File E143030
Project 96NK17423

November 6, 1996

REPORT

on

COMPONENT - POWER SUPPLIES, GENERAL PURPOSE (QQFU2)

* *

Complimentary Product Category
POWER SUPPLIES, INFORMATION TECHNOLOGY EQUIPMENT
INCLUDING ELECTRICAL BUSINESS EQUIPMENT (QQGQ2)

Melcher AG
Uster, Switzerland

SH/DC:bem
NKDLS

DESCRIPTION

PRODUCT COVERED:

USR CNR Component Power Supply Series, Models K4000, K5000, S4000, S5000 and KP5000.

Model	*Input Rating	Output Rating (+) Voltage	Maximum Power	No. of Outputs
K4000	85 - 264 V ac/88 V dc - 300 V dc	2 V dc - 56 V dc	150 W	1
K5000	85 - 264 V ac/88 V dc - 300 V dc	2 V dc - 56 V dc	150 W	2
S4000	85 - 264 V ac/88 V dc - 300 V dc	2 V dc - 56 V dc	100 W	1
S5000	85 - 264 V ac/88 V dc - 300 V dc	2 V dc - 56 V dc	100 W	2
KP5000	187- 255 V ac	2 V dc - 56 V dc	260 W	2

(+) - Ratings can be selected from range specified.

Model Differences: The S version has a smaller heat sink version than the K version. Alternately, both models can have a baseplate instead of the heat sinks.

ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE USE):

Use - For use only in (or with) complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

Conditions of Acceptability - When installed in the end product, consideration shall be given to the following:

1. This component has been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment, UL 1950, Sub Clause 2.9, CAN/CSA C22.2 No. 950-95.

2. All secondary output circuits are SELV up to 48 V dc and are not hazardous energy levels.

3. The terminals and connectors are suitable for factory wiring only.

*4. Magnetic devices TR1 constructed of R/C insulation system Designated Class F (155°C). The auxiliary transformer is a planar type constructed of an R/C (ZPMV2) rated 130°C. Consideration for conducting the temperature on the transformer need to be measured in the end product use.

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5. The equipment has been evaluated for use in a Pollution Degree 2 environment.

6. The input voltage rating specified contains the maximum and minimum voltage tested, no additional tolerances were considered.

*7. The temperature test was conducted by monitoring the exposed heat sink temperature as rated in the manufacturer's specifications. The S Series was maintained at 95°C and the K Series at 85°C. Consideration should be given to measure the hotspot so that the specified maximum temperature (95°C for the S- and 85°C for the K- Series) will not be exceeded.

Special Considerations - The following items are considerations that were used when evaluating this product.

The equipment is:

USL, USR indicates investigation to the U.S. Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment, UL 1950, Third Edition.

CNL, CNR indicates investigation to the Canadian Standard for the Safety of Information Technology Equipment, Including Electrical Business Equipment CAN/CSA-C22.2, No. 950-95.

The equipment is:

For building in, Class I (earthed) intended for us on an IT.

Intertek Testing Services
ETL SEMKO

TEST REPORT

IEC950

Safety of information technology equipment including electrical business equipment

Report		
Reference No.	:	<98KFS038-03>
Compiled by (+ signature)	:	M. Hermann
:Reviewed by (+ signature)	:	R. Grumpelt
Approved by (+ signature)	:	K. Stenzhorn
Date of issue	:	28.01.99
Contents	:	53 pages

This report is based on a blank test report that was prepared by KEMA using information obtained from the TRF originator (see below).

Testing laboratory		
Name	:	ITS Testing & Certification GmbH
Address	:	87600 Kaufbeuren, Innovapark 20
Testing location	:	as above

Client		
Name	:	Power- One
Address	:	Ackerstr.56, CH-8610 Uster

Test specification		
Standard	:	EN 60 950:1992 + A1:1993 + A2:1993 + A3:1995 + A4:1997+A11:1997
Test procedure	:	CCA-scheme
Procedure deviation	:	N.A.
Non-standard test method	:	N.A.

Test Report Form/blank test report		
Test Report Form No.	:	60950__D/97-08
TRF originator.	:	FIMKO
Master TRF	:	reference No. 60950 D, dated 97-02

Test item		
Description	:	Power Supply
Trademark	:	Power One
Model and/or type reference	:	LKP5000 serie and K4000, K5000, S5000-series
Manufacturer	:	Power-one
Rating(s)	:	see next page

Product: **Power Supply**

Model/Type: **LKP5000 serie**

Type	Rated Input			Operating Input			Rated Output		Max. total
	Vac	A	Hz	Vac	A	Hz	Out1/Vdc /A	Out2/Vdc /A	Output Power/ W
LKP5000	208-240Vac	1.9 A	50/60Hz	187-255Vac	1.9 A	47-63 Hz	max 28.25V, max 5.8A	max 28.25V, max 5.8A	280

There are two outputs. If you put them parallel you can provide two outputs with max. output current. (LKP5660)

If you put them in serie you can provide one output with max. output voltage. (LKP5740).

Alternatively both models can have a baseplate instead of the heatsink

Product: **Power Supply**

Model/Type: **K4000, K5000, S4000, S5000 series**

Type	Rated Input			Operating Input			Rated Output		Max. total
	Vac	A	Hz	Vac	A	Hz	Out1/Vdc /A	Out2/Vdc /A	Output Power/ W
K4000	85-264Vac 88-300Vdc	2.2 A	50/60Hz	85-264Vac 88-300Vdc	2.2 A	47-63 Hz	2-28.25Vdc, max 20A		150
K5000	85-264Vac 88-300Vdc	2.2 A	50/60Hz	85-264Vac 88-300Vdc	2.2 A	47-63 Hz	2-28.25Vdc, max 6A	2-28.25Vdc, max 6A	150
S4000	90-264Vac 95-300Vdc	2.2 A	50/60Hz	85-264Vac 88-300Vdc	2.2 A	47-63 Hz	2-28.25Vdc, max 16A		100
S5000	90-264Vac 95-300Vdc	2.2 A	50/60Hz	85-264Vac 88-300Vdc	2.2 A	47-63 Hz	2-28.25Vdc, max 4.2A	2-28.25Vdc, max 4.2A	100

There are two outputs in K/S 5000:.

If you put them in sieries you can provide one output with max output voltage 56.6V. (LK5740-R7)

Model difference: The S version has a smaller heatsink version than the K version. Alternatively both models can have a baseplate instead of the heatsink

Nomenclature:

ab-cdee-fgg

a → input voltage: L

b → family: K, S, KP

c → number of outputs 4= 1 Outputs, 5= 2 Outputs

d → output voltage classification: 0-9

e → output voltage contrrol: 01 …99

f → ambient temperature range: 0, 5, 6, 7, 9

gg → options and features : R, E, P, D, V, T, B1

Conditions of Acceptability

When installed in the end-use equipment, the following are among the considerations to be made:

1. The power supply shall be installed in compliance with the enclosure, mounting, spacing, casualty and segregation requirements of the ultimate application.
2. Consideration should be given to measuring the temperatures on power electronic components and transformer windings when the power supply is installed in the end-use equipment. All transformers and inductors are provided with Class H insulating systems in accordance to IEC and Class A in accordance to UL requirements.
3. The power supplies are provided with reinforced insulation, input to output.
4. The outputs up to 48Vdc are considered to be SELV non energy hazardous level.
5. The input/output connectors are not acceptable for field wiring and are only intended for connection to mating connectors of the internal wiring inside the end-use machine.
6. The need for conducting a Leakage Current Test is to be determined as part of the end product evaluation.
7. The temperature test was conducted with the power supply in vertical position 100mm above bench.
8. Humidity testing was conducted on LKP5660 representing all other models.
9. The LKP series can be used in an ambient of 51°C. In the K4000, K5000. S4000, S5000 series is the hotspot on the heatsink defined as shown in the attachment. The hotspot can be in the K –series 85°C and in the S-series 95°C. (see temperature measurments 5.1)

Note about the standards:

The power Supply was evaluated in accordance to EN 60 950:1992 + A1:1993 + A2:1993 + A3:1995 + A4:1997+A11:1997, CSA22.2-950 3rd Edition and UL1950 3rd Edition and IEC950:A4 .

Factory Inspection:

According the Low Voltage Directive and EN50116 the following production tests have to be performed:

1. Dielectric Test Primary to Ground 1500 Vac 1 Second. The SELV outputs are connected to Ground
2. Ground Continuity 25 A between enclosure and the PE input pin.

The test results have to be documented with the serial number, model number, date and result. This information has to be stored for 10 years and has to be available to the European authorities.