

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (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:	AC-DC Power Supply
Model:	TBLC06-105, TBLC06-112, TBLC06-124; TBLC15-105, TBLC15-112, TBLC15-124; TBLC25-105, TBLC25-112, TBLC25-124; TBLC50-112, TBLC50-124; TBLC75-112, TBLC75-124; TBLC90-112, TBLC90-124; Each model may be followed by suffix "xx" where each "x" can be 'a-z' or '0-9' for traceability only, no impact on safety"
Rating:	Input: TBLC06-105: 100-240 Vac; 0.15 - 0.09 A; 50/60Hz TBLC06-112: 100-240 Vac; 0.14 - 0.08 A; 50/60Hz TBLC06-124: 100-240 Vac; 0.15 - 0.08 A; 50/60 Hz TBLC15-105: 100-240 Vac; 0.3 - 0.17 A; 50/60 Hz TBLC15-112: 100-240 Vac; 0.33 - 0.18 A; 50/60 Hz TBLC15-124: 100-240 Vac; 0.35 - 0.2 A; 50/60 Hz TBLC25-105: 100-240 Vac; 0.5 - 0.27 A; 50-60 Hz TBLC25-112: 100-240 Vac; 0.6 - 0.33 A; 50/60 Hz TBLC25-124: 100-240 Vac; 0.55 - 0.3 A; 50/60 Hz TBLC50-112: 100-240 Vac; 1.1 - 0.6 A; 50/60 Hz TBLC50-124: 100-240 Vac; 1.1 - 0.6 A; 50/60 Hz TBLC75-112: 100-240 Vac; 1.8 - 1.0 A; 50/60 Hz TBLC75-124: 100-240 Vac; 1.8 - 1.0 A; 50/60 Hz TBLC90-112: 100-240 Vac; 2.1 - 1.1 A; 50/60 Hz TBLC90-124: 100-240 Vac; 2.1 - 1.1 A; 50/60 Hz Output: TBLC06-105: 5 VDC; 1.2 A; 6 W TBLC06-112: 12 VDC; 0.5 A; 6W TBLC06-124: 24 VDC; 0.25 A; 6W TBLC15-105: 5 VDC; 2.4 A; 12 W TBLC15-112: 12 VDC; 1.25 A; 15 W TBLC15-124: 24 VDC; 0.63 A; 15 W TBLC25-105: 5 VDC; 4 A; 20 W TBLC25-112: 12 VDC; 2 A; 24 W TBLC25-124: 24 VDC; 1.05 A; 25 W TBLC50-112: 12 VDC; 4 A; 48 W TBLC50-124: 24 VDC; 2.1 A; 50W TBLC75-112: 12 VDC; 6.0 A; 72 W TBLC75-124: 24 VDC; 3.1 A; 75 W TBLC90-112: 12 VDC; 7.5 A; 90 W TBLC90-124: 24 VDC; 3.75 A; 90W

Applicant Name and Address:	TRACO POWER SOLUTIONS LTD WHITEMILL INDUSTRIAL ESTATE WEXFORD IRELAND
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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 UL LLC ('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 UL LLC (UL) or any authorized licensee of UL.

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Reviewed by: Dennis Butcher

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 a switching mode power supply intended for mounting on DIN rail in end product. All models include trimmer potentiometer for fine output voltage adjustment. All models have automatic output power derating 2%/V for input voltage less than 100 Vac.

Model Differences

All model are identical except:

- different power rating for each power series: 6, 15, 25, 50, 75 and 90 W
- different output voltage ratings within each power series
- enclosure size for each power series
- different PWB and component layout for each power series
- different components and transformer designs for each power series and additional minor differences for various voltage outputs

Suffix "xx" denotes different color of casing or labels or additional traceability criteria defined on demand.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : not directly connected to the mains
- Operating condition : continuous
- Access location : service access area
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : 85-265 Vac (-15%, +10%)
- Tested for IT power systems : Yes
- IT testing, phase-phase voltage (V) : N/A (See Conditions of Acceptability)
- Class of equipment : Class II (double insulated)
- Considered current rating of protective device as part of the building installation (A) : 20
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : TBLC06-xxx, TBLC15-xxx, TBLC25-xxx, TBLC90-xxx: up to 5000 m; models TBLC50-xxx, TBLC75-xxx: up to 4800 m

- Altitude of test laboratory (m) : 300
- Mass of equipment (kg) : max. 0.3
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 55°C with full load , 70°C with output load derated linearly 2.5%/°C above 55 °C
- The means of connection to the mains supply is: to be provided in end-product
- The product is intended for use on the following power systems: TT, TN, IT
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (which includes all European national differences, including those specified in this test report).
- LEDs provided in the product are considered low power devices: Yes
- Outputs of all models except TBLC75-112, TBLC90-112, TBLC90-124 were additionally classified as class 2 output based on UL 1310 ed. 6th, 2014-12-12, clause 30 and 39.7.

Engineering Conditions of Acceptability

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

- The following Production-Line tests are conducted for this product: Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-SELV: 305.8 Vrms, 632 Vpk (TLBC25-112 worst case)
- The following secondary output circuits are SELV: outputs of all models
- The following secondary output circuits are supplied by a Limited Power Source: outputs of all models except TBLC75-112, TBLC90-112, TBLC90-124
- The power supply terminals and/or connectors are: Suitable for field wiring
- The following input terminals/connectors must be connected to the end-product supply neutral: AC Supply terminal designated G\$1 and marked "N" in all models.
- 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): TR1, TR2 in models TBLC06-xxx, TBLC15-xxx, TBLC25-xxx, TBLC50-xxx (130 °C, class B), TR1, TR2 in models TBLC75-xxx, TBLC90-xxx (155 °C, class F) ,
- The following end-product enclosures are required: Fire, Electrical
- The following components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing: transformers TR1 (108.4 °C/110 °C limit) and TR2 (125.5 °C/130 °C limit),
- Touch current for fault conditions with Fig. 10 of IEC 60990 for IT system waived due to no connection to earth based on 6.2.2 of IEC 60990.

Additional Information

All models have Double/Reinforced Insulation between Primary and Secondary Circuits and may be used in Class II or Class I end-product.

Markings and instructions

Clause Title	Marking or Instruction Details
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
Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
Class 2/3 terminals	"Class 2" or "Class 2 output"
Terminals for external primary power supply conductors	Capital letter "N" located adjacent to a terminal intended exclusively for connection of the primary power neutral conductor
Special Instructions to UL Representative N/A	

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	all transformers	n/a	PRI-SELV	300 0	4242	1

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

all models

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

N/A

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

N/A

Sample and Test Specifics for Follow-Up Tests at UL

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

Full report available for notified bodies only on request