



Certificate Number: 092619X3-A6002

Date: 2020-01-02

## UL CONDITIONS OF ACCEPTABILITY

**Company Name:** TRACO ELECTRONIC AG

**File-CCN:** E188913 - QQJQ2 & QQJQ8

**Product Description:** DC to DC Converter

**Models:** DC to DC Converter: Models TEN 40-1210Ezzzzzz, TEN 40-1211Ezzzzzz, TEN 40-1212Ezzzzzz, TEN 40-1213Ezzzzzz, TEN 40-1215Ezzzzzz, TEN 40-1222Ezzzzzz, TEN 40-1223Ezzzzzz, TEN 40-1225Ezzzzzz, TEN 40-2410Ezzzzzz, TEN 40-2411Ezzzzzz, TEN 40-2412Ezzzzzz, TEN 40-2413Ezzzzzz, TEN 40-2415Ezzzzzz, TEN 40-2422Ezzzzzz, TEN 40-2423Ezzzzzz, TEN 40-2425Ezzzzzz, TEN 40-4810Ezzzzzz, TEN 40-4811Ezzzzzz, TEN 40-4812Ezzzzzz, TEN 40-4813Ezzzzzz, TEN 40-4815Ezzzzzz, TEN 40-4822Ezzzzzz, TEN 40-4823Ezzzzzz, TEN 40-4825Ezzzzzz, TEN 40-2410WIEzzzzzz, TEN 40-2411WIEzzzzzz, TEN 40-2412WIEzzzzzz, TEN 40-2413WIEzzzzzz, TEN 40-2415WIEzzzzzz, TEN 40-2422WIEzzzzzz, TEN 40-2423WIEzzzzzz, TEN 40-2425WIEzzzzzz, TEN 40-4810WIEzzzzzz, TEN 40-4811WIEzzzzzz, TEN 40-4812WIEzzzzzz, TEN 40-4813WIEzzzzzz, TEN 40-4815WIEzzzzzz, TEN 40-4822WIEzzzzzz, TEN 40-4823WIEzzzzzz, TEN 40-4825WIEzzzzzz, where "z" can be any alphanumeric or dash or blank.

### 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 output circuits are at ES1 energy levels : Outputs
- The following output circuits are at PS3 energy levels : Outputs
- The terminals of the DC to DC Converter are only suitable for factory wiring only.
- The DC to DC Converter was evaluated for Functional Insulation and is intended to be installed in an isolated (non-mains) ES3 circuit which is separated from a.c. mains circuit by Double or Reinforced Insulation.
- The need for suitable electrical enclosure (for ES safeguard), fire enclosure (for PS safeguard), and safeguard for thermal burn injury (for TS safeguard) is to be evaluated and provided (if necessary) in the end-product.
- The current rating of protective device is to be determined in the end-product. Simulated Abnormal Operating Conditions Test and Simulated Single Fault Conditions Test were carried out with an external slow blow fuse (12 A). Repeating Simulated Abnormal Operating Conditions Test and Simulated Single Fault Conditions Test in the end-product shall be considered if using different rated protective device. UL Recognized Component Fuse used and rated to at least the maximum allowable DC input voltage.
- Class of equipment will be evaluated in end-product.

**Ratings:**

No.	Model Designation	Input Voltage (Vdc)	Output Voltage (Vdc)	Output Current (A)	Output Power (W)	Input Current (A)	Layout
1	TEN 40-1210Ezzzzzz	9 ~ 18	3.3	12.2	40.26	5.03	A
2	TEN 40-1211Ezzzzzz	9 ~ 18	5	8	40	4.94	A
3	TEN 40-1212Ezzzzzz	9 ~ 18	12	3.333	39.996	4.88	A
4	TEN 40-1213Ezzzzzz	9 ~ 18	15	2.666	39.99	4.88	A
5	TEN 40-1215Ezzzzzz	9 ~ 18	24	1.666	39.984	4.94	B
6	TEN 40-1222Ezzzzzz	9 ~ 18	±12	±1.666	39.984	4.94	B
7	TEN 40-1223Ezzzzzz	9 ~ 18	±15	±1.333	39.99	4.94	B
8	TEN 40-1225Ezzzzzz	9 ~ 18	±24	±0.833	39.984	4.88	B
9	TEN 40-2410Ezzzzzz	18 ~ 36	3.3	12.2	40.26	2.50	A
10	TEN 40-2411Ezzzzzz	18 ~ 36	5	8	40	2.42	A
11	TEN 40-2412Ezzzzzz	18 ~ 36	12	3.333	39.996	2.42	A
12	TEN 40-2413Ezzzzzz	18 ~ 36	15	2.666	39.99	2.39	A
13	TEN 40-2415Ezzzzzz	18 ~ 36	24	1.666	39.984	2.44	B
14	TEN 40-2422Ezzzzzz	18 ~ 36	±12	±1.666	39.984	2.44	B
15	TEN 40-2423Ezzzzzz	18 ~ 36	±15	±1.333	39.99	2.44	B
16	TEN 40-2425Ezzzzzz	18 ~ 36	±24	±0.833	39.984	2.44	B
17	TEN 40-4810Ezzzzzz	36 ~ 75	3.3	12.2	40.26	1.24	A
18	TEN 40-4811Ezzzzzz	36 ~ 75	5	8	40	1.22	A
19	TEN 40-4812Ezzzzzz	36 ~ 75	12	3.333	39.996	1.21	A
20	TEN 40-4813Ezzzzzz	36 ~ 75	15	2.666	39.99	1.21	A
21	TEN 40-4815Ezzzzzz	36 ~ 75	24	1.666	39.984	1.21	B
22	TEN 40-4822Ezzzzzz	36 ~ 75	±12	±1.666	39.984	1.22	B
23	TEN 40-4823Ezzzzzz	36 ~ 75	±15	±1.333	39.99	1.22	B
24	TEN 40-4825Ezzzzzz	36 ~ 75	±24	±0.833	39.984	1.21	B
25	TEN 40-2410WIEzzzzzz	9 ~ 36	3.3	12.2	40.26	5.00	A
26	TEN 40-2411WIEzzzzzz	9 ~ 36	5	8	40	4.83	A
27	TEN 40-2412WIEzzzzzz	9 ~ 36	12	3.333	39.996	4.83	A
28	TEN 40-2413WIEzzzzzz	9 ~ 36	15	2.666	39.99	4.88	A
29	TEN 40-2415WIEzzzzzz	9 ~ 36	24	1.666	39.984	4.88	B
30	TEN 40-2422WIEzzzzzz	9 ~ 36	±12	±1.666	39.984	4.88	B
31	TEN 40-2423WIEzzzzzz	9 ~ 36	±15	±1.333	39.99	4.88	B
32	TEN 40-2425WIEzzzzzz	9 ~ 36	±24	±0.833	39.984	4.88	B

The input current for test reference only

**Ratings (continued):**

No.	Model Designation	Input Voltage (vdc)	Output Voltage (Vdc)	Output Current (A)	Output Power (W)	Input Current (A)	Layout
							A
33	TEN 40-4810WIEzzzzzz	18 ~ 75	3.3	12.2	40.26	2.49	A
34	TEN 40-4811WIEzzzzzz	18 ~ 75	5	8	40	2.44	A
35	TEN 40-4812WIEzzzzzz	18 ~ 75	12	3.333	39.996	2.42	A
36	TEN 40-4813WIEzzzzzz	18 ~ 75	15	2.666	39.99	2.41	A
37	TEN 40-4815WIEzzzzzz	18 ~ 75	24	1.666	39.984	2.41	B
38	TEN 40-4822WIEzzzzzz	18 ~ 75	±12	±1.666	39.984	2.44	B
39	TEN 40-4823WIEzzzzzz	18 ~ 75	±15	±1.333	39.99	2.44	B
40	TEN 40-4825WIEzzzzzz	18 ~ 75	±24	±0.833	39.984	2.41	B

The input current for test reference only

**Nomenclature:** N/A