Ref. Certif. No.

SI-651

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

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D'ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product Produit	Power supply for building-in
Name and address of the applicant Nom et adresse du demandeur	PULS Elektronische Stromversorgungen GmbH Arabellastrasse 15, D-81925 München, Germany
Name and address of the manufacturer Nom et adresse du fabricant	PULS Elektronische Stromversorgungen GmbH Arabellastrasse 15, D-81925 München, Germany
Name and address of the factory Nome et adresse de l'usine	See annex to the certificate
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	See annex to the certificate
Trademark (if any) Marque de fabrique (si elle existe)	PULS
Model / Type Ref. Ref. De type	ML30.xxx-yyy, ML50.xxx-yyy xxx and yyy are not safety relevant
Additional information (if necessary) Information complémentaire (si nécessaire)	This CB Test Certificate substitutes previously issued CB Test Certificate No. SI-523.
A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la	PUBLICATION: IEC 60 950:1999 EDITION: 3rd
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	T223-0060/02

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

Slovenski institut za kakovost in meroslovje
Slovenian Institute of Quality and Metrology
Tržaška c. 2, 1000 Ljubljana, Slovenia

Date: 2002-02-14

Signature:

ANNEX to CB Test Certificate No.: SI-651

	Input rating			Output rating		
Model	V ac	A	Hz	V dc	A	W
ML30.xxx-yyy	100-240	1,0	50-60	5-48 or	≤5,5	≤30
				12-15	-	≤36
	or					
Model	Vdc	A				
ML30.xxx-yyy	100-375	1,0	-	5-48 or	≤5,5	≤30
				12-15	-	≤36

	Input rating			Output rating		
Model	V ac	A	Hz	V dc	A	W
ML50.xxx.yyy	100-240	1,0	50-60	12 - 48	-	≤50
	or					
Model	Vdc	A				
ML50.xxx.yyy	100-375	1,0	-	12 - 48	-	≤50

The power supplies have adjustable output voltage and output power limitation.
Both power supplies can be supplied by ac or dc voltage.

NAME AND ADDRESS OF THE PRODUCTION SITES (FACTORIES):

PULS Elektronische Stromversorgungen GmbH
Weltenburgerstr. 6
D-81677 München

PULS Production s.r.o.
Zadni Vinohrady ul. Alfonse Muchy 496
43001 Chomotov

Ljubljana, 2002-02-14

Podpis pooblaščene osebe / Authorized signature

TEST REPORT

IEC 60950

Safety of information technology equipment

Report reference number ..... :	T223-0060/02
Compiled by (a signature) ..... :	Boštjan Glavič
Approved by (a signature) ..... :	Gregor Schoss
Date of issue ..... :	2002-02-27

Testing laboratory ..... :	Slovenian Institute of Quality and Metrology
Address ..... :	Tržaška 2, 1000 Ljubljana, SLOVENIA
Testing location ..... :	Same as above

Applicant ..... :	PULS Elektronische Stromversorgungen GmbH
Address ..... :	Arabellastraße 15,D-81925 München Germany

Standard ..... :	IEC 60950, 3rd Edition, 1999
Test Report Form No. ..... :	I950___F/00-03
TRF originator. ..... :	FIMKO
Master TRF ..... :	dated 00-02
Copyright blank test report..... :	the bodies participating in the Committee of Certification Bodies (CCB) and/or the CENELEC Certification Agreement (CCA). This report is based on a blank test report that was prepared by KEMA using information obtained from the TRF originator.

Test procedure ..... :	CB-scheme
Procedure deviation ..... :	N.A.
Non-standard test method ..... :	N.A.

Type of test object..... :	Power Supply for building-in
Trademark..... :	PULS Stromversorgungen
Model/type reference ..... :	ML30.xxx-yyy, ML50.xxx-yyy xxx and yyy are non safety relevant modifications related to output voltage or customer specific versions.
Manufacturer..... :	PULS Elektronische Stromversorgungen GmbH Arabellastraße 15,D-81925 München Germany
Rating..... :	See page 2

Test item particulars:

Equipment mobility ..... :	For built in use
Operating condition ..... :	continuous
Tested for IT power systems ..... :	Yes
IT testing, phase-phase voltage (V) ..... :	230 Vac
Class of equipment ..... :	Class I
Mass of equipment (kg) ..... :	approx. 0,3 kg
Protection against ingress of water ..... :	IP20

Possible test case verdicts:

- test case does not apply to the test object ..... :	N(.A.)
- test object does meet the requirement ..... :	P(ass)
- test object does not meet the requirement ..... :	F(ail)

General remarks:
"(see remark #)" refers to a remark appended to the report.
"(see appended table)" refers to a table appended to the report.
Throughout this report a comma is used as the decimal separator.
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 testing laboratory.

RATINGS

Rated Input:

ML50.xxx-yyy (12-48 V d.c.)			
100 – 240 V a.c.	1,0 – 0,5 A	50-60 Hz	1 phase
ML30.xxx-yyy (5-48 V d.c., max. 30 W)			
100 – 240 V a.c.	0,6 – 0,25 A	50-60 Hz	1 phase
ML30.xxx-yyy (+/- 12-15 V d.c., max. 36 W)			
100 – 240 V a.c.	0,7 – 0,4 A	50-60 Hz	1 phase

Rated Output:

ML30.xxx-yyy:	5 V d.c. – 48 V d.c., ≤ 5,5 A, ≤ 30 W and +/- 12 - 15 V d.c., ≤ 36 W
ML50.xxx-yyy:	12 V d.c. – 48 V d.c,. ≤ 50 W

History sheet

Date	Name	Change	Revision No
2001-05-18-	T223-0179/01	Initial test report issued.	
2002-02-27	T223-0060/02	Added an alternative construction. The output diode is replaced by an electronic board with a FET transistor to reduce the power loss and reduce the temperature rise within the unit (see also list of critical components). Output voltage range for ML50 version is extended to 12-48 V d.c. Changed National Deviations according to CB Bulletin 99A. Changed EN deviations to EN 60950:2000	1.0

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict

ADDITIONAL INFORMATION			
DESCRIPTION OF EQUIPMENT UNDER TEST			
Equipment under test is power supply for building-in. There are two different versions of power supplies. Both versions have the same input circuit. There is a potentiometer for adjusting the output voltage.			
	NAME AND ADDRESS OF PRODUCTION-SITES (FACTORIES):		
	PULS Elektronische Stromversorgungen GmbH Weltenburgerstr. 6 D-81677 München, Germany	PULS Production s.r.o. Zadni Vinohrady ul. Alfonse Muchy 496 43001 Chomotov, Check Republic	
	INFORMATION ABOUT THE STANDARDS / DOCUMENTS CONSIDERED		
	IEC 60950, 3rd Edition: 1999		
	EN 60950, 3rd Edition: 2000		
	TESTED ACCORDING TO NATIONAL REQUIREMENTS FOR THE FOLLOWING COUNTRIES:		
	All CENELEC members as listed in EN 60950:2000. All CB members as listed in CB Bulletin 99A, July 2001		
	LIST OF APPENDIXES / ENCLOSURES TO THE TEST REPORT		
	Appendix EN 60950: 2000		Page 76
	GROUP DIFFERENCES		Page 86
	Australian deviations (including New Zealand)		Page 88
	Canadian und USA deviations.		Page 97
	Chinese deviations		Page 102
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	Japanese deviations.		Page 103
	Korean deviations		Page 107
	Norwege deviations		Page 107
	Sweden deviations		Page 109

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict

	SUMMARY OF TESTING :	
Clause	Information/Remarks	Comments
1.0	General	The component has been judged on the basis of the required spacing, in the standard for information technology equipment, including electrical business equipment, CSA22.2-no. 60950 , UL60950 , IEC60950 third edition.
1.2.8	Circuits and circuit characteristics	The outputs are SELV, non hazard energy level.
1.7.10	IT Power System	The Power Supply was tested for IT and TN Power Systems.
2.10	Pollution degree	The equipment was evaluated for use in a pollution degree II environment.
4.5	Heating test	The following components should be given special considerations during the end-use heating tests because of temperatures achieved during the component level testing: Component max. Temp. Achieved: T1 winding 87 °C at 24 °C ambient (85 Vdc input).
5.3.6	Abnormal testing	The product is tested on a 32 a branch circuit. If used on a branch circuit greater than this, additional testing might be necessary.
Annex C	Working voltage	The working voltage present is 335 Vrms, 508 V peak. The electrical strength test for the power supply shall be based on these values.
1.5	Terminals	The terminals are suitable for field wiring.
4.6.2	Enclosures	An electrical and fire enclosure has to be provided in the end product.
UL508 32.7	Limited energy circuit requirements	Unit complies with requirement for limited energy circuit.

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict

Overview of Tests Performed

Clause	Test	Result
1.6.1	Input Test: Single Phase.	P
2.1.1.5	Energy Hazard Measurements	P
2.1.1.7	Capacitance Discharge Test	P
2.9.2	Humidity Test	P
2.2.2	SELV: Hazard Voltage (Circuit) Measurement Test	P
2.2.3	SELV Reliability testing	P
2.6.3.3	Earthing Test	P
2.7	Fuse Test (AC approved fuse in DC circuit)	P
2.10	Creepage and Clearance Working Voltage measurement	P
2.10.5.1	Distance through Insulation Measurements	P
2.10.7	Enclosed or Hermetically Sealed Unit Test	N
4.2	Steady Force test (10 N, 30 N.)	P
4.2.7	Stress relief test	P
4.2.10	Wall mounting test.	N
4.5.1	Heating (Temperature) Test	P
5.1	Touch Current	P
5.2	Electric Strength Test	P
5.3.6	Component Failure Test	P
5.3	Abnormal Operating Tests foreseeable misuse	P
Annex C.	Transformer Output Short Transformer loaded with max. possible Current Working Voltage measurement	P
UL 508 32.7	Limited Energy circuit	P

This is an extract of the CB-Scheme report with the most important information.
If a complete copy of the report is required, please contact your PULS sales representative.