

# Certificate of Compliance

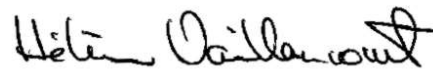
**Certificate:** 1594801 **Master Contract:** 226037  
**Project:** 1780335 **Date Issued:** 2006/07/26  
**Issued to:** TRACO Electronic AG  
Jenatschstrasse 1  
Zurich, Zurich 8027  
Switzerland  
Attention: N/A

*The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US'*



**Issued by:** Eric Fortier, Eng.

**Authorized by:** Helene Vaillancourt,  
Operations Manager



## **PRODUCTS**

**CLASS 5311 07** - POWER SUPPLIES - Component Type - (CSA 60950-1-03)  
**CLASS 5311 87** - POWER SUPPLIES - Component Type - Certified to US Stds. - (CSA 60950-1-03/UL 60950-1, First Edition, NRTL Program)

## **PART A**

- DC to DC Converters\*, PCB Mount, Models as follow :
- TEN 6-24xx, Rated Input: 9 to 36Vdc, 600mA, Output: 3.3 to +/-15Vdc, +/-1200mA.
- TEN 6-48xx, Rated Input: 18 to 75Vdc, 300mA, Output: 3.3 to +/-15Vdc, +/- 1200mA.

The 'C' and 'US' indicators adjacent to the CSA Mark signify that the product has been evaluated to the applicable CSA and ANSI/UL Standards, for use in Canada and the U.S., respectively. This 'US' indicator includes products eligible to bear the 'NRTL' indicator. NRTL, i.e. National Recognized Testing Laboratory, is a designation granted by the U.S. Occupational Safety and Health Administration (OSHA) to laboratories which have been recognized to perform certification to U.S. Standards.



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-TEL 2-05xx, Rated Input: 4.5 to 9Vdc, 930mA, Output: 3.3 to +/-15Vdc, +/- 500mA.

-TEL 2-12xx, Rated Input: 9 to 18Vdc, 420mA, Output: 3.3 to +/-15Vdc, +/-500mA.

-TEL 2-24xx, Rated Input: 18 to 36Vdc, 205mA, Output: 3.3 to +/-15Vdc, +/-500mA.

-TEL 2-48xx, Rated Input: 36 to 72Vdc, 100mA, Output: 3.3 to +/-15Vdc, +/-500mA.

-TEL 5-12xx, Rated Input: 9 to 18Vdc, 590mA, Output: 3.3 to +/-15Vdc, +/-1200mA.

-TEL 5-24xx, Rated Input: 18 to 36Vdc, 290mA, Output: 3.3 to +/-15Vdc, +/-1200mA.

#### **PART B**

• DC to DC Converters\*, PCB Mount, Models:

-TEN 20-12xx, Rated Input: 9 to 18Vdc, 1985mA, Output: 3.3 to +/-15Vdc, +/-4000mA.

-TEN 20-24xx, Rated Input: 18 to 36Vdc, 980mA, Output: 3.3 to +/-15Vdc, +/-4000mA.

-TEN 20-48xx, Rated Input: 36 to 75Vdc, 490mA, Output: 3.3 to +/-15Vdc, +/-4000mA.

-TEN 25-12xx, Rated Input: 9 to 18Vdc, 2840mA, Output: 3.3 to +/-15Vdc, +/-5500mA.

-TEN 25-24xx, Rated Input: 18 to 36Vdc, 1400mA, Output: 3.3 to +/-15Vdc, +/-5500mA.

-TEN 25-48xx, Rated Input: 36 to 75Vdc, 700mA, Output: 3.3 to +/-15Vdc, +/-5500mA.

-THD 10-24xx, Rated Input: 18 to 36Vdc, 480mA, Output: 2.5 to 12Vdc, 3000mA.

-THD 10-48xx, Rated Input: 36 to 75Vdc, 240mA, Output: 2.5 to 12Vdc, 3000mA.

-TEL 15-12xx, Rated Input: 9 to 18Vdc, 1580mA, Output: 3.3 to +/-15Vdc; 3000mA.

-TEL 15-24xx, Rated Input: 18 to 36Vdc, 780mA, Output: 3.3 to +/-15Vdc; 3000mA.

-TEL 15-48xx, Rated Input: 36 to 75Vdc; 390mA, Output: 3.3 to +/-15Vdc; 3000mA.

#### **PART C**

• DC to DC Converters\*, PCB Mount, Models:

-TEL 3-05xx, Rated Input: 4,5 – 9,0Vdc / 820mA, Output: See 'xx' values below.  
-18Vdc / 320mA, Output: See 'xx' values below.

-TEL 3-12xx, Rated Input: 9



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- TEL 3-20xx, Rated Input: 10 – 30Vdc / 190mA, Output: See ‘xx’ values below.
- TEL 3-24xx, Rated Input: 18 – 36Vdc / 155mA, Output: See ‘xx’ values below.
- TEL 3-48xx, Rated Input: 36 – 75Vdc / 80mA, Output: See ‘xx’ values below.
- TEL 30-24xx, Rated Input: 18 – 36Vdc / 744-1420mA, Output: See ‘xx’ values below.
- TEL 30-48xx, Rated Input: 36 – 75Vdc / 372 – 710mA, Output: See ‘xx’ values below.
- TEN 15-24xxWI, Rated Input: 9 – 36Vdc / 528 – 740mA, Output: See ‘xx’ values below.
- TEN 15-48xxWI , Rated Input: 18 – 75Vdc / 264 – 370mA, Output: See ‘xx’ values below.
- TEN 3-05xx, Rated Input: 4,5 – 9,0Vdc / 800mA, Output: See ‘xx’ values below.
- TEN 3-12xx, Rated Input: 9 – 18Vdc / 300mA, Output: See ‘xx’ values below.
- TEN 3-24xx, Rated Input: 18 – 36Vdc / 150mA, Output: See ‘xx’ values below.
- TEN 3-48xx, Rated Input: 36 – 72Vdc / 75mA, Output: See ‘xx’ values below.
- TEN 5-05xx, Rated Input: 4,5 – 7Vdc / 1460mA, Output: See ‘xx’ values below.
- TEN 5-12xx, Rated Input: 9 – 18Vdc / 590mA, Output: See ‘xx’ values below.
- TEN 5-24xx, Rated Input: 18 - 36Vdc / 290mA, Output: See ‘xx’ values below.
- TEN 5-48xx, Rated Input: 36 – 75Vdc / 145mA, Output: See ‘xx’ values below.
- TEN 5-24xxWI, Rated Input: 9 – 36Vdc / 528-787mA, Output: See ‘xx’ values below.
- TEN 5-48xxWI, Rated Input: 18 -75Vdc / 264-393mA, Output: See ‘xx’ values below.

| Series | xx value | Output Rating   |
|--------|----------|-----------------|
| TEL 3  | 11       | 5Vdc / 600mA    |
|        | 12       | 12Vdc / 250mA   |
|        | 13       | 15Vdc / 200mA   |
|        | 22       | +12Vdc / +125mA |
|        | 23       | +15Vdc / +100mA |



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|          |    |                 |
|----------|----|-----------------|
| TEL 30   | 09 | 2,5Vdc / 6000mA |
|          | 10 | 3,3Vdc / 6000mA |
|          | 11 | 5,1Vdc / 5000mA |
|          | 12 | 12Vdc / 2500mA  |
|          | 13 | 15Vdc / 2000mA  |
| TEN 15WI | 10 | 3,3Vdc / 3000mA |
|          | 11 | 5,1Vdc / 2950mA |
|          | 12 | 12Vdc / 1250mA  |
|          | 22 | +12Vdc / +625mA |
|          | 23 | +15Vdc / +500mA |
| TEN 3    | 10 | 3,3Vdc / 600mA  |
|          | 11 | 5Vdc / 500mA    |
|          | 12 | 12Vdc / 250mA   |
|          | 13 | 15Vdc / 200mA   |
|          | 21 | +5Vdc / +250mA  |
|          | 22 | +12Vdc / +125mA |
|          | 23 | +15Vdc / +100mA |
| TEN 5    | 10 | 3,3Vdc / 1200mA |
|          | 11 | 5Vdc / 1000mA   |
|          | 12 | 12Vdc / 500mA   |
|          | 13 | 15Vdc / 400mA   |
|          | 21 | +5Vdc / +500mA  |



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|         |    |                 |
|---------|----|-----------------|
|         | 22 | +12Vdc / +250mA |
|         | 23 | +15Vdc / +200mA |
| TEN 5WI | 10 | 3,3Vdc / 1200mA |
|         | 11 | 5Vdc / 1000mA   |
|         | 12 | 12Vdc / 500mA   |
|         | 13 | 15Vdc / 400mA   |
|         | 21 | +5Vdc / +500mA  |
|         | 22 | +12Vdc / +250mA |
|         | 23 | +15Vdc / +200mA |

**\*Notes:**

- Units were evaluated as components where the suitability of the combination with the host equipment shall be re-evaluated.
- TEL 2, TEL 3, TEN 3 and TEL 5 = moulded case
- TEN 5, 6, 20, 25, TEL 15, TEL 30, THD 10, TEN 5WI and TEN 15WI = metal enclosure
- “xx” stands for the output voltage: 10=3,3Vdc / 11=5,0Vdc (11=5,1Vdc for TEN 20, TEN 25, THD 10, TEL 15) / 12=12Vdc / 13=15Vdc / 21=+/-5Vdc / 22=+/-12Vdc and 23=+/-15Vdc.
- The equipment has been evaluated for use in a Pollution Degree 1 or 2 and overvoltage category II environment.
- A suitable Electrical and Fire enclosure shall be provided.
- The product is specified for maximum ambient of:
  1. TEL 15, TEN 20, TEN 25, TEN 6, TEL 5 and TEL 30 : < 71°C
  2. TEL 2 and TEL 3: < 75°C ;
  3. THD 10: < 60°C
  4. TEN 3, TEN 5, TEN 5WI and TEN 15WI < 85°C
  5. Dielectric insulation: 1500Vdc.
- Functional insulation input-output except for models : TEL 3, TEL 30, TEN 15WI, TEN 3, TEN 5, TEN 5WI Series which have basic insulation.

**BI-NAT CSA 60950-1-03/UL 60950-1, 1st Edition DESIGN MANUAL, Version 1.0 IS AN INTEGRAL PART OF THIS REPORT.**

**APPLICABLE REQUIREMENTS**

CAN/CSA-C22.2 No. 60950-1-03 - Information Technology Equipment – Safety – Part 1: General requirements.



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UL 60950-1 (1st Edition) - Information Technology Equipment – Safety – Part 1: General requirements.



## *Supplement to Certificate of Compliance*

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*The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.*

### **Product Certification History**

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| <b>Project</b> | <b>Date</b> | <b>Description</b>  |
|----------------|-------------|---|
| 1780335        | 2006/07/26  | Report upgrade for the addition of some DC/DC converters.                 |
| 1626979        | 2005/02/01  | CSA C/US Report update for correction of component ratings.               |
| 1594801        | 2004/11/25  | Original certification project of DC/DC converter modules Series: TEN XX. |