

File E170507
Project 01ME16210

August 14, 2001

REPORT

ON

POWER SUPPLY ADAPTER FOR
INFORMATION TECHNOLOGY EQUIPMENT,
INCLUDING ELECTRICAL BUSINESS EQUIPMENT

Globtek, Inc.
Northvale, NJ

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DESCRIPTION

PRODUCT COVERED:

USL/CNL: Power Supply Adapter, Model GT-21131-6012, -7212, -7219, -7224. May be followed by -X.X for specifying output voltage deviation from standard model (subtracting X.X from standard rated output voltage will reflect modified output voltage rating)

ELECTRICAL RATING:

Input: 100-240 V ac, 47-63 Hz, 1.6 A

Output:

Model	<u>V dc (max)</u>	<u>A (max)</u>	<u>Watts@ (max)</u>
GT-21131-6012-X.X	12	5	60
GT-21131-7212-X.X	12	6	72
GT-21131-7219-X.X	19	3.8	72
GT-21131-7224-X.X	24	3	72

Each output current can vary up to its maximum rated current provided the rated output power is not exceeded.

@ Watts rating for informational purposes only. May or may not be provided on label.

Single output units are available with output voltages of 12 Vdc to 24 Vdc in 0.1 V increments.

ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Use - For use only in (or with) complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

Special Consideration - The following items are considerations that were used when evaluating this product.

USL, CNL indicates the equipment has been investigated to the U.S. and Canadian (Bi-National) Standard for Information Technology Equipment including Electrical Business Equipment CSA C22.2 No. 60950/UL 60950-1, First Edition.

The equipment is considered: Movable, Class I (earthed) pluggable Type A, used detachable power cord, intended for use on a TN power system.

The equipment was submitted by the manufacturer for use in a maximum air ambient of 40°C.

Disconnect device - The following component is considered the equipment disconnect device: Appliance Inlet.

CONSTRUCTION DETAILS:

See Section General for details.

Printed Wiring Board - See Section General for Printed Wiring Board in details and ILL. 1.

Alternate - For models with suffix -7212, -7219, -7224, same as above, except rated 130°C.

Nameplate Marking - Listee's name or File No. E170507, model number, and input and output electrical ratings provided on each unit. May be provided on more than one label. Located where tools not necessary for gaining access. Located on parts not likely to be discarded or lost. May be directly molded on to the enclosure.

Marking - The following marking is provided on the outside of the enclosure. It states "CAUTION - For Indoor Use Only". **For Model GT-21131-7224, "LPS" or "Limited Power Source" may be provided on the label.**

Instruction Safety Manual - Provided with unit. Indicates unit is not a Limited Power Source. **For Model GT-21131-7224, this statement is not required for the output of this model complies with LPS requirements.**

Power Supply Cord - Optional. See Instruction Manual for power cord selection instruction Not shown. For units intended for 120 V ac: Detachable, Listed Cord Set rated 125 V, 10 A, consisting of a minimum No. 18 AWG, Type SVT or SJT, three conductor cord a maximum of 4.57 m (14.76 ft) in length and a parallel blade, grounding type attachment plug at one end and a cord connector body at the other end.

For units intended for 240 V ac (domestic use): Detachable, Listed Cord Set rated 250 V, 6 A, consisting of a minimum No. 18 AWG, Type SVT or SJT, three conductor cord a maximum of 4.57 m (14.76 ft) in length and a parallel blade, grounding type attachment plug at one end a cord connector body at the other end.

For units intended for 240 V ac (outside of U.S.): Detachable, Cord set consisting of a minimum No. 18 AWG cord and grounding type attachment plug rated minimum 6 A, 250 V. The cord Set should have the appropriate safety approvals for country in which the equipment will be installed and marked <HAR>.

CNL Marking - Month and year of manufacturing or traceable series number marked on the unit.

Model Difference - Models GT-21131-7212, -7219 and -7224 are identical to Model GT-21131-6012, except for output rating as described in the report.

MODEL GT-21131-6012 - FIG. 1 (S99-12888)

General - Shows overall external view of unit.

1. Enclosure - R/C (QMFZ2), Teijin Chemicals Ltd., Type LN-1250#, rated 94V-0. Overall measures 141 by 76 by 43 mm, minimum 2.0 mm thick. Constructed of two parts secured together by screws.

Alternate - Same as above, except GE Plastics, Type SE-100 or C6200.

2. Appliance Inlet - Listed or R/C (AXUT2), Supercom, Type SC-9, rated minimum 250 V, 10 A. Secured to enclosure by snap fit.

Alternate - Same as above, except Inalways, Type 0707-2.

3. Output Cable - (AVLV2), AWM, style 1185, No. 22 AWG minimum, VW-1, 80°C, 300V. One end is soldered to the printed wiring board while the other end is molded with connector barrel type.

Alternate - Same as above, except cable style SPT-1, VW-1, 105°C, No. 18 AWG minimum.

Alternate - Same as above, except cable style No. 2468, AWM, VW-1, No. 22 AWG minimum.

Alternate - Same as above, except cable style No. 2464, AWM, VW-1, No. 20 AWG minimum, 80°C minimum, 300V.

Alternate - Same as above, except cable style XT, VW-1, 80°C Min, No. 20 AWG or greater.

Alternate - Same as above, except Style No. 1185.

4. Strain Relief of Output Cable - Molded with Output Cable. Strain Relief provided with a molded-on anti-kink bushing held in place by integral slots of top and bottom enclosure in an opening of 7.6 by 10 mm. See ILL. 2 for details.
5. Switch (Optional for Output Cord) - R/C (WNWV2), manufactured by Openwise, Series 303fb-12, -22, -23, rated 250 V, 2 A or 120 V, 3 A, V-2 (min).

Alternate Switch (Optional Cord) - R/C (WNWV2), manufactured by Teilbar, Series 303, rated 250 V, 2 A or 120 V, 3 A, V-2 (min).

MODEL - GT-21131-6012 - FIG. 2 (S99-12887)

General - Figure shows internal view of unit.

1. Fuse (F1) - R/C (JDYX2), Bel, Type 5ST, rated 250 V, 2.0 A. Wired on hot sides of line. Fuse current and voltage ratings are permanently marked adjacent to fuse, Fuse lead soldered to PWB. See Section General, Markings.

Alternate - Same as above, except Listed (JDYX).

Alternate - For Models -7212, -7219, -7224, same as above, except 3.15 A, 250 V.

Alternate - Same as above, except Listed (JDYX), Walter Electronic Co. Ltd., Type SIP, rated 3.15 A, 250 V.

Alternate - Same as above, except Listed (JDYX), Sun Electronic Co. Ltd., Type 5R rated 3.15 A, 250 V.

Alternate - Same as above, except Listed (JDYX), WICKMANN-WERKE GMBH, Type 19191 or 191 rated 3.15 A, 250 V.

2. Line Choke (LF2) - Toroidal type construction. Ferrite core, size 13 mm OD, 8 mm ID, 6.3 mm thick. Coil of copper magnet wire-wound on core. (Rated 130°C)
3. Line Choke (LF1) - Open-type construction. Ferrite core, size 20 by 26 by 6 mm, coil of copper magnet wire-wound on three flange bobbin of R/C (QMFZ2), Phenolic, rated minimum 94V-1, minimum 0.71 mm thick. (Rated 130°C)
4. X-Capacitors (CX1, CX2) - Optional. (Line-to-Line), R/C (FOWX2), and SEV or VDE marked X1 to indicate compliance with IEC 384-14, CX1, rated maximum 0.68 μ F, CX2, rated 0.22 μ F maximum, 250 V minimum.

Alternate - Same as above, except CX1 capacitor, CHIEFCON ELECTRONICS Co. Ltd., Type CKX.

Alternate - Same as above, except CX1 capacitor, CHENG TUNG INDUSTRIAL Co. Ltd., Type CTX.

Alternate - Same as above, except X2 capacitor, marked X2 to indicate compliance to IEC 384-14, X2 Capacitor:

<u>CCN</u>	<u>Certified</u>	<u>Manufacturer/Type</u>
FOWX2/FOKY2	VDE or SEV	Arcotronics / 1.58,1.47,1.40
FOWX2	VDE or SEV	Pilkor / PCX series
FOKY2	VDE or SEV	Philips / MKP or PCX series
FOWX2/FOKY2	VDE or SEV	Okay / RE or PA series
FOWX2/FOKY2	VDE or SEV	Iskra / KNB series
FOKY2	VDE or SEV	Echhoff-Werk / MKT
FOWX2	VDE or SEV	Teapo / XG-V series
FOWX2	VDE or SEV	Shiny Space / SX1
FOWX2	VDE or SEV	Nitsuko / CFKC or CFJC.
FOWX2/FOKY2	VDE or SEV	EVOX Rifa / PHE series
FOWX2/FOKY2	VDE or SEV	Siemens / B8113 series
FOKY2	VDE or SEV	Roederstein / F1772 series
FOWX2/FOKY2	VDE or SEV	Matsushita / ECQ-UV
FOWX2/FOKY2	VDE or SEV	LCC / DX
FOWX2	VDE or SEV	Presting / MPX
FOWX2	VDE or SEV	TDK / CS
FOWX2	VDE or SEV	Panasonic / ECQUG
FOWX2	VDE or SEV	Jenn Fu / MPX
FOWX2	VDE or SEV	UTX / HQX

5. Y Capacitors (CY1-3) - Optional. (Primary-to-Ground), R/C (FOWX2), and VDE or SEV, marked Y2 to comply with IEC384-14. Rated minimum 250 V, maximum 4700 pF (max.).

6. Bulk Capacitor (C22) - Rated 180 μ F maximum, 400 V, 105°C minimum. Electrolytic Type, provided with integral pressure relief. Top end covered with three layers, overall 23 mm wide on the Capacitor, Polyester tape, R/C (OANZ2), minimum 0.075 mm thick.

Alternate - For Models -7212, -7219, -7224. Provided with cover on Capacitor, R/C (QMFZ2), rated 94V-1 minimum. Same material as Fig. 1, Item 1, 0.4 mm thick, overall 19 mm diameter, 25 mm long, covered on top side of C22, secured to PWB by snap-fit.

7. Bleeder Resistor (R11) - Rated 1.2 Megohm, 1/4 W.

8. Bridge Diode (BD1) - Rated 600 V, minimum 4 A.

9. Thermistor (RT1)- Rated 5 ohm, 2 A at 25°C.

Alternate - Rated 8 ohms, 3 A at 25°C.

Alternate - Same as above except NTC, Rated 5 ohms, 3 A at 25°C.

10. Transformer (T1) - R/C (OBJY2), XEPEX Electronic, model designation XB-1 or XPB-5. Class B insulation system. Open-type construction. Core: Ferrite core. Overall 42.4 by 35.4 by 11.6 mm thick. Coil: Copper magnet wire-wound concentrically on two-flanged bobbin. Bobbin: R/C (QMFZ2) Phenolic, minimum 0.71 mm thick. Leads exit directly through integral flanges in bobbin and are mechanically secured and soldered to pins which are molded into bobbin. Core including bobbin to PWB are covered with one layer of polyester tape and top side of Transformer is covered with silicone rubber sheet.

<u>Location</u>	<u>#Layer / Total Thickness (mm)/ Material</u>
Outer wrap	2 layer / minimum 0.050 thick / polyester tape.
Pri./Sec.	3 layer / minimum 0.075 thick / polyester tape.
Pri./Core	Bobbin, 0.71 mm thick.
Sec./Core	Bobbin, 0.71 mm thick.

Margin tape 3.2 mm wide between winding and bobbin edge. Lead exits provided with tubing, See Section General for Insulating Tubing.

Alternate - Same as above, except R/C (OBJY2), Precision Craft Electronic Co., Ltd., model designation PC-B3A, Class B insulation system.

Alternate - Same as above, except R/C (OBJY2), Syn Electronics Co., Ltd., model designation ST-2804, Class B insulation system.

11. Transistor (Q3) - Rated minimum 600 V, 8.5 A. Secured to Primary Heat Sink by screw and nut. A silicone rubber, minimum 0.2 mm thick provided between the body of Transistor and Heat Sink.
12. Primary Heat Sink - Aluminum, or copper, L-shaped, size 54 by 30 by 16 mm, 6.3 mm thick. Secured to PWB by soldering. (Heat Sink is live.)

Alternate Heat Sink - Copper, L-shaped, size 54 by 30 by 16 mm, 6.3 mm thick. Secured to PWB by soldering. (Heat Sink is live.)

13. Optical Isolator (U2) - R/C (FPQU2), Sharp, Type PC817. (Rated isolation 3000 V ac, insulation thickness 0.4 mm.)

Alternate - Same as above, except Liteon, Type LTV-817.

Alternate - Same as above, except Telefunken, Type TCET110X.

Alternate - Same as above, except Philips, Type CNX82A.

Alternate - Same as above, except Everlight Electronics Co. Ltd., Type EL817, Rated isolation voltage 5000 V ac.

Alternate - Same as above, except Cosmo Electronics Corp., Type KPC817, Rated isolation voltage 5000 V ac.

Alternate - Same as above, except Bright Led Electronics Corp.,
Type BPC817, Rated isolation voltage 5000 V ac.

14. Earthing - A green/yellow wire minimum No. 18 AWG is mechanically secured and soldered to the ground pin of AC input receptacle, the other end is provided with Listed double crimped type pin, secured and soldered to PWB. A EMI core provided, ferrite type, overall 13 mm OD, 8 mm ID, 6.3 mm thick. Covered with tubing, See Section General for Insulation Tubing.
15. EMI Board - See Section General for Printed Wiring Board. Overall 126 by 68 mm, 1.0 mm thick, and keep 2.5 mm from the copper portion to primary area of main PWB. EMI board is mechanically secured and soldered by pins to the main PWB, and copper foil is grounded.

TEST RECORD NO. 1

SAMPLES:

Samples of GT-21131-XXXX series were submitted by the manufacturer. Each was representative of the construction described in the preceding section of this report and the following tests were conducted. Test results relate only to the items tested.

Due to the similarity to other products previously Listed by UL no tests were considered necessary.

Refer to Test Reference pages for original Test Records from previous evaluations.

TEST RECORD NO. 2

SAMPLES:

No tests were deemed necessary based on the results of previous evaluation.

TEST RECORD SUMMARY:

The results of this investigation indicate that the products evaluated comply with the applicable requirements and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Test Record by:
MICHAEL A. LAVORATA
Sr. Project Engineer
Conformity Assessment Services
Services

Reviewed by:
DAVID V. ALMA
Staff Engineer
Conformity Assessment

Test Record No. 3

SAMPLES:

The manufacturer submitted representative sample of Power Supply Adaptor, Model GT-21131-7224 for construction investigation and testing.

GENERAL:

Test results relate only to the items tested.

The following tests were conducted.

Limited Power Source Measurements	UL 60950-1 Sec. 2.5 CAN/CSA-C22.2 NO. 60950-1-03 Sec. 2.5
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The test methods and results of the above tests have been reviewed and found in accordance with the requirements in the bi-national standard Information Technology Equipment - Safety - Part 1: General Requirements, UL 60950-1, First Edition, Revisions dated October 31, 2007 and CAN/CSA-C22.2 No. 60950-1-03, First Edition, Revisions dated July 7, 2006.

Tests conducted in accordance with Information Technology Equipment - Safety - Part 1: General Requirements, UL 60950-1, First Edition, Revisions dated October 31, 2007 were considered representative of the same tests required by Information Technology Equipment - Safety - Part 1: General Requirements, CAN/CSA-C22.2 No. 60950-1-03, First Edition, Revisions dated July 7, 2006.

TEST RECORD SUMMARY:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in Information Technology Equipment - Safety - Part 1: General Requirements, UL 60950-1, First Edition, Revisions dated October 31, 2007, and Information Technology Equipment - Safety - Part 1: General Requirements, CAN/CSA-C22.2 No. 60950-1-03, First Edition, Revisions dated July 7, 2006 and, therefore, such products are judged eligible to bear UL's Mark. Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

Test Record by:
Louis Kang
Associate Project Engineer

Reviewed by:
Robert Jeziorny
Project Engineer

CONCLUSION

A sample of the product covered by this Report has been found to comply with the requirements covering the class and the product is judged to be eligible for Listing and Follow-Up Service. The manufacturer is authorized to use the Laboratories' Mark on such products which comply with the Follow-Up Service Procedure and any other applicable requirements of Underwriters Laboratories Inc. Only those products which properly bear the Laboratories' Mark are considered as Listed by Underwriters Laboratories Inc.

Report by:

DAVID V. ALMA
Engineering Group Leader

Reviewed by:

BAHRAM BARZIDEH
Engineering Group Leader