

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

SYSTÈME CEI D'ESSAIS DE CONFORMITÉ  
ET DE CERTIFICATION DES ÉQUIPEMENTS  
ÉLECTRIQUE (IECEE)  
METHODE OC

CB TEST CERTIFICATE  
CERTIFICAT D'ESSAI OC

Product

*Produit*

Name and address of the applicant

*Nom et adresse du demandeur*

Name and address of the manufacturer

*Nom et adresse du fabricant*

Name and address of the factory

*Nom et adresse de l'usine*

Rating and principal characteristics

*Valeurs nominales et caractéristiques principales*

Trade mark (if any)

*Marque de fabrique (si elle existe)*

Model/type Ref.

*Ref. de type*

Additional 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*

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*

This CB Test Certificate is issued by the National Certification Body

*Ce Certificat d'essai OC est établi par l'Organisme National de Certification*

Switching Power Supply (built-in application)

Densei-Lambda K.K.  
1-11-15 Higashi-Gotanda  
SHINAGAWA-KU, TOKYO 141-0022, JAPAN

Densei-Lambda K.K.  
1-11-15 Higashi-Gotanda  
SHINAGAWA-KU, TOKYO 141-0022, JAPAN

(See appendix for factories information)

Input rating : AC 100-240V, 50/60Hz or DC 120-360V  
: 1) 4.4A, 2) 3.2A

Output rating : refer to the test report

Protection class : I

NEMIC-LAMBDA

1) JWS300-x x = 2, 3, 5, 6, 9, 12, 15, 18, 24, 28, 36 or 48  
2) JWS240P-y y = 24, 36 or 48

may be followed by suffix "/CP" for model JWS300-24,  
"/PV" for all JWS300 models

For differences between the models, refer to the test report

PUBLICATION

EDITION

inclusive CENELEC Common Modifications  
inclusive German differences  
IEC 60950:1999

12003202 001



TÜV Rheinland Japan Ltd.  
3-19-5 Shin-Yokohama  
222-0033 Japan

Date 20.08.2002

Signature

Dipl.-Ing. M. Lechtermann

Appendix to CB Certificate JPTUV-004761  
Report Number: 12003202 001

PAGE 1 OF 1

Name and address of the manufacturer

Densei-Lambda K.K.  
1-11-15 Higashi-Gotanda  
Shinagawa-ku, Tokyo 141-0022  
Japan

Name and address of the factory(ies)

Densei-Lambda K.K. Plant, R & D Laboratory

2701 Togawa, Settaya  
Nagaoka-shi, Niigata 940-1195  
Japan

Nemic-Lambda (Kuantan) SDN. BHD.

Lot 2 & 3, Batu 9 3/4  
Kawasan Perindustrian  
Bandar Baru Jaya Gading  
26070 Kuantan Pahang, Malaysia

Wuxi Nemic-Lambda Electronics Co., Ltd.

Lot 107  
Wuxi Singapore Industrial Park  
Xing Chuang Erlu, Wuxi Jiangsu 214028, P.R. China

Sendan Electronics Mfg. Co. Ltd.

440 Goka  
Shogawa-machi, Higashi-Tonami-gun  
Toyama 932-0313  
Japan

Date: 20.08.2002



Dipl.-Ing. M. Lechtermann



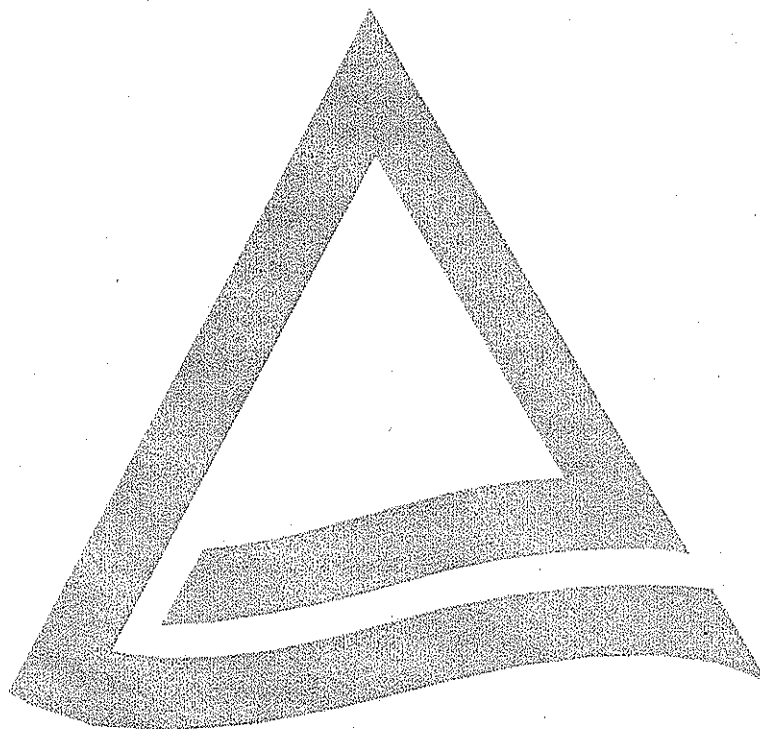
## CB TEST REPORT

12003202 001

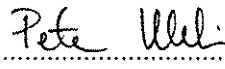
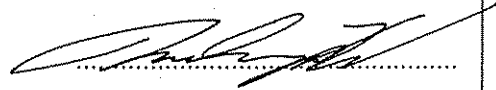
for

Switching Power Supply (built-in application)  
JWS300 series, JWS240P series

Densei-Lambda K.K.



This documentation consists of 50 pages (excluding this cover page).

TEST REPORT				
IEC 60950				
Safety of information technology equipment				
Report Reference No.:	12003202 001			
Tested by (printed name and signature) .....	Peter Uhlir			
Approved by (printed name and signature) .....	Masakazu Kera			
Date of issue .....	August 19, 2002			
This report is based on a blank test report that was prepared by FIMKO using information obtained from the TRF originator.				
Testing Laboratory Name .....	TÜV Rheinland Japan Ltd., Yokohama Laboratories			
Address .....	Festo Building 5F, 1-26-10, Hayabuchi, Tsuzuki-ku, Yokohama 224-0025, Japan			
Testing location .....	(as above)			
Applicant's Name .....	Densei-Lambda K.K.			
Address .....	1-11-15 Higashi-Gotanda, Shinagawa-ku, Tokyo 141-0022, Japan			
Test specification				
Standard .....	IEC 60950:1999; EN 60950:2000			
Test procedure .....	CB-scheme			
Procedure deviation .....	CENELEC common modifications, Germany			
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			
Copyright reserved to the bodies participating in the IECEE Schemes (CB and CB-FCS) and/or the bodies participating in the C.I.G (CCA-ENEC).				
Test item description .....	Switching Power Supply (built-in application)			
Trademark .....	NEMIC-LAMBDA			
Model and/or type reference .....	JWS300-2	JWS300-3	JWS300-5	JWS300-6
	JWS300-9	JWS300-12	JWS300-15	JWS300-18
	JWS300-24	JWS300-28	JWS300-36	JWS300-48
	JWS240P-24	JWS240P-36	JWS240P-48	
	May be followed by suffix: "/CP" for model JWS300-24 "/PV" for all JWS300 models			
Rating(s) .....	(see page 3)			

<p>Particulars: test item vs. test requirements</p> <p>Equipment mobility ..... : For building-in</p> <p>Operating condition ..... : Continuous</p> <p>Mains supply tolerance (%) ..... : +6%, -10%</p> <p>Tested for IT power systems ..... : No</p> <p>IT testing, phase-phase voltage (V) . ..... : -</p> <p>Class of equipment ..... : Class I</p> <p>Mass of equipment (kg) ..... : Approx. 2kg</p> <p>Protection against ingress of water . ..... : IPX0</p>
<p>Test case verdicts</p> <p>Test case does not apply to the test object ... : N/A</p> <p>Test item does meet the requirement ..... : P(ass)</p> <p>Test item does not meet the requirement ..... : F(all)</p>
<p>Testing</p> <p>Date of receipt of test item ..... : 02.08.2002</p> <p>Date(s) of performance of test ..... : 13.08.2002 – 18.08.2002</p>
<p><b>General remarks:</b></p> <p>"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 60335-1-2".</p> <p>This report shall not be reproduced except in full without the written approval of the testing laboratory.</p> <p>The test results presented in this report relate only to the item(s) tested.</p> <p>"(see remark #)" refers to a remark appended to the report.</p> <p>"(see Annex #)" refers to an annex appended to the report.</p> <p>Throughout this report a point is used as the decimal separator.</p>
<p><b>1) Description of the product:</b></p> <ul style="list-style-type: none"> <li>- The equipment tested is a switching power supply for general use in office equipment (host equipment is not specified).</li> <li>- The test sample was a pre-production sample without serial number.</li> <li>- Relevant tests were performed in the most severe condition allowed by the installation instruction.</li> <li>- No part of the switching power supply is intended for any operator access.</li> <li>- Tests were performed with model JWS300-5 unless otherwise mentioned.</li> </ul>

## 2) Ratings (Differences between the models):

Input: AC 100-240V, 50/60Hz or DC 120-360V  
4.4A (for JWS300 series), 3.2A (for JWS240P series)

Output:

JWS300-2	DC 2V, 60A	JWS300-15	DC 15V, 22A
JWS300-3	DC 3.3V, 60A	JWS300-18	DC 18V, 18A
JWS300-5	DC 5V, 60A	JWS300-24	DC 24V, 14A
JWS300-6	DC 6V, 50A	JWS300-28	DC 28V, 12A
JWS300-9	DC 9V, 34A	JWS300-36	DC 36V, 8.5A
JWS300-12	DC 12V, 27A	JWS300-48	DC 48V, 6.5A

JWS300-24/CP adjusted to DC 12-24V, 12.5A

JWS300-x/PV adjusted to 20-100% of each output voltage, output current: same as JWS300-x

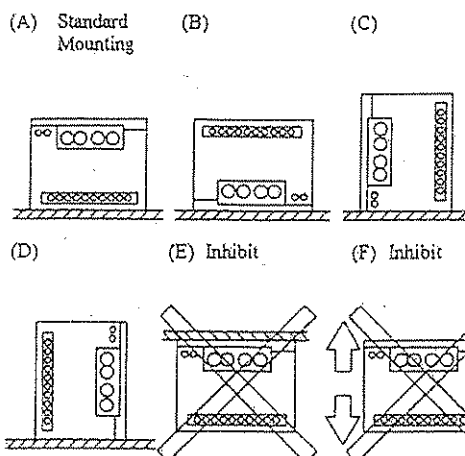
JWS240P-24 DC 24V, 10A

JWS240P-36 DC 36V, 6.65A

JWS240P-48 DC 48V, 5A

## 3) Specified ambient temperature (°C) depending on output load (%) and mounting direction:

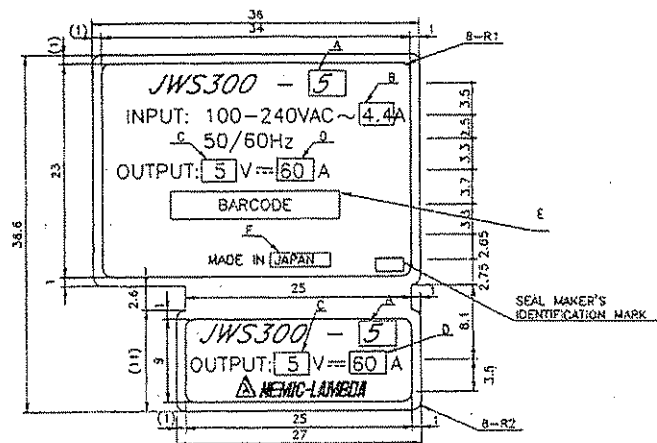
Information provided in the installation instruction.



JWS300 Output Derating

Ta(°C)	LOAD(%)			
	A	B	C	D
-10 ~ +35	100	100	100	100
45	100	100	100	70
50	100	100	100	55
60	70	70	70	-
65	55	55	55	-

<p><b>4) Insulation system:</b></p> <p>Secondary circuits are separated from primary by double/reinforced insulation.</p> <p>All output / interface voltages are at SELV level.</p> <p>SWPS is connected to PE via chassis.</p> <p><b>Sub-units (PCB's, ... ) with pri - sec separation:</b></p> <p>SWPS</p> <p><b>Other sub-units with pri-parts:</b></p> <p>(none)</p> <p><b>HV-unit(s):</b></p> <p>(none)</p> <p><b>Pri - sec components, which are not part of the above mentioned sub-units:</b></p> <p>(none)</p> <p><b>Non-certified pri-components directly mounted to chassis:</b></p> <p>(none)</p> <p>(certified components only checked for correct-application (see 1.5.1))</p>								
<p><b>5) Manufacturer:</b></p> <p>(same as client)</p>								
<p><b>6) Production facilities:</b></p> <ol style="list-style-type: none"> <li>1. Densai-Lambda K.K., Plant, R &amp; D Laboratory 2701 Togawa, Settaya, Nagaoka-shi, Niigata 940-1195, Japan</li> <li>2. Sendan Electronics Mfg. Co., Ltd. 440 Goka, Shogawa-machi, Higashi-Tonami-gun, Toyama 932-0313, Japan</li> <li>3. Wuxi Nemic-Lambda Electronics Co., Ltd. Lot 107, Wuxi Singapore Industrial Park, Xing Chuang Erlu, Wuxi Jiangsu 214028, P.R. China</li> <li>4. Nemic-Lambda (Kuantan) SDN. BHD. Lot 2 &amp; 3, Batu 9 3/4, Kawasan Perindustrian, Bandar Baru Jaya Gading, 26070 Kuantan Pahang, MALAYSIA</li> </ol>								
<p><b><u>Abbreviations used throughout this test report:</u></b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">PE : protective earth</td> <td style="width: 50%;">pri : primary</td> </tr> <tr> <td>TIW : triple insulated wire</td> <td>sec : secondary</td> </tr> <tr> <td>(SW)PS : (switching) power supply</td> <td>gnd : ground</td> </tr> <tr> <td>PCB : printed circuit (wiring) board</td> <td>B/I : Built-in equipment</td> </tr> </table>	PE : protective earth	pri : primary	TIW : triple insulated wire	sec : secondary	(SW)PS : (switching) power supply	gnd : ground	PCB : printed circuit (wiring) board	B/I : Built-in equipment
PE : protective earth	pri : primary							
TIW : triple insulated wire	sec : secondary							
(SW)PS : (switching) power supply	gnd : ground							
PCB : printed circuit (wiring) board	B/I : Built-in equipment							

**Copy of marking plate:**

Design of rating label of other models is identical to the above except for type designation and output ratings.



IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict


1	GENERAL		P
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1.5	Components		P
1.5.1	Comply with IEC 60950 or relevant component standard	(see appended table 1.5.1) Components, which are found to affect safety aspects, comply with the requirements of this standard or comply with the safety requirement of the relevant component standards.	P
1.5.2	Evaluation and testing of components	Components, which are certified for IEC and/or national standards, are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment. Fuses outside the IEC 60127 scope are tested according to the CCA test decision, 10 times to open.	P
	Dimensions (mm) of mains plug for direct plug-in:	Not for direct plug-in.	N
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N):		N
1.5.3	Thermal controls	None.	N
1.5.4	Transformers	Transformers T1, T51, T52 are suitable for their intended application and comply with the relevant requirements of the standard and particularly Annex C.	P
1.5.5	Interconnecting cables	No interconnecting cables.	N
1.5.6	Capacitors in primary circuits:	Type X2 capacitors used between lines complies with IEC 60384-14. (see appended table 1.5.1)	P
1.5.7	Double or reinforced insulation bridged by components	See below.	N
1.5.7.1	Bridging capacitors	None.	N
1.5.7.2	Bridging resistors	None.	N
1.5.7.3	Accessible parts	No components per 1.5.7.1 or 1.5.7.2 provided.	N
1.5.8	Components in equipment for IT power systems	Not applied for IT system.	N

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

1.6	Power interface		P
1.6.1	AC power distribution systems	TN	P
1.6.2	Input current	Input current measured under continuous operating. (see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	This appliance is not hand-held equipment.	N
1.6.4	Neutral conductor	Neutral insulated from earth like a line conductor. Components between Neutral and PE are rated same as for line to PE.	P

1.7	Marking and instructions		P
1.7.1	Power rating	See below.	P
	Rated voltage(s) or voltage range(s) (V):	100-240VAC~	P
	Symbol for nature of supply for d.c.:	AC supply.	N
	Rated frequency or frequency range (Hz):	50/60Hz	P
	Rated current (A):	4.4A (for JWS300 series) 3.2A (for JWS240P series)	P
	Manufacturer's name/Trademark:	NEMIC-LAMBDA	P
	Type/model:	JWS300-2    JWS300-15 JWS300-3    JWS300-18 JWS300-5    JWS300-24 JWS300-6    JWS300-28 JWS300-9    JWS300-36 JWS300-12   JWS300-48  May be followed by suffix: "/CP" for model JWS300-24 "/PV" for all JWS300 models  JWS240P-24 JWS240P-36 JWS240P-48	P
	Symbol of Class II:	Class I equipment.	N
	Other symbols:	Not provided.	N
	Certification marks:		N
1.7.2	Safety instructions	See below.	P
	Installation instructions supplied. English version checked, will be translated equally into applicable language.		--
1.7.3	Short duty cycles	Continuous operation.	N
1.7.4	Supply voltage adjustment:	Single voltage range.	N

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict
1.7.5	Power outlets on the equipment:	No power outlets provided.	N
1.7.6	Fuse identification:	Fuse marking located near the fuse holder: F1: 250V 10A F1 is soldered on PCB, not replaceable.	P
1.7.7	Wiring terminals	See below.	P
1.7.7.1	Protective earthing and bonding terminals	PE mark, symbol IEC 60417, No. 5019 (  ) provided on chassis.	P
1.7.7.2	Terminal for a.c. mains supply conductors	B/I.	N
1.7.8	Controls and indicators	No switches or controls.	N
1.7.8.1	Identification, location and marking:		N
1.7.8.2	Colours:		N
1.7.8.3	Symbols according to IEC 60417:		N
1.7.8.4	Markings using figures:		N
1.7.9	Isolation of multiple power sources:	Single supply.	N
1.7.10	IT power system	Equipment not intended for IT power systems.	N
1.7.11	Thermostats and other regulating devices	No thermostat or the like.	N
1.7.12	Language:	See 1.7.2	P
1.7.13	Durability	Marking is durable and legible. Tested by water followed with petroleum spirit.	P
1.7.14	Removable parts	Safety relevant markings are located on fixed installed parts.	P
1.7.15	Replaceable batteries	No lithium battery.	N
	Language:		---
1.7.16	Operator access with a tool:	B/I. Final compliance to be guaranteed within end product.	N
1.7.17	Equipment for restricted access locations:	Not intended for restricted areas.	N

2	PROTECTION FROM HAZARDS	P
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2.1	Protection from electric shock and energy hazards	N
2.1.1	Protection in OPERATOR access areas	B/I. Final compliance to be guaranteed within end product.

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict
2.1.1.1	Access to energized parts	B/I.	N
	Test by inspection:		N
	Test with test finger:		N
	Test with test pin:		N
	Test with test probe:	No TNV.	N
2.1.1.2	Battery compartments:	No battery compartment.	N
2.1.1.3	Access to ELV wiring	No ELV.	N
	Working voltage (V); distance (mm) through insulation:		--
2.1.1.4	Access to hazardous voltage circuit wiring	B/I.	N
2.1.1.5	Energy hazards:	B/I.	N
2.1.1.6	Manual controls	No manual controls.	N
2.1.1.7	Discharge of capacitors in the primary circuit	Final compliance should be guaranteed by the end product. Measured anyway, the result, see below.	N
	Time-constant (s); measured voltage (V):	Overall capacitance approx. 0.68 $\mu$ F, discharge resistor (R101, R102, R103, R104) 400k $\Omega$ . $\rightarrow \tau = RC = 0.272s$ $\tau$ measured = 8V after 1sec.	--
2.1.2	Protection in service access areas	Built-in equipment	N
2.1.3	Protection in restricted access locations	Not intended to be installed in a restricted access area.	N

2.2	SELV circuits		P
2.2.1	General requirements	Measured DC 48V max.	P
2.2.2	Voltages under normal conditions (V):	Between any-SELV circuits 42.4V peak or 60Vdc are not exceeded.	P
2.2.3	Voltages under fault conditions (V):	Limits of 71V peak and 120Vdc were not exceed, SELV limits not for longer than 0.2 seconds, see abnormal results 5.3.	P
2.2.3.1	Separation by double or reinforced insulation (method 1)		P
2.2.3.2	Separation by earthed screen (method 2)		P
2.2.3.3	Protection by earthing of the SELV circuit (method 3)	Not used.	N

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict
2.2.4	Connection of SELV circuits to other circuits:	SELV not connected to primary.	P
2.3	TNV circuits <i>No TNV circuits.</i>		N
2.4	Limited current circuits <i>No limited current circuits present.</i>		N
2.5	Limited power sources <i>Not applied for.</i>		N
2.6	Provisions for earthing and bonding		P
	The SWPS is to be connected to PE in the end product via chassis (instruction is given in the installation instruction).		--
2.6.1	Protective earthing	Metal chassis has to be reliably connected to PE at the PE terminal of the terminal block as described in the installation instruction, pin of terminal block soldered to the PE pattern, from there PE connection to the chassis.	P
2.6.2	Functional earthing	Class I equipment.	N
2.6.3	Protective earthing and protective bonding conductors	B/I. No direct connection to primary power.	P
2.6.3.1	Size of protective earthing conductors		N
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG:		--
2.6.3.2	Size of protective bonding conductors		N
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG:		--
2.6.3.3	Rated current (A), type and nominal thread diameter (mm):	Final compliance should be guaranteed by the end product. Measured anyway, the result, see below.	P
	Resistance (Ω) of earthing conductors and their terminations, test current (A):	Measured from PE screw pin to chassis: 27mΩ. Test current was 25A.	--
2.6.3.4	Colour of insulation:	No PE wire used.	N

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict
2.6.4	Terminals	The terminal provided is not intended to act as mains supply terminal in the host equipment.	N
2.6.4.1	Protective earthing and bonding terminals		N
	Rated current (A), type and nominal thread diameter (mm):	--	--
2.6.4.2	Separation of the protective earthing conductor from protective bonding conductors		N
2.6.5	Integrity of protective earthing	See below.	P
2.6.5.1	Interconnection of equipment	Class I construction.	N
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switches or fuses in earthing conductor.	P
2.6.5.3	Disconnection of protective earth	B/I.	N
2.6.5.4	Parts that can be removed by an operator	B/I.	N
2.6.5.5	Parts removed during servicing	B/I.	N
2.6.5.6	Corrosion resistance	All protective earth connections in compliance with Annex J.	P
2.6.5.7	Screws for protective bonding	Thread cutting or space thread screw not used for protective bonding connections.	N
2.6.5.8	Reliance on telecommunication network	No connection to TNV circuits.	N
2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	Equipment relies on 16A rated fuse or circuit breaker of the building installation for short circuit and earth fault. The built-in device fuse provides overcurrent protection.	P
	Instructions when protection relies on building installation	B/I	N
2.7.2	Faults not covered in 5.3		P
2.7.3	Short-circuit backup protection	Verified by short/abnormal tests.	P
2.7.4	Number and location of protective devices:	Overcurrent protections by fuse F1 in primary phase. Earth fault protection by fuse or circuit breaker in the building installation.	P
2.7.5	Protection by several devices	Only one fuse in phase or line.	N

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict
2.7.6	Warning to service personnel:	Not required, no unexpected hazard.	N
2.8	Safety interlocks <i>No safety interlocks.</i>		N
2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials are not used.	P
2.9.2	Humidity conditioning	Humidity treatment conducted for 48 h (humidity: 93%, temperature 25°C).	P
2.9.3	Requirements for insulation	Refer to 4.5.1, 5.2 and 2.10	P
2.9.4	Insulation parameters	Kind of insulation and working voltage considered.	P
2.9.5	Categories of insulation	Sufficient level of safety insulation is provided and maintained.	P
2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	Creepage distances and clearances measured per Annex F. Overvoltage category I used to determine clearances in secondary circuits.	P
2.10.2	Determination of working voltage	The r.m.s. and the peak voltage were measured on all sources of the switching power supply.	P
2.10.3	Clearances		P
2.10.3.1	General	Comply with 2.10.3.1 and 2.10.3.2, Annex G not applied.	P
2.10.3.2	Clearances in primary circuit	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.3	Clearances in secondary circuits	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.4	Measurement of transient levels	Not measured, normal transient levels considered.	N
2.10.4	Creepage distances	(see appended table 2.10.3 and 2.10.4)	P

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict
	CTI tests:	CTI for all materials <175	—
2.10.5	Solid insulation	See below.	P
2.10.5.1	Minimum distance through insulation	(see appended table 2.10.5)	P
2.10.5.2	Thin sheet material	TIW is used in pri-sec transformers, insulation sheets are for functional purpose only.	N
	Number of layers (pcs):	-	—
	Electric strength test	-	—
2.10.5.3	Printed boards	Not used to provide supplementary or double/reinforced insulation.	N
	Distance through insulation		N
	Electric strength test for thin sheet insulating material		N
	Number of layers (pcs):		N
2.10.5.4	Wound components	Approved triple insulation wire is used.	P
	Number of layers (pcs):	3 layers.	P
	Two wires in contact inside component; angle between 45° and 90°	Adequate construction.	P
2.10.6	Coated printed boards	Coating not tested.	N
2.10.6.1	General		N
2.10.6.2	Sample preparation and preliminary inspection		N
2.10.6.3	Thermal cycling		N
2.10.6.4	Thermal ageing (°C):		N
2.10.6.5	Electric strength test		—
2.10.6.6	Abrasion resistance test		N
	Electric strength test		—
2.10.7	Enclosed and sealed parts:	Photo-couplers are approved components. Not applied for other components.	N
	Temperature $T_1=T_2 = T_{mra} - T_{amb} + 10K$ (°C):		N
2.10.8	Spacings filled by insulating compound:	Not provided.	N
	Electric strength test		—
2.10.9	Component external terminations	No components conforming to 2.10.6 provided.	N



IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

2.10.10	Insulation with varying dimensions	Single working voltage (highest value) used to determine creepage distances and clearances.	P
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3	WIRING, CONNECTIONS AND SUPPLY		P
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3.1	General		P
3.1.1	Current rating and overcurrent 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	Not used.	N
3.1.6	Screws for electrical contact pressure	Screwed connections have adequate construction.	P
3.1.7	Non-metallic materials in electrical connections	All current carrying and protective earthing connections are metal to metal.	P
3.1.8	Self-tapping and spaced thread screws	Thread cutting or space thread screw not used for current carrying electrical connections.	N
3.1.9	Termination of conductors	Securely held on PCB. No hazard.	P
	10 N pull test	10 N applied to relevant conductors.	P
3.1.10	Sleeving on wiring	No sleeves.	N

3.2	Connection to a.c. mains supplies <i>B/I, Compliance to be guaranteed by the host equipment.</i>		P
3.2.1	Means of connection:	Terminal Block.	P
3.2.2	Multiple supply connections	Only one supply connection.	N
3.2.3	Permanently connected equipment	See clause 3.2.1	N
	Number of conductors, diameter (mm) of cable and conduits:		--
3.2.4	Appliance inlets	Terminal Block used.	N
3.2.5	Power supply cords	The power supply cord is not provided with this unit.	N
	Type:		--

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG:		–
3.2.6	Cord anchorages and strain relief		N
	Mass of equipment (kg), pull (N):		–
	Longitudinal displacement (mm):		–
3.2.7	Protection against mechanical damage	B/I.	N
3.2.8	Cord guards		N
	D (mm); test mass (g):		–
	Radius of curvature of cord (mm):		–
3.2.9	Supply wiring space	B/I.	N

3.3	Wiring terminals for connection of external conductors		P
3.3.1	Wiring terminals	The terminal block provided is intended to act as mains supply terminal in the host equipment.	P
3.3.2	Connection of non-detachable power supply cords		N
3.3.3	Screw terminals	Metal screw with ISO thread.	P
3.3.4	Rated current (A), cord/cable type, cross-sectional area (mm <sup>2</sup> ):	Fixing of wires according to table 13 is possible.	P
3.3.5	Rated current (A), type and nominal thread diameter (mm):	4mm.	P
3.3.6	Wiring terminals design		P
3.3.7	Grouping of wiring terminals		P
3.3.8	Stranded wire		P

3.4	Disconnection from the a.c. mains supply <i>B/I, Compliance to be guaranteed by the host equipment.</i>		N
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3.5	Interconnection of equipment		P
3.5.1	General requirements		P
3.5.2	Types of interconnection circuits:	SELV is connected to SELV.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N

4	PHYSICAL REQUIREMENTS		P
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4.1	Stability		N
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IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

	Angle of 10°	B/I	N
	Test: force (N):	Equipment is not a floor-standing unit.	N

4.2	Mechanical strength		N
4.2.1	General	B/I, no parts is intended to act as internal or external enclosure of the end product.	N
4.2.2	Steady force test, 10 N		N
4.2.3	Steady force test, 30 N		N
4.2.4	Steady force test, 250 N		N
4.2.5	Impact test		N
4.2.6	Drop test	Not for direct plug-in nor hand held.	N
4.2.7	Stress relief		N
4.2.8	Cathode ray tubes	No CRT.	N
	Picture tube separately certified:		N
4.2.9	High pressure lamps	No such lamp.	N
4.2.10	Wall or ceiling mounted equipment; force (N):	Not intended for wall or ceiling mounting.	N

4.3	Design and construction		P
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded and smooth.	P
4.3.2	Handles and manual controls; force (N):	No such components.	N
4.3.3	Adjustable controls	Full range circuit, no voltage adjustment necessary. Automatic adjustment to DC voltage.	N
4.3.4	Securing of parts	Electrical and mechanical connections can be expected to withstand usual mechanical stress.	P
4.3.5	Connection of plugs and sockets	No plugs or sockets used.	N
4.3.6	Direct plug-in equipment	Not intended to plug directly to wall socket-outlet.	N
	Torque (Nm):		—
4.3.7	Heating elements in earthed equipment	No heating elements.	N
4.3.8	Batteries	No battery.	N

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict
4.3.9	Oil and grease	B/I.	N
4.3.10	Dust, powders, liquids and gases	B/I.	N
4.3.11	Containers for liquids or gases	No liquid contained.	N
4.3.12	Flammable liquids:	No flammable liquids present.	N
	Quantity of liquid (l):		--
	Flash point (°C):		--
4.3.13	Radiation; type of radiation:	No ionizing or laser radiation present.	N
	Equipment using lasers	No laser.	N
4.4	Protection against hazardous moving parts		N
4.4.1	General	No moving parts.	N
4.4.2	Protection in operator access areas		N
4.4.3	Protection in restricted access locations		N
4.4.4	Protection in service access areas	No moving parts.	N
4.5	Thermal requirements		P
4.5.1	Temperature rises	(see appended table 4.5.1)	P
	Normal load condition per Annex L:		P
4.5.2	Resistance to abnormal heat	Phenolic bobbins used for L3, T1, T51 and T52, other parts tested accordingly. (see appended table 4.5.2)	P
4.6	Openings in enclosures		N
4.6.1	Top and side openings	B/I, fire enclosure to be guaranteed by the end product.	N
	Dimensions (mm):		--
4.6.2	Bottoms of fire enclosures	B/I.	N
	Construction of the bottom:		--
4.6.3	Doors or covers in fire enclosures	B/I, no door or cover as a part of the fire enclosure.	N
4.6.4	Openings in transportable equipment	B/I.	N
4.6.5	Adhesives for constructional purposes	Not used.	N
	Conditioning temperature/time:		--

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	Materials with the required flammability classes are used. Safety relevant components used within their specified rating. Electrical parts are not likely to ignite nearby materials. Temperatures see 4.5.1	P
4.7.2	Conditions for a fire enclosure	Built-in equipment, fire enclosure to be guaranteed by the end product.	N
4.7.2.1	Parts requiring a fire enclosure	All components need fire enclosure, to be guaranteed by the end product.	N
4.7.2.2	Parts not requiring a fire enclosure	See above.	N
4.7.3	Materials		P
4.7.3.1	General	Materials with the required flammability classes are used.	P
4.7.3.2	Materials for fire enclosures	B/I.	N
4.7.3.3	Materials for components and other parts outside fire enclosures	B/I.	N
4.7.3.4	Materials for components and other parts inside fire enclosures	Internal components except small parts are V-2, HF-2 or better. Insulating material consists of PVC.	P
4.7.3.5	Materials for air filter assemblies	No air filter assemblies.	N
4.7.3.6	Materials used in high-voltage components	No high voltage (>4 kV) components.	N

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
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5.1	Touch current and protective conductor current		P
5.1.1	General	Tested for TN system.	P
5.1.2	Equipment under test (EUT)	Single supply, independently tested.	P
5.1.3	Test circuit	Per figure 5A.	P
5.1.4	Application of measuring instrument	Per Annex D	P
5.1.5	Test procedure		P
5.1.6	Test measurements	(see appended table 5.1)	P
	Test voltage (V):	AC 264V, 60Hz	--

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

	Measured current (mA):	Max.: 0.65mA (see appended table 5.1)	–
	Max. allowed current (mA):	3.5mA	–
5.1.7	Equipment with touch current exceeding 3.5 mA:	Leakage current does not exceed 3.5mA	N
5.1.8	Touch currents to and from telecommunication networks	No TNV.	N
5.1.8.1	Limitation of the touch current to a telecommunication network		N
	Test voltage (V):		–
	Measured current (mA):		–
	Max. allowed current (mA):		–
5.1.8.2	Summation of touch currents from telecommunication networks:		N

5.2	Electric strength		P
5.2.1	General	(see appended table 5.2)	P
5.2.2	Test procedure	(see appended table 5.2)	P

5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	P
5.3.2	Motors	No motors.	N
5.3.3	Transformers	Shorting transformer outputs one at a time result in shutdown of the unit. No excessive temperatures occurred during tests. (see appended Annex C)	P
5.3.4	Functional insulation:	Short circuit tests. (see appended table 5.3)	P
5.3.5	Electromechanical components	Not provided.	N
5.3.6	Simulation of faults	(see appended table 5.3)	P
5.3.7	Unattended equipment	Not used.	N
5.3.8	Compliance criteria for abnormal operating and fault conditions	No fire propagated beyond the equipment. No molten metal was emitted. Electric strength test primary to SELV passed.	P

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict
6	CONNECTION TO TELECOMMUNICATION NETWORKS <i>No connection to TNV circuits.</i>		N
A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE <i>Flammability data was taken from available documents.</i>		N
B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2) <i>No motors.</i>		N

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position:	Primary – secondary T1	-
	Manufacturer:	(see appended table 1.5.1)	-
	Type:	(see appended table 1.5.1)	-
	Rated values:	(see appended table 1.5.1)	-
	Method of protection:		-
C.1	Overload test	(see appended table 5.3)	N
C.2	Insulation	(see appended tables 2.10.3/4, 2.10.5, 5.2)	P
	Protection from displacement of windings:	Windings are twisted and soldered on pins.	P

Construction details of Transformer T1:

Concentric windings on phenolic bobbin, approved Triple Insulated Wire used for secondary windings.

Recurring peak voltage	616V <sub>peak</sub>	
Required clearance for reinforced insulation (table 2H and 2J)	4.6mm	
Measured min. clearances, location	inside (mm)	outside (mm)
pri-sec	*	7.0
pri-core	*	3.5
sec-core	*	3.5
Effective voltage rms	330V	
Required creepage for reinforced insulation ( table 2L)	7.0mm	
Measured min. creepages, location:	inside (mm)	outside (mm)
pri-sec	*	10.0
pri-core	*	5.0
sec-core	*	5.0
Pin numbers primary:	1-2/4-5	
Pin numbers secondary:	6-7/9-10	
Bobbin thickness /material:	0.8mm/phenolic	
Electric strength test, 3000Vac after humidity treatment	No breakdown	

\*: Approved Triple Insulated Wire used.



IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position:	Primary – secondary T51	--
	Manufacturer:	(see appended table 1.5.1)	--
	Type:	(see appended table 1.5.1)	--
	Rated values:	(see appended table 1.5.1)	--
	Method of protection:		--
C.1	Overload test	(see appended table 5.3)	N
C.2	Insulation	(see appended tables 2.10.3/4, 2.10.5, 5.2)	P
	Protection from displacement of windings:	Windings are twisted and soldered on pins.	P

**Construction details of Transformer T51:**

Concentric windings on phenolic bobbin, 3 layers insulation between prim and sec windings. Winding ends additionally fixed with tape, outer winding primary. Tubing on winding ends is leaded above the distance tape.

Recurring peak voltage	416V <sub>peak</sub>	
Required clearance for reinforced insulation (table 2H and 2J)	4.0mm	
Measured min. clearances, location	inside (mm)	outside (mm)
pri-sec	10.0	10.0
pri-core	5.0	5.0
sec-core	5.0	5.0
Effective voltage rms	308V	
Required creepage for reinforced insulation ( table 2L)	6.6mm	
Measured min. creepages, location:	inside (mm)	outside (mm)
pri-sec	14.0	14.0
pri-core	7.0	7.0
sec-core	7.0	7.0
Pin numbers primary:	1-2	
Pin numbers secondary:	3-4	
Bobbin thickness /material:	0.8mm/phenolic	
Electric strength test, 3000Vac after humidity treatment	No breakdown	

## IEC 60950

Clause	Requirement – Test	Result - Remark	Verdict
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C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position:	Primary – secondary T52	---
	Manufacturer:	(see appended table 1.5.1)	---
	Type:	(see appended table 1.5.1)	---
	Rated values:	(see appended table 1.5.1)	---
	Method of protection:		---
C.1	Overload test	(see appended table 5.3)	N
C.2	Insulation	(see appended tables 2.10.3/4, 2.10.5, 5.2)	P
	Protection from displacement of windings:	Windings are twisted and soldered on pins.	P

Construction details of Transformer T52:

Concentric windings on phenolic bobbin, approved Triple Insulated Wire used for primary windings.

Recurring peak voltage	680V <sub>peak</sub>	
Required clearance for reinforced insulation (table 2H and 2J)	4.8mm	
Measured min. clearances, location	inside (mm)	outside (mm)
pri-sec	*	8.0
pri-core	*	4.0
sec-core	*	4.0
Effective voltage rms	433V	
Required creepage for reinforced insulation ( table 2L)	8.8mm	
Measured min. creepages, location:	inside (mm)	outside (mm)
pri-sec	*	11.9
pri-core	*	6.0
sec-core	*	5.9
Pin numbers primary:	2-4-6	
Pin numbers secondary:	8,9-10,11	
Bobbin thickness /material:	0.8mm/phenolic	
Electric strength test, 3000Vac after humidity treatment	No breakdown	

\*: Approved Triple Insulated Wire used.

G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES <i>Alternate method not considered.</i>	N
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IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict
H	ANNEX H, IONIZING RADIATION (see 4.3.13) <i>No ionizing radiation generated.</i>		N
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		P
	Metal used:		
K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7) <i>Not used.</i>		N
M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1) <i>Not considered.</i>		N
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4) <i>Approved TIW used. No further test required.</i>		N
	Separate test report		N

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

1.5.1	TABLE: list of critical components					P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>	
Terminal Block (TB1)	Fujicon	F2028AX- 3.5M10P	250V, 20A	IEC/EN 60950	Tested in unit	
Fuse (F1)	Littelfuse	314010	250V, 10A	UL	UL*	
(alternate)	S.O.C.	SHV14	400V, 10A	UL	UL*	
X-Capacitor (C1) for JWS300	Arcotronics	1.40	275V, 0.68μF Class X2	EN 132400	VDE, SEV	
X-Capacitor (C2) for JWS300	Arcotronics	1.40	275V, 0.22μF Class X2	EN 132400	VDE, SEV	
Varistor (Z1)	Matsushita	ERZV10D471	272Vrms, 0.4W	UL	UL*	
Inductor (L1)	Delta	LFZ2805V13	Class E PBTP bobbin	IEC/EN 60950	Tested in unit	
Inductor (L2) for JWS300	Tokin	SS35V- 35047	Class E PBT bobbin	IEC/EN 60950	Tested in unit	
Inductor (L2) for JWS240P	Tokin	SS35V- 45022	Class E PBT bobbin	IEC/EN 60950	Tested in unit	
Y-Capacitors (C3, C4)	Murata	KX	250V, 2200pF Class Y1	EN 132400	VDE	
Bleeder Resistor (R101, R102, R103, R104)	--	--	100kΩ, 0.25W	IEC/EN 60950	Tested in unit	
Inductor (L3)	Densei- Lambda	A16101_	Class B	IEC/EN 60950	Tested in unit	
TIW used in L3	Totoku	3S-ETFE	3000V/2layers	IEC/EN 60950	TÜV-R	
Capacitors (C9, C10)	Murata	KX	250V, 2200pF Class Y1	EN 132400	VDE	
Electrolytic Capacitors (C8, C66)	--	--	450V, 180μF	IEC/EN 60950	Tested in unit	
Resistor with Thermal Fuse (TFR1)	Uchihashi Estec	A53K	10Ω, 130 °C	EN 60691	TÜV-R	
Fuse (F2)	Bussmann	PCB2A	250V, 2A	UL	UL*	
Current Transformer (T51)	Densei- Lambda	05723_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit	
Transformer (T52) for JWS300-2	Densei- Lambda	A16111_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit	

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
Transformer (T52) for JWS300-3	Densei- Lambda	A16112_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit
Transformer (T52) for JWS300-5	Densei- Lambda	A16113_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit
Transformer (T52) for JWS300-6	Densei- Lambda	A16141_ or A16118_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit
Transformer (T52) for JWS300-9	Densei- Lambda	A16142_ or A16119_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit
Transformer (T52) for JWS300-12	Densei- Lambda	A16114_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit
Transformer (T52) for JWS300-15	Densei- Lambda	A16115_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit
Transformer (T52) for JWS300-18	Densei- Lambda	A16143_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit
Transformer (T52) for JWS300-24 and JWS240P-24	Densei- Lambda	A16116_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit
Transformer (T52) for JWS300-28	Densei- Lambda	A16144_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit
Transformer (T52) for JWS300-36 and JWS240P-36	Densei- Lambda	A16145_ or A18211_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit
Transformer (T52) for JWS300-48 and JWS240P-48	Densei- Lambda	A16117_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit
Transformer (T1)	Densei- Lambda	A16131_	Class B Phenolic bobbin	IEC/EN 60950	Tested in unit
TIW used in T1 and T52	Furukawa	TEX-E	3000V/2layers	IEC/EN 60950	TÜV-R
(alternate)	Totoku	3S-ETFE	3000V/2layers	IEC/EN 60950	TÜV-R
Optical Isolators (PC51, PC52, PC53)	Toshiba	TLP721F	Insulation distance 0.5mm	DIN VDE 0884	VDE
Fan	Sanyo Denki	109P0812H2 D011	12Vdc, 0.16A	IEC/EN 60950	Tested in unit
Insulation Sheet	--	--	V-2	UL94	UL*
PCB	CMK	C2X	Min V-1 CTI≥600	UL94	UL*

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
(alternate)	Shoei Print	600	Min V-1 CTI≥600	UL94	UL*

1) An asterisk indicates a mark which assures the agreed level of surveillance

1.6.2	TABLE: electrical data (in normal conditions)					P
Fuse #	Irated (A)	U (V)	P (W)	I (mA)	Ifuse (mA)	Condition/status
Model: JWS300-5						
F1	4.4	100/50Hz	-	4.0	4.0	Rated output
F1	4.4	100/60Hz	-	4.0	4.0	
F1	4.4	240/50Hz	-	1.6	1.6	
F1	4.4	240/60Hz	-	1.6	1.6	
F1	4.4	DC 120	-	3.7	3.7	
F1	4.4	DC 360	-	1.2	1.2	
Model: JWS300-24						
F1	4.4	100/50Hz	-	4.3	4.3	Rated output
F1	4.4	100/60Hz	-	4.3	4.3	
F1	4.4	240/50Hz	-	1.7	1.7	
F1	4.4	240/60Hz	-	1.7	1.7	
F1	4.4	DC 120	-	3.5	3.5	
F1	4.4	DC 360	-	1.12	1.12	
Model: JWS300-48						
F1	4.4	100/50Hz	-	4.2	4.2	Rated output
F1	4.4	100/60Hz	-	4.2	4.2	
F1	4.4	240/50Hz	-	1.6	1.6	
F1	4.4	240/60Hz	-	1.6	1.6	
Model: JWS240P-24						
F1	3.2	100/50Hz	-	3.0	3.0	Rated output
F1	3.2	100/60Hz	-	3.0	3.0	
F1	3.2	240/50Hz	-	1.3	1.3	
F1	3.2	240/60Hz	-	1.3	1.3	
F1	3.2	DC 120	-	2.5	2.5	
F1	3.2	DC 360	-	0.8	0.8	

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

1.6.2	TABLE: electrical data (in normal conditions, continuation)						P
Fuse #	Irated (A)	U (V)	P (W)	I (mA)	Ifuse (mA)	Condition/status	
Model: JWS240P-48							
F1	3.2	100/50Hz	-	3.0	3.0	Rated output	
F1	3.2	100/60Hz	-	3.0	3.0		
F1	3.2	240/50Hz	-	1.2	1.2		
F1	3.2	240/60Hz	-	1.2	1.2		
F1	3.2	DC 120	-	2.5	2.5		
F1	3.2	DC 360	-	0.8	0.8		
Operating condition(s):							
Measured under continuous normal operation, deviation throughout one cycle: less than 110% of rating.							

2.10.3/4	TABLE: clearance and creepage distance measurements							P
Type of insulation	clearance cl and creepage distance dcr at/of	U <sub>peak</sub> (V)	U <sub>r.m.s.</sub> (V)	required cl (mm)	measure cl (mm)	required dcr (mm)	measure dcr (mm)	
<b>Main-PCB (pri, gnd, sec)</b>								
Operat.	Pri - pri (before fuse)	< 420	< 250	1.5	3.0	2.5	3.0	
Basic	Pri - gnd (traces)	< 420	< 250	2.0	5.0	2.5	5.0	
Reinf.	Pri - sec (traces at T51)	416	308	4.0	8.6	6.6	8.6	
Reinf.	Pri - sec (traces at T52)	680	433	4.8	8.8	8.8	8.8	
Reinf.	Pri - sec (traces at T1)	616	330	4.6	14.0	7.0	14.0	
Reinf.	Pri - sec (terminal block TB1)	< 420	< 250	4.0	6.0	5.0	6.0	
Reinf.	Pri - sec (traces, other than at transf.)	< 420	< 250	4.0	8.0	5.0	8.0	
<b>Transformer T51</b>								
Reinf.	Pri - sec	416	308	4.0	10.0	6.6	14.0	
<b>Transformer T52</b>								
Reinf.	Pri - sec	680	433	4.8	8.0	8.8	11.9	
<b>Transformer T1</b>								
Reinf.	Pri - sec	616	330	4.6	7.0	7.0	10.0	

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

2.10.5	TABLE: distance through insulation measurements				P
Type of insulation	distance through insulation di at/of:	U r.m.s. (V)	Test voltage (V)	required di (mm)	measured di (mm)
Transformers have TIW. Insulation sheets are used for functional purpose only. Photo-coupler are certified for double/reinforced insulation according DIN VDE 0884. Their insulation thickness is > 0.4mm according to manufacturers data.					

4.5.1	TABLE: Temperature rise measurements			P
Temperatures were measured according cl. 1.4.5, test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperature limits are calculated according cl. 1.4.12 with regard to the maximum ambient operation temperature of 50°C, as specified by the manufacturer (see page 3 for specified ambient temperature).				
test voltage(s) (V):		A: 90V, 50Hz	B: 254V, 50Hz	
t1 (°C):	A: 50    B: 50	t2 (°C):	A: 50    B: 50	
Temperature rise dT of part/at. (measured with thermocouple)		A dT (K)	B dT (K)	allowed dT (K)
TB1		1	0	--
F1		6	0	--
C1		1	0	--
C3		5	1	--
L1		24	2	E/55
L2		28	3	E/55
D1		41	12	--
L3		29	17	B/60
T1 coil primary side		6	6	B/60
T1 coil secondary side		2	2	B/60
Q51		45	44	--
T51 coil		9	9	B/60
T52 coil primary side		27	27	B/60
T52 coil secondary side		16	16	B/60
PCB near T52		21	21	--
PC51		4	5	--
C8		5	3	--
Fan body		11	8	A/40
Test condition: Model JWS300-24, 100% output load				



IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

4.5.1	TABLE: Temperature rise measurements (continuation)			P
Temperatures were measured according cl. 1.4.5, test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperature limits are calculated according cl. 1.4.12 with regard to the maximum ambient operation temperature of 50°C, as specified by the manufacturer (see page 3 for specified ambient temperature).				
test voltage(s) (V):		A: DC 108V		B: DC 382V
t1 (°C):	A: 50    B: 50	t2 (°C):	A: 50    B: 50	
Temperature rise dT of part/at: (measured with thermocouple)		A dT (K)	B dT (K)	allowed dT (K)
TB1		0	0	--
F1		3	1	--
C1		1	1	--
C4		0	1	--
L1		18	2	E/55
L2		15	2	E/55
D1		33	10	--
L3		28	6	B/60
T1 coil primary side		4	5	B/60
T1 coil secondary side		5	5	B/60
Q51		32	33	--
T51 coil		6	7	B/60
T52 coil primary side		30	30	B/60
T52 coil secondary side		24	24	B/60
PCB near T52		18	18	--
PC51		6	6	--
C8		8	7	--
Test condition: Model JWS300-24, 100% output load				

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

4.5.1	TABLE: Temperature rise measurements (continuation)			P
Temperatures were measured according cl. 1.4.5, test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperature limits are calculated according cl. 1.4.12 with regard to the maximum ambient operation temperature of 60°C, as specified by the manufacturer (see page 3 for specified ambient temperature).				
test voltage(s) (V):		A: 90V, 50Hz	B: 254V, 50Hz	
t1 (°C):	A: 60 B: 60	t2 (°C):	A: 60 B: 60	
Temperature rise dT of part/at (measured with thermocouple)		A dT (K)	B dT (K)	allowed dT (K)
TB1		0	0	--
F1		3	0	--
C1		0	0	--
C3		2	1	--
L1		11	1	E/45
L2		14	1	E/45
D1		27	8	--
L3		23	13	B/50
T1 coil primary side		6	6	B/50
T1 coil secondary side		2	2	B/50
Q51		42	42	--
T51 coil		7	7	B/50
T52 coil primary side		19	19	B/50
T52 coil secondary side		11	11	B/50
PCB near T52		17	17	--
PC51		4	3	--
C8		3	2	--
Fan body		7	5	A/30
Test condition: Model JWS300-24, 70% output load				

## IEC 60950

Clause	Requirement – Test	Result - Remark	Verdict
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4.5.1	TABLE: Temperature rise measurements (continuation)			P
Temperatures were measured according cl. 1.4.5, test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperature limits are calculated according cl. 1.4.12 with regard to the maximum ambient operation temperature of 65°C, as specified by the manufacturer (see page 3 for specified ambient temperature).				
test voltage(s) (V):		A: 90V, 50Hz		B: 254V, 50Hz
t1 (°C):	A: 65 B: 65		t2 (°C):	A: 65 B: 65
Temperature rise dT of part/at: (measured with thermocouple)		A dT (K)	B dT (K)	allowed dT (K)
TB1		0	0	--
F1		2	0	--
C1		0	0	--
C3		1	0	--
L1		8	1	E/40
L2		9	1	E/40
D1		23	7	--
L3		22	12	B/45
T1 coil primary side		6	6	B/45
T1 coil secondary side		3	3	B/45
Q51		38	38	--
T51 coil		5	5	B/45
T52 coil primary side		17	17	B/45
T52 coil secondary side		8	8	B/45
PCB near T52		16	16	--
PC51		2	2	--
C8		2	2	--
Fan body		7	5	A/25
Test condition: Model JWS300-24, 55% output load				

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

4.5.1	TABLE: Temperature rise measurements (continuation)			P
Temperatures were measured according cl. 1.4.5, test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperature limits are calculated according cl. 1.4.12 with regard to the maximum ambient operation temperature of 70°C, as specified by the manufacturer (see page 3 for specified ambient temperature).				
test voltage(s) (V):		A: DC 108V	B: DC 382V	
t1 (°C):	A: 70 B: 70	t2 (°C):	A: 70 B: 70	
Temperature rise dT of part/at: (measured with thermocouple)		A dT (K)	B dT (K)	allowed dT (K)
TB1		0	0	--
F1		1	1	--
C1		1	1	--
C4		0	1	--
L1		5	1	E/35
L2		5	1	E/35
D1		17	5	--
L3		26	4	B/40
T1 coil primary side		4	5	B/40
T1 coil secondary side		6	6	B/40
Q51		24	26	--
T51 coil		4	4	B/40
T52 coil primary side		14	14	B/40
T52 coil secondary side		12	11	B/40
PCB near T52		13	13	--
PC51		14	5	--
C8		15	5	--
Test condition: Model JWS300-24, 55% output load				

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

4.5.1	TABLE: Temperature rise measurements (continuation)			P
Temperatures were measured according cl. 1.4.5, test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperature limits are calculated according cl. 1.4.12 with regard to the maximum ambient operation temperature of 50°C, as specified by the manufacturer (see page 3 for specified ambient temperature).				
test voltage(s) (V):		A: 90V, 50Hz		B: 254V, 50Hz
t1 (°C):	A: 50 B: 50		t2 (°C):	A: 50 B: 50
Temperature rise dT of part/at: (measured with thermocouple)		A dT (K)	B dT (K)	allowed dT (K)
TB1		3	2	--
F1		8	3	--
C1		5	3	--
C3		7	3	--
L1		28	5	E/55
L2		22	5	E/55
D1		33	11	--
L3		34	21	B/60
T1 coil primary side		5	5	B/60
T1 coil secondary side		8	6	B/60
Q51		37	40	--
T51 coil		16	15	B/60
T52 coil primary side		36	35	B/60
T52 coil secondary side		30	30	B/60
PCB near T52		36	36	--
PC51		10	10	--
Fan body		9	8	A/40
Test condition: Model JWS300-5, 100% output load				

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

4.5.1	TABLE: Temperature rise measurements (continuation)			P
Temperatures were measured according cl. 1.4.5, test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperature limits are calculated according cl. 1.4.12 with regard to the maximum ambient operation temperature of 50°C, as specified by the manufacturer (see page 3 for specified ambient temperature).				
test voltage(s) (V):		A: DC 108V		B: DC 382V
t1 (°C):	A: 50    B: 50	t2 (°C):	A: 50    B: 50	
Temperature rise dT of part/at: (measured with thermocouple)		A dT (K)	B dT (K)	allowed dT (K)
TB1		2	1	--
F1		4	1	--
C1		3	2	--
C4		1	1	--
L1		18	3	E/55
L2		21	4	E/55
D1		35	12	--
L3		24	8	B/60
T1 coil primary side		8	8	B/60
T1 coil secondary side		9	9	B/60
Q51		41	41	--
T51 coil		14	14	B/60
T52 coil primary side		30	29	B/60
T52 coil secondary side		24	23	B/60
PCB near T52		31	30	--
PC51		13	12	--
C8		7	6	--
Test condition: Model JWS300-5, 100% output load				

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

4.5.1	TABLE: Temperature rise measurements (continuation)			P
Temperatures were measured according cl. 1.4.5, test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperature limits are calculated according cl. 1.4.12 with regard to the maximum ambient operation temperature of 60°C, as specified by the manufacturer (see page 3 for specified ambient temperature).				
test voltage(s) (V):		A: 90V, 50Hz		B: 254V, 50Hz
t1 (°C):	A: 60    B: 60	t2 (°C):	A: 60    B: 60	
Temperature rise dT of part/at: (measured with thermocouple)		A dT (K)	B dT (K)	allowed dT (K)
TB1		1	1	--
F1		4	1	--
C1		2	2	--
C3		4	2	--
L1		14	3	E/45
L2		11	2	E/45
D1		21	6	--
L3		26	16	B/50
T1 coil primary side		4	3	B/50
T1 coil secondary side		4	4	B/50
Q51		30	30	--
T51 coil		10	9	B/50
T52 coil primary side		23	23	B/50
T52 coil secondary side		20	19	B/50
PCB near T52		26	26	--
PC51		6	6	--
Fan body		6	5	A/30
Test condition: Model JWS300-5, 70% output load				

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

4.5.1	TABLE: Temperature rise measurements (continuation)			P
Temperatures were measured according cl. 1.4.5, test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperature limits are calculated according cl. 1.4.12 with regard to the maximum ambient operation temperature of 65°C, as specified by the manufacturer (see page 3 for specified ambient temperature).				
test voltage(s) (V):		A: 90V, 50Hz		B: 254V, 50Hz
t1 (°C):	A: 65 B: 65		t2 (°C):	A: 65 B: 65
Temperature rise dT of part/at: (measured with thermocouple)		A dT (K)	B dT (K)	allowed dT (K)
TB1		0	0	--
F1		1	0	--
C1		1	0	--
C3		1	0	--
L1		8	1	E/40
L2		6	0	E/40
D1		15	4	--
L3		23	12	B/45
T1 coil primary side		1	1	B/45
T1 coil secondary side		2	1	B/45
Q51		24	25	--
T51 coil		5	5	B/45
T52 coil primary side		17	17	B/45
T52 coil secondary side		14	14	B/45
PCB near T52		19	19	--
PC51		3	3	--
Fan body		6	4	A/25
Test condition: Model JWS300-5, 55% output load				



IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

4.5.1	TABLE: Temperature rise measurements (continuation)			P
Temperatures were measured according cl. 1.4.5, test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperature limits are calculated according cl. 1.4.12 with regard to the maximum ambient operation temperature of 70°C, as specified by the manufacturer (see page 3 for specified ambient temperature).				
test voltage(s) (V):		A: DC 108V		B: DC 382V
t1 (°C):	A: 70    B: 70	t2 (°C):	A: 70    B: 70	
Temperature rise dT of part/at (measured with thermocouple)		A dT (K)	B dT (K)	allowed dT (K)
TB1		0	0	--
F1		0	0	--
C1		0	1	--
C4		0	0	--
L1		3	1	E/35
L2		5	1	E/35
D1		16	5	--
L3		18	4	B/40
T1 coil primary side		6	6	B/40
T1 coil secondary side		7	7	B/40
Q51		23	24	--
T51 coil		6	5	B/40
T52 coil primary side		15	24	B/40
T52 coil secondary side		10	20	B/40
PCB near T52		14	24	--
PC51		4	5	--
C8		3	3	--
Test condition: Model JWS300-5, 55% output load				

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

4.5.1	TABLE: Temperature rise measurements (continuation)			P
Temperatures were measured according cl. 1.4.5, test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperature limits are calculated according cl. 1.4.12 with regard to the maximum ambient operation temperature of 50°C, as specified by the manufacturer (see page 3 for specified ambient temperature).				
test voltage(s) (V):		A: 90V, 50Hz	B: 254V, 50Hz	
t1 (°C):	A: 50 B: 50	t2 (°C):	A: 50 B: 50	
Temperature rise dT of part/at: (measured with thermocouple)		A dT (K)	B dT (K)	allowed dT (K)
C1		5	4	--
L1		18	5	E/55
L2		14	5	E/55
L3		19	14	B/60
T1 coil primary side		11	10	B/60
T1 coil secondary side		9	8	B/60
T52 coil primary side		25	25	B/60
T52 coil secondary side		21	20	B/60
Test condition: Model JWS240P-48, 100% output load				

4.5.1	TABLE: Temperature rise measurements (continuation)			P
Temperatures were measured according cl. 1.4.5, test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperature limits are calculated according cl. 1.4.12 with regard to the maximum ambient operation temperature of 65°C, as specified by the manufacturer (see page 3 for specified ambient temperature).				
test voltage(s) (V):		A: 90V, 50Hz		B: 254V, 50Hz
t1 (°C):	A: 65    B: 65	t2 (°C):	A: 65    B: 65	
Temperature rise dT of part/at: (measured with thermocouple)		A dT (K)	B dT (K)	allowed dT (K)
C1		4	2	--
L1		8	3	E/40
L2		7	3	E/40
L3		16	8	B/45
T1 coil primary side		10	8	B/45
T1 coil secondary side		8	7	B/45
T52 coil primary side		17	15	B/45
T52 coil secondary side		14	12	B/45
Test condition: Model JWS240P-48, 55% output load				

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

4.5.2	TABLE: ball pressure test of thermoplastic parts			P
	allowed impression diameter (mm):	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	
Bobbin of L1 (PBTP)		125	1.1	
Bobbin of L2 (PBT)		125	1.1	
Material of TB1 (PBTP)		125	1.1	
Maximum impression did not exceed the limits. Bobbins of phenolic resin not tested.				

5.1	TABLE: touch current and protective conductor current				P
	Test voltage (V) :	264V, 60Hz			—
		Polarity (normal)	Polarity (reverse)		—
Measurement location:	Switch: ON	Switch: OFF	Switch: ON	Switch: OFF	Limit
Earth Terminal	0.65 mA	--	0.65 mA	--	3.5 mA
Output Terminal	0.14 mA	--	0.14 mA	--	3.5 mA
Remarks: No switch is provided on the unit.					

5.2	TABLE: electric strength tests and impulse tests			P
Type of insulation	Test voltage applied between:	Test voltage (V)	Breakdown Yes / No	
Unit				
Basic	Pri - gnd	DC 2758	No	
Reinf.	Pri - sec	DC 4242	No	
Transformer T1, T51 and T52, tested separately				
Reinf.	Pri - sec	AC 3000	No	
Basic	Pri – core	AC 1951	No	
Basic	Sec – core	AC 1951	No	
Tests were performed after heating, abnormal tests and humidity treatment.				

## IEC 60950

Clause	Requirement – Test	Result - Remark	Verdict
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5.3	TABLE: fault condition tests		P
	Ambient temperature (°C):	24	--
	Model/type of power supply:	(see below)	--
	Manufacturer of power supply:	(see page 1)	--
	Rated markings of power supply:	(see page 3)	--

No.	Component no.	Fault	Test voltage (V)	Test time	Fuse No.	Fuse current (A)	Result
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## Model JWS300-48

1	D1 +, to ~	S	AC 240	1s	F1	Max. 18	F1 opened.
2	C10	S	AC 240	1s	F1	Max. 18	F1 opened.
3	Q1 D-S	S	AC 240	1s	F1	Max. 18	F1 opened. Q1 damaged.
4	Q1 D-G	S	AC 240	1s	F1	Max. 18	F1 opened. Q1 damaged.
5	Q2 D-S	S	AC 240	1s	F1	Max. 18	F1 opened. Q2 damaged.
6	Q2 D-G	S	AC 240	1s	F1	Max. 18	F1 opened. Q2 damaged.
7	Q2 G-S	S	AC 240	1s	F1	Max. 18	Unit shut down, not damaged.
8	D51	S	AC 240	1s	F1	Max. 18	Unit shut down, not damaged.
9	PC1 1-2	S	AC 240	15min	F1	1.6	Normal operation.
10	PC1 3-4	S	AC 240	1s	F1	--	Unit shut down, not damaged.
11	PC2 1-2	S	AC 240	1s	F1	--	Unit shut down, not damaged.
12	PC2 3-4	S	AC 240	1s	F1	--	Unit shut down, not damaged.
13	PC3 1-2	S	AC 240	1s	F1	--	Unit shut down, not damaged.
14	PC3 3-4	S	AC 240	15min	F1	1.6	Normal operation.
15	T52 7-10	S	AC 240	1s	F1	--	Unit shut down, not damaged.
16	T51 3-4	S	AC 240	15min	F1	1.6	Normal operation.
17	T1 6-7	S	AC 240	1s	F1	--	Unit shut down, not damaged.
18	T1 9-10	S	AC 240	1s	F1	--	Unit shut down, not damaged.
19	Output	S	AC 240	1s	F1	0.2	Maximum output current 10.2A, maximum T52 temperature 31°C after 30 min.

## Model JWS300-24

1	D1 + to ~	S	DC 360	1s	F1	10	F1 opened.
2	C10	S	DC 360	1s	F1	10	F1 opened.

## Remarks:

During the tests no fire or other hazard occurred, SELV limits were not exceeded for longer than 0.2 sec. The insulation system could withstand the dielectric strength test after fault conditions.

S = shorted, O = open, OL = overloaded, L = locked

IEC 60950			
Clause	Requirement – Test	Result - Remark	Verdict

5.3	TABLE: fault condition tests (continuation)						P
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No.	Component no.	Fault	Test voltage (V)	Test time	Fuse No.	Fuse current (A)	Result
3	Q1 D-S	S	DC 360	1s	F1	10	F1 opened.
4	Q2 D-S	S	DC 360	1s	F1	10	F1 opened, Q1 damaged.

**Model JWS300-5**

1	Ventilation openings closed		240	5min	F1	1.6	After 5 min, unit shut down, maximum temperature of T52 winding 50°C, ambient 19°C.
2	Output	S	240	1s	F1	0.4	Maximum output current 72.8A, maximum T52 temperature 49°C after 30 min.

**Remarks:**

During the tests no fire or other hazard occurred, SELV limits were not exceeded for longer than 0.2 sec. The insulation system could withstand the dielectric strength test after fault conditions.  
S = shorted, O = open, OL = overloaded, L = locked

**Overload test:**

The outputs were operated at max. load, while the remaining outputs were operated at rated/actual load.

Transformer	Output # (ratings)	Max. load	Result; max. temperature of transformer
JWS300-48 T52	48V 6.5A	48.0V 7.58A	50
JWS300-5 T52	5V 60A	5V 67.2A	61

Remarks: An electronic overload protection circuit shuts down output if loaded beyond the indicated value.

EN 60950			
Clause	Requirement – Test	Result - Remark	Verdict
Appendix	EN 60950:2000 (IEC Publication 60950:1999)  CENELEC common modification, Special National condition, National deviation and other information		
EXPLANATION FOR ABBREVIATIONS			
C=CENELEC common modification, S=Special National condition, D=National deviation, F=Other information, CH=Switzerland, DE=Germany, DK=Denmark, ES=Spain, FI=Finland, FR=France, GB=United Kingdom, IE=Ireland, NO=Norway, SE=Sweden.			
P=Pass, F=Fail, N=Not applicable, placed in the right "Verdict" column.			
(General) C	Delete all the "country" notes that appear on the following pages of the reference document (IEC 60950:1999): 85, 91, 99, 103, 117, 119, 123, 125, 149, 171, 213, 215, 219, 251, 283, 325, 327, 331, 333 and 407.	Considered.	P
1.2.4.1	(DK). Certain types of Class I appliances (see subclause 3.2.1) may be provided with a plug not establishing earthing continuity when inserted into Danish socket-outlets.	Built-in type, no power cord provided.	N
1.5.1 D	(SE). Add the following: Note: In Sweden, switches containing mercury such as thermostats, relays and level controllers are not allowed.	No such switch.	N
1.5.1 D	(CH). Add the following: Note: In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.	No such switch.	N
1.5.8 S	(NO). Due to the IT power system used (see annex V, figure V.7), capacitors are required to be rated for the applicable phase-to-phase voltage (230V).	Not intended for IT systems.	N
1.7.2 S	(NO). Class I plugable equipment type A intended for connection to other equipment or a communication network: If safety relies on connection to protective earth, require a marking stating that the equipment must be connected to an earthed mains socket outlet.	Built-in type power supply.	N
1.7.2 S	(SE). If the separation between the mains and SELV terminal relies upon connection to the safety earth, the apparatus shall have a marking stating that it must be connected to an earthed mains socket outlet. The marking shall be in Swedish and as follows: Apparaten skall anslutas till jordat uttag när den ansluts till ett nätverk."	Built-in type power supply.	N

EN 60950			
Clause	Requirement – Test	Result - Remark	Verdict
1.7.2 D	(DK). Supply cords of Class I appliances, which are delivered without a plug, must be provided with a visible tag with the following text: "Vigtigt. Lederen med grøn/gul isolation må kun tilsluttes en klemme mærket eller".  If essential for the safety of the appliance, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text: "For tilslutning af de øvrige ledere, se medfølgende installationsvejledning".	Built-in type power supply.	N
1.7.5 S	(DK). Socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a when used on appliances of Class I.	No socket outlet.	N
1.7.5 D	(DK). Class II appliances shall not be fitted with socket-outlets for providing power to other appliances.	Class I type.	N
1.7.12 D	(DE). Directions for use with rules to prevent certain hazards for (among others) maintenance of the technical labour equipment, also for imported technical labour equipment shall be written in German language. Note: Of this requirement, rules for use even only by service personnel are not exempted.	Not applicable for built-in type power supply.	N
1.7.15 D	(CH). Annex 4.10 of SR 814.013 (ordinance on environmentally hazardous substances) applies for batteries.	No battery.	N
2.2.4 S	(NO). Requirements according to this annex, sub-clauses 1.7.2 and 6.1.2.1 apply.	No TNV.	N
2.3.2 S	(NO). Requirements according to this annex, sub-clause 6.1.2.1 applies.	No TNV.	N
2.3.3 S	(NO). Requirements according to this annex, sub-clause 6.1.2.1 applies.	No TNV.	N
2.3.4 S	(NO). Requirements according to this annex, sub-clauses 1.7.2 and 6.1.2.1 apply.	No TNV.	N

## EN 60950

Clause	Requirement – Test	Result - Remark	Verdict
2.7.1 C	<p>Replace the sub-clause as follows:</p> <p>Basic requirements</p> <p>To protect against excessive current, short circuits and earth faults in primary circuits, protective devices shall be included either as integral parts of the equipment or as part of the building installation, subject to the following a), b) and c)</p> <p>a) Except as detailed in b) and c), protective devices necessary to comply with the requirements of sub-clause 6.3 shall be included as parts of the equipment.</p> <p>b) For components in series with the mains input to the equipment such as supply cord, appliance coupler, r.f.i. filter and switch, short circuit and earth fault protection may be provided by protective devices in the building installation.</p> <p>c) It is permitted for plugable equipment type B or permanently connected equipment, to rely on dedicated overcurrent and short circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instruction.</p> <p>If reliance is placed on protection in the building installation, the installation instruction shall so state, except that for plugable equipment type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>	Replaced.	P
2.7.2 C	This sub-clause has been declared 'void'	Considered.	P
2.10.3.1 S	(NO). Due to the IT power distribution system used (see annex V, figure V.7), the AC mains supply voltage is considered to be equal to the line-to-line voltage, and will remain at 230V in case of a single earth fault.	Not intended to be connected to IT power system.	N



EN 60950			
Clause	Requirement – Test	Result - Remark	Verdict
3.2.1 S	<p>(DK). Supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to the Heavy Current Regulations Section 107-2-D1.</p> <p>Class I equipment provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a rated current exceeding 10A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations Section 107-1-D1 or EN 60309-2.</p>	Built-in type power supply. No power cord provided.	N
3.2.1 S	<p>(ES). Supply cords of single-phase equipment having a rated current not exceeding 10A shall be provided with a plug according UNE 20315:1994</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2.5A shall be provided with a plug according to UNE 50075:1993</p> <p>Class I equipment provided with socket-outlets with earth contacts, or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p>	Built-in type power supply. No power cord provided.	N

EN 60950			
Clause	Requirement – Test	Result - Remark	Verdict
3.2.1 S	<p>(CH). Supply cords of equipment having a rated current not exceeding 10A shall be provided with a plug complying with SEV 1011 or IEC 884-1 and one of the following dimension sheets</p> <p><u>SEV 6532-2</u>, 1991 Plug type 15 3P+N+PE 250/400V, 10A</p> <p><u>SEV 6533-2</u>, 1991 Plug type 11 L+N 250V, 10A</p> <p><u>SEV 6534-2</u>, 1991 Plug type 12 L+N+PE 250V, 10A</p> <p>In general EN 60 309 applies for plugs for currents exceeding 10A. However, a 16A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998:</p> <p><u>SEV 5932-2</u>, 1998 Plug type 15 3P+N+PE 250/400V, 10A</p> <p><u>SEV 5933-2</u>, 1998 Plug type 11 L+N 250V, 10A</p> <p><u>SEV 5934-2</u>, 1998 Plug type 12 L+N+PE 250V, 10A</p>	Built-in type power supply. No power cord provided.	N
3.2.1 S	<p>(IE). Apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket confirming to I.S. 411 by means of that flexible cable or cord and plug shall be fitted with a 13A plug in accordance with Statutory Instrument 525:1997 – National Standards Authority of Ireland (section 28) (13A plugs and Conversion adaptors for domestic use) Regulations 1997.</p>	Built-in type power supply. No power cord provided.	N
3.2.1 S	<p>(GB). Apparatus which is fitted with a flexible cable or cord, and is designed to be connected to a mains socket, conforming to BS1363 by means of that flexible cable or cord and plug, shall be fitted with a "standard plug" in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (safety) Regulations 1994, unless exempted by those regulations.</p> <p>Note: 'standard plug' is defined in SI 1768:1994 and essentially means an approved plug confirming to BS 1363 or an approved conversion plug.</p>	Built-in type power supply. No power cord provided.	N
3.2.3 C	Delete Note 1, and in table 3A delete the conduit sizes in parentheses.	Deleted.	P

EN 60950												
Clause	Requirement – Test	Result - Remark	Verdict									
3.2.5 C	<p>Replace</p> <p>"245 IEC 53" by "H05 RR-F"</p> <p>"227 IEC 52" by "H03 VV-F or H03 VVH2-F"</p> <p>"227 IEC 53" by "H05 VV-F or H05 VVH2-F"</p> <p>In table 3B, replace the first four lines by the following:</p> <table> <tr> <td>Up to and including 6</td> <td>0.75<sup>1)</sup></td> <td></td> </tr> <tr> <td>Over 6 up to and including 10</td> <td>(0.75)<sup>2)</sup></td> <td>1.0</td> </tr> <tr> <td>Over 10 up to and including 16</td> <td>(1.0)<sup>3)</sup></td> <td>1.5</td> </tr> </table> <p>In the conditions applicable to table 3B delete the words "in some countries" in condition <sup>1)</sup>.</p> <p>In Note 1, delete the second sentence.</p>	Up to and including 6	0.75 <sup>1)</sup>		Over 6 up to and including 10	(0.75) <sup>2)</sup>	1.0	Over 10 up to and including 16	(1.0) <sup>3)</sup>	1.5	Replaced.	P
Up to and including 6	0.75 <sup>1)</sup>											
Over 6 up to and including 10	(0.75) <sup>2)</sup>	1.0										
Over 10 up to and including 16	(1.0) <sup>3)</sup>	1.5										
3.2.5 S	(GB). A power supply cord with conductor of 1.25 mm <sup>2</sup> is allowed for equipment with rated current over 10 A and up to and including 13 A.	Built-in type power supply. No power cord provided.	N									
3.3.4 C	<p>In table 3D, delete the fourth line – conductor sizes for 10 to 13A – and replace with the following:</p> <p>Over 10 up to and including 16 1.5 to 2.5 1.5 to by 4</p> <p>Delete the fifth line – conductor sizes for 13 to 16A.</p>	Built-in type power supply. No power cord provided.	N									
3.3.4 S	(GB). The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current of over 10 A and up to and including 13 A is: 1.25 mm <sup>2</sup> to 1.5 mm <sup>2</sup> nominal cross-sectional area.	Built-in type power supply. No power cord provided.	N									
4.3.6 S	(IE). Direct plug-in equipment is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 – National Standards Authority of Ireland (Section 28)(Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.	Not direct plug-in equipment.	N									
4.3.6 S	(GB). The torque test is performed using a socket outlet complying with BS 1363 and the plug part of direct plug-in equipment shall be assessed to BS 1363:Part1, 12.1, 12.2, 12.3, 12.11, 12.12, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125°C.	Not direct plug-in equipment.	N									
4.3.13 C	<p>Replace the second compliance paragraph by:</p> <p>For equipment using LED or lasers, compliance is checked according to EN 60825-1.</p> <p>Note 1 – if equipment falling within the scope of EN 60950 is inherently a class 1 laser product, i.e. it contains no embedded laser or LD of a higher class number, then a warning label or other laser warning statement is not required (see 1.1 of EN 60825-1).</p>	Amended, see IEC 60950 report.	P									

EN 60950			
Clause	Requirement – Test	Result - Remark	Verdict
6.1.2.1 S	<p>(NO)(SE). Add the following text between the first and second paragraph:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>- two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> <li>- one layer having a distance through insulation of at least 0.4mm, which shall pass the electric strength test below.</li> </ul> <p>If this insulation forms part of a semiconductor component e.g. an optocoupler, there is no distance through insulation requirement for the insulation consists of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist if the component passes the electric strength test in accordance with the compliance clause below and in addition:</p> <ul style="list-style-type: none"> <li>- passes the tests and inspection criteria of 2.10.8 with an electric strength test of 1.5kV multiplied by 1.6 (the electric strength test of 2.10.7 shall be performed using 1.5kV); and</li> <li>- is subjected to routine testing for electric strength during manufacturing, using a test voltage of 1.5kV.</li> </ul> <p>It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, sub-class Y2.</p>	No TNV.	N
6.1.2.2 S	<p>(FI)(NO)(SE). The exclusions are applicable for permanent connected equipment and plugable equipment type B only.</p>	No TNV.	N
Annex G.2 S	<p>(NO) Due to the IT power distribution system used (see annex V, figure V.7), the AC mains supply voltage is considered to be equal to the line-to-line voltage, and will remain at 230V in case of a single earth fault.</p>	Not intended to be connected to IT power system.	N
Annex H C	<p>Replace the last paragraph of this annex by:</p> <p>At any point 10cm from the surface of the operator access area, the dose rate shall not exceed 1µSv/h (0.1mR/h) (see note). Account is taken of the background level.</p> <p>Replace the note as follows:</p> <p>Note – These values appear in directive 96/29/Euratom.</p>	Replaced.	P
Annex H D	<p>(DE) X-ray emission source</p>	No X-ray emission source, CRT etc.	N

EN 60950			
Clause	Requirement – Test	Result - Remark	Verdict
Annex P C	Replace the text of this annex by: See annex ZA.	Replaced.	P
Annex Q C	Add the following notes for the standards indicated:  IEC 60127 series (not modified) Note: Harmonized as EN 60127 series modified) IEC 60529 Note: Harmonized as EN 60529:1991 (not modified) IEC 61032 Note: Harmonized as EN 61032:1998 (not modified)	Added.	P