Jameco P/N: 2102713

250W Isolated Dual Output with PFC Function

PID-250

■ Features :

- Universal AC input / Full range
- Isolated output & GND for CH1,CH2
- Built-in active PFC function, PF>0.92
- Protections:Short circuit / Overload / Over voltage / Over temperature
- Remote control for CH1
- Peak load 170% for CH1 within 10 sec.
- Cooling by free air convection
- 100% full load burn-in test
- 3 years warranty

UL62368-1 EN62368-1 TPTC004 IEC62368-1

SPECIFICATION

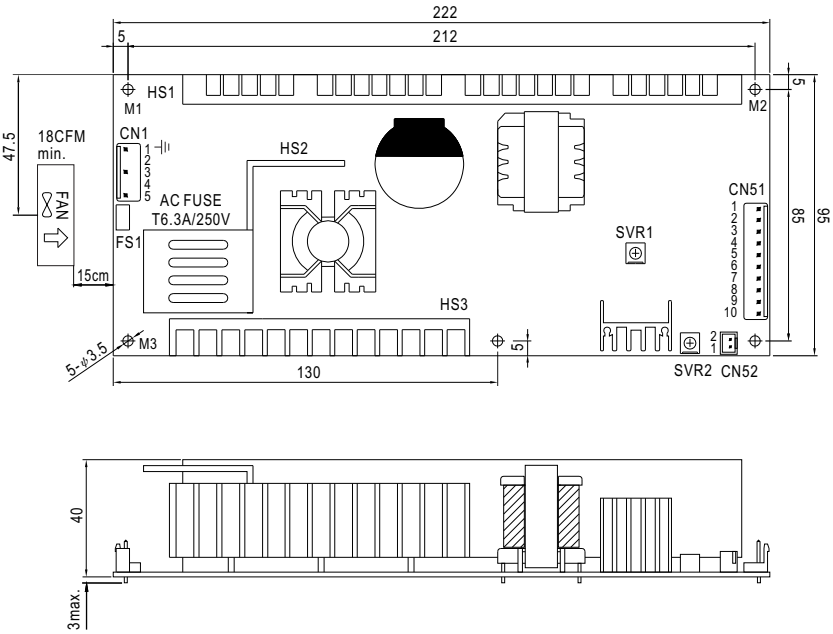
MODEL		PID-250A		PID-250B		PID-250C		PID-250D	
OUTPUT	OUTPUT NUMBER	CH1	CH2	CH1	CH2	CH1	CH2	CH1	CH2
	DC VOLTAGE	12V	5V	24V	5V	36V	5V	48V	5V
	RATED CURRENT	15A(Peak 20A)	5A	9.4A(Peak 16.7A)	5A	6.3A(Peak 11.1A)	5A	4.7A(Peak 8.4A)	5A
	CURRENT RANGE Note.6	0 ~ 15A (Peak 20A)	0 ~ 5A	0 ~ 9.4A (Peak 16.7A)	0 ~ 5A	0 ~ 6.3A (Peak 11.1A)	0 ~ 5A	0 ~ 4.7A (Peak 8.4A)	0 ~ 5A
	RATED POWER	205W		250.6W		251.8W		250.6W	
	RIPPLE & NOISE (max.) Note.2	120mVp-p	50mVp-p	150mVp-p	50mVp-p	200mVp-p	50mVp-p	200mVp-p	50mVp-p
	VOLTAGE ADJ. RANGE	10.8 ~ 13.2V	4.75 ~ 5.25V	21.6 ~ 26.4V	4.75 ~ 5.25V	32.4 ~ 39.6V	4.75 ~ 5.25V	43.2 ~ 52.8V	4.75 ~ 5.25V
	VOLTAGE TOLERANCE Note.3	±3.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±2.0%	±1.0%	±2.0%	±1.0%	±2.0%	±1.0%	±2.0%
	SETUP, RISE TIME	2500ms, 60ms/115VAC 1200ms, 60ms/230VAC							
	HOLD UP TIME (Typ.)	30ms at full load							
INPUT	VOLTAGE RANGE Note.5	90 ~ 264VAC 127 ~ 370VDC							
	FREQUENCY RANGE	47 ~ 63Hz							
	POWER FACTOR	PF≧0.92/230VAC PF≧0.97/115VAC at full load							
	EFFICIENCY(Typ.)	83%		86%		86%		86%	
	AC CURRENT (Typ.)	3A/115VAC 1.5A/230VAC							
	INRUSH CURRENT (Typ.)	COLD START 58A/230VAC							
	LEAKAGE CURRENT	<3.5mA / 240VAC							
PROTECTION	OVERLOAD	CH1: 105 ~ 170% rated output power Normally work within 10 sec and then shut down, re-power on to recover Over 180% rated power or short circuit, constant current limiting within 10 sec and then shut down, re-power on to recover							
		CH2: 101 ~ 150% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed							
	OVER VOLTAGE	13.8 ~ 16.2V	5.5 ~ 6.75V	27.6 ~ 32.4V	5.5 ~ 6.75V	40 ~ 48V	5.5~ 6.75V	54 ~ 64.8V	5.5 ~ 6.75V
		Protection type : Shut down o/p voltage, re-power on to recover for CH1 ; Hiccup mode, recovers automatically afer fault condition is removed for CH2(by zener diode clamp)							
	OVER TEMPERATURE	Shut down o/p voltage(CH1), recovers automatically after temperature goes down							
FUNCTION	REMOTE CONTROL	CN52 : Open=CH1 & CH2 power on ; Short = CH1 power off, CH2 power on; when CH2 is malfunction, CH1 will be shut down							
ENVIRONMENT	WORKING TEMP.	-20 ~ +70℃ (Refer to "Derating Curve")							
	WORKING HUMIDITY	20 ~ 90% RH non-condensing							
	STORAGE TEMP., HUMIDITY	-20 ~ +85℃, 10 ~ 95% RH							
	TEMP. COEFFICIENT	±0.05%/℃ (0 ~ 50℃)							
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min each along X, Y, Z axes							
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL62368-1, TUV EN62368-1, EAC TP TC 004 approved							
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC							
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃/ 70% RH							
	EMC EMISSION	Compliance to EN55032 (CISPR32) Class B, EN61000-3-2,-3, EAC TP TC 020							
	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN61000-6-2, heavy industry level, criteria A, EAC TP TC 020							
OTHERS	MTBF	150.4K hrs min. MIL-HDBK-217F (25℃)							
	DIMENSION	222*95*40mm (L*W*H)							
	PACKING	0.74Kg; 18pcs/14.3Kg/0.88CUFT							

NOTE

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to “EMI testing of component power supplies.” (as available on http://www.meanwell.com)
5. Derating may be needed under low input voltage. Please check the derating curve for more details.
6. Peak current should reduce to 150% of rated value if the input voltage <110VAC.
7. Heat Sink HS1,HS2,HS3 can not be shorted.
8. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).

■ Mechanical Specification

Unit:mm



AC Input Connector (CN1) : JST B5P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	FG ⏚	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2,4	No Pin		
3	AC/N		
5	AC/L		

⏚ : Grounding Required

DC Output Connector (CN51) : JST B10P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1,2,3	COM1	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
4,5,6	V1		
7,8	COM2		
9,10	V2		

Remote ON/OFF Connector(CN52):JST B2B-XH or equivalent

Pin No.	Status	Mating Housing	Terminal
PIN1,2 (Short)	V1: OFF V2: ON	JST XHP or equivalent	JST SXH-001T-P0.6 or equivalent
PIN1,2 (Open)	V1: ON V2: ON		

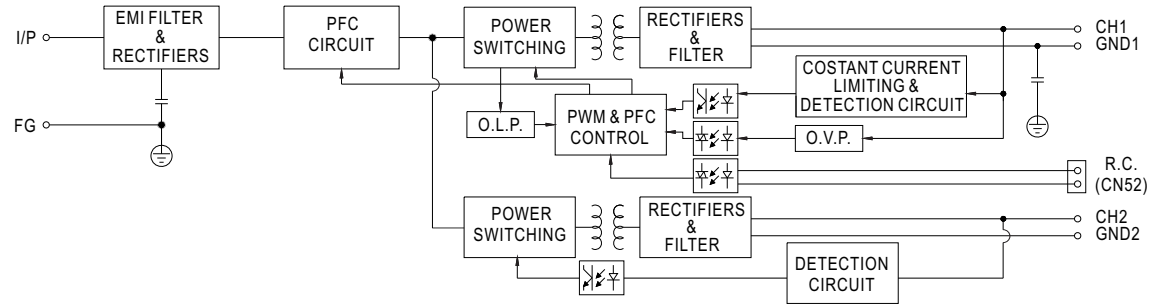
SVR1	For CH1
SVR2	For CH2

⚠

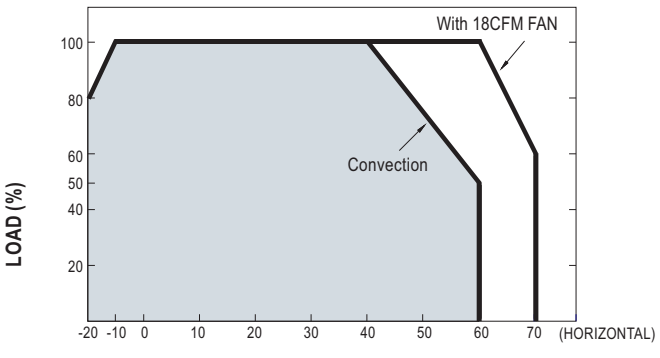
1.HS1,HS2,HS3 cannot be shorted.
2.CN1:Pin1 is safety ground. For better EMC performance,Please secure an electrical connection between M1,M2,M3,and chassis grounding.

■ Block Diagram

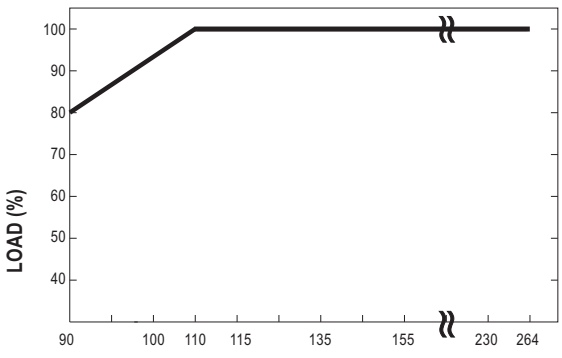
PFC fosc : 100KHz
PWM fosc : 100KHz



■ Derating Curve



■ Output Derating VS Input Voltage



MS. SANDY HSU
MEAN WELL ENTERPRISES CO LTD
28 WU-CHUAN 3RD RD
WUGU INDUSTRIAL PARK
TAIPEI HSIEN
248 TAIWAN

Date: 2011/01/28
Subscriber: 710861002
PartySite: 156523
File No: E183223
Project No: 10CA61558
PD No: 11003581
Type: R
PO Number: 99-0492-1

Subject: **Procedure And/Or Report Material**

The following material resulting from the investigation under the above numbers is enclosed.

Issue

Date	Vol	Sec	Pages	Revised Date
2007/03/16	X1	A81	Revised Proc/Rpt Section	

"If there are illegible images in this package, legible images may be found online via MyHome@UL under My UL Reports/CDA."

Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

Please review this material and report any inaccuracies to UL's Customer Service Professionals. Contact information for all of UL's global offices can be found at http://www.ul.com/global/eng/pages/corporate/contactus.

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CAM File

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2007-03-27 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Component Recognition
CCN:	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	Open Frame Switching Power Supply
Model:	PID-250X, where X can be A, B, C or D
Rating:	Input: 100-240 Vac, 50/60 Hz, 3 A Output: Model PID-250A: 12 Vdc/15 A, 5 Vdc/5 A Model PID-250B: 24 Vdc/9.4 A, 5 Vdc/5 A Model PID-250C: 36 Vdc/6.3 A, 5 Vdc/5 A Model PID-250D: 48 Vdc/4.7 A, 5 Vdc/5 A
Applicant Name and Address:	MEAN WELL ENTERPRISES CO LTD 28 WU-CHUAN 3RD RD WUGU INDUSTRIAL PARK TAIPEI HSIEN 248 TAIWAN

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of Underwriters Laboratories Inc. ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

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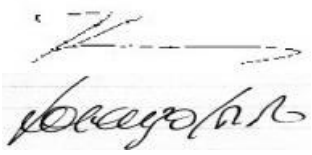
UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

Prepared by: Attila Kardos
Underwriters Laboratories Inc.

Reviewed by: Lorenzo Iorio
Underwriters Laboratories Inc.



Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

A. Authorization - The Authorization page may include additional Factory Identification Code markings.

B. Generic Inspection Instructions -

i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.

ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.

iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

The equipment is for building in switching power supply for use in information technology equipment, Class I (earthed), switching power supply intended for use on a TN power system. Provided with connector for input/output connection. Enclosure is optionally provided.

Model Differences

PIX-250A is the base model.
PIX-250B is identical basic model except output rating, transformer T1 secondary winding and model designation.
PIX-250C is identical basic model except output rating, transformer T1 secondary winding and model designation.
PIX-250D is identical basic model except output rating, transformer T1 secondary winding and model designation.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : N/A (to be evaluated in the end product)
- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10%
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A

- Class of equipment : Class I (earthed)
- Considered current rating (A) : 20
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : 2000
- Altitude of test laboratory (m) : 40
- Mass of equipment (kg) : < 18
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: Secondary side of capacitor C31
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 40°C (when units are without enclosure) 50°C (when units are provided with enclosure and external fan)
- The product is intended for use on the following power systems: TN

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc. When installed in an end-product, consideration must be given to the following:

- The following secondary output circuits are Limited Current Circuits: Secondary side of capacitor C31
- Means of connection and disconnection to main source shall be determined in the end product. The VDR used in the products are rated for Type 3 application and the suitability shall be evaluated in the end product.
- The following Production-Line tests are conducted for this product: Electric Strength , Earthing Continuity
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-Earthed Dead Metal: 368 Vrms, 584 Vpk , Primary-SELV: 383 Vrms, 604 Vpk
- The following secondary output circuits are SELV: All outputs
- The following secondary output circuits are at hazardous energy levels: 36 V output (PID-250C), 48

V output (PID-250D)

- 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
- The following input terminals/connectors must be connected to the end-product supply neutral: AC/N is marked near CN1 indicates Neutral connection.
- 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): T1, T2 (Class B)
- The following end-product enclosures are required: Electrical , Fire , Electrical
- An investigation of the protective bonding terminals has: Not been conducted
- The following secondary output circuits are at non-hazardous energy levels: 12 V output (PID-250A), 24 V output (PID-250B), 5 V output (all models)
- The maximum continuous power supply output (Watts) relied on forced air cooling from: DC fan at minimum 17.5 cfm applied to units with enclosure, DC fan located 5 cm away and inward airflow.

Additional Information

All models may or may not be provided with metal enclosures. Units with metal enclosure were evaluated with external DC fan, minimum 17.5 CFM inward airflow.

Project 10CA61558: Upgrade standard to second edition, addition of alternate transformer for T1 and T2 (Meanwell), addition of alternate fuse for FS1, revise the description for X/Y capacitors and varistor.

Markings and instructions

Clause Title	Marking or Instruction Details
1.7.1 Power rating - Ratings	Ratings (voltage, frequency/dc, current)
1.7.1 Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
1.7.1 Power rating - Model	Model Number

1.7.6 Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
1.7.6 Fuses - Non-operator access/soldered-in fuses	Unambiguous reference to service documentation for instructions for replacement of fuses replaceable only by service personnel

Special Instructions to UL Representative

Inspect the transformer(s) listed in BD1.1 per AA1.1- (C). When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in BD1.1 is conducted at the component manufacturer. The test record noted above shall be submitted to the manufacturer from transformer manufacturer. The test record can be in the form of an actual test record. A stamp or sticker on the transformer or other method verifying the routine test is being completed on 100% production is also acceptable.

Production-Line Testing Requirements

Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
All models	Transformer T1 (all sources)	N/A	Primary to Secondary	3000	N/A	1
All models	Transformer T2 (all sources)	N/A	Primary to Secondary	3000	N/A	1

Earthing Continuity Test Exemptions - This test is not required for the following models:

Electric Strength Test Exemptions - This test is not required for the following models:

Electric Strength Test Component Exemptions - The following solid-state components may disconnected from the remainder of the circuitry during the performance of this test:

Sample and Test Specifics for Follow-Up Tests at UL

Model	Component	Material	Test	Sample(s)	Test Specifics
N/A					

TABLE: List of Critical Components

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
Chassis (Optional)	Various	Various	Metal, minimum 0.6 mm thick. Measured overall 250 by 105.4 by 53 mm. Two halves secured together by screw.	--	--
Chassis Vent Openings	Various	Various	Top chassis: provided with numerous circular openings, each measured 3.8 mm OD. Bottom chassis: provided with numerous slot openings each measured 22.8 mm by 4 mm.	--	--
Insulating Tubing/Sleeving	Various	Various	FEP, PTFE, PVC, TFE, neoprene, or marked VW-1; minimum 105°C, minimum 300 V.	UZFT2, YDPU2, YDRY2, YDTU2	UL
Printed Wiring Board	Various	Various	Rated minimum V-1, minimum 130°C. Provided with one cut slot C31, measured overall 12.2 by 1.5 mm and another under U4, U7, measured overall 16 by 1.5 mm	ZPMV2	UL
Primary Connector (CN1)	Chyao Shiunn Electronic Industrial Ltd	JS-1120 series, JS-4001 series	Rated 7A, 250V, minimum 85°C	ECBT2	UL
Primary Connector (CN1) (Alternate)	Molex Inc	41791 series	7A, 250V, 105°C	ECBT2	UL
Primary Connector (CN1) (Alternate)	Taiwan King Pin Terminal Co Ltd	P-8800I series	5A, 250V, 90°C	ECBT2	UL
Primary Connector (CN1) (Alternate)	Japan Solderless Terminal MFG Co Ltd	VH series	7A, 250V, 130°C.	ECBT2	UL
Primary Connector (CN1) (Alternate)	Sheng Ming Enterprise Co., Ltd	4001W, 4002W	Minim 7A, 250V, 65°C.	ECBT2	UL
Fuse (FS1)	Various	Various	T6.3 A, 250V	JDYX	UL
Fuse (FS1) (Alternate)	Conquer Electronics Co., Ltd.	MST, MET	T6.3 A, 250 Vac.	JDYX2, JDYX8	UL
Fuse (FS1) (Alternate)	Walter	2010	T6.3 A, 250 Vac.	JDYX2, JDYX8	UL
Thermistor (RTH1, RTH2) (Optional)	Various	Various	Rated minimum 3 A, maximum 15 ohms at 25°C	--	--
X-Capacitor (C1, C2)	ISKRA	KNB1530	Rated maximum 1.0 µF for C1. Rated maximum	FOKY2, FOKY8	UL

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
(Optional)	KONDENZATORJI D D		0.6 µF for C2. Both minimum 250 Vac, 100°C, Class X1 or X2. (Certified to compliance with IEC 60384-14) The damp heat test duration is 21 days minimum.	or FOWX2, FOWX8	
X-Capacitors (C1, C2) (Optional) (Alternate)	ISKRA KONDENZATORJI D D	KNB1560	Rated maximum 1.0 µF for C1. Rated maximum 0.6 µF for C2. Both minimum 250 Vac, 125°C, Class X1 or X2. (Certified to compliance with IEC 60384-14) The damp heat test duration is 21 days minimum.	FOKY2, FOKY8 or FOWX2, FOWX8	UL
X-Capacitors (C1, C2) (Optional) (Alternate)	LIOW GU ELECTRONICS INDUSTRY CO LTD	GS-L	Rated maximum 1.0 µF for C1. Rated maximum 0.6 µF for C2. Both minimum 250 Vac, 100°C, Class X1 or X2. (Certified to compliance with IEC 60384-14) The damp heat test duration is 21 days minimum.	FOKY2, FOKY8 or FOWX2, FOWX8	UL
X-Capacitors (C1, C2) (Optional) (Alternate)	PILKOR ELECTRONICS CO LTD	PCX2 335M	Rated maximum 1.0 µF for C1. Rated maximum 0.6 µF for C2. Both minimum 250 Vac, 105°C, Class X1 or X2. (Certified to compliance with IEC 60384-14) The damp heat test duration is 21 days minimum.	FOKY2, FOKY8 or FOWX2, FOWX8	UL
X-Capacitors (C1, C2) (Optional) (Alternate)	CHENG TUNG INDUSTRIAL CO LTD	CTX	Rated maximum 1.0 µF for C1. Rated maximum 0.6 µF for C2. Both minimum 250 Vac, 100°C, Class X1 or X2. (Certified to compliance with IEC 60384-14) The damp heat test duration is 21 days minimum.	FOKY2, FOKY8 or FOWX2, FOWX8	UL
X-Capacitors (C1, C2) (Optional) (Alternate)	SHINY SPACE ENTERPRISE CO LTD	SX1	Rated maximum 1.0 µF for C1. Rated maximum 0.6 µF for C2. Both minimum 250 Vac, 100°C, Class X1 or X2. (Certified to compliance with IEC 60384-14) The damp heat test duration is 21 days minimum.	FOKY2, FOKY8 or FOWX2, FOWX8	UL
X-Capacitors (C1, C2) (Optional) (Alternate)	ULTRA TECH XIPHI ENTERPRISE CO LTD	HQX	Rated maximum 1.0 µF for C1. Rated maximum 0.6 µF for C2. Both minimum 250 Vac, 100°C, Class X1 or X2. (Certified to compliance with IEC 60384-14) The damp heat test duration is 21 days	FOKY2, FOKY8 or FOWX2, FOWX8	UL

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
			minimum.		
X-Capacitors (C1, C2) (Optional) (Alternate)	PILKOR ELECTRONICS CO LTD	PCX2 337	Rated maximum 1.0 µF for C1. Rated maximum 0.6 µF for C2. Both minimum 250 Vac, 100°C, Class X1 or X2. (Certified to compliance with IEC 60384-14) The damp heat test duration is 21 days minimum.	FOKY2, FOKY8 or FOWX2, FOWX8	UL
X-Capacitors (C1, C2) (Optional) (Alternate)	EPCOS ELECTRONIC COMPONENTS S A	B3292 series	Rated maximum 1.0 µF for C1. Rated maximum 0.6 µF for C2. Both minimum 250 Vac, 105°C, Class X1 or X2. (Certified to compliance with IEC 60384-14) The damp heat test duration is 21 days minimum.	FOKY2, FOKY8 or FOWX2, FOWX8	UL
X-Capacitors (C1, C2) (Optional) (Alternate)	VISHAY CAPACITORS BELGIUM N V	339	Rated maximum 1.0 µF for C1. Rated maximum 0.6 µF for C2. Both minimum 250 Vac, 105°C, Class X1 or X2. (Certified to compliance with IEC 60384-14) The damp heat test duration is 21 days minimum.	FOKY2, FOKY8 or FOWX2, FOWX8	UL
X-Capacitors (C1, C2) (Optional) (Alternate)	ARCOTRONICS SPA	R.46, R.49	Rated maximum 1.0 µF for C1. Rated maximum 0.6 µF for C2. Both minimum 250 Vac, 110°C, Class X1 or X2. (Certified to compliance with IEC 60384-14) The damp heat test duration is 21 days minimum.	FOKY2, FOKY8 or FOWX2, FOWX8	UL
Y-Capacitors (C3, C4, C24, C25, C29) (Optional)	MURATA MFG CO LTD	KH, KX	Rated maximum 4700 pF for C3, C4, C25, C29, maximum 220pF for C24, minimum 250 Vac. Class Y1 or Y2., rated 125°C. (meets IEC 60384-14). The damp heat test duration is 21 days minimum.	FOWX2, FOWX8	UL
Y-Capacitors (C3, C4, C24, C25, C29) (Optional) (Alternate)	WALSIN TECHNOLOGY CORP	AH, AC	Rated maximum 4700 pF for C3, C4, C25, C29, maximum 220pF for C24, minimum 250 Vac. Class Y1 or Y2., rated 125°C. (meets IEC 60384-14). The damp heat test duration is 21 days minimum.	FOWX2, FOWX8	UL
Y-Capacitors (C3, C4, C24, C25, C29) (Optional) (Alternate)	TDK-EPC CORP	CD, CS	Rated maximum 4700 pF for C3, C4, C25, C29, maximum 220pF for C24, minimum 250 Vac. Class Y1 or Y2., rated 125°C. (meets IEC 60384-14). The damp heat test duration is 21 days minimum.	FOWX2, FOWX8	UL

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
Y-Capacitors (C3, C4, C24, C25, C29) (Optional) (Alternate)	WELSON INDUSTRIAL CO LTD	WD, KL	Rated maximum 4700 pF for C3, C4, C25, C29, maximum 220pF for C24, minimum 250 Vac. Class Y1 or Y2., rated 125°C. (meets IEC 60384-14). The damp heat test duration is 21 days minimum.	FOWX2, FOWX8	UL
Varistor (ZNR1) (Optional)	Various	Various	Rated 300 Vac, 385 Vdc, minimum type 3 application.	VZCA2, XUHT8	UL
Bridge Rectifier (BD1)	Various	Various	Rated minimum 4A, minimum 600 V.	--	--
Transistors (Q3)	Various	Various	Rated minimum 5 A, minimum 500 V.	--	--
Electrolytic Capacitor (C5)	Various	Various	Rated 220 µF, minimum 400 V, minimum 85°C.	--	--
Bridging Capacitor (C31) (Optional)	MURATA MFG CO LTD	KX	Rated maximum 2200 pF, minimum 250 V, 125°C. Class Y1 type. (meets IEC 60384-14). The damp heat test duration is 21 days minimum.	FOWX2, FOWX8	UL
Bridging Capacitor (C31) (Optional) (Alternate)	WALSIN TECHNOLOGY CORP	AH	Rated maximum 2200 pF, minimum 250 V, 125°C. Class Y1 type. (meets IEC 60384-14). The damp heat test duration is 21 days minimum.	FOWX2, FOWX8	UL
Bridging Capacitor (C31) (Optional) (Alternate)	TDK-EPC CORP	CD	Rated maximum 2200 pF, minimum 250 V, 125°C. Class Y1 type. (meets IEC 60384-14). The damp heat test duration is 21 days minimum.	FOWX2, FOWX8	UL
Bridging Capacitor (C31) (Optional) (Alternate)	WELSON INDUSTRIAL CO	WD	Rated maximum 2200 pF, minimum 250 V, 125°C. Class Y1 type. (meets IEC 60384-14). The damp heat test duration is 21 days minimum.	FOWX2, FOWX8	UL
Optical Isolator (U4, U5, U6, U7)	Cosmo Electronics Corp	K1010	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL
Optical Isolator (U4, U5, U6, U7) (Alternate)	Isocom Ltd.	ISP621-1X, ISP817X	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL
Optical Isolator (U4, U5, U6, U7) (Alternate)	Lite-on Technology Corp	LTV817	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL
Optical Isolator (U4, U5, U6, U7) (Alternate)	NEC Electronics Corp Compound Semiconductor Device Div.	PS2561, PS2561-1	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL
Optical Isolator (U4, U5,	Sharp Corp	PC123	Rated minimum 3000 Vac isolation. Double	FPQU2	UL

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
U6, U7) (Alternate)			protection.		
Transformer (T1)	Long Sail Electronic Co Ltd	TF-1538 (for X=A), TF-1539 (for X=B), TF-1540 (for X=C), TF-1541 (for X=D)	Class B (130°C) Insulation System, Type SBI4.2.	OBJY2	UL
Core (T1)	Various	Various	Ferrite, measured overall 35.2 by 34.6 by 10.7 mm. Provided with 1 layer of insulation tape on topside edge near heat sink.	--	--
Coil (T1)	Various	Various	Rated minimum 130°C.	OBMW2	UL
Bobbin (T1)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, and minimum 0.51 mm thick.	QMFZ2	UL
Insulating Tape (T1)	Symbio Inc.	35660Y, 35660	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T1) (Alternate)	3M Co.	1350F-1, 1350-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T1) (Alternate)	Bondtec Pacific Co Ltd	371F, 370S	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Margin Tape (T1)	Symbio Inc.	35661	Polyester tape, rated 130°C. Minimum 4 mm wide on both side of the bobbin	OANZ2	UL
Margin Tape (T1) (Alternate)	3M Co.	44(a), 44T-A(a), 44D-A(a)	Polyester tape, rated 130°C.	OANZ2	UL
Margin Tape (T1) Alternate	Bondtec Pacific Co Ltd	201	Polyester tape, rated 130°C.	OANZ2	UL
Tubing (T1)	Great Holding Industrial Co., Ltd.	TFL, TFT	Minimum 200°C. Provided on all exit leads.	YDPU2	UL
Varnish (T1)	PD GEORGE CO/RIPLEY RESIN	468-2-7	Rated minimum 130°C.	OBOR2	UL
Varnish (T1) (Alternate)	Hitachi Chemical Co., Ltd.	WP-2952F-2G	Rated minimum 130°C.	OBOR2	UL
Varnish (T1) (Alternate)	John C Dolph	BC-346A	Rated minimum 130°C.	OBOR2	UL
Transformer (T1) (Alternate)	JET Signal Industries Co Ltd.	TF-1538 (for X=A), TF-1539 (for X=B), TF-	Class B (130°C) Insulation System, Type SBI4.2	OBJY2	UL

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
		1540 (for X=C). TF-1541 (for X=D)			
Core (T1)	Various	Various	Ferrite, measured overall 35.2 by 34.6 by 10.7 mm. Provided with 1 layer of insulation tape on topside edge near heat sink.	--	--
Coil (T1)	Various	Various	Rated minimum 130°C.	OBMW2	UL
Bobbin (T1)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL
Copper Shield (T1)	Various	Varoius	Copper foil, provided with insulation tape minimum 10 mm.	--	--
Insulating Tape (T1)	3M Co.	1350-1, 1350F-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T1) (Alternate) system	Bondtec Pacific Co Ltd	370S	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T1) (Alternate)	Symbio Inc.	35660, 35660Y	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Margin Tape (T1)	Bondtec Pacific Co Ltd	201-45	Polyester tape, rated 130°C. Minimum 4 mm wide on both sides of the bobbin.	OANZ2	UL
Margin Tape (T1) (Alternate)	3M Co.	44T-A(a), 44D-A(a)	Polyester tape, rated 130°C.	OANZ2	UL
Varnish (T1)	John C Dolph	BC-346A	Rated minimum 200°C.	OBOR2	UL
Varnish (T1) Alternate	PD George/Ripley Resin	468-2-7	Rated minimum 130°C.	OBOR2	UL
Varnish (T1) Alternate	Hitachi Chemical Co., Ltd.	WP-2952F-2G	Rated minimum 130°C.	OBOR2	UL
Tubing (T1)	Great Holding Industrial Co., Ltd.	TFL, TFT	Minimum 200°C. Provided on all exit leads.	YDPU2	UL
Transformer (T1) (Alternate)	Mean Well Enterprises Co Ltd	TF-1538 (for X=A), TF-1539 (for X=B), TF-1540 (for X=C). TF-1541 (for X=D)	Class B (130°C) Insulation System, Type SBI4.2	OBJY2	UL
Core (T1)	Various	Various	Ferrite, measured overall 35.2 by 34.6 by 10.7 mm. Provided with 1 layer of insulation tape on topside	--	--

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
			edge near heat sink.		
Coil (T1)	Various	Various	Rated minimum 130°C.	OBMW2	UL
Bobbin (T1)	Sumitomo Bakelite Co Ltd.	PM-9820, PM-9630	Rated V-0, 150°C, and minimum 0.51 mm thick.	QMFZ2	UL
Insulating Tape (T1)	3M Company	1350F-1, 1350T-1, 1351-1, 1318-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T1) (Alternate)	Bondtec Pacific Co Ltd	370S	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T1) (Alternate)	Symbio Inc.	35660, 35660Y	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T1) (Alternate)	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD.	CT, PZ	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Margin Tape (T1)	3M Company	44, 44A, 44D, 44D-A, 44T, 44T-A	Polyester tape, rated 130°C. Minimum 4 mm wide on both side of the bobbin	OANZ2	UL
Margin Tape (T1) (Alternate)	Symbio Inc	35661	Polyester tape, rated 130°C.	OANZ2	UL
Margin Tape (T1) Alternate	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD.	WF	Polyester tape, rated 130°C.	OANZ2	UL
Tubing (T1)	Great Holding Industrial Co Ltd	TFL, TFT	Minimum 200°C. Provided on all exit leads.	YDPU2	UL
Tubing (T1) Alternate	Zeus Industrial Products Inc	TFE-TW-300, TFE-LW-150	Minimum 200°C. Provided on all exit leads.	YDPU2	UL
Varnish (T1)	John C Dolph Co	BC-346A, BC-359	Rated minimum 130°C.	OBOR2	UL
Varnish (T1) (Alternate)	ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC.	468-2(x)	Rated minimum 130°C.	OBOR2	UL
Varnish (T1) (Alternate)	Hitachi Chemical Co.	WP-2952F-2G	Rated minimum 130°C.	OBOR2	UL

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
	Ltd.				
Varnish (T1) (Alternate)	Kyocera Chemical Corp.	TVB-2180T++	Rated minimum 130°C.	OBOR2	UL
Varnish (T1) (Alternate)	ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC.	V1630FS	Rated minimum 130°C.	OBOR2	UL
Transformer (T2)	Long Sail Electronic Co Ltd	TF-1572	Class B (130°C) Insulation System, Type SBI4.2.	OBJY2	UL
Core (T2)	Various	Various	Ferrite, measured overall 28.2 by 28.8 by 11.4 mm.	--	--
Coil (T2)	Various	Various	Rated minimum 130°C.	OBMW2	UL
Bobbin (T2)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL
Insulating Tape (T2)	Symbio Inc.	35660Y, 35660	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T2) (Alternate)	3M Co.	1350F-1, 1350-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T2) (Alternate)	Bondtec Pacific Co Ltd	370S	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Margin Tape (T2)	Symbio Inc.	35661	Polyester tape, rated 130°C. Minimum 3.5 mm wide on both sides of the bobbin.	OANZ2	UL
Margin Tape (T2) (Alternate)	3M Co.	44(a), 44T-A(a), 44D-A(a)	Polyester tape, rated 130°C.	OANZ2	UL
Tubing (T2)	Great Holding Industrial Co., Ltd.	TFL	Minimum 200°C. Provided on all exit leads.	YDPU2	UL
Varnish (T2)	PD GEORGE CO/RIPLEY RESIN	468-2-7	Rated minimum 130°C.	OBOR2	UL
Varnish (T2) (Alternate)	Hitachi Chemical Co., Ltd.	WP-2952F-2G	Rated minimum 130°C.	OBOR2	UL
Varnish (T2) (Alternate)	John C Dolph	BC-346A	Rated minimum 130°C.	OBOR2	UL
Transformer (T2) (Alternate)	JET Signal Industries Co Ltd.	TF-1572	Class B (130°C) Insulation System, Type SBI4.2	OBJY2	UL
Core (T2	Various	Various	Ferrite, measured overall 28.2 by 28.8 by 11.4 mm.	--	--

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
Coil (T2)	Various	Various	Rated minimum 130°C.	OBMW2	UL
Bobbin (T2)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL
Copper Shield (T2)	Various	Various	Copper foil, provided with insulation tape minimum 10 mm.	--	--
Insulating Tape (T2)	3M Co.	1350-1, 1350F-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T2) (Alternate) system	Bondtec Pacific Co Ltd	370S	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T2) (Alternate)	Symbio Inc.	35660, 35660Y	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Margin Tape (T2)	Bondtec Pacific Co Ltd	201-45	Polyester tape, rated 130°C. Minimum 3.5 mm wide on both sides of the bobbin.	OANZ2	UL
Margin Tape (T2) (Alternate)	3M Co.	44T-A(a), 44D-A(a)	Polyester tape, rated 130°C.	OANZ2	UL
Margin Tape (T2) Alternate	Symbio Inc.	35661	Polyester tape, rated 130°C.	OANZ2	UL
Varnish (T2)	John C Dolph	BC-346A	Rated minimum 200°C.	OBOR2	UL
Varnish (T2) Alternate	PD GEORGE CO/RIPLEY RESIN	468-2-7	Rated minimum 130°C.	OBOR2	UL
Varnish (T2) Alternate	Hitachi Chemical Co., Ltd.	WP-2952F-2G	Rated minimum 130°C.	OBOR2	UL
Tubing (T2)	Great Holding Industrial Co., Ltd.	TFL, TFT	Minimum 200°C. Provided on all exit leads.	YDPU2	UL
Transformer (T2) (Alternate)	Mean Well Enterprises Co Ltd	TF-1572	Class B (130°C) Insulation System, Type SBI4.2.	OBJY2	UL
Core (T2)	Various	Various	Ferrite, measured overall 28.2 by 28.8 by 11.4 mm.	--	--
Coil (T2)	Various	Various	Rated minimum 130°C.	OBMW2	UL
Bobbin (T2)	Sumitomo Bakelite Co Ltd.	PM-9820, PM-9630	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL
Insulating Tape (T2)	3M Company	1350F-1, 1350T-1, 1351-1, 1318-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T2)	Bondtec Pacific Co	370S	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL

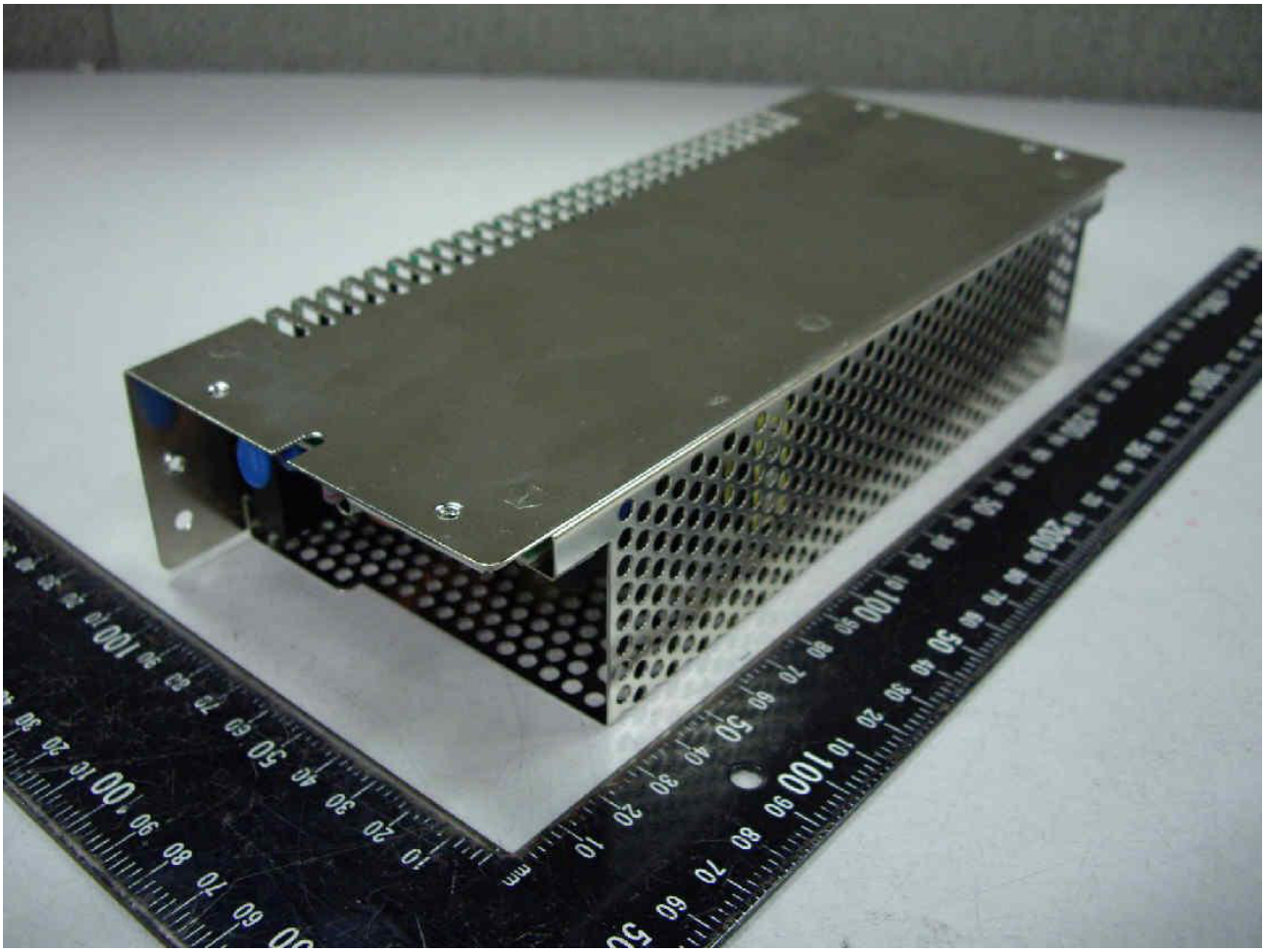
Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
(Alternate)	Ltd				
Insulating Tape (T2) (Alternate)	Symbio Inc.	35660, 35660Y	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Insulating Tape (T2) (Alternate)	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD.	CT, PZ	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL
Margin Tape (T2)	3M Company	44, 44A, 44D, 44D-A, 44T, 44T-A	Polyester tape, rated 130°C. Minimum 3.5 mm wide on both sides of the bobbin.	OANZ2	UL
Margin Tape (T2) (Alternate)	Symbio Inc	35661	Polyester tape, rated 130°C.	OANZ2	UL
Margin Tape (T2) (Alternate)	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD.	WF	Polyester tape, rated 130°C.	OANZ2	UL
Tubing (T2)	Great Holding Industrial Co Ltd	TFL, TFT	Minimum 200°C. Provided on all exit leads.	YDPU2	UL
Tubing (T2) (Alternate)	Zeus Industrial Products Inc	TFE-TW-300, TFE-LW-150	Minimum 200°C. Provided on all exit leads.	YDPU2	UL
Varnish (T2)	John C Dolph Co	BC-346A, BC-359	Rated minimum 130°C.	OBOR2	UL
Varnish (T2) (Alternate)	ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC.	468-2(x)	Rated minimum 130°C.	OBOR2	UL
Varnish (T2) (Alternate)	Hitachi Chemical Co. Ltd.	WP-2952F-2G	Rated minimum 130°C.	OBOR2	UL
Varnish (T2) (Alternate)	Kyocera Chemical Corp.	TVB-2180T++	Rated minimum 130°C.	OBOR2	UL
Varnish (T2) (Alternate)	ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC.	V1630FS	Rated minimum 130°C.	OBOR2	UL

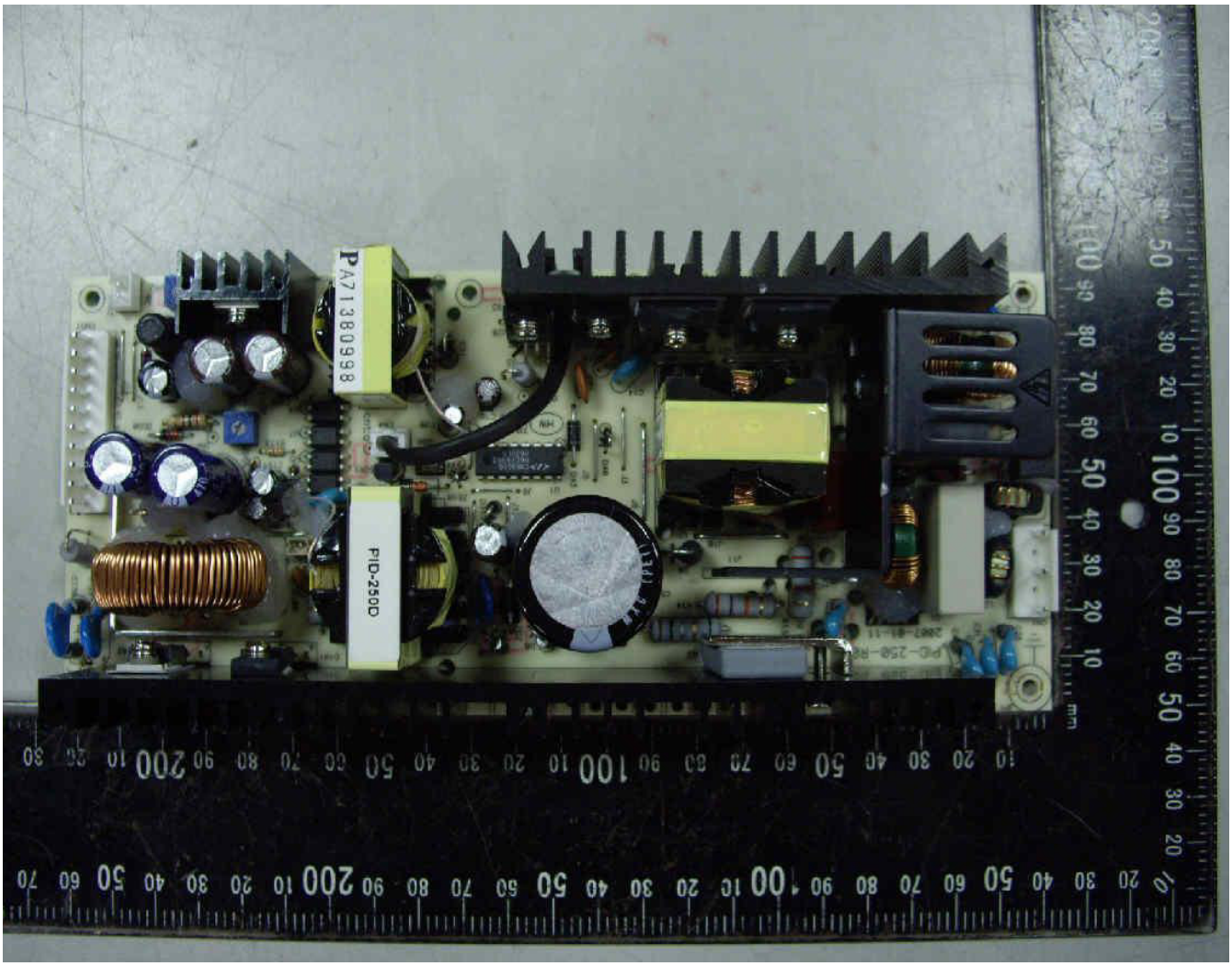
Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
Line Filter (L2, L3) (Optional)	Various	TR-737	Open type construction. Rated 125°C. Covered with shrinkable tube.	--	--
Core (L2, L3)	Various	Various	Ferrite, measured overall 11.2 mm OD by 5.82 mm ID by 4.04 mm wide.	--	--
Coil (L2, L3)	Various	Various	Rated minimum 130°C.	OBMW2	UL
Line Filter (LF1) (Optional)	Various	TR-738	Open type construction. Rated 125°C.	--	--
Core (LF1)	Various	Various	Ferrite, measured overall 16 mm OD by 9 mm ID by 5 mm wide.	--	--
Coil (LF1)	Various	Various	Rated minimum 130°C.	OBMW2	UL
Line Filter (LF2) (Optional)	Various	TR-548	Open type construction. Rated 120°C.	--	--
Core (LF2)	Various	Various	Ferrite, measured overall 22 mm OD by 14 mm ID by 8 mm wide.	--	--
Coil (LF2)	Various	Various	Rated minimum 130°C.	OBMW2	UL
PFC Choke (L1) (Optional)	Various	TF-1571	Open type construction. Rated 130°C.	--	--
Core (L1)	Various	Various	Silicon Steel, measured overall 32 by 30.35 by 22 mm.	--	--
Coil (L1)	Various	Various	Rated minimum 130°C.	OBMW2	UL
Bobbin (L1)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL
Thermostat (TSW1) Optional	Seki Controls Co Ltd	ST-22	70-130°C, 250Vac	YFZW2	UL
Thermostat wires	Various	Various	FEP, PTFE, PVC, TFE, neoprene, or marked VW-1; minimum 125°C, minimum 300 V. Sleeved with tubing.	AVLV2, AVLV8	UL
Sleeving tube (on Q3)	Various	Various	Minimum V-2, silicone rubber, minimum 120°C.	QMFZ2	UL
Adhesive Glue	Various	Various	Minimum V-2, 105°C. See table 2.10.3 supplement info for locations	QMFZ2	UL
Label	Various	Various	Minimum 60ºC.	PGDQ2, PGJI2	UL
IC Regulator (U3)	Various	Various	Rated minimum 650 V, 2.7 A	--	--

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
Zener Diode (ZD60)	Various	Various	Rated 6.2V, 1/2W	--	--
Heat Sink (HS1)	Various	Various	Aluminum, see Enclosure for details.	--	--
Heat Sink (HS2)	Various	Various	Aluminum, see Enclosure for details.	--	--
Heat Sink (HS3)	Various	Various	Aluminum, see Enclosure for details.	--	--
Heat Sink (HS4)	Various	Various	Aluminum, see Enclosure for details.	--	--

Enclosures

Type	Supplement Id	Description
Photographs	3-01	Unit with Enclosure - Overall View
Photographs	3-02	Overall View
Photographs	3-03	PCB trace view
Photographs	3-04	Unit with Enclosure - Inside View
Diagrams	4-01	Enclosure - Top Side
Diagrams	4-02	Enclosure - Bottom Side
Diagrams	4-03	DC Fan (for models with enclosure option)
Diagrams	4-04	Heat Sink (HS1)
Diagrams	4-05	Heat Sink (HS2)
Diagrams	4-06	Heat Sink (HS3)
Diagrams	4-07	Heat Sink (HS4)
Diagrams	4-08	PFC Choke L1 - Jet Signal
Diagrams	4-09	PFC Choke L1 - Long Sail
Diagrams	4-10	Choke L2, L3
Diagrams	4-11	Line Filter LF1
Diagrams	4-12	Line Filter LF2
Diagrams	4-13	Transformer T1 - Jet Signal
Diagrams	4-14	Transformer T1 - Long Sail
Diagrams	4-16	Transformer T2 - Jet Signal
Diagrams	4-17	Transformer T2 - Long Sail
Diagrams	4-19	Sleeving Tube (on Q3)
Diagrams	4-20	Thermostat TSW1 wire
Diagrams	4-21	Transformer T1 - Mean Well
Diagrams	4-22	Transformer T2 - Mean Well
Schematics + PWB	5-01	Schematic
Schematics + PWB	5-02	Printed Wiring Board
Manuals		
Miscellaneous		

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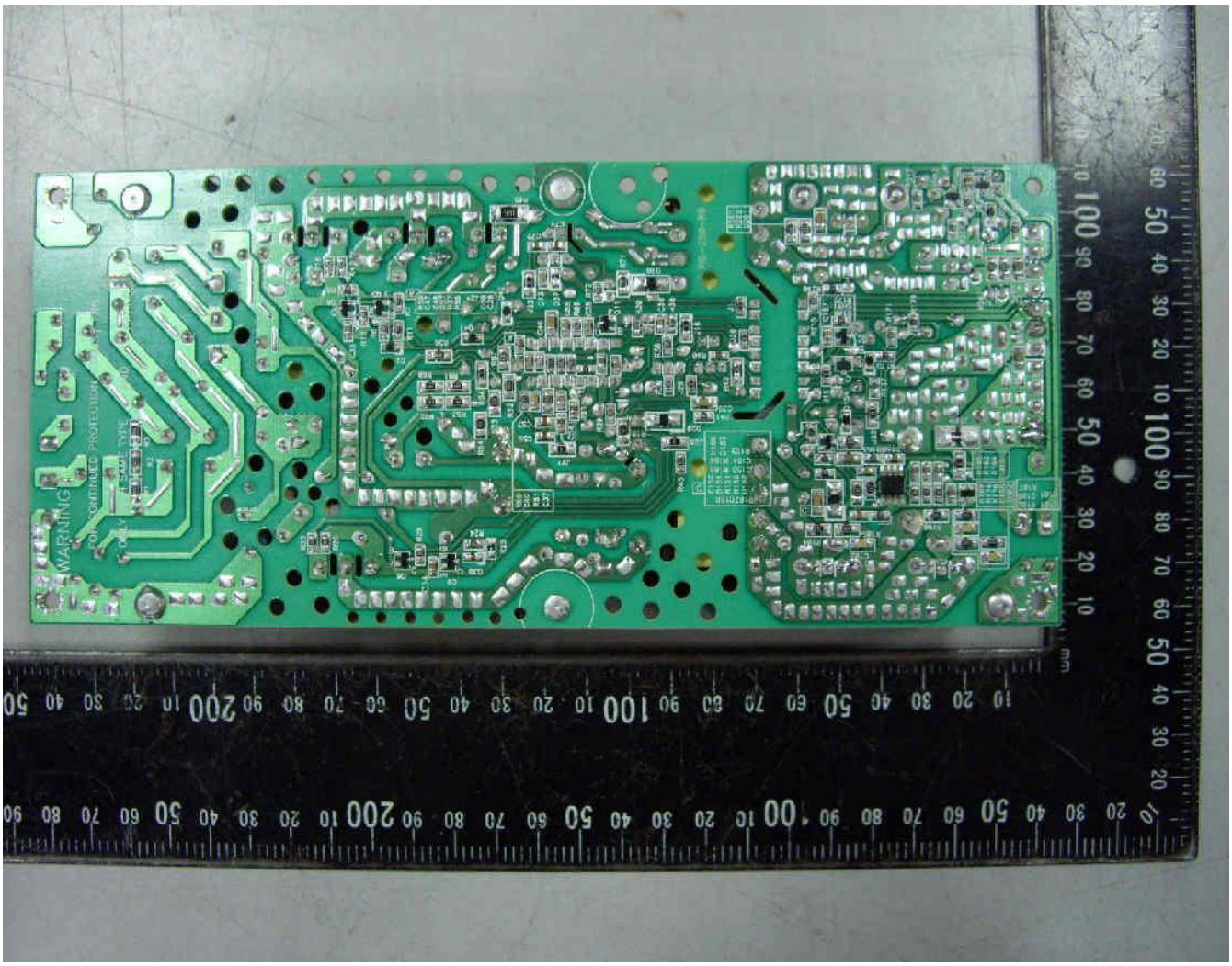
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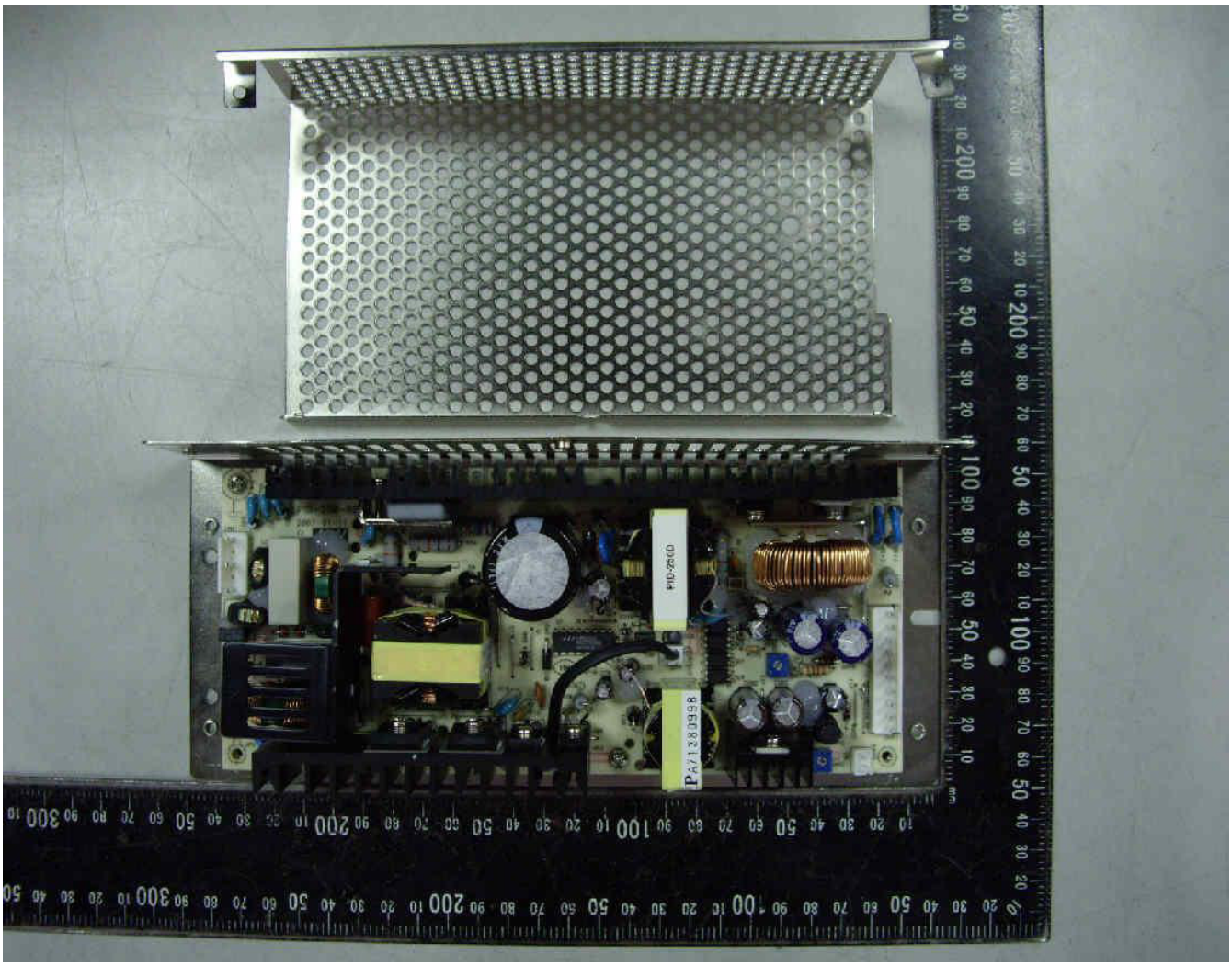

Test Record No. 1

The manufacturer submitted representative production samples of open frame power supply, model PID-250X.

The following tests were conducted:

Test	Testing Location/Comments

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard(s) referenced at the beginning of this Test Report.

The following supplements are provided as a part of this Test Record. NOTE: These supplements are only available to the Applicant via the CDA system.

Type	Supplement Id	Description
	2-01	Datasheet
	2-02	Verification Test
	2-03	Comstruction Review

Test Record No. 2

Investigation for the addition of an alternate transformer for T1 and T2, for upgrading the report to the second edition of the standard, addition of an alternate fuse and revision of the description for X/Y capacitors and varistor. Only the tests listed below were considered necessary, the following tests were conducted:
GENERAL GUIDELINES
2.10.5.13 - TRANSFORMER AND WIRE INSULATION ELECTRIC STRENGTH TEST
2.10.5.9, 2.10.5.10, 2.10.5.6 - THIN SHEET MATERIAL TESTS
5.3.1, 5.3.4, 5.3.7 - COMPONENT FAILURE TEST

The following tests were conducted:

Test	Testing Location/Comments
General Guidelines	
Power Supply Reference Page	
Thin Sheet Material (2.10.5.9, 2.10.5.10, 2.10.5.6)	
Transformer and Wire /Insulation Electric Strength (2.10.5.13)	
Component Failure (5.3.1, 5.3.4, 5.3.7)	

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard(s) referenced at the beginning of this Test Report.

The following supplements are provided as a part of this Test Record. NOTE: These supplements are only available to the Applicant via the CDA system.

Type	Supplement Id	Description
Datasheet	2-04	Datasheet

Corporate Headquarters
7 Underwriters Road
Toronto, ON M1R 3B4
Canada
www.ulc.ca
tel: 1 416 757 3611
fax: 1 416 757 8915

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Underwriters Laboratories Inc.®

MR. TSOU-CHING C HUANG
MEAN WELL ENTERPRISES CO LTD
28 WU-CHUAN 3RD RD
WUGU INDUSTRIAL PARK
TAIPEI HSIEN
248 TAIWAN

Date: 03/20/2007
Subscriber: 710861002
PartySite: 156523
File No: E183223
Project No: 07CA06500
PD No: 07M16436
Type: R
PO Number: 96-0033

Subject: UL Certification Documents For Applicant

The following material resulting from the investigation under the above numbers is enclosed.

Document	Volume	Report Reference	Status	Date
Index	X1			
UL Test Report	X1	E183223-A81-UL-1	New	03/16/07

Please file revised Authorizations, Indices, and General Inspection Instructions in place of material of like identity. New Test Reports should be filed immediately following the last Test Report. Amendments or Corrections should be filed immediately before the Test Report to which they relate. Re-issued Test Reports should be filed immediately before all material related to the Test Report that it replaces.

NOTE: Manufacturers receive only the following sub-sections of the Applicant's complete Test Report, where applicable: Cover Page, Specific Inspection Criteria (BA through BE), Specific Technical Criteria (through section CF), Critical Components table, and Enclosures containing image supplements. Manufacturers do not receive Test Report information related to standard clause compliance or testing results.

NOTE: Manufacturers that require an Initial Product Inspection (IPI) have received their copy of the Follow-Up Service Procedure, but are instructed they are not allowed to ship products bearing the UL Mark until their UL Representative has successfully conducted the Initial Production Inspection.

Please review this material and report any inaccuracies to , referring to the above Project and/or PD Numbers.

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c: TRT File

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Product Type	Model/Type Reference	Report Reference #
Switching Power Supply	P-600-13.8, P-600-27, P-600-48, SE-600-5, SE-600-12, SE-600-15, SE-600-24, SE-600-27, SE-600-48	E183223-A2-UL-2
Open Frame Switching Power Supply	PPx-125y, where x can be S or T; when x equal to S, that y will be -3.3, -5, -12, -13.5, -15, -24, -27 or -48; when x equal to T that y will be A, B, C or D. PPT-125AA	E183223-A7-UL-1
Open Frame Power Supply	PD-45PR	E183223-A8-UL-1
Open Frame Power Supply	PPQ-1003X, where X may be A, B, C, or D.	E183223-A10-UL-1
Switching Power Supply	S-40-w where w can be 5, 12, 15, or 24 S-60-x where x can be 5, 9, 12, 15 or 24 D-60y, where y can be A or B T-60z, where z can be A, B, BTE or C	E183223-A12-UL-1
Open Frame Power Supply	PTsb-181CL, and PTsb-205CL	E183223-A13-UL-1
Switching Power Supply	Models DRP-240-x (where x can be 24 or 48)	E183223-A14-UL-1
Switching Power Supply	DR-120-x (where x can be 12, 24 or 48)	E183223-A16-UL-1
Switching Power Supply	UR24-6, UR48-3	E183223-A15-UL-1
Switching Power Supply	DP-260OR, DP-130OR	E183223-A18-UL-1
Switching Power Supply	Models Rx-y-z, where x can be S, D, ID, T or Q; y can be 85, 100 and z can be 3.3, 5, 12, 15, 24, 48, A, B, C, or D.	E183223-A19-UL-1
Switching Power Supply	Models Rx-y-z, where x can be S, D, ID, T or Q; y can be 65, 75 and z can be 3.3, 5, 12, 15, 24, 48, A, B, C, or D.	E183223-A22-UL-1
DIN RAIL Power Supply	DRT-240-24, DRT-240-48.	E183223-A20-UL-1
DIN RAIL Power Supply	DRT-480-24, DRT-480-48 and DRT-480-36PE.	E183223-A21-UL-1
Switching Power Supply	RS-25-x, where x can be 3.3, 5, 12, 15, 24, 48.	E183223-A23-UL-1
Switching Power Supply	Rx-50y, where x can be S, D, T, ID or Q, y can be -3.3, -5, -12, -15, -24, -48, A, B, C or D.	E183223-A26-UL-1
Switching Power Supply	RS-35-x, where x can be 3.3, 5, 12, 15, 24 or 48. RD-35y where y can be A, B or 13.	E183223-A25-UL-1
Switching Power Supply	Rx-yz, where x can be S, D, T, ID or Q; y can be 125 or 150; z can be -3.3, -5, -12, -15, -24, -48, -1224, -1248, -2448, -2412, -4812, -4824, A, B, C or D.	E183223-A24-UL-1
Switching Power Supply	SP-750-x, where x can be 5, 12, 15, 24, 27, 36 or 48 and SP-750-yAPI-1, where y can be 24 or	E183223-A27-UL-1

	48, SP-750-yOCE ans SP-750-yOCE where y can be 24 or 48	
Switching Power Supply	PSP-600-x, where x can be 5, 12, 13.5, 15, 24, 27, 32 or 48.	E183223-A28-UL-1
Open frame power supply	LPS-50-X, X = 3.3, 5, 7.5, 12, 13.5, 15, 24, 27, 48	E183223-A5-UL-2
Open Frame Power Supply	LPS-75-3.3, LPS-75-5, LPS-75-12, LPS-75-15, LPS-75-24, LPS-75-48.	E183223-A4-UL-2
Switch mode type power supply	ID-60B, IT-60D, IT-60F, IQ-60D, IQ-60F	E183223-A1-UL-2
Power Supply	DR-480-X, DRP-480-X, DR-480S-X, DRP-480S-X (X = 24, 48)	E183223-A17-UL-3
Switching Power Supply	PD-85SP	E183223-A31-UL-1
Redundant Power Supply	MP650-aaaaa, MP650-aaab, MP650-aaba, MP650-abaa, MP650-baaa, MP650-abb-c, MP650-bba-c, MP650-bab, where a can be A-X or #; b can be 2A-2K or ##; c can be 1, 2 or blank.	E183223-A32-UL-1
Redundant Power Supply	MP450-aaaaa, MP450-aaab, MP450-aaba, NP450-abaa, MP450-baaa, MP450-abb-c, MP-450bba-c, MP450-bab, where a can be A-X or #; b can be 2A-2K or ##; c can be 1, 2 or blank.	E183223-A35-UL-1
Redundant Power Supply	MP1K0-aaaaaaa, MP1K0-aaaaab, MP1K0-aaaaba, MP1K0-aaabaa, MP1K0-aabaaa, MP1K0-abaaaa, MP1K0-baaaaa, MP1K0-bbaaa-c, MP1K0-abbaa-c, MP1K0-aabba-c, MP1K0-aaabb-c, MP1K0-babaa, MP1K0-baaba, MP1K0-baaab, MP1K0-aabab, MP1K0-ababa, MP1K0-abaab, MP1K0-bbba-c, MP1K0-abbb-c, MP1K0-babb-c, MP1K0-bbab-c, where a can be A-X or #; b can be 2A-2K or ##; c can be 1, 2, 3, 4, 5, 6 or blank.	E183223-A36-UL-1
DIN RAIL Power Supply	DRT-960X-Y (X = P or blank; Y = 24 or 48)	E183223-A34-UL-1
Switching Power Supply	DR-60-x, where x can be 5, 12, 15, or 24.	E183223-A37-UL-1
Switching Power Supply	DR-30-x, where x can be 5, 12, 15, or 24.	E183223-A33-UL-1
Switching Power Supply	RSP-1500-X (X can be 5, 12, 15, 24, 27, 48)	E183223-A39-UL-1
Switching Power Supply	IPC-300A, IPC-300B, IPC-250, IPC-200	E183223-A41-UL-1
Switching Power Supply	USP-350-x (x = 3.3, 5, 12, 15, 24, 48)	E183223-A45-UL-1
Other	SP-125CL	E183223-A47-UL-1
Switching Power Supply (For Built-In)	NES-15-x (x = 5, 12, 15, 24, 48)	E183223-A50-UL-1
Switching Power Supply (For Built-In)	NEx-35-y (x = S, D,T; y = -5, -12, -15, -24, -48, A, B, C, D)	E183223-A52-UL-1

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Supply

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COVER PAGE FOR TEST REPORT

Product Category:	Power Supplies for Information Technology Equipment Including Electrical Business Equipment
Product Category CCN:	QQGQ2, QQGQ8
Test Procedure:	Component Recognition
Product:	Open Frame Switching Power Supply
Model/Type Reference:	PID-250X, where X can be A, B, C or D
Rating(s):	Input: 100-240 Vac, 50/60 Hz, 3 A Output: Model PID-250A: 12 Vdc/15 A, 5 Vdc/5 A Model PID-250B: 24 Vdc/9.4 A, 5 Vdc/5 A Model PID-250C: 36 Vdc/6.3 A, 5 Vdc/5 A Model PID-250D: 48 Vdc/4.7 A, 5 Vdc/5 A
Standards:	UL 60950-1, 1st Edition, 2006-07-07 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-03, 1st Edition, 2006-07 (Information Technology Equipment - Safety - Part 1: General Requirements)
Applicant Name and Address:	MEAN WELL ENTERPRISES CO LTD 28 WU-CHUAN 3RD RD WUGU INDUSTRIAL PARK TAIPEI HSIEN 248 TAIWAN

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

1. Specific Inspection Criteria
2. Specific Technical Criteria
3. Clause Verdicts
4. Critical Components
5. Test Results
6. National Differences
7. Enclosures

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of Underwriters Laboratories Inc. ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

Test Report By:

Gregory Kusnandar
Project Handler
Underwriters' Laboratories of Canada

Reviewed By:

Joseph Petilla
Engineering Team Leader
Underwriters' Laboratories of Canada

SPECIFIC INSPECTION CRITERIA

BA1.0	**Special Instructions to UL Representative**
BA1.1	N/A

BB1.0	**Supporting Documentation**
BB1.1	The following documents located at the beginning of this Procedure supplement the requirements of this Test Report: A. Authorization - The Authorization page may include additional Factory Identification Code markings. B. Generic Inspection Instructions - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report. ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report. iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

BC1.0	**Markings and instructions**
BC1.1	The following markings and instructions are provided as indicated.
BC1.2	All clause references are from UL 60950-1, 1st Edition, 2006-07-07 (Information Technology Equipment - Safety - Part 1: General Requirements).

Standard Clause	Clause Title	Marking or Instruction Details
1.7.1	Power rating - Ratings	Ratings (voltage, frequency/dc, current)
	Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
	Power rating - Model	Model Number
1.7.6	Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
	Fuses - Non-operator access/soldered-in fuses	Unambiguous reference to service documentation for instructions for replacement of fuses replaceable only by service personnel

BD1.0	**Production-Line Testing Requirements**	
BD1.1	Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.	
	Model / Component / Removable Parts / Test probe location / Test Potential V rms / Test Potential V dc / Test Time, s	
	N/A	
BD1.2	Earthing Continuity Test Exemptions - This test is not required for the following models:	
BD1.3	Electric Strength Test Exemptions - This test is not required for the following models:	
BD1.4	Electric Strength Test Component Exemptions - The following solid-state components may disconnected from the remainder of the circuitry during the performance of this test:	

BE1.0	**Sample and Test Specifics for Follow-Up Tests at UL**
BE1.1	Model / Component / Material / Test / Sample(s) / Test Specifics
	N/A

SPECIFIC TECHNICAL CRITERIA

UL 60950-1, First Edition Information technology equipment - Safety- Part 1: General Requirements	
Report Reference No	E183223-A81-UL-1
Compiled by	Gregory Kusnandar
Reviewed by	Joseph Petilla
Date of issue	2007-03-16
Standards	UL 60950-1, 1st Edition, 2006-07-07 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-03, 1st Edition, 2006-07 (Information Technology Equipment - Safety - Part 1: General Requirements)
Test procedure	Component Recognition
Non-standard test method	N/A
Test item description	Open Frame Switching Power Supply
Trademark	None
Model and/or type reference	PID-250X, where X can be A, B, C or D
Rating(s)	Input: 100-240 Vac, 50/60 Hz, 3 A Output: Model PID-250A: 12 Vdc/15 A, 5 Vdc/5 A Model PID-250B: 24 Vdc/9.4 A, 5 Vdc/5 A Model PID-250C: 36 Vdc/6.3 A, 5 Vdc/5 A Model PID-250D: 48 Vdc/4.7 A, 5 Vdc/5 A

Particulars: test item vs. test requirements	
Equipment mobility	for building-in
Operating condition	continuous
Mains supply tolerance (%)	+10%, -10%
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	Class I (earthed)
Mass of equipment (kg)	< 18
Protection against ingress of water	IP X0

Possible test case verdicts:	
- test case does not apply to the test object .....:	N / A
- test object does meet the requirement .....:	Pass
- test object does not meet the requirement .....:	Fail (acceptable only if a corresponding, less stringent national requirement is "Pass")

General remarks:

- "(see Enclosure #)" refers to additional information appended to the Test Report
- "(see appended table)" refers to a table appended to the Test Report
- Throughout the Test Report a point is used as the decimal separator

GENERAL PRODUCT INFORMATION:	
CA1.0	**Report Summary**
CA1.1	N/A
CB1.0	**Product Description**
CB1.1	The equipment is for building in switching power supply for use in information technology equipment, Class I (earthed), switching power supply intended for use on a TN power system. Provided with connector for input/output connection. Enclosure is optionally provided.
CC1.0	**Model Differences**
CC1.1	PIX-250A is the base model. PIX-250B is identical basic model except output rating, transformer T1 secondary winding and model designation. PIX-250C is identical basic model except output rating, transformer T1 secondary winding and model designation. PIX-250D is identical basic model except output rating, transformer T1 secondary winding and model designation.
CD1.0	**Additional Information**
CD1.1	All models may or may not be provided with metal enclosures. Units with metal enclosure were evaluated with external DC fan, minimum 17.5 CFM inward airflow.
CE1.0	**Technical Considerations**
CE1.2	The product was submitted and tested for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 40°C (when units are without enclosure), 50°C (when units are provided with enclosure and external fan)
CE1.4	The product is intended for use on the following power systems: TN
CF1.0	**Engineering Conditions of Acceptability**
CF1.1	For use only in or with complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc. When installed in an end-product, consideration must be given to the following:
CF1.2	The following Production-Line tests are conducted for this product: Electric Strength, Earthing Continuity
CF1.3	The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-Earthed Dead Metal: 368 Vrms, 584 Vpk, Primary-SELV: 383 Vrms, 604 Vpk
CF1.5	The following secondary output circuits are SELV: All outputs
CF1.6	The following secondary output circuits are at hazardous energy levels: 36 V output (PID-250C), 48 V output (PID-250D)

CF1.7	The following secondary output circuits are at non-hazardous energy levels: 12 V output (PID-250A), 24 V output (PID-250B), 5 V output (all models)
CF1.12	The maximum investigated branch circuit rating is: 20 A
CF1.13	The investigated Pollution Degree is: 2
CF1.15	Proper bonding to the end-product main protective earthing termination is: Required
CF1.16	An investigation of the protective bonding terminals has: Not been conducted
CF1.17	The following input terminals/connectors must be connected to the end-product supply neutral: AC/N is marked near CN1 indicates Neutral connection.
CF1.18	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): T1, T2 (Class B)
CF1.19	The following end-product enclosures are required: Electrical, Fire, Electrical
CF1.21	The maximum continuous power supply output (Watts) relied on forced air cooling from: DC fan at minimum 17.5 cfm applied to units with enclosure, DC fan located 5 cm away and inward airflow.
CF1.23	The equipment is suitable for direct connection to: AC mains supply
CF2.0	The means of connection and disconnetion to mains power shall be determined in the end product.

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	Components certified to IEC harmonized standard and checked for correct application. Components, for which no relevant IEC-Standard exist, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950. Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950 and the relevant component Standard.	Pass
1.5.3	Thermal controls		N/A
1.5.4	Transformers		Pass
1.5.5	Interconnecting cables		N/A
1.5.6	Capacitors in primary circuits ..... :	Line-to-line capacitors are subclass X1 or X2. Primary-to-earth capacitors are subclass Y1 or Y2.	Pass
1.5.7	Double insulation or reinforced insulation bridged by components		Pass
1.5.7.1	General		Pass
1.5.7.2	Bridging capacitors	Double Insulation bridged by a single capacitor C31 complying with IEC 384-14: 1993, subclass Y1.	Pass
1.5.7.3	Bridging resistors		N/A
1.5.7.4	Accessible parts	Accessible conductive parts separated from other parts by DOUBLE or REINFORCED INSULATION bridged by C31 comply with the requirements	Pass

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
		for LIMITED CURRENT CIRCUITS.	
1.5.8	Components in equipment for IT power systems		N/A
1.6	**Power interface**		Pass
1.6.1	AC power distribution systems		Pass
1.6.2	Input current	The steady state input current of the equipment did not exceed the RATED CURRENT by more than 10% under NORMAL LOAD.	Pass
1.6.3	Voltage limit of hand-held equipment		N/A
1.6.4	Neutral conductor	Neutral is insulated from earth with basic insulation.	Pass

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

1.7	**Marking and instructions**		Pass
1.7.1	Power rating	Rating marking readily visible to operator.	Pass
	Rated voltage(s) or voltage range(s) (V) ..... :	100 - 240 V.	Pass
	Symbol for nature of supply, for d.c. only ..... :		N/A
	Rated frequency or rated frequency range (Hz).... :	50/60 Hz.	Pass
	Rated current (mA or A)..... :	3 A	Pass
	Manufacturer's name or trademark or identification mark..... :	Mean Well Enterprise Co Ltd or "E183223" or it's trademark.	Pass
	Type/model or type reference..... :	Refer to the Model information at the beginning of this Test Report.	Pass
	Symbol for Class II equipment only..... :		N/A
	Other symbols..... :	Additional markings are used and are defined in the installation instructions.	Pass
	Certification marks..... :	UL, c-UL.	Pass
1.7.2	Safety instructions		Pass
1.7.3	Short duty cycles		N/A
1.7.4	Supply voltage adjustment ..... :		N/A
1.7.5	Power outlets on the equipment..... :		N/A
1.7.6	Fuse identification..... :	Fuse marking provided as follows: T 6.3A/250V.	Pass
1.7.7	Wiring terminals		N/A
1.7.7.1	Protective earthing and bonding terminals ..... :	Protective earthing to be evaluated in the end product.	N/A
1.7.7.2	Terminal for a.c. mains supply conductors		N/A
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
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

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.10	IT power distribution systems		N/A
1.7.11	Thermostats and other regulating devices		N/A
1.7.12	Language ..... :	Reviewed only English markings/instructions.	-
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		Pass
2.1.1.1	Access to energized parts	To be evaluated in the end product.	N/A
	Test by inspection.....:	To be evaluated in the end product.	N/A
	Test with test finger.....:	To be evaluated in the end product.	N/A
	Test with test pin.....:	To be evaluated in the end product.	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) .....:	131 ms, 22 V	-
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	SELV levels are maintained after single fault condition.	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.	N/A

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**		Pass
2.4.1	General requirements		Pass
2.4.2	Limit values	0.7 mA peak	Pass
	Frequency (Hz) ..... :	Frequency not exceeding 1 kHz.	-
	Measured current (mA) ..... :	0.13 mA	-
	Measured voltage (V) ..... :	240 Vrms	-
	Measured capacitance (mF) ..... :	2200 pF	-
2.4.3	Connection of limited current circuits to other circuits	Limited current circuit meets the limits of 2.4.2 under normal conditions and under single component or insulation faults in interconnected circuits.	Pass
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	To be evaluated in the end product.	N/A
2.6.2	Functional earthing	Functional earthing separated from Hazardous voltage by reinforced insulation.	Pass
2.6.3	Protective earthing and protective bonding conductors	To be evaluated in the end product.	Pass
2.6.3.1	General		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	To be evaluated in the end product.	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, 0.165 V, 4.125 mOhm	Pass
2.6.3.5	Colour of insulation ..... :		N/A
2.6.4	Terminals		N/A
2.6.4.1	General		N/A
2.6.4.2	Protective earthing and bonding terminals		N/A
	Rated current (A), type and nominal thread diameter (mm) ..... :		-
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N/A
2.6.5	Integrity of protective earthing	To be evaluated in the end product.	N/A
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	To be evaluated in the end product.	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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.7	Screws for protective bonding		N/A
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	Protective device are integrated in the equipment.	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	The building installation is considered as providing 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

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Clause	Requirement + Test	Result - Remark	Verdict
2.9	**Electrical insulation**		Pass
2.9.1	Properties of insulating materials	Natural rubber, materials containing asbestos and hygroscopic materials are not used as insulation.	Pass
2.9.2	Humidity conditioning	Electric strength test was conducted after the humidity treatment.	Pass
	Humidity (%) ..... :	95	-
	Temperature (°C) ..... :	40	-
2.9.3	Grade of insulation		Pass

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Clause	Requirement + Test	Result - Remark	Verdict
2.10	**Clearances, creepage distances and distances through insulation**		Pass
2.10.1	General	Pollution degree 2 applicable.	Pass
2.10.2	Determination of working voltage		Pass
2.10.3	Clearances	(see appended table 2.10.3 and 2.10.4).	Pass
2.10.3.1	General		Pass
2.10.3.2	Clearances in primary circuit		Pass
2.10.3.3	Clearances in secondary circuits	See 5.3.4.	Pass
2.10.3.4	Measurement of transient voltage levels		N/A
2.10.4	Creepage distances	(see appended table 2.10.3 and 2.10.4)	Pass
	CTI tests..... :	Material group IIIb; 100 <= CTI < 175.	-
2.10.5	Solid insulation		Pass
2.10.5.1	Minimum distance through insulation		Pass
2.10.5.2	Thin sheet material	(see appended table 5.2)	Pass
	Number of layers (pcs) ..... :	Reinforced Insulation - 2 layers	-
	Electric strength test ..... :	(see appended table 5.2)	-
2.10.5.3	Printed boards		N/A
	Distance through insulation		N/A
	Electric strength test for thin sheet insulating material ..... :		-
	Number of layers (pcs) ..... :		N/A
2.10.5.4	Wound components		Pass
	Number of layers (pcs) ..... :	Two wrapped layers.	Pass
	Two wires in contact inside wound component; angle between 45° and 90° ..... :	Physical separation in the form of insulating sleeving provided to relieve mechanical stress at the crossover point.	Pass
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

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.6.4	Thermal ageing (°C) ..... :		N/A
2.10.6.5	Electric strength test ..... :		-
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..... :	UL approved optical isolator	Pass
	Electric strength test ..... :	3000 VAC	-
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		N/A
3.1.1	Current rating and overcurrent protection		N/A
3.1.2	Protection against mechanical damage		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		N/A
3.1.7	Insulating materials in electrical connections		N/A
3.1.8	Self-tapping and spaced thread screws		N/A
3.1.9	Termination of conductors		N/A
	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	To be evaluated in the end product.	N/A
3.2.1.1	Connection to an a.c. mains supply	To be evaluated in the end product.	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 (mm^2), 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 (mm^2) ..... :		-
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	To be evaluated in the end product.	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**		Pass
3.5.1	General requirements		Pass
3.5.2	Types of interconnection circuits .....:	Interconnection circuits are SELV CIRCUITS.	Pass
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**		N/A
4.2.1	General	To be evaluated in the end product.	N/A
4.2.2	Steady force test, 10 N		N/A
4.2.3	Steady force test, 30 N		N/A
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		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		N/A
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)		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	The equipment and its component parts did not attain excessive temperatures during normal operation.	Pass
	Normal load condition per Annex L ..... :	Permitted rises based on manufacturer's specified Tmra of 40°C or 50°C. 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		Pass
4.6	**Openings in enclosures**		N/A
4.6.1	Top and side openings	To be evaluated in the end product.	N/A
	Dimensions (mm)..... :		-
4.6.2	Bottoms of fire enclosures	To be evaluated in the end product.	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	(see appended table 4.7)	Pass
	Method 2, application of all of simulated fault condition tests		N/A
4.7.2	Conditions for a fire enclosure		Pass
4.7.2.1	Parts requiring a fire enclosure	The unit is for building-in, fire enclosure to be provided in the end product.	Pass
4.7.2.2	Parts not requiring a fire enclosure	Fire enclosure covers all parts.	N/A
4.7.3	Materials		Pass
4.7.3.1	General		Pass
4.7.3.2	Materials for fire enclosures	The unit is for building-in, fire enclosure to be provided in the end product.	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)	Equipment designed to require simultaneous power from one power source.	Pass
5.1.3	Test circuit	Single phase equipment intended only for connection to star TN or TT system.	Pass
5.1.4	Application of measuring instrument	Test made to 10 x 20 cm metal foil in contact with accessible non-conductive part. Tested using D.1 measuring instrument.	Pass
5.1.5	Test procedure		Pass
5.1.6	Test measurements		Pass
	Test voltage (V) ..... :	264 VAC	-
	Measured touch current (mA) ..... :	0.95 mA	-
	Max. allowed touch current (mA) ..... :	3.5 mA	-
	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

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Clause	Requirement + Test	Result - Remark	Verdict
5.2	**Electric strength**		Pass
5.2.1	General	(see appended table 5.2)	Pass
5.2.2	Test procedure	No insulation breakdown detected during the test.	Pass
5.3	**Abnormal operating and fault conditions**		Pass
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	Pass
5.3.2	Motors		N/A
5.3.3	Transformers	Transformers are constructed in accordance with the applicable Clause and Annex C.	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	No fire, emission of molten metal or deformation was noted during the tests. Electric Strength tests performed after abnormal and fault tests.	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

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Clause	Requirement + Test	Result - Remark	Verdict
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
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

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Clause	Requirement + Test	Result - Remark	Verdict

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 ..... :	T1, T2	-
	Manufacturer ..... :	1. Jet Signal Industries Co Ltd 2. Long Sail Electronic Co Ltd 3. Yao Sheng Electronic Co Ltd	-
	Type ..... :	1. SBI4.2 2. SBI4.2 3. YST-JC1	-
	Rated values ..... :	All Class B (130°C)	-
	Method of protection ..... :	Circuit network.	-
C.1	Overload test		Pass
C.2	Insulation	(see appended table 5.2)	Pass
	Protection from displacement of windings ..... :	Margin tape provided on each end of each winding.	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**		N/A
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)**		N/A
	Metal used :		-
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		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
	..... :		-

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Clause	Requirement + Test	Result - Remark	Verdict

1.5.1	**TABLE: list of critical components**					Pass
Object/part No.	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID
Chassis (Optional)	Various	Various	Metal, minimum 0.6 mm thick. Measured overall 253 by 105.5 by 53 mm.	--	--	4-01
Chassis Vent Openings	Various	Various	Front: provided with numerous circular openings, each measured 2.9 mm OD.Rear: provided with numerous	--	--	
Insulating Tubing/Sleeving	Various	Various	FEP, PTFE, PVC, TFE, neoprene, or marked VW-1; minimum 105°C, minimum 300 V.	UZFT2, YDPU2, YDRY2, YDTU2	UL	3-02
Printed Wiring Board	Various	Various	Rated minimum V-1, 130°C. Provided with one cut slot C31, measured overall 12.2 by 1.5 mm and another under U4, U7, measured overall 16 by 1.5 mm	ZPMV2	UL	5-02
Primary Connector (CN1)	Chyao Shiunn Electronic Industrial Ltd	JS-1120 series	Rated 7A, 250V, 105°C	ECBT2	UL	3-02
Primary Connector (CN1) (Alternate)	Molex Inc	41791 series	7A, 250V, 105°C	ECBT2	UL	
Primary Connector (CN1) (Alternate)	Taiwan King Pin Terminal Co Ltd	P-8800l series	5A, 250V, 90°C	ECBT2	UL	
Primary Connector (CN1) (Alternate)	Japan Solderless Terminal MFG Co Ltd	VH series	7A, 250V, 130°C. T6.3A	ECBT2	UL	
Fuse (FS1)	Various	Various	~~E10~~A, 250V	JDYX	UL	3-02
Fuse (FS1) (Alternate)	Conquer Electronics Co., Ltd.	MST, MET	T6.3 A, 250 Vac.	JDYX2,	UL	3-02
Thermistor (RTH1,	Various	Various	Rated minimum 3 A, maximum	--	--	3-02

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Clause	Requirement + Test	Result - Remark	Verdict

RTH2) (Optional)			15 ohms at 25°C			
X-Capacitor (C1, C2) (Optional)	Various	Various	Rated maximum 1.0 µF for C1, maximum 0.6 µF, rated 85°C. For C2, minimum 250 Vac. Class X1 or X2. Rated 100°C	FOKY2, FOKY8 or FOWX2, FOWX8	UL	3-02
Y-Capacitors (C3, C4, C24, C25, C29) (Optional)	Various	Various	Rated maximum 4700 pF for C3, C4, C25, C29, maximum 220pF for C24, minimum 250 Vac. Class Y1 or Y2., rated 85°C.	FOKY2, FOKY8 or FOWX2, FOWX8	UL	3-02
Varistor (ZNR1) (Optional)	Various	Various	Rated 300 Vac, 385 Vdc.	XUHT2, XUHT8	UL	3-02
Bridge Rectifier (BD1)	Various	Various	Rated minimum 4A, minimum 600 V.	--	--	3-02
Transistors (Q3)	Various	Various	Rated minimum 5 A, minimum 500 V.	--	--	3-02
Electrolytic Capacitor (C5)	Various	Various	Rated 220 µF, minimum 400 V, minimum 85°C.	--	--	3-02
Bridging Capacitor (C31) (Optional)	Various	Various	Rated maximum 2200 pF, minimum 250 V. Class Y1 type.	FOKY2, FOKY8 or FOWX2, FOWX8	UL	3-02
Optical Isolator (U4, U5, U6, U7)	Cosmo Electronics Corp	K1010	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL	3-02
Optical Isolator (U4, U5, U6, U7) (Alternate)	Isocom Components Ltd.	ISP621-1X, ISP817X	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL	
Optical Isolator (U4, U5, U6, U7) (Alternate)	Lite-on Technology Corp	LTV817	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL	
Optical Isolator (U4, U5, U6, U7) (Alternate)	NEC Electronics Corp Compound Semiconductor Device Div.	PS2561, PS2561-1	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL	
Optical Isolator (U4, U5, U6, U7) (Alternate)	Sharp Corp	PC123	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL	
Transformer (T1)	Long Sail Electronic	TF-1538 (for	Class B (130°C) Insulation	OBJY2	UL	4-14

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Clause	Requirement + Test	Result - Remark	Verdict

Varnish (T1) John C Dolph Co BC-346 B Rated min. 130°C
(Alternate)

	Co Ltd	X=A), TF-1539 (for X=B), TF-1540 (for X=C), TF-1541 (for X=D)	System, Type SBI4.2.			
Core (T1)	Various	Various	Ferrite, measured overall 35.2 by 34.6 by 10.7 mm. Provided with 1 layer of insulation tape on topside edge near heat sink.	--	--	
Coil (T1)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Bobbin (T1)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, and minimum 0.51 mm thick.	QMFZ2	UL	
Insulating Tape (T1)	Symbio Inc.	35660Y 35660	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T1) (Alternate)	3M Co.	1350F-1 1350-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T1) (Alternate)	Bondtec Pacific Co Ltd	~~371F~~ 3705	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Margin Tape (T1)	Symbio Inc.	35661	Polyester tape, rated 130°C. Minimum 4 mm wide on both side of the bobbin	OANZ2	UL	
Margin Tape (T1) (Alternate)	3M Co.	~~44(a)~~, 44T-A(a) 44T-A (a)	Polyester tape, rated 130°C.	OANZ2	UL	
Tubing (T1)	Great Holding Industrial Co., Ltd.	TFL : TFT	Minimum 200°C. Provided on all exit leads.	YDPU2	UL	
Varnish (T1)	PD GEORGE CO/RIPLEY RESIN	468-2-7	Rated minimum 130°C.	OBOR2	UL	
Varnish (T1) (Alternate)	Hitachi Chemical Co., Ltd.	WP-2952F-2G	Rated minimum 130°C.	OBOR2	UL	
Transformer (T1) (Alternate)	JET Signal Industries Co Ltd.	TF-1538 (for X=A), TF-1539 (for X=B), TF-1540 (for X=C). TF-1541 (for X=D)	Class B (130°C) Insulation System, Type SBI4.2	OBJY2	UL	4-13
Core (T1)	Various	Various	Ferrite, measured overall 35.2	--	--	

Margin Tape (T1) (Alternate) Bondtec 371 Polyester tape, rated 130°C

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Clause	Requirement + Test	Result - Remark	Verdict

			by 34.6 by 10.7 mm. Provided with 1 layer of insulation tape on topside edge near heat sink.			
Coil (T1)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Bobbin (T1)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL	
Copper Shield (T1)	Various	Varoius	Copper foil, provided with insulation tape minimum 10 mm.	--	--	
Insulating Tape (T1)	3M Co.	1350-1, 1350F-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T1) (Alternate) system	Bondtec Pacific Co Ltd	370S	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T1) (Alternate)	Symbio Inc.	35660	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Margin Tape (T1)	Bondtec Pacific Co Ltd	201-45	Polyester tape, rated 130°C. Minimum 4 mm wide on both sides of the bobbin.	OANZ2	UL	
Margin Tape (T1) (Alternate)	3M Co.	44	Polyester tape, rated 130°C.	OANZ2	UL	
Varnish (T1)	John C Dolph	BC-346A	Rated minimum 200°C.	OBOR2	UL	
Tubing (T1)	Great Holding Industrial Co., Ltd.	TFL, TFT	Minimum 200°C. Provided on all exit leads.	YDPU2	UL	
Transformer (T2)	Long Sail Electronic Co Ltd	TF-1572	Class B (130°C) Insulation System, Type SBI4.2.	OBJY2	UL	4-17
Core (T2)	Various	Various	Ferrite, measured overall 28.2 by 28.8 by 11.4 mm.	--	--	
Coil (T2)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Bobbin (T2)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL	
Insulating Tape (T2)	Symbio Inc.	35660Y	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T2)	3M Co.	1350F-1	Polyester tape, 0.05 mm thick,	OANZ2	UL	

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Clause	Requirement + Test	Result - Remark	Verdict

(Alternate)			rated 130°C.			
Margin Tape (T2)	Symbio Inc.	35661	Polyester tape, rated 130°C. Minimum 3.5 mm wide on both sides of the bobbin.	OANZ2	UL	
Margin Tape (T2) (Alternate)	3M Co.	44(a), 44T-A(a)	Polyester tape, rated 130°C.	OANZ2	UL	
Tubing (T2)	Great Holding Industrial Co., Ltd.	TFL	Minimum 200°C. Provided on all exit leads.	YDPU2	UL	
Varnish (T2)	PD GEORGE CO/RIPLEY RESIN	468-2-7	Rated minimum 130°C.	OBOR2	UL	
Varnish (T2) (Alternate)	Hitachi Chemical Co., Ltd.	WP-2952F-2G	Rated minimum 130°C.	OBOR2	UL	
Transformer (T2) (Alternate)	JET Signal Industries Co Ltd.	TF-1572	Class B (130°C) Insulation System, Type SBI4.2	OBJY2	UL	4-16
Core (T2	Various	Various	Ferrite, measured overall 28.2 by 28.8 by 11.4 mm.	--	--	
Coil (T2)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Bobbin (T2)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL	
Copper Shield (T2)	Various	Various	Copper foil, provided with insulation tape minimum 10 mm.	--	--	
Insulating Tape (T2)	3M Co.	1350-1, 1350F-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T2) (Alternate) system	Bondtec Pacific Co Ltd	370S	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T2) (Alternate)	Symbio Inc.	35660, 35660Y	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Margin Tape (T2)	Bondtec Pacific Co Ltd	201-45	Polyester tape, rated 130°C. Minimum 3.5 mm wide on both sides of the bobbin.	OANZ2	UL	
Margin Tape (T2) (Alternate)	3M Co.	44	Polyester tape, rated 130°C.	OANZ2	UL	

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Clause	Requirement + Test	Result - Remark	Verdict

Varnish (T2)	John C Dolph	BC-346A	Rated minimum 200°C.	OBOR2	UL	
Tubing (T2)	Great Holding Industrial Co., Ltd.	TFL, TFT	Minimum 200°C. Provided on all exit leads.	YDPU2	UL	
Line Filter (L2, L3) (Optional)	Various	TR-737	Open type construction. Rated 130°C. Covered with shrinkable tube.	--	--	4-10
Core (L2, L3)	Various	Various	Ferrite, measured overall 11.2 by 5.82 by 4.04 mm.	--	--	
Coil (L2, L3)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Line Filter (LF1) (Optional)	Various	TR-738	Open type construction. Rated 130°C.	--	--	4-11
Core (LF1)	Various	Various	Ferrite, measured overall 14 by 8.4 by 4 mm.	--	--	
Coil (LF1)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Line Filter (LF2) (Optional)	Various	TR-548	Open type construction. Rated 120°C.	--	--	4-12
Core (LF2)	Various	Various	Ferrite, measured overall 22 by 14 by 8 mm.	--	--	
Coil (LF2)	Various	Various	Rated minimum 120°C.	OBMW2	UL	
PFC Choke (L1) (Optional)	Various	TF-1571	Open type construction. Rated 130°C.	--	--	4-08
Core (L1)	Various	Various	Silicon Steel, measured overall 50 by 34 by 16 mm.	--	--	
Coil (L1)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Bobbin (L1)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL	
Thermostat (TSW1)	Seki Controls Co Ltd	ST-22	70-130°C, 250Vac	YFZW2	UL	3-02
Thermostat wires	Various	Various	FEP, PTFE, PVC, TFE, neoprene, or marked VW-1; minimum 125°C, minimum 300 V. Sleeved with tubing.	AVLV2, AVLV8	UL	
Sleeving tube (on Q3)	Various	Various	Minimum V-2, silicone rubber, minimum 120°C.	QMFZ2	UL	

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Adhesive Glue	Various	Various	Minimum V-2, 105°C. See table 2.10.3 supplement info for locations	QMFZ2	UL	3-02
Label	Various	Various	Minimum 60°C.	PGDQ2	UL	
Electrolytic Capacitor (C28)	Various	Various	Rated 25V, 47uF, 105°C	--	--	
Electrolytic Capacitor (C51)	Various	Various	Rated 25V, 330uF, 105°C	--	--	
Electrolytic Capacitor (C70)	Various	Various	Rated 50V, 22uF, 105°C	--	--	
IC Regulator (U3)	Various	Various	Rated minimum 650 V, 2.7 A	--	--	
Zener Diode (Z60)	Various	Various	Rated 6.2V, 1/2W	--	--	

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Clause	Requirement + Test	Result - Remark	Verdict

1.6.2	**TABLE: electrical data (in normal conditions)**					Pass
fuse #	I rated (A)	U (V)	P (W)	I (mA)	I fuse (mA)	condition/status
--	--	--	--	--	--	Model PID-250A
F1	--	90	225	2542	2542	+12V/15A, +5V/5A / 50Hz
F1	3	100	222	2279	2279	+12V/15A, +5V/5A / 50Hz
F1	3	240	213	975	975	+12V/15A, +5V/5A / 50Hz
F1	--	254	213	929	929	+12V/15A, +5V/5A / 50Hz
F1	--	264	213	899	899	+12V/15A, +5V/5A / 50Hz
F1	--	90	225	2531	2531	+12V/15A, +5V/5A / 60Hz
F1	3	100	222	2270	2270	+12V/15A, +5V/5A / 60Hz
F1	3	240	213	969	969	+12V/15A, +5V/5A / 60Hz
F1	--	254	213	927	927	+12V/15A, +5V/5A / 60Hz
F1	--	264	213	899	899	+12V/15A, +5V/5A / 60Hz
--	--	--	--	--	--	Model PID-250C
F1	--	90	277	3111	3111	+36V/6.3A, +5V/5A / 50Hz
F1	3	100	273	2777	2777	+36V/6.3A, +5V/5A / 50Hz
F1	3	240	260	1170	1170	+36V/6.3A, +5V/5A / 50Hz
F1	--	254	260	1109	1109	+36V/6.3A, +5V/5A / 50Hz
F1	--	264	259	1066	1066	+36V/6.3A, +5V/5A / 50Hz
F1	--	90	277	3100	3100	+36V/6.3A, +5V/5A / 60Hz
F1	3	100	273	2772	2772	+36V/6.3A, +5V/5A / 60Hz
F1	3	240	260	1157	1157	+36V/6.3A, +5V/5A / 60Hz
F1	--	254	260	1097	1097	+36V/6.3A, +5V/5A / 60Hz
F1	--	264	260	1057	1057	+36V/6.3A, +5V/5A / 60Hz
--	--	--	--	--	--	Model PID-250D
F1	--	90	300	3467	3467	+48V/4.7A, +5V/5A / 50Hz
F1	3	100	298	3160	3160	+48V/4.7A, +5V/5A / 50Hz
F1	3	240	288	1655	1655	+48V/4.7A, +5V/5A / 50Hz
F1	--	254	288	1581	1581	+48V/4.7A, +5V/5A / 50Hz
F1	--	264	287	1307	1307	+48V/4.7A, +5V/5A / 50Hz
F1	--	90	300	3427	3427	+48V/4.7A, +5V/5A / 60Hz
F1	3	100	298	3108	3108	+48V/4.7A, +5V/5A / 60Hz
F1	3	240	285	1332	1332	+48V/4.7A, +5V/5A / 60Hz
F1	--	254	285	1266	1266	+48V/4.7A, +5V/5A / 60Hz
F1	--	264	285	1223	1223	+48V/4.7A, +5V/5A / 60Hz
supplementary information:						
--						

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Clause	Requirement + Test	Result - Remark	Verdict

2.10.3 and 2.10.4	**TABLE: clearance and creepage distance measurements**					Pass
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
Line to Neutral before Fuse (FS1) (PWB Trace)	<420	<250	1.5	3.5	2.5	3.5
Primary to Ground (PWB Trace)	<420	<250	2.0	4.5	2.5	4.5
Primary to Ground (Component) HS3 to the chassis	<420	<250	2.0	3.3	2.5	3.3
Between Fuse (FS1) leads (PWB Trace)	<420	<250	1.5	2.5	2.5	2.5
Primary (10N) to Secondary (10N) (U5 primary leads to D134 lead)	<420	<250	4.0	8.4	5.0	8.4
Primary to Secondary (PWB Trace), under U6	<420	<250	4.0	7.6	5.0	10.6
Primary to Secondary, U4, U6, U7	<420	<250	4.0	7.6	5.0	7.6
Primary to Secondary (PWB Trace), under C31	<420	<250	4.0	6.0	5.0	9.0
Primary to Secondary (PWB Trace), under T1	604	383	4.6	12.8	7.8	12.8
Primary to Secondary, T1	604	383	4.6	8.0	7.8	8.0
Primary to Core, T1	604	383	2.3	4.0	3.9	4.0
Secondary to Core, T1	604	383	2.3	4.0	3.9	4.0
Primary to Secondary (PWB Trace), under T2	488	330	4.2	12.0	7.0	12.0
Primary to Secondary, T2	488	330	4.2	7.0	7.0	7.0
Primary to Core, T1	488	330	2.1	3.5	3.5	3.5
Secondary to Core, T2	488	330	2.1	3.5	3.5	3.5
supplementary information:						
1) Function insulation shorted, see 5.3.4 for details. 2) Transformers (T1, T2) all exit leads sleeved with tubing/sleeving. 3) Transformers (T1, T2) provided with tubing sleeved on secondary fly wires to minimum 8.6 mm past secondary windings. 4) Transformers (T1) is provided with margin tape, minimum 4 mm wide on both sides of the bobbin. 5) Transformer (T2) is provided with margin tape, minimum 3.5 mm wide on both sides of the bobbin. 6) Glued Components: C28, C51, C70, FS1, LF1, L2, L3, T1 secondary fly wires, T2 secondary fly wires 7) Insulation rubber between Q3 and HS1. 8) One cut slot provided under C31, measured overall 12.2 by 1.5 mm. 9) One cut slot provided under U4, U7. measured overall 16 by 1.5 mm 10) Tubed components: L2, L3, wire from CN4 to thermostat						

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Clause	Requirement + Test	Result - Remark	Verdict

2.10.5	**TABLE: distance through insulation measurements**				Pass
distance through insulation di at/of:		Up (V)	test voltage (V)	required di (mm)	di (mm)
UL approved optical isolator		240	3000	0.4	>0.4
supplementary information:					
--					

4.5	**TABLE: temperature rise measurements**						Pass
	test voltage (V)	--	--	--	--	--	—
	t1 (°C).....	--	--	--	--	--	—
	t2 (°C).....	--	--	--	--	--	—
maximum temperature T of part/at:		T (°C)					allowed Tmax (°C)
Model PID-250A (for open frame)		90V / 50Hz	90V / 50Hz	264V / 50Hz	264V / 50Hz	--	--
CN1 body		33.1	44.6	28.9	41.3	--	70
L2 coil		41.0	52.5	32.3	44.7	--	125
L3 coil		49.1	60.6	35.0	47.4	--	125
C1 body		36.6	48.1	31.7	44.1	--	85
C2 body		52.9	64.4	39.4	51.8	--	100
LF1 coil		59.0	70.5	39.3	51.7	--	130
LF2 coil		80.0	91.5	47.4	59.8	--	130
PCB under RTH2		52.9	64.4	38.8	51.2	--	130
PCB under BD1		54.3	65.8	41.1	53.5	--	130
C4 body		33.9	45.4	32.9	45.3	--	85
C25 body		32.5	44.0	30.6	43.0	--	85
C24 body		48.6	60.1	38.2	50.6	--	85
C29 body		45.5	57.0	44.8	57.2	--	85
L1 coil		74.1	85.6	51.3	63.7	--	130
H.S3 near Q1		73.4	84.9	--	--	--	130
H.S1 near Q3		58.2	69.7	57.3	69.7	--	130
C5 body		49.6	61.1	46.4	58.8	--	85
T1 primary Coil		73.8	85.3	72.0	84.4	--	110
T1 secondary Coil		76.0	87.5	71.5	83.9	--	110
T1 Core		64.8	76.3	63.9	76.3	--	110
T2 primary Coil		56.0	67.5	54.8	67.2	--	110
T2 secondary Coil		51.8	63.3	53.0	65.4	--	110
T2 Core		58.3	69.8	59.4	71.8	--	110
C31 body		59.2	70.7	58.9	71.3	--	125
U6 body		63.7	75.2	63.1	75.5	--	100
U4 body		62.4	73.9	61.6	74.0	--	100

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Clause	Requirement + Test	Result - Remark	Verdict

L100 coil	77.6	89.1	69.0	81.4	--	105
L200 coil	57.8	69.3	60.5	72.9	--	105
C14 body	48.1	59.6	38.8	51.2	--	85
Ambient Air	28.5	40.0	27.6	40.0	--	--
Test During	1.8 hrs	--	1.5 hrs	--	--	--
Model PID-250A (with enclosure and fan)	90V / 50Hz	90V / 50Hz	--	--	--	--
CN1 body	27.6	51.0	--	--	--	70
L2 coil	28.6	52.0	--	--	--	125
L3 coil	30.7	54.1	--	--	--	125
C1 body	27.6	51.0	--	--	--	85
C2 body	30.4	53.8	--	--	--	100
LF1 coil	32.7	56.1	--	--	--	130
LF2 coil	35.5	58.9	--	--	--	130
PCB under RTH2	33.1	56.5	--	--	--	130
PCB under BD1	35.9	59.3	--	--	--	130
C4 body	27.3	50.7	--	--	--	85
C25 body	26.9	50.3	--	--	--	85
C24 body	29.8	53.2	--	--	--	85
C29 body	28.1	51.5	--	--	--	85
L1 coil	42.1	65.5	--	--	--	130
H.S3 near Q1	44.3	67.7	--	--	--	130
H.S1 near Q3)	35.8	59.2	--	--	--	130
C5 body	35.0	58.4	--	--	--	85
T1 primary Coil	46.0	69.4	--	--	--	110
T1 secondary Coil	52.7	76.1	--	--	--	110
T1 Core	44.4	67.8	--	--	--	110
T2 primary Coil	43.9	67.3	--	--	--	110
T2 secondary Coil	48.0	71.4	--	--	--	110
T2 Core	45.4	68.8	--	--	--	110
C31 body	42.1	65.5	--	--	--	125
U6 body	41.4	64.8	--	--	--	100
U4 body	41.8	65.2	--	--	--	100
L100 coil	58.5	81.9	--	--	--	105
L200 coil	54.8	78.2	--	--	--	105
C14 body	38.3	61.7	--	--	--	85
Ambient air	26.6	50.0	--	--	--	--
During times	2 hrs	--	--	--	--	--
Model PID-250C (for open frame)	90V / 50Hz	90V / 50Hz	264V / 50Hz	264V / 50Hz	--	--
CN1 body	36.6	48.3	30.5	42.3	--	70
L2 coil	49.0	60.7	34.6	46.4	--	125
L3 coil	54.7	66.4	36.8	48.6	--	125
C1 body	47.1	58.8	35.9	47.7	--	85
C2 body	63.7	75.4	42.1	53.9	--	100
LF1 coil	71.9	83.6	42.2	54	--	130

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Clause	Requirement + Test	Result - Remark	Verdict

LF2 coil	85.2	96.9	46.5	58.3	--	130
PCB under RTH2	56.9	68.6	42.8	54.6	--	130
PCB under BD1	91.4	103.1	57.9	69.7	--	130
C4 body	40.9	52.6	36.1	47.9	--	85
C25 body	35.2	46.9	31.5	43.3	--	85
C24 body	51.8	63.5	41.3	53.1	--	85
C29 body	44.0	55.7	41.3	53.1	--	85
L1 coil	91.5	103.2	56.4	68.2	--	130
H.S3 near Q1	83.8	95.5	58.4	70.2	--	130
H.S1 near Q3	62.8	74.5	63.2	75.0	--	130
C5 body	55.6	67.3	54.1	65.9	--	85
T1 primary Coil	87.7	99.4	86.5	98.3	--	110
T1 secondary Coil	92.9	104.6	94.4	106.2	--	110
T1 Core	80.6	92.3	80.1	91.9	--	110
T2 primary Coil	57.7	69.4	55.9	67.7	--	110
T2 secondary Coil	62.3	74.0	62.2	74.0	--	110
T2 Core	61.8	73.5	60.7	72.5	--	110
C31 body	62.3	74.0	64.4	76.2	--	125
U6 body	62.9	74.6	64.0	75.8	--	100
U4 body	58.9	70.6	59.8	71.6	--	100
L100 coil	76.4	88.1	79.4	91.2	--	105
L200 coil	52.0	63.7	53.6	65.4	--	105
C14 body	59.2	70.9	44.4	56.2	--	85
Ambient Air	28.3	40.0	28.2	40.0	--	--
Test During	1.5 hrs	--	1.5 hrs	--	--	--
Model PID-250C	264V / 50Hz	264V / 50Hz	--	--	--	--
CN1 body	27.5	50.9	--	--	--	70
L2 coil	30.0	53.4	--	--	--	125
L3 coil	29.2	52.6	--	--	--	125
C1 body	29.2	52.6	--	--	--	85
C2 body	34.9	58.3	--	--	--	100
LF1 coil	40.3	63.7	--	--	--	130
LF2 coil	41.4	64.8	--	--	--	130
PCB under RTH2	30.9	54.3	--	--	--	130
PCB under BD1	51.0	74.4	--	--	--	130
C4 body	26.8	50.2	--	--	--	85
C25 body	26.7	50.1	--	--	--	85
C24 body	29.1	52.5	--	--	--	85
C29 body	28.9	52.3	--	--	--	85
L1 coil	55.6	79.0	--	--	--	130
H.S3 near Q1	52.4	75.8	--	--	--	130
H.S1 near Q3	41.5	64.9	--	--	--	130
C5 body	39.9	63.3	--	--	--	85
T1 primary Coil	57.9	81.3	--	--	--	110

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Clause	Requirement + Test	Result - Remark	Verdict

T1 secondary Coil	70.1	93.5	--	--	--	110
T1 Core	47.3	70.7	--	--	--	110
T2 primary Coil	50.2	73.6	--	--	--	110
T2 secondary Coil	55.3	78.7	--	--	--	110
T2 Core	50.2	73.6	--	--	--	110
C31 body	51.5	74.9	--	--	--	125
U6 body	46.5	69.9	--	--	--	100
U4 body	44.1	67.5	--	--	--	100
L100 coil	68.2	91.6	--	--	--	105
L200 coil	55.8	79.2	--	--	--	105
C14 body	46.1	69.5	--	--	--	85
Ambient air	26.6	50.0	--	--	--	--
During times	1.5 hrs	--	--	--	--	--
Model PID-250D (for open frame)	90V / 50Hz	90V / 50Hz	264V / 50Hz	264V / 50Hz	--	--
CN1 body	43.5	56.8	32.9	45.6	--	70
L2 coil	61.7	75.0	40.0	52.7	--	125
L3 coil	67.6	80.9	42.5	55.2	--	125
C1 body	57.1	70.4	43.3	56.0	--	85
C2 body	75.4	88.7	46.9	59.6	--	100
LF1 coil	77.5	90.8	50.0	62.7	--	130
LF2 coil	80.8	94.1	46.1	58.8	--	130
PCB under RTH2	86.4	99.7	56.1	68.8	--	130
PCB under BD1	78.4	91.7	53.3	66.0	--	130
C4 body	48.9	62.2	43.9	56.6	--	85
C25 body	47.0	60.3	38.7	51.4	--	85
C24 body	49.2	62.5	39.0	51.7	--	85
C29 body	67.0	80.3	66.9	79.6	--	85
L1 coil	75.9	89.2	50.2	62.9	--	130
H.S3 near Q1	80.9	94.2	56.0	68.7	--	130
H.S1 near Q3	72.1	85.4	70.1	82.8	--	130
C5 body	61.7	75.0	59.2	71.9	--	85
T1 primary Coil	90.8	104.1	90.0	102.7	--	110
T1 secondary Coil	88.2	101.5	91.4	104.1	--	110
T1 Core	66.6	79.9	67.2	79.9	--	110
T2 primary Coil	47.4	60.7	47.1	59.8	--	110
T2 secondary Coil	53.9	67.2	55.1	67.8	--	110
T2 Core	46.2	59.5	47.8	60.5	--	110
C31 body	70.0	83.3	73.6	86.3	--	125
U6 body	52.7	66.0	56.5	69.2	--	100
U4 body	54.1	67.4	57.4	70.1	--	100
L100 coil	72.9	86.2	75.3	88.0	--	105
L200 coil	45.6	58.9	50.4	63.1	--	105
C14 body	63.1	76.4	49.9	62.6	--	85
Ambient Air	26.7	40.0	27.3	40.0	--	--
Test During	1.8	--	1.8 hrs	--	--	--

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Clause	Requirement + Test	Result - Remark	Verdict

	hrs					
Model PID-250D (for enclosure type)	90V / 50Hz	90V / 50Hz	264V / 50Hz	264V / 50Hz	--	--
CN1 body	27.6	51.9	28.0	51.6	--	70
L2 coil	33.5	57.8	27.9	51.5	--	125
L3 coil	31.6	55.9	27.6	51.2	--	125
C1 body	29.5	53.8	27.9	51.5	--	85
C2 body	35.6	59.9	29.5	53.1	--	100
LF1 coil	38.1	62.4	29.3	52.9	--	130
LF2 coil	42.7	67.0	31.1	54.7	--	130
PCB under RTH2	44.4	68.7	34.7	58.3	--	130
PCB under BD1	36.6	60.9	29.9	53.5	--	130
C4 body	26.5	50.8	27.3	50.9	--	85
C25 body	25.9	50.2	26.6	50.2	--	85
C24 body	28.9	53.2	27.3	50.9	--	85
C29 body	33.1	57.4	33.9	57.5	--	85
L1 coil	56.4	80.7	35.6	59.2	--	130
H.S3 near Q1	56.0	80.3	40.0	63.6	--	130
H.S1 near Q3	48.0	72.3	47.0	70.6	--	130
C5 body	39.6	63.9	38.6	62.2	--	85
T1 primary Coil	67.7	92.0	66.2	89.8	--	110
T1 secondary Coil	79.7	104.0	78.6	102.2	--	110
T1 Core	52.7	77.0	50.6	74.2	--	110
T2 primary Coil	50.0	74.3	43.2	66.8	--	110
T2 secondary Coil	56.0	80.3	51.0	74.6	--	110
T2 Core	51.2	75.5	44.4	68.0	--	110
C31 body	52.5	76.8	49.8	73.4	--	125
U6 body	45.4	69.7	42.2	65.8	--	100
U4 body	44.4	68.7	41.7	65.3	--	100
L100 coil	76.3	100.6	73.8	97.4	--	105
L200 coil	58.3	82.6	55.0	78.6	--	105
C14 body	50.6	74.9	38.9	62.5	--	85
Ambient air	25.7	50.0	26.4	50.0	--	--
During times	2 hrs	--	1.5 hrs	--	--	--
temperature T of winding:		R_1 (Ω)	R_2 (Ω)	T (°C)	allowed Tmax (°C)	insulation class
--		--	--	--	--	--
supplementary information:						
For models with metal enclosure, a external DC fan with minimum 17.5 CFM is provided with external airflow located 5 cm from the unit.						

4.5.2	**TABLE: ball pressure test of thermoplastics**		Pass
	allowed impression diameter (mm) ..... :	2 mm	—

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Clause	Requirement + Test	Result - Remark	Verdict

part	test temperature (°C)	impression diameter (mm)
CN1, Chyao Shium #JS-4001, 3.3mm x 1	125	1.10
CN1, Chyao Shium #JS-1120, 3.3mm x 1	125	1.12
CN1, Molex #41791, 3.3mm x 1	125	1.10
CN1, TKP #P8800I, 3.3mm x 1	125	1.14
CN1, TKP #PVHI, 3.3mm x 1	125	1.12
CN1, JST #VH, 3.3mm x 1	125	1.12
supplementary information:		
--		

4.7	**TABLE: resistance to fire**			Pass
part	manufacturer of material	type of material	thickness(mm)	flammability class
--	--	--	--	--
supplementary information:				
See Critical Components List.				

5.2	**TABLE: electric strength tests, impulse tests and voltage surge tests**		Pass
test voltage applied between:		test voltage (V) a.c./d.c.	breakdown Yes / No
One layer of insulation (Thickness = 0.05mm)		3000 V ac	No
Primary winding to SELV winding of T1, T2		3000V ac	No
Primary winding to Core of T1, T2		1900V ac	No
SELV winding to Core of T1, T2		1900V ac	No
Primary to SELV (for open frame)		4242V dc	No
Primary to SELV (for enclosure)		4242V dc	No
Primary to Enclosure (for Enclosure type)		3000V dc	No
supplementary information:			
--			

5.3	**TABLE: fault condition tests**		Pass
	ambient temperature (°C) ..... :	--	—
	model/type of power supply..... :	--	—
	manufacturer of power supply ..... :	--	—
	rated markings of power supply ..... :	--	—

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Clause	Requirement + Test	Result - Remark	Verdict

component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
Model PID-250D (for open frame)	--	--	--	--	--	--
C5	Short	240	1 sec	FS1	0	IP(FS1), repeat all fuses 9 times result were same, NT, NB, NC,
BD1 L - +	Short	240	1 sec	FS1	0	IP(FS1), CD(BD1), repeat all fuses 9 times result were same, NT, NB, NC,
Q3 G to D	Short	240	1 sec	FS1	0	IP(FS1), CD(Q3), repeat all fuses 9 times result were same, NT, NB, NC,
Q3 D to S	Short	240	1 sec	FS1	0	IP(FS1), CD(Q3), repeat all fuses 9 times result were same, NT, NB, NC,
Q3 G to S	Short	240	10 min	FS1	0.34	Unit shutdown, except +5V, NT, NB, NC
T1 pin 5 to 6	Short	240	10min	FS1	0.34	Unit shutdown, except +5V, NT, NB, NC
T1 pin 10 to 11	Short	240	10min	FS1	0.34	Unit shutdown, except +5V, NT, NB, NC
T1 pin 8 to FLB	Short	240	10min	FS1	0.34	Unit shutdown, except +5V, NT, NB, NC
T2 pin 2 to 3	Short	240	10min	FS1	0.33	Unit shutdown, except +5V, NT, NB, NC
T2 pin 1 to FLA	Short	240	10min	FS1	0.33	Unit shutdown, except +5V, NT, NB, NC
T2 pin 7 to 8	Short	240	10min	FS1	0.11	Unit shutdown, NT, NB, NC
U4 Primary	Short	240	10min	FS1	0.11	Unit shutdown, NT, NB, NC
U4 Secondary	Short	240	10min	FS1	0.11	Unit shutdown, NT, NB, NC
U5 Secondary	Short	240	10min	FS1	0.34	Unit shutdown, except +5V, NT, NB, NC
U5 Primary	Short	240	10min	FS1	0.34	Unit shutdown, except +5V, NT, NB, NC
U6 Primary	Short	240	10min	FS1	0.34	Unit shutdown, except +5V, NT, NB, NC
U6 Secondary	Short	240	2 hrs	FS1	1.27	Normal operation, NT, NB, NC, T1=92°C, T2=56°C,, Amb=25.8°C
U7 Primary	Short	240	2 hrs	FS1	1.27	Normal operation, NT, NB, NC, T1=92°C, T2=55°C,, Amb=26.2°C

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Clause	Requirement + Test	Result - Remark	Verdict

U7 Secondary	Short	240	10min	FS1	0.34	Unit shutdown, except +5V, NT, NB, NC
U4 Pin1	Open	240	10min	FS1	0.11	Unit shutdown, NT, NB, NC
U5 Pin1	Open	240	10min	FS1	0.34	Unit shutdown, except +5V, NT, NB, NC
U6 Pin1	Open	240	2 hrs	FS1	1.27	Normal operation, NT, NB, NC, T1=93°C, T2=57°C,, Amb=26.5°C
U7 Pin1	Open	240	10min	FS1	0.34	Unit shutdown, except +5V, NT, NB, NC
U3 Pin 1 – 6	Short	240	1 sec	FS1	0.11	CD(U3), repeat 2 times result were same, NT, NB, NC,
T1 pin 9, 10 after L100	Overload	240	4 hrs	FS1	1.49	CT at 1.2A increased to 1.7A, CD(U3), repeat 2 times result were same, NT, NB, NC. T1=157°C, T2=70°C,, Amb=27.7°C
+48V output	Overload	240	4 hrs	FS1	1.50	CT at 6.0A increased to 6.2A, CD(U3), repeat 2 times result were same, NT, NB, NC. T1=148°C, T2=86°C,, Amb=27.7°C
+48V to +5V	Short	240	1 sec	FS1	0.11	CD(ZD60), repeat 2 times result were same, NT, NB, NC.
+5V to RTN	Short	240	10 min	FS1	0.11	Unit shutdown except +5Vsb, NT, NB, NC.
+48V to RTN	Short	240	10 min	FS1	0.34	Unit shutdown except +5Vsb, NT, NB, NC.
Model PID-250D (for enclosure type)	--	--	--	--	--	--
Fan	Disconnected	240	3.5 hrs	FS1	0.11	CD(U3), repeat 2 times result were same, NT, NB, NC, T1=140°C, T2=96°C,, Amb=22.0°C
Vent	Blocked	240	1.5 hrs	FS1	0.11	CD(U3), repeat 2 times result were same, NT, NB, NC, T1=142°C, T2=94°C,, Amb=22.4°C
Model PID-250B (for open frame)	--	--	--	--	--	--
T1 pin 10 to 11	Short	240	10min	FS1	0.38	Unit shutdown, except +5V, NT, NB, NC

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Clause	Requirement + Test				Result - Remark	Verdict

T1 pin 8 to FLB	Short	240	10min	FS1	0.38	Unit shutdown, except +5V, NT, NB, NC
Model PID-250C (for open frame)	--	--	--	--	--	--
T1 pin 10 to 11	Short	240	10min	FS1	0.33 - 0.15	Unit cycle protection, except +5V, NT, NB, NC
T1 pin 8 to FLB	Short	240	10min	FS1	0.34	Unit shutdown, except +5V, NT, NB, NC
T2 pin 6, 7 after D201	Overload	240	4 hrs	FS1	1.28	CT at 1A increased to 1.5A, unit shutdown, NT, NB, NC. T1=110°C, T2=80°C,, Amb=23.6°C
T2 pin 9, 10 after L100	Overload	240	4 hrs	FS1	1.62	CT at 2A increased to 2.5A, unit shutdown, NT, NB, NC. T1=128°C, T2=80°C,, Amb=24.7°C
+36V	Overload	240	2hr	FS1	1.45	CT at 7A increased to 7.5A, unit shutdown, except +5V, NT, NB, NC, T1=126°C, T2=74°C,, Amb=27.7°C
+5V	Overload	240	3.5 hrs	FS1	1.29	CT at 5.9A increased to 6.2A, unit shutdown, NT, NB, NC, T1=115°C, T2=71°C,, Amb=24.5°C
+36V to RTN	Short	240	10min	FS1	0.34	Unit shutdown, except +5V, NT, NB, NC
+36V to 5V	Short	240	1 sec	FS1	0.11	CD(ZD60), repeat 2 times result were same, NT, NB, NC
Model PID-250A (for open frame)	--	--	--	--	--	--
T1 pin 10 to 11	Short	240	10min	FS1	0.31	Unit shutdown, except +5V, NT, NB, NC
T1 pin 8 to FLB	Short	240	10min	FS1	0.31	Unit shutdown, except +5V, NT, NB, NC
T1 pin 9, 10 after L100	Overload	240	3.5 hrs	FS1	1.35	CT at 4A increased to 6A, unit shutdown, except +5V, NT, NB, NC, T1=140°C, T2=80°C,, Amb=30°C
+12V to RTN	Short	240	10min	FS1	0.31	Unit shutdown, except +5V, NT, NB, NC
+12V to 5V	Short	240	1 sec	FS1	0	CD(ZD60), repeat 2 times result were same, NT, NB, NC

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Clause	Requirement + Test	Result - Remark	Verdict

supplementary information:
Results Key: IP = Internal protection operated (component indicated) CT = Constant temperatures were obtained TW = Transformer winding opened CD = Components damaged (damaged components indicated) NB = No indication of dielectric breakdown YB = Dielectric breakdown (time and location indicated) NC = Cheesecloth remained intact YC = Cheesecloth charred or flamed NT = Tissue paper remained intact YT = Tissue paper charred or flamed Data verified by CB Test Report, See Test Record for details.

Enclosure

National Differences

USA / Canada

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
USA / Canada - Differences to IEC 60950-1:2001, First Edition			
1.1	Equipment able to be installed in accordance with the National Electrical Code ANSI/NFPA 70 and the Canadian Electrical Code, Part1, and when applicable, the National Electrical Safety Code, IEEE C2.		Pass
1.1.1	Equipment able to be installed in accordance with ANSI/NFPA 75 and NEC Art. 645 unless intended for use outside of computer room and provided with such instructions.		Pass
1.1.2	Equipment in wire-line communication facilities serving high-voltage electric power stations operating at greater than 1kV are excluded.		N/A
1.1.2	Special requirements apply to equipment intended for use outdoors.		N/A
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20 A.		N/A
1.5.1	All IEC standards for components identified in Annex P.1 replaced by the relevant requirements of CSA and UL component standards in Annex P.1.		Pass
1.5.1	All IEC standards for components identified in Annex P.2 alternatively satisfied by the relevant requirements of CSA and UL component standards in Annex P.2.		Pass
1.5.5	Interconnecting cables acceptable for the application regarding voltage, current, temperature, flammability, mechanical serviceability and the like.		N/A
1.5.5	For other than limited power and TNV circuits, the type of output circuit identified for output connector.		N/A
1.5.5	External cable assemblies that exceed 3.05 m in length to be types specified in the NEC and CEC.		N/A
1.5.5	Detachable external interconnecting cables 3.05 m or less in length and provided with equipment marked to identify the responsible organization and the designation for the cable.		N/A
1.5.5	Building wiring and cable for use in ducts, plenums and other air handling space subject to special requirements and excluded from scope.		N/A
1.5.5	Telephone line and extension cords and the like comply with UL 1863 and CSA C22.2 No. 233.		N/A
1.6.1.2	Equipment intended for connection to a d.c. power (mains) distribution system is subject to special		N/A

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SubClause	Difference + Test	Result - Remark	Verdict
	circuit classification requirements (e.g., TNV-2)		
1.6.1.2	Earthing of d.c. powered equipment provided.		N/A
1.7	Lamp replacement information indicated on lampholder in operator access area.		N/A
1.7.1	Special marking format for equipment intended for use on a supply system with an earthed neutral and more than one phase conductor.		N/A
1.7.1	Equipment voltage rating not higher than rating of the plug except under special conditions.		N/A
1.7.6	Special fuse replacement marking for operator accessible fuses.		N/A
1.7.7	Identification of terminal connection of the equipment earthing conductor.		N/A
1.7.7	Connectors and field wiring terminals for external Class 2 or Class 3 circuits provided with marking indicating minimum Class of wiring to be used.		N/A
1.7.7	Marking located adjacent to terminals and visible during wiring.		N/A
2.1.1	Screw shell of Edison-base lampholder tied to the neutral conductor.		N/A
2.1.1.1	Bare TNV conductive parts in the interior of equipment normally protected against contact by a cover intended for occasional removal are exempt provided instructions include directions for disconnection of TNV prior to removal of the cover.		N/A
2.3.1.b	Other telecommunication signaling systems (e.g., message waiting) than described in 2.3.1(b) are subject to M.4.		N/A
2.3.1.b	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vp or 60 V d.c., the maximum current limit through a 2000 Ohm or greater resistor with loads disconnected is 7.1 mA peak or 30 mA d.c. under normal conditions.		N/A
2.3.1.b	Limits for measurements across 5000 ohm resistor in the event of a single fault are replaced after 200 ms with the limits of M.3.1.4.		N/A
2.3.2	Enamel coating on signal transformer winding wire allowed as an alternative to Basic insulation in specific telecommunication applications when subjected to special construction requirements and routine testing.		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
2.3.2	In the event of a single fault, the limits of 2.2.3 apply to SELV circuits and accessible conductive parts.		N/A
2.5	Overcurrent protection device required for Class 2 and Class 3 limiting in accordance with the NEC, or for a Limited Power Source, not interchangeable with devices of higher ratings if operator replaceable.		N/A
2.6	Equipment having receptacles for output a.c. power connectors generated from an internal separately derived source have the earthed (grounded) circuit conductor suitably bonded to earth.		N/A
2.6.3.3	For Pluggable Equipment Type A, if neither a) or b) are applicable, the current rating of the circuit is taken as 20 A.		N/A
2.6.3.4	Capacity of connection between earthing terminal and parts required to be earthed subject to special conditions based on the current rating of the circuit.		N/A
2.6.3.4	Protective bonding conductors and their terminals of non-standard constructions (e.g. PWB traces) evaluated to limited short-circuit test of CSA C22.2 No.0.4.		N/A
2.6.4.1	Field wiring terminals for earthing conductors suitable for wire sizes (gauge) used in US and Canada.		N/A
2.7.1	Data for selection of special external branch circuit overcurrent devices marked on the equipment.		N/A
2.7.1	Standard supply outlets protected by overcurrent device in accordance with the NEC, and CEC, Part 1.		N/A
2.7.1	Overcurrent protection for individual transformers that distribute power to other units over branch circuit wiring.		N/A
2.7.1	Additional requirements for overcurrent protection apply to equipment provided with panelboards.		N/A
2.7.1	Non-motor-operated equipment requiring special overcurrent protective device marked with device rating.		N/A
2.10.5.4	Multi-layer winding wire subject to UL component wire requirements in addition to 2.10.5.4 and Annex U.		N/A
3.1.1	Permissible combinations of internal wiring/external		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
	cable sizes for overcurrent and short circuit protection.		
3.1.1	All interconnecting cables protected against overcurrent and short circuit.		N/A
3.2	Wiring methods permit connection of equipment to primary power supply in accordance with the NEC and CEC, Part 1.		N/A
3.2.1	Permitted use for flexible cords and plugs.		N/A
3.2.1	Flexible cords provided with attachment plug rated 125% of equipment current rating.		N/A
3.2.1	Any Class II equipment provided with 15 or 20 A standard supply outlets, Edison-base lampholders or single pole disconnect device provided with a polarized type attachment plug.		N/A
3.2.1.2	Equipment intended for connection to DC mains supply power systems complies with special wiring requirements (e.g., no permanent connection to supply by flexible cord).		N/A
3.2.1.2	Equipment with one pole of the DC mains supply connected to both the equipment mains input terminal and the main protective earthing terminal provided with special instructions and construction provisions for earthing		N/A
3.2.1.2	Equipment with means for connecting supply to earthing electrode conductor has no switches or protective devices between supply connection and earthing electrode connection.		N/A
3.2.1.2	Special markings and instructions for equipment with provisions to connect earthed conductor of a DC supply circuit to earthing conductor at the equipment.		N/A
3.2.1.2	Special markings and instructions for equipment with earthed conductor of a DC supply circuit connected to the earthing conductor at the equipment.		N/A
3.2.1.2	Terminals and leads provided for permanent connection of DC powered equipment to supply marked to indicate polarity if reverse polarity may result in a hazard.		N/A
3.2.3	Permanently connected equipment has provision for connecting and securing a field wiring system (i.e. conduit, or leads etc.) per the NEC and CEC.		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
	Part 1.		
3.2.3	Permanently connected equipment may have terminals or leads not smaller than No. 18 AWG (0.82 mm²) and not less than 152 mm in length for connection of field installed wiring.		N/A
3.2.3	If supply wires exceed 60 °C, marking indicates use of 75 °C or 90 °C wiring for supply connection as appropriate.		N/A
3.2.3	Equipment compatible with suitable trade sizes of conduits and cables.		N/A
3.2.5	Length of power supply cord limited to between 1.5 and 4.5 m unless shorter length used when intended for a special installation.		N/A
3.2.5	Conductors in power supply cords sized according to NEC and CEC, Part I.		N/A
3.2.5	Power supply cords and cord sets incorporate flexible cords suitable for the particular application.		N/A
3.2.6	Strain relief provided for non-detachable interconnecting cables not supplied by a limited power source.		N/A
3.2.9	Adequate wire bending space and volume of field wiring compartment required to properly make the field connections.		N/A
3.2.9	Equipment intended solely for installation in Restricted Access Locations using low voltage d.c. systems may not need provision for connecting and securing a field wiring system. A method of securing wiring or instructions provided to ensure the wiring is protected from abuse.		N/A
3.3	Field wiring terminals provided for interconnection of units for other then LPS or Class 2 circuits also comply with 3.3.		N/A
3.3	Interconnection of units by LPS or Class 2 conductors may have field wiring connectors other than those specified in 3.3 if wiring is reliably separated.		N/A
3.3.1	Terminals for the connection of neutral conductor identified by a distinctive white marking or other equally effective means.		N/A
3.3.3	Wire binding screw terminal permitted for connection of No. 10 AWG (5.3 mm²) or smaller conductor if provided with upturned lugs, cupped		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
	washer or equivalent retention.		
3.3.4	Terminals accept wire sizes (gauge) used in the U.S. and Canada.		N/A
3.3.4	Terminals accept current-carrying conductors rated 125% of the equipment current rating.		N/A
3.3.6	Field wiring terminals marked to indicate the material(s) of the conductor appropriate for the terminals used.		N/A
3.3.6	Connection of an aluminum conductor not permitted to terminal for equipment earthing conductor.		N/A
3.3.6	Field wiring connections made through the use of suitable pressure connectors (including set screw type), solder lugs or splices to flexible leads.		N/A
3.4.2	Separate motor control device(s) required for cord-connected equipment rated more than 12 A, or with motor rated more than 1/3 hp or more than 120 V.		N/A
3.4.8	Vertically mounted disconnect devices oriented so up position of handle is "on".		N/A
3.4.11	For computer-room applications, equipment with battery systems capable of supplying 750 VA for 5 min require battery disconnect means.		N/A
4.2.8.1	Special opening restrictions for enclosures around CRTs with face dimension of 160 mm or more.		N/A
4.2.9	Compartment housing high-pressure lamp marked to indicate risk of explosion.		N/A
4.3.2	Loading test for equipment with handle(s) used to support more than 9 kg tested at four times the weight of the unit.		N/A
4.3.6	In addition to the IEC requirements, Direct Plug-in Equipment complies with UL 1310 or CSA 223 mechanical assembly requirements.		N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment complies with ANSI/NFPA 30(Table NAE.6).		N/A
4.3.12	Equipment using replenishable liquids marked to indicate type of liquid to be used.		N/A
4.3.13.2	Equipment that produces x-radiation and does not comply with 4.3.12 under all conditions of servicing marked to indicate the presence of radiation where readily visible.		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
4.3.13.5	Requirements contained in the applicable national codes and regulations apply to lasers (21 CFR 1040 and REDR C1370).		N/A
4.7	Automated information storage equipment intended to contain more than 0.76 m^3 of combustible media requires provision for automatic sprinklers or a gaseous agent extinguishing system.		N/A
4.7.3.1	Equipment for use in environmental air space other than ducts or plenums provided with metal enclosure or with non-metallic enclosure having adequate fire-resistance and low smoke producing characteristics. Low smoke-producing characteristics evaluated according to UL 2043. Equipment for installation in space used for environmental air as described in Sec. 300-22(c) of the NEC provided with instructions indicating suitability for installation in such locations.		N/A
4.7.3.1	Flame spread rating for external surface of combustible material with exposed area greater than 0.93 m^2 or a single dimension greater than 1.8 m; 50 or less for computer room applications or 200 or less for other applications.		N/A
4.7.3.4	Wire marked "VW-1" or "FT-1" considered equivalent.		N/A
5.1.8.2	Special earthing provisions and instructions for equipment with high touch current due to telecommunication network connections.		N/A
5.1.8.3	Touch current due to ringing voltage for equipment containing telecommunication network leads.		N/A
5.3.6	Overloading of SELV connectors and printed wiring board receptacles accessible to the operator.		Pass
5.3.6	Tests interrupted by opening of a component repeated two additional times.		Pass
5.3.8.1	Test interrupted by opening of wire or trace subject to certain conditions.		N/A
6	Specialized instructions provided for telephones that may be connected to a telecommunications network.		N/A
6	Marking identifying function of telecommunication type connectors not used for connection to a telecommunication network.		N/A
6.2.1	Special requirements for enameled wiring used as electrical separation provided between parts		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
	connected to telecommunication network and telecommunication circuitry intentionally isolated from network.		
6.2.1	Digital line termination equipment (e.g., NCTE) subject to separation requirements.		N/A
6.3	Equipment remotely powered over telecommunication wiring systems provided with specialized markings adjacent to the connection.		N/A
6.3	Overcurrent protection incorporated into equipment to provide power over telecommunication wiring system not interchangeable with devices of higher ratings if operator replaceable.		N/A
6.4	Additional requirements for equipment intended for connection to a telecommunication network using cable subject to overvoltage from power line failures (Fig. 6C).		N/A
6.4	Where 26 AWG line cord required by Fig. 6C, either the cord is provided with the equipment or described in the safety instructions.		N/A
6.5	Acoustic pressure from an ear piece less than 136 dBA for short duration disturbances, and less than 125 dBA for handsets, 118 dBA for headsets, and 121 dBA for insert earphones, for long duration disturbances.		N/A
7	Equipment associated with the cable distribution system may need to be subjected to applicable parts of Chapter 8 of the NEC.		N/A
H	Ionizing radiation measurements made under single fault conditions in accordance with the requirements of the Code of Federal Regulations 21 CFR 1020 and the Canadian Radiation Emitting Devices Act, REDR C1370.		N/A
M.2	Continuous ringing signals evaluated to Method A subjected to special accessibility considerations.		N/A
M.4	Special requirements for message waiting and similar telecommunications signals.		N/A
NAC	Equipment intended for use with a generic secondary protector marked with suitable instructions.		N/A
NAC	Equipment intended for use with a specific primary or secondary protector marked with suitable instructions.		N/A

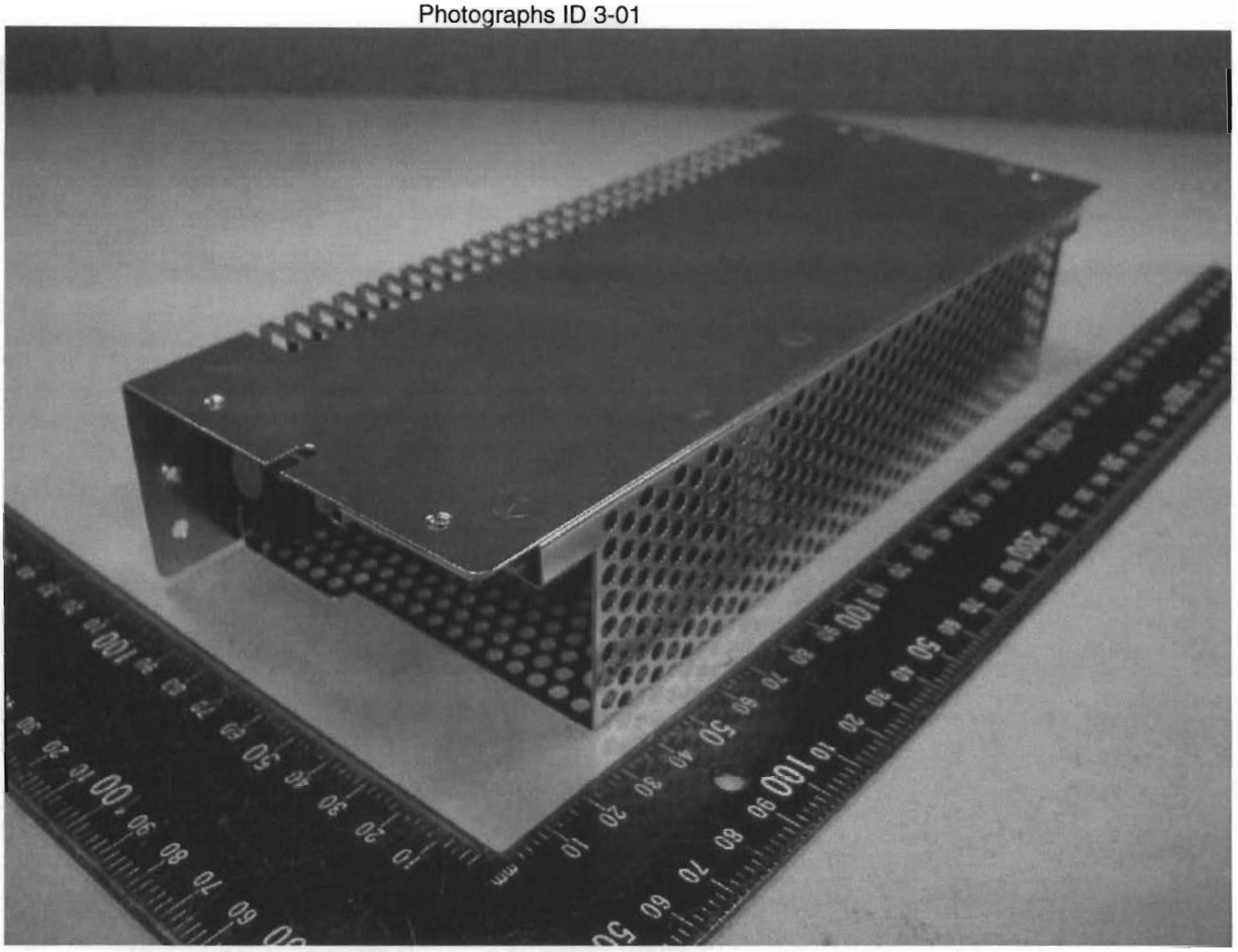
IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
NAF	Household/Home Office Document Shredders		N/A
NAF.1.7	Markings and instructions alert the user to key safety considerations related to use of shredders, including not intended to be used by children, avoid touching document feed opening, avoid clothes and hair entanglement, and avoid aerosol products.		N/A
NAF.2.8.3	Safety interlock cannot be inadvertently activated by the articulated accessibility probe (figure NAF.1).		N/A
NAF.3.4	Provided with an isolating switch complying with 3.4.2, including 3 mm contact gap, with appropriate markings associated with the switch.		N/A
NAF.4.4	Hazardous moving parts are not accessible to the user, as determined using the articulated accessibility probe (figure NAF.1) and the accessibility probe/wedge (figures NAF.2/NAF.3).		N/A

Enclosure

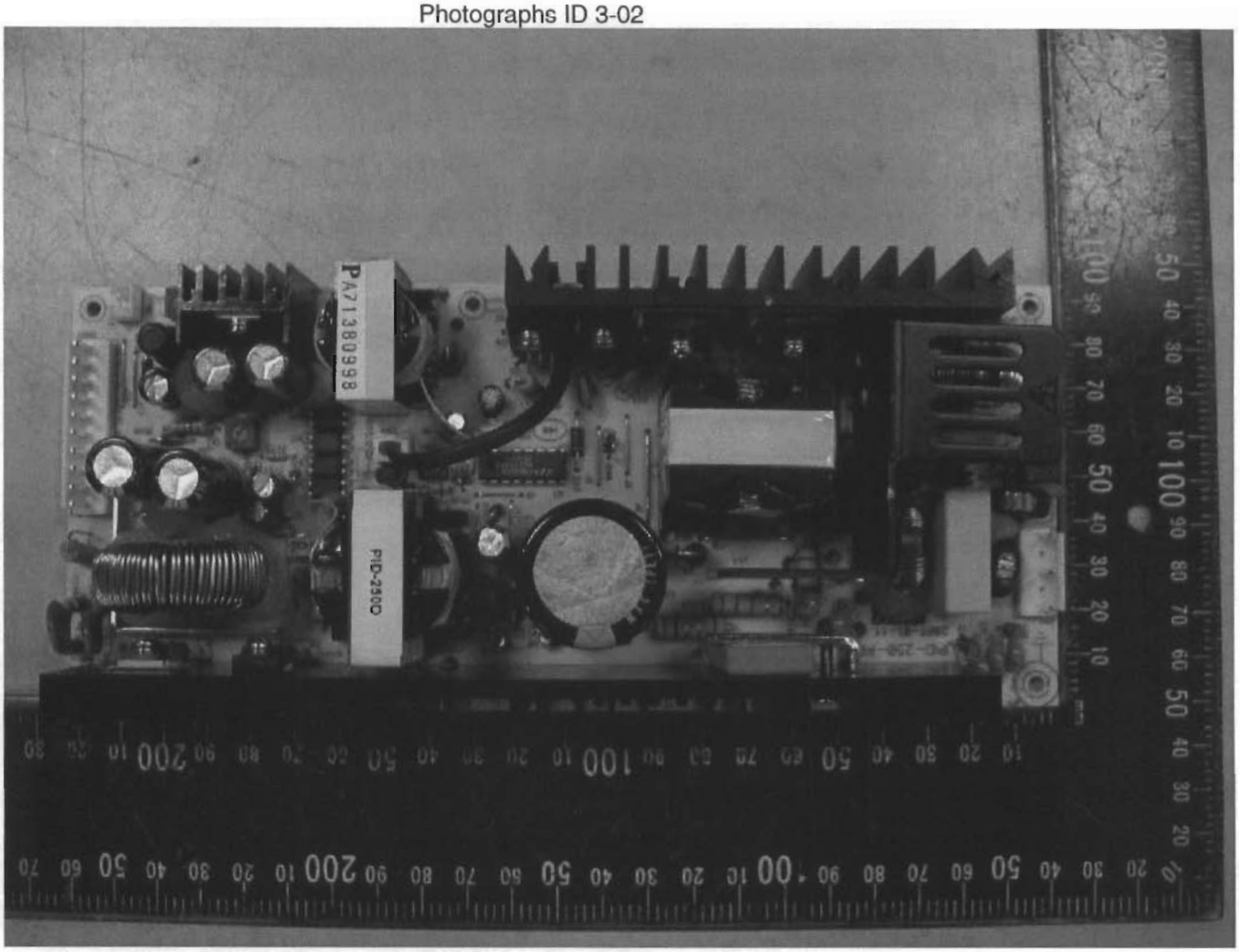
Photographs

Supplement Id	Description
3-01	Unit with Enclosure - Overall View
3-02	Overall View
3-03	PCB trace view
3-04	Unit with Enclosure - Inside View

Photographs ID 3-01



Photographs ID 3-02



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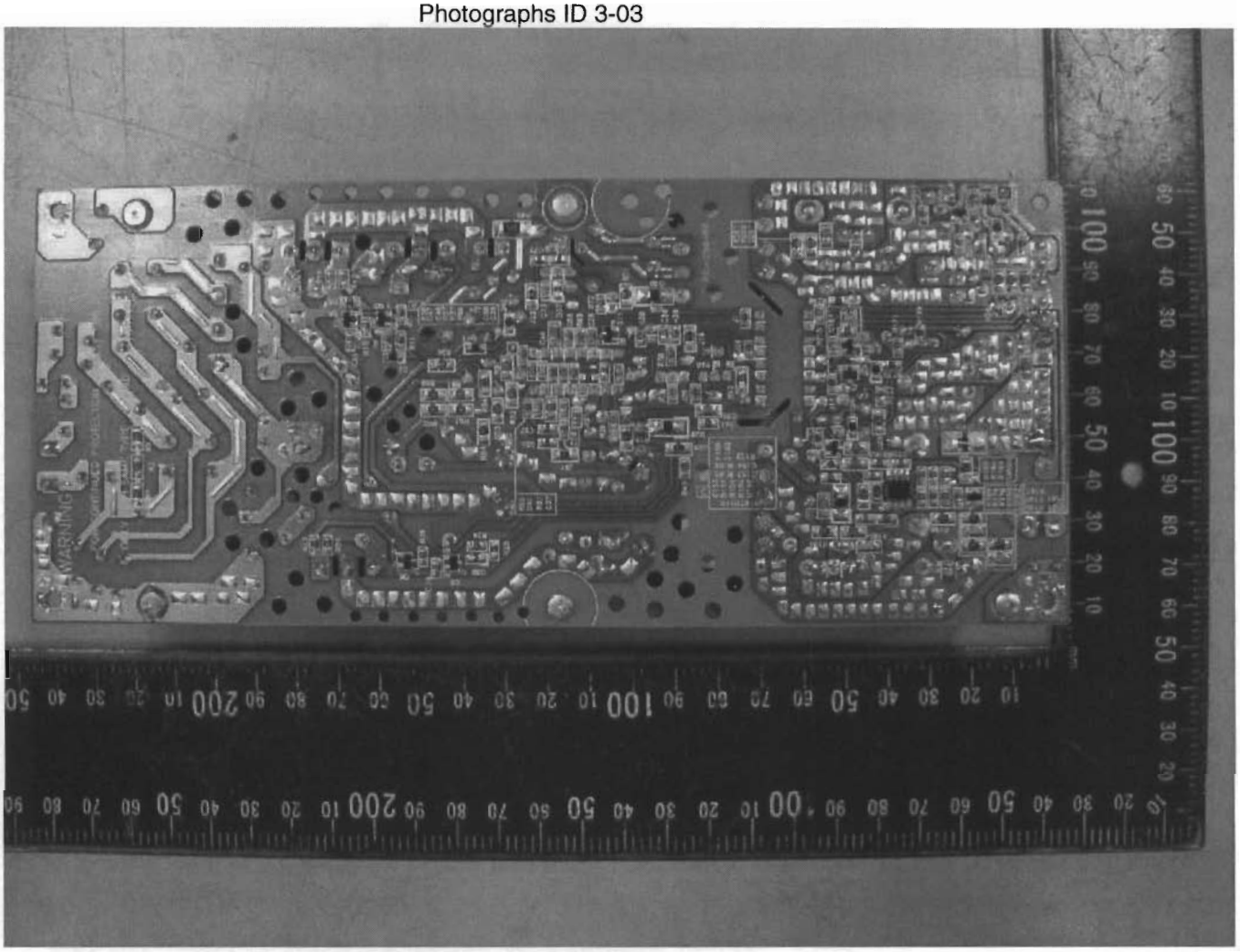
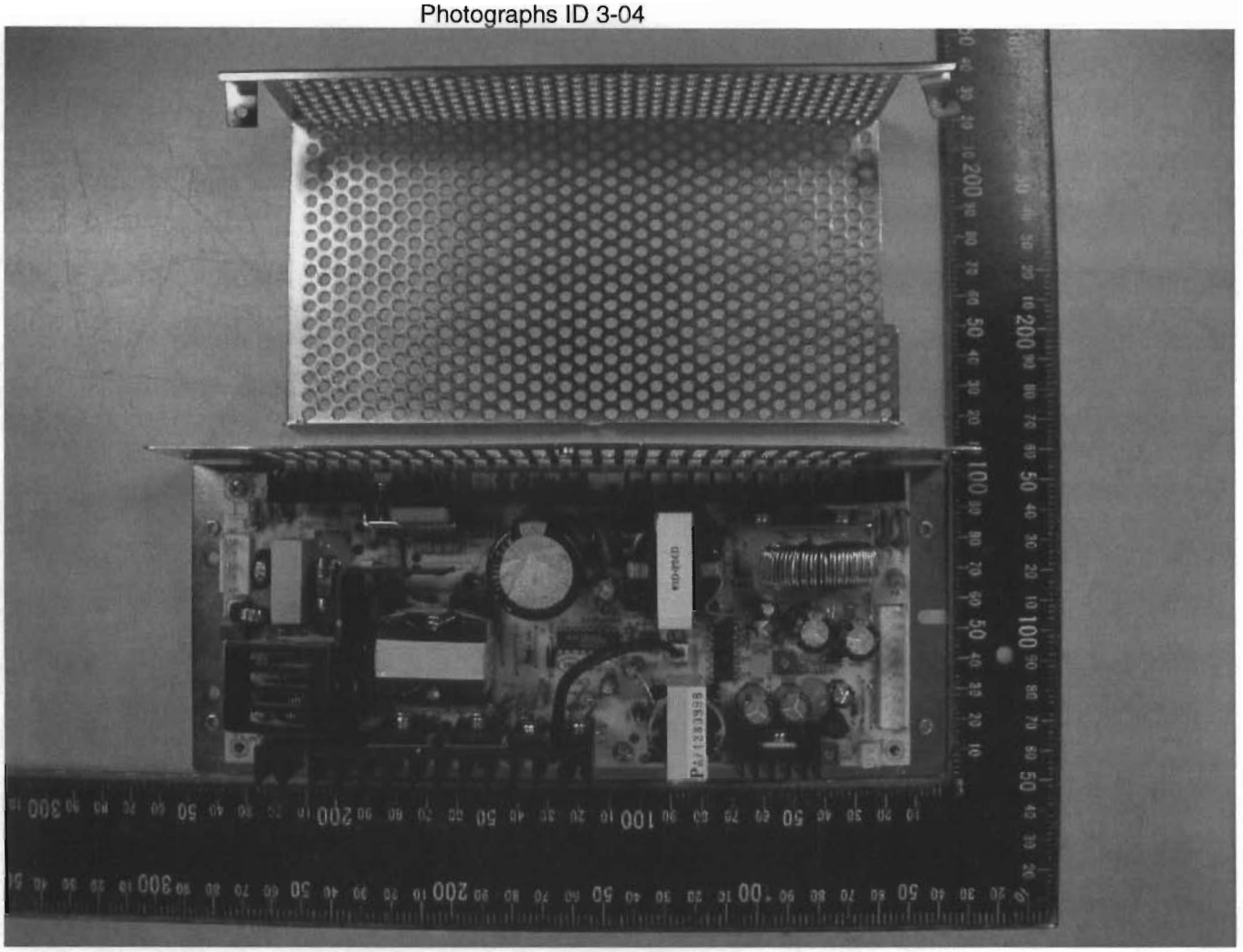


Photographs ID 3-04



Enclosure

Diagrams

Supplement Id	Description
4-01	Enclosure - Top Side
4-02	Enclosure - Bottom Side
4-03	DC Fan (for models with enclosure option)
4-04	Heat Sink (HS1)
4-05	Heat Sink (HS2)
4-06	Heat Sink (HS3)
4-07	Heat Sink (HS4)
4-08	PFC Choke L1 - Jet Signal
4-09	PFC Choke L1 - Long Sail
4-10	Choke L2, L3
4-11	Line Filter LF1
4-12	Line Filter LF2
4-13	Transformer T1 - Jet Signal
4-14	Transformer T1 - Long Sail
4-16	Transformer T2 - Jet Signal
4-17	Transformer T2 - Long Sail
4-19	Sleeving Tube (on Q3)
4-20	Thermostat TSW1 wire

Enclosure

Test Record

Description
Test Record 1
Datasheet
Verification Test
Comstruction Review

Test Record No. 1

The manufacturer submitted representative production samples of open frame power supply, model PID-250X.

The following tests were conducted:

Test	Testing Location/Comments
End Product Reference Page	
General Guidelines	
Power Supply Reference Page	
Maximum Output Voltage, Current, and Volt-Ampere Measurement (1.2.2.1)	
Double or Reinforced Insulation Bridged By Components (1.5.7.4, Annex D)	
Input: Single-Phase (1.6.2)	
Capacitance Discharge (2.1.1.7)	
SELV Reliability (2.2.2, 2.2.3, 2.2.4)	
Earthing II (2.6.3.4, 2.6.1)	
Humidity (2.9.1, 2.9.2, 5.2.2)	
Determination of Working Voltage; Voltage Measurement (2.10.2)	
Determination of Working Voltage; Hazardous Voltage (Circuit) Measurement (2.10.2)	
Transformer/Insulation Electric Strength (2.10.5.2, 2.9.5)	
Heating (4.5.1, 1.4.12, 1.4.13)	
Ball Pressure (4.5.2, 4.5)	
Touch Current (Single-Phase/ Polyphase; TN/TT System) (5.1, Annex D)	
Electric Strength (5.2.2)	
Component Failure (5.3.1, 5.3.4, 5.3.6)	
Abnormal Operation (5.3.1 - 5.3.8.2)	
Transformer Abnormal Operation (5.3.3, 5.3.6b, Annex C.1)	
Power Supply Output Short-Circuit/Overload (5.3.6)	

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard(s) referenced at the beginning of this Test Report.

COVER PAGE FOR TEST REPORT

Product Category:	Power Supplies for Information Technology Equipment Including Electrical Business Equipment
Product Category CCN:	QQGQ2, QQGQ8
Test Procedure:	Component Recognition
Product:	Open Frame Switching Power Supply
Model/Type Reference:	PID-250X, where X can be A, B, C or D
Rating(s):	Input: 100-240 Vac, 50/60 Hz, 3 A Output: Model PID-250A: 12 Vdc/15 A, 5 Vdc/5 A Model PID-250B: 24 Vdc/9.4 A, 5 Vdc/5 A Model PID-250C: 36 Vdc/6.3 A, 5 Vdc/5 A Model PID-250D: 48 Vdc/4.7 A, 5 Vdc/5 A
Standards:	UL 60950-1, 1st Edition, 2006-07-07 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-03, 1st Edition, 2006-07 (Information Technology Equipment - Safety - Part 1: General Requirements)
Applicant Name and Address:	MEAN WELL ENTERPRISES CO LTD 28 WU-CHUAN 3RD RD WUGU INDUSTRIAL PARK TAIPEI HSIEN 248 TAIWAN

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

1. Specific Technical Criteria
2. Critical Components

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of Underwriters Laboratories Inc. ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

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UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

Test Report By:

Gregory Kusnandar
Project Handler
Underwriters' Laboratories of Canada

Reviewed By:

Glenn Wang
Project Engineer
Underwriters' Laboratories of Canada

SPECIFIC TECHNICAL CRITERIA

UL 60950-1, First Edition Information technology equipment - Safety- Part 1: General Requirements	
Report Reference No	E183223-A81-UL-1
Compiled by	Gregory Kusnandar
Reviewed by	Glenn Wang
Date of issue	2007-03-16
Standards	UL 60950-1, 1st Edition, 2006-07-07 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-03, 1st Edition, 2006-07 (Information Technology Equipment - Safety - Part 1: General Requirements)
Test procedure	Component Recognition
Non-standard test method	N/A
Test item description	Open Frame Switching Power Supply
Trademark	None
Model and/or type reference	PID-250X, where X can be A, B, C or D
Rating(s)	Input: 100-240 Vac, 50/60 Hz, 3 A Output: Model PID-250A: 12 Vdc/15 A, 5 Vdc/5 A Model PID-250B: 24 Vdc/9.4 A, 5 Vdc/5 A Model PID-250C: 36 Vdc/6.3 A, 5 Vdc/5 A Model PID-250D: 48 Vdc/4.7 A, 5 Vdc/5 A

Particulars: test item vs. test requirements	
Equipment mobility	for building-in
Operating condition	continuous
Mains supply tolerance (%)	+10%, -10%
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	Class I (earthed)
Mass of equipment (kg)	< 18
Protection against ingress of water	IP X0

Possible test case verdicts:	
- test case does not apply to the test object ..... :	N / A
- test object does meet the requirement ..... :	Pass
- test object does not meet the requirement ..... :	Fail (acceptable only if a corresponding, less stringent national requirement is "Pass")

General remarks:

- "(see Enclosure #)" refers to additional information appended to the Test Report
- "(see appended table)" refers to a table appended to the Test Report
- Throughout the Test Report a point is used as the decimal separator

GENERAL PRODUCT INFORMATION:	
CA1.0	**Report Summary**
CA1.1	N/A
CB1.0	**Product Description**
CB1.1	The equipment is for building in switching power supply for use in information technology equipment, Class I (earthed), switching power supply intended for use on a TN power system. Provided with connector for input/output connection. Enclosure is optionally provided.
CC1.0	**Model Differences**
CC1.1	PIX-250A is the base model. PIX-250B is identical basic model except output rating, transformer T1 secondary winding and model designation. PIX-250C is identical basic model except output rating, transformer T1 secondary winding and model designation. PIX-250D is identical basic model except output rating, transformer T1 secondary winding and model designation.
CD1.0	**Additional Information**
CD1.1	All models may or may not be provided with metal enclosures. Units with metal enclosure were evaluated with external DC fan, minimum 17.5 CFM inward airflow.
CE1.0	**Technical Considerations**
CE1.2	The product was submitted and tested for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 40°C (when units are without enclosure), 50°C (when units are provided with enclosure and external fan)
CE1.4	The product is intended for use on the following power systems: TN
CF1.0	**Engineering Conditions of Acceptability**
CF1.1	For use only in or with complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc. When installed in an end-product, consideration must be given to the following:
CF1.2	The following Production-Line tests are conducted for this product: Electric Strength, Earthing Continuity
CF1.3	The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-Earthed Dead Metal: 368 Vrms, 584 Vpk, Primary-SELV: 383 Vrms, 604 Vpk
CF1.5	The following secondary output circuits are SELV: All outputs
CF1.6	The following secondary output circuits are at hazardous energy levels: 36 V output (PID-250C), 48 V output (PID-250D)

CF1.7	The following secondary output circuits are at non-hazardous energy levels: 12 V output (PID-250A), 24 V output (PID-250B), 5 V output (all models)
CF1.12	The maximum investigated branch circuit rating is: 20 A
CF1.13	The investigated Pollution Degree is: 2
CF1.15	Proper bonding to the end-product main protective earthing termination is: Required
CF1.16	An investigation of the protective bonding terminals has: Not been conducted
CF1.17	The following input terminals/connectors must be connected to the end-product supply neutral: AC/N is marked near CN1 indicates Neutral connection.
CF1.18	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): T1, T2 (Class B)
CF1.19	The following end-product enclosures are required: Electrical, Fire, Electrical
CF1.21	The maximum continuous power supply output (Watts) relied on forced air cooling from: DC fan at minimum 17.5 cfm applied to units with enclosure, DC fan located 5 cm away and inward airflow.
CF1.23	The equipment is suitable for direct connection to: AC mains supply
CF2.0	The means of connection and disconnetion to mains power shall be determined in the end product.

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

1.5.1	**TABLE: list of critical components**					Pass
Object/part No.	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID
Chassis (Optional)	Various	Various	Metal, minimum 0.6 mm thick. Measured overall 250 by 105.4 by 53 mm. Two halves secured together by screw.	--	--	4-01
Chassis Vent Openings	Various	Various	Top chassis: provided with numerous circular openings, each measured 3.8 mm OD. Bottom chassis: provided with numerous slot openings each measured 22.8 mm by 4 mm.	--	--	
Insulating Tubing/Sleeving	Various	Various	FEP, PTFE, PVC, TFE, neoprene, or marked VW-1; minimum 105°C, minimum 300 V.	UZFT2, YDPU2, YDRY2, YDTU2	UL	3-02
Printed Wiring Board	Various	Various	Rated minimum V-1, 130°C. Provided with one cut slot C31, measured overall 12.2 by 1.5 mm and another under U4, U7, measured overall 16 by 1.5 mm	ZPMV2	UL	5-02
Primary Connector (CN1)	Chyao Shiunn Electronic Industrial Ltd	JS-1120 series	Rated 7A, 250V, 105°C	ECBT2	UL	3-02
Primary Connector (CN1) (Alternate)	Molex Inc	41791 series	7A, 250V, 105°C	ECBT2	UL	
Primary Connector (CN1) (Alternate)	Taiwan King Pin Terminal Co Ltd	P-8800l series	5A, 250V, 90°C	ECBT2	UL	
Primary Connector (CN1) (Alternate)	Japan Solderless Terminal MFG Co Ltd	VH series	7A, 250V, 130°C.	ECBT2	UL	
Fuse (FS1)	Various	Various	T6.3 A, 250V	JDYX	UL	3-02

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

Fuse (FS1) (Alternate)	Conquer Electronics Co., Ltd.	MST, MET	T6.3 A, 250 Vac.	JDYX2, JDYX8	UL	3-02
Thermistor (RTH1, RTH2) (Optional)	Various	Various	Rated minimum 3 A, maximum 15 ohms at 25°C	--	--	3-02
X-Capacitor (C1, C2) (Optional)	Various	Various	Rated maximum 1.0 µF , minimum 85°C for C1. Rated maximum 0.6 µF, minimum 100°C for C2. Both minimum 250 Vac, Class X1 or X2.	FOKY2, FOKY8 or FOWX2, FOWX8	UL	3-02
Y-Capacitors (C3, C4, C24, C25, C29) (Optional)	Various	Various	Rated maximum 4700 pF for C3, C4, C25, C29, maximum 220pF for C24, minimum 250 Vac. Class Y1 or Y2., rated 85°C minimum.	FOKY2, FOKY8 or FOWX2, FOWX8	UL	3-02
Varistor (ZNR1) (Optional)	Various	Various	Rated 300 Vac, 385 Vdc.	XUHT2, XUHT8	UL	3-02
Bridge Rectifier (BD1)	Various	Various	Rated minimum 4A, minimum 600 V.	--	--	3-02
Transistors (Q3)	Various	Various	Rated minimum 5 A, minimum 500 V.	--	--	3-02
Electrolytic Capacitor (C5)	Various	Various	Rated 220 µF, minimum 400 V, minimum 85°C.	--	--	3-02
Bridging Capacitor (C31) (Optional)	Various	Various	Rated maximum 2200 pF, minimum 250 V. Class Y1 type.	FOKY2, FOKY8 or FOWX2, FOWX8	UL	3-02
Optical Isolator (U4, U5, U6, U7)	Cosmo Electronics Corp	K1010	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL	3-02
Optical Isolator (U4, U5, U6, U7) (Alternate)	Isocom Ltd.	ISP621-1X, ISP817X	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL	
Optical Isolator (U4, U5, U6, U7) (Alternate)	Lite-on Technology Corp	LTV817	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL	
Optical Isolator (U4, U5, U6, U7) (Alternate)	NEC Electronics Corp Compound Semiconductor	PS2561, PS2561-1	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL	

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	Device Div.					
Optical Isolator (U4, U5, U6, U7) (Alternate)	Sharp Corp	PC123	Rated minimum 3000 Vac isolation. Double protection.	FPQU2	UL	
Transformer (T1)	Long Sail Electronic Co Ltd	TF-1538 (for X=A), TF-1539 (for X=B), TF-1540 (for X=C), TF-1541 (for X=D)	Class B (130°C) Insulation System, Type SBI4.2.	OBJY2	UL	4-14
Core (T1)	Various	Various	Ferrite, measured overall 35.2 by 34.6 by 10.7 mm. Provided with 1 layer of insulation tape on topside edge near heat sink.	--	--	
Coil (T1)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Bobbin (T1)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, and minimum 0.51 mm thick.	QMFZ2	UL	
Insulating Tape (T1)	Symbio Inc.	35660Y, 35660	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T1) (Alternate)	3M Co.	1350F-1, 1350-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T1) (Alternate)	Bondtec Pacific Co Ltd	371F, 370S	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Margin Tape (T1)	Symbio Inc.	35661	Polyester tape, rated 130°C. Minimum 4 mm wide on both side of the bobbin	OANZ2	UL	
Margin Tape (T1) (Alternate)	3M Co.	44(a), 44T-A(a), 44D-A(a)	Polyester tape, rated 130°C.	OANZ2	UL	
Margin Tape (T1) Alternate	Bondtec Pacific Co Ltd	201	Polyester tape, rated 130°C.	OANZ2	UL	
Tubing (T1)	Great Holding Industrial Co., Ltd.	TFL, TFT	Minimum 200°C. Provided on all exit leads.	YDPU2	UL	
Varnish (T1)	PD GEORGE CO/RIPLEY RESIN	468-2-7	Rated minimum 130°C.	OBOR2	UL	
Varnish (T1) (Alternate)	Hitachi Chemical Co., Ltd.	WP-2952F-2G	Rated minimum 130°C.	OBOR2	UL	

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Varnish (T1) (Alternate)	John C Dolph	BC-346A	Rated minimum 130°C.	OBOR2	UL	
Transformer (T1) (Alternate)	JET Signal Industries Co Ltd.	TF-1538 (for X=A), TF-1539 (for X=B), TF-1540 (for X=C). TF-1541 (for X=D)	Class B (130°C) Insulation System, Type SBI4.2	OBJY2	UL	4-13
Core (T1)	Various	Various	Ferrite, measured overall 35.2 by 34.6 by 10.7 mm. Provided with 1 layer of insulation tape on topside edge near heat sink.	--	--	
Coil (T1)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Bobbin (T1)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL	
Copper Shield (T1)	Various	Varoius	Copper foil, provided with insulation tape minimum 10 mm.	--	--	
Insulating Tape (T1)	3M Co.	1350-1, 1350F-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T1) (Alternate) system	Bondtec Pacific Co Ltd	370S	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T1) (Alternate)	Symbio Inc.	35660, 35660Y	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Margin Tape (T1)	Bondtec Pacific Co Ltd	201-45	Polyester tape, rated 130°C. Minimum 4 mm wide on both sides of the bobbin.	OANZ2	UL	
Margin Tape (T1) (Alternate)	3M Co.	44T-A(a), 44D-A(a)	Polyester tape, rated 130°C.	OANZ2	UL	
Varnish (T1)	John C Dolph	BC-346A	Rated minimum 200°C.	OBOR2	UL	
Varnish (T1) Alternate	PD George/Ripley Resin	468-2-7	Rated minimum 130°C.	OBOR2	UL	
Varnish (T1) Alternate	Hitachi Chemical Co., Ltd.	WP-2952F-2G	Rated minimum 130°C.	OBOR2	UL	
Tubing (T1)	Great Holding	TFL, TFT	Minimum 200°C. Provided on	YDPU2	UL	

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Clause	Requirement + Test	Result - Remark	Verdict

	Industrial Co., Ltd.		all exit leads.			
Transformer (T2)	Long Sail Electronic Co Ltd	TF-1572	Class B (130°C) Insulation System, Type SBI4.2.	OBJY2	UL	4-17
Core (T2)	Various	Various	Ferrite, measured overall 28.2 by 28.8 by 11.4 mm.	--	--	
Coil (T2)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Bobbin (T2)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL	
Insulating Tape (T2)	Symbio Inc.	35660Y, 35660	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T2) (Alternate)	3M Co.	1350F-1, 1350-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T2) (Alternate)	Bondtec Pacific Co Ltd	370S	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Margin Tape (T2)	Symbio Inc.	35661	Polyester tape, rated 130°C. Minimum 3.5 mm wide on both sides of the bobbin.	OANZ2	UL	
Margin Tape (T2) (Alternate)	3M Co.	44(a), 44T-A(a), 44D-A(a)	Polyester tape, rated 130°C.	OANZ2	UL	
Tubing (T2)	Great Holding Industrial Co., Ltd.	TFL	Minimum 200°C. Provided on all exit leads.	YDPU2	UL	
Varnish (T2)	PD GEORGE CO/RIPLEY RESIN	468-2-7	Rated minimum 130°C.	OBOR2	UL	
Varnish (T2) (Alternate)	Hitachi Chemical Co., Ltd.	WP-2952F-2G	Rated minimum 130°C.	OBOR2	UL	
Varnish (T2) (Alternate)	John C Dolph	BC-346A	Rated minimum 130°C.	OBOR2	UL	
Transformer (T2) (Alternate)	JET Signal Industries Co Ltd.	TF-1572	Class B (130°C) Insulation System, Type SBI4.2	OBJY2	UL	4-16
Core (T2	Various	Various	Ferrite, measured overall 28.2 by 28.8 by 11.4 mm.	--	--	
Coil (T2)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Bobbin (T2)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL	

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Copper Shield (T2)	Various	Various	Copper foil, provided with insulation tape minimum 10 mm.	--	--	
Insulating Tape (T2)	3M Co.	1350-1, 1350F-1	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T2) (Alternate) system	Bondtec Pacific Co Ltd	370S	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Insulating Tape (T2) (Alternate)	Symbio Inc.	35660, 35660Y	Polyester tape, 0.05 mm thick, rated 130°C.	OANZ2	UL	
Margin Tape (T2)	Bondtec Pacific Co Ltd	201-45	Polyester tape, rated 130°C. Minimum 3.5 mm wide on both sides of the bobbin.	OANZ2	UL	
Margin Tape (T2) (Alternate)	3M Co.	44T-A(a), 44D-A(a)	Polyester tape, rated 130°C.	OANZ2	UL	
Margin Tape (T2) Alternate	Symbio Inc.	35661	Polyester tape, rated 130°C.	OANZ2	UL	
Varnish (T2)	John C Dolph	BC-346A	Rated minimum 200°C.	OBOR2	UL	
Varnish (T2) Alternate	PD GEORGE CO/RIPLEY RESIN	468-2-7	Rated minimum 130°C.	OBOR2	UL	
Varnish (T2) Alternate	Hitachi Chemical Co., Ltd.	WP-2952F-2G	Rated minimum 130°C.	OBOR2	UL	
Tubing (T2)	Great Holding Industrial Co., Ltd.	TFL, TFT	Minimum 200°C. Provided on all exit leads.	YDPU2	UL	
Line Filter (L2, L3) (Optional)	Various	TR-737	Open type construction. Rated 125°C. Covered with shrinkable tube.	--	--	4-10
Core (L2, L3)	Various	Various	Ferrite, measured overall 11.2 mm OD by 5.82 mm ID by 4.04 mm wide.	--	--	
Coil (L2, L3)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Line Filter (LF1) (Optional)	Various	TR-738	Open type construction. Rated 125°C.	--	--	4-11
Core (LF1)	Various	Various	Ferrite, measured overall 16	--	--	

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			mm OD by 9 mm ID by 5 mm wide.			
Coil (LF1)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Line Filter (LF2) (Optional)	Various	TR-548	Open type construction. Rated 120°C.	--	--	4-12
Core (LF2)	Various	Various	Ferrite, measured overall 22 mm OD by 14 mm ID by 8 mm wide.	--	--	
Coil (LF2)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
PFC Choke (L1) (Optional)	Various	TF-1571	Open type construction. Rated 130°C.	--	--	4-08
Core (L1)	Various	Various	Silicon Steel, measured overall 32 by 30.35 by 22 mm.	--	--	
Coil (L1)	Various	Various	Rated minimum 130°C.	OBMW2	UL	
Bobbin (L1)	Sumitomo Bakelite Co Ltd.	PM-9820	Rated V-0, 150°C, minimum 0.51 mm thick.	QMFZ2	UL	
Thermostat (TSW1) Optional	Seki Controls Co Ltd	ST-22	70-130°C, 250Vac	YFZW2	UL	3-02
Thermostat wires	Various	Various	FEP, PTFE, PVC, TFE, neoprene, or marked VW-1; minimum 125°C, minimum 300 V. Sleeved with tubing.	AVLV2, AVLV8	UL	
Sleeving tube (on Q3)	Various	Various	Minimum V-2, silicone rubber, minimum 120°C.	QMFZ2	UL	
Adhesive Glue	Various	Various	Minimum V-2, 105°C. See table 2.10.3 supplement info for locations	QMFZ2	UL	3-02
Label	Various	Various	Minimum 60°C.	PGDQ2	UL	
IC Regulator (U3)	Various	Various	Rated minimum 650 V, 2.7 A	--	--	
Zener Diode (ZD60)	Various	Various	Rated 6.2V, 1/2W	--	--	
Heat Sink (HS1)	Various	Various	Aluminum, see Enclosure for details.	--	--	4-04
Heat Sink (HS2)	Various	Various	Aluminum, see Enclosure for	--	--	4-05