

### Features

- ◆ I/O isolation voltage 3000 VACrms
- ◆ Reinforced insulation, rated for 300 VAC working voltage
- ◆ Certified to IEC/EN/UL 60950-1 safety standards
- ◆ Safety barrier 100 % production test
- ◆ Low coupling capacity
- ◆ Single-in-line package (SIP)
- ◆ Lead-free design, RoHS compliant
- ◆ 3-year product warranty



The TMV-EN series is a range of 1 Watt non-regulated DC/DC converters with high I/O-isolation. This product features an isolation barrier which is approved for supplementary an reinforced insulation. SMD construction and a special designed toroidal transformer made it possible to built these converters in a standard SIP package with a very small footprint. These features making the TMV-EN series an economical solution in many DC/DC converter applications requiring safety agency approval.

### Models

Order code	Input voltage	Output voltage	Output current max.	Efficiency typ.
TMV 0505 EN	5 VDC ±10 %	5 VDC	200 mA	66 %
TMV 0512 EN		12 VDC	80 mA	66 %
TMV 0515 EN		15 VDC	65 mA	66 %
TMV 0505D EN		±5 VDC	±100 mA	66 %
TMV 0512D EN		±12 VDC	±40 mA	72 %
TMV 0515D EN		±15 VDC	±30 mA	73 %
TMV 1205 EN	12 VDC ±10 %	5 VDC	200 mA	66 %
TMV 1212 EN		12 VDC	80 mA	66 %
TMV 1215 EN		15 VDC	65 mA	66 %
TMV 1205D EN		±5 VDC	±100 mA	66 %
TMV 1212D EN		±12 VDC	±40 mA	74 %
TMV 1215D EN		±15 VDC	±30 mA	75 %

### Input Specifications

Input current no load / full load	5 Vin models: 55 mA / 300 mA typ. 12 Vin models: 30 mA / 125 mA typ.
Surge voltage (1 sec. max.)	5 Vin models: 9 V max. 12 Vin models: 29 V max.
Reverse voltage protection	0.3 A max.
Reflected input ripple current	can be reduced by ext. 1–3.3 µF polyester film capacitor
Input filter	internal capacitor
Input fuse	recommended, required for compliance with CB
– recommended min. fuse rating	5 V models: 500 mA 12 V models: 200 mA

### Output Specifications

Voltage set accuracy	±3 % max.
Voltage balance (dual output models)	1 % max.
Regulation	– Input variation 1.2 % / 1 % change of Vin – Load variation 20 – 100 % <10 %
Ripple and noise (20 MHz Bandwidth)	100 mVp-p typ.
Temperature coefficient	±0.02 %/K
Short circuit protection	limited 0.5 sec. max.
Capacitive load	single output models: 680 µF max. dual output models: 220 µF max. (each output)

### Isolation / Safety

Isolation voltage	– Isolation test voltage (tested for 1 sec.) 4'500 Vpk – I/O isolation voltage (60 sec.) 3'000 VACrms – Rated max. working voltage 300 VACrms / 640 Vpk
Isolation capacitance (input/output)	15 pF typ.
Isolation resistance (input/output)	>10 Gohm
Safety standards	IEC 60950-1:2005 +A1:2009 EN 60950-1:2006 +A1:2010 +A11:2009 +A12:2011 UL 60950-1, CSA C22.2 No. 60950-1-03
Safety approvals	– CB report (IEC & EN) <a href="http://www.tracopower.com/products/tmv-en-cb.pdf">www.tracopower.com/products/tmv-en-cb.pdf</a> – UL certification <a href="http://www.tracopower.com/products/tmv-en-ul.pdf">www.tracopower.com/products/tmv-en-ul.pdf</a>

### General Specifications

Temperature ranges	– Operating –40°C to +85°C (with derating) – Max. ambient approved IEC/UL 60950-1 +70°C (full load) – Case temperature +90°C max.
Derating	2.85 %/K above 70°C
Humidity (non condensing)	95 % rel H max.
Temperature coefficient	±0.02 %/K typ.
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)	>2'000'000 h
Switching frequency	80 kHz typ. (frequency modulation)
Frequency change over line and load	±30 % max.
Altitude during operation	4'000m max. (13'000 ft) approved
Environmental compliance	– Reach <a href="http://www.tracopower.com/products/reach-declaration.pdf">www.tracopower.com/products/reach-declaration.pdf</a> – RoHS RoHS directive 2011/65/EU

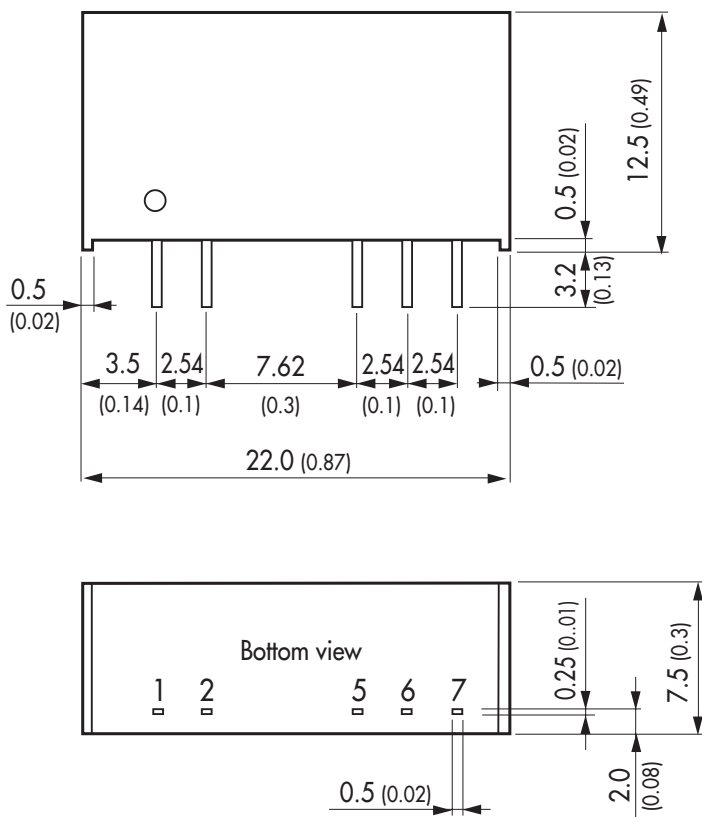
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

**Physical Specifications**

Casing material	non conductive plastic (UL 94V-0 rated)
Package weight	4.0 g (0.14 oz)
Soldering temperature	max. 265°C / 10 sec.

**Application note:** [www.tracopower.com/products/tmv-en-application.pdf](http://www.tracopower.com/products/tmv-en-application.pdf)

**Outline Dimensions**



Pin-Out		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
5	-Vout	-Vout
6	No pin	Common
7	+Vout	+Vout

Dimensions in [mm], ( ) = Inch  
Tolerance  $\pm 0.5$  (0.02)  
Pin pitch tolerance  $\pm 0.13$  (0.005)  
Pin width tolerance  $\pm 0.05$  (0.002)

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at [www.tracopower.com](http://www.tracopower.com)