



Certificate of Compliance

Certificate: 2661824

Master Contract: 226037

Project: 2724056

Date Issued: June 06, 2014

Issued to: **TRACO Electronics AG**
Sihlbruggstrasse 111
Baar, Zurich 6340
SWITZERLAND
Attention: Mr. Michael Bruderer

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only



Issued by: 
Hades Lee

PRODUCTS

CLASS 5311 11 – POWER SUPPLIES - Component Type (For Canadian Certification)
CLASS 5311 91 – POWER SUPPLIES - Component Type (For US Certification)

Component type DC/DC Converter, Models TEN 40WIN Series, TEN 40WIN-HS Series, TEN 50 Series, TEN 50-HS Series, TMR 1 Series, TMR 1SM Series and TMR 3WIE Series. Ratings as follow:

For TMR 1SM Series					
Model Number	Transformer Number	Input Voltage Range	Rated Input Current (mA)	Output Voltage (V dc)	Output Current (mA)
TMR 1-0511SM	OB-MSCW01-05S05-T1	Nominal: 5Vdc Range: 4.5-9Vdc Input Fuse: 500mA	256	5.0	200
TMR 1-0512SM	OB-MSCW01-05S12-T1		252	12.0	83
TMR 1-0513SM	OB-MSCW01-05S15-T1		248	15.0	67
TMR 1-0522SM	OB-MSCW01-05D12-T1		255	±12.0	±42



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TMR 1-0523SM	OB-MSCW01-05D15-T1		248	±15.0	±33
TMR 1-1211SM	OB-MSCW01-12S05-T1	Nominal: 12Vdc Range: 9-18Vdc Input Fuse: 250mA	105	5.0	200
TMR 1-1212SM	OB-MSCW01-12S12-T1		105	12.0	83
TMR 1-1213SM	OB-MSCW01-12S15-T1		102	15.0	67
TMR 1-1222SM	OB-MSCW01-12D12-T1		104	±12.0	±42
TMR 1-1223SM	OB-MSCW01-12D15-T1		103	±15.0	±33
TMR 1-2411SM	OB-MSCW01-24S05-T1		Nominal: 24Vdc Range: 18-36Vdc Input Fuse: 120mA	53	5.0
TMR 1-2412SM	OB-MSCW01-24S12-T1	51		12.0	83
TMR 1-2413SM	OB-MSCW01-24S15-T1	51		15.0	67
TMR 1-2422SM	OB-MSCW01-24D12-T1	51		±12.0	±42
TMR 1-2423SM	OB-MSCW01-24D15-T1	50		±15.0	±33
TMR 1-4811SM	OB-MSCW01-48S05-T1	Nominal: 48Vdc Range: 36-75Vdc Input Fuse: 60mA		26	5.0
TMR 1-4812SM	OB-MSCW01-48S12-T1		26	12.0	83
TMR 1-4813SM	OB-MSCW01-48S15-T1		26	15.0	67
TMR 1-4822SM	OB-MSCW01-48D12-T1		26	±12.0	±42
TMR 1-4823SM	OB-MSCW01-48D15-T1		25	±15.0	±33

For TMR 1 Series

Model Number	Transformer Number	Input Voltage Range	Rated Input Current (mA)	Output Voltage (V dc)	Output Current (mA)
TMR 1-0511	OB-MAW01-05S05-T1	Nominal: 5Vdc Range: 4.5-9Vdc Input Fuse: 500mA	263	5.0	200
TMR 1-0512	OB-MAW01-05S12-T1		259	12.0	83
TMR 1-0513	OB-MAW01-05S15-T1		254	15.0	67
TMR 1-0515	OB-MAW01-05S24-T1		265	24.0	42



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TMR 1-0522	OB-MAW01-05D12-T1		262	±12.0	±42	
TMR 1-0523	OB-MAW01-05D15-T1		254	±15.0	±33	
TMR 1-1211	OB-MAW01-12S05-T1	Nominal: 12Vdc Range: 9-18Vdc Input Fuse: 250mA	108	5.0	200	
TMR 1-1212	OB-MAW01-12S12-T1		108	12.0	83	
TMR 1-1213	OB-MAW01-12S15-T1		105	15.0	67	
TMR 1-1215	OB-MAW01-12S24-T1		109	24.0	42	
TMR 1-1222	OB-MAW01-12D12-T1		106	±12.0	±42	
TMR 1-1223	OB-MAW01-12D15-T1		106	±15.0	±33	
TMR 1-2411	OB-MAW01-24S05-T1		Nominal: 24Vdc Range: 18-36Vdc Input Fuse: 120mA	54	5.0	200
TMR 1-2412	OB-MAW01-24S12-T1			52	12.0	83
TMR 1-2413	OB-MAW01-24S15-T1	52		15.0	67	
TMR 1-2415	OB-MAW01-24S24-T1	55		24.0	42	
TMR 1-2422	OB-MAW01-24D12-T1	53		±12.0	±42	
TMR 1-2423	OB-MAW01-24D15-T1	52		±15.0	±33	
TMR 1-4811	OB-MAW01-48S05-T1	Nominal: 48Vdc Range: 36-75Vdc Input Fuse: 60mA		27	5.0	200
TMR 1-4812	OB-MAW01-48S12-T1			27	12.0	83
TMR 1-4813	OB-MAW01-48S15-T1		27	15.0	67	
TMR 1-4815	OB-MAW01-48S24-T1		28	24.0	42	
TMR 1-4822	OB-MAW01-48D12-T1		27	±12.0	±42	
TMR 1-4823	OB-MAW01-48D15-T1		26	±15.0	±33	

For TMR 3WIE Series

Model Number	Transformer Number	Input Voltage Range	Rated Input Current (mA)	Output Voltage (V dc)	Output Current (mA)
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TMR 3-1210WIE	OB-MCWI03-12S033-T1	Nominal: 12Vdc Range: 4.5-18Vdc Input Fuse: 1500mA	260	3.3	700
TMR 3-1211WIE	OB-MCWI03-12S05-T1		320	5.0	600
TMR 3-1212WIE	OB-MCWI03-12S12-T1		313	12.0	250
TMR 3-1213WIE	OB-MCWI03-12S15-T1		313	15.0	200
TMR 3-1221WIE	OB-MCWI03-12D05-T1		313	±5.0	±300
TMR 3-1222WIE	OB-MCWI03-12D12-T1		313	±12.0	±125
TMR 3-1223WIE	OB-MCWI03-12D15-T1		313	±15.0	±100
TMR 3-2410WIE	OB-MCWI03-24S033-T1	Nominal: 24Vdc Range: 9-36Vdc Input Fuse: 700mA	128	3.3	700
TMR 3-2411WIE	OB-MCWI03-24S05-T1		156	5.0	600
TMR 3-2412WIE	OB-MCWI03-24S12-T1		154	12.0	250
TMR 3-2413WIE	OB-MCWI03-24S15-T1		154	15.0	200
TMR 3-2421WIE	OB-MCWI03-24D05-T1		158	±5.0	±300
TMR 3-2422WIE	OB-MCWI03-24D12-T1		156	±12.0	±125
TMR 3-2423WIE	OB-MCWI03-24D15-T1		154	±15.0	±100
TMR 3-4810WIE	OB-MCWI03-48S033-T1	Nominal: 48Vdc Range: 18-75Vdc Input Fuse: 350mA	65	3.3	700
TMR 3-4811WIE	OB-MCWI03-48S05-T1		79	5.0	600
TMR 3-4812WIE	OB-MCWI03-48S12-T1		79	12.0	250
TMR 3-4813WIE	OB-MCWI03-48S15-T1		79	15.0	200
TMR 3-4821WIE	OB-MCWI03-48D05-T1		79	±5.0	±300
TMR 3-4822WIE	OB-MCWI03-48D12-T1		79	±12.0	±125
TMR 3-4823WIE	OB-MCWI03-48D15-T1		78	±15.0	±100

For TEN 40WIN Series and TEN 40WIN -HS Series

Model Number	Transformer	Input Voltage	Rated Input	Output Voltage	Output Current
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	Number	Range	Current (mA)	(V dc)	(mA)
TEN 40-2410WIN TEN 40-2410WIN -HS	OB-MKWI40-24S033-T1	Nominal: 24Vdc Range: 9-36Vdc Input Fuse: 8000mA	1240	3.3	8000
TEN 40-2411WIN TEN 40-2411WIN -HS	OB-MKWI40-24S05-T1		1850	5.0	8000
TEN 40-2412WIN TEN 40-2412WIN -HS	OB-MKWI40-24S12-T1		1870	12.0	3330
TEN 40-2413WIN TEN 40-2413WIN -HS	OB-MKWI40-24S15-T1		1870	15.0	2670
TEN 40-2415WIN TEN 40-2415WIN -HS	MKWI40-24S24 (PWB type)		1835	24.0	1670
TEN 40-2422WIN TEN 40-2422WIN -HS	OB-MKWI40-24D12-T1		1890	±12.0	±1670
TEN 40-2423WIN TEN 40-2423WIN -HS	OB-MKWI40-24D15-T1		1890	±15.0	±1330
TEN 40-4810WIN TEN 40-4810WIN -HS	OB-MKWI40-48S033-T1		Nominal: 48Vdc Range: 18-75Vdc Input Fuse: 4000mA	620	3.3
TEN 40-4811WIN TEN 40-4811WIN -HS	OB-MKWI40-48S05-T1	930		5.0	8000
TEN 40-4812WIN TEN 40-4812WIN -HS	OB-MKWI40-48S12-T1	930		12.0	3330
TEN 40-4813WIN TEN 40-	OB-MKWI40-48S15-T1	930		15.0	2670



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4813WIN -HS					
TEN 40-4815WIN TEN 40-4815WIN -HS	MKWI40-48S24 (PWB type)		918	24.0	1670
TEN 40-4822WIN TEN 40-4822WIN -HS	OB-MKWI40-48D12-T1		950	±12.0	±1670
TEN 40-4823WIN TEN 40-4823WIN -HS	OB-MKWI40-48D15-T1		950	±15.0	±1330

Note: The suffix “-HS” meaning is the converter with heatsink.

For TEN 50 Series and TEN 50-HS Series

Model Number	Transformer Number	Input Voltage Range	Rated Input Current (mA)	Output Voltage (V dc)	Output Current (mA)
TEN 50-1210 TEN 50-1210-HS	OB-MKW50-12S033-T1	Nominal: 12Vdc Range: 9-18Vdc Input Fuse: 10000mA	3090	3.3	10000
TEN 50-1211 TEN 50-1211-HS	OB-MKW50-12S05-T1		4630	5.0	10000
TEN 50-1212 TEN 50-1212-HS	OB-MKW50-12S12-T1		4580	12.0	4170
TEN 50-1213 TEN 50-1213-HS	OB-MKW50-12S15-T1		4580	15.0	3330
TEN 50-1215 TEN 50-1215-HS	MKW50-12S24 (PWB type)		4570	24.0	2080
TEN 40-1215N TEN 40-1215N-HS					
TEN 50-2410 TEN 50-2410-HS	OB-MKW50-24S033-T1	Nominal: 24Vdc Range: 18-36Vdc Input Fuse: 5000mA	1550	3.3	10000
TEN 50-2411 TEN 50-2411-HS	OB-MKW50-24S05-T1		2260	5.0	10000
TEN 50-2412 TEN 50-2412-HS	OB-MKW50-24S12-T1		2260	12.0	4170



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HS					
TEN 50-2413 TEN 50-2413- HS	OB-MKW50- 24S15-T1		2260	15.0	3330
TEN 50-2415 TEN 50-2415- HS	MKW50-24S24 (PWB type)		2290	24.0	2080
TEN 40-2415N TEN 40-2415N- HS					
TEN 50-4810 TEN 50-4810- HS	OB-MKW50- 48S033-T1	Nominal: 48Vdc Range: 36- 75Vdc Input Fuse: 2500mA	770	3.3	10000
TEN 50-4811 TEN 50-4811- HS	OB-MKW50- 48S05-T1		1130	5.0	10000
TEN 50-4812 TEN 50-4812- HS	OB-MKW50- 48S12-T1		1130	12.0	4170
TEN 50-4813 TEN 50-4813- HS	OB-MKW50- 48S15-T1		1130	15.0	3330
TEN 50-4815 TEN 50-4815- HS	MKW50-48S24 (PWB type)		1150	24.0	2080
TEN 40-4815N TEN 40-4815N- HS					

Note: The suffix “-HS” meaning is the converter with heatsink.

Note:

- (1) The above models are intended for use with Information Technology Equipment, where the suitability of the combination is determined by CSA Group.
- (2) Maximum operating ambient:

For TMR 1SM Series:

Maximum ambient (Tma): +75°C (Power Derating Curve 100%, full load)

Maximum ambient (Tma): +82°C (Power Derating Curve 50%, full load)

For TMR 1 series:

Maximum ambient (Tma): +85°C (Power Derating Curve 100%, full load)

For TMR 3WIE Series:

Maximum ambient (Tma): +71°C (Power Derating Curve 100%, full load)

Maximum ambient (Tma): +85°C (Power Derating Curve 50%, full load)



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For TEN 40WIN Series:

Power Derating Curve 100%, full load:

Maximum ambient (Tma) for 3.3V output models: +66°C

Maximum ambient (Tma) for TEN 40-2411WIN, TEN 40-4811WIN, TEN 40-4812WIN, TEN 40-4813WIN:
+51°C

Maximum ambient (Tma) for TEN 40-2412WIN, TEN 40-2413WIN: +45°C

Maximum ambient (Tma) for TEN 40-2415WIN, TEN 40-4815WIN: +57°C

Maximum ambient (Tma) for TEN 40-2422WIN, TEN 40-2423WIN, TEN 40-4822WIN, TEN 40-4823WIN:
+40°C

Power Derating Curve 50%, half load:

Maximum ambient (Tma) for 3.3V output models: +85°C

Maximum ambient (Tma) for TEN 40-2411WIN, TEN 40-4811WIN, TEN 40-4812WIN, TEN 40-4813WIN:
+79°C

Maximum ambient (Tma) for TEN 40-2412WIN, TEN 40-2413WIN: +75°C

Maximum ambient (Tma) for TEN 40-2415WIN, TEN 40-4815WIN: +82°C

Maximum ambient (Tma) for TEN 40-2422WIN, TEN 40-2423WIN, TEN 40-4822WIN, TEN 40-4823WIN:
+72°C

For TEN 40WIN-HS Series:

Power Derating Curve 100%, full load:

Maximum ambient (Tma) for 3.3V output models: +73°C

Maximum ambient (Tma) for TEN 40-2411WIN-HS, TEN 40-4811WIN-HS, TEN 40-4812WIN-HS, TEN
40-4813WIN-HS: +61°C

Maximum ambient (Tma) for TEN 40-2412WIN-HS, TEN 40-2413WIN-HS: +57°C

Maximum ambient (Tma) for TEN 40-2415WIN-HS, TEN 40-4815WIN-HS: +66°C

Maximum ambient (Tma) for TEN 40-2422WIN-HS, TEN 40-2423WIN-HS, TEN 40-4822WIN-HS, TEN
40-4823WIN-HS: +52°C

Power Derating Curve 50%, half load:

Maximum ambient (Tma) for 3.3V output models: +90°C

Maximum ambient (Tma) for TEN 40-2411WIN-HS, TEN 40-4811WIN-HS, TEN 40-4812WIN-HS, TEN
40-4813WIN-HS: +84°C

Maximum ambient (Tma) for TEN 40-2412WIN-HS, TEN 40-2413WIN-HS: +80°C

Maximum ambient (Tma) for TEN 40-2415WIN-HS, TEN 40-4815WIN-HS: +86°C

Maximum ambient (Tma) for TEN 40-2422WIN-HS, TEN 40-2423WIN-HS, TEN 40-4822WIN-HS, TEN
40-4823WIN-HS: +79°C

For TEN 50 Series:

Power Derating Curve 100%, full load:

Maximum ambient (Tma) for 3.3V output models: +56°C

Maximum ambient (Tma) for TEN 50-2411, TEN 50-2412, TEN 50-2413, TEN 50-4811, TEN 50-4812, TEN
50-4813: +53°C

Maximum ambient (Tma) for TEN 50-1212, TEN 50-1213, TEN 50-1215, TEN 40-1215N, TEN 50-2415,
TEN 40-2415N, TEN 50-4815, TEN 40-4815N: +46°C



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Maximum ambient (Tma) for TEN 50-1211: +38°C

Power Derating Curve 50%, half load:

Maximum ambient (Tma) for 3.3V output models: +80°C

Maximum ambient (Tma) for TEN 50-2411, TEN 50-2412, TEN 50-2413, TEN 50-4811, TEN 50-4812, TEN 50-4813: +79°C

Maximum ambient (Tma) for TEN 50-1212, TEN 50-1213, TEN 50-1215, TEN 40-1215N, TEN 50-2415, TEN 40-2415N, TEN 50-4815, TEN 40-4815N: +75°C

Maximum ambient (Tma) for TEN 50-1211: +70°C

For TEN 50-HS Series:

Power Derating Curve 100%, full load:

Maximum ambient (Tma) for 3.3V output models: +64°C

Maximum ambient (Tma) for TEN 50-2411-HS, TEN 50-2412-HS, TEN 50-2413-HS, TEN 50-4811-HS, TEN 50-4812-HS, TEN 50-4813-HS: +62°C

Maximum ambient (Tma) for TEN 50-1212-HS, TEN 50-1213-HS, TEN 50-1215-HS, TEN 40-1215N-HS, TEN 50-2415-HS, TEN 40-2415N-HS, TEN 50-4815-HS, TEN 40-4815N-HS: +56°C

Maximum ambient (Tma) for TEN 50-1211-HS: +49°C

Power Derating Curve 50%, half load:

Maximum ambient (Tma) for 3.3V output models: +85°C

Maximum ambient (Tma) for TEN 50-2411-HS, TEN 50-2412-HS, TEN 50-2413-HS, TEN 50-4811-HS, TEN 50-4812-HS, TEN 50-4813-HS: +84°C

Maximum ambient (Tma) for TEN 50-1212-HS, TEN 50-1213-HS, TEN 50-1215-HS, TEN 40-1215N-HS, TEN 50-2415-HS, TEN 40-2415N-HS, TEN 50-4815-HS, TEN 40-4815N-HS: +81°C

Maximum ambient (Tma) for TEN 50-1211-HS: +79°C

APPLICABLE REQUIREMENTS

- | | | |
|---|---|--|
| CAN/CSA-C22.2 No 60950-1-07
Incl. AM1 (2011) | - | Information Technology Equipment - Safety - Part 1: General Requirements |
| ANSI/UL Std No 60950-1, 2nd
Ed. Incl. AM1 (2011) | - | 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

Project	Date	Description
2724056	June 06, 2014	Add alternative models.
2661824	October 24, 2013	Original Certification.