

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

SYSTEME CEI D'ESSAIS DE CONFORMITE ET DE CERTIFICATION
DES EQUIPEMENTS ELECTRIQUES (IECEE)
METHODE OC

CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC

Product
Produit

Component - Power Supply

Name and address of the applicant
Nom et adresse du demandeur

SL Power Electronics Corp
Bldg A, 6050 King St
Ventura, CA 93003, USA

Name and address of the manufacturer
Nom et adresse du fabricant

SL Power Electronics Corp
Bldg A, 6050 King St
Ventura, CA 93003, USA

Name and address of the factory
Nom et adresse de l'usine

1. Industrias S L S A De C V
Costa Rica #60, Col Cuahutemoc, Mexicali, BC, Mexico
2. Shanghai Ges Information Technology Co Ltd
Zhangjiang Hi Tech Park, 668 Li Shi Zhen Rd, Shanghai, 201203, China
3. SL Power Electronics Xianghe
Anping Economic & Tech Developing Zone, Xianghe, Hebei 065402, China

Rating and principal characteristics
Valeurs nominales et caractéristiques principales

Input: 100-240 V ac, 5.5-2.5 A, 50/60 Hz
Output: 12 thru 48 V, 400 W maximum with 200 LFM minimum forced air cooling, (MINT1400AWXYZ);
11-16 V, 25 A, 150 W maximum with convection cooling, 300 W with 35 CFM forced air cooling (MISP1300A1873).
NOTES: 1. Consult factory for application with convection cooling and usage at higher operating ambient temperature.

Trademark (if any)
Marque de fabrique (si elle existe)



Model / Type Ref.
Ref. de type

Models MISP1300A1873, and MINT1400AWXYZ, where W represents the output voltage which may be any number from 24 thru 48; X indicates the type of output connector which may be any number from 01 thru 99; Y indicates the type of input connector which may be the letter E, L or P; Z indicates the configuration options which may be the number 01 for standard configuration or 02 thru 99 for modifications that have no impact on safety.

Additional information (if necessary)
Information complémentaire (si nécessaire)

The CB Test Report comprises 7 enclosures.

A sample of the product was tested and found to be in conformity with
Un échantillon de ce produit a été essayé et a été considéré conforme à la

PUBLICATION

EDITION

IEC 60601-1 (1988) Second Edition, with Amendment No. 1 (1991) and No. 2 (1995) with the exception of:
Clause 36, Electromagnetic Compatibility, Clause 48, Biocompatibility and Clause 52.1, Programmable Electronic Systems. Additionally evaluated to EN 60601-1 (1990) with Am. 1 (1993) and Am. 2 (1995). See Test Report for National Differences.

as shown in the Test Report Ref. No. which forms part of this Certificate
comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat

E116994-A33-CB-2

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



Underwriters
Laboratories

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email: jolanta.m.wroblewska@us.ul.com

Date Issued: 2009 July 20

Signature:

Jolanta M. Wroblewska

COVER PAGE FOR TEST REPORT

Product Category:	Power Supplies, Medical and Dental
Product Category CCN:	QQHM2, QQHM8
Test Procedure:	Component Recognition
Product:	Component - Power Supply
Model/Type Reference:	GNT4WXYZ-XXXG, where W represents the output voltage which may be any number from 12 thru 48; X indicates the type of input connector which may be the letters A, B or C; Y indicates the type of output connector which may be the letter B or T; Z indicates the type of cover or cover/fan options which may be blank or the letter E or T; -XXX indicates value added configurations that have no impact on safety which may be any number from 001 thru 999; and G indicates compliance to RoHS. (ROHS compliance has not been evaluated by UL.) Models MISP1300A1873, and MINT1400AWXYZ, where W represents the output voltage which may be any number from 24 thru 48; X indicates the type of output connector which may be any number from 01 thru 99; Y indicates the type of input connector which may be the letter E, L or P; Z indicates the configuration options which may be the number 01 for standard configuration or 02 thru 99 for modifications that have no impact on safety.
Rating(s):	Input: 100-240 V ac, 5.5-2.5 A, 50/60 Hz Output: 12 thru 48 V, 400 W maximum with forced air cooling (GNT4WXYZ-XXXG); 24 thru 48 V, 400 W maximum with 200 LFM minimum forced air cooling, (MINT1400AWXYZ); 11-16 V, 25 A, 150 W maximum with convection cooling, 300 W with 35 CFM forced air cooling (MISP1300A1873)
	NOTES: 1. Consult factory for application with convection cooling and usage at higher operating ambient temperature.
Standards:	UL 60601-1, 1st Edition, 2006-04-26 (Medical Electrical Equipment, Part 1: General Requirements for Safety) CAN/CSA-C22.2 No. 601.1-M90, 2005 (Medical Electrical Equipment - Part 1: General Requirements for Safety)
Applicant Name and Address:	SL POWER ELECTRONICS CORP. 6050 KING DRIVE, BLDG. A VENTURA, CA 93003
This Report includes the following parts, in addition to this cover page: <ol style="list-style-type: none">1. Specific Inspection Criteria2. Specific Technical Criteria3. Clause Verdicts4. Critical Components5. Test Results6. Enclosures	

Issue Date: 2006-09-28
Amendment 2 2008-11-13

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Report Reference #

E116994-A33-UL-1

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:



Ahmad Daoudi
Engineering Associate
Underwriters Laboratories Inc.

Reviewed By:



Michael J. Howell
Staff Engineer
Underwriters Laboratories Inc.

SPECIFIC TECHNICAL CRITERIA

TEST REPORT UL 60601-1 Medical Electrical Equipment Part 1: General requirements for safety	
Report Reference No	E116994-A33-UL-1
Compiled by	Ahmad Daoudi
Reviewed by	Michael J. Howell
Date of issue	2006-09-28
Standards	UL 60601-1, 1st Edition, 2006-04-26 (Medical Electrical Equipment, Part 1: General Requirements for Safety) CAN/CSA-C22.2 No. 601.1-M90, 2005 (Medical Electrical Equipment - Part 1: General Requirements for Safety)
Test procedure	Component Recognition
Non-standard test method	N/A
Test item description	Component - Power Supply
Trademark	See Enclosure Miscellaneous for Trade Mark
Model and/or type reference ...:	GNT4WXYZ-XXXG, where W represents the output voltage which may be any number from 12 thru 48; X indicates the type of input connector which may be the letters A, B or C; Y indicates the type of output connector which may be the letter B or T; Z indicates the type of cover or cover/fan options which may be blank or the letter E or T; -XXX indicates value added configurations that have no impact on safety which may be any number from 001 thru 999; and G indicates compliance to RoHS. (ROHS compliance has not been evaluated by UL.) Models MISP1300A1873, and MINT1400AWXYZ, where W represents the output voltage which may be any number from 24 thru 48; X indicates the type of output connector which may be any number from 01 thru 99; Y indicates the type of input connector which may be the letter E, L or P; Z indicates the configuration options which may be the number 01 for standard configuration or 02 thru 99 for modifications that have no impact on safety.
Rating(s)	Input: 100-240 V ac, 5.5-2.5 A, 50/60 Hz Output: 12 thru 48 V, 400 W maximum with forced air cooling (GNT4WXYZ-XXXG); 24 thru 48 V, 400 W maximum with 200 LFM minimum forced air cooling, (MINT1400AWXYZ); 11-16 V, 25 A, 150 W maximum with convection cooling, 300 W with 35 CFM forced air cooling (MISP1300A1873) NOTES: 1. Consult factory for application with convection cooling and usage at higher operating ambient temperature.

Issue Date: 2006-09-28
Amendment 2 2008-11-13

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Report Reference #

E116994-A33-UL-1

GENERAL INFORMATION	
Test item particulars (see also clause 5):	
Classification of installation and use	For building-in
Supply connection	Terminal Block or Header or Appliance inlet
Accessories and detachable parts included in the evaluation	None
Options included	Cover/Fan (Options E and T) (GNT4WXYZ-XXXG)
Possible test case verdicts:	
- test case does not apply to the test object :	N / A
- test object does meet the requirement	P(Pass)
- test object does not meet the requirement :	F(Fail) (acceptable only if a corresponding, less stringent national requirement is "Pass")
Abbreviations used in the report:	
- normal condition	N.C - single fault condition
- operational insulation	OP - basic insulation
- basic insulation between parts of opposite polarity:	BO - supplementary insulation : P
- double insulation	DI - reinforced insulation
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 (DC power supplies) covered by this report, are components, which are intended for use in end-product equipment used in a hospital or related health care facility, evaluated to standard Medical Equipment.

	<p>The GNT4WXYZ-XXXG Series, MINT1400AWXYZ Series and MISP1300A1873 are designed for building-in to an end product.</p>
<p>CC1.0</p>	<p>Model Differences</p>
<p>CC1.1</p>	<p>The power supplies in the GNT4WXYZ-XXXG Series are similar to each other and differ only in secondary circuit for the different outputs. The power supplies MINT1400AWXYZ Series are similar to the GNT4WXYZ-XXXG Series with some minor improvements. The chassis has no slots, the insulator gap pad between the mini cover and the transformer T5 is replaced with an aluminum block bolted to the cover, and insulator gap pad is added between the primary heatsink and chassis. The power supply MISP1300A1873 is a custom power supply similar to model GNT415ABG. The difference is in secondary with added circuitry to allow output to be adjustable from 11-16 V by external analog signal to control output voltage. Also, the insulator gap pad between the mini cover and the transformer T5 is replaced with an aluminum block bolted to the cover.</p> <p>The GNT4WXYZ-XXXG Series is available with three different types of input connector and two different type of output connector. Also, there are two different cover/fan options; option E with fan mounted on end and includes an appliance inlet for the input, and option T with fan mounted on top. The following are the various options for the GNT4WXYZ-XXXG:</p> <p>W = Main Output from 12 thru 48 12 = 12 V dc/33.3 A 15 = 15 V dc/26.7 A 24 = 24 V dc/16.7 A 28 = 28 V dc/14.3 A 36 = 36 V dc/11.1 A 48 = 48 V dc/8.4 A</p> <p>X = Input Connectors A, B, or C A = Eby P/N 5002-03-N-12 B = Phoenix Contact P/N 1732034 (GMKDSP 3/3) C = Amp P/N MTA-156 Series</p> <p>Y = Output Connectors B = Bussbars T = Phoenix Contact P/N 1731721</p> <p>Z = Cover Options Blank = Standard Mini Cover E = Cover with Vertically Mounted Fan on End When used, AC inlet is used (Schurter P/N 6100.3100) and input connector X is C by default. T = Cover with Horizontally Mounted Fan on Top</p> <p>-XXX = Value added configurations that have no impact on safety which may be any number from 001 thru 999</p> <p>G = Compliance to RoHS</p>

	<p>The MINT1400AWXYZ Series is available with three different types of input connector which are the following:</p> <p>W = Main Output from 24 thru 48 24 = 24 V dc/16.7 A 28 = 28 V dc/14.3 A 36 = 36 V dc/11.1 A 48 = 48 V dc/8.4 A</p> <p>X = Output Connectors 01 thru 99</p> <p>Y = Input Connectors E, L, or P L = Eby P/N 5002-03-N-12 P = Phoenix Contact P/N 1732034 (GMKDSP 3/3) E = Molex P/N 2139 Series or Amp P/N MTA-156 Series</p> <p>Z = Configuration Options 01 or 02 thru 99 01 = Standard Mini Cover 02 thru 99 = Added option not effecting safety</p> <p>G = Compliance to RoHS</p>	
CD1.0	Additional Information	
CD1.1	<p>The schematics for these models are kept on file at the CB Testing Laboratory mentioned in the first page of this test report, and can be provided by the applicant upon request by CBTLs.</p> <p>The power supplies described in this report have the same model number/construction as the power supplies described in Report Ref. # E135803-A34.</p> <p>Capacitors Type 339 Series by Vishay and Type MEX Series by Meritek and Varistors Type MVR Series by Meritek, Type TVR by Thinking Electronics, and Type ERZV14D471 by Matsushita/Panasonic have been previously evaluated to the requirements of their respective applicable UL standards by UL, and are under UL's component recognition program. Additionally the above components have been evaluated to the requirements of their respective applicable IEC/EN standards. Certificates of compliance to the applicable IEC standard for these component can be requested from the manufacturer at the discretion of the accepting NCB.</p>	
CE1.0	Technical Considerations	
CE1.1	<p>The product was investigated to the following additional standards:</p>	<p>EN 60601-1: 1990 + A1:1993 + A2:1995 + A13:1996, CAN/CSA C22.2 No. 601.1-M90 (R1997), CAN/CSA C22.2 No. 601.1S1-94, and CAN/CSA C22.2 No. 601.1B-98 (National Differences for Canada), UL 60601-1(except EMC limitations, EN 60601-1-2, Biocompatibility, EN 10993-1, Programmable Electronic Systems, IEC 60601-1-4)</p>
CE1.2	<p>The product was not investigated to the following standards or clauses:</p>	<p>Clause 36, Electromagnetic Compatibility (IEC 601-1-2), Clause 48, Biocompatibility (ISO</p>

		10993-1), Clause 52.1, Programmable Electronic Systems (IEC 601-1-4)
CE1.3	The product is Classified only to the following hazards:	Casualty, Shock, Fire
CE1.4	The degree of protection against harmful ingress of water is:	Ordinary
CE1.5	The following accessories were investigated for use with the product:	None
CE1.6	The mode of operation is:	Continuous
CE1.7	Software is relied upon for meeting safety requirements related to mechanical, fire and shock:	No
CE1.8	The product is suitable for use in the presence of a flammable anesthetics mixture with air or oxygen or with nitrous oxide:	No
CE2.0	The Accompanying Documents referred to by this standard refer to the Installation Instructions. The installation instructions are not shipped with this unit. They can be found on the company website. http://www.slpower.com or can request for a copy by writing to SL Power Electronics Corp. at: 6050 King Drive, Bldg. A, Ventura, CA 93003.	--
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:	
CF2.0	This power supply has been evaluated as Class I, continuous operation, ordinary equipment and has not been evaluated for use in the presence of a flammable anesthetic mixture with air, oxygen or nitrous oxide.	--
CF2.1	This component has been judged on	--

	the basis of the required spacings in the First Edition of the Standards for Medical Equipment, Part 1: General Requirements for Safety, UL60601-1 and CSA 22.2 No. 601.1, which covers the end use product for which the component is designed.	
CF2.2	The component shall be installed in compliance with the enclosure, mounting, spacings, casualty markings and segregation requirements of the end-use application.	--
CF2.3	Consideration should be given to measuring the temperature on power electronic components and transformer windings when the power supply is installed in the end-use equipment.	--
CF2.4	The input connector for models with option E is acceptable for field connection and all other models the input/output are not acceptable for field connection, they are only intended for connection to mating connectors of internal wiring inside the end-use machine. the output circuits have not been evaluated for direct patient connection (Type B, BF or CF).	--
CF2.5	The component should be properly bonded to the ground in the end-use equipment.	--
CF2.6	The temperature test was performed in a raised ambient of 40°C on Models GNT4WXYZ-XXXG Series and MINT1400AWXYZ Series, and was performed in a raised ambient of 50°C on Model MISP1300A1873.	--
CF2.7	Leakage Current testing should be repeated in the end-product application.	--
CF2.8	The main Power Transformer (T5), Drive Transformer (T6) and Bias Transformer (T100). comply with Class	--

	F (155°C) limits.	
CF2.9	Power supply is provided/tested with two fuses, UL R/C (JDYX2), rated T 6.3 A, 250 V, one on each input line.	--

DEMKO CERTIFICATE

Certificate No. 142247-04
Page 1/3
Date of Issue 2009-06-11

Certificate Holder SL POWER ELECTRONICS CORP.
6050 KING DRIVE, BLDG. A
VENTURA, CA 93003, USA

Manufacturer SL POWER ELECTRONICS CORP.
6050 KING DRIVE, BLDG. A
VENTURA, CA 93003, USA

Production site INDUSTRIAS SL, S.A. DE C.V.
COSTA RICA NO. 60, COL. CUAHUTEMOC
MEXICALI, B.C. MEXICO

Certified Product Component - Power Supply
Model GNT4WXYZ-XXXG, MINT1400AWXYZ, MISP1300A1873,
Trademark

 or SL LOGO

Rated Voltage / Frequency 100-240 V ac, 50/60 Hz

Rated Current / Power 5.5-2.5 A

Insulation Class -

Degree of protection (IP) -

Tested acc. to EN 60601-1:1990 + A1:1993 + A2:1995

Test Report No. E116994-A33-CB-1 Issue date 2006-09-28, amendment 1
2007-01-08, amendment 2 2008-11-13

Additional For building-in
Expire date 2016-10-02

Certification Manager
Jan-Erik Storgaard

Certification Body

The product and production sites listed on the certificate comply with the D-mark requirements and the UL Global Service Agreement, with reference to Terms and Conditions for the D mark. The Owner of the certificate is entitled to use the δ or δ for cables δ DEMKO δ , for the products listed on the certificate and manufactured at the production sites listed. UL has to be informed in writing about any changes to the product or production site in accordance with the Term and Conditions of the D mark. The validity of the certificate is shortened if the EU legislation require re-testing and re-certification due to new standards or amendments coming into force before the expiry date.

UL International Demko A/S, Lyskaer 8, P.O. Box 514, DK-2730
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www.ul-europe.com

Appendix DEMKO CERTIFICATE

Certificate No. 142247-04
Page 2/3
Date of Issue 2009-06-11

The Certificate covers the following:

001: GNT4WXYZ-XXXG

W represents the output voltage which may be any number from 12 thru 48; X indicates the type of input connector which may be the letters A, B or C; Y indicates the type of output connector which may be the letter B or T; Z indicates the type of cover or cover/fan options which may be blank or the letter E or T; -XXX indicates value added configurations that have no impact on safety which may be any number from 001 thru 999; and G indicates compliance to RoHS. (ROHS compliance has not been evaluated by UL.)

002: MISP1300A1873

003: MINT1400AWXYZ

W represents the output voltage which may be any number from 24 thru 48; X indicates the type of output connector which may be any number from 01 thru 99; Y indicates the type of input connector which may be the letter E, L or P; Z indicates the configuration options which may be the number 01 for standard configuration or 02 thru 99 for modifications that have no impact on safety.

Output: 12 thru 48 V, 400 W maximum with forced air cooling (GNT4WXYZXXXG);
24 thru 48 V, 400 W maximum with 200 LFM minimums forced air cooling, (MINT1400AWXYZ); 11-16 V, 25 A, 150 W maximum with convection cooling, 300 W with 35 CFM forced air cooling (MISP1300A1873)

This certificate replaces the certificate No. 142247-03, dated 2008-12-04

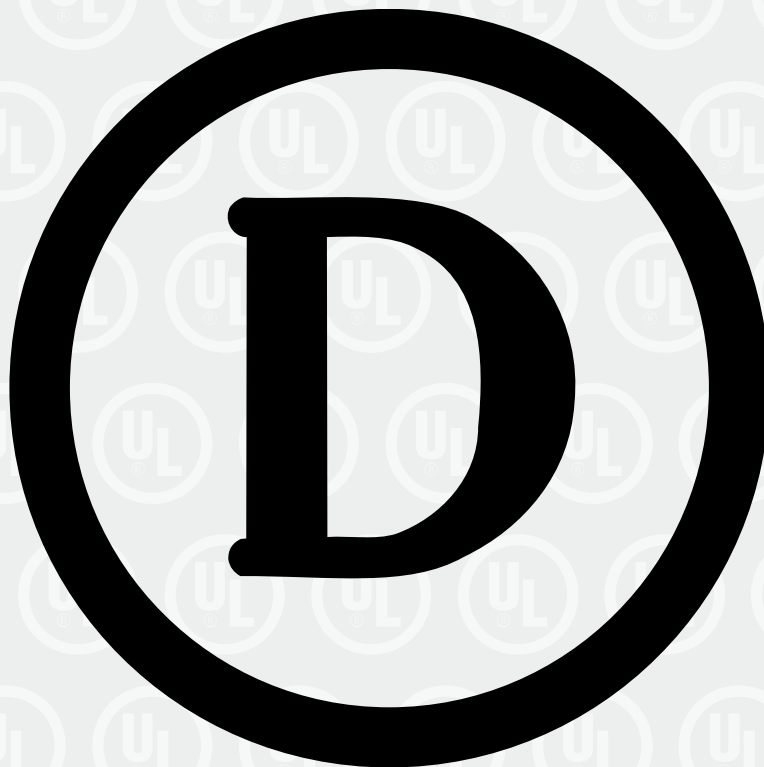
UL International Demko A/S has issued a new certificate due to due to correct the expire date

Certification Body

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Appendix DEMKO Certificate

Certification Mark	D-mark
Certificate No.	142247-04
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Date of Issue	2009-06-11



Certification Body

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