INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
COMMISSION ELECTROTECHNIQUE INTERNATIONALE (CEI)

Ref. Certif. No.
DK-10708

IEC SYSTEM FOR CONFORMITY TESTING AND CERTIFICATION OF ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTÈME CEI D'ESSAIS DE CONFORMITÉ ET DE CERTIFICATION DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product *Produit*	**Switch Mode Power Supply (DIN Rail)**
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 Elektronik GmbH Niederwaldstrasse 3 D-09123 Chemnitz, Germany**
Name and address of the factory *Nom et adresse de l'usine*	**PULS EP k.s. ul. Alfonse Muchy 5473 430 01 Chomutov, Czech Republic**
Rating and principal characteristics *Valeurs norminales et caractéristiques principales*	**See appendix, Class I**
Trade mark (if any) *Marque de fabrique (si elle existe)*	**-NONE-**
Model/type Ref. *Ref. de type*	**See appendix**
Additional information (if necessary) *Information complémentaire (si nécessaire)*	**See appendix Test done according to SMT agreement**
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 60950-1:2001** **EDITION** **1st**
as shown in the Test Report Ref. No. which form part of this certificate *comme indiqué dans le Rapport d'essais numéro de référence qui constitue une partie de ce certificat*	**E137006-A21-CB-1 dated 2007-01-29**

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

Date **2007-02-01**

Signature

Jan-Erik Storgaard
Certification manager

UL International Demko A/S
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An Affiliate of
Underwriters Laboratories Inc.®

Internal Ref.:
Paul Zawatson

Appendix to
CB–Certificate No. DK–10708

The Certificate covers the following:

Model QS20.KK1-XX:
Input: 100-240VAC, 5.4-2.4A, 50-60Hz
Output:
-Model QS20.241-XX: 24-28VDC, 20-17.1A continuous*
-Model QS20.361-XX: 36-42VDC, 13.3-11.4A continuous*.
-Model QS20.481-XX: 48-55DC, 10-8.7A continuous*

Model QS20.KK4-XX and QS20.KK6-XX:
Input: 200-240VAC, 4.8A, 50-60Hz.
Output:
-Model QS20.244/246-XX: 24-28VDC, 20-17.1A continuous*
-Model QS20.364/366-XX: 36-42VDC, 13.3-11.4A continuous*
-Model QS20.484/486-XX: 48-55DC, 10-8.7A continuous*

*For repetitive pulse load max. 150% of rated output power. (additional information refer to enclosure 7-12).

Type key: KK represents the output voltage and can be 24 up to 55; Z can be 1, 4, 6. X can be any character or number, not safety relevant.

Herlev, 2007-02-01

Karina Christiansen
Certification Manager

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INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
COMMISSION ELECTROTECHNIQUE INTERNATIONALE (CEI)

Ref. Certif. No.
DK-10709

IEC SYSTEM FOR CONFORMITY TESTING AND CERTIFICATION OF ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTÈME CEI D'ESSAIS DE CONFORMITÉ ET DE CERTIFICATION DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product *Produit*	**Switch Mode Power Supply (DIN Rail)**
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 Elektronik GmbH** **Niederwaldstrasse 3** **D-09123 Chemnitz, Germany**
Name and address of the factory *Nom et adresse de l'usine*	**PULS EP k.s.** **ul. Alfonse Muchy 5473** **430 01 Chomutov, Czech Republic**
Rating and principal characteristics *Valeurs norminales et caractéristiques principales*	**See appendix, Class I**
Trade mark (if any) *Marque de fabrique (si elle existe)*	**-NONE-**
Model/type Ref. *Ref. de type*	**See appendix**
Additional information (if necessary) *Information complémentaire (si nécessaire)*	**See appendix** **Test done according to SMT agreement**
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 60950-1:2001** **1st**
as shown in the Test Report Ref. No. which form part of this certificate *comme indiqué dans le Rapport d'essais numéro de référence qui constitue une partie de ce certificat*	**E137006-A21-CB-1 dated 2007-01-29**

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

Date **2007-02-01**

Signature

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Internal Ref.:
Paul Zawatson

Appendix to
CB–Certificate No. DK–10709

The Certificate covers the following:

Model QS20.KK1-XX:
110-300VDC, 4.8-1.8A.
Output:
-Model QS20.241-XX: 24-28VDC, 20-17.1A continuous*
-Model QS20.361-XX: 36-42VDC, 13.3-11.4A continuous*.
-Model QS20.481-XX: 48-55DC, 10-8.7A continuous*

Model QS20.249-XX:
Input: 370VDC, 1.4A.
Output:
24-28VDC, 20-17A continuous*.

*For repetitive pulse load max. 150% of rated output power. (additional information refer to enclosure 7-12).

Type key: KK represents the output voltage and can be 24 up to 55; Z can be 1, 4, 6. X can be any character or number, not safety relevant.

Herlev, 2007-02-01

Karina Christiansen
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COVER PAGE FOR TEST REPORT

Test Item Description:	Switch Mode Power Supply (DIN Rail)
Model/Type Reference:	QS20.KKZ-XX and QS20.249-XX: where KK represents the output voltage and can be 24 up to 55; Z can be 1, 4, 6. X can be any character or number, not safety relevant.
Rating(s):	Model QS20.KK1-XX: Input: 100-240VAC, 5.4-2.4A, 50-60Hz or 110-300VDC, 4.8-1.8A. Output: -Model QS20.241-XX: 24-28VDC, 20-17.1A continuous* -Model QS20.361-XX: 36-42VDC, 13.3-11.4A continuous*. -Model QS20.481-XX: 48-55DC, 10-8.7A continuous* Model QS20.KK4-XX and QS20.KK6-XX: Input: 200-240VAC, 4.8A, 50-60Hz. Output: -Model QS20.244/246-XX: 24-28VDC, 20-17.1A continuous* -Model QS20.364/366-XX: 36-42VDC, 13.3-11.4A continuous* -Model QS20.484/486-XX: 48-55DC, 10-8.7A continuous* Model QS20.249-XX: Input: 370VDC, 1.4A. Output: 24-28VDC, 20-17A continuous*. *For repetitive pulse load max. 150% of rated output power. (additional information refer to enclosure 7-12).
Standards:	IEC 60950-1:2001, First Edition
Applicant Name and Address:	PULS ELEKTRONISCHE STROMVERSORGUNGEN GMBH ARABELLASTR 15 81925 MUNICH GERMANY
Factory Location(s):	PULS EP K.S. UL. ALFONSE MUCHY 5473 430 01 CHOMUTOV, CZECH REPUBLIC

This Report includes the following parts, in addition to this cover page:

1. Specific Technical Criteria
2. Clause Verdicts
3. Critical Components
4. Test Results
5. Enclosures
    a. National Differences
    b. Marking Plate
    c. Photographs
    d. Schematics + PWB
    e. Manuals
    f. Miscellaneous
    g. Licenses

All applicable tests according to the above standard(s) have been carried out.
Test results are valid only for the tested equipment.
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Written permission from UL International Demko A/S is required if the test report is copied in part.

Test Report issued under the responsibility of:

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TEST REPORT
IEC 60950-1,First Edition
Information technology equipment-Safety
Part 1:General Requirements

Report Reference No ..... :	E137006-A21-CB-1	
Tested By ..... :	Thomas Weißbach	
Approved By ..... :	Michaela Zielke	
Supervised By ..... :	Paul Zawatson	
Date of issue ..... :	2007-01-29	

CB Testing Laboratory ..... :	UL International Demko A/S
Address ..... :	Lyskaer 8, 2730, Herlev, Denmark
Testing location/procedure ..... :	CBTL [ ] RMT [ ] SMT [x] TMP [ ] WMT [ ]
Testing Location/address ..... :	PULS ELEKTRONIK, GMBH, Niederwaldstraße 3, D-09123 Chemnitz, Germany
Applicant's name .....:	PULS ELEKTRONISCHE STROMVERSORGUNGEN GMBH
Address .....:	ARABELLASTR 15 81925 MUNICH GERMANY
Test specification:	
Standard ..... :	IEC 60950-1:2001, First Edition
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC60950_1B
Test Report Form originator ..... :	SGS Fimko Ltd
Master TRF ..... :	dated 2003-03

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

Test item description ..... :	Switch Mode Power Supply (DIN Rail)
Trade Mark ..... :	None
Model/Type reference ..... :	QS20.KKZ-XX and QS20.249-XX: where KK represents the output voltage and can be 24 up to 55; Z can be 1, 4, 6. X can be any character or number, not safety relevant.
Manufacturer ..... :	PULS ELEKTRONIK, GMBH, NIEDERWALDSTRAßE 3, D-09123 CHEMNITZ, GERMANY
Rating ..... :	Model QS20.KK1-XX: Input: 100-240VAC, 5.4-2.4A, 50-60Hz or 110-300VDC, 4.8-1.8A. Output: -Model QS20.241-XX: 24-28VDC, 20-17.1A continuous* -Model QS20.361-XX: 36-42VDC, 13.3-11.4A continuous*. -Model QS20.481-XX: 48-55DC, 10-8.7A continuous* Model QS20.KK4-XX and QS20.KK6-XX: Input: 200-240VAC, 4.8A, 50-60Hz. Output: -Model QS20.244/246-XX: 24-28VDC, 20-17.1A continuous* -Model QS20.364/366-XX: 36-42VDC, 13.3-11.4A continuous* -Model QS20.484/486-XX: 48-55DC, 10-8.7A continuous* Model QS20.249-XX: Input: 370VDC, 1.4A. Output: 24-28VDC, 20-17A continuous*. *For repetitive pulse load max. 150% of rated output power. (additional information refer to enclosure 7-12).

Summary of Testing:

No tests were conducted

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

Test item particulars :

Equipment mobility ..... :	for building-in
Operating condition ..... :	continuous
Mains supply tolerance (%) ..... :	AC Mains: +10%, -10%
Tested for IT power systems ..... :	Yes
IT testing, phase-phase voltage (V) ..... :	240
Class of equipment ..... :	Class I (earthed)
Mass of equipment (kg) ..... :	< 1kg
Protection against ingress of water ..... :	N/A

Possible test case verdicts:	
- 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)
Testing:	
Date(s) of receipt of test item .....:	2006-12-04
Date(s) of Performance of tests .....:	2006-11-24

General remarks:

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 Issuing testing laboratory.

"(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.

Refer to the Cover Page For Test Report for a list of all Factory Locations.

GENERAL PRODUCT INFORMATION:

Report Summary

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

Product Description

The product is a Switch Mode Power Supply for DIN-Rail mounting.

Model Differences

The models are technical identical except the following differences: - for details refer to enclosure 7-10

Additional Information

-

Technical Considerations

The product was submitted and tested for use at the maximum ambient temperature (Tma) permitted by the manufacturer’s specification of: 60°C

The means of connection to the mains supply is: Permanently connected (field wired)

The product is intended for use on the following power systems: TT, TN, IT

The normal mounting orientation is: Input downwards, output upwards. Other mounting orientations have been measured at a lower output current of 50%. Refer to heating test table for details.

Engineering Conditions of Acceptability

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

The following Production-Line tests are conducted for this product: Earthing Continuity, Electric Strength

The end-product Electric Strength Test is to be based upon a maximum working voltage of: 526Vrms, 560Vpk;

The following secondary output circuits are SELV: All outputs.

The power supply terminals and/or connectors are: Suitable for field wiring

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 OBJY2 insulation system with the indicated rating greater than Class A (105°C): T101 (Class F);

The following end-product enclosures are required: Mechanical, Fire, Electrical

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	**GENERAL**		Pass
1.5	Components		Pass
1.5.1	General		Pass
	Comply with IEC 60950 or relevant component standard		Pass
1.5.2	Evaluation and testing of components		Pass
1.5.3	Thermal controls		N/A
1.5.4	Transformers	T101, T103	Pass
1.5.5	Interconnecting cables		N/A
1.5.6	Capacitors in primary circuits ..... :	Refer to LOCC.	Pass
1.5.7	Double insulation or reinforced insulation bridged by components		Pass
1.5.7.1	General		N/A
1.5.7.2	Bridging capacitors		N/A
1.5.7.3	Bridging resistors		N/A
1.5.7.4	Accessible parts		Pass
1.5.8	Components in equipment for IT power systems		Pass
1.6	**Power interface**		Pass
1.6.1	AC power distribution systems		Pass
1.6.2	Input current		Pass
1.6.3	Voltage limit of hand-held equipment		N/A
1.6.4	Neutral conductor		Pass

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7	**Marking and instructions**		Pass
1.7.1	Power rating		Pass
	Rated voltage(s) or voltage range(s) (V) ..... :	Refer to the Rating information at the beginning of this Test Report.	Pass
	Symbol for nature of supply, for d.c. only ..... :	Not required for component.	N/A
	Rated frequency or rated frequency range (Hz) .... :	Refer to the Rating information at the beginning of this Test Report.	Pass
	Rated current (mA or A) ..... :	Refer to the Rating information at the beginning of this Test Report.	Pass
	Manufacturer's name or trademark or identification mark ..... :	Refer to Cover Page.	Pass
	Type/model or type reference ..... :	Refer to Cover Page.	Pass
	Symbol for Class II equipment only ..... :		N/A
	Other symbols ..... :		N/A
	Certification marks ..... :	UL/c-UL Recognition Mark	Pass
1.7.2	Safety instructions		N/A
1.7.3	Short duty cycles		N/A
1.7.4	Supply voltage adjustment ..... :	Equipment is auto-ranging.	N/A
1.7.5	Power outlets on the equipment ..... :		N/A
1.7.6	Fuse identification ..... :	Fuse(s) provided with voltage, current, and special fusing characteristic marking as applicable.	Pass
1.7.7	Wiring terminals		Pass
1.7.7.1	Protective earthing and bonding terminals ..... :	The earth terminal is marked with the standard earth symbol (60417-2-IEC-5019) near the terminal. (refer to enclosure 3-01)	Pass
1.7.7.2	Terminal for a.c. mains supply conductors		Pass
1.7.7.3	Terminals for d.c. mains supply conductors		N/A
1.7.8	Controls and indicators		N/A
1.7.8.1	Identification, location and marking ..... :		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.8.2	Colours ..... :		N/A
1.7.8.3	Symbols according to IEC 60417 ..... :		N/A
1.7.8.4	Markings using figures ..... :		N/A
1.7.9	Isolation of multiple power sources ..... :		N/A
1.7.10	IT power distribution systems		Pass
1.7.11	Thermostats and other regulating devices		N/A
1.7.12	Language ..... :	only english reviewed	-
1.7.13	Durability		N/A
1.7.14	Removable parts		N/A
1.7.15	Replaceable batteries		N/A
	Language ..... :		-
1.7.16	Operator access with a tool ..... :		N/A
1.7.17	Equipment for restricted access locations ..... :		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2	**PROTECTION FROM HAZARDS**		Pass
2.1	Protection from electric shock and energy hazards		Pass
2.1.1	Protection in operator access areas	To be considered in end-use application.	Pass
2.1.1.1	Access to energized parts	To be considered in end-use application.	N/A
	Test by inspection .....:		N/A
	Test with test finger .....:		N/A
	Test with test pin .....:		N/A
	Test with test probe .....:		N/A
2.1.1.2	Battery compartments .....:		N/A
2.1.1.3	Access to ELV wiring		N/A
	Working voltage (V); minimum distance (mm) through insulation .....:		-
2.1.1.4	Access to hazardous voltage circuit wiring		N/A
2.1.1.5	Energy hazards .....:		N/A
2.1.1.6	Manual controls		N/A
2.1.1.7	Discharge of capacitors in equipment		Pass
	Time-constant (s); measured voltage (V) .....:	Time constant less than 1 second.	-
2.1.2	Protection in service access areas		N/A
2.1.3	Protection in restricted access locations		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.2	**SELV circuits**		Pass
2.2.1	General requirements		Pass
2.2.2	Voltages under normal conditions (V) .....:	All accessible voltages are less than 42.4 Vp or 60 V dc and are classified as SELV.	Pass
2.2.3	Voltages under fault conditions (V).....:	Under fault conditions voltages never exceed 71V peak and 120Vdc and do not exceed 42.4V peak or 60V dc for more than 0.2 sec.	Pass
2.2.3.1	Separation by double insulation or reinforced insulation (method 1)		Pass
2.2.3.2	Separation by earthed screen (method 2)		N/A
2.2.3.3	Protection by earthing of the SELV circuit (method 3)		N/A
2.2.4	Connection of SELV circuits to other circuits.....:	SELV circuits are only connected to other secondary circuits. SELV circuit and all interconnected circuits separated from primary by reinforced insulation. The SELV circuit does not exceed the SELV limits under normal and fault conditions.	Pass

2.3	**TNV circuits**		N/A
2.3.1	Limits		N/A
	Type of TNV circuits.....:		-
2.3.2	Separation from other circuits and from accessible parts		N/A
	Insulation employed .....:		-
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed .....:		-
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed .....:		-
2.3.5	Test for operating voltages generated externally		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.4	**Limited current circuits**		N/A
2.4.1	General requirements		N/A
2.4.2	Limit values		N/A
	Frequency (Hz) .....:		-
	Measured current (mA) .....:		-
	Measured voltage (V) .....:		-
	Measured capacitance (mF).....:		-
2.4.3	Connection of limited current circuits to other circuits		N/A

2.5	**Limited power sources**		N/A
	Inherently limited output		N/A
	Impedance limited output		N/A
	Overcurrent protective device limited output		N/A
	Regulating network limited output under normal operating and single fault condition		N/A
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition		N/A
	Output voltage (V), output current (A), apparent power (VA): .....:		-
	Current rating of overcurrent protective device (A):		-

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.6	**Provisions for earthing and bonding**		Pass
2.6.1	Protective earthing	Protective earthing provided as one level of protection against electric shock. Unit is for builing-in.	Pass
2.6.2	Functional earthing		N/A
2.6.3	Protective earthing and protective bonding conductors		Pass
2.6.3.1	General	Equipment shall be properly bonded over earthing terminal at chassis	Pass
2.6.3.2	Size of protective earthing conductors		N/A
	Rated current (A), cross-sectional area (mm2), AWG.....:		-
2.6.3.3	Size of protective bonding conductors		N/A
	Rated current (A), cross-sectional area (mm2), AWG.....:		-
2.6.3.4	Resistance (Ohm) of earthing conductors and their terminations, test current (A).....:	40 A, 3mOhm	Pass
2.6.3.5	Colour of insulation.....:		N/A
2.6.4	Terminals		Pass
2.6.4.1	General		Pass
2.6.4.2	Protective earthing and bonding terminals		Pass
	Rated current (A), type and nominal thread diameter (mm).....:	M4 used at housing.	-
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N/A
2.6.5	Integrity of protective earthing		Pass
2.6.5.1	Interconnection of equipment		N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N/A
2.6.5.3	Disconnection of protective earth		N/A
2.6.5.4	Parts that can be removed by an operator		N/A
2.6.5.5	Parts removed during servicing		N/A
2.6.5.6	Corrosion resistance		Pass

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.7	Screws for protective bonding		Pass
2.6.5.8	Reliance on telecommunication network or cable distribution system		N/A
2.7	**Overcurrent and earth fault protection in primary circuits**		Pass
2.7.1	Basic requirements		Pass
	Instructions when protection relies on building installation		N/A
2.7.2	Faults not covered in 5.3	The protective device is properly sized and mounted.	Pass
2.7.3	Short-circuit backup protection		Pass
2.7.4	Number and location of protective devices.....:	One protective device in the "LIVE" phase .	Pass
2.7.5	Protection by several devices		N/A
2.7.6	Warning to service personnel.....:		N/A
2.8	**Safety interlocks**		N/A
2.8.1	General principles		N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches and relays		N/A
2.8.7.1	Contact gaps (mm).....:		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.9	**Electrical insulation**		Pass
2.9.1	Properties of insulating materials		Pass
2.9.2	Humidity conditioning	96h	Pass
	Humidity (%).....:	93	-
	Temperature (°C) .....:	29	-
2.9.3	Grade of insulation		Pass

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.10	**Clearances, creepage distances and distances through insulation**		Pass
2.10.1	General		Pass
2.10.2	Determination of working voltage		Pass
2.10.3	Clearances		Pass
2.10.3.1	General		Pass
2.10.3.2	Clearances in primary circuit		Pass
2.10.3.3	Clearances in secondary circuits		Pass
2.10.3.4	Measurement of transient voltage levels		N/A
2.10.4	Creepage distances		Pass
	CTI tests.....:	Material group IIIb; 100 <= CTI < 175.	-
2.10.5	Solid insulation	certified optocoupler	Pass
2.10.5.1	Minimum distance through insulation		Pass
2.10.5.2	Thin sheet material		Pass
	Number of layers (pcs).....:	min. 3 layers	-
	Electric strength test.....:	3000Vac/one layer	-
2.10.5.3	Printed boards		Pass
	Distance through insulation		Pass
	Electric strength test for thin sheet insulating material .....:		-
	Number of layers (pcs).....:		N/A
2.10.5.4	Wound components		N/A
	Number of layers (pcs).....:		N/A
	Two wires in contact inside wound component; angle between 45° and 90° .....:		N/A
2.10.6	Coated printed boards		N/A
2.10.6.1	General		N/A
2.10.6.2	Sample preparation and preliminary inspection		N/A
2.10.6.3	Thermal cycling		N/A
2.10.6.4	Thermal ageing (°C).....:		N/A
2.10.6.5	Electric strength test.....:		-

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.6.6	Abrasion resistance test		N/A
	Electric strength test.....:		-
2.10.7	Enclosed and sealed parts.....:		N/A
	Temperature T1=T2 = Tma - Tamb +10K (°C).....:		N/A
2.10.8	Spacings filled by insulating compound.....:		N/A
	Electric strength test.....:		-
2.10.9	Component external terminations		N/A
2.10.10	Insulation with varying dimensions		N/A
3	**WIRING, CONNECTIONS AND SUPPLY**		Pass
3.1	General		Pass
3.1.1	Current rating and overcurrent protection		Pass
3.1.2	Protection against mechanical damage	Only PWB traces.	N/A
3.1.3	Securing of internal wiring		N/A
3.1.4	Insulation of conductors		N/A
3.1.5	Beads and ceramic insulators		N/A
3.1.6	Screws for electrical contact pressure	Within certified terminal blocks and grounding stud.	Pass
3.1.7	Insulating materials in electrical connections		Pass
3.1.8	Self-tapping and spaced thread screws		N/A
3.1.9	Termination of conductors		Pass
	10 N pull test		N/A
3.1.10	Sleeving on wiring		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

3.2	**Connection to an a.c. mains supply or a d.c. mains supply**		N/A
3.2.1	Means of connection		N/A
3.2.1.1	Connection to an a.c. mains supply		N/A
3.2.1.2	Connection to a d.c. mains supply		N/A
3.2.2	Multiple supply connections		N/A
3.2.3	Permanently connected equipment		N/A
	Number of conductors, diameter (mm) of cable and conduits.....:		-
3.2.4	Appliance inlets		N/A
3.2.5	Power supply cords		N/A
3.2.5.1	AC power supply cords		N/A
	Type .....:		-
	Rated current (A), cross-sectional area (mm²), AWG.....:		-
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N) .....:		-
	Longitudinal displacement (mm) .....:		-
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards		N/A
	D (mm); test mass (g).....:		-
	Radius of curvature of cord (mm).....:		-
3.2.9	Supply wiring space		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

3.3	**Wiring terminals for connection of external conductors**		N/A
3.3.1	Wiring terminals		N/A
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals		N/A
3.3.4	Conductor sizes to be connected		N/A
	Rated current (A), cord/cable type, cross-sectional area (mm²) .....:		-
3.3.5	Wiring terminal sizes		N/A
	Rated current (A), type and nominal thread diameter (mm).....:		-
3.3.6	Wiring terminals design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A

3.4	**Disconnection from the mains supply**		N/A
3.4.1	General requirement		N/A
3.4.2	Disconnect devices		N/A
3.4.3	Permanently connected equipment		N/A
3.4.4	Parts which remain energized		N/A
3.4.5	Switches in flexible cords		N/A
3.4.6	Single-phase equipment and d.c. equipment		N/A
3.4.7	Three-phase equipment		N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices		N/A
3.4.10	Interconnected equipment		N/A
3.4.11	Multiple power sources		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

3.5	**Interconnection of equipment**		N/A
3.5.1	General requirements		N/A
3.5.2	Types of interconnection circuits.....:		N/A
3.5.3	ELV circuits as interconnection circuits		N/A

4	**PHYSICAL REQUIREMENTS**		Pass
4.1	Stability		N/A
	Angle of 10°		N/A
	Test: force (N) .....:		N/A

4.2	**Mechanical strength**		Pass
4.2.1	General		Pass
4.2.2	Steady force test, 10 N		Pass
4.2.3	Steady force test, 30 N	Done by inspection.	Pass
4.2.4	Steady force test, 250 N		N/A
4.2.5	Impact test		N/A
	Fall test		N/A
	Swing test		N/A
4.2.6	Drop test		N/A
4.2.7	Stress relief test		N/A
4.2.8	Cathode ray tubes		N/A
	Picture tube separately certified.....:		N/A
4.2.9	High pressure lamps		N/A
4.2.10	Wall or ceiling mounted equipment; force (N) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4.3	**Design and construction**		Pass
4.3.1	Edges and corners		Pass
4.3.2	Handles and manual controls; force (N) .....:		N/A
4.3.3	Adjustable controls	No user adjustable controls.	N/A
4.3.4	Securing of parts		N/A
4.3.5	Connection of plugs and sockets		N/A
4.3.6	Direct plug-in equipment		N/A
	Dimensions (mm) of mains plug for direct plug-in .:		N/A
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N).....:		N/A
4.3.7	Heating elements in earthed equipment		N/A
4.3.8	Batteries		N/A
4.3.9	Oil and grease		N/A
4.3.10	Dust, powders, liquids and gases		N/A
4.3.11	Containers for liquids or gases		N/A
4.3.12	Flammable liquids .....:		N/A
	Quantity of liquid (l) .....:		N/A
	Flash point (°C) .....:		N/A
4.3.13	Radiation; type of radiation		Pass
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg) .....:		-
	Measured high-voltage (kV) .....:		-
	Measured focus voltage (kV).....:		-
	CRT markings .....:		-
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification.....:		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation.....:		N/A
4.3.13.5	Laser (including LEDs)	Only indication LEDs used.	N/A
	Laser class.....:		-

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.13.6	Other types.....:		N/A
4.4	**Protection against hazardous moving parts**		N/A
4.4.1	General		N/A
4.4.2	Protection in operator access areas		N/A
4.4.3	Protection in restricted access locations		N/A
4.4.4	Protection in service access areas		N/A
4.5	**Thermal requirements**		Pass
4.5.1	Maximum temperatures		Pass
	Normal load condition per Annex L .....:	Operated in the most unfavorable way of operation given in the operating instructions until steady conditions established.	Pass
4.5.2	Resistance to abnormal heat	It has been determined from examination of the physical characteristics of the materials used that the material meets the requirements of the test.	Pass
4.6	**Openings in enclosures**		N/A
4.6.1	Top and side openings	Appropriate eletrical and fire enclosure needs to be considered in the end use application.	N/A
	Dimensions (mm) .....:		-
4.6.2	Bottoms of fire enclosures		N/A
	Construction of the bottom .....:		-
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature (°C)/time (weeks) .....:		-

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Clause	Requirement + Test	Result - Remark	Verdict

4.7	**Resistance to fire**		Pass
4.7.1	Reducing the risk of ignition and spread of flame		Pass
	Method 1, selection and application of components wiring and materials		Pass
	Method 2, application of all of simulated fault condition tests		N/A
4.7.2	Conditions for a fire enclosure	To be considered in the end application.	N/A
4.7.2.1	Parts requiring a fire enclosure	To be considered in the end application.	N/A
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		Pass
4.7.3.1	General		Pass
4.7.3.2	Materials for fire enclosures		N/A
4.7.3.3	Materials for components and other parts outside fire enclosures		N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	All internal materials are rated V-2 or better or are mounted on a PWB rated V-1 or better.	Pass
4.7.3.5	Materials for air filter assemblies		N/A
4.7.3.6	Materials used in high-voltage components		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

5	**ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS**		Pass
5.1	Touch current and protective conductor current		Pass
5.1.1	General		Pass
5.1.2	Equipment under test (EUT)		Pass
5.1.3	Test circuit		Pass
5.1.4	Application of measuring instrument		Pass
5.1.5	Test procedure		Pass
5.1.6	Test measurements		Pass
	Test voltage (V) ..... :	264Vac, 50Hz;	-
	Measured touch current (mA) ..... :	Max. 0.310mA at housing; max. 0.24mA at Plus/Minus	-
	Max. allowed touch current (mA) ..... :	3.5mA	-
	Measured protective conductor current (mA) ..... :	-	-
	Max. allowed protective conductor current (mA) ... :	-	-
5.1.7	Equipment with touch current exceeding 3.5 mA .. :		N/A
5.1.8	Touch currents to and from telecommunication networks and cable distribution systems and from telecommunication networks		N/A
5.1.8.1	Limitation of the touch current to a telecommunication network and a cable distribution system		N/A
	Test voltage (V) ..... :		-
	Measured touch current (mA) ..... :		-
	Max. allowed touch current (mA) ..... :		-
5.1.8.2	Summation of touch currents from telecommunication networks ..... :		N/A

5.2	**Electric strength**		Pass
5.2.1	General		Pass
5.2.2	Test procedure		Pass

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	**Abnormal operating and fault conditions**		Pass
5.3.1	Protection against overload and abnormal operation		Pass
5.3.2	Motors		N/A
5.3.3	Transformers		Pass
5.3.4	Functional insulation.....:	Functional insulation complies with the requirements (a), (b), or (c).	Pass
5.3.5	Electromechanical components		N/A
5.3.6	Simulation of faults		Pass
5.3.7	Unattended equipment		N/A
5.3.8	Compliance criteria for abnormal operating and fault conditions		Pass

6	**CONNECTION TO TELECOMMUNICATION NETWORKS**		N/A
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N/A
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements		N/A
	Test voltage (V).....:		-
	Current in the test circuit (mA).....:		-
6.1.2.2	Exclusions.....:		N/A

6.2	**Protection of equipment users from overvoltages on telecommunication networks**		N/A
6.2.1	Separation requirements		N/A
6.2.2	Electric strength test procedure		N/A
6.2.2.1	Impulse test		N/A
6.2.2.2	Steady-state test		N/A
6.2.2.3	Compliance criteria		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

6.3	**Protection of the telecommunication wiring system from overheating**		N/A
	Max. output current (A).....:		-
	Current limiting method .....:		-

7	**CONNECTION TO CABLE DISTRIBUTION SYSTEMS**		N/A
7.1	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N/A
7.2	Protection of equipment users from overvoltages on the cable distribution system		N/A
7.3	Insulation between primary circuits and cable distribution systems		N/A
7.3.1	General		N/A
7.3.2	Voltage surge test		N/A
7.3.3	Impulse test		N/A

A	**Annex A, TESTS FOR RESISTANCE TO HEAT AND FIRE**		N/A
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N/A
A.1.1	Samples .....:		-
	Wall thickness (mm) .....:		-
A.1.2	Conditioning of samples; temperature (°C) .....:		N/A
A.1.3	Mounting of samples .....:		N/A
A.1.4	Test flame		N/A
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s) .....:		-
	Sample 2 burning time (s) .....:		-
	Sample 3 burning time (s) .....:		-

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Clause	Requirement + Test	Result - Remark	Verdict

A.2	**Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)**		N/A
A.2.1	Samples, material.....:		-
	Wall thickness (mm).....:		-
A.2.2	Conditioning of samples		N/A
A.2.3	Mounting of samples		N/A
A.2.4	Test flame		N/A
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s).....:		-
	Sample 2 burning time (s).....:		-
	Sample 3 burning time (s).....:		-
A.2.7	Alternative test acc. to IEC 60695-2-2, cl. 4, 8		N/A
	Sample 1 burning time (s).....:		-
	Sample 2 burning time (s).....:		-
	Sample 3 burning time (s).....:		-

A.3	**Hot flaming oil test (see 4.6.2)**		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

B	**Annex B, MOTOR TESTS UNDER ABNORMAL CONDITIONS(see 4.7.2.2 and 5.3.2)**		N/A
B.1	General requirements		N/A
	Position .....:		-
	Manufacturer .....:		-
	Type .....:		-
	Rated values .....:		-
B.2	Test conditions		N/A
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days) .....:		-
	Electric strength test: test voltage (V).....:		-
B.6	Running overload test for d.c. motors in secondary circuits		N/A
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
B.7.1	Test procedure		N/A
B.7.2	Alternative test procedure; test time (h).....:		N/A
B.7.3	Electric strength test		N/A
B.8	Test for motors with capacitors		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Operating voltage (V) .....:		-

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Clause	Requirement + Test	Result - Remark	Verdict

C	**Annex C, TRANSFORMERS (see 1.5.4 and 5.3.3)**		Pass
	Position .....:	T101, T103	-
	Manufacturer .....:	PULS GmbH	-
	Type .....:	TE-362.590.00 and TE-347.550.00	-
	Rated values .....:	-	-
	Method of protection.....:	Impedance	-
C.1	Overload test	T101: Maximum transformer winding temperature was 140.3°C T103 = N/A (T103 is part of control circuit)	Pass
C.2	Insulation		Pass
	Protection from displacement of windings .....:	Winding N2 (SEC) is completly tubed additional adhesive foile for fixing winding N2 used, for details refer to enclosure 7-01, -02, -03.	Pass

D	**Annex D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS**		Pass
D.1	Measuring instrument		Pass
D.2	Alternative measuring instrument		N/A

E	**Annex E, TEMPERATURE RISE OF A WINDING**	Pass

F	**Annex F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10)**	Pass

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Clause	Requirement + Test	Result - Remark	Verdict

G	**Annex G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES**		N/A
G.1	Summary of the procedure for determining minimum clearances		N/A
G.2	Determination of mains transient voltage (V)		N/A
G.2.1	AC mains supply		N/A
G.2.2	DC mains supply		N/A
G.3	Determination of telecommunication network transient voltage (V) : .....:		N/A
G.4	Determination of required withstand voltage (V) ...:		N/A
G.5	Measurement of transient levels (V).....:		N/A
G.6	Determination of minimum clearances .....:		N/A

H	**ANNEX H, IONIZING RADIATION (see 4.3.13)**		N/A

J	**Annex J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)**		Pass
	Metal used.....:	Aluminium/Zinc alloy.	-

K	**ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7)**		N/A
K.1	Making and breaking capacity		N/A
K.2	Thermostat reliability; operating voltage (V).....:		N/A
K.3	Thermostat endurance test; operating voltage (V) :		N/A
K.4	Temperature limiter endurance; operating voltage (V) .....:		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

L	**Annex L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.1)**		Pass
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment	Refer to GPI for details.	Pass

M	**Annex M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)**		N/A
M.1	Introduction		N/A
M.2	Method A		N/A
M.3	Method B		N/A
M.3.1	Ringing signal		N/A
M.3.1.1	Frequency (Hz) .....:		-
M.3.1.2	Voltage (V) .....:		-
M.3.1.3	Cadence; time (s), voltage (V).....:		-
M.3.1.4	Single fault current (mA).....:		-
M.3.2	Tripping device and monitoring voltage.....:		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V) .....:		N/A

N	**Annex N, IMPULSE TEST GENERATORS (see 2.10.3.4, 6.2.2.1, 7.3.2 and clause G.5)**		N/A
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
P	**Annex P, NORMATIVE REFERENCES**		Pass
Q	**Annex Q, BIBLIOGRAPHY**		Pass
R	**Annex R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES**		N/A
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6)		N/A
R.2	Reduced clearances (see 2.10.3)		N/A
S	**Annex S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)**		N/A
S.1	Test equipment		N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing		N/A
T	**Annex T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)**		N/A
	.....:		-
U	**Annex U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)**		N/A
	.....:		-

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.