



Certificate Number: A78-UL

Date: 2023-06-13

UL CONDITIONS OF ACCEPTABILITY

Company Name: TRACO ELECTRONIC AG

File-CCN: E188913 - QQQQ2, QQQQ8 & QQJQ2, QQJQ8

Product Description: DC/DC Converter

Models: TRI 15 series & TRI 20 series

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 end-product Electric Strength Test is to be based upon a maximum working voltage of: HAZ/V-SELV: 89.6 Vrms / 148 Vpk
- The following secondary output circuits are SELV: Output Terminal was evaluated as ES1.
- The following secondary output circuits are at non-hazardous energy levels: Output Terminal
- The power supply terminals and/or connectors are: Suitable for factory wiring only.
- The investigated Pollution Degree is: 2
- 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): Transformer (T1) (Class B)
- The following end-product enclosures are required: Electrical / Fire
- The outputs of this DC/DC Converter was evaluated for ES1 (SELV circuit); the ES classification of circuits and parts that are accessible to ordinary persons should be reconsidered in the end-product.
- The Electric Strength Test voltage of 6,000 Vdc (4242 Vac) between input and output was conducted in accordance with manufacturer's specification.
- Tests for abnormal operating and single fault conditions were carried out with an external fuse rated (250V/1.5A maximum for 48 (36-75) input models (for Models TRI 20 series, x1 = 48), 250V/2.5A maximum for 24 (18-36) input models (for Models TRI 20 series, x1 = 24), 250V/5A maximum for 12 (9-18) input models (for Models TRI 20 series, x1 = 12), 250V/1.0A maximum for 48 (36-75) Input models (for Models TRI 15 series; x1 = 48); 250V/2.0A maximum for 24 (18-36) input models (for Models TRI 15 series, x1 = 24), and 250V/4.0A maximum for 12 (9-18) Input models (for Models TRI 15 series, x1 = 12). Tests should be repeated in the end-product if a differently rated overcurrent protective device is used.

- The DC/DC Converter has three different input voltage ranges 9-18 Vdc, 18-36 Vdc and 36-75 Vdc. Tests were conducted with the assumption the insulation is reinforced for working voltage 1000 Vrms – HAZ/V. Reinforced Insulation between input and output is assured by potting of the device. Thermal cycling procedure was conducted. Only distance through insulation exists. TRI 15 series & TRI 20 series is considered providing Reinforced Insulation between input to output up to a maximum potential of 1000 Vrms / 1410 Vpk.
- The DC/DC Converter was evaluated for Reinforced Insulation and intended to be supplied by an isolated or non-isolated DC source, the transient voltage through the DC source is considered up to 2500 Vpk maximum.

Nomenclature: N/A