditions of Acceptability

When installed in an end-product, consideration must be given to the following:

- The end-product Electric Strength Test is to be based upon a maximum working voltage of: (Model TMS15105 series), Primary-Earthed Dead Metal: 259 Vrms, 548 Vpk, Primary-SELV: 259 Vrms, 548 Vpk, , (Model TMS15112 series), Primary-Earthed Dead Metal: 286 Vrms, 556 Vpk, Primary-SELV: 287 Vrms, 556 Vpk, , (Model TMS15115 series), Primary-Earthed Dead Metal: 272 Vrms, 528 Vpk, Primary-SELV: 272 Vrms, 528 Vpk, , (Model TMS15124 series, TMS15212 series), Primary-Earthed Dead Metal: 287 Vrms, 556 Vpk, Primary-SELV: 300 Vrms, 572 Vpk, , (Model TMS15215 series), Primary-Earthed Dead Metal: 270 Vrms, 528 Vpk
- A suitable disconnect device shall be provided in the end product. --
- A suitable protective device (overcurrent protection) shall be provided in the end product. --
- The evaluation of IT power systems shall be conducted in the end product. --
- The following secondary output circuits are SELV: All model's output circuits --
- The following secondary output circuits are at non-hazardous energy levels: All model's output circuits --
- The power supply terminals and/or connectors are: Suitable for factory wiring only --
- 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: Not been conducted --
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJ2 insulation system with the indicated rating greater than Class A (105°C): T1 (Class B), L1 (150°C) --
- The following end-product enclosures are required: Fire, Electrical --

Abbreviations used in the report:

- normal condition .....	N.C.	- single fault condition .....	S.F.C
- operational insulation .....	OP	- basic insulation .....	BI
- basic insulation between parts of opposite polarity:	BOP	- supplementary insulation .....	SI
- double insulation .....	DI	- reinforced insulation .....	RI

Indicate used abbreviations (if any)