



Certificate Number: 030717D1-D1002

Date: 2017-11-14

## UL CONDITIONS OF ACCEPTABILITY

**Company Name:** TRACO ELECTRONIC AG

**File-CCN:** E188913, QQHM2 & QQHM8

### **Product Description:**

**Model:** TPP100-112BAzzzzzzzz, TPP100-115BAzzzzzzzz, TPP100-118BAzzzzzzzz, TPP100-124BAzzzzzzzz, TPP100-128BAzzzzzzzz, TPP100-136BAzzzzzzzz, TPP100-148BAzzzzzzzz, TPP150-112BAzzzzzzzz, TPP150-115BAzzzzzzzz, TPP150-118BAzzzzzzzz, TPP150-124BAzzzzzzzz, TPP150-128BAzzzzzzzz, TPP150-136BAzzzzzzzz, TPP150-148BAzzzzzzzz, TPP100-112BDzzzzzzzz, TPP100-115BDzzzzzzzz, TPP100-118BDzzzzzzzz, TPP100-124BDzzzzzzzz, TPP100-128BDzzzzzzzz, TPP100-136BDzzzzzzzz, TPP100-148BDzzzzzzzz, TPP150-112BDzzzzzzzz, TPP150-115BDzzzzzzzz, TPP150-118BDzzzzzzzz, TPP150-124BDzzzzzzzz, TPP150-128BDzzzzzzzz, TPP150-136BDzzzzzzzz, TPP150-148BDzzzzzzzz, TPP100-112Bzzzzzzzz, TPP100-115Bzzzzzzzz, TPP100-118Bzzzzzzzz, TPP100-124Bzzzzzzzz, TPP100-128Bzzzzzzzz, TPP100-136Bzzzzzzzz, TPP100-148Bzzzzzzzz, TPP150-112Bzzzzzzzz, TPP150-115Bzzzzzzzz, TPP150-118Bzzzzzzzz, TPP150-124Bzzzzzzzz, TPP150-128Bzzzzzzzz, TPP150-136Bzzzzzzzz, TPP150-148Bzzzzzzzz, TPP100-112BUzzzzzzzz, TPP100-115BUzzzzzzzz, TPP100-118BUzzzzzzzz, TPP100-124BUzzzzzzzz, TPP100-128BUzzzzzzzz, TPP100-136BUzzzzzzzz, TPP100-148BUzzzzzzzz, TPP150-112BUzzzzzzzz, TPP150-115BUzzzzzzzz, TPP150-118BUzzzzzzzz, TPP150-124BUzzzzzzzz, TPP150-128BUzzzzzzzz, TPP150-136BUzzzzzzzz, TPP150-148BUzzzzzzzz.

### **Conditions of Acceptability –**

When installed in an end-product, consideration must be given to the following:

- This power supply has been judged on the basis of the required creepage and clearances in the First Edition of the Standard for Medical Electrical Equipment, ANSI/AAMI ES 60601-1, Sub clause 8.9.
- This power supply has been evaluated as a 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. An additional evaluation shall be made if the power supply is intended for use in other than Class I equipment.
- This power supply was tested on a 20A branch circuit. If used on a branch circuit greater than this, additional testing may be necessary.
- The power supply was evaluated as 2 MOPP between Primary to Secondary and Core to Secondary of transformer (T1). 2 MOPP was provided between Primary to Secondary and 1 MOPP from Primary to Earth see insulation diagram for details.
- Consideration shall be given to measuring the temperatures on power electronic components and transformer windings when the power supply is installed in/with the end-use equipment. Transformer T1 employs a Class B (130°C) insulation system.
- The secondary output circuit of the product is SELV.

- The ambient temperature for model TPP100-112BAzzzzzzzz, TPP100-115BAzzzzzzzz, TPP100-118BAzzzzzzzz, TPP100-124BAzzzzzzzz, TPP100-128BAzzzzzzzz, TPP100-136BAzzzzzzzz, TPP100-148BAzzzzzzzz, TPP100-112BDzzzzzzzz, TPP100-115BDzzzzzzzz, TPP100-118BDzzzzzzzz, TPP100-124BDzzzzzzzz, TPP100-128BDzzzzzzzz, TPP100-136BDzzzzzzzz, TPP100-148BDzzzzzzzz, TPP100-112Bzzzzzzzz, TPP100-115Bzzzzzzzz, TPP100-118Bzzzzzzzz, TPP100-124Bzzzzzzzz, TPP100-128Bzzzzzzzz, TPP100-136Bzzzzzzzz, TPP100-148Bzzzzzzzz, TPP100-112BUzzzzzzzz, TPP100-115BUzzzzzzzz, TPP100-118BUzzzzzzzz, TPP100-124BUzzzzzzzz, TPP100-128BUzzzzzzzz, TPP100-136BUzzzzzzzz, TPP100-148BUzzzzzzzz with full load 100W (with fan) is 50 degree C and with derated load 80W (without fan) is 40 degree C; for model X150US05 with full load 100W (with fan) is 50 degree C; model TPP150-112BAzzzzzzzz, TPP150-115BAzzzzzzzz, TPP150-118BAzzzzzzzz, TPP150-124BAzzzzzzzz, TPP150-128BAzzzzzzzz, TPP150-136BAzzzzzzzz, TPP150-148BAzzzzzzzz, TPP150-112BDzzzzzzzz, TPP150-115BDzzzzzzzz, TPP150-118BDzzzzzzzz, TPP150-124BDzzzzzzzz, TPP150-128BDzzzzzzzz, TPP150-136BDzzzzzzzz, TPP150-148BDzzzzzzzz, TPP150-112Bzzzzzzzz, TPP150-115Bzzzzzzzz, TPP150-118Bzzzzzzzz, TPP150-124Bzzzzzzzz, TPP150-128Bzzzzzzzz, TPP150-136Bzzzzzzzz, TPP150-148Bzzzzzzzz, TPP150-112BUzzzzzzzz, TPP150-115BUzzzzzzzz, TPP150-118BUzzzzzzzz, TPP150-124BUzzzzzzzz, TPP150-128BUzzzzzzzz, TPP150-136BUzzzzzzzz, TPP150-148BUzzzzzzzz with full load 100W (with fan) and with derated load 80W (without fan) is 50 degree C.
- The following tests shall be performed in the end-product evaluation: Voltage or Charge Limitation Test for L/N to PE, Temperature Test, Grounding Continuity Test, Dielectric Voltage Withstand Tests, and Leakage Current Test.
- The maximum reference voltage for Dielectric Voltage Test in End Product: 344 Vrms, 820 Vpk for T1 (Model TPP100-148zzzzzzzz and TPP100-148Bzzzzzzzz )
- This power supply shall be installed in compliance with the enclosure, mounting, spacing, casualty, markings and segregation requirements of the end use application.
- This power supply is operated up to 5000m above sea level as declared by manufacturer.
- End product Risk Management Process to include consideration of requirements specific to the Power Supply.
- End product Risk Management Process to consider the need for simultaneous fault condition testing.
- End product to determine the acceptability of risk in conjunction to insulation to resistance to heat, moisture, and dielectric strength.
- Temperature Test was conducted without Test Corner. End product to determine the acceptability of risk in conjunction to temperature testing without test corner as part of the power supply.
- End product to determine the acceptability of risk in conjunction to the Cleaning and Disinfection Methods as part of the power supply.
- End product to determine the acceptability of risk in conjunction to the Leakage of Liquids as part of the power supply.
- End product to determine the acceptability of risk in conjunction to the selection of components as it pertains to the intended use, essential performance, transport, storage conditions as part of the power supply.
- The end-product evaluation shall ensure that the requirements related to Accompanying Documents, Clause 7.9 are met.
- The risk management requirements of the standard were not addressed in this evaluation.
- The secondary circuit of this power supply has not been evaluated for patient connected applications.
- The accessibility of output connectors, insulating materials and temperatures shall be considered in the end use product.
- Completed fire, mechanical and electrical enclosure shall be provided in end product.

- Test of label related tests (Clause 7.1.2 and 7.1.3) shall be considered in end application.
- This power supply has not been evaluated for patient connected applications.
- The power supply shall be properly bonded to the main protective earthing termination with screws hole adjacent to CY2 of PWB in the end product.
- Temperature of metal enclosure is 71.4 degree C shall be evaluated in end product.
- Overcurrent releases of adequate breaking capacity must be employed in the end product.
- The additional temperature measurement conditions according to sub-clause 11.1 were conducted as per client's request for reference only as below: - Model TPP100-112BAzzzzzzzz, TPP100-115BAzzzzzzzz, TPP100-118BAzzzzzzzz, TPP100-124BAzzzzzzzz, TPP100-128BAzzzzzzzz, TPP100-136BAzzzzzzzz, TPP100-148BAzzzzzzzz, TPP100-112BUzzzzzzzz, TPP100-115BUzzzzzzzz, TPP100-118BUzzzzzzzz, TPP100-124BUzzzzzzzz, TPP100-128BUzzzzzzzz, TPP100-136BUzzzzzzzz, TPP100-148BUzzzzzzzz with full load 100W (without fan), maximum operating ambient temperature is 50 degree C for 100-230VAC; 60 degree C for 230-264VAC. - Model TPP100-112Bzzzzzzzz, TPP100-115Bzzzzzzzz, TPP100-118Bzzzzzzzz, TPP100-124Bzzzzzzzz, TPP100-128Bzzzzzzzz, TPP100-136Bzzzzzzzz, TPP100-148Bzzzzzzzz, TPP100-112BDzzzzzzzz, TPP100-115BDzzzzzzzz, TPP100-118BDzzzzzzzz, TPP100-124BDzzzzzzzz, TPP100-128BDzzzzzzzz, TPP100-136BDzzzzzzzz, TPP100-148BDzzzzzzzz with full load 100W (without fan), maximum operating ambient temperature is 55 degree C for 100-230VAC; 60 degree C for 230-264VAC. - Model TPP100-112Bzzzzzzzz, TPP100-115Bzzzzzzzz, TPP100-118Bzzzzzzzz, TPP100-124Bzzzzzzzz, TPP100-128Bzzzzzzzz, TPP100-136Bzzzzzzzz, TPP100-148Bzzzzzzzz, TPP100-112BDzzzzzzzz, TPP100-115BDzzzzzzzz, TPP100-118BDzzzzzzzz, TPP100-124BDzzzzzzzz, TPP100-128BDzzzzzzzz, TPP100-136BDzzzzzzzz, TPP100-148BDzzzzzzzz with de-rated load 80W (without fan), maximum operating ambient temperature is 50 degree C for 90-100VAC; 60 degree C for 100-115VAC; 65 degree C for 115-264VAC. - - Model TPP150-112BAzzzzzzzz, TPP150-115BAzzzzzzzz, TPP150-118BAzzzzzzzz, TPP150-124BAzzzzzzzz, TPP150-128BAzzzzzzzz, TPP150-136BAzzzzzzzz, TPP150-148BAzzzzzzzz, TPP150-112BUzzzzzzzz, TPP150-115BUzzzzzzzz, TPP150-118BUzzzzzzzz, TPP150-124BUzzzzzzzz, TPP150-128BUzzzzzzzz, TPP150-136BUzzzzzzzz, TPP150-148BUzzzzzzzz with full load 150W (with fan), maximum operating ambient temperature is 75 degree C for 100-230VAC; 80 degree C for 230-264VAC. - Model TPP150-112BDzzzzzzzz, TPP150-115BDzzzzzzzz, TPP150-118BDzzzzzzzz, TPP150-124BDzzzzzzzz, TPP150-128BDzzzzzzzz, TPP150-136BDzzzzzzzz, TPP150-148BDzzzzzzzz, TPP150-112Bzzzzzzzz, TPP150-115Bzzzzzzzz, TPP150-118Bzzzzzzzz, TPP150-124Bzzzzzzzz, TPP150-128Bzzzzzzzz, TPP150-136Bzzzzzzzz, TPP150-148Bzzzzzzzz with full load 150W (with fan), maximum operating ambient temperature is 65 degree C for 90-115VAC; 70 degree C for 115-264VAC. - Model TPP150-112BDzzzzzzzz, TPP150-115BDzzzzzzzz, TPP150-118BDzzzzzzzz, TPP150-124BDzzzzzzzz, TPP150-128BDzzzzzzzz, TPP150-136BDzzzzzzzz, TPP150-148BDzzzzzzzz, TPP150-112Bzzzzzzzz, TPP150-115Bzzzzzzzz, TPP150-118Bzzzzzzzz, TPP150-124Bzzzzzzzz, TPP150-128Bzzzzzzzz, TPP150-136Bzzzzzzzz, TPP150-148Bzzzzzzzz with de-rated load 120W (without fan), maximum operating ambient temperature is 50 degree C for 115VAC; and with de-rated load 130W (without fan) is 50 degree C for 230VAC.
- The Power Supply tests should be considered as part of the end product evaluation and be tested accordingly to achieve certification of the end application or ME equipment defined Type B and BF Applied Part.
- Either one of four screws holes of PWB can be considered as PE connection and acceptability and Grounding Continuity Test and Earth Leakage Current Test shall be reevaluated in end product.

## Ratings:

Input:

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100-240 V ac, 50/60 Hz, 2.0-0.9 A for models TPP150-112BAzzzzzzzz, TPP150-115BAzzzzzzzz, TPP150-118BAzzzzzzzz, TPP150-124BAzzzzzzzz, TPP150-128BAzzzzzzzz, TPP150-136BAzzzzzzzz, TPP150-148BAzzzzzzzz, TPP150-112BDzzzzzzzz, TPP150-115BDzzzzzzzz, TPP150-118BDzzzzzzzz, TPP150-124BDzzzzzzzz, TPP150-128BDzzzzzzzz, TPP150-136BDzzzzzzzz, TPP150-148BDzzzzzzzz, TPP150-112Bzzzzzzzz, TPP150-115Bzzzzzzzz, TPP150-118Bzzzzzzzz, TPP150-124Bzzzzzzzz, TPP150-128Bzzzzzzzz, TPP150-136Bzzzzzzzz, TPP150-148Bzzzzzzzz, TPP150-112BUzzzzzzzz, TPP150-115BUzzzzzzzz, TPP150-118BUzzzzzzzz, TPP150-124BUzzzzzzzz, TPP150-128BUzzzzzzzz, TPP150-136BUzzzzzzzz, TPP150-148BUzzzzzzzz series; 100-240 V ac, 50/60 Hz, 1.6-0.6 A for models TPP100-112BAzzzzzzzz, TPP100-115BAzzzzzzzz, TPP100-118BAzzzzzzzz, TPP100-124BAzzzzzzzz, TPP100-128BAzzzzzzzz, TPP100-136BAzzzzzzzz, TPP100-148BAzzzzzzzz, TPP100-112BDzzzzzzzz, TPP100-115BDzzzzzzzz, TPP100-118BDzzzzzzzz, TPP100-124BDzzzzzzzz, TPP100-128BDzzzzzzzz, TPP100-136BDzzzzzzzz, TPP100-148BDzzzzzzzz, TPP100-112Bzzzzzzzz, TPP100-115Bzzzzzzzz, TPP100-118Bzzzzzzzz, TPP100-124Bzzzzzzzz, TPP100-128Bzzzzzzzz, TPP100-136Bzzzzzzzz, TPP100-148Bzzzzzzzz, TPP100-112BUzzzzzzzz, TPP100-115BUzzzzzzzz, TPP100-118BUzzzzzzzz, TPP100-124BUzzzzzzzz, TPP100-128BUzzzzzzzz, TPP100-136BUzzzzzzzz, TPP100-148BUzzzzzzzz series

#### Output:

For model TPP100-112BAzzzzzzzz, TPP100-115BAzzzzzzzz, TPP100-118BAzzzzzzzz, TPP100-124BAzzzzzzzz, TPP100-128BAzzzzzzzz, TPP100-136BAzzzzzzzz, TPP100-148BAzzzzzzzz, TPP100-112BDzzzzzzzz, TPP100-115BDzzzzzzzz, TPP100-118BDzzzzzzzz, TPP100-124BDzzzzzzzz, TPP100-128BDzzzzzzzz, TPP100-136BDzzzzzzzz, TPP100-148BDzzzzzzzz, TPP100-112Bzzzzzzzz, TPP100-115Bzzzzzzzz, TPP100-118Bzzzzzzzz, TPP100-124Bzzzzzzzz, TPP100-128Bzzzzzzzz, TPP100-136Bzzzzzzzz, TPP100-148Bzzzzzzzz, TPP100-112BUzzzzzzzz, TPP100-115BUzzzzzzzz, TPP100-118BUzzzzzzzz, TPP100-124BUzzzzzzzz, TPP100-128BUzzzzzzzz, TPP100-136BUzzzzzzzz, TPP100-148BUzzzzzzzz is with full load 100W (with fan) and with derated load 80W (without fan); TPP150-112BAzzzzzzzz, TPP150-115BAzzzzzzzz, TPP150-118BAzzzzzzzz, TPP150-124BAzzzzzzzz, TPP150-128BAzzzzzzzz, TPP150-136BAzzzzzzzz, TPP150-148BAzzzzzzzz, TPP150-112BDzzzzzzzz, TPP150-115BDzzzzzzzz, TPP150-118BDzzzzzzzz, TPP150-124BDzzzzzzzz, TPP150-128BDzzzzzzzz, TPP150-136BDzzzzzzzz, TPP150-148BDzzzzzzzz, TPP150-112Bzzzzzzzz, TPP150-115Bzzzzzzzz, TPP150-118Bzzzzzzzz, TPP150-124Bzzzzzzzz, TPP150-128Bzzzzzzzz, TPP150-136Bzzzzzzzz, TPP150-148Bzzzzzzzz, TPP150-112BUzzzzzzzz, TPP150-115BUzzzzzzzz, TPP150-118BUzzzzzzzz, TPP150-124BUzzzzzzzz, TPP150-128BUzzzzzzzz, TPP150-136BUzzzzzzzz, TPP150-148BUzzzzzzzz is with full load 150W (with fan) and with derated load 80W (without fan).

Model Name	Output Voltage	Output Current	Output Power
TPP100-112BAzzzzzzzz	12 VDC	8.34A	100W max.
TPP100-115BAzzzzzzzz	15 VDC	6.67A	100W max.
TPP100-118BAzzzzzzzz	18 VDC	5.56A	100W max.
TPP100-124BAzzzzzzzz	24 VDC	4.17A	100W max.
TPP100-128BAzzzzzzzz	28 VDC	3.58A	100W max.
TPP100-136BAzzzzzzzz	36 VDC	2.78A	100W max.
TPP100-148BAzzzzzzzz	48 VDC	2.09A	100W max.
TPP100-112BUzzzzzzzz	12 VDC	8.34A	100W max.
TPP100-115BUzzzzzzzz	15 VDC	6.67A	100W max.
TPP100-118BUzzzzzzzz	18 VDC	5.56A	100W max.
TPP100-124BUzzzzzzzz	24 VDC	4.17A	100W max.
TPP100-128BUzzzzzzzz	28 VDC	3.58A	100W max.
TPP100-136BUzzzzzzzz	36 VDC	2.78A	100W max.

TPP100-148BUzzzzzzzz	48 VDC	2.09A	100W max.
TPP100-112BDzzzzzzzz, TPP100-112Bzzzzzzzz	12 12 VDC	8.34A	100W max.
TPP100-115BDzzzzzzzz, TPP100-115Bzzzzzzzz	15 VDC	6.67A	100W max.
TPP100-118BDzzzzzzzz, TPP100-118Bzzzzzzzz	18 VDC	5.56A	100W max.
TPP100-124BDzzzzzzzz, TPP100-124Bzzzzzzzz	24 VDC	4.17A	100W max.
TPP100-128BDzzzzzzzz, TPP100-128Bzzzzzzzz	28 VDC	3.58A	100W max.
TPP100-136BDzzzzzzzz, TPP100-136Bzzzzzzzz	36 VDC	2.78A	100W max.
TPP100-148BDzzzzzzzz, TPP100-148Bzzzzzzzz	48 VDC	2.09A	100W max.
TPP150-112BAzzzzzzzz	12 VDC	12.50A	150W max.
TPP150-115BAzzzzzzzz	15 VDC	10.00A	150W max.
TPP150-118BAzzzzzzzz	18 VDC	8.34A	150W max.
TPP150-124BAzzzzzzzz	24 VDC	6.25A	150W max.
TPP150-128BAzzzzzzzz	28 VDC	5.36A	150W max.
TPP150-136BAzzzzzzzz	36 VDC	4.17A	150W max.
TPP150-148BAzzzzzzzz	48 VDC	3.13A	150W max.
TPP150-112BUzzzzzzzz	12 VDC	12.50A	150W max.
TPP150-115BUzzzzzzzz	15 VDC	10.00A	150W max.
TPP150-118BUzzzzzzzz	18 VDC	8.34A	150W max.
TPP150-124BUzzzzzzzz	24 VDC	6.25A	150W max.
TPP150-128BUzzzzzzzz	28 VDC	5.36A	150W max.
TPP150-136BUzzzzzzzz	36 VDC	4.17A	150W max.
TPP150-148BUzzzzzzzz	48 VDC	3.13A	150W max.
TPP150-112BDzzzzzzzz TPP150-112Bzzzzzzzz	12 VDC	12.50A	150W max.
TPP150-115BDzzzzzzzz TPP150-115Bzzzzzzzz	15 VDC	10.00A	150W max.
TPP150-118BDzzzzzzzz TPP150-118Bzzzzzzzz	18 VDC	8.34A	150W max.
TPP150-124BDzzzzzzzz TPP150-124Bzzzzzzzz	24 VDC	6.25A	150W max.
TPP150-128BDzzzzzzzz TPP150-128Bzzzzzzzz	28 VDC	5.36A	150W max.
TPP150-136BDzzzzzzzz TPP150-136Bzzzzzzzz	36 VDC	4.17A	150W max.
TPP150-148BDzzzzzzzz TPP150-148Bzzzzzzzz	48 VDC	3.13A	150W max.

**Nomenclature:** N/A

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