

TEST REPORT

IEC 60 950

Safety of information technology equipment

Report reference No.: T223-0152/02

Tested by (printed name and signature): Boštjan Glavič

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Approved by (printed name and signature): Gregor Schoss

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Date of issue: 2002-05-24

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 c. 2, 1000 Ljubljana, Slovenia

Testing location: Same as above

Applicant's Name: PULS Elektronische Stromversorgungen GmbH

Address: Arabellastraße 15,
..... 81925 München Germany

Test specification

Standard: IEC 60 950, 3rd Edition (1999), EN60950 : 2000

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 AS-Interface System Power Supply

Trademark: PULS or Brand name IFM

Model and/or type reference: SLA8.100 or alternatively SLA8.5xx (x stands for customer specific versions) or AC1218

Rating(s): Input: 100 – 120/ 220 – 240 Vac, 6,0/ 2,8 A, 50 – 60 Hz or alternatively 230 – 375 Vdc (in voltage switch position 230 Vac)

Output: 30 Vdc, 8 A

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 or alternatively 230 – 375 Vdc (voltage switch in 230 Vac position)
Operational Voltage:	85 – 132 Vac/ 184 – 264 Vac or alternatively 230 – 375 Vdc
Test Load:	30 Vdc, 8 A (output tolerance is 29,5 – 31,6 Vdc)
Air Conditions:	Natural cooling
Maximum ambient temperature:	60 °C
Tested for IT power systems:	Yes
IT testing, phase-phase voltage (V):	400 Vac
Class of equipment:	Class I
Mass of equipment (kg):	0,87 kg.
Dimensions of Equipment:	125 mm by 91 mm by 95 mm (without DIN Rail brackets)
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:	2002-04-23
Date(s) of performance of test:	2002-05-24

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 60950-1".

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.

History sheet			
Date	Name	Change	Revision No
2002-05-10	T223-0138/02	Initial test report issued.	
2002-05-24	T223-0152/02	Manufacturer changed the name of the product and alternatively name of the model.	1.0

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 and connectors are suitable for field wiring with the restriction of using ferrules. The unit is tested for connection to mains with a maximum 32 A branch circuit.
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, hazardous energy level.
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 F1
4.5.0	Thermal requirements	The following components should be given special consideration during end-use Heating test because of temperatures achieved during component level testing: <u>Component:</u> <u>Maximum temperature Achieved</u> T1 winding 108,2 °C (60 °C ambient).
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 420 V peak, 309 V RMS (with DC input voltage).The electric strength tests for the Power Supply should be based on this value.

ADDITIONAL INFORMATION	
DESCRIPTION OF EQUIPMENT UNDER TEST	
Switch mode power supply with ASI bus connection.	
	NAME AND ADDRESS OF PRODUCTION-SITES (FACTORIES):
	See page 1.
INFORMATION ABOUT THE STANDARDS / DOCUMENTS CONSIDERED	
	IEC 60950, 3 rd Edition: 1999
	EN 60950, 3 rd 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 101A, December 2001
LIST OF APPENDIXES / ENCLOSURES TO THE TEST REPORT	
	Appendix EN 60950: 2000 Page 64
	GROUP DIFFERENCES Page 74
	Australian deviations (including New Zealand) Page 77
	Canadian deviations. Page 86
	Israeli deviations Page 91
	Japanese deviations. Page 92
	Korean deviations Page 96
	Norwege deviations Page 96
	Sweden deviations Page 98
	US Deviations Page 99

IEC 60950

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 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.	—

IEC 60950			
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 and list of critical components.	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	Certified capacitors connected between line and earth, ref. List of Critical Components.	P

1.5	LIST OF CRITICAL COMPONENTS		P
The list of safety critical components is located in the test section. The components were reviewed for the appropriate rating, the appropriate approvals and for the appropriate use.			

1.6	POWER INTERFACE		P
1.6.1	A.C. power distribution systems	TN and IT	—
1.6.2	Input current	Rated 6,0/ 2,8 A	—
	Test voltage (at each rated voltage or at each end of a rated voltage range)	100 – 120 Vac / 220 – 240 Vac 230-375 Vdc	—
	Measured current	Refer to enclosed test results	—
	Deviation	The input current measured is below 1,1 times of the rated current.	P

IEC 60950

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 / 220-240 Vac	P
	Symbol for nature of supply for d.c.	The equipment is for a.c. supply. The dc supply is described in the manual, but not marked on the outside to avoid confusion.	N
	Rated frequency or frequency range	50 – 60 Hz	P
	Rated current	6,0/ 2,8 A	P
	Manufacturers name, trade mark or identification mark	PULS or brand name : IFM	P
	Type / model		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	Must be checked in the end product.	N
	Operating instructions	Must be checked in the end product.	N
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 is not operator accessible. The means of adjustment is a simple control on the front side. An instruction is applied to the equipment.	P
1.7.5	Power outlets on the equipment	No standard power outlet.	N
1.7.6	Fuse identification	Fuse locations and markings: described in the manual.	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. 5017) near the terminal.	P
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

IEC 60950

Clause	Requirement - Test	Result - Remark	Verdict
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 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 should be given in the installation instruction: "This product is also designed for IT power distribution system ".	—
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.	—
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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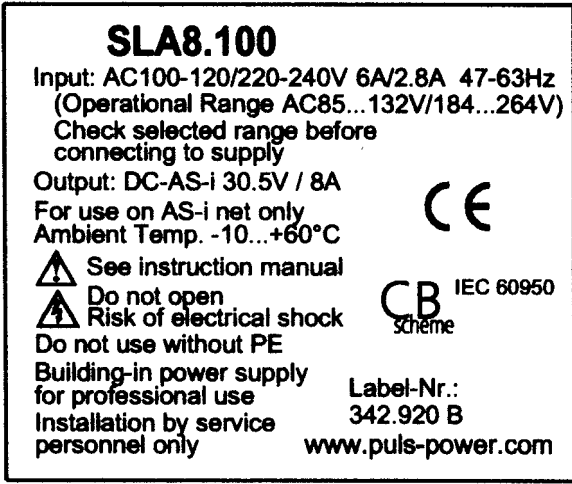
Copy of the markings (include all relevant equipment markings):

P

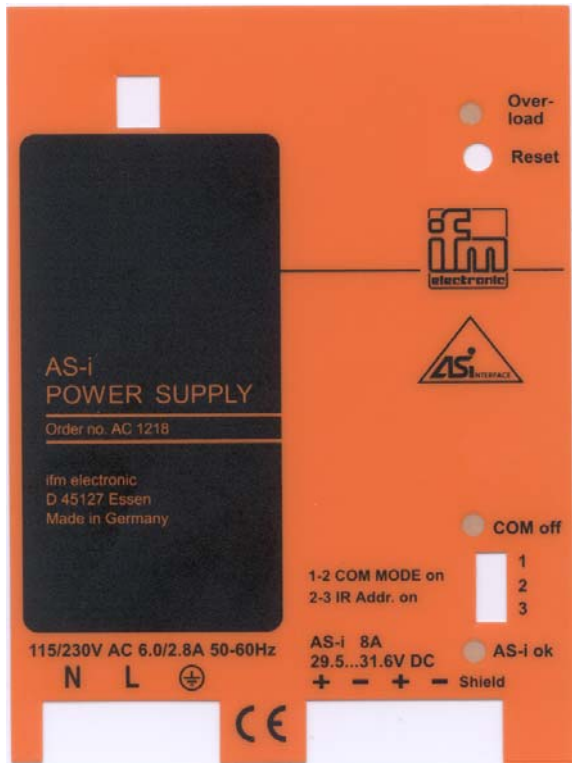
Front Label SLA8.100



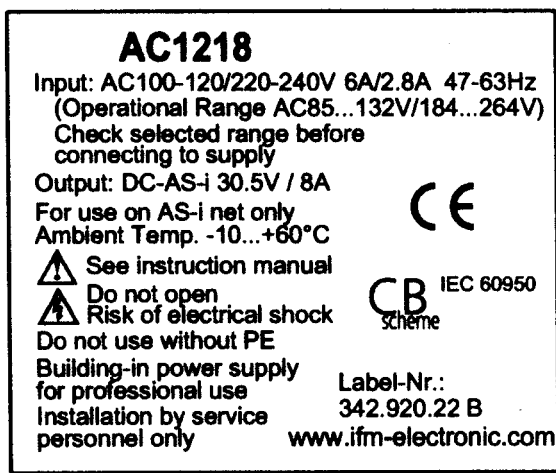
Rating Label SLA8.100



Front Label AC1218



Rating Label AC1218



IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict
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	Built in Power Supply	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		N
2.1.1.5	Energy hazards	The output from the power supply represents an energy hazard. Must be considered for the end product. See test results enclosed.	N
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 > 0,1 μ F. The measurements were performed in worst-case condition.	P
	Time-constant (s)	The time constant is < 1 sec.	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
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 operational 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

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict
2.5	LIMITED POWER SOURCES	No limited power source.	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 properly bonded.	P
	Warning label for service personnel. Warning label:		N
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	Power supply cord not provided with the equipment.	N
2.6.3.2	Size of protective bonding conductors	The bonding is done via the PCB board with a screw M4 from PCB to enclosure.	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	See list of safety critical components.	P
2.6.4.2	Separation of the protective earthing conductors from protective bonding conductors	Approved terminal used.	P
2.6.5	Integrity of protective earthing	Refer below:	—
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.	N
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.	N
2.6.5.7	Screws for protective bonding	Adequate connection of protective bonding.	P

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict
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	Single fuse in identified Line.	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	Single fuse in identified Line. In case of one fault the equipment might still be under power in case of an IT system. The unit is for built in use. A warning mark for the service engineer was not considered as required and might be necessary within the end product.	N
2.8	SAFETY INTERLOCKS	2.8.1 – 2.8.8; No safety interlocks.	N
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 48h at 91-95%.	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	P
	Pollution degree	II	—

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict
	CTI rating	PCB: III	—
		Other parts: III	—
2.10.1	General	Considered, see the following clauses:	—
2.10.2	Determination of working voltage	Considered.	N
2.10.3	Clearances	See table 2.10.3	N
2.10.3.1	General	Refer below:	—
	10mm air gap between hazardous voltage and accessible conductive parts of enclosure	Not applicable.	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.	P
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:	—
2.10.5.1	Minimum distance through insulation	See table enclosed	P
2.10.5.2	Thin sheet material	Ref. Annex C and table 2.10.5	P
2.10.5.3	Printed boards	Thickness of the main PCB board is > 0,4 mm.	P
2.10.5.4	Wound components		P
	Two wires in contact inside component		N
2.10.6	Coated printed boards	No special coating in order to reduce distances.	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

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict
2.10.7	Enclosed and sealed parts	For optical insulators, see Appendix – Optical Electronic Devices.	P
2.10.8	Spacing filled by insulating compound	For optical insulators, 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	No internal wiring.	N
3.1.2	Protection against mechanical damage	No internal wiring.	N
3.1.3	Securing of internal wiring	No internal wiring.	N
3.1.4	Insulation of conductors	No internal wiring.	N
3.1.5	Beads and ceramic insulators	No beads or similar ceramic insulators on conductors.	N
3.1.6	Screws for electrical contact pressure	Electrical screw connection is only connecting protective earth to chassis. Metal screw engages more than 2 threads. Screws made of insulating material are not used where electrical connections, including protective earthing, are involved.	P
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	No internal conductors.	N
	10N force test		N
3.1.10	Sleeving on wiring	No internal wiring (transformer outlets were not considered as internal wiring).	N

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict

3.2	CONNECTION TO A.C. MAINS SUPPLIES	Built in product with appropriate and approved terminals.	P
3.2.1	Means of connection	Built in Power Supply with approved connector (see list of safety critical components).	P
3.2.2	Multiple supply connections	Only one supply connection.	N
3.2.3	Permanently connected equipment	The equipment is not intended for permanent connection to the mains.	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)		—
	Test with mass of (g)		—
	Radius of curvature of cord		—
3.2.9	Supply wiring space	The supply wiring space is satisfactory.	P

3.3	WIRING TERMINALS FOR CONNECTION OF EXTERNAL CONDUCTORS		P
3.3.1	Wiring terminals	Screw terminals are used.	P
3.3.2	Connection of non-detachable power supply cords	Adequate connection, checked by inspection.	P
3.3.3	Screw terminals	Screws do not clamp the external supply wiring.	P
3.3.4	Conductor sizes to be connected	See list of safety critical components.	P
3.3.5	Wiring terminal sizes	05-6 mm ²	P
3.3.6	Wiring terminal design	Screw terminal	P
3.3.7	Grouping of wiring terminals		P
3.3.8	Stranded wire	The terminals are suitable for field wiring with the restriction of using ferrules.	N

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict
3.4	DISCONNECTION FROM THE A.C. MAINS SUPPLY	Built in power supply without 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		N
3.4.11	Multiple power sources	One power source only.	N
3.5	INTERCONNECTION OF EQUIPMENT		P
3.5.1	General requirements	Considered.	P
3.5.2	Types of interconnection circuits	SELV 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	Refer below	—
4.2.2	Steady force test, 10N	No hazard, ref. To test results enclosed.	P
4.2.3	Steady force test, 30N	No enclosure located in operator access area.	N

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict
4.2.4	Steady force test, 250N	No external enclosure.	N
4.2.5	Impact test		—
	Fall test	This is a component level power supply. Outer surfaces intended to form outer enclosure must be tested in end product.	N
	Swing test	This is a component level power supply. Outer surfaces intended to form outer enclosure must be tested in end product.	N
4.2.6	Drop test	Drop test not applicable.	N
4.2.7	Stress relief	Enclosure consists out of metal.	N
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	Not intended to be mounted on a wall or ceiling.	N
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	No knobs, grips, handles, lever etc.	N
4.3.3	Adjustable controls	Setting of the voltage only for the service engineer (built in power supply)	P
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 connectors do not comply with IEC 60320 or IEC 60083.	P
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

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict
	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	No 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		N
4.4.4	Protection in service access areas		N
4.5	THERMAL REQUIREMENTS		P
4.5.1	Temperature rises	No thermostats temp. Limiters or thermal cutouts.	P
4.5.2	Resistance to abnormal heat	See enclosed test results.	P
4.6	OPENINGS IN ENCLOSURES	Unit does not provide fire and electrical enclosure.	N
4.6.1	Top and side openings	Refer below:	N
	Top openings	Openings in top are < 5mm (including diagonal) in any dimension:	N
	Dimension	3,5 mm by 3,5 mm	N
	Front, side and rear openings	No front, side or rear openings.	N
	Dimension		N
4.6.2	Bottoms of fire enclosures	Bottom of the unit does not fulfill requirements for fire and electrical enclosure. There are openings 3,5 mm by 3,5 mm in the bottom.	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		N

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict

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	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

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 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

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict
	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
5.3	ABNORMAL OPERATING AND FAULT CONDITIONS		P
5.3.1	Protection against overload and abnormal operation	See enclosed test results.	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.	N
ANNEX B	MOTOR TESTS UNDER ABNORMAL CONDITIONS	No motors in the equipment.	N

IEC 60950			
Clause	Requirement - Test	Result - Remark	Verdict

ANNEX C	TRANSFORMERS		P
	Position	Primary to Secondary	—
	Manufacturer's name	PULS	—
	Manufacturer's designation	T6	—
	Rated values		—
C.1	Short and Overload test	See Simulation of Faults enclosed	P
	Ferro-resonant transformer		N
	Type of thermal cut-out	No	N
C.2	Insulation	Transformer TR6 provides reinforced insulation between primary and secondary windings. The insulation fulfil the requirements in 2.10 and relevant tests of 5.2.2	P
	Precautions taken	Insulation is provided between windings consisting of sheet insulation extending beyond the end turns of each layer.	P
	Retaining of end turns of all windings	Secured to the soldering pins with wrapping.	P
	Earthing test at 25 A		N
Comments	The tested transformer is in compliance with the attached specification.		