

IEC**IECEE**
CB
SCHEME

Ref. Certif. No.

SI-665IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST
CERTIFICATES FOR ELECTRICAL EQUIPMENT
(IECEE) CB SCHEMESYSTEME CEI D'ACCEPTATION MUTUELLE DE
CERTIFICATS D'ESSAIS DES EQUIPEMENTS
ELECTRIQUES (IECEE) METHODE OC**CB TEST CERTIFICATE**
CERTIFICAT D'ESSAI OCProduct
Produit

Power supply for building-in

Name and address of the applicant
Nom et adresse du demandeurPULS Elektronische Stromversorgungen GmbH
Arabellastrasse 15, D-81925 Munchen GermanyName and address of the manufacturer
Nom et adresse du fabricantPULS Elektronische Stromversorgungen GmbH
Arabellastrasse 15, D-81925 Munchen GermanyName and address of the factory
Nom 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 typeML70.xxx-yyy,
xxx and yyy are not safety relevantAdditional information (if necessary)
Information complémentaire (si nécessaire)

/

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	EDITION
IEC 60 950:1999	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

T223-0072/02

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: 2002-02-28

Signature:



Slovenski inštitut za
kakovost in meroslovje
Slovenian Institute of
Quality and Metrology

ANNEX to CB Test Certificate No.: SI-665

page 2 of 2

RATINGS:

Input: 100-120/ 220-240 V a.c. or 115/230 V a.c., 1,6/0,8 A, 50-60 Hz
Alternative input voltage: 220-375 V d.c.

Output: 24-28 V d.c., 3,0 A, max. 72 W

NAME AND ADDRESS OF THE 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

Ljubljana, 2002-02-28



Slovenski inštitut za
kakovost in meroslovje
Slovenian Institute of
Quality and Metrology
Tržakova 2, 1000 Ljubljana
Slovenija / Slovenia

Podpis pooblaščenice osebe / Authorized signature

TEST REPORT

IEC 60 950


Safety of information technology equipment

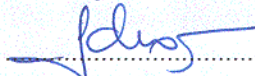
Report reference No.: T223-0072/02

Tested by (printed name and signature): Boštjan Glavič

Approved by (printed name and signature): Gregor Schoss

Date of issue: 2002-02-28





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

Testing Laboratory Name: Slovenian Institute of Quality and Metrology

Address: Tržaška 2, 1000 Ljubljana, SLOVENIA

Testing location: Same as above

Applicant's Name: PULS Elektronische Stromversorgungen GmbH

Address: Arabellastraße 15, D-81925 München

Test specification

Standard: IEC 60 950, 3rd Edition (1999)

Test procedure: CB-scheme

Procedure deviation: N.A.

Non-standard test method: N.A.

Test Report Form

Test Report Form No.: I950__F/00-03

TRF originator: FIMKO

Master TRF: Dated 00-02

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Test item description: DIN RAIL POWER SUPPLY

Trademark: PULS

Model and/or type reference: ML70.xxx-yyy

Rating(s): Input: 100 – 120/ 220 – 240 Vac or 115/230 Vac, 1,6 / 0,8 A, 50 – 60 Hz and alternative 220 – 375 Vdc,

Output: 24 – 28 Vdc, 3,0 A, max. 72 W.

Particulars: test item vs. test requirements	
Equipment mobility:	for building-in
Connection to Mains	Built in equipment, not intended for direct connection to mains
Operating condition:.....	Continuous
Rated Voltage:	100 – 120 / 220 – 240 Vac and alternative 220 – 375 Vdc. ,
Operational Voltage:	85 – 132 / 184 – 264 Vac and alternative 220 – 375 Vdc.
Test Load:	24 - 28 Vdc with 72 W output load in horizontal and vertical mounting 24 - 28 Vdc with 57 W (80%) output load in front side up mounting.
Air Conditions:	Natural convection.
Maximum ambient temperature:	60 °C
Tested for IT power systems:	Yes
IT testing, phase-phase voltage (V):	230 Vac.
Class of equipment:	Class I
Mass of equipment (kg):	0,26 kg.
Dimensions of Equipment:	45 mm (width) by 75 mm (height) by 91 mm (depth)
Protection against ingress of water: .	IP20
Test case verdicts	
Test case does not apply to the test object:	N/A
Test item does meet the requirement:	P (ass)
Test item does not meet the requirement: ...	F (ail)
Testing	
Date of receipt of test item:	2001-12-27
Date(s) of performance of test:	2002-01-07 — 2002-02-24
General remarks	
"This report is not valid as a CB Test Report unless appended to a CB Test Certificate issued by a NCB, in accordance with IEC 60950-02".	
This report shall not be reproduced without the written approval of the applicant.	
The test results presented in this report relate only to the item(s) tested.	
"(See remark #)" refers to a remark appended to the report.	
"(See Annex #)" refers to an annex appended to the report.	
Throughout this report a comma is used as the decimal separator.	

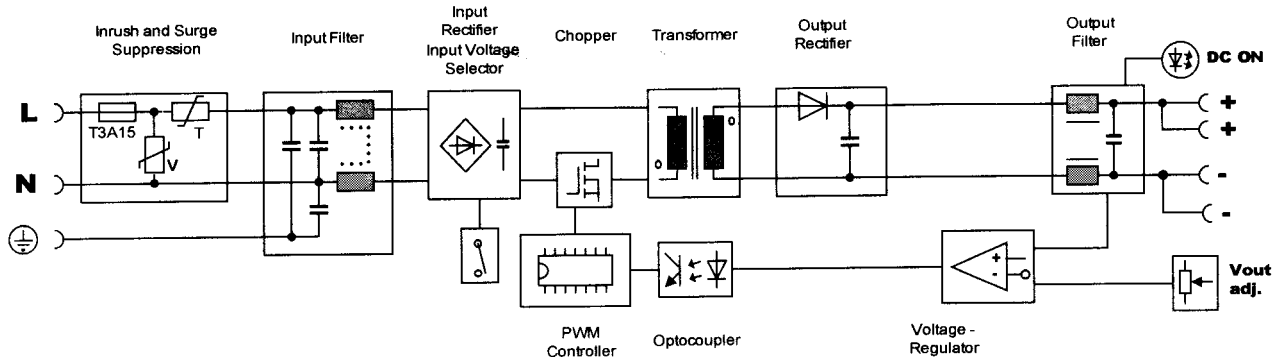
List of Acceptability/ Summary of Testing		
Clause	Information/Remarks	Comments
1.0	Component	This component has been judged on the basis of the required spacing in the Standard of Information Technology Equipment, Including Electrical Business Equipment, CAN/CSA 22.2 – 60950 * UL 60950, Third Edition, which are based on the IEC 60950, Third Edition 1999.
1.2.5.1	Connection to the Supply	The terminals are suitable for factory/field wiring.
2.10	Pollution degree	The equipment has been evaluated for use in a Pollution Degree 2 environment.
2.2	SELV circuits	The outputs are SELV, non-hazardous energy level.
2.5	Limited Power source	Unit does not fulfill requirements of IEC 60950 for Limited Power Source. Unit meets requirements of NEC class II.
2.6.0	Provisions for earthing and bonding	The equipment shall be properly bonded to the main protective earthing.
2.9.1	Properties of insulating materials	The transformer T1 employs an R/C (OBJY2) electrical insulation system Class F
4.5.0	Thermal requirements	<p>The component was evaluated for use at 60 °C ambient.</p> <p>The following components should be given special consideration during end-use Heating test because of temperatures achieved during component level testing:</p> <p><u>Component:</u> <u>Maximum temperature Achieved</u></p> <p>T1 winding 110,2 °C (60 °C ambient).</p>
4.6.0	Openings in enclosure	The power supply will require fire and electrical enclosure.
5.2	Electric strength	The maximum working voltage present is 570 V peak, 314 V RMS. The electric strength tests for the Power Supply should be based on this value.

ADDITIONAL INFORMATION

DESCRIPTION OF EQUIPMENT UNDER TEST

The product is a switch mode power supply with plastics enclosure.

Functional Diagram:



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	
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Clause	Requirement - Test	Result - Remark	Verdict
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1	GENERAL		—
1.1	SCOPE		—
1.1.1	Equipment covered by this standard	The product is within the scope of IEC 60950.	—
1.1.2	Additional requirements:		—
	Exposure to extreme temperatures, excessive dust, moisture or vibration; to flammable gases; to corrosive or explosive atmospheres	This equipment is intended to operate in a "normal" environment (Offices and homes).	—
	Electro medical equipment connected to the patient	This equipment is not an electro medical equipment intended to be physically connected to a patient.	—
	Equipment used in vehicles, ships or aircrafts, in tropical countries, or at elevations > 2000m	This equipment is intended to operate in a "normal" environment (Offices and homes).	—
	Equipment intended for use where ingress of water is possible	This equipment is intended to be used in applications where ingress of water is not regarded possible. The equipment is non-protected according to IEC 60529.	—
	IP-classification (IEC 60529) (IP)	Minimum IP 20.	—

1.2.2	OPERATING CONDITIONS		—
1.2.2.1	Normal load as described in Annex L or as close as possible to the most severe normal use	See Load description on page 2.	—
1.2.2.2	Rated operating time as assigned by the manufacturer	The manufacturer has not declared a rated operating time.	—
1.2.2.3	- 1.2.2.5 Continuous operation / Short-time operation/ Intermittent operation	The equipment is regarded to be for continuous operation.	—

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Clause	Requirement - Test	Result - Remark	Verdict

1.5	COMPONENTS		P
1.5.1	General	Ref. List of Critical Components.	P
1.5.2	Evaluation and testing of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard. Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950 and the relevant component standard. Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950.	P
	Dimensions of mains plug for direct plug-in equipment	Not a direct plug-in equipment.	N
	Additional torque (Nm) Pull (N)		N
1.5.3	Thermal controls	No thermal controls.	N
1.5.4	Transformers	Transformers used are suitable for their intended applications and comply with relevant parts of this standard and particularly Annex C, see Annex C – Transformers.	P
1.5.5	Interconnecting cables	No interconnecting cables.	N
1.5.6	Capacitors in primary circuits	X1 or X2 and Y1 or Y2 capacitors according to IEC 60384-14:1993.	P
1.5.7.1	- 1.5.7.3 Double or reinforced insulation bridged by components	No such components bridging double or reinforced insulation.	N
1.5.8	Components in equipment for IT power systems	The components were evaluated and passed the requirements.	P

1.5	LIST OF CRITICAL COMPONENTS		P
See enclosed test results.			

1.6	POWER INTERFACE		P
1.6.1	A.C. power distribution systems	TN and IT for 230 Vac	—
1.6.2	Input current	1,6A / 0,8 A	—
	Test voltage (at each rated voltage or at each end of a rated voltage range)	100 – 240 Vac 220 – 375 Vdc	—
	Measured current	Refer to enclosed test results	—
	Deviation	The input current measured is below 1,1 times of the rated current.	P

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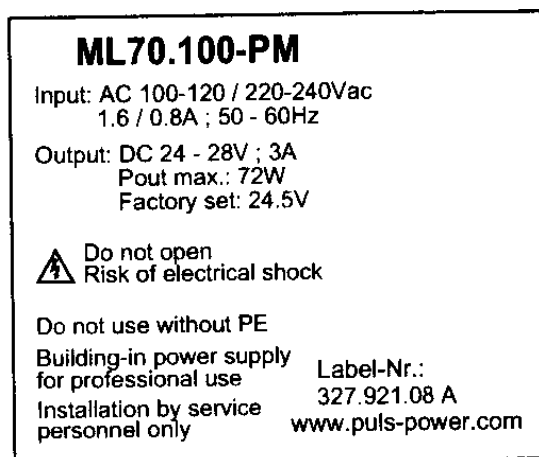
Clause	Requirement - Test	Result - Remark	Verdict
1.6.3	Voltage limit of hand-held equipment (max. 250V)	The equipment is not hand-held.	N
1.6.4	Neutral conductor	Neutral is insulated from earth with basic insulation throughout the equipment.	P
1.7	MARKINGS AND INSTRUCTIONS		P
1.7.1	Power rating	The required marking is located on the outside surface of the equipment.	P
	Rated voltage(s) or voltage range(s)	100-120 / 220-240Vac or alternatively 115/230 Vac	P
	Symbol for nature of supply for d.c.	The equipment is for a.c. supply and in addition for DC input voltage. The DC input is not marked to avoid confusion for the user. It is described in the installation instruction.	P
	Rated frequency or frequency range	The unit is specified for AC and DC. Only the AC input is marked to avoid confusion for the operator.	P
	Rated current	1,6 / 0,8 A	P
	Manufacturers name, trade mark or identification mark	PULS	P
	Type / model	ML70.xxx-yyy	P
	Symbol of Class II	The equipment is Class I.	N
	Other symbols	The additional marking does not give rise to misunderstandings.	P
	Certification marks	Refer to copy of markings.	—
1.7.2	Safety instructions	Installation instructions are provided.	P
	Operating instructions	Installation instructions are provided.	P
1.7.3	Short duty cycles	The equipment is intended for continuous operation.	N
1.7.4	Supply voltage adjustment	Voltage selector 115 V or 230 V. The means of adjustment is a simple control on the front near the power rating marking.	P
1.7.5	Power outlets on the equipment	No standard power outlet.	N
1.7.6	Fuse identification	Fuse locations and markings: F101 is marked on the lay-out. The value and characteristic is described in the data sheet.	P
1.7.7	Wiring terminals	Refer below:	—
1.7.7.1	Protective earthing and bonding terminals	Terminal for connection of protective earthing conductor is marked with standard earth symbol (IEC 60417-2 No. 5019) near the terminal.	P

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Clause	Requirement - Test	Result - Remark	Verdict
1.7.7.2	Terminals for a.c. mains supply conductors	The terminal for the neutral conductor is marked with the capital letter "N".	P
1.7.8	Controls and indicators	Refer below:	—
1.7.8.1	Identification, location and marking	The function of controls affecting safety is obvious without knowledge of language etc.	P
1.7.8.2	Colors	For functional indication a LED lights when the equipment is operating.	P
1.7.8.3	Symbols	There are no mains (input) switches in the equipment.	N
1.7.8.4	Marking using figures	No controls in the sense of this clause.	N
1.7.9	Isolation of multiple power sources	Only one connection supplying hazardous voltages and energy levels to the equipment.	N
1.7.10	IT power system	The following information is given in the installation instruction: "This product is also designed for IT power distribution system with voltage 230V".	P
1.7.11	Thermostats and other regulating devices	No thermostats or other regulating devices.	N
1.7.12	Language	Instructions and markings shall be in a language acceptable for the country where the equipment is to be used.	P
1.7.13	Durability	The marking withstands required tests.	P
1.7.14	Removable parts	No removable parts.	N
1.7.15	Replaceable batteries	No lithium battery in the equipment.	N
	Language		N
1.7.16	Operator access with a tool	The unit is for built in use not operator accessible.	N
1.7.17	Equipment for restricted access locations	Equipment not intended for installation in RAL.	N

Clause	Requirement - Test	Result - Remark	Verdict
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Copy of the markings (include all relevant equipment markings):



2	PROTECTION FROM HAZARDS		P
2.1	PROTECTION FROM ELECTRIC SHOCK AND ENERGY HAZARDS		P
2.1.1	Protection in operator access areas	Refer below:	—
2.1.1.1	Access to energized parts	This is a component level power supply. Protection must be checked in the end product.	N
2.1.1.2	Battery compartments	No TNV circuits in the equipment.	N
2.1.1.3	Access to ELV wiring	No internal wiring at ELV.	N
2.1.1.4	Access to hazardous voltage circuit wiring	Built in Power Supply, not intended for direct access.	N
2.1.1.5	Energy hazards	The output from the power supply represents no energy hazard. See test results enclosed.	P
2.1.1.6	Manual controls	No shafts of knobs etc. at ELV or hazardous voltage.	N
2.1.1.7	Discharge of capacitors in the primary circuit	The capacitance of the input circuit is > 0,1µF. The measurements were performed in worst-case condition.	P
	Time-constant (s)	The time constant is < 1 sec. See enclosed test results.	P
2.1.2	Protection in service access areas	Checked by inspection, unintentional contact is unlikely during service operations.	P
2.1.3	Protection in restricted access locations	Equipment not intended for installation in RAL.	N

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Clause	Requirement - Test	Result - Remark	Verdict
2.2	SELV CIRCUITS		P
2.2.1	General requirements	SELV limits (at accessible parts) are not exceeded under normal condition and after a single fault.	P
2.2.2	Voltages under normal conditions	Within SELV limits. (See enclosed test results)	P
2.2.3	Voltage under fault conditions	Single fault conditions: <60 Vdc	P
2.2.3.1	- 2.2.3.3 Method used for separation	Method 1	P
2.2.4	Connection of SELV circuits to other circuits	SELV circuits are only connected to hazardous voltages in secondary circuits, but accessible parts do not exceed the limits of SELV in the event of a single failure of a component or shorting of functional insulation not complying with the requirements.	P
2.3	TNV CIRCUITS	2.3.1 – 2.3.5; No TNV circuits in the equipment.	N
2.4	LIMITED CURRENT CIRCUITS	2.4.1 – 2.4.3; No limited current circuits.	N
2.5	LIMITED POWER SOURCES	Unit meets requirements of NEC class II.	N
2.6	PROVISIONS FOR EARTHING AND BONDING	The built in equipment shall be properly bonded to the main protective earthing.	P
2.6.1	Protective earthing	The unit is for built in. The enclosure is not intended for operator contact: The enclosure is made of plastic.	P
	Warning label for service personnel. Warning label:	The following warning notice is written on the type label: "DO NOT USE WITHOUT PE".	P
2.6.2	Functional earthing	No functional earthing is provided.	N
2.6.3	Protective earthing and protective bonding conductors	Refer below:	—
2.6.3.1	Size of protective earthing conductors	Rated current of the circuit under test: 1,6 A. Terminal is rated for 0,5 – 2,5 mm ² / 20 – 12 AWG.	P
2.6.3.2	Size of protective bonding conductors	See clause 2.6.3.3	P
2.6.3.3	Resistance of earthing conductors and their terminations	From the earth terminal to the chassis : (see below)	P
	Test current	See enclosed test results.	P
2.6.3.4	Color of insulation	The built in Power Supply does not provide wiring (for earthing).	N
2.6.4	Terminals	Refer below:	—
2.6.4.1	Protective earthing and bonding terminals	Rated current of equipment: 1,6 A. Cross sectional area: 0,5 – 2,5 mm ² . / 20 – 12 AWG	P

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Clause	Requirement - Test	Result - Remark	Verdict
2.6.4.2	Separation of the protective earthing conductors from protective bonding conductors	Approved screwless terminal is used. See list of critical components.	P
2.6.5	Integrity of protective earthing	Refer below:	P
2.6.5.1	Interconnection of equipment	No interconnection of equipment.	N
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	There are no switches or over current protective devices in the protective earthing / bonding conductors.	P
2.6.5.3	Disconnection of protective earth	The Power Supply is for built in use.	N
2.6.5.4	Parts that can be removed by an operator	No operator removable parts.	N
2.6.5.5	Parts removed during servicing	Protective earthed parts cannot be removed in a way, which impair safety.	P
2.6.5.6	Corrosion resistance	No risk of corrosion.	P
2.6.5.7	Screws for protective bonding	Screws are not used for protective bonding	N
2.6.5.8	Reliance on telecommunication network	Protective earthing does not rely on a telecommunication network.	N
2.7	OVERCURRENT AND EARTH FAULT PROTECTION IN PRIMARY CIRCUITS		P
2.7.1	Basic requirements	Protective devices are integrated in the equipment, see also Sub-clause 5.3.	P
	Instruction when protection relies on building installation	Protective devices are integrated in the equipment.	P
2.7.2	Faults not covered in 5.3	Considered.	P
2.7.3	Short-circuit backup protection	Adequate protective device.	P
2.7.4	Number and location of protective devices	There is a fuse F102 in live supply conductor.	P
2.7.5	Protection by several devices	Only one protective device. See Sub-clause 2.7.4.	N
2.7.6	Warning to service personnel	After operation of the protective device, the equipment is still under voltage if it is connected to an IT-power distribution system. A warning is required for service personnel. Norway does not require this warning. See also Sub-clause 2.7.4.	N
2.8	SAFETY INTERLOCKS	2.8.1 – 2.8.8; No safety interlocks.	N

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Clause	Requirement - Test	Result - Remark	Verdict
2.9	ELECTRICAL INSULATION		P
2.9.1	Properties of insulating materials	Neither natural rubber, materials containing asbestos nor hygroscopic materials are used as insulation. No driving belts or couplings used.	P
2.9.2	Humidity conditioning	Humidity treatment performed for 48 hours at 93%, 30°C (see enclosed test results)	P
2.9.3	Requirements for insulation	The insulation complies with sub-clauses 4.5.1, 5.2 and 2.10.	P
2.9.4	Insulation parameters	Application of insulation and working voltage are considered.	P
2.9.5	Categories of insulation	Insulation is considered to be functional, basic, supplementary, reinforced or double insulation.	P
2.10	CLEARANCES, CREEPAGE DISTANCES AND DISTANCES THROUGH INSULATION	See enclosed test results	P
	Nominal voltage	> 150V ≤ 300V	—
	Pollution degree	II	—
	CTI rating	PCB: III	—
		Other parts: Transformer III	—
2.10.1	General	Considered, see the following clauses:	—
2.10.2	Determination of working voltage	Considered.	P
2.10.3	Clearances	See table 2.10.3	P
2.10.3.1	General	Refer below:	—
	10mm air gap between hazardous voltage and accessible conductive parts of enclosure		N
	2mm air gap between hazardous voltage and earthed accessible conductive parts of enclosure	Not applicable.	N
2.10.3.2	Clearances in primary circuits	See table 2.10.3 enclosed	P
2.10.3.3	Clearances in secondary circuits	Only functional insulation in secondary circuits, ref. 5.2.	N
2.10.3.4	Measurements of transient levels	Measurement not relevant.	N
2.10.4	Creepage distances	See table 2.10.4 enclosed	P
2.10.5	Solid insulation	Refer below:	P

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Clause	Requirement - Test	Result - Remark	Verdict
2.10.5.1	Minimum distance through insulation	See table enclosed	P
2.10.5.2	Thin sheet material	See table enclosed	P
2.10.5.3	Printed boards	PCB does not serve as insulation barrier.	N
2.10.5.4	Wound components	Interleaved insulation complies with 2.10.5.2	P
	Two wires in contact inside component		N
2.10.6	Coated printed boards		N
2.10.6.1	General	Refer below:	—
2.10.6.2	Sample preparation and preliminary inspection		N
2.10.6.3	Thermal cycling		N
2.10.6.4	Thermal ageing		N
2.10.6.5	Electric strength test		N
2.10.6.6	Abrasion resistance test		N
2.10.7	Enclosed and sealed parts	For optical insulator, see Appendix – Optical Electronic Devices.	P
2.10.8	Spacing filled by insulating compound	For optical insulator, see Appendix – Optical Electronic Devices.	P
2.10.9	Component external terminations	See Sub-clauses 2.10.1 up to and including 2.10.4.	P
2.10.10	Insulation with varying dimensions	No such transformer used.	N
3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	GENERAL		P
3.1.1	Current rating and over current protection	Adequate cross sectional areas on internal wiring. (The PCB traces were treated as internal wires to satisfy interpretation of some NCB.)	P
3.1.2	Protection against mechanical damage	Wire ways are smooth and free from edges. Wires are adequately fixed to prevent excessive strain on wire and terminals and avoiding damage to the insulation of the conductors.	P
3.1.3	Securing of internal wiring	There is no internal wiring within the Power Supply.	N
3.1.4	Insulation of conductors	There is no internal wiring within the Power Supply.	N
3.1.5	Beads and ceramic insulators	No beads or similar ceramic insulators on conductors.	N

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Clause	Requirement - Test	Result - Remark	Verdict
3.1.6	Screws for electrical contact pressure	No using of screws for electrical connections	N
3.1.7	Non-metallic materials in electrical connections	No contact pressure through insulating material.	P
3.1.8	Self-tapping and spaced thread screws	Thread-cutting or space thread screws are not used for electrical connections.	N
3.1.9	Termination of conductors	Terminations cannot become displaced so that clearances and Creepage distances can be reduced.	P
	10N force test		P
3.1.10	Sleeving on wiring	There is a sleeving on the earthing conductor within the unit (E201). Sleeving can only be removed by breaking or cutting. Sleeving is min. 0,4 mm thick For the transformer construction (tubed outlets) see list of safety critical components.	P
3.2	CONNECTION TO A.C. MAINS SUPPLIES		P
3.2.1	Means of connection	Built in Power Supply with approved screwless terminal (see list of safety critical components).	P
3.2.2	Multiple supply connections	Only one supply connection.	N
3.2.3	Permanently connected equipment		N
3.2.4	Appliance inlets	No appliance inlet is used.	N
3.2.5	Power supply cords	Power supply cord is not provided (built in Power Supply).	N
3.2.6	Cord anchorages and strain relief	Equipment is not provided with an appliance inlet.	N
3.2.5	Mass of equipment, pull		N
	Longitudinal displacement $\leq 2\text{mm}$		N
3.2.7	Protection against mechanical damage	No sharp points or cutting edges on the equipment surfaces.	P
3.2.8	Cord guards	The equipment is neither hand-held nor intended to be moved during operation.	N
	D = (mm)		N
	Test with mass of (g)		N
	Radius of curvature of cord		N
3.2.9	Supply wiring space	The supply wiring space is satisfactory.	P

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Clause	Requirement - Test	Result - Remark	Verdict

3.3	WIRING TERMINALS FOR CONNECTION OF EXTERNAL CONDUCTORS		P
3.3.1	Wiring terminals	Screwless terminal is used. See list of safety critical components.	P
3.3.2	Connection of non-detachable power supply cords		N
3.3.3	Screw terminals	Approved screwless terminal is used.	N
3.3.4	Conductor sizes to be connected	0,5 - 2,5 mm ² or 20 AWG -12 AWG	P
3.3.5	Wiring terminal sizes	0,5 - 2,5 mm ² or 20 AWG -12 AWG	P
3.3.6	Wiring terminal design	Screwless terminal clamp the conductor between metal surfaces.	P
3.3.7	Grouping of wiring terminals		P
3.3.8	Stranded wire	Tested, in compliance with the standard. Due to the plastic enclosure the test was passed.	P

3.4	DISCONNECTION FROM THE A.C. MAINS SUPPLY	The unit is for built in use and does not provide a disconnect device.	N
3.4.1	General requirement	See Sub-clause 3.4.2.	—
3.4.2	Disconnect devices	The unit is a built in Power Supply and does not provide a disconnect device.	N
	Contact separation		N
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N
3.4.4	Parts which remain energized		N
3.4.5	Switches in flexible cords		N
3.4.6	Single-phase equipment		N
3.4.7	Three-phase equipment	Single phase equipment.	N
3.4.8	Switches as disconnect devices	No switch as disconnect device.	N
3.4.9	Plugs as disconnect devices		N
3.4.10	Interconnected equipment	No interconnections using hazardous voltages.	N
3.4.11	Multiple power sources	One power source only.	N

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Clause	Requirement - Test	Result - Remark	Verdict

3.5	INTERCONNECTION OF EQUIPMENT		P
3.5.1	General requirements	Considered.	—
3.5.2	Types of interconnection circuits	SELV circuit or limited current circuit.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnections.	N

4	PHYSICAL REQUIREMENTS		P
4.1	Stability	Refer below:	—
	Angle of 10°		N
	Test: force (20% of the weight of the unit, max. 250N)	The unit is not floor standing.	N
	Test: force (800N)	The unit is not floor standing.	N

4.2	MECHANICAL STRENGTH		P
4.2.1	General	Considered.	P
4.2.2	Steady force test, 10N	No hazard, ref. to test results enclosed.	P
4.2.3	Steady force test, 30N	No parts of an enclosure in operator access area.	N
4.2.4	Steady force test, 250N	No external enclosure.	N
4.2.5	Impact test	Refer below:	—
	Fall test	Power supply for building-in.	N
	Swing test	Power supply for building-in.	N
4.2.6	Drop test	Drop test not applicable.	N
4.2.7	Stress relief	Test is carried out at 100 °C / 7h. No risk of shrinkage or distortion on enclosures due to release of internal stresses.	P
4.2.8	Cathode ray tubes	CRT(s) not used in the equipment.	N
4.2.9	High pressure lamps	No high-pressure lamps in the equipment.	N
4.2.10	Wall or ceiling mounted equipment	The unit is intended to be mounted on a DIN Rail system. The enclosure is not a fire or electrical enclosure. Therefore the units are not intended and not allowed to be mounted on a wall without additional precaution.	N

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Clause	Requirement - Test	Result - Remark	Verdict
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4.3	DESIGN AND CONSTRUCTION		P
4.3.1	Edges and corners	All edges and corners are rounded and/or smoothed.	P
4.3.2	Handles and manual controls	Loosening of any knobs, handles or levers will not result in any hazard. The knobs to fix the input wire on the input terminal were considered.	P
4.3.3	Adjustable controls	Setting of the supply voltage is only intended to be done by the service engineer.	N
4.3.4	Securing of parts	No loosening of parts impairing Creepage distances or clearances is likely to occur.	P
4.3.5	Connection of plugs and sockets	SELV and TNV connectors do not comply with IEC 60320 or IEC 60083.	N
4.3.6	Direct plug-in equipment	Not intended to plug directly into a wall socket-outlet.	N
	Torque (Nm)		N
4.3.7	Heating elements in earthed equipment	No heating elements provided.	N
4.3.8	Batteries	No batteries in the equipment.	N
4.3.9	Oil and grease	Insulation is not exposed to oil, grease etc.	N
4.3.10	Dust, powders, liquids and gases	The equipment does not generate ionizing radiation or use a laser, and does not contain flammable liquids or gases.	N
4.3.11	Containers for liquids or gases	No containers for liquids or gases in the equipment.	N
4.3.12	Flammable liquids	The equipment does not contain flammable liquid.	N
	Quantity of liquid		N
	Flash point		N
4.3.13	Radiation	No radiation in the sense of this clause is generated.	N

4.4	PROTECTION AGAINST HAZARDOUS MOVING PARTS		N
4.4.1	General		N
4.4.2	Protection in operators access areas	No moving parts.	N
4.4.3	Protection in restricted access locations	Not intended for installation in RAL.	N
4.4.4	Protection in service access areas	Unintentional contact is not likely in service access areas.	N

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4.5	THERMAL REQUIREMENTS		P
4.5.1	Temperature rises	No thermostats temp. Limiters or thermal cutouts. Temperatures under normal condition do not exceed required limits.	P
4.5.2	Resistance to abnormal heat	See enclosed test results.	P

4.6	OPENINGS IN ENCLOSURES	Power supply for building-in. Electrical enclosure not provided.	N
4.6.1	Top and side openings	Refer below:	N
	Top openings	The enclosure is not intended to be an electrical enclosure. For dimensions see safety critical component list.	N
	Dimension	mm	N
	Front, side and rear openings		N
	Dimension	mm	N
4.6.2	Bottoms of fire enclosures		N
4.6.3	Doors or covers in fire enclosures	No doors or covers in fire enclosure.	N
4.6.4	Openings in transportable equipment	The unit is not regarded as transportable equipment.	N
4.6.5	Adhesives for constructional purposes	No barrier secured by adhesive inside enclosure.	N
	Conditioning temperature / time	°C / week(s).	N

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Clause	Requirement - Test	Result - Remark	Verdict
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4.7	RESISTANCE TO FIRE		P
4.7.1	Reducing the risk of ignition and spread of flame	Method 1 is used.	P
4.7.2	Conditions for a fire enclosure	Component power supply for building-in, fire enclosure must be considered for the end product.	N
4.7.2.1	Parts requiring a fire enclosure	The fire enclosure is required to cover all parts.	N
4.7.2.2	Parts not requiring a fire enclosure	The fire enclosure is required to cover all parts.	N
4.7.3	Materials	Components and materials have adequate flammability classification. Refer to "List of Critical Components".	P
4.7.3.1	General	Considered.	P
4.7.3.2	Materials for fire enclosure		N
4.7.3.3	Materials for components and other parts outside fire enclosures	Equipment for building in must be considered in the end product.	N
4.7.3.4	Materials for components and other parts inside fire enclosures	Other materials inside fire enclosure are minimum V-2 material.	P
4.7.3.5	Materials for air filter assemblies	No air filters in the equipment.	N
4.7.3.6	Materials used in high-voltage components	No parts exceeding 4kV.	N

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5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current	Refer below:	—
5.1.1	General	Test conducted in accordance with 5.1.2 to 5.1.7.	P
5.1.2	Equipment under test (EUT)	No interconnected equipment or multiple power sources.	N
5.1.3	Test circuit	Tested for connection to IT power distribution system (also relevant for TN or TT power distribution system).	P
5.1.4	Application of measuring instrument	Measuring instrument D1 is used.	P
5.1.5	Test procedure	According to the IEC 60990 standard	P
5.1.6	Test measurements	See enclosed test results.	P
5.1.7	Equipment with touch current exceeding 3,5mA	The touch current does not exceed 3,5mA.	N
5.1.8	Touch currents to and from telecommunication networks	Not connected to a telecommunication network.	N
5.1.8.1	Limitation of the touch current to a telecommunication network	Not connected to a telecommunication network.	N
	Test voltage		N
	Measured current		N
	Max. allowed current		N
5.1.8.2	Summation of touch currents from telecommunication networks	Not connected to a telecommunication network.	N

5.2	ELECTRIC STRENGTH	For details see enclosed test results.	P
5.2.1	- 5.2.2 General. Test procedure	Considered.	P

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5.3	ABNORMAL OPERATING AND FAULT CONDITIONS	See enclosed test results.	P
5.3.1	Protection against overload and abnormal operation		P
5.3.2	Motors	There are no motors in the equipment.	N
5.3.3	Transformers	See Annex C.	P
5.3.4	Functional insulation	Complies with a) and c).	P
5.3.5	Electromechanical components	No electromechanical components in secondary circuits.	N
5.3.6	Simulation of faults	See the enclosed fault condition tests.	P
5.3.7	Unattended equipment	No thermostats, temperature limiters or thermal cutouts.	N
5.3.8	Compliance criteria for abnormal operating and fault conditions	Refer below:	—
5.3.8.1	During the tests	No fire or molten metal occurred and no deformation of enclosure during the tests.	P
5.3.8.2	After the tests	No reduction of clearance and Creepage distances. Electric strength test is made on basic, supplementary and reinforced insulation. See enclosed test results.	P
6	CONNECTION TO TELECOMMUNICATION NETWORKS	No TNV circuits in the equipment.	N
ANNEX A	TESTS FOR RESISTANCE TO HEAT AND FIRE	All materials have suitable flame class, no testing required.	P
ANNEX B	MOTOR TESTS UNDER ABNORMAL CONDITIONS	No motors in the equipment.	N

*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.*