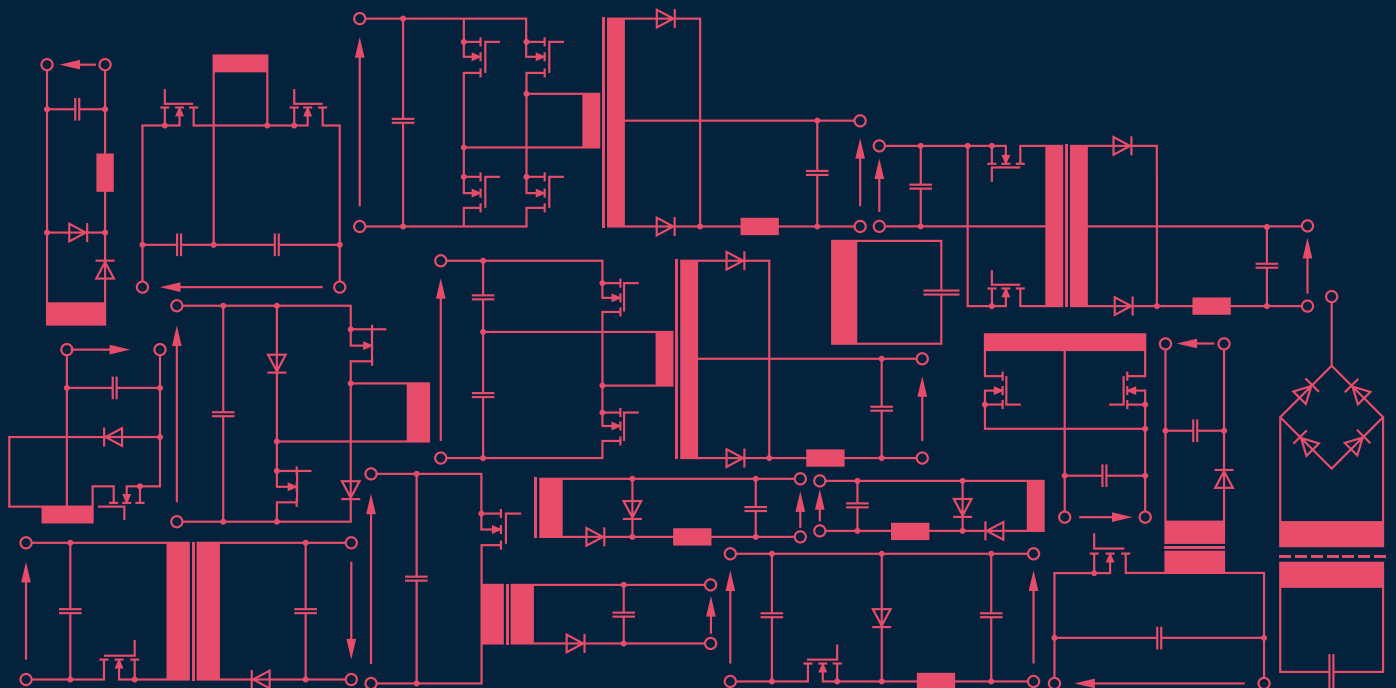


# Selection Guide 2015

## DC/DC Converters

## AC/DC Power Supplies



# Company Profile

TRACO Electronic AG is a Swiss company with headquarters based in Baar, Switzerland. As a leading power supply specialist with more than 35 years' experience we are dedicated to the design and manufacturing of high quality DC/DC and AC/DC power conversion products.

TRACO markets its products worldwide under the registered trademark **TRACO POWER**. Our mission is to provide our customers with optimal power supply solutions in terms of performance, quality and cost for their individual application.

## Product Range

TRACO POWER product range focuses on the following markets:

Industrial & IT, Transportation & Railway, Medical & Healthcare, Automation & Control, Renewable Energy & Smart Grid.

Within these markets TRACO offers one of the most comprehensive programs for standard products:

- ▶ [DC/DC Converter Modules, 1–300 W](#)
- ▶ [Encapsulated AC/DC Power Modules, 2–100 W](#)
- ▶ [AC/DC Power Supplies \(open frame / encased\), 15–1000 W](#)
- ▶ [Power Supplies for DIN-Rail Mounting, 15–1000 W](#)
- ▶ [High Power Rack Converters and Inverters, up to 22 kW](#)

Detailed technical data of all our products can be downloaded from our website: [\*\*www.tracopower.com\*\*](http://www.tracopower.com)

## Compliance, Certification and Quality Management

TRACO has a high reputation for global compliance with applicable regulations and directives allowing easier implementation of our products in our customer's applications. Our products are 100% tested and burned-in prior to shipment to guarantee full compliance to the applicable published specifications. Our safety critical products are globally certified to current standards in accordance to the applicable market segments. TRACO's global manufacturing facilities are certified to ISO 9001/14000.

Our commitment to quality is supported by a full **3 year product warranty**.

## Commercial and Technical Support

Our experienced team of application engineers has the ability to assist on any question concerning product specifications, safety standards and application. Our customers highly value our reliable two working days dedicated response policy.

## Distribution, Availability and Sustainability

TRACO distributes its products through a global network of franchised distributors recognized in the industry for top-level design, stocking and supply chain services. The majority of products presented in our selection guide and on our web site are available ex-stock for dispatch from our central warehouse in Baar, Switzerland within 48 hours. With an extended product lifecycle TRACO provides a long-term disposability and maintenance.

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|                       |             |   |     |
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## DIN-Rail Mount System Solutions

### **NEW** UPS Systems

|                               |       |  |     |
|-------------------------------|-------|--|-----|
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### Decoupling Modules

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### Buffer Module (capacitor bank)

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| TPC-REM | 360 – 600 W | Active current sharing for TPC series            | 163 |
| TSP-REM | 480 W       | Active current sharing for TSP series            | 163 |

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# TSR-0.5 Series ▶ 0.5A

- ▶ Compact SIP package – LM 78xx pin-compatible
- ▶ Very high efficiency up to 97% – No heatsink required
- ▶ Excellent line / load regulation
- ▶ Low standby current
- ▶ Operating temperature range  $-40^{\circ}$  to  $90^{\circ}\text{C}$
- ▶ Wide input voltage range 4.75 – 32 VDC
- ▶ Output voltages from 1.5 – 15 VDC
- ▶ Over-temperature protection
- ▶ Short circuit protection



**NEW**  
Product

## Specifications

|                               |  |
|-------------------------------|--|
| Line regulation               | 0.4 % max.   |
| Load regulation               | 0.6 % max.   |
| Ripple & noise<br>(20 MHz BW) | <30 mVpk-pk for models up to 6.5 VDC output<br><40 mVpk-pk for models higher 6.5 VDC output      |
| Short circuit protection      | continuous, automatic recovery   |
| Efficiency                    | 94 % typ.  |
| Operating temperature range   | $-40^{\circ}\text{C}$ to $+90^{\circ}\text{C}$<br>above $80^{\circ}\text{C}$ derating 5%/K       |
| I/O isolation voltage         | non-isolated   |
| No load input current         | 5 mA typ.  |
| Casing                        | plastic (UL 94 V-0 rated)  |
| Full datasheet                | <a href="http://www.tracopower.com/products/tsr05.pdf">www.tracopower.com/products/tsr05.pdf</a> |

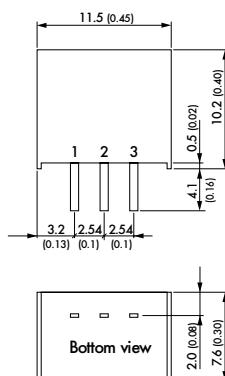
## Models

| Order code     | Input voltage range * | Output voltage | Output current max. |
|----------------|-----------------------|----------------|---------------------|
| TSR 0.5-2415   | 4.75 – 32 VDC         | 1.5 VDC        | 500 mA              |
| TSR 0.5-2418   | 4.75 – 32 VDC         | 1.8 VDC        | 500 mA              |
| TSR 0.5-2425   | 4.75 – 32 VDC         | 2.5 VDC        | 500 mA              |
| TSR 0.5-2433   | 4.75 – 32 VDC         | 3.3 VDC        | 500 mA              |
| TSR 0.5-2450   | 6.5 – 32 VDC          | 5.0 VDC        | 500 mA              |
| TSR 0.5-2465   | 8.0 – 32 VDC          | 6.5 VDC        | 500 mA              |
| TSR 0.5-2490   | 11 – 32 VDC           | 9.0 VDC        | 500 mA              |
| TSR 0.5-24120  | 15 – 32 VDC           | 12 VDC         | 500 mA              |
| TSR 0.5-241150 | 18 – 32 VDC           | 15 VDC         | 500 mA              |

\* For an input voltage higher than 28VDC an input capacitor 22  $\mu\text{F}$  / 50V is required

Product as SMD version:  
See TSR-0.5SM series page 12

## Dimensions



## Pin

| Pin |            |
|-----|------------|
| 1   | +Vin (Vcc) |
| 2   | GND        |
| 3   | +Vout      |

# TSR-1 Series ▶ 1A

- ▶ Compact SIP package – LM 78xx pin-compatible
- ▶ Very high efficiency up to 96% – No heatsink required
- ▶ Excellent line / load regulation
- ▶ Built in filter capacitors
- ▶ Operating temp. range  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- ▶ Short circuit protection
- ▶ Wide input operating range up to 36 VDC
- ▶ Low standby current



## Specifications

|                               |  |
|-------------------------------|--|
| Line regulation               | 0.2 % max.   |
| Load regulation               | 0.6 % max.   |
| Ripple & noise<br>(20 MHz BW) | <50 mVpk-pk for models up to 6.5 VDC output<br><75 mVpk-pk for models higher 6.5 VDC output    |
| Short circuit protection      | continuous, automatic recovery   |
| Efficiency                    | 94 % typ.  |
| Operating temperature range   | $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$<br>above $60^{\circ}\text{C}$ derating 2.4%/K   |
| I/O isolation voltage         | non-isolated   |
| No load input current         | 1 mA typ.  |
| Casing                        | plastic (UL 94 V-0 rated)  |
| Full datasheet                | <a href="http://www.tracopower.com/products/tsr1.pdf">www.tracopower.com/products/tsr1.pdf</a> |

## Models

| Order code  | Input voltage range * | Output voltage | Output current max. |
|-------------|-----------------------|----------------|---------------------|
| TSR 1-2412  | 4.6 – 36 VDC          | 1.2 VDC        | 1000 mA             |
| TSR 1-2415  | 4.6 – 36 VDC          | 1.5 VDC        | 1000 mA             |
| TSR 1-2418  | 4.6 – 36 VDC          | 1.8 VDC        | 1000 mA             |
| TSR 1-2425  | 4.6 – 36 VDC          | 2.5 VDC        | 1000 mA             |
| TSR 1-2433  | 4.75 – 36 VDC         | 3.3 VDC        | 1000 mA             |
| TSR 1-2450  | 6.5 – 36 VDC          | 5.0 VDC        | 1000 mA             |
| TSR 1-2465  | 9.0 – 36 VDC          | 6.5 VDC        | 1000 mA             |
| TSR 1-2490  | 12 – 36 VDC           | 9.0 VDC        | 1000 mA             |
| TSR 1-24120 | 15 – 36 VDC           | 12 VDC         | 1000 mA             |
| TSR 1-24150 | 18 – 36 VDC           | 15 VDC         | 1000 mA             |

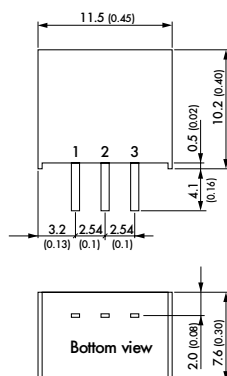
\* For an input voltage higher than 32VDC an input capacitor 22  $\mu\text{F}$  / 50V is required

Product suitable for negative output voltage:

See TSRN-1 series page 9 (through hole)

See TSRN-1SM series page 14 (SMD)

## Dimensions



## Pin

|   |            |
|---|------------|
| 1 | +Vin (Vcc) |
| 2 | GND        |
| 3 | +Vout      |

() = Inches



# TSN-1 Series ▶ 1A

- ▶ Negative input to negative output
- ▶ Pin compatible with LM79xx linear regulators
- ▶ High efficiency up to 96% - No heatsink required
- ▶ Operating temp. range -40°C to +85°C
- ▶ Protection against overload, short circuit and over-temperature
- ▶ Wide input range up to -32 VDC
- ▶ Low standby current

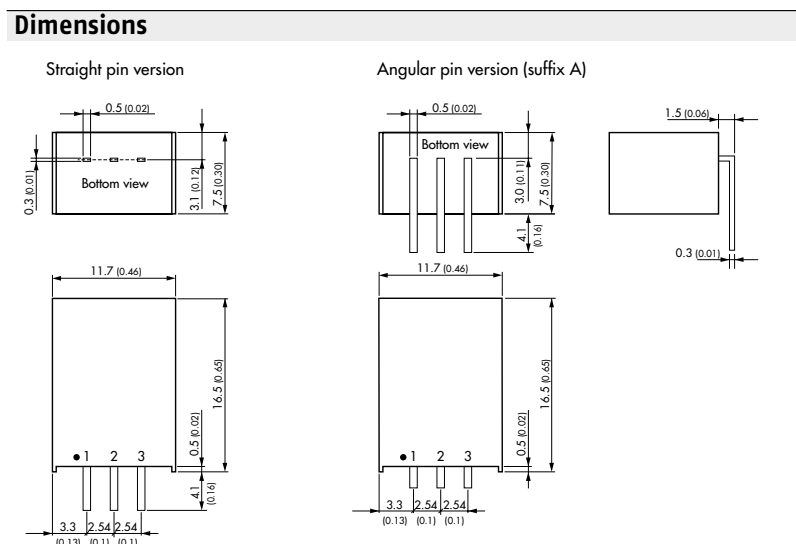


**NEW**  
Product

| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 1.0 % max.   |
| Load regulation             | 0.6 % max.   |
| Ripple & noise (20 MHz BW)  | <75 mVpk-pk for models up to 5.2 VDC output<br><100 mVpk-pk for models higher 5.2 VDC output   |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 92 % typ.  |
| Operating temperature range | -40 °C to +85 °C<br>above 70 °C derating 2.7%/K  |
| I/O isolation voltage       | non-isolated   |
| No load input current       | -3 mA typ.   |
| Casing                      | plastic (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tsn1.pdf">www.tracopower.com/products/tsn1.pdf</a> |

| Models      |                       |                |                     |
|-------------|-----------------------|----------------|---------------------|
| Order code  | Input voltage range * | Output voltage | Output current max. |
| TSN 1-2450  | -7.0 - -32 VDC        | -5.0 VDC       | 1000 mA             |
| TSN 1-2452  | -7.0 - -32 VDC        | -5.2 VDC       | 1000 mA             |
| TSN 1-1260  | -8.0 - -32 VDC        | -6.0 VDC       | 1000 mA             |
| TSN 1-2480  | -10.5 - -32 VDC       | -8.0 VDC       | 1000 mA             |
| TSN 1-2490  | -11.5 - -32 VDC       | -9.0 VDC       | 1000 mA             |
| TSN 1-24120 | -15 - -32 VDC         | -12 VDC        | 1000 mA             |
| TSN 1-24150 | -18 - -32 VDC         | -15 VDC        | 1000 mA             |

\* Order code for angular-pin, add suffix -A



| Pin |       |
|-----|-------|
| 1   | GND   |
| 2   | -Vin  |
| 3   | -Vout |

( ) = Inches

# TSRN-1 Series ▶ 1A

- ▶ Suitable for positive to negative output circuit
- ▶ SIP-package fits existing T0-220 footprint
- ▶ Pin compatible with LMxx linear regulators
- ▶ Built in filter capacitors
- ▶ Operation temp. range -40°C to +85°C
- ▶ No heat-sink required
- ▶ Over-temperature protection
- ▶ Short circuit protection
- ▶ Wide input range up to 42 VDC
- ▶ Excellent line / load regulation
- ▶ Low standby current



## Specifications

|                             |   |
|-----------------------------|---|
| Line regulation             | 0.2% max.   |
| Load regulation             | 1.0% typ.   |
| Output voltage set accuracy | 2.0 % typ.  |
| Ripple & noise              | 1.5 – 6.5 VDC output models: <50 mVpk-pk (20 MHz BW)<br>9.0 – 15.0 VDC output models: <75 mVpk-pk (20 MHz BW) |
| Short circuit protection    | continuous, automatic recovery  |
| Efficiency                  | 85 % typ.   |
| Operating temperature range | -40 °C to +85 °C<br>above 70 °C derating 2.7%/K   |
| I/O isolation voltage       | non-isolated  |
| No load input current       | 2.0 mA typ.   |
| Casing                      | plastic (UL 94 V-0 rated)   |
| Full datasheet              | <a href="http://www.tracopower.com/products/tsrn1.pdf">www.tracopower.com/products/tsrn1.pdf</a>              |

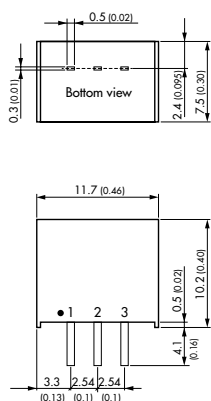
## Models

| Order code 1)<br>straight pins | Input voltage range <sup>2)</sup> | Output voltage | Output current max. |
|--------------------------------|-----------------------------------|----------------|---------------------|
| <b>Negative output circuit</b> |                                   |                |                     |
| TSRN 1-2415                    | 4.6 – 32 VDC                      | -1.5 VDC       | 600 mA              |
| TSRN 1-2418                    | 4.6 – 32 VDC                      | -1.8 VDC       | 600 mA              |
| TSRN 1-2425                    | 4.6 – 32 VDC                      | -2.5 VDC       | 600 mA              |
| TSRN 1-2433                    | 4.6 – 32 VDC                      | -3.3 VDC       | 600 mA              |
| TSRN 1-2450                    | 6.5 – 31 VDC                      | -5.0 VDC       | 400 mA              |
| TSRN 1-2465                    | 8.0 – 29 VDC                      | -6.5 VDC       | 300 mA              |
| TSRN 1-2490                    | 10.5 – 27 VDC                     | -9.0 VDC       | 300 mA              |
| TSRN 1-24120                   | 13.5 – 24 VDC                     | -12 VDC        | 300 mA              |
| TSRN 1-24150                   | 16.5 – 21 VDC                     | -15 VDC        | 200 mA              |
| <b>Positive output circuit</b> |                                   |                |                     |
| TSRN 1-2415                    | 4.6 – 42 VDC                      | 1.5 VDC        | 1000 mA             |
| TSRN 1-2418                    | 4.6 – 42 VDC                      | 1.8 VDC        | 1000 mA             |
| TSRN 1-2425                    | 4.6 – 42 VDC                      | 2.5 VDC        | 1000 mA             |
| TSRN 1-2433                    | 4.6 – 42 VDC                      | 3.3 VDC        | 1000 mA             |
| TSRN 1-2450                    | 6.5 – 42 VDC                      | 5.0 VDC        | 1000 mA             |
| TSRN 1-2465                    | 8.0 – 42 VDC                      | 6.5 VDC        | 1000 mA             |
| TSRN 1-2490                    | 10.5 – 42 VDC                     | 9.0 VDC        | 1000 mA             |
| TSRN 1-24120                   | 13.5 – 42 VDC                     | 12 VDC         | 1000 mA             |
| TSRN 1-24150                   | 16.5 – 42 VDC                     | 15 VDC         | 1000 mA             |

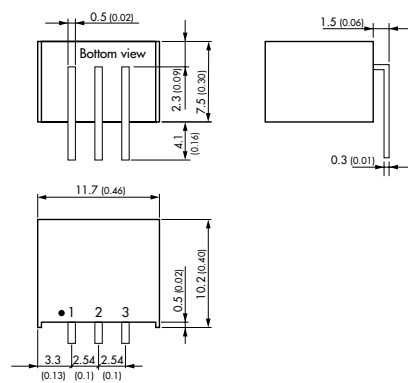
1) Order code for angular pins model suffix A.  
2) For input voltage higher 36 VDC an input capacitor 22 µF / 50 V is required.

## Dimensions

Straight pin version



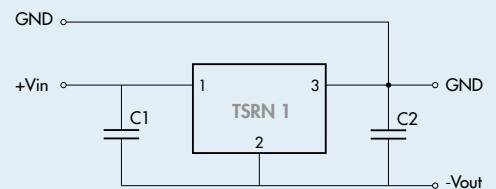
Angular pin version (suffix A)



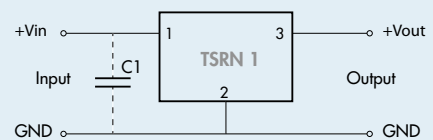
( ) = Inches

## Operation

Negative output operation:



Positive output operation:



# TSR-3 Series ▶ 3A

- ▶ High performance switching regulator
- ▶ Suitable for positive to negative output circuit
- ▶ Highest efficiency up to 95 %
- ▶ Adjustable output voltage
- ▶ Remote On/Off
- ▶ Wide input voltage range 2.5-5.5, 4.5-14 and 10-30 VDC
- ▶ Output voltages from 0.6 to 15 VDC and -0.6 to -15 VDC
- ▶ Short circuit protection
- ▶ Low output ripple & noise

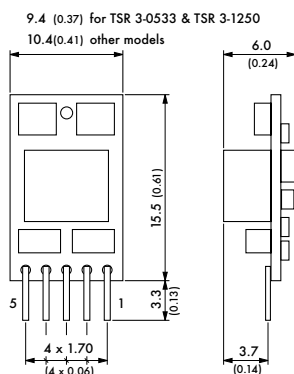


| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 0.2 % max.   |
| Load regulation             | 0.8 % max.   |
| Output voltage adjustment   | by external resistor.  |
| Ripple & noise (20 MHz BW)  | <75 mVpk-pk for models up to 6 VDC output<br><150 mVpk-pk for models higher 6 VDC output       |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 93 % typ.  |
| Operating temperature range | -40 °C to +85 °C<br>above 50 °C derating 1.5%/K  |
| I/O isolation voltage       | non-isolated   |
| Standby input current       | 20 mA typ.   |
| Remote On/Off               | shutdown input for low input current in standby operation                                      |
| Casing                      | plastic (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tsr3.pdf">www.tracopower.com/products/tsr3.pdf</a> |

| Models                         |                             |   |                     |
|--------------------------------|-----------------------------|---|---------------------|
| Order code                     | Input voltage               | Output voltage adjustable <sup>6)</sup> | Output current max. |
| <b>Positive output circuit</b> |                             |   |                     |
| TSR 3-0533                     | 2.5 – 5.5 VDC <sup>1)</sup> | 0.6 – 3.3 VDC                           | 3000 mA             |
| TSR 3-1250                     | 4.5 – 14 VDC <sup>2)</sup>  | 0.6 – 6.0 VDC                           | 3000 mA             |
| TSR 3-2450                     | 10 – 30 VDC <sup>3)</sup>   | 3.0 – 6.0 VDC                           | 3000 mA             |
| TSR 3-24150                    | 10 – 30 VDC <sup>3)</sup>   | 5.0 – 15 VDC                            | 3000 mA             |
| <b>Negative output circuit</b> |                             |   |                     |
| TSR 3-1250                     | 4.7 – 13 VDC <sup>4)</sup>  | -0.6 – -6.0 VDC                         | 2200 mA             |
| TSR 3-2450                     | 10 – 27 VDC <sup>5)</sup>   | -3.0 – -6.0 VDC                         | 2200 mA             |
| TSR 3-24150                    | 10 – 25 VDC <sup>5)</sup>   | -5.0 – -15 VDC                          | 1200 mA             |

1) input voltage must be at least 0.5 V higher than output  
 2) input voltage must be at least 2.0 V higher than output  
 3) input voltage must be at least 3.0 V higher than output  
 4) max. input voltage = 14 - |Vout|  
 5) max. input voltage = 30 - |Vout|  
 6) open trim input = min. output voltage

## Dimensions

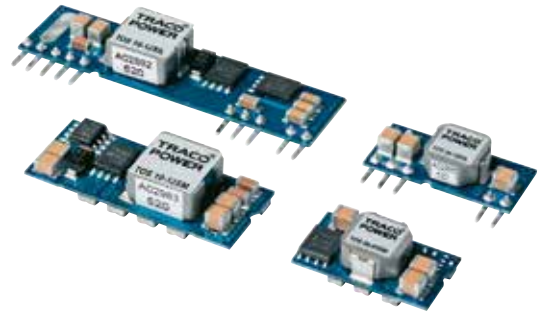


| Pin | Positive output | Negative output |
|-----|-----------------|-----------------|
| 1   | Remote On/Off   | Remote On/Off   |
| 2   | +Vin (Vcc)      | +Vin (Vcc)      |
| 3   | GND             | -Vout           |
| 4   | +Vout           | GND             |
| 5   | Trim            | Trim            |

() = Inches

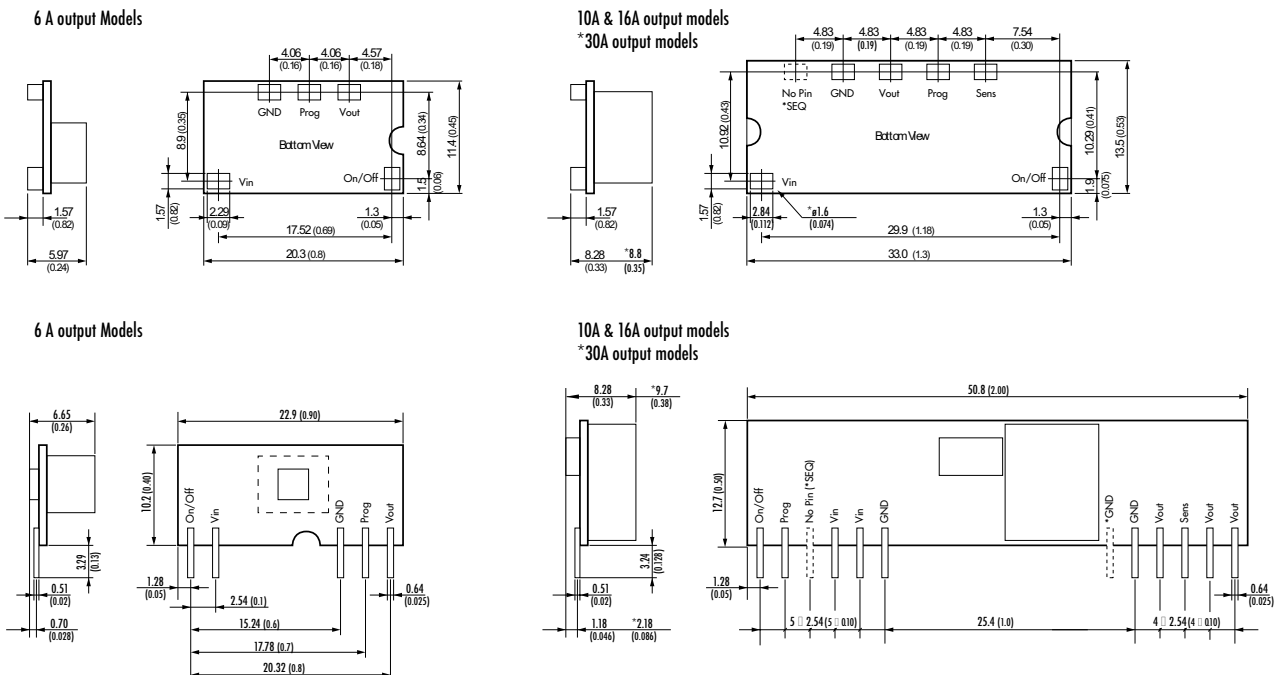
# TOS Series ▶ 6 – 30 A

- ▶ Models with 6, 10, 16 and 30 A
- ▶ Programmable output voltage from 0.75 to 5.5 VDC
- ▶ Very high efficiency up to 96 %
- ▶ Remote On/Off
- ▶ Under-voltage lockout
- ▶ Over temperature protection
- ▶ Surface mount (SM) or SIP-version
- ▶ Surface mount version fully compatible with DOSA standard



| Specifications              |  | Models  |                            |                             |                            |
|-----------------------------|--|---|----------------------------|-----------------------------|----------------------------|
| Line regulation             | 0.3% max.  | <b>Order code SMT-version</b>                 | <b>Input voltage range</b> | <b>Output voltage range</b> | <b>Output current max.</b> |
| Load regulation             | 0.4% max.  | TOS 06-05SM                                   | 2.4 – 5.5 VDC              | 0.75 – 3.3 VDC              | 6 A                        |
| Output voltage              | programmable by external resistor  | TOS 10-05SM                                   | 2.4 – 5.5 VDC              | 0.75 – 3.3 VDC              | 10 A                       |
| Ripple & noise (20 MHz BW)  | <50 mVpk-pk for 5 Vin output models<br><75 mVpk-pk for 12 Vin output models  | TOS 16-05SM                                   | 2.4 – 5.5 VDC              | 0.75 – 3.3 VDC              | 16 A                       |
| Transient response time     | 50 µsec. typ. (50% load change)  | TOS 30-05SM                                   | 4.5 – 5.5 VDC              | 0.80 – 3.6 VDC              | 30 A                       |
| Short circuit protection    | continuous, automatic recovery   | TOS 06-12SM                                   | 8.3 – 14.0 VDC             | 0.75 – 5.0 VDC              | 6 A                        |
| Efficiency                  | 93% typ.   | TOS 10-12SM                                   | 8.3 – 14.0 VDC             | 0.75 – 5.0 VDC              | 10 A                       |
| Operating temperature range | -40 °C to +85 °C (for derating see datasheet)  | TOS 16-12SM                                   | 8.3 – 14.0 VDC             | 0.75 – 5.0 VDC              | 16 A                       |
| I/O isolation voltage       | non-isolated   | TOS 30-12SM                                   | 6.0 – 14.0 VDC             | 0.80 – 3.6 VDC              | 30 A*                      |
| Thermal protection          | shutdown at 125 °C   | * 20 A at output voltage higher than 2.75 VDC |                            |                             |                            |
| Remote On/Off               | shutdown input for low input current (3 mA) in standby operation   | <b>Order code SIP-version</b>                 | <b>Input voltage range</b> | <b>Output voltage range</b> | <b>Output current max.</b> |
| Full datasheet              | <a href="http://www.tracopower.com/products/tos.pdf">www.tracopower.com/products/tos.pdf</a><br><a href="http://www.tracopower.com/products/tos30.pdf">www.tracopower.com/products/tos30.pdf</a> | TOS 06-05SIL                                  | 2.4 – 5.5 VDC              | 0.75 – 3.3 VDC              | 6 A                        |
|                             |  | TOS 10-05SIL                                  | 2.4 – 5.5 VDC              | 0.75 – 3.3 VDC              | 10 A                       |
|                             |  | TOS 16-05SIL                                  | 2.4 – 5.5 VDC              | 0.75 – 3.3 VDC              | 16 A                       |
|                             |  | TOS 30-05SIL                                  | 4.5 – 5.5 VDC              | 0.80 – 5.5 VDC              | 30 A                       |
|                             |  | TOS 06-12SIL                                  | 8.3 – 14.0 VDC             | 0.75 – 5.0 VDC              | 6 A                        |
|                             |  | TOS 10-12SIL                                  | 8.3 – 14.0 VDC             | 0.75 – 5.0 VDC              | 10 A                       |
|                             |  | TOS 16-12SIL                                  | 8.3 – 14.0 VDC             | 0.75 – 5.0 VDC              | 16 A                       |
|                             |  | TOS 30-12SIL                                  | 6.0 – 14.0 VDC             | 0.80 – 5.5 VDC              | 30 A*                      |
|                             |  | * 25 A at output voltage higher than 2.75 VDC |                            |                             |                            |

## Dimensions



( ) = Inches

# TSR-0.5SM Series ▶ 0.5A

- ▶ Compact SMD package
- ▶ High efficiency up to 97 % - No thermal layer required
- ▶ Excellent line / load regulation
- ▶ Low standby current
- ▶ Operating temperature range -40°C to +90°C
- ▶ Wide input voltage range 4.75-32 VDC
- ▶ Output voltages from 1.5 to 15 VDC
- ▶ Short circuit protection
- ▶ Low output ripple & noise
- ▶ Available in tape & reel package



**NEW**  
Product

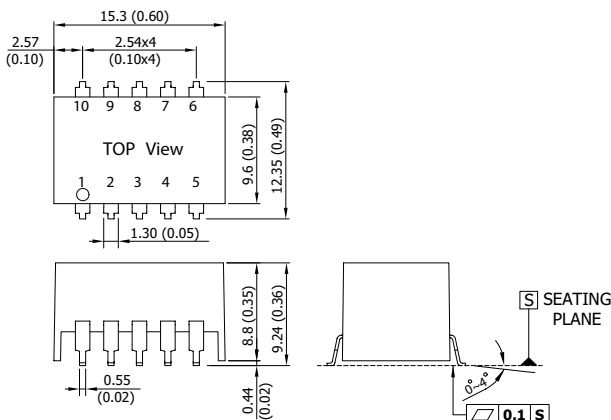
| Specifications                |  |
|-------------------------------|--|
| Line regulation               | 0.4 % max.   |
| Load regulation               | 0.6 % max.   |
| Ripple & noise<br>(20 MHz BW) | <30 mVpk-pk for models up to 6.5 VDC output<br><40 mVpk-pk for models higher 6.5 VDC output          |
| Short circuit protection      | continuous, automatic recovery   |
| Efficiency                    | 94 % typ.  |
| Operating temperature range   | -40 °C to +85 °C<br>above 80 °C derating 5%/K  |
| I/O isolation voltage         | non-isolated   |
| No load input current         | 5 mA typ.  |
| Casing                        | plastic (UL 94 V-0 rated)  |
| Full datasheet                | <a href="http://www.tracopower.com/products/tsr05sm.pdf">www.tracopower.com/products/tsr05sm.pdf</a> |

| Models          |                       |                |                     |
|-----------------|-----------------------|----------------|---------------------|
| Order code      | Input voltage range * | Output voltage | Output current max. |
| TSR 0.5-2415SM  | 4.75 – 32 VDC         | 1.5 VDC        | 500 mA              |
| TSR 0.5-2418SM  | 4.75 – 32 VDC         | 1.8 VDC        | 500 mA              |
| TSR 0.5-2425SM  | 4.75 – 32 VDC         | 2.5 VDC        | 500 mA              |
| TSR 0.5-2433SM  | 4.75 – 32 VDC         | 3.3 VDC        | 500 mA              |
| TSR 0.5-2450SM  | 6.5 – 32 VDC          | 5.0 VDC        | 500 mA              |
| TSR 0.5-2465SM  | 8.0 – 32 VDC          | 6.5 VDC        | 500 mA              |
| TSR 0.5-2490SM  | 11 – 32 VDC           | 9.0 VDC        | 500 mA              |
| TSR 0.5-24120SM | 15 – 32 VDC           | 12 VDC         | 500 mA              |
| TSR 0.5-24150SM | 18 – 32 VDC           | 15 VDC         | 500 mA              |

\* For an input voltage higher than 28VDC an input capacitor 22 µF / 50V is required

Product as SIP version:  
See TSR-0.5 series page 6

## Dimensions



| Pin |               |
|-----|---------------|
| 1   | +Vin (Vcc)    |
| 2   | +Vin (Vcc)    |
| 3   | GND           |
| 4   | +Vout         |
| 5   | +Vout         |
| 6   | adj.          |
| 7   | GND           |
| 8   | GND           |
| 9   | GND           |
| 10  | remote On/Off |

() = Inches

# TSR-1SM Series ▶ 1A

- ▶ Non-isolated (POL) converter
- ▶ Up to 96% efficiency - No thermal layer required
- ▶ Built in filter capacitors
- ▶ Operating temp. range -40°C to +85°C
- ▶ Short circuit protection
- ▶ Wide input operating range up to 36 VDC
- ▶ Low standby current
- ▶ Available in tape & reel package

**NEW**  
Product



| Specifications              |   | Models            |                              |                       |                            |
|-----------------------------|---|-------------------|------------------------------|-----------------------|----------------------------|
| Line regulation             | 0.2 % max.  | <b>Order code</b> | <b>Input voltage range *</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation             | 0.6 % max.  | TSR 1-0512SM      | 3.0 – 5.5 VDC                | 1.2 VDC               | 1000 mA                    |
| Ripple & noise (20 MHz BW)  | 50 mVpk-pk typ. for models up to 6.5 VDC output<br>75 mVpk-pk typ. for models higher 6.5 VDC output | TSR 1-0515SM      | 3.0 – 5.5 VDC                | 1.5 VDC               | 1000 mA                    |
| Short circuit protection    | continuous, automatic recovery  | TSR 1-0518SM      | 3.0 – 5.5 VDC                | 1.8 VDC               | 1000 mA                    |
| Efficiency                  | 90 % typ.   | TSR 1-0525SM      | 3.8 – 5.5 VDC                | 2.5 VDC               | 1000 mA                    |
| Operating temperature range | -40 °C to +85 °C<br>above 65 °C derating 2.5%/K   | TSR 1-2412SM      | 4.6 – 36 VDC                 | 1.2 VDC               | 1000 mA                    |
| I/O isolation voltage       | non-isolated  | TSR 1-2415SM      | 4.6 – 36 VDC                 | 1.5 VDC               | 1000 mA                    |
| No load input current       | 1 mA typ.   | TSR 1-2418SM      | 4.6 – 36 VDC                 | 1.8 VDC               | 1000 mA                    |
| Casing                      | plastic (UL 94 V-0 rated)   | TSR 1-2425SM      | 4.6 – 36 VDC                 | 2.5 VDC               | 1000 mA                    |
| Full datasheet              | <a href="http://www.tracopower.com/products/tsr1sm.pdf">www.tracopower.com/products/tsr1sm.pdf</a>  | TSR 1-2433SM      | 4.75 – 36 VDC                | 3.3 VDC               | 1000 mA                    |
|                             |   | TSR 1-2450SM      | 6.5 – 36 VDC                 | 5.0 VDC               | 1000 mA                    |
|                             |   | TSR 1-2465SM      | 9.0 – 36 VDC                 | 6.5 VDC               | 1000 mA                    |
|                             |   | TSR 1-2490SM      | 12 – 36 VDC                  | 9.0 VDC               | 1000 mA                    |
|                             |   | TSR 1-24120SM     | 15 – 36 VDC                  | 12 VDC                | 1000 mA                    |
|                             |   | TSR 1-24150SM     | 18 – 36 VDC                  | 15 VDC                | 1000 mA                    |

\* For an input voltage higher than 32VDC an input capacitor 22 µF / 50V is required

| Dimensions   |  | Pin   |  |
|--|--|---|--|
| <p>The drawing shows a top view and a side view of the converter. The top view shows a rectangular package with dimensions 15.2 (0.60) inches in length and 11.8 (0.47) inches in width. Pin 1 is at the bottom left, pin 5 at the bottom right, pin 10 at the top left, pin 9 at the top left-center, pin 7 at the top center, and pin 6 at the top right-center. Pin spacings are 2.54 (0.10) inches between pins 10 and 9, 5.08 (0.20) inches between pins 9 and 7, and 2.54 (0.10) inches between pins 7 and 6. A 0.5 (0.02) inch gap is shown between pins 1 and 5. The side view shows a height of 7.6 (0.30) inches and a mounting hole diameter of 0.30 (0.01) inches.</p> |  | <p>1 -Vin</p> <p>5 -Vout</p> <p>6 No con.</p> <p>7 GND</p> <p>9 GND</p> <p>10 No con.</p> |  |

() = Inches

# TSRN-1SM Series ▶ 1A

- ▶ Suitable for positive to negative output circuit
- ▶ Non-isolated (POL) converter
- ▶ Built in filter capacitors
- ▶ Remote On/Off and output trim
- ▶ Operation temp. range -40°C to +85°C
- ▶ Over-temperature protection
- ▶ Short circuit protection
- ▶ Excellent line / load regulation
- ▶ Wide input up to 42 VDC
- ▶ Low standby current
- ▶ Available in tape & reel package



## Specifications

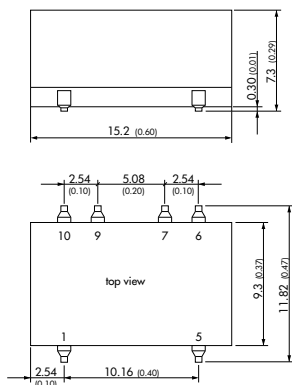
|                             |   |
|-----------------------------|---|
| Line regulation             | 0.2% max.   |
| Load regulation             | 0.6% max. (0-100%)  |
| Output voltage adjustment   | see table   |
| Ripple & noise              | 1.2-8.0 VDC output models: <50 mVpk-pk (20 MHz BW)<br>8.1-15.0 VDC output models: <75 mVpk-pk (20 MHz BW) |
| Short circuit protection    | continuous, automatic recovery  |
| Efficiency                  | 85% typ.  |
| Operating temperature range | -40 °C to +85 °C<br>above 60 °C derating 2.0%/K   |
| I/O isolation voltage       | non-isolated  |
| Remote On/Off               | shutdown input for low input current (1.2 mA) in standby operation  |
| Casing                      | plastic (UL 94 V-0 rated)   |
| Full datasheet              | <a href="http://www.tracopower.com/products/tsrn1sm.pdf">www.tracopower.com/products/tsrn1sm.pdf</a>      |

## Models

| Order code <sup>1)</sup>       | Input voltage range <sup>2)</sup> | Output voltage range (nominal) <sup>3)</sup> | Output current |
|--------------------------------|-----------------------------------|--|----------------|
| <b>Negative output circuit</b> |                                   |  |                |
| TSRN 1-2433SM                  | 4.6-32 VDC                        | -1.5--5.5 (-3.3) VDC                         | 600 mA         |
| TSRN 1-2450SM                  | 4.6-31 VDC                        | -2.5--8.0 (-5.0) VDC                         | 400 mA         |
| TSRN 1-2490SM                  | 7.0-27 VDC                        | -4.5--12.6 (-9.0) VDC                        | 300 mA         |
| TSRN 1-24120SM                 | 7.0-24 VDC                        | -4.5--13.5 (-12) VDC                         | 300 mA         |
| TSRN 1-24150SM                 | 7.0-21 VDC                        | -4.5--15.5 (-15) VDC                         | 200 mA         |
| <b>Positive output circuit</b> |                                   |  |                |
| TSRN 1-0525SM                  | 3.0-5.5 VDC                       | 1.2-3.6 (2.5) VDC                            | 1000 mA        |
| TSRN 1-2433SM                  | 4.6-42 VDC                        | 1.5-5.5 (3.3) VDC                            | 1000 mA        |
| TSRN 1-2450SM                  | 6.5-42 VDC                        | 2.5-8.0 (5.0) VDC                            | 1000 mA        |
| TSRN 1-2490SM                  | 10.5-42 VDC                       | 4.5-12.6 (9.0) VDC                           | 1000 mA        |
| TSRN 1-24120SM                 | 13.5-42 VDC                       | 4.5-13.5 (12) VDC                            | 1000 mA        |
| TSRN 1-24150SM                 | 16.5-42 VDC                       | 15.5-4.5 (15) VDC                            | 1000 mA        |

- 1) Same order code for positive and negative output operation
- 2) For input voltage higher 36 VDC an input capacitor 22 µF / 50 V is required.
- 3) For positive output circuit, input voltage must be higher than output voltage set: >0.5V for TSRN1-0525SM and >1.5 V for other models. For negative output circuit, input voltage plus absolute output voltage set must not exceed 36 VDC (Vin + |Vout| <36 VDC)

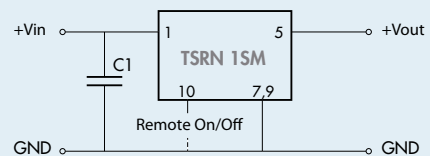
## Dimensions



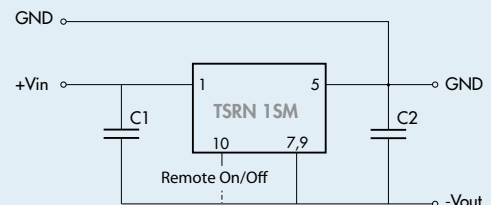
() = Inches

## Operation

### Positive output operation



### Negative output operation



# TES-1 Series ▶ 1 W

- ▶ SMD package with industry standard footprint
- ▶ Single and dual output models
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature Range -40 °C to +85 °C
- ▶ Available in tape & reel package



| Specifications              |  | Models            |                      |                       |                            |
|-----------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation             | non regulated  | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation             | +10 %/ -5% max.  | TES 1-0510        |                      | 3.3 VDC               | 300 mA                     |
| Ripple & noise              | <120mVpk-pk (20 MHz BW)  | TES 1-0511        |                      | 5 VDC                 | 200 mA                     |
| Short circuit protection    | limited 0.5 sec.   | TES 1-0519        |                      | 9 VDC                 | 110 mA                     |
| Efficiency                  | 80 % typ.  | TES 1-0512        | 5 VDC ± 10 %         | 12 VDC                | 85 mA                      |
| Operating temperature range | -40 °C to +85 °C<br>above 75 °C derating 4.0 %/K   | TES 1-0513        |                      | 15 VDC                | 65 mA                      |
| I/O isolation voltage       | 1500 VDC (60 sec.)   | TES 1-0521        |                      | ± 5 VDC               | ± 100 mA                   |
| Casing                      | plastic, insert mold (UL 94-0 rated)   | TES 1-0522        |                      | ± 12 VDC              | ± 40 mA                    |
| Full datasheet              | <a href="http://www.tracopower.com/products/tes1.pdf">www.tracopower.com/products/tes1.pdf</a> | TES 1-0523        |                      | ± 15 VDC              | ± 35 mA                    |
|                             |  | TES 1-1211        |                      | 5 VDC                 | 200 mA                     |
|                             |  | TES 1-1219        |                      | 9 VDC                 | 110 mA                     |
|                             |  | TES 1-1212        |                      | 12 VDC                | 85 mA                      |
|                             |  | TES 1-1213        | 12 VDC ± 10 %        | 15 VDC                | 65 mA                      |
|                             |  | TES 1-1221        |                      | ± 5 VDC               | ± 100 mA                   |
|                             |  | TES 1-1222        |                      | ± 12 VDC              | ± 40 mA                    |
|                             |  | TES 1-1223        |                      | ± 15 VDC              | ± 35 mA                    |
|                             |  | TES 1-2411        |                      | 5 VDC                 | 200 mA                     |
|                             |  | TES 1-2419        |                      | 9 VDC                 | 110 mA                     |
|                             |  | TES 1-2412        |                      | 12 VDC                | 85 mA                      |
|                             |  | TES 1-2413        | 24 VDC ± 10 %        | 15 VDC                | 65 mA                      |
|                             |  | TES 1-2421        |                      | ± 5 VDC               | ± 100 mA                   |
|                             |  | TES 1-2422        |                      | ± 12 VDC              | ± 40 mA                    |
|                             |  | TES 1-2423        |                      | ± 15 VDC              | ± 35 mA                    |

| Dimensions                  |                           | Pin |            |
|-----------------------------|---------------------------|-----|------------|
| <p>Single Output Models</p> | <p>Dual Output Models</p> |     |            |
|                             |                           | 1   | -Vin (GND) |
|                             |                           | 2   | +Vin (Vcc) |
|                             |                           | 4   | -Vout      |
|                             |                           | 5   | +Vout      |
|                             |                           | 7   | +Vout      |
|                             |                           | 8   | No con.    |
|                             |                           | 18  | No con.    |

() = Inches



# TES-1V Series ▶ 1 W

- ▶ SMD package with industry standard footprint
- ▶ I/O isolation 3000 VDC
- ▶ Single and dual output models
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- ▶ Available in tape & reel package



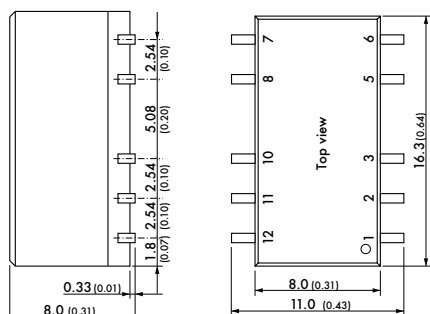
## Specifications

|                             |   |
|-----------------------------|---|
| Line regulation             | non regulated   |
| Load regulation             | +10 %/ -5% max.   |
| Ripple & noise              | <100mVpk-pk (20 MHz BW)   |
| Short circuit protection    | limited 0.5 sec.  |
| Efficiency                  | 80 % typ.   |
| Operating temperature range | $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$<br>above $75\text{ }^{\circ}\text{C}$ derating 4.0 %/K |
| I/O isolation voltage       | 3000VDC (60 sec.) functional isolation  |
| I/O isolation capacitance   | 60 pF typ.  |
| I/O isolation resistance    | >10 GOhm  |
| Casing                      | insert mold (UL 94-0 rated plastic)   |
| Full datasheet              | <a href="http://www.tracopower.com/products/tes1v.pdf">www.tracopower.com/products/tes1v.pdf</a>                      |

## Models

| Order code  | Input voltage     | Output voltage | Output current max. |
|-------------|-------------------|----------------|---------------------|
| TES 1-0510V |                   | 3.3 VDC        | 260 mA              |
| TES 1-0511V |                   | 5 VDC          | 200 mA              |
| TES 1-0512V |                   | 12 VDC         | 84 mA               |
| TES 1-0513V | 5 VDC $\pm$ 10 %  | 15 VDC         | 67 mA               |
| TES 1-0521V |                   | $\pm$ 5 VDC    | $\pm$ 100 mA        |
| TES 1-0522V |                   | $\pm$ 12 VDC   | $\pm$ 42 mA         |
| TES 1-0523V |                   | $\pm$ 15 VDC   | $\pm$ 34 mA         |
| TES 1-1210V |                   | 3.3 VDC        | 260 mA              |
| TES 1-1211V |                   | 5 VDC          | 200 mA              |
| TES 1-1212V |                   | 12 VDC         | 84 mA               |
| TES 1-1213V | 12 VDC $\pm$ 10 % | 15 VDC         | 67 mA               |
| TES 1-1221V |                   | $\pm$ 5 VDC    | $\pm$ 100 mA        |
| TES 1-1222V |                   | $\pm$ 12 VDC   | $\pm$ 42 mA         |
| TES 1-1223V |                   | $\pm$ 15 VDC   | $\pm$ 34 mA         |
| TES 1-2410V |                   | 3.3 VDC        | 260 mA              |
| TES 1-2411V |                   | 5 VDC          | 200 mA              |
| TES 1-2412V |                   | 12 VDC         | 84 mA               |
| TES 1-2413V | 24 VDC $\pm$ 10 % | 15 VDC         | 67 mA               |
| TES 1-2421V |                   | $\pm$ 5 VDC    | $\pm$ 100 mA        |
| TES 1-2422V |                   | $\pm$ 12 VDC   | $\pm$ 42 mA         |
| TES 1-2423V |                   | $\pm$ 15 VDC   | $\pm$ 34 mA         |

## Dimensions



() = Inches

| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | -Vin (GND)    | -Vin (GND)  |
| 2   | +Vin (Vcc)    | +Vin (Vcc)  |
| 3   | No con.       | No con.     |
| 5   | -Vout         | Common      |
| 6   | No con.       | -Vout       |
| 7   | No con.       | No con.     |
| 8   | +Vout         | +Vout       |
| 10  | No con.       | No con.     |
| 11  | No con.       | No con.     |
| 12  | No con.       | No con.     |

# TMR-1SM Series ▶ 1 W



- ▶ Wide 2:1 input voltage
- ▶ Low ripple and noise 30mVpk-pk
- ▶ Fully regulated outputs
- ▶ No minimum load required
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Continuous short circuit protection
- ▶ Remote On/Off
- ▶ Available in tape & reel package



**NEW**  
Product

| Specifications              |  | Models            |                      |                       |                            |
|-----------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation             | 0.2 % max.   | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation             | 1 % max.   | TMR 1-0511SM      |                      | 5 VDC                 | 200 mA                     |
| Ripple & noise              | 30mVpk-pk typ. (20 MHz BW)   | TMR 1-0512SM      |                      | 12 VDC                | 83 mA                      |
| Short circuit protection    | continuous, automatic recovery   | TMR 1-0513SM      | 4.5 – 9.0 VDC        | 15 VDC                | 67 mA                      |
| Efficiency                  | 80 % typ.  | TMR 1-0522SM      |                      | ± 12 VDC              | ± 42 mA                    |
| Operating temperature range | -40 °C to +85 °C<br>above 75 °C derating 6.7 %/K   | TMR 1-0523SM      |                      | ± 15 VDC              | ± 33 mA                    |
| I/O isolation voltage       | 1500VDC (60 sec.)  | TMR 1-1211SM      |                      | 5 VDC                 | 200 mA                     |
| Casing                      | plastic, insert mold (UL 94-0 rated)   | TMR 1-1212SM      |                      | 12 VDC                | 83 mA                      |
| Full datasheet              | <a href="http://www.tracopower.com/products/tmr1sm.pdf">www.tracopower.com/products/tmr1sm.pdf</a> | TMR 1-1213SM      | 9 – 18 VDC           | 15 VDC                | 67 mA                      |
|                             |  | TMR 1-1222SM      |                      | ± 12 VDC              | ± 42 mA                    |
|                             |  | TMR 1-1223SM      |                      | ± 15 VDC              | ± 33 mA                    |
|                             |  | TMR 1-2411SM      |                      | 5 VDC                 | 200 mA                     |
|                             |  | TMR 1-2412SM      |                      | 12 VDC                | 83 mA                      |
|                             |  | TMR 1-2413SM      | 18 – 36 VDC          | 15 VDC                | 67 mA                      |
|                             |  | TMR 1-2422SM      |                      | ± 12 VDC              | ± 42 mA                    |
|                             |  | TMR 1-2423SM      |                      | ± 15 VDC              | ± 33 mA                    |
|                             |  | TMR 1-4811SM      |                      | 5 VDC                 | 200 mA                     |
|                             |  | TMR 1-4812SM      |                      | 12 VDC                | 83 mA                      |
|                             |  | TMR 1-4813SM      | 36 – 75 VDC          | 15 VDC                | 67 mA                      |
|                             |  | TMR 1-4822SM      |                      | ± 12 VDC              | ± 42 mA                    |
|                             |  | TMR 1-4823SM      |                      | ± 15 VDC              | ± 33 mA                    |

| Dimensions |  | Pin                  |                    |               |
|------------|--|----------------------|--------------------|---------------|
|            |  | <b>Single output</b> | <b>Dual output</b> |               |
|            |  | 1                    | -Vin (GND)         | -Vin (GND)    |
|            |  | 2                    | Remote On/Off      | Remote On/Off |
|            |  | 6                    | No con.            | Common        |
|            |  | 7                    | No con.            | -Vout         |
|            |  | 8                    | +Vout              | +Vout         |
|            |  | 9                    | -Vout              | Common        |
|            |  | 14                   | +Vin               | +Vin          |

() = Inches

# TES-2H Series ▶ 2 W

- ▶ SMD package with industry standard footprint
- ▶ Single and dual output models
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- ▶ Available in tape & reel package



## Specifications

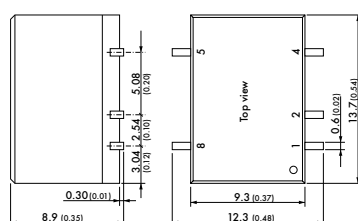
|                             |   |
|-----------------------------|---|
| Line regulation             | non regulated   |
| Load regulation             | +10 %/ -5% max.   |
| Ripple & noise              | <120mVpk-pk (20 MHz BW)   |
| Short circuit protection    | limited 0.5 sec.  |
| Efficiency                  | 80 % typ.   |
| Operating temperature range | $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$<br>above $75\text{ }^{\circ}\text{C}$ derating 4.0 %/K |
| I/O isolation voltage       | 1500VDC (60 sec.)   |
| Casing                      | plastic, insert mold (UL 94-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tes2h.pdf">www.tracopower.com/products/tes2h.pdf</a>                      |

## Models

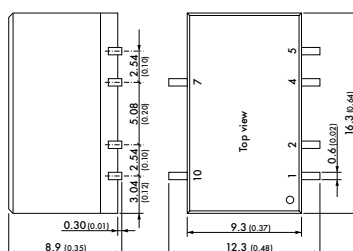
| Order code  | Input voltage     | Output voltage | Output current max. |
|-------------|-------------------|----------------|---------------------|
| TES 2-0510H |                   | 3.3 VDC        | 500 mA              |
| TES 2-0511H |                   | 5 VDC          | 400 mA              |
| TES 2-0512H | 5 VDC $\pm$ 10 %  | 12 VDC         | 165 mA              |
| TES 2-0521H |                   | $\pm$ 5 VDC    | $\pm$ 200 mA        |
| TES 2-0522H |                   | $\pm$ 12 VDC   | $\pm$ 83 mA         |
| TES 2-0523H |                   | $\pm$ 15 VDC   | $\pm$ 66 mA         |
| TES 2-1210H |                   | 3.3 VDC        | 500 mA              |
| TES 2-1211H |                   | 5 VDC          | 400 mA              |
| TES 2-1212H | 12 VDC $\pm$ 10 % | 12 VDC         | 165 mA              |
| TES 2-1222H |                   | $\pm$ 12 VDC   | $\pm$ 83 mA         |
| TES 2-1223H |                   | $\pm$ 15 VDC   | $\pm$ 66 mA         |
| TES 2-2410H |                   | 3.3 VDC        | 500 mA              |
| TES 2-2411H |                   | 5 VDC          | 400 mA              |
| TES 2-2412H | 24 VDC $\pm$ 10 % | 12 VDC         | 165 mA              |
| TES 2-2422H |                   | $\pm$ 12 VDC   | $\pm$ 83 mA         |
| TES 2-2423H |                   | $\pm$ 15 VDC   | $\pm$ 66 mA         |

## Dimensions

Single output models



Dual output models



() = Inches

| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | - Vin (GND)   | - Vin (GND) |
| 2   | +Vin (Vcc)    | +Vin (Vcc)  |
| 4   | - Vout        | Common      |
| 5   | + Vout        | - Vout      |
| 7   |               | + Vout      |
| 8   | No con.       |             |
| 10  |               | No con.     |

# TES-2N Series ▶ 2 W



- ▶ Low profile SMD package
- ▶ Wide 2:1 input range
- ▶ Fully regulated output
- ▶ I/O isolation 1500VDC
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Short circuit protection
- ▶ Input filter to meet EN 55022, class A
- ▶ Available in tape & reel package

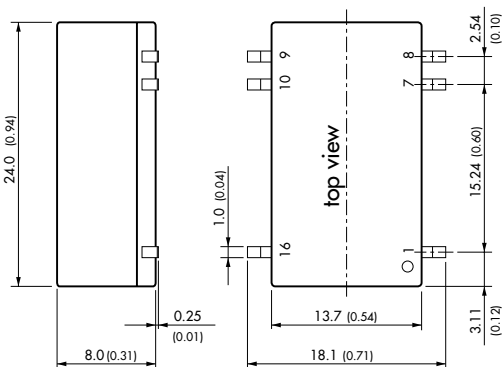


| Specifications               |  |
|------------------------------|--|
| Line regulation              | 0.5 % max.   |
| Load regulation              | Single output models: 0.75 % max.<br>Dual output models: 2.0 % max.                              |
| Ripple & noise               | <50 mVpk-pk (20 MHz BW)  |
| Conducted EMI                | EN55022 class A  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 78 % typ.  |
| Operating temperature range  | -40 °C to +85 °C<br>above 70 °C derating 3.5 %/K   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  |
| Casing                       | plastic, insert mold (UL 94-0 rated)   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tes2n.pdf">www.tracopower.com/products/tes2n.pdf</a> |

| Models      |               |                |                     |
|-------------|---------------|----------------|---------------------|
| Order code  | Input voltage | Output voltage | Output current max. |
| TES 2N-0510 |               | 3.3 VDC        | 500 mA              |
| TES 2N-0511 |               | 5 VDC          | 400 mA              |
| TES 2N-0512 |               | 12 VDC         | 165 mA              |
| TES 2N-0513 | 4.5 – 9.0 VDC | 15 VDC         | 135 mA              |
| TES 2N-0521 |               | ± 5 VDC        | ± 200 mA            |
| TES 2N-0522 |               | ± 12 VDC       | ± 85 mA             |
| TES 2N-0523 |               | ± 15 VDC       | ± 65 mA             |
| TES 2N-1210 |               | 3.3 VDC        | 500 mA              |
| TES 2N-1211 |               | 5 VDC          | 400 mA              |
| TES 2N-1212 |               | 12 VDC         | 165 mA              |
| TES 2N-1213 | 9 – 18 VDC    | 15 VDC         | 135 mA              |
| TES 2N-1221 |               | ± 5 VDC        | ± 200 mA            |
| TES 2N-1222 |               | ± 12 VDC       | ± 85 mA             |
| TES 2N-1223 |               | ± 15 VDC       | ± 65 mA             |
| TES 2N-2410 |               | 3.3 VDC        | 500 mA              |
| TES 2N-2411 |               | 5 VDC          | 400 mA              |
| TES 2N-2412 |               | 12 VDC         | 165 mA              |
| TES 2N-2413 | 18 – 36 VDC   | 15 VDC         | 135 mA              |
| TES 2N-2421 |               | ± 5 VDC        | ± 200 mA            |
| TES 2N-2422 |               | ± 12 VDC       | ± 85 mA             |
| TES 2N-2423 |               | ± 15 VDC       | ± 65 mA             |
| TES 2N-4810 |               | 3.3 VDC        | 500 mA              |
| TES 2N-4811 |               | 5 VDC          | 400 mA              |
| TES 2N-4812 |               | 12 VDC         | 165 mA              |
| TES 2N-4813 | 36 – 75 VDC   | 15 VDC         | 135 mA              |
| TES 2N-4821 |               | ± 5 VDC        | ± 200 mA            |
| TES 2N-4822 |               | ± 12 VDC       | ± 85 mA             |
| TES 2N-4823 |               | ± 15 VDC       | ± 65 mA             |

Product with same electrical specifications available in DIP package.  
See TEL-2 series page 48

## Dimensions



() = Inches

| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | - Vin (GND)   | - Vin (GND) |
| 7   | No con.       | No con.     |
| 8   | No con.       | Common      |
| 9   | + Vout        | + Vout      |
| 10  | - Vout        | - Vout      |
| 16  | + Vin (Vcc)   | + Vin (Vcc) |

# TDR-2SM Series ▶ 2 W



- ▶ Compact design in SMD package
- ▶ Wide 2:1 input voltage range
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$  without derating
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30 mVpk-pk
- ▶ No minimum load required
- ▶ I/O-isolation 1500VDC
- ▶ Short circuit protection
- ▶ Remote On/Off
- ▶ Available in tape & reel package



## Specifications

|                              |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | - Single output models: 1.0% max.<br>- Dual output models: 1.0% max.                           |
| Ripple & noise               | 30 mVpk-pk typ. (20 MHz BW)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 81% typ.   |
| Operating temperature range  | $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ without derating                |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                             |
| Casing                       | over mold (UL 94 V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tdr2.pdf">www.tracopower.com/products/tdr2.pdf</a> |

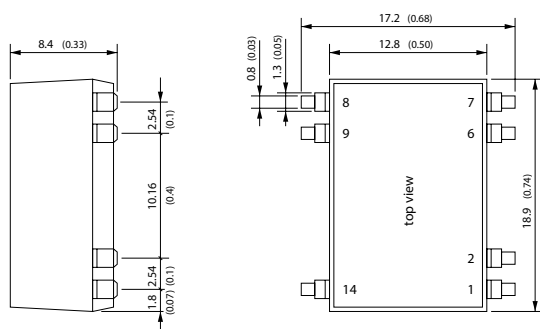
## Models

| Order code   | Input voltage | Output voltage | Output current max. |
|--------------|---------------|----------------|---------------------|
| TDR 2-0511SM |               | 5 VDC          | 400 mA              |
| TDR 2-0512SM |               | 12 VDC         | 167 mA              |
| TDR 2-0513SM | 4.5 – 9 VDC   | 15 VDC         | 134 mA              |
| TDR 2-0522SM |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TDR 2-0523SM |               | $\pm 15$ VDC   | $\pm 67$ mA         |
| TDR 2-1211SM |               | 5 VDC          | 400 mA              |
| TDR 2-1212SM |               | 12 VDC         | 167 mA              |
| TDR 2-1213SM | 9 – 18 VDC    | 15 VDC         | 134 mA              |
| TDR 2-1222SM |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TDR 2-1223SM |               | $\pm 15$ VDC   | $\pm 67$ mA         |
| TDR 2-2411SM |               | 5 VDC          | 400 mA              |
| TDR 2-2412SM |               | 12 VDC         | 167 mA              |
| TDR 2-2413SM | 18 – 36 VDC   | 15 VDC         | 134 mA              |
| TDR 2-2422SM |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TDR 2-2423SM |               | $\pm 15$ VDC   | $\pm 67$ mA         |
| TDR 2-4811SM |               | 5 VDC          | 400 mA              |
| TDR 2-4812SM |               | 12 VDC         | 167 mA              |
| TDR 2-4813SM | 36 – 75 VDC   | 15 VDC         | 134 mA              |
| TDR 2-4822SM |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TDR 2-4823SM |               | $\pm 15$ VDC   | $\pm 67$ mA         |

Product with same electrical specifications available in DIP package.

See TDR-2 series page 49

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | - Vin (GND)   | - Vin (GND)   |
| 2   | Remote On/Off | Remote On/Off |
| 6   | No con.       | Common        |
| 7   | No con.       | - Vout        |
| 8   | + Vout        | + Vout        |
| 9   | - Vout        | Common        |
| 14  | + Vin (Vcc)   | + Vin (Vcc)   |

# TDR-2WISM Series ▶ 2 W



- ▶ Compact design in SMD package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$  without derating
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30 mVpk-pk
- ▶ No minimum load required
- ▶ I/O-isolation 1500VDC
- ▶ Short circuit protection
- ▶ Remote On/Off
- ▶ Available in tape & reel package



## Specifications

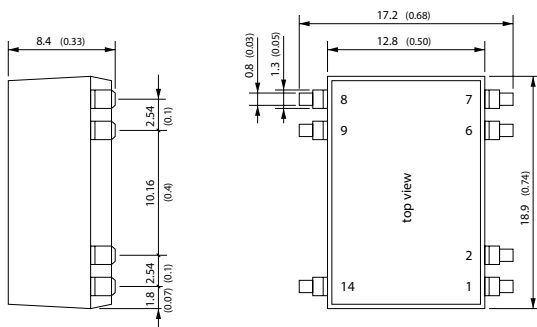
|                              |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | - Single output models: 1.0% max.<br>- Dual output models: 1.0% max.                               |
| Ripple & noise               | 30 mVp-p typ. (20 MHz BW)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 81% typ.   |
| Operating temperature range  | $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ without derating                    |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                                 |
| Casing                       | over mold (UL 94 V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tdr2wi.pdf">www.tracopower.com/products/tdr2wi.pdf</a> |

## Models

| Order code     | Input voltage | Output voltage | Output current max. |
|----------------|---------------|----------------|---------------------|
| TDR 2-1211WISM |               | 5 VDC          | 400 mA              |
| TDR 2-1212WISM |               | 12 VDC         | 167 mA              |
| TDR 2-1213WISM | 4.5 – 18 VDC  | 15 VDC         | 134 mA              |
| TDR 2-1222WISM |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TDR 2-1223WISM |               | $\pm 15$ VDC   | $\pm 67$ mA         |
| TDR 2-2411WISM |               | 5 VDC          | 400 mA              |
| TDR 2-2412WISM |               | 12 VDC         | 167 mA              |
| TDR 2-2413WISM | 9 – 36 VDC    | 15 VDC         | 134 mA              |
| TDR 2-2422WISM |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TDR 2-2423WISM |               | $\pm 15$ VDC   | $\pm 67$ mA         |
| TDR 2-4811WISM |               | 5 VDC          | 400 mA              |
| TDR 2-4812WISM |               | 12 VDC         | 167 mA              |
| TDR 2-4813WISM | 18 – 75 VDC   | 15 VDC         | 134 mA              |
| TDR 2-4822WISM |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TDR 2-4823WISM |               | $\pm 15$ VDC   | $\pm 67$ mA         |

Product with same electrical specifications available in DIP package.  
See TDR-2WI series page 50

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | - Vin (GND)   | - Vin (GND)   |
| 2   | Remote On/Off | Remote On/Off |
| 6   | No con.       | Common        |
| 7   | No con.       | - Vout        |
| 8   | + Vout        | + Vout        |
| 9   | - Vout        | Common        |
| 14  | + Vin (Vcc)   | + Vin (Vcc)   |

# TDR-3SM Series ▶ 3 W



- ▶ Smallest 3 Watt converter in SMD package
- ▶ Wide 2:1 input voltage range
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30 mVpk-pk
- ▶ No minimum load required
- ▶ I/O isolation 1500 VDC
- ▶ Short circuit protection
- ▶ Remote On/Off
- ▶ Available in tape & reel package



## Specifications

|                              |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | – Single output models: 1.0% max.<br>– Dual output models: 1.0% max.   |
| Ripple & noise               | 30 mVpk-pk typ. (20 MHz BW)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 81% typ.   |
| Operating temperature range  | $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$<br>above $70\text{ }^{\circ}\text{C}$ derating 3.3%/K |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation   |
| Casing                       | over mold (UL 94 V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tdr3sm.pdf">www.tracopower.com/products/tdr3sm.pdf</a>                   |

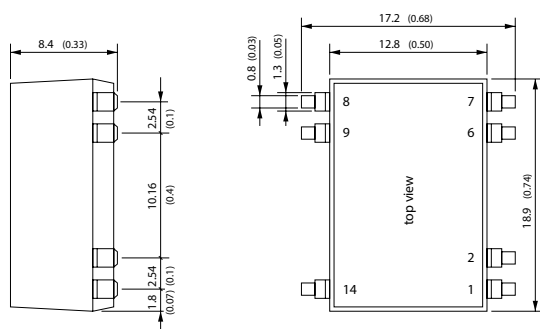
## Models

| Order code   | Input voltage | Output voltage      | Output current max. |
|--------------|---------------|---------------------|---------------------|
| TDR 3-0511SM | 4.5 – 9 VDC   | 5 VDC               | 600 mA              |
| TDR 3-0512SM |               | 12 VDC              | 250 mA              |
| TDR 3-0513SM |               | 15 VDC              | 200 mA              |
| TDR 3-0522SM |               | $\pm 12\text{ VDC}$ | $\pm 125\text{ mA}$ |
| TDR 3-0523SM |               | $\pm 15\text{ VDC}$ | $\pm 100\text{ mA}$ |
| TDR 3-1211SM | 9 – 18 VDC    | 5 VDC               | 600 mA              |
| TDR 3-1212SM |               | 12 VDC              | 250 mA              |
| TDR 3-1213SM |               | 15 VDC              | 200 mA              |
| TDR 3-1222SM |               | $\pm 12\text{ VDC}$ | $\pm 125\text{ mA}$ |
| TDR 3-1223SM |               | $\pm 15\text{ VDC}$ | $\pm 100\text{ mA}$ |
| TDR 3-2411SM | 18 – 36 VDC   | 5 VDC               | 600 mA              |
| TDR 3-2412SM |               | 12 VDC              | 250 mA              |
| TDR 3-2413SM |               | 15 VDC              | 200 mA              |
| TDR 3-2422SM |               | $\pm 12\text{ VDC}$ | $\pm 125\text{ mA}$ |
| TDR 3-2423SM |               | $\pm 15\text{ VDC}$ | $\pm 100\text{ mA}$ |
| TDR 3-4811SM | 36 – 75 VDC   | 5 VDC               | 600 mA              |
| TDR 3-4812SM |               | 12 VDC              | 250 mA              |
| TDR 3-4813SM |               | 15 VDC              | 200 mA              |
| TDR 3-4822SM |               | $\pm 12\text{ VDC}$ | $\pm 125\text{ mA}$ |
| TDR 3-4823SM |               | $\pm 15\text{ VDC}$ | $\pm 100\text{ mA}$ |

Product with same electrical specifications available in DIP package.

See TDR-3 series page 51

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | – Vin (GND)   | – Vin (GND)   |
| 2   | Remote On/Off | Remote On/Off |
| 6   | No con.       | Common        |
| 7   | No con.       | – Vout        |
| 8   | + Vout        | + Vout        |
| 9   | – Vout        | Common        |
| 14  | + Vin (Vcc)   | + Vin (Vcc)   |

# TDR-3WISM Series ▶ 3 W



- ▶ Smallest 3 Watt converter in SMD package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30 mVpk-pk
- ▶ No minimum load required
- ▶ I/O isolation 1500VDC
- ▶ Short circuit protection
- ▶ Remote On/Off
- ▶ Available in tape & reel package

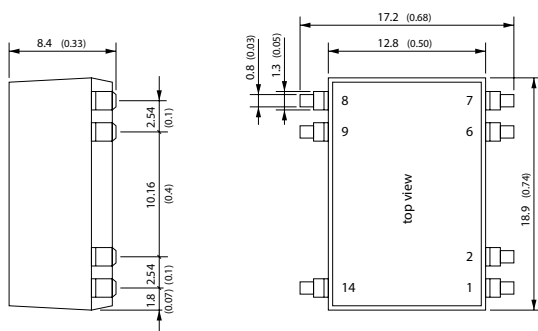


| Specifications               |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | - Single output models: 1.0% max.<br>- Dual output models: 1.0% max.                               |
| Ripple & noise               | 30 mVp-p typ. (20 MHz BW)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 81% typ.   |
| Operating temperature range  | -40 °C to +85 °C<br>above 70 °C derating 3.3%/K  |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                                 |
| Casing                       | over mold (UL 94 V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tdr3wi.pdf">www.tracopower.com/products/tdr3wi.pdf</a> |

| Models         |               |                |                     |
|----------------|---------------|----------------|---------------------|
| Order code     | Input voltage | Output voltage | Output current max. |
| TDR 3-1211WISM |               | 5 VDC          | 600 mA              |
| TDR 3-1212WISM |               | 12 VDC         | 250 mA              |
| TDR 3-1213WISM | 4.5 – 18 VDC  | 15 VDC         | 200 mA              |
| TDR 3-1222WISM |               | ± 12 VDC       | ± 125 mA            |
| TDR 3-1223WISM |               | ± 15 VDC       | ± 100 mA            |
| TDR 3-2411WISM |               | 5 VDC          | 600 mA              |
| TDR 3-2412WISM |               | 12 VDC         | 250 mA              |
| TDR 3-2413WISM | 9 – 36 VDC    | 15 VDC         | 200 mA              |
| TDR 3-2422WISM |               | ± 12 VDC       | ± 125 mA            |
| TDR 3-2423WISM |               | ± 15 VDC       | ± 100 mA            |
| TDR 3-4811WISM |               | 5 VDC          | 600 mA              |
| TDR 3-4812WISM |               | 12 VDC         | 250 mA              |
| TDR 3-4813WISM | 18 – 75 VDC   | 15 VDC         | 200 mA              |
| TDR 3-4822WISM |               | ± 12 VDC       | ± 125 mA            |
| TDR 3-4823WISM |               | ± 15 VDC       | ± 100 mA            |

Product with same electrical specifications available in DIP package.  
See TDR-3WI series page 52

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | - Vin (GND)   | - Vin (GND)   |
| 2   | Remote On/Off | Remote On/Off |
| 6   | No con.       | Common        |
| 7   | No con.       | - Vout        |
| 8   | + Vout        | + Vout        |
| 9   | - Vout        | Common        |
| 14  | + Vin (Vcc)   | + Vin (Vcc)   |



# THL-3WISM Series ▶ 3 W



- ▶ Ultra wide 4:1 input voltage range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+80\text{ }^{\circ}\text{C}$
- ▶ Short circuit protection
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off
- ▶ Available in tape & reel package



## Specifications

|                             |  |
|-----------------------------|--|
| Line regulation             | 1.0% max.  |
| Load regulation             | 1.2% max.  |
| Ripple & noise              | <100 mVpk-pk (20 MHz BW)   |
| Conducted EMI               | EN55022 class A  |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 80 % typ.  |
| Operating temperature range | $-40\text{ }^{\circ}\text{C}$ to $+80\text{ }^{\circ}\text{C}$<br>above $60\text{ }^{\circ}\text{C}$ derating 2.5%/K |
| I/O isolation voltage       | 1500 VDC (60 sec.)   |
| Safety standards            | UL 60950-1, IEC/EN 60950-1, CB report  |
| Remote On/Off               | shutdown input for low input current (5 mA)<br>in standby operation  |
| Casing                      | insert mold (UL 94 V-0 rated plastic)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/thl3wism.pdf">www.tracopower.com/products/thl3wism.pdf</a>               |

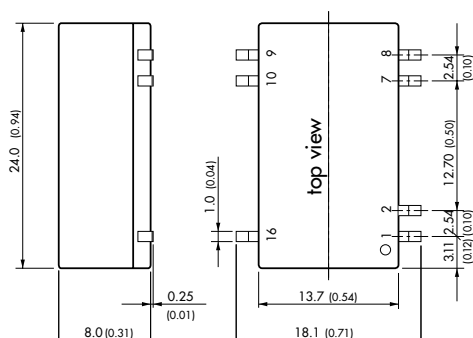
## Models

| Order code     | Input voltage | Output voltage | Output current max. |
|----------------|---------------|----------------|---------------------|
| THL 3-2410WISM |               | 3.3 VDC        | 600 mA              |
| THL 3-2411WISM |               | 5 VDC          | 600 mA              |
| THL 3-2412WISM |               | 12 VDC         | 250 mA              |
| THL 3-2413WISM | 9 – 36 VDC    | 15 VDC         | 200 mA              |
| THL 3-2415WISM |               | 24 VDC         | 125 mA              |
| THL 3-2421WISM |               | $\pm 5$ VDC    | $\pm 300$ mA        |
| THL 3-2422WISM |               | $\pm 12$ VDC   | $\pm 125$ mA        |
| THL 3-2423WISM |               | $\pm 15$ VDC   | $\pm 100$ mA        |
| THL 3-4810WISM |               | 3.3 VDC        | 600 mA              |
| THL 3-4811WISM |               | 5 VDC          | 600 mA              |
| THL 3-4812WISM |               | 12 VDC         | 250 mA              |
| THL 3-4813WISM | 18 – 75 VDC   | 15 VDC         | 200 mA              |
| THL 3-4815WISM |               | 24 VDC         | 125 mA              |
| THL 3-4821WISM |               | $\pm 5$ VDC    | $\pm 300$ mA        |
| THL 3-4822WISM |               | $\pm 12$ VDC   | $\pm 125$ mA        |
| THL 3-4823WISM |               | $\pm 15$ VDC   | $\pm 100$ mA        |

Product with same electrical specifications available in DIP package.

See THL-3WI series page 53

## Dimensions



| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | - Vin (GND)   | - Vin (GND)   |
| 2   | Remote On/Off | Remote On/Off |
| 7   | No con.       | No con.       |
| 8   | No con.       | Common        |
| 9   | + Vout        | + Vout        |
| 10  | - Vout        | - Vout        |
| 16  | + Vin (Vcc)   | + Vin (Vcc)   |

() = Inches

# THL-6WISM Series ▶ 6 W



- ▶ Ultra wide 4:1 input voltage range
- ▶ Fully regulated output
- ▶ Operating temperature range -40 °C to +80 °C
- ▶ I/O isolation 1500 VDC
- ▶ Short circuit protection
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off
- ▶ Optional tape & reel package



| Specifications              |  | Models            |                      |                       |                            |
|-----------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation             | 1.0 % max.   | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation             | 1.2 % max.   | THL 6-2410WISM    |                      | 3.3 VDC               | 1450 mA                    |
| Ripple & Noise              | <100 mVpk-pk typ.(20 MHz BW)   | THL 6-2411WISM    |                      | 5 VDC                 | 1200 mA                    |
| Input filter                | EN 55022, class EN55022 class A without external components  | THL 6-2412WISM    |                      | 12 VDC                | 500 mA                     |
| Short circuit protection    | continuous, automatic recovery   | THL 6-2413WISM    | 9 – 36 VDC           | 15 VDC                | 400 mA                     |
| Efficiency                  | 83 % typ.  | THL 6-2415WISM    |                      | 24 VDC                | 250 mA                     |
| Operating temperature range | -40 °C to +80 °C<br>above 60°C derating 2.5%/K   | THL 6-2421WISM    |                      | ± 5 VDC               | ± 600 mA                   |
| I/O isolation voltage       | 1500 VDC (60 sec.)   | THL 6-2422WISM    |                      | ± 12 VDC              | ± 250 mA                   |
| Safety standards            | UL 60950-1, IEC/EN 60950-1, CB report  | THL 6-2423WISM    |                      | ± 15 VDC              | ± 200 mA                   |
| Remote On/Off               | shutdown input for low input current (10 mA) in standby operation                                      | THL 6-4810WISM    |                      | 3.3 VDC               | 1450 mA                    |
| Casing                      | insert mold (UL 94 V-0 rated plastic)  | THL 6-4811WISM    |                      | 5 VDC                 | 1200 mA                    |
| Full datasheet              | <a href="http://www.tracopower.com/products/thl6wism.pdf">www.tracopower.com/products/thl6wism.pdf</a> | THL 6-4812WISM    |                      | 12 VDC                | 500 mA                     |
|                             |  | THL 6-4813WISM    | 18 – 75 VDC          | 15 VDC                | 400 mA                     |
|                             |  | THL 6-4815WISM    |                      | 24 VDC                | 250 mA                     |
|                             |  | THL 6-4821WISM    |                      | ± 5 VDC               | ± 600 mA                   |
|                             |  | THL 6-4822WISM    |                      | ± 12 VDC              | ± 250 mA                   |
|                             |  | THL 6-4823WISM    |                      | ± 15 VDC              | ± 200 mA                   |

| Dimensions |                 | Pin           |               |               |
|------------|-----------------|---------------|---------------|---------------|
|            | <p>top view</p> | Single output | Dual output   |               |
|            |                 | 1             | Remote On/Off | Remote On/Off |
|            |                 | 2             | - Vin (GND)   | - Vin (GND)   |
|            |                 | 6             | No con.       | Common        |
|            |                 | 8             | No con.       | - Vout        |
|            |                 | 9             | + Vout        | + Vout        |
|            |                 | 11            | - Vout        | Common        |
|            |                 | 16            | + Vin (Vcc)   | + Vin (Vcc)   |

() = Inches

# TON-15 Series ▶ 15 W



- ▶ Low profile, open frame
- ▶ SMD or trough hole version
- ▶ Wide 2:1 input voltage range
- ▶ High efficiency up to 88 %
- ▶ I/O-isolation 2250 VDC (planar transformer)
- ▶ Operating temperature range -40 °C to +90 °C
- ▶ Remote On/Off
- ▶ Adjustable output voltage

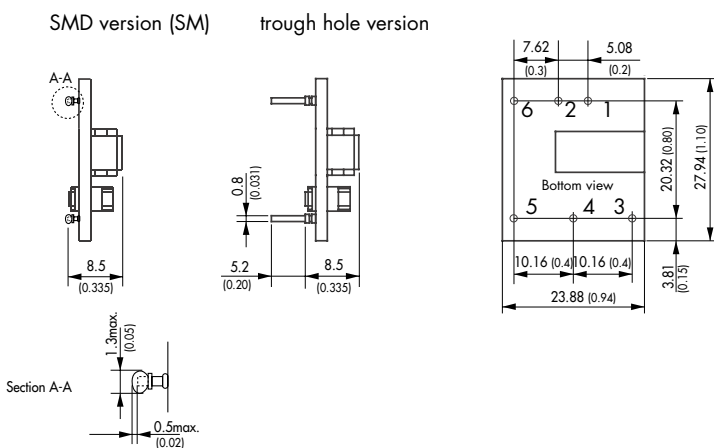


| Specifications               |   |
|------------------------------|---|
| Line regulation              | 0.2 % max.  |
| Load regulation              | 0.2 % max.  |
| Output voltage adjustment    | ±10 % by external resistor  |
| Ripple & noise (20 MHz BW)   | <75 mVpk-pk<br><100 mVpk-pk for 12 & 15 VDC models  |
| Conducted EMI                | EN55022, class EN55022 class A (internal filter)  |
| Short circuit protection     | continuous, automatic recovery  |
| Efficiency                   | 86 % typ.   |
| Operating temperature range  | -40 °C to +85 °C<br>above 75 °C derating 3.3 %/K  |
| I/O isolation voltage        | 2250 VDC (60 sec.) basic insulation   |
| Safety standards / approvals | cUL/UL 60950-1, IEC 60950-1, CB-report  |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation.<br>Negative remote function (forced On) on request. |
| Full datasheet               | <a href="http://www.tracopower.com/products/ton15.pdf">www.tracopower.com/products/ton15.pdf</a>                        |

| SMD Models    |               |                |                     |
|---------------|---------------|----------------|---------------------|
| Order code    | Input voltage | Output voltage | Output current max. |
| TON 15-2410SM | 18 – 36 VDC   | 3.3 VDC        | 3500 mA             |
| TON 15-2411SM |               | 5 VDC          | 3000 mA             |
| TON 15-2412SM |               | 12 VDC         | 1250 mA             |
| TON 15-2413SM | 36 – 75 VDC   | 15 VDC         | 1000 mA             |
| TON 15-4810SM |               | 3.3 VDC        | 3500 mA             |
| TON 15-4811SM |               | 5 VDC          | 3000 mA             |
| TON 15-4812SM | 12 VDC        | 1250 mA        |                     |
| TON 15-4813SM | 15 VDC        | 1000 mA        |                     |

| Trough Hole Models |               |                |                     |
|--------------------|---------------|----------------|---------------------|
| Order code         | Input voltage | Output voltage | Output current max. |
| TON 15-2410        | 18 – 36 VDC   | 3.3 VDC        | 3500 mA             |
| TON 15-2411        |               | 5 VDC          | 3000 mA             |
| TON 15-2412        |               | 12 VDC         | 1250 mA             |
| TON 15-2413        | 36 – 75 VDC   | 15 VDC         | 1000 mA             |
| TON 15-4810        |               | 3.3 VDC        | 3500 mA             |
| TON 15-4811        |               | 5 VDC          | 3000 mA             |
| TON 15-4812        | 12 VDC        | 1250 mA        |                     |
| TON 15-4813        | 15 VDC        | 1000 mA        |                     |

## Dimensions



( ) = Inches

| Pin |               |
|-----|---------------|
| 1   | + Vin (Vcc)   |
| 2   | - Vin (GND)   |
| 3   | + Vout        |
| 4   | Trim          |
| 5   | - Vout        |
| 6   | Remote On/Off |

# TON-15WI Series ▶ 15 W



- ▶ Low profile, open frame
- ▶ SMD or trough hole version
- ▶ Ultra wide 4:1 input voltage range
- ▶ High efficiency up to 88 %
- ▶ I/O-isolation 2250 VDC (planar transformer)
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Remote On/Off
- ▶ Adjustable output voltage



| Specifications               |   | SMD Models                |               |                |                     |
|------------------------------|---|---------------------------|---------------|----------------|---------------------|
| Line regulation              | 0.2% max.   | Order code                | Input voltage | Output voltage | Output current max. |
| Load regulation              | 0.2 % max.  | TON 15-2410WISM           |               | 3.3 VDC        | 4000 mA             |
| Output voltage adjustment    | ±10 % by external resistor  | TON 15-2411WISM           | 9 – 36 VDC    | 5 VDC          | 3000 mA             |
| Ripple & noise (20 MHz BW)   | <75 mVpk-pk<br><100 mVpk-pk for 12 & 15 VDC models  | TON 15-2412WISM           |               | 12 VDC         | 1300 mA             |
| Conducted EMI                | EN55022, class EN55022 class A (with external capacitors)   | TON 15-2413WISM           |               | 15 VDC         | 1000 mA             |
| Short circuit protection     | continuous, automatic recovery  | TON 15-4810WISM           |               | 3.3 VDC        | 4000 mA             |
| Efficiency                   | 86 % typ.   | TON 15-4811WISM           | 18 – 75 VDC   | 5 VDC          | 3000 mA             |
| Operating temperature range  | -40 °C to +85 °C<br>above 60 °C derating 2.0 %/K  | TON 15-4812WISM           |               | 12 VDC         | 1300 mA             |
| I/O isolation voltage        | 2250 VDC (60 sec.) basic insulation   | TON 15-4813WISM           |               | 15 VDC         | 1000 mA             |
| Safety standards / approvals | cUL/UL 60950-1, IEC 60950-1, CB-report  | <b>Trough Hole Models</b> |               |                |                     |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation.<br>Negative remote function (forced On) on request. | Order code                | Input voltage | Output voltage | Output current max. |
| Full datasheet               | <a href="http://www.tracopower.com/products/ton15wi.pdf">www.tracopower.com/products/ton15wi.pdf</a>                    | TON 15-2410WI             |               | 3.3 VDC        | 4000 mA             |
|                              |   | TON 15-2411WI             | 9 – 36 VDC    | 5 VDC          | 3000 mA             |
|                              |   | TON 15-2412WI             |               | 12 VDC         | 1300 mA             |
|                              |   | TON 15-2413WI             |               | 15 VDC         | 1000 mA             |
|                              |   | TON 15-4810WI             |               | 3.3 VDC        | 4000 mA             |
|                              |   | TON 15-4811WI             | 18 – 75 VDC   | 5 VDC          | 3000 mA             |
|                              |   | TON 15-4812WI             |               | 12 VDC         | 1300 mA             |
|                              |   | TON 15-4813WI             |               | 15 VDC         | 1000 mA             |

| Dimensions       |                     | Pin |               |  |  |
|------------------|---------------------|-----|---------------|--|--|
| SMD version (SM) | trough hole version | 1   | + Vin (Vcc)   |  |  |
|                  |                     | 2   | - Vin (GND)   |  |  |
|                  |                     | 3   | + Vout        |  |  |
|                  |                     | 4   | Trim          |  |  |
|                  |                     | 5   | - Vout        |  |  |
|                  |                     | 6   | Remote On/Off |  |  |
| () = Inches      |                     |     |               |  |  |

# TMA/TME Series ▶ 1 W

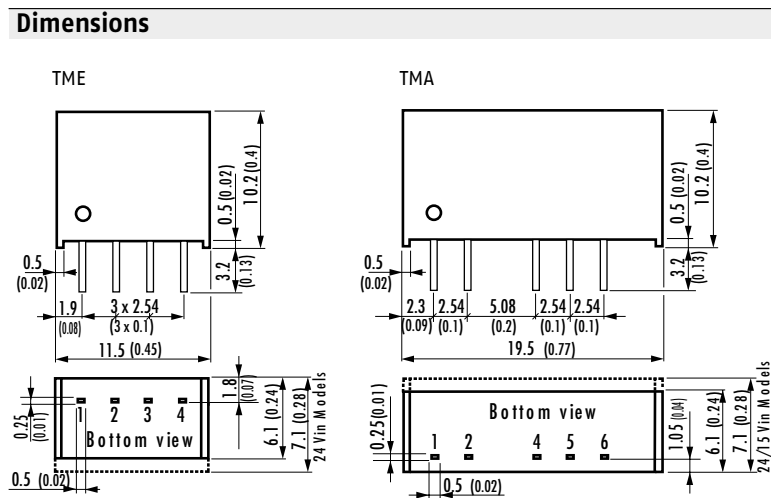
- ▶ Industry standard pinout
- ▶ Non-regulated output
- ▶ Single and dual output models
- ▶ I/O isolation voltage 1000VDC
- ▶ High efficiency
- ▶ Operating temperature range -40 °C to +85 °C



| Specifications              |  |
|-----------------------------|--|
| Line regulation             | non regulated  |
| Load regulation             | 10% max.   |
| Ripple & Noise              | - TMA <75 mVpk-pk (20 MHz BW)<br>- TME <150 mVpk-pk (20 MHz BW)  |
| Short circuit protection    | limited 1 sec.   |
| Efficiency                  | 80% typ.   |
| Operating temperature range | -40 °C to +85 °C (no derating)   |
| I/O isolation voltage       | 1000VDC (60 sec.)  |
| Casing                      | plastic (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tme.pdf">www.tracopower.com/products/tme.pdf</a><br><a href="http://www.tracopower.com/products/tma.pdf">www.tracopower.com/products/tma.pdf</a> |

| Models     |               |                |                     |       |
|------------|---------------|----------------|---------------------|-------|
| Order code | Input voltage | Output voltage | Output current max. |       |
| TME 0303S  | 3.3 VDC ±10%  | 3.3 VDC        | 260 mA              |       |
| TME 0305S  |               | 5 VDC          | 200 mA              |       |
| TME 0503S  |               | 3.3 VDC        | 260 mA              |       |
| TMA 0505S  |               | 5 VDC          | 200 mA              |       |
| TME 0509S  |               | 9 VDC          | 110 mA              |       |
| TMA 0512S  |               | 12 VDC         | 80 mA               |       |
| TMA 0515S  | 5 VDC ±10%    | 15 VDC         | 65 mA               |       |
| TMA 0505D  |               | ± 5 VDC        | ±100 mA             |       |
| TMA 0512D  |               | ± 12 VDC       | ± 40 mA             |       |
| TMA 0515D  |               | ± 15 VDC       | ± 35 mA             |       |
| TMA 1205S  | TME 1205S     | 5 VDC          | 200 mA              |       |
|            | TME 1209S     | 9 VDC          | 110 mA              |       |
| TMA 1212S  | TME 1212S     | 12 VDC         | 80 mA               |       |
| TMA 1215S  | TME 1215S     | 12 VDC ± 10%   | 15 VDC              | 65 mA |
| TMA 1205D  |               | ± 5 VDC        | ±100 mA             |       |
| TMA 1212D  |               | ± 12 VDC       | ± 40 mA             |       |
| TMA 1215D  |               | ± 15 VDC       | ± 35 mA             |       |
| TMA 1505S  |               | 5 VDC          | 200 mA              |       |
| TMA 1512S  |               | 12 VDC         | 80 mA               |       |
| TMA 1515S  | 15 VDC ± 10%  | 15 VDC         | 65 mA               |       |
| TMA 1505D  |               | ± 5 VDC        | ± 100 mA            |       |
| TMA 1512D  |               | ± 12 VDC       | ± 40 mA             |       |
| TMA 1515D  |               | ± 15 VDC       | ± 35 mA             |       |
| TMA 2405S  | TME 2405S     | 5 VDC          | 200 mA              |       |
|            | TME 2409S     | 9 VDC          | 110 mA              |       |
| TMA 2412S  | TME 2412S     | 12 VDC         | 80 mA               |       |
| TMA 2415S  | TME 2415S     | 24 VDC ±10%    | 15 VDC              | 65 mA |
| TMA 2405D  |               | ± 5 VDC        | ±100 mA             |       |
| TMA 2412D  |               | ± 12 VDC       | ± 40 mA             |       |
| TMA 2415D  |               | ± 15 VDC       | ± 35 mA             |       |

For improved load regulation see TRA-1 series page 29



| Pin | TMA Single output | TMA Dual output | TME Single output |
|-----|-------------------|-----------------|-------------------|
| 1   | + Vin (Vcc)       | + Vin (Vcc)     | - Vin (GND)       |
| 2   | - Vin (GND)       | - Vin (GND)     | + Vin (Vcc)       |
| 3   | No Pin            | No Pin          | - Vout            |
| 4   | - Vout            | - Vout          | + Vout            |
| 5   | No Pin            | Common          |                   |
| 6   | + Vout            | + Vout          |                   |

() = Inches

# TRA-1 Series ▶ 1 W



- ▶ Semi-regulated output (load)
- ▶ Industry standard pinout
- ▶ Very high efficiency up to 88%
- ▶ Single and dual output models
- ▶ I/O isolation voltage 1000VDC
- ▶ Operating temperature range -40 °C to +85 °C



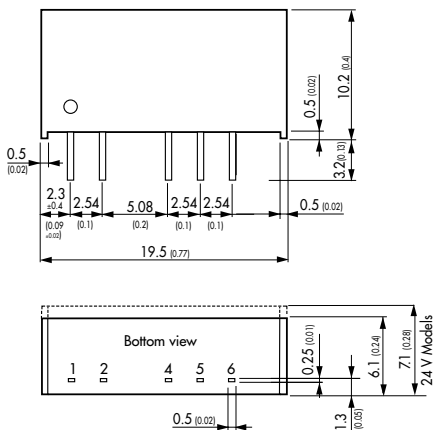
## Specifications

|                                    |  |
|------------------------------------|--|
| Line regulation                    | non regulated  |
| Load regulation<br>(20- 100% load) | 5% typ for 5V input models<br>3.5% typ for 12V input models<br>2.5% typ for 24V input models   |
| Ripple & Noise                     | <60 mVp-p (20 MHz BW)  |
| Short circuit protection           | limited 0.5 sec.   |
| Efficiency                         | 86 % typ.  |
| Operating temperature range        | -40 °C to +85 °C (no derating)   |
| I/O isolation voltage              | 1000 VDC (60 sec.)   |
| Safety standards / approvals       | cUL/UL 60950-1, IEC/EN 60950-1 CB-report   |
| Casing                             | plastic (UL 94 V-0 rated)  |
| Full datasheet                     | <a href="http://www.tracopower.com/products/tra1.pdf">www.tracopower.com/products/tra1.pdf</a> |

## Models

| Order code | Input voltage | Output voltage | Output current max. |
|------------|---------------|----------------|---------------------|
| TRA 1-0511 |               | 5 VDC          | 200 mA              |
| TRA 1-0519 |               | 9 VDC          | 110 mA              |
| TRA 1-0512 |               | 12 VDC         | 84 mA               |
| TRA 1-0513 | 5 VDC ± 10 %  | 15 VDC         | 67 mA               |
| TRA 1-0521 |               | ± 5 VDC        | ± 100 mA            |
| TRA 1-0522 |               | ± 12 VDC       | ± 42 mA             |
| TRA 1-0523 |               | ± 15 VDC       | ± 34 mA             |
| TRA 1-1211 |               | 5 VDC          | 200 mA              |
| TRA 1-1219 |               | 9 VDC          | 110 mA              |
| TRA 1-1212 |               | 12 VDC         | 84 mA               |
| TRA 1-1213 | 12 VDC ± 10 % | 15 VDC         | 67 mA               |
| TRA 1-1221 |               | ± 5 VDC        | ± 100 mA            |
| TRA 1-1222 |               | ± 12 VDC       | ± 42 mA             |
| TRA 1-1223 |               | ± 15 VDC       | ± 34 mA             |
| TRA 1-2411 |               | 5 VDC          | 200 mA              |
| TRA 1-2419 |               | 9 VDC          | 110 mA              |
| TRA 1-2412 |               | 12 VDC         | 84 mA               |
| TRA 1-2413 | 24 VDC ± 10 % | 15 VDC         | 67 mA               |
| TRA 1-2421 |               | ± 5 VDC        | ± 100 mA            |
| TRA 1-2422 |               | ± 12 VDC       | ± 42 mA             |
| TRA 1-2423 |               | ± 15 VDC       | ± 34 mA             |

## Dimensions

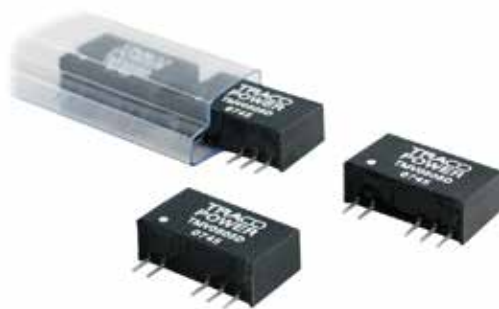


() = Inches

| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc) |
| 2   | - Vin (GND)   | - Vin (GND) |
| 4   | - Vout        | - Vout      |
| 5   | No pin        | Common      |
| 6   | + Vout        | + Vout      |

# TMV Series ▶ 1 W

- ▶ Industry standard pinout
- ▶ Single and dual output models
- ▶ I/O isolation voltage 3000 VDC
- ▶ Operating temperature range -40 °C to +85 °C



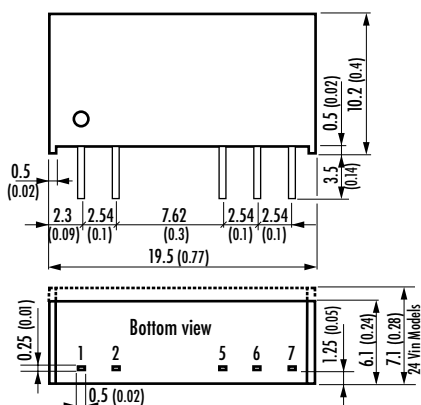
| Specifications              |  |
|-----------------------------|--|
| Line regulation             | non regulated  |
| Load regulation             | 10% max.   |
| Ripple & noise              | <100 mVpk-pk (20MHz BW)  |
| Short circuit protection    | limited 0.5 sec.   |
| Efficiency                  | 77% typ.   |
| Operating temperature range | -40 °C to +85 °C<br>above 80 °C derating 4%/K  |
| I/O isolation voltage       | 3000 VDC (60 sec.) functional insulation   |
| I/O isolation capacitance   | 60 pF typ.   |
| I/O isolation resistance    | >10 GOhm   |
| Casing                      | plastic (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tmv.pdf">www.tracopower.com/products/tmv.pdf</a> |

| Models     |               |                |                     |
|------------|---------------|----------------|---------------------|
| Order code | Input voltage | Output voltage | Output current max. |
| TMV 0505S  |               | 5 VDC          | 200 mA              |
| TMV 0509S  |               | 9 VDC          | 110 mA              |
| TMV 0512S  |               | 12 VDC         | 80 mA               |
| TMV 0515S  | 5 VDC ± 10 %  | 15 VDC         | 65 mA               |
| TMV 0505D  |               | ± 5 VDC        | ± 100 mA            |
| TMV 0512D  |               | ± 12 VDC       | ± 40 mA             |
| TMV 0515D  |               | ± 15 VDC       | ± 30 mA             |
| TMV 1205S  |               | 5 VDC          | 200 mA              |
| TMV 1212S  |               | 12 VDC         | 80 mA               |
| TMV 1215S  | 12 VDC ± 10 % | 15 VDC         | 65 mA               |
| TMV 1205D  |               | ± 5 VDC        | ± 100 mA            |
| TMV 1212D  |               | ± 12 VDC       | ± 40 mA             |
| TMV 1215D  |               | ± 15 VDC       | ± 30 mA             |
| TMV 2405S  |               | 5 VDC          | 200 mA              |
| TMV 2412S  |               | 12 VDC         | 80 mA               |
| TMV 2415S  | 24 VDC ± 10 % | 15 VDC         | 65 mA               |
| TMV 2405D  |               | ± 5 VDC        | ± 100 mA            |
| TMV 2412D  |               | ± 12 VDC       | ± 40 mA             |
| TMV 2415D  |               | ± 15 VDC       | ± 30 mA             |

Product available with reinforced insulation  
See TMV-EN series page 111

For improved load regulation  
see TRV-1 series page 32

## Dimensions



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

() = Inches

# TMV-HI Series ▶ 1 W



- ▶ Industry standard pinout
- ▶ Very high 5200 VDC I/O-isolation
- ▶ Low coupling capacitance 7pF
- ▶ Suitable for IGBT applications
- ▶ Operating temperature range  
-40 °C to +85 °C without derating

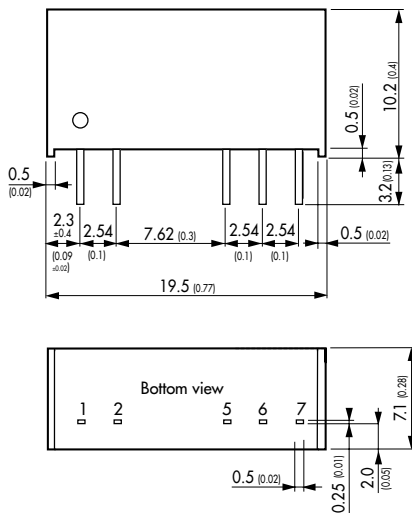
**NEW**  
Product



| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 1.2%   |
| Load regulation             | 5.0 VDC models: 15% max.<br>3.3 VDC models 20% max.<br>other models: 10% max.                      |
| Ripple & noise              | <100 mVpk-pk (20 MHz BW)   |
| Efficiency                  | 76 % typ.  |
| Operating temperature range | -40 °C to +85 °C (without derating)  |
| I/O isolation voltage       | 5200 VDC (60 sec.)   |
| I/O isolation dV/dt         | 15kV/μs @ 100kHz max.  |
| I/O isolation capacitance   | 7 pF typ.  |
| I/O isolation resistance    | >10 GOhm   |
| Casing                      | plastic (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tmv-hi.pdf">www.tracopower.com/products/tmv-hi.pdf</a> |

| Models      |               |                |                     |
|-------------|---------------|----------------|---------------------|
| Order code  | Input voltage | Output voltage | Output current max. |
| TMV 0503SHI |               | 3.3 VDC        | 303 mA              |
| TMV 0505SHI |               | 5.0 VDC        | 200 mA              |
| TMV 0509SHI |               | 9.0 VDC        | 111 mA              |
| TMV 0512SHI |               | 12 VDC         | 84 mA               |
| TMV 0515SHI | 5 VDC ± 10 %  | 15 VDC         | 66 mA               |
| TMV 0505DHI |               | ± 5.0 VDC      | ±100 mA             |
| TMV 0509DHI |               | ± 9.0 VDC      | ± 56 mA             |
| TMV 0512DHI |               | ± 12 VDC       | ± 42 mA             |
| TMV 0515DHI |               | ± 15 VDC       | ± 33 mA             |
| TMV 05159HI |               | ± 15 / -9 VDC  | ± 33 / -55 mA       |
| TMV 1203SHI |               | 3.3 VDC        | 303 mA              |
| TMV 1205SHI |               | 5.0 VDC        | 200 mA              |
| TMV 1209SHI |               | 9.0 VDC        | 111 mA              |
| TMV 1212SHI |               | 12 VDC         | 84 mA               |
| TMV 1215SHI | 12 VDC ± 10 % | 15 VDC         | 66 mA               |
| TMV 1205DHI |               | ± 5.0 VDC      | ±100 mA             |
| TMV 1209DHI |               | ± 9.0 VDC      | ± 56 mA             |
| TMV 1212DHI |               | ± 12 VDC       | ± 42 mA             |
| TMV 1215DHI |               | ± 15 VDC       | ± 33 mA             |
| TMV 12159HI |               | ± 15 / -9 VDC  | ± 33 / -55 mA       |
| TMV 1503SHI |               | 3.3 VDC        | 303 mA              |
| TMV 1505SHI |               | 5.0 VDC        | 200 mA              |
| TMV 1509SHI |               | 9.0 VDC        | 111 mA              |
| TMV 1512SHI |               | 12 VDC         | 84 mA               |
| TMV 1515SHI | 15 VDC ± 10 % | 15 VDC         | 66 mA               |
| TMV 1505DHI |               | ± 5.0 VDC      | ±100 mA             |
| TMV 1509DHI |               | ± 9.0 VDC      | ± 56 mA             |
| TMV 1512DHI |               | ± 12 VDC       | ± 42 mA             |
| TMV 1515DHI |               | ± 15 VDC       | ± 33 mA             |
| TMV 15159HI |               | ± 15 / -9 VDC  | ± 33 / -55 mA       |
| TMV 2403SHI |               | 3.3 VDC        | 303 mA              |
| TMV 2405SHI |               | 5.0 VDC        | 200 mA              |
| TMV 2409SHI |               | 9.0 VDC        | 111 mA              |
| TMV 2412SHI |               | 12 VDC         | 84 mA               |
| TMV 2415SHI | 24 VDC ± 10 % | 15 VDC         | 66 mA               |
| TMV 2405DHI |               | ± 5.0 VDC      | ±100 mA             |
| TMV 2409DHI |               | ± 9.0 VDC      | ± 56 mA             |
| TMV 2412DHI |               | ± 12 VDC       | ± 42 mA             |
| TMV 2415DHI |               | ± 15 VDC       | ± 33 mA             |
| TMV 24159HI |               | ± 15 / -9 VDC  | ± 33 / -55 mA       |

## Dimensions



( ) = Inches

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



# TRV-1 Series ▶ 1 W



- ▶ Semi-regulated output (load)
- ▶ Industry standard pinout
- ▶ Very high efficiency up to 88%
- ▶ I/O isolation voltage 3000VDC
- ▶ Operating temperature range -40 °C to +85 °C



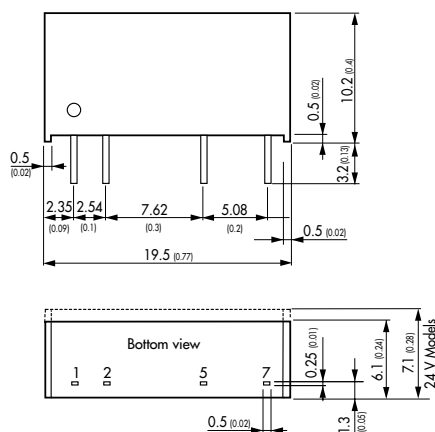
## Specifications

|                                    |  |
|------------------------------------|--|
| Line regulation                    | non regulated  |
| Load regulation<br>(20- 100% load) | 5% typ for 5V input models<br>3.5% typ for 12 V & 24 V input models                            |
| Ripple & Noise                     | <50 mVp-p (20 MHz BW)  |
| Short circuit protection           | limited 0.5 sec.   |
| Efficiency                         | 86 % typ.  |
| Operating temperature range        | -40 °C to +85 °C (no derating)   |
| I/O isolation voltage              | 3000 VDC (60 sec.) functional insulation   |
| Safety standards / approvals       | cUL/UL 60950-1, IEC/EN 60950-1 CB-report   |
| Casing                             | plastic (UL 94 V-0 rated)  |
| Full datasheet                     | <a href="http://www.tracopower.com/products/trv1.pdf">www.tracopower.com/products/trv1.pdf</a> |

## Models

| Order code | Input voltage | Output voltage | Output current max. |
|------------|---------------|----------------|---------------------|
| TRV 1-0511 |               | 5 VDC          | 200 mA              |
| TRV 1-0519 | 5 VDC ± 10 %  | 9 VDC          | 110 mA              |
| TRV 1-0512 |               | 12 VDC         | 84 mA               |
| TRV 1-0513 |               | 15 VDC         | 67 mA               |
| TRV 1-1211 |               | 5 VDC          | 200 mA              |
| TRV 1-1219 | 12 VDC ± 10 % | 9 VDC          | 110 mA              |
| TRV 1-1212 |               | 12 VDC         | 84 mA               |
| TRV 1-1213 |               | 15 VDC         | 67 mA               |
| TRV 1-2411 |               | 5 VDC          | 200 mA              |
| TRV 1-2419 | 24 VDC ± 10 % | 9 VDC          | 110 mA              |
| TRV 1-2412 |               | 12 VDC         | 84 mA               |
| TRV 1-2413 |               | 15 VDC         | 67 mA               |

## Dimensions



### Pin

|   |             |
|---|-------------|
| 1 | + Vin (Vcc) |
| 2 | - Vin (GND) |
| 5 | - Vout      |
| 7 | + Vout      |

( ) = Inches

# TMR-1 Series ▶ 1 W

- ▶ Fully regulated outputs
- ▶ Wide 2 : 1 input voltage range
- ▶ Operating temperature range  
-40°C to +85°C without derating
- ▶ No minimum load required
- ▶ I/O isolation voltage 1500VDC
- ▶ Short circuit protection

**NEW**  
Product



| Specifications              |  | Models            |                      |                       |                            |
|-----------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation             | 0.2 % max.   | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation             | 1 % max.   | TMR 1-0511        |                      | 5 VDC                 | 200 mA                     |
| Ripple & noise              | <110mVpk-pk (20 MHz BW)  | TMR 1-0512        |                      | 12 VDC                | 83 mA                      |
| Short circuit protection    | continuous, automatic recovery   | TMR 1-0513        | 4.5 – 9.0 VDC        | 15 VDC                | 67 mA                      |
| Efficiency                  | 78 % typ.  | TMR 1-0522        |                      | ± 12 VDC              | ±42 mA                     |
| Operating temperature range | -40 °C to +85 °C (without derating)  | TMR 1-0523        |                      | ± 15 VDC              | ± 33 mA                    |
| I/O isolation voltage       | 1500VDC (60 sec.)  | TMR 1-1211        |                      | 5 VDC                 | 200 mA                     |
| Casing                      | plastic (UL 94-0 rated)  | TMR 1-1212        |                      | 12 VDC                | 83 mA                      |
| Full datasheet              | <a href="http://www.tracopower.com/products/tmr1.pdf">www.tracopower.com/products/tmr1.pdf</a> | TMR 1-1213        | 9 – 18 VDC           | 15 VDC                | 67 mA                      |
|                             |  | TMR 1-1222        |                      | ± 12 VDC              | ±42 mA                     |
|                             |  | TMR 1-1223        |                      | ± 15 VDC              | ± 33 mA                    |
|                             |  | TMR 1-2411        |                      | 5 VDC                 | 200 mA                     |
|                             |  | TMR 1-2412        |                      | 12 VDC                | 83 mA                      |
|                             |  | TMR 1-2413        | 18 – 36 VDC          | 15 VDC                | 67 mA                      |
|                             |  | TMR 1-2422        |                      | ± 12 VDC              | ± 42 mA                    |
|                             |  | TMR 1-2423        |                      | ± 15 VDC              | ± 33 mA                    |
|                             |  | TMR 1-4811        |                      | 5 VDC                 | 200 mA                     |
|                             |  | TMR 1-4812        |                      | 12 VDC                | 83 mA                      |
|                             |  | TMR 1-4813        | 36 – 75 VDC          | 15 VDC                | 67 mA                      |
|                             |  | TMR 1-4822        |                      | ± 12 VDC              | ± 42 mA                    |
|                             |  | TMR 1-4823        |                      | ± 15 VDC              | ± 33 mA                    |

| Dimensions  |             | Pin                  |                    |  |
|---|-------------|----------------------|--------------------|--|
| <p>Top view dimensions: 17.0 (0.67) total width, 11.0 (0.41) total height, 0.5 (0.02) pin pitch, 0.5 (0.02) pin width, 2.3 (0.09) pin 1 offset, 2.54 (0.1) pin 2 offset, 5.08 (0.2) pin 4 offset, 2.54 (0.1) pin 5 offset, 2.54 (0.1) pin 6 offset, 0.5 (0.02) pin 6 offset from right edge, 3.2 (0.12) pin 6 height, 0.5 (0.02) pin 6 width.</p> <p>Bottom view dimensions: 7.62 (0.30) total width, 0.25 (0.01) pin 1 offset, 0.5 (0.02) pin 2 offset, 2.5 (0.10) pin 4 offset, 2.5 (0.10) pin 5 offset, 0.5 (0.02) pin 6 offset.</p> |             | <b>Single output</b> | <b>Dual output</b> |  |
| 1   | - Vin (GND) | - Vin (GND)          |                    |  |
| 2   | + Vin (Vcc) | + Vin (Vcc)          |                    |  |
| 4   | + Vout      | + Vout               |                    |  |
| 5   | No pin      | Common               |                    |  |
| 6   | - Vout      | - Vout               |                    |  |

( ) = Inches

# TMH Series ▶ 2 W

- ▶ Industry standard pinout
- ▶ Single and dual output models
- ▶ Operating temperature range -40 °C to +85 °C

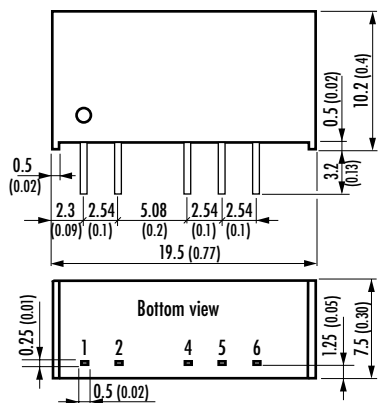


| Specifications              |  |
|-----------------------------|--|
| Line regulation             | non regulated  |
| Load regulation             | 10% max.   |
| Ripple & noise (20 MHz BW)  | < 75 mVpk-pk for 5 Vin models<br><150 mVpk-pk for 12/24 Vin models                           |
| Short circuit protection    | limited 0.5 sec. max.  |
| Efficiency                  | 81% typ.   |
| Operating temperature range | -40 °C to +85 °C<br>above 70°C derating 3%/K   |
| I/O isolation voltage       | 1000VDC (60 sec.)  |
| Casing                      | plastic (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tmh.pdf">www.tracopower.com/products/tmh.pdf</a> |

| Models     |               |                |                     |
|------------|---------------|----------------|---------------------|
| Order code | Input voltage | Output voltage | Output current max. |
| TMH 0505S  |               | 5 VDC          | 400 mA              |
| TMH 0512S  |               | 12 VDC         | 165 mA              |
| TMH 0515S  | 5 VDC ± 10 %  | 15 VDC         | 130 mA              |
| TMH 0505D  |               | ± 5 VDC        | ± 200 mA            |
| TMH 0512D  |               | ± 12 VDC       | ± 80 mA             |
| TMH 0515D  |               | ± 15 VDC       | ± 65 mA             |
| TMH 1205S  |               | 5 VDC          | 400 mA              |
| TMH 1212S  |               | 12 VDC         | 165 mA              |
| TMH 1215S  | 12 VDC ± 10 % | 15 VDC         | 130 mA              |
| TMH 1205D  |               | ± 5 VDC        | ± 200 mA            |
| TMH 1212D  |               | ± 12 VDC       | ± 80 mA             |
| TMH 1215D  |               | ± 15 VDC       | ± 65 mA             |
| TMH 2405S  |               | 5 VDC          | 400 mA              |
| TMH 2412S  |               | 12 VDC         | 165 mA              |
| TMH 2415S  | 24 VDC ± 10 % | 15 VDC         | 130 mA              |
| TMH 2405D  |               | ± 5 VDC        | ± 200 mA            |
| TMH 2412D  |               | ± 12 VDC       | ± 80 mA             |
| TMH 2415D  |               | ± 15 VDC       | ± 65 mA             |

For improved load regulation see TRA-3 series page 35

## Dimensions



| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc) |
| 2   | - Vin (GND)   | - Vin (GND) |
| 4   | - Vout        | - Vout      |
| 5   | No pin        | Common      |
| 6   | + Vout        | + Vout      |

() = Inches

# TRA-3 Series ▶ 3 W



- ▶ Semi-regulated output (load)
- ▶ Very high efficiency up to 89%
- ▶ Operating temperature range -40 °C to +85 °C



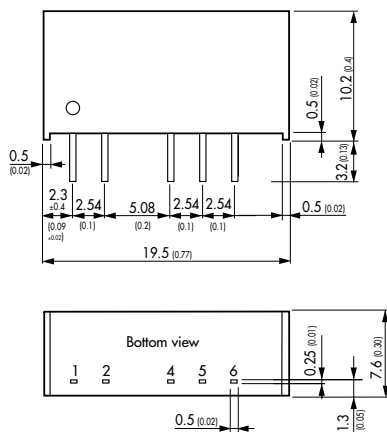
## Specifications

|                                    |  |
|------------------------------------|--|
| Line regulation                    | non regulated  |
| Load regulation<br>(20- 100% load) | 7% typ for 5V input models<br>5% typ for 12V & 24V input models                                |
| Ripple & Noise                     | 60 mVp-p typ. (20 MHz BW)  |
| Short circuit protection           | limited 0.5 sec.   |
| Efficiency                         | 86 % typ.  |
| Operating temperature range        | -40 °C to +85 °C (no derating)   |
| I/O isolation voltage              | 1000VDC (60 sec.)  |
| Safety standards / approvals       | cUL/UL 60950-1, IEC/EN 60950-1, reports pending  |
| Casing                             | plastic (UL 94 V-0 rated)  |
| Full datasheet                     | <a href="http://www.tracopower.com/products/tra3.pdf">www.tracopower.com/products/tra3.pdf</a> |

## Models

| Order code | Input voltage | Output voltage | Output current max. |
|------------|---------------|----------------|---------------------|
| TRA 3-0511 | 5 VDC ± 10 %  | 5 VDC          | 600 mA              |
| TRA 3-0519 |               | 9 VDC          | 333 mA              |
| TRA 3-0512 |               | 12 VDC         | 250 mA              |
| TRA 3-0513 |               | 15 VDC         | 200 mA              |
| TRA 3-1211 | 12 VDC ± 10 % | 5 VDC          | 600 mA              |
| TRA 3-1219 |               | 9 VDC          | 333 mA              |
| TRA 3-1212 |               | 12 VDC         | 250 mA              |
| TRA 3-1213 |               | 15 VDC         | 200 mA              |
| TRA 3-2411 | 24 VDC ± 10 % | 5 VDC          | 600 mA              |
| TRA 3-2419 |               | 9 VDC          | 333 mA              |
| TRA 3-2412 |               | 12 VDC         | 250 mA              |
| TRA 3-2413 |               | 15 VDC         | 200 mA              |

## Dimensions



() = Inches

## Pin

|   |             |
|---|-------------|
| 1 | + Vin (Vcc) |
| 2 | - Vin (GND) |
| 4 | - Vout      |
| 5 | No pin      |
| 6 | + Vout      |

# TMR-2E Series ▶ 2 W

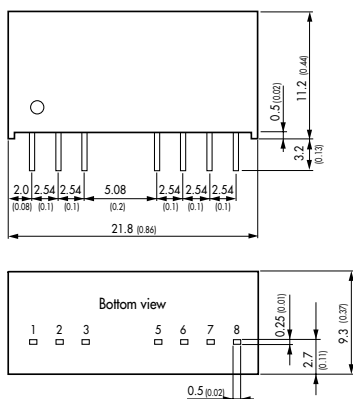
- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ High quality/cost performance
- ▶ Short circuit protection
- ▶ Remote On/Off



| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 0.5% max.  |
| Load regulation             | 0.75% max. (25 - 100% load)  |
| Ripple & noise              | <50 mVpk-pk (20 MHz BW)<br>(no external output capacitor required)                               |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 78% typ.<br>5 VDC input models: 73% typ.   |
| Operating temperature range | -40 °C to +85 °C<br>above 65 °C derating 2.8 %/K   |
| I/O isolation voltage       | 1000VDC (60 sec.)  |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1 (no report)   |
| Remote On/Off               | shutdown input for low input current (1mA)<br>in standby operation                               |
| Casing                      | plastic (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tmr2e.pdf">www.tracopower.com/products/tmr2e.pdf</a> |

| Models      |               |                |                     |
|-------------|---------------|----------------|---------------------|
| Order code  | Input voltage | Output voltage | Output current max. |
| TMR 2-0510E | 4.5 - 9.0 VDC | 3.3 VDC        | 500 mA              |
| TMR 2-0511E |               | 5 VDC          | 400 mA              |
| TMR 2-0512E |               | 12 VDC         | 167 mA              |
| TMR 2-1210E | 9 - 18 VDC    | 3.3 VDC        | 500 mA              |
| TMR 2-1211E |               | 5 VDC          | 400 mA              |
| TMR 2-1212E |               | 12 VDC         | 167 mA              |
| TMR 2-2410E | 18 - 36 VDC   | 3.3 VDC        | 500 mA              |
| TMR 2-2411E |               | 5 VDC          | 400 mA              |
| TMR 2-2412E |               | 12 VDC         | 167 mA              |
| TMR 2-4810E | 36 - 75 VDC   | 3.3 VDC        | 500 mA              |
| TMR 2-4811E |               | 5 VDC          | 400 mA              |
| TMR 2-4812E |               | 12 VDC         | 167 mA              |

## Dimensions



| Pin | Single output |
|-----|---------------|
| 1   | - Vin (GND)   |
| 2   | + Vin (Vcc)   |
| 3   | Remote On/Off |
| 5   | No con.       |
| 6   | + Vout        |
| 7   | - Vout        |
| 8   | No con.       |

() = Inches

# TMR-2 Series ▶ 2 W



- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ Single and dual output models
- ▶ Operating temperature range  
–40 °C to +85 °C without derating
- ▶ Low ripple and noise <50 mVpk-pk
- ▶ Short circuit protection
- ▶ Remote On/Off



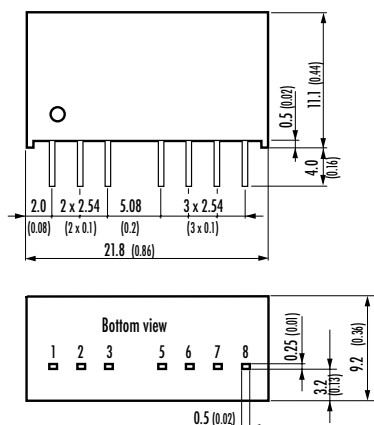
## Specifications

|                              |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | 1.0% max.  |
| Ripple & noise               | <50 mVpk-pk (20 MHz BW)<br>(no external output capacitor required)                           |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 82% typ.<br>5 VDC input models: 80% typ.   |
| Operating temperature range  | –40 °C to +85 °C<br>above 75°C derating 2 %/K  |
| I/O isolation voltage        | 1000VDC (60 sec.)  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off                | shutdown input for low input current (1mA)<br>in standby operation                           |
| Casing                       | plastic (UL 94 V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmr.pdf">www.tracopower.com/products/tmr.pdf</a> |

## Models

| Order code | Input voltage | Output voltage | Output current max. |
|------------|---------------|----------------|---------------------|
| TMR 0510   |               | 3.3 VDC        | 500 mA              |
| TMR 0511   |               | 5 VDC          | 400 mA              |
| TMR 0512   | 4.5 – 9.0 VDC | 12 VDC         | 165 mA              |
| TMR 0521   |               | ± 5 VDC        | ± 200 mA            |
| TMR 0522   |               | ± 12 VDC       | ± 85 mA             |
| TMR 0523   |               | ± 15 VDC       | ± 65 mA             |
| TMR 1210   |               | 3.3 VDC        | 500 mA              |
| TMR 1211   |               | 5 VDC          | 400 mA              |
| TMR 1212   | 9 – 18 VDC    | 12 VDC         | 165 mA              |
| TMR 1221   |               | ± 5 VDC        | ± 200 mA            |
| TMR 1222   |               | ± 12 VDC       | ± 85 mA             |
| TMR 1223   |               | ± 15 VDC       | ± 65 mA             |
| TMR 2410   |               | 3.3 VDC        | 500 mA              |
| TMR 2411   |               | 5 VDC          | 400 mA              |
| TMR 2412   | 18 – 36 VDC   | 12 VDC         | 165 mA              |
| TMR 2421   |               | ± 5 VDC        | ± 200 mA            |
| TMR 2422   |               | ± 12 VDC       | ± 85 mA             |
| TMR 2423   |               | ± 15 VDC       | ± 65 mA             |
| TMR 4810   |               | 3.3 VDC        | 500 mA              |
| TMR 4811   |               | 5 VDC          | 400 mA              |
| TMR 4812   | 36 – 75 VDC   | 12 VDC         | 165 mA              |
| TMR 4821   |               | ± 5 VDC        | ± 200 mA            |
| TMR 4822   |               | ± 12 VDC       | ± 85 mA             |
| TMR 4823   |               | ± 15 VDC       | ± 65 mA             |

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | – Vin (GND)   | – Vin (GND)   |
| 2   | + Vin (Vcc)   | + Vin (Vcc)   |
| 3   | Remote On/Off | Remote On/Off |
| 5   | No con.       | No con.       |
| 6   | + Vout        | + Vout        |
| 7   | – Vout        | Common        |
| 8   | No con.       | – Vout        |

# TMR-2WIN Series ▶ 2 W

- ▶ Miniature SIP package
- ▶ Wide 4:1 input range
- ▶ Fully regulated outputs
- ▶ I/O-isolation 1500VDC
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+90\text{ }^{\circ}\text{C}$
- ▶ Low ripple and noise
- ▶ No minimum load required
- ▶ Short circuit protection
- ▶ Remote On/Off

**NEW**  
Product



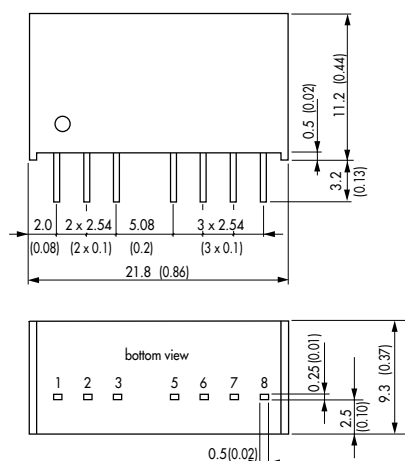
## Specifications

|                             |  |
|-----------------------------|--|
| Line regulation             | 0.5% max.  |
| Load regulation             | 1.0% max.  |
| Ripple & noise              | <100 mVpk-pk (20 MHz BW)   |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 80% typ.   |
| Operating temperature range | $-40\text{ }^{\circ}\text{C}$ to $+90\text{ }^{\circ}\text{C}$<br>above $75\text{ }^{\circ}\text{C}$ derating 3.3%/K |
| I/O isolation voltage       | 1500VDC (60 sec.)  |
| Safety standards            | UL 60950-1, IEC/EN 60950-1 (no report)   |
| Remote On/Off               | shutdown input for low input current (3mA)<br>in standby operation   |
| Casing                      | plastic (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tmr2win.pdf">www.tracopower.com/products/tmr2win.pdf</a>                 |

## Models

| Order code    | Input voltage | Output voltage | Output current max. |
|---------------|---------------|----------------|---------------------|
| TMR 2-1210WIN |               | 3.3 VDC        | 500 mA              |
| TMR 2-1211WIN |               | 5 VDC          | 400 mA              |
| TMR 2-1212WIN |               | 12 VDC         | 167 mA              |
| TMR 2-1213WIN | 4.5 – 18 VDC  | 15 VDC         | 134 mA              |
| TMR 2-1221WIN |               | $\pm 5$ VDC    | $\pm 200$ mA        |
| TMR 2-1222WIN |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TMR 2-1223WIN |               | $\pm 15$ VDC   | $\pm 67$ mA         |
| TMR 2-2410WIN |               | 3.3 VDC        | 500 mA              |
| TMR 2-2411WIN |               | 5 VDC          | 400 mA              |
| TMR 2-2412WIN |               | 12 VDC         | 167 mA              |
| TMR 2-2413WIN | 9 – 36 VDC    | 15 VDC         | 134 mA              |
| TMR 2-2421WIN |               | $\pm 5$ VDC    | $\pm 200$ mA        |
| TMR 2-2422WIN |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TMR 2-2423WIN |               | $\pm 15$ VDC   | $\pm 67$ mA         |
| TMR 2-4810WIN |               | 3.3 VDC        | 500 mA              |
| TMR 2-4811WIN |               | 5 VDC          | 400 mA              |
| TMR 2-4812WIN |               | 12 VDC         | 167 mA              |
| TMR 2-4813WIN | 18 – 75 VDC   | 15 VDC         | 134 mA              |
| TMR 2-4821WIN |               | $\pm 5$ VDC    | $\pm 200$ mA        |
| TMR 2-4822WIN |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TMR 2-4823WIN |               | $\pm 15$ VDC   | $\pm 67$ mA         |

## Dimensions



( ) = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | - Vin (GND)   | - Vin (GND)   |
| 2   | + Vin (Vcc)   | + Vin (Vcc)   |
| 3   | Remote On/Off | Remote On/Off |
| 5   | No con.       | No con.       |
| 6   | + Vout        | + Vout        |
| 7   | - Vout        | Common        |
| 8   | No con.       | - Vout        |

# TMR-3E Series ▶ 3 W



- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ Single and dual output models
- ▶ High quality/cost performance
- ▶ I/O-isolation 1500VDC
- ▶ Short circuit protection
- ▶ Remote On/Off



| Specifications              |  | Models            |                      |                       |                            |
|-----------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation             | 0.5% max.  | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation             | 1.0% max.  | TMR 3-0510E       |                      | 3.3 VDC               | 700 mA                     |
| Ripple & noise              | <75 mVpk-pk (20 MHz BW)  | TMR 3-0511E       |                      | 5 VDC                 | 600 mA                     |
| Short circuit protection    | continuous, automatic recovery   | TMR 3-0512E       |                      | 12 VDC                | 250 mA                     |
| Efficiency                  | 81% typ.<br>5 VDC input models: 76% typ.   | TMR 3-0513E       | 4.5 – 9 VDC          | 15 VDC                | 200 mA                     |
| Operating temperature range | -40 °C to +85 °C<br>above 70 °C derating 3.3 %/K   | TMR 3-0521E       |                      | ± 5 VDC               | ± 300 mA                   |
| I/O isolation voltage       | 1500VDC (60 sec.)  | TMR 3-0522E       |                      | ± 12 VDC              | ± 125 mA                   |
| Safety standards            | UL 60950-1, IEC/EN 60950-1, CB report  | TMR 3-0523E       |                      | ± 15 VDC              | ± 100 mA                   |
| Remote On/Off               | shutdown input for low input current (1mA) in standby operation                                  | TMR 3-1210E       |                      | 3.3 VDC               | 700 mA                     |
| Casing                      | plastic (UL 94 V-0 rated)  | TMR 3-1211E       |                      | 5 VDC                 | 600 mA                     |
| Full datasheet              | <a href="http://www.tracopower.com/products/tmr3e.pdf">www.tracopower.com/products/tmr3e.pdf</a> | TMR 3-1212E       |                      | 12 VDC                | 250 mA                     |
|                             |  | TMR 3-1213E       | 9 – 18 VDC           | 15 VDC                | 200 mA                     |
|                             |  | TMR 3-1221E       |                      | ± 5 VDC               | ± 300 mA                   |
|                             |  | TMR 3-1222E       |                      | ± 12 VDC              | ± 125 mA                   |
|                             |  | TMR 3-1223E       |                      | ± 15 VDC              | ± 100 mA                   |
|                             |  | TMR 3-2410E       |                      | 3.3 VDC               | 700 mA                     |
|                             |  | TMR 3-2411E       |                      | 5 VDC                 | 600 mA                     |
|                             |  | TMR 3-2412E       |                      | 12 VDC                | 250 mA                     |
|                             |  | TMR 3-2413E       | 18 – 36 VDC          | 15 VDC                | 200 mA                     |
|                             |  | TMR 3-2421E       |                      | ± 5 VDC               | ± 300 mA                   |
|                             |  | TMR 3-2422E       |                      | ± 12 VDC              | ± 125 mA                   |
|                             |  | TMR 3-2423E       |                      | ± 15 VDC              | ± 100 mA                   |
|                             |  | TMR 3-4810E       |                      | 3.3 VDC               | 700 mA                     |
|                             |  | TMR 3-4811E       |                      | 5 VDC                 | 600 mA                     |
|                             |  | TMR 3-4812E       |                      | 12 VDC                | 250 mA                     |
|                             |  | TMR 3-4813E       | 36 – 75 VDC          | 15 VDC                | 200 mA                     |
|                             |  | TMR 3-4821E       |                      | ± 5 VDC               | ± 300 mA                   |
|                             |  | TMR 3-4822E       |                      | ± 12 VDC              | ± 125 mA                   |
|                             |  | TMR 3-4823E       |                      | ± 15 VDC              | ± 100 mA                   |

| Dimensions |  | Pin Configuration |                      |                    |
|------------|--|-------------------|----------------------|--------------------|
|            |  | <b>Pin</b>        | <b>Single output</b> | <b>Dual output</b> |
|            |  | 1                 | - Vin (GND)          | - Vin (GND)        |
|            |  | 2                 | + Vin (Vcc)          | + Vin (Vcc)        |
|            |  | 3                 | Remote On/Off        | Remote On/Off      |
|            |  | 5                 | No con.              | No con.            |
|            |  | 6                 | + Vout               | + Vout             |
|            |  | 7                 | - Vout               | Common             |
|            |  | 8                 | No con.              | - Vout             |

() = Inches



# TMR-3 Series ▶ 3 W



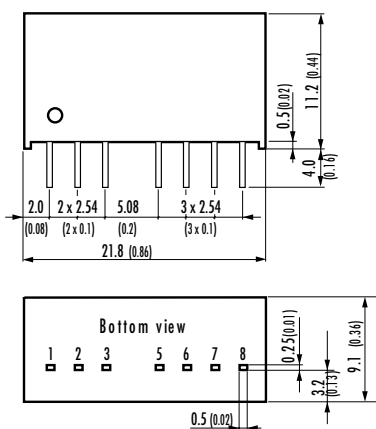
- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500 VDC
- ▶ No minimum load required
- ▶ Short circuit protection
- ▶ Remote On/Off



| Specifications               |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                           |
| Ripple & noise               | <50 mVpk-pk (20 MHz BW)<br>no external output capacitor required                               |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 79% typ.   |
| Operating temperature range  | -40 °C to +85 °C<br>above 70 °C derating 3.3 %/K   |
| I/O isolation voltage        | 1500VDC (60 sec.)  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                             |
| Casing                       | plastic (UL 94 V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmr3.pdf">www.tracopower.com/products/tmr3.pdf</a> |

| Models       |               |                |                     |
|--------------|---------------|----------------|---------------------|
| Order code * | Input voltage | Output voltage | Output current max. |
| TMR 3-0510   | 4.5 – 9.0 VDC | 3.3 VDC        | 700 mA              |
| TMR 3-0511   |               | 5 VDC          | 600 mA              |
| TMR 3-0512   |               | 12 VDC         | 250 mA              |
| TMR 3-0513   | 9 – 18 VDC    | 15 VDC         | 200 mA              |
| TMR 3-0521   |               | ± 5 VDC        | ± 300 mA            |
| TMR 3-0522   |               | ± 12 VDC       | ± 125 mA            |
| TMR 3-0523   |               | ± 15 VDC       | ± 100 mA            |
| TMR 3-1210   | 18 – 36 VDC   | 3.3 VDC        | 700 mA              |
| TMR 3-1211   |               | 5 VDC          | 600 mA              |
| TMR 3-1212   |               | 12 VDC         | 250 mA              |
| TMR 3-1213   | 36 – 75 VDC   | 15 VDC         | 200 mA              |
| TMR 3-1221   |               | ± 5 VDC        | ± 300 mA            |
| TMR 3-1222   |               | ± 12 VDC       | ± 125 mA            |
| TMR 3-1223   |               | ± 15 VDC       | ± 100 mA            |
| TMR 3-2410   |               | 3.3 VDC        | 700 mA              |
| TMR 3-2411   |               | 5 VDC          | 600 mA              |
| TMR 3-2412   |               | 12 VDC         | 250 mA              |
| TMR 3-2413   |               | 15 VDC         | 200 mA              |
| TMR 3-2421   |               | ± 5 VDC        | ± 300 mA            |
| TMR 3-2422   |               | ± 12 VDC       | ± 125 mA            |
| TMR 3-2423   |               | ± 15 VDC       | ± 100 mA            |
| TMR 3-4810   |               | 3.3 VDC        | 700 mA              |
| TMR 3-4811   |               | 5 VDC          | 600 mA              |
| TMR 3-4812   |               | 12 VDC         | 250 mA              |
| TMR 3-4813   |               | 15 VDC         | 200 mA              |
| TMR 3-4821   |               | ± 5 VDC        | ± 300 mA            |
| TMR 3-4822   |               | ± 12 VDC       | ± 125 mA            |
| TMR 3-4823   |               | ± 15 VDC       | ± 100 mA            |

## Dimensions



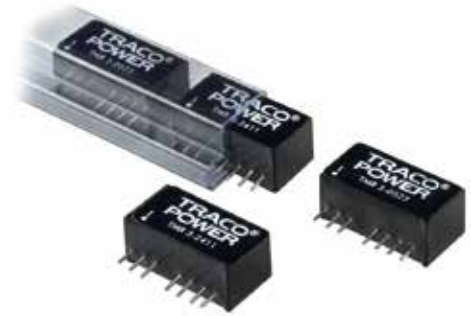
| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | - Vin (GND)   | - Vin (GND)   |
| 2   | + Vin (Vcc)   | + Vin (Vcc)   |
| 3   | Remote On/Off | Remote On/Off |
| 5   | No con.       | No con.       |
| 6   | + Vout        | + Vout        |
| 7   | - Vout        | Common        |
| 8   | No con.       | - Vout        |

() = Inches

# TMR-3HI Series ▶ 3 W



- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ 3'000 VDC I/O isolation
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ No minimum load required
- ▶ Short circuit protection
- ▶ Remote On/Off



| Specifications               |  | Models       |               |                |                     |
|------------------------------|--|--------------|---------------|----------------|---------------------|
| Line regulation              | 0.2% max.  | Order code   | Input voltage | Output voltage | Output current max. |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                           | TMR 3-0510HI |               | 3.3 VDC        | 700 mA              |
| Ripple & noise               | <50 mVpk-pk (20 MHz BW)<br>no external output capacitor required                               | TMR 3-0511HI |               | 5 VDC          | 600 mA              |
| Short circuit protection     | continuous, automatic recovery   | TMR 3-0512HI |               | 12 VDC         | 250 mA              |
| Efficiency                   | 79% typ.   | TMR 3-0513HI | 4.5 – 9.0 VDC | 15 VDC         | 200 mA              |
| Operating temperature range  | -40 °C to +85 °C<br>above 70 °C derating 3.3 %/K   | TMR 3-0521HI |               | ± 5 VDC        | ± 300 mA            |
| I/O isolation voltage        | 3000 VDC (60 sec.) functional insulation   | TMR 3-0522HI |               | ± 12 VDC       | ± 125 mA            |
| I/O isolation capacitance    | 40 pF max.   | TMR 3-0523HI |               | ± 15 VDC       | ± 100 mA            |
| I/O isolation resistance     | >10 GOhm   | TMR 3-1210HI |               | 3.3 VDC        | 700 mA              |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   | TMR 3-1211HI |               | 5 VDC          | 600 mA              |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                             | TMR 3-1212HI |               | 12 VDC         | 250 mA              |
| Casing                       | plastic (UL 94 V-0 rated)  | TMR 3-1213HI | 9 – 18 VDC    | 15 VDC         | 200 mA              |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmr3.pdf">www.tracopower.com/products/tmr3.pdf</a> | TMR 3-1221HI |               | ± 5 VDC        | ± 300 mA            |
|                              |  | TMR 3-1222HI |               | ± 12 VDC       | ± 125 mA            |
|                              |  | TMR 3-1223HI |               | ± 15 VDC       | ± 100 mA            |
|                              |  | TMR 3-2410HI |               | 3.3 VDC        | 700 mA              |
|                              |  | TMR 3-2411HI |               | 5 VDC          | 600 mA              |
|                              |  | TMR 3-2412HI |               | 12 VDC         | 250 mA              |
|                              |  | TMR 3-2413HI | 18 – 36 VDC   | 15 VDC         | 200 mA              |
|                              |  | TMR 3-2421HI |               | ± 5 VDC        | ± 300 mA            |
|                              |  | TMR 3-2422HI |               | ± 12 VDC       | ± 125 mA            |
|                              |  | TMR 3-2423HI |               | ± 15 VDC       | ± 100 mA            |
|                              |  | TMR 3-4810HI |               | 3.3 VDC        | 700 mA              |
|                              |  | TMR 3-4811HI |               | 5 VDC          | 600 mA              |
|                              |  | TMR 3-4812HI |               | 12 VDC         | 250 mA              |
|                              |  | TMR 3-4813HI | 36 – 75 VDC   | 15 VDC         | 200 mA              |
|                              |  | TMR 3-4821HI |               | ± 5 VDC        | ± 300 mA            |
|                              |  | TMR 3-4822HI |               | ± 12 VDC       | ± 125 mA            |
|                              |  | TMR 3-4823HI |               | ± 15 VDC       | ± 100 mA            |

| Dimensions |  | Pin Configuration |               |               |
|------------|--|-------------------|---------------|---------------|
|            |  | Pin               | Single output | Dual output   |
|            |  | 1                 | - Vin (GND)   | - Vin (GND)   |
|            |  | 2                 | + Vin (Vcc)   | + Vin (Vcc)   |
|            |  | 3                 | Remote On/Off | Remote On/Off |
|            |  | 5                 | No Pin        | No Pin        |
|            |  | 6                 | + Vout        | + Vout        |
|            |  | 7                 | - Vout        | Common        |
|            |  | 8                 | No con.       | - Vout        |

() = Inches

# TMR-3WIE Series ▶ 3 W



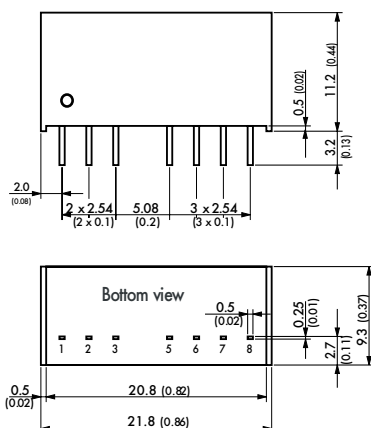
- ▶ Ultra wide 4:1 input range
- ▶ High quality/cost performance
- ▶ Fully regulated outputs
- ▶ I/O-isolation 1500VDC
- ▶ Short circuit protection
- ▶ Remote On/Off



| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 0.5% max.  |
| Load regulation             | 1.0% max. (25-100% load)   |
| Ripple & noise              | <75 mVpk-pk (20 MHz BW)  |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 78% typ.<br>5 VDC input models: 74% typ.   |
| Operating temperature range | -40 °C to +85 °C<br>above 70 °C derating 3.3 %/K   |
| I/O isolation voltage       | 1500VDC (60 sec.)  |
| Safety standards            | UL 60950-1, IEC/EN 60950-1, CB-report  |
| Remote On/Off               | shutdown input for low input current (1 mA) in standby operation                                     |
| Casing                      | plastic (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tmr3wie.pdf">www.tracopower.com/products/tmr3wie.pdf</a> |

| Models        |               |                |                     |
|---------------|---------------|----------------|---------------------|
| Order code    | Input voltage | Output voltage | Output current max. |
| TMR 3-1210WIE | 4.5 – 18 VDC  | 3.3 VDC        | 700 mA              |
| TMR 3-1211WIE |               | 5 VDC          | 600 mA              |
| TMR 3-1212WIE |               | 12 VDC         | 250 mA              |
| TMR 3-1213WIE | 9 – 36 VDC    | 15 VDC         | 200 mA              |
| TMR 3-1221WIE |               | ± 5 VDC        | ± 300 mA            |
| TMR 3-1222WIE |               | ± 12 VDC       | ± 125 mA            |
| TMR 3-1223WIE | 18 – 75 VDC   | ± 15 VDC       | ± 100 mA            |
| TMR 3-2410WIE |               | 3.3 VDC        | 700 mA              |
| TMR 3-2411WIE |               | 5 VDC          | 600 mA              |
| TMR 3-2412WIE | 18 – 75 VDC   | 12 VDC         | 250 mA              |
| TMR 3-2413WIE |               | 15 VDC         | 200 mA              |
| TMR 3-2421WIE |               | ± 5 VDC        | ± 300 mA            |
| TMR 3-2422WIE | 18 – 75 VDC   | ± 12 VDC       | ± 125 mA            |
| TMR 3-2423WIE |               | ± 15 VDC       | ± 100 mA            |
| TMR 3-4810WIE |               | 3.3 VDC        | 700 mA              |
| TMR 3-4811WIE | 18 – 75 VDC   | 5 VDC          | 600 mA              |
| TMR 3-4812WIE |               | 12 VDC         | 250 mA              |
| TMR 3-4813WIE |               | 15 VDC         | 200 mA              |
| TMR 3-4821WIE | 18 – 75 VDC   | ± 5 VDC        | ± 300 mA            |
| TMR 3-4822WIE |               | ± 12 VDC       | ± 125 mA            |
| TMR 3-4823WIE |               | ± 15 VDC       | ± 100 mA            |

## Dimensions



| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | - Vin (GND)   | - Vin (GND)   |
| 2   | + Vin (Vcc)   | + Vin (Vcc)   |
| 3   | Remote On/Off | Remote On/Off |
| 5   | No con.       | No con.       |
| 6   | + Vout        | + Vout        |
| 7   | - Vout        | Common        |
| 8   | No con.       | - Vout        |

() = Inches

# TMR-3WI Series ▶ 3 W



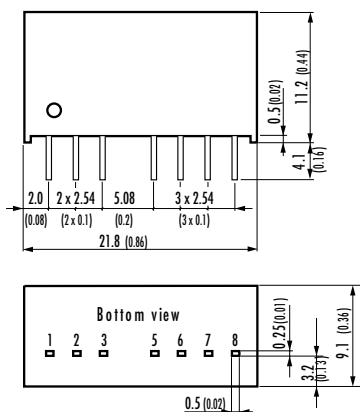
- ▶ Ultra wide 4:1 input range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500VDC
- ▶ No minimum load required
- ▶ Short circuit protection
- ▶ Remote On/Off



| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 0.2% max.  |
| Load regulation             | 1.0% max.  |
| Ripple & noise              | <75 mVpk-pk (20 MHz BW)  |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 80% typ.   |
| Operating temperature range | -40 °C to +85 °C<br>above 70 °C derating 3.3 %/K   |
| I/O isolation voltage       | 1500VDC (60 sec.)  |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off               | shutdown input for low input current (1 mA)<br>in standby operation                              |
| Casing                      | plastic (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tm3wi.pdf">www.tracopower.com/products/tm3wi.pdf</a> |

| Models       |               |                |                     |
|--------------|---------------|----------------|---------------------|
| Order code   | Input voltage | Output voltage | Output current max. |
| TMR 3-1210WI | 4.5 – 18 VDC  | 3.3 VDC        | 700 mA              |
| TMR 3-1211WI |               | 5 VDC          | 600 mA              |
| TMR 3-1212WI |               | 12 VDC         | 250 mA              |
| TMR 3-1213WI | 9 – 36 VDC    | 15 VDC         | 200 mA              |
| TMR 3-1221WI |               | ± 5 VDC        | ± 300 mA            |
| TMR 3-1222WI |               | ± 12 VDC       | ± 125 mA            |
| TMR 3-1223WI |               | ± 15 VDC       | ± 100 mA            |
| TMR 3-2410WI | 18 – 75 VDC   | 3.3 VDC        | 700 mA              |
| TMR 3-2411WI |               | 5 VDC          | 600 mA              |
| TMR 3-2412WI |               | 12 VDC         | 250 mA              |
| TMR 3-2413WI | 18 – 75 VDC   | 15 VDC         | 200 mA              |
| TMR 3-2421WI |               | ± 5 VDC        | ± 300 mA            |
| TMR 3-2422WI |               | ± 12 VDC       | ± 125 mA            |
| TMR 3-2423WI |               | ± 15 VDC       | ± 100 mA            |
| TMR 3-4810WI | 18 – 75 VDC   | 3.3 VDC        | 700 mA              |
| TMR 3-4811WI |               | 5 VDC          | 600 mA              |
| TMR 3-4812WI |               | 12 VDC         | 250 mA              |
| TMR 3-4813WI | 18 – 75 VDC   | 15 VDC         | 200 mA              |
| TMR 3-4821WI |               | ± 5 VDC        | ± 300 mA            |
| TMR 3-4822WI |               | ± 12 VDC       | ± 125 mA            |
| TMR 3-4823WI |               | ± 15 VDC       | ± 100 mA            |

## Dimensions



| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | - Vin (GND)   | - Vin (GND)   |
| 2   | + Vin (Vcc)   | + Vin (Vcc)   |
| 3   | Remote On/Off | Remote On/Off |
| 5   | No con.       | No con.       |
| 6   | + Vout        | + Vout        |
| 7   | - Vout        | Common        |
| 8   | No con.       | - Vout        |

( ) = Inches

# TMR-6 Series ▶ 6 W



- ▶ High power density
- ▶ Smallest footprint 6 W converter
- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500VDC
- ▶ No minimum load required
- ▶ Input under voltage lockout
- ▶ Optional metal case with case pin connection
- ▶ Short circuit protection
- ▶ Remote On/Off

**NEW**  
Models

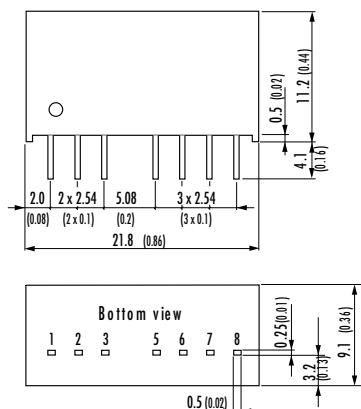


| Specifications               |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | 1% max.  |
| Ripple & noise               | <50 mVpk-pk (20 MHz BW)<br>no external output capacitor required                               |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 83% typ.   |
| Operating temperature range  | -40 °C to +65 °C (without derating)<br>above 65 °C derating 5 %/K                              |
| I/O isolation voltage        | 1500VDC (60 sec.)  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off                | shutdown input for low input current (2.5 mA)<br>in standby operation                          |
| Casing                       | plastic (UL 94 V-0 rated), Metal case on demand  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmr6.pdf">www.tracopower.com/products/tmr6.pdf</a> |

| Models     |               |                |                     |
|------------|---------------|----------------|---------------------|
| Order code | Input voltage | Output voltage | Output current max. |
| TMR 6-0510 |               | 3.3 VDC        | 1300 mA             |
| TMR 6-0511 |               | 5 VDC          | 1200 mA             |
| TMR 6-0519 |               | 9 VDC          | 666 mA              |
| TMR 6-0512 |               | 12 VDC         | 500 mA              |
| TMR 6-0513 | 4.5 – 9 VDC   | 15 VDC         | 400 mA              |
| TMR 6-0515 |               | 24 VDC         | 250 mA              |
| TMR 6-0521 |               | ± 5 VDC        | ± 600 mA            |
| TMR 6-0522 |               | ± 12 VDC       | ± 250 mA            |
| TMR 6-0523 |               | ± 15 VDC       | ± 200 mA            |
| TMR 6-1210 |               | 3.3 VDC        | 1300 mA             |
| TMR 6-1211 |               | 5 VDC          | 1200 mA             |
| TMR 6-1219 |               | 9 VDC          | 666 mA              |
| TMR 6-1212 |               | 12 VDC         | 500 mA              |
| TMR 6-1213 | 9 – 18 VDC    | 15 VDC         | 400 mA              |
| TMR 6-1215 |               | 24 VDC         | 250 mA              |
| TMR 6-1221 |               | ± 5 VDC        | ± 600 mA            |
| TMR 6-1222 |               | ± 12 VDC       | ± 250 mA            |
| TMR 6-1223 |               | ± 15 VDC       | ± 200 mA            |
| TMR 6-2410 |               | 3.3 VDC        | 1300 mA             |
| TMR 6-2411 |               | 5 VDC          | 1200 mA             |
| TMR 6-2419 |               | 9 VDC          | 666 mA              |
| TMR 6-2412 |               | 12 VDC         | 500 mA              |
| TMR 6-2413 | 18 – 36 VDC   | 15 VDC         | 400 mA              |
| TMR 6-2415 |               | 24 VDC         | 250 mA              |
| TMR 6-2421 |               | ± 5 VDC        | ± 600 mA            |
| TMR 6-2422 |               | ± 12 VDC       | ± 250 mA            |
| TMR 6-2423 |               | ± 15 VDC       | ± 200 mA            |
| TMR 6-4810 |               | 3.3 VDC        | 1300 mA             |
| TMR 6-4811 |               | 5 VDC          | 1200 mA             |
| TMR 6-4819 |               | 9 VDC          | 666 mA              |
| TMR 6-4812 |               | 12 VDC         | 500 mA              |
| TMR 6-4813 | 36 – 75 VDC   | 15 VDC         | 400 mA              |
| TMR 6-4815 |               | 24 VDC         | 250 mA              |
| TMR 6-4821 |               | ± 5 VDC        | ± 600 mA            |
| TMR 6-4822 |               | ± 12 VDC       | ± 250 mA            |
| TMR 6-4823 |               | ± 15 VDC       | ± 200 mA            |

On demand: Modules with metal casing

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | - Vin (GND)   | - Vin (GND)   |
| 2   | + Vin (Vcc)   | + Vin (Vcc)   |
| 3   | Remote On/Off | Remote On/Off |
| 5   | No con.       | No con.       |
| 6   | + Vout        | + Vout        |
| 7   | - Vout        | Common        |
| 8   | No con.       | - Vout        |

# TMR-6WI Series ▶ 6 W



- ▶ High power density
- ▶ Smallest footprint 6 W converter
- ▶ Ultra wide 4:1 input range
- ▶ I/O isolation 1500VDC
- ▶ Operating temperature range -40 °C to +71 °C
- ▶ High efficiency up to 88%
- ▶ Short-circuit protection
- ▶ Remote On/Off



**NEW**  
Product

| Specifications               |  | Models            |                      |                       |                            |
|------------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | 0.2% max.  | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | 1% max.  | TMR 6-2410WI      |                      | 3.3 VDC               | 1500 mA                    |
| Ripple & noise               | <125 mVpk-pk (20 MHz BW)   | TMR 6-2411WI      |                      | 5 VDC                 | 1200 mA                    |
| Conducted EMI                | EN55022, class A (internal filter)   | TMR 6-2419WI      |                      | 9 VDC                 | 666 mA                     |
| Short circuit protection     | continuous, automatic recovery   | TMR 6-2412WI      |                      | 12 VDC                | 500 mA                     |
| Efficiency                   | 85% typ.   | TMR 6-2413WI      | 9 – 36 VDC           | 15 VDC                | 400 mA                     |
| Operating temperature range  | -40 °C to +71 °C (without derating)<br>above 71 °C derating 3.5 %/K                                | TMR 6-2415WI      |                      | 24 VDC                | 250 mA                     |
| I/O isolation voltage        | 1500VDC (60 sec.)  | TMR 6-2421WI      |                      | ± 5 VDC               | ± 600 mA                   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, reports pending  | TMR 6-2422WI      |                      | ± 12 VDC              | ± 250 mA                   |
| Remote On/Off                | shutdown input for low input current (3 mA) in standby operation                                   | TMR 6-2423WI      |                      | ± 15 VDC              | ± 200 mA                   |
| Casing                       | plastic (UL 94 V-0 rated), Metal case on demand  | TMR 6-4810WI      |                      | 3.3 VDC               | 1500 mA                    |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmr6wi.pdf">www.tracopower.com/products/tmr6wi.pdf</a> | TMR 6-4811WI      |                      | 5 VDC                 | 1200 mA                    |
|                              |  | TMR 6-4819WI      |                      | 9 VDC                 | 666 mA                     |
|                              |  | TMR 6-4812WI      |                      | 12 VDC                | 500 mA                     |
|                              |  | TMR 6-4813WI      | 18 – 75 VDC          | 15 VDC                | 400 mA                     |
|                              |  | TMR 6-4815WI      |                      | 24 VDC                | 250 mA                     |
|                              |  | TMR 6-4821WI      |                      | ± 5 VDC               | ± 600 mA                   |
|                              |  | TMR 6-4822WI      |                      | ± 12 VDC              | ± 250 mA                   |
|                              |  | TMR 6-4823WI      |                      | ± 15 VDC              | ± 200 mA                   |

| Dimensions |  | Pin Configuration |                      |                    |
|------------|--|-------------------|----------------------|--------------------|
|            |  | <b>Pin</b>        | <b>Single output</b> | <b>Dual output</b> |
|            |  | 1                 | - Vin (GND)          | - Vin (GND)        |
|            |  | 2                 | + Vin (Vcc)          | + Vin (Vcc)        |
|            |  | 3                 | Remote On/Off        | Remote On/Off      |
|            |  | 5                 | No con.              | No con.            |
|            |  | 6                 | + Vout               | + Vout             |
|            |  | 7                 | - Vout               | Common             |
|            |  | 8                 | No con.              | - Vout             |

() = Inches

# TMR-9 Series ▶ 9 W

- ▶ Highest power density in SIP package
- ▶ Smallest footprint 9 W converter
- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range -40 °C to +71 °C
- ▶ No minimum load required
- ▶ Short circuit protection
- ▶ Remote On/Off



**NEW**  
Product

| Specifications               |  | Models     |               |                |                     |
|------------------------------|--|------------|---------------|----------------|---------------------|
| Line regulation              | 0.2% max.  | Order code | Input voltage | Output voltage | Output current max. |
| Load regulation              | 1% max.  | TMR 9-1210 |               | 3.3 VDC        | 1800 mA             |
| Ripple & noise               | 75 mVpk-pk typ. (20 MHz BW)<br>no external output capacitor required                           | TMR 9-1211 |               | 5 VDC          | 1600 mA             |
| Short circuit protection     | continuous, automatic recovery   | TMR 9-1219 |               | 9 VDC          | 1000 mA             |
| Efficiency                   | 86% typ.   | TMR 9-1212 |               | 12 VDC         | 750 mA              |
| Operating temperature range  | -40 °C to +71 °C<br>above 60 °C derating 4 %/K   | TMR 9-1213 | 9 – 18 VDC    | 15 VDC         | 600 mA              |
| I/O isolation voltage        | 1500VDC (60 sec.)  | TMR 9-1215 |               | 24 VDC         | 375 mA              |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   | TMR 9-1221 |               | ± 5 VDC        | ± 800 mA            |
| Remote On/Off                | shutdown input for low input current (3 mA)<br>in standby operation                            | TMR 9-1222 |               | ± 12 VDC       | ± 375 mA            |
| Casing                       | metal  | TMR 9-1223 |               | ± 15 VDC       | ± 300 mA            |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmr9.pdf">www.tracopower.com/products/tmr9.pdf</a> | TMR 9-2410 |               | 3.3 VDC        | 1800 mA             |
|                              |  | TMR 9-2411 |               | 5 VDC          | 1600 mA             |
|                              |  | TMR 9-2419 |               | 9 VDC          | 1000 mA             |
|                              |  | TMR 9-2412 |               | 12 VDC         | 750 mA              |
|                              |  | TMR 9-2413 | 18 – 36 VDC   | 15 VDC         | 600 mA              |
|                              |  | TMR 9-2415 |               | 24 VDC         | 375 mA              |
|                              |  | TMR 9-2421 |               | ± 5 VDC        | ± 800 mA            |
|                              |  | TMR 9-2422 |               | ± 12 VDC       | ± 375 mA            |
|                              |  | TMR 9-2423 |               | ± 15 VDC       | ± 300 mA            |
|                              |  | TMR 9-4810 |               | 3.3 VDC        | 1800 mA             |
|                              |  | TMR 9-4811 |               | 5 VDC          | 1600 mA             |
|                              |  | TMR 9-4819 |               | 9 VDC          | 1000 mA             |
|                              |  | TMR 9-4812 |               | 12 VDC         | 750 mA              |
|                              |  | TMR 9-4813 | 36 – 75 VDC   | 15 VDC         | 600 mA              |
|                              |  | TMR 9-4815 |               | 24 VDC         | 375 mA              |
|                              |  | TMR 9-4821 |               | ± 5 VDC        | ± 800 mA            |
|                              |  | TMR 9-4822 |               | ± 12 VDC       | ± 375 mA            |
|                              |  | TMR 9-4823 |               | ± 15 VDC       | ± 300 mA            |

| Dimensions |  | Pin |               |               |
|------------|--|-----|---------------|---------------|
|            |  | Pin | Single output | Dual output   |
|            |  | 1   | - Vin (GND)   | - Vin (GND)   |
|            |  | 2   | + Vin (Vcc)   | + Vin (Vcc)   |
|            |  | 3   | Remote On/Off | Remote On/Off |
|            |  | 6   | + Vout        | + Vout        |
|            |  | 7   | - Vout        | Common        |
|            |  | 8   | No con.       | - Vout        |
|            |  | 9   | Case          | Case          |
|            |  | 10  | Stand off     | Stand off     |
|            |  | 11  | Stand off     | Stand off     |
|            |  | 12  | Case          | Case          |

( ) = Inches

# TMR-9WI Series ▶ 9 W

- ▶ Highest power density in SIP package
- ▶ Smallest footprint 9W converter
- ▶ Wide 4:1 input range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500VDC
- ▶ Operating temperature range -40 °C to +71 °C
- ▶ No minimum load required
- ▶ Short circuit protection
- ▶ Remote On/Off

**NEW**  
Product



| Specifications               |  | Models            |                      |                       |                            |
|------------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | 0.2% max.  | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | 1% max.  | TMR 9-2410WI      |                      | 3.3 VDC               | 1800 mA                    |
| Ripple & noise               | 75 mVpk-pk typ. (20 MHz BW)<br>no external output capacitor required                               | TMR 9-2411WI      |                      | 5 VDC                 | 1600 mA                    |
| Short circuit protection     | continuous, automatic recovery   | TMR 9-2419WI      |                      | 9 VDC                 | 1000 mA                    |
| Efficiency                   | 86% typ.   | TMR 9-2412WI      |                      | 12 VDC                | 750 mA                     |
| Operating temperature range  | -40 °C to +71 °C<br>above 60 °C derating 4 %/K   | TMR 9-2413WI      | 9 – 36 VDC           | 15 VDC                | 600 mA                     |
| I/O isolation voltage        | 1500VDC (60 sec.)  | TMR 9-2415WI      |                      | 24 VDC                | 375 mA                     |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   | TMR 9-2421WI      |                      | ± 5 VDC               | ± 800 mA                   |
| Remote On/Off                | shutdown input for low input current (3 mA)<br>in standby operation                                | TMR 9-2422WI      |                      | ± 12 VDC              | ± 375 mA                   |
| Casing                       | metal  | TMR 9-2423WI      |                      | ± 15 VDC              | ± 300 mA                   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmr9wi.pdf">www.tracopower.com/products/tmr9wi.pdf</a> | TMR 9-4810WI      |                      | 3.3 VDC               | 1800 mA                    |
|                              |  | TMR 9-4811WI      |                      | 5 VDC                 | 1600 mA                    |
|                              |  | TMR 9-4819WI      |                      | 9 VDC                 | 1000 mA                    |
|                              |  | TMR 9-4812WI      |                      | 12 VDC                | 750 mA                     |
|                              |  | TMR 9-4813WI      | 18 – 75 VDC          | 15 VDC                | 600 mA                     |
|                              |  | TMR 9-4815WI      |                      | 24 VDC                | 375 mA                     |
|                              |  | TMR 9-4821WI      |                      | ± 5 VDC               | ± 800 mA                   |
|                              |  | TMR 9-4822WI      |                      | ± 12 VDC              | ± 375 mA                   |
|                              |  | TMR 9-4823WI      |                      | ± 15 VDC              | ± 300 mA                   |

| Dimensions |  | Pin           |               |               |
|------------|--|---------------|---------------|---------------|
|            |  | Single output | Dual output   |               |
|            |  | 1             | - Vin (GND)   | - Vin (GND)   |
|            |  | 2             | + Vin (Vcc)   | + Vin (Vcc)   |
|            |  | 3             | Remote On/Off | Remote On/Off |
|            |  | 6             | + Vout        | + Vout        |
|            |  | 7             | - Vout        | Common        |
|            |  | 8             | No con.       | - Vout        |
|            |  | 9             | Case          | Case          |
|            |  | 10            | Stand off     | Stand off     |
|            |  | 11            | Stand off     | Stand off     |
|            |  | 12            | Case          | Case          |

( ) = Inches



## TEL-2 Series ▶ 2 W



- ▶ Low profile DIP-16 package
- ▶ Wide 2:1 input voltage range
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+75\text{ }^{\circ}\text{C}$
- ▶ Input filter to meet EN 55022, Class A



## Specifications

|                              |   |
|------------------------------|---|
| Line regulation              | 0.5 % max.  |
| Load regulation              | – Single output models: 0.75 % max.<br>– Dual output models: 2.0 % max.   |
| Ripple & Noise               | <50 mVpk-pk (20 MHz BW)   |
| Conducted EMI                | EN55022, class EN55022 class A (internal filter)  |
| Short circuit protection     | continuous, automatic recovery  |
| Efficiency                   | 78 % typ.   |
| Operating temperature range  | $-40\text{ }^{\circ}\text{C}$ to $+75\text{ }^{\circ}\text{C}$<br>above $65\text{ }^{\circ}\text{C}$ derating 2.8 %/K |
| I/O isolation voltage        | 1500 VDC (60 sec.)  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report   |
| Casing                       | plastic (UL 94 V-0 rated)   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tel2.pdf">www.tracopower.com/products/tel2.pdf</a>                        |

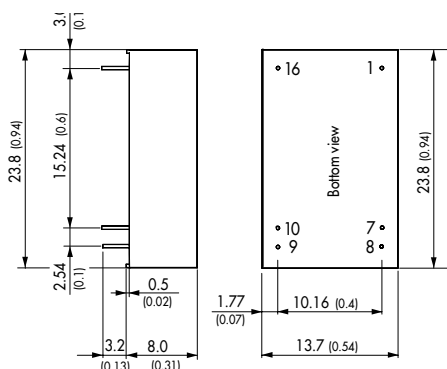
## Models

| Order code | Input voltage | Output voltage | Output current max. |
|------------|---------------|----------------|---------------------|
| TEL 2-0510 |               | 3.3 VDC        | 500 mA              |
| TEL 2-0511 |               | 5 VDC          | 400 mA              |
| TEL 2-0512 |               | 12 VDC         | 165 mA              |
| TEL 2-0513 | 4.5 – 9.0 VDC | 15 VDC         | 135 mA              |
| TEL 2-0521 |               | $\pm 5$ VDC    | $\pm 200$ mA        |
| TEL 2-0522 |               | $\pm 12$ VDC   | $\pm 85$ mA         |
| TEL 2-0523 |               | $\pm 15$ VDC   | $\pm 65$ mA         |
| TEL 2-1210 |               | 3.3 VDC        | 500 mA              |
| TEL 2-1211 |               | 5 VDC          | 400 mA              |
| TEL 2-1212 |               | 12 VDC         | 165 mA              |
| TEL 2-1213 | 9 – 18 VDC    | 15 VDC         | 135 mA              |
| TEL 2-1221 |               | $\pm 5$ VDC    | $\pm 200$ mA        |
| TEL 2-1222 |               | $\pm 12$ VDC   | $\pm 85$ mA         |
| TEL 2-1223 |               | $\pm 15$ VDC   | $\pm 65$ mA         |
| TEL 2-2410 |               | 3.3 VDC        | 500 mA              |
| TEL 2-2411 |               | 5 VDC          | 400 mA              |
| TEL 2-2412 |               | 12 VDC         | 165 mA              |
| TEL 2-2413 | 18 – 36 VDC   | 15 VDC         | 135 mA              |
| TEL 2-2421 |               | $\pm 5$ VDC    | $\pm 200$ mA        |
| TEL 2-2422 |               | $\pm 12$ VDC   | $\pm 85$ mA         |
| TEL 2-2423 |               | $\pm 15$ VDC   | $\pm 65$ mA         |
| TEL 2-4810 |               | 3.3 VDC        | 500 mA              |
| TEL 2-4811 |               | 5 VDC          | 400 mA              |
| TEL 2-4812 |               | 12 VDC         | 165 mA              |
| TEL 2-4813 | 36 – 75 VDC   | 15 VDC         | 135 mA              |
| TEL 2-4821 |               | $\pm 5$ VDC    | $\pm 200$ mA        |
| TEL 2-4822 |               | $\pm 12$ VDC   | $\pm 85$ mA         |
| TEL 2-4823 |               | $\pm 15$ VDC   | $\pm 65$ mA         |

Product with same electrical specifications available in SMD package.

See TES-2N series page 19

## Dimensions



| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | – Vin (GND)   | – Vin (GND) |
| 7   | No con.       | No con.     |
| 8   | No con.       | Common      |
| 9   | + Vout        | + Vout      |
| 10  | – Vout        | – Vout      |
| 16  | + Vin         | + Vin       |

( ) = Inches

# TDR-2 Series ▶ 2 W



- ▶ Compact design in DIP-14 package
- ▶ Wide 2:1 input voltage range
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30mVpk-pk typ.
- ▶ No minimum load required
- ▶ I/O isolation 1500VDC
- ▶ Operating temperature range -40 °C to +85 °C without derating
- ▶ Remote On/Off



| Specifications              |  | Models            |                      |                       |                            |
|-----------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation             | 0.2% max.  | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation             | - Single output models: 1.0% max.<br>- Dual output models: 1.0% max.                           | TDR 2-0511        |                      | 5 VDC                 | 400 mA                     |
| Ripple & noise              | 30 mVpk-pk typ. (20 MHz BW)<br>(no external output capacitor required)                         | TDR 2-0512        |                      | 12 VDC                | 167 mA                     |
| Short circuit protection    | continuous, automatic recovery   | TDR 2-0513        | 4.5 – 9 VDC          | 15 VDC                | 134 mA                     |
| Efficiency                  | 83% typ.   | TDR 2-0522        |                      | ± 12 VDC              | ± 83 mA                    |
| Operating temperature range | -40 °C to +85 °C without derating  | TDR 2-0523        |                      | ± 15 VDC              | ± 67 mA                    |
| I/O isolation voltage       | 1500 VDC (60 sec.)   | TDR 2-1211        |                      | 5 VDC                 | 400 mA                     |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1   | TDR 2-1212        |                      | 12 VDC                | 167 mA                     |
| Remote On/Off               | shutdown input for low input current (2.5 mA) in standby operation                             | TDR 2-1213        | 9 – 18 VDC           | 15 VDC                | 134 mA                     |
| Casing                      | plastic over mold (UL 94 V-0 rated)  | TDR 2-1222        |                      | ± 12 VDC              | ± 83 mA                    |
| Full datasheet              | <a href="http://www.tracopower.com/products/tdr2.pdf">www.tracopower.com/products/tdr2.pdf</a> | TDR 2-1223        |                      | ± 15 VDC              | ± 67 mA                    |
|                             |  | TDR 2-2411        |                      | 5 VDC                 | 400 mA                     |
|                             |  | TDR 2-2412        |                      | 12 VDC                | 167 mA                     |
|                             |  | TDR 2-2413        | 18 – 36 VDC          | 15 VDC                | 134 mA                     |
|                             |  | TDR 2-2422        |                      | ± 12 VDC              | ± 83 mA                    |
|                             |  | TDR 2-2423        |                      | ± 15 VDC              | ± 67 mA                    |
|                             |  | TDR 2-4811        |                      | 5 VDC                 | 400 mA                     |
|                             |  | TDR 2-4812        |                      | 12 VDC                | 167 mA                     |
|                             |  | TDR 2-4813        | 36 – 75 VDC          | 15 VDC                | 134 mA                     |
|                             |  | TDR 2-4822        |                      | ± 12 VDC              | ± 83 mA                    |
|                             |  | TDR 2-4823        |                      | ± 15 VDC              | ± 67 mA                    |

Product with same electrical specifications available in SMD package.  
See TDR-2SM series page 20

| Dimensions |  | Pin                  |                    |               |
|------------|--|----------------------|--------------------|---------------|
|            |  | <b>Single output</b> | <b>Dual output</b> |               |
|            |  | 1                    | - Vin (GND)        | - Vin (GND)   |
|            |  | 2                    | Remote On/Off      | Remote On/Off |
|            |  | 6                    | No con.            | Common        |
|            |  | 7                    | No con.            | - Vout        |
|            |  | 8                    | + Vout             | + Vout        |
|            |  | 9                    | - Vout             | Common        |
|            |  | 14                   | + Vin (Vcc)        | + Vin (Vcc)   |

() = Inches

# TDR-2WI Series ▶ 2 W



- ▶ Compact design in DIP-14 package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30 mVpk-pk typ.
- ▶ No minimum load required
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$  without derating
- ▶ Remote On/Off



## Specifications

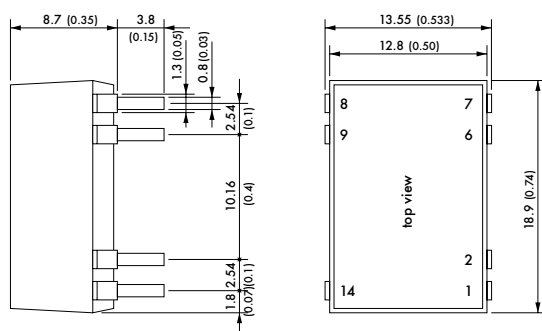
|                             |  |
|-----------------------------|--|
| Line regulation             | 0.2% max.  |
| Load regulation             | - Single output models: 1.0% max.<br>- Dual output models: 1.0% max.                               |
| Ripple & noise              | 30 mVpk-pk typ. (20 MHz BW)<br>(no external output capacitor required)                             |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 81% typ.   |
| Operating temperature range | $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ without derating                    |
| I/O isolation voltage       | 1500 VDC (60 sec.)   |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off               | shutdown input for low input current (2.5 mA) in standby operation                                 |
| Casing                      | plastic over mold (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tdr2wi.pdf">www.tracopower.com/products/tdr2wi.pdf</a> |

## Models

| Order code   | Input voltage | Output voltage | Output current max. |
|--------------|---------------|----------------|---------------------|
| TDR 2-1211WI |               | 5 VDC          | 400 mA              |
| TDR 2-1212WI |               | 12 VDC         | 167 mA              |
| TDR 2-1213WI | 4.5 – 18 VDC  | 15 VDC         | 134 mA              |
| TDR 2-1222WI |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TDR 2-1223WI |               | $\pm 15$ VDC   | $\pm 67$ mA         |
| TDR 2-2411WI |               | 5 VDC          | 400 mA              |
| TDR 2-2412WI |               | 12 VDC         | 167 mA              |
| TDR 2-2413WI | 9 – 36 VDC    | 15 VDC         | 134 mA              |
| TDR 2-2422WI |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TDR 2-2423WI |               | $\pm 15$ VDC   | $\pm 67$ mA         |
| TDR 2-4811WI |               | 5 VDC          | 400 mA              |
| TDR 2-4812WI |               | 12 VDC         | 167 mA              |
| TDR 2-4813WI | 18 – 75 VDC   | 15 VDC         | 134 mA              |
| TDR 2-4822WI |               | $\pm 12$ VDC   | $\pm 83$ mA         |
| TDR 2-4823WI |               | $\pm 15$ VDC   | $\pm 67$ mA         |

Product with same electrical specifications available in SMD package.  
See TDR-2WISM series page 21

## Dimensions



| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | - Vin (GND)   | - Vin (GND)   |
| 2   | Remote On/Off | Remote On/Off |
| 6   | No con.       | Common        |
| 7   | No con.       | - Vout        |
| 8   | + Vout        | + Vout        |
| 9   | - Vout        | Common        |
| 14  | + Vin (Vcc)   | + Vin (Vcc)   |

# TDR-3 Series ▶ 3 W



- ▶ Smallest 3 Watt converter in DIP-14 package
- ▶ Wide 2:1 input voltage range
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30mVpk-pk typ.
- ▶ No minimum load required
- ▶ I/O isolation 1500VDC
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Remote On/Off

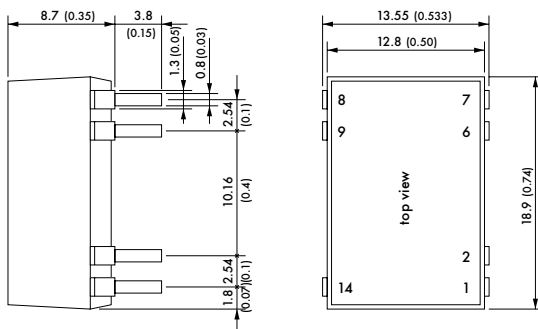


| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 0.2% max.  |
| Load regulation             | - Single output models: 1.0% max.<br>- Dual output models: 1.0% max.                           |
| Ripple & noise              | 30 mVpk-pk typ. (20 MHz BW)<br>(no external output capacitor required)                         |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 83% typ.   |
| Operating temperature range | -40 °C to +85 °C<br>above 70 °C derating 3.5%/K  |
| I/O isolation voltage       | 1500 VDC (60 sec.)   |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1 CB-report   |
| Remote On/Off               | shutdown input for low input current (2.5 mA)<br>in standby operation                          |
| Casing                      | Epoxy molded (UL 94 V-0 rated)   |
| Full datasheet              | <a href="http://www.tracopower.com/products/tdr3.pdf">www.tracopower.com/products/tdr3.pdf</a> |

| Models     |               |                |                     |
|------------|---------------|----------------|---------------------|
| Order code | Input voltage | Output voltage | Output current max. |
| TDR 3-0511 | 4.5 – 9 VDC   | 5 VDC          | 600 mA              |
| TDR 3-0512 |               | 12 VDC         | 250 mA              |
| TDR 3-0513 |               | 15 VDC         | 200 mA              |
| TDR 3-0522 | 9 – 18 VDC    | ± 12 VDC       | ± 125 mA            |
| TDR 3-0523 |               | ± 15 VDC       | ± 100 mA            |
| TDR 3-1211 | 18 – 36 VDC   | 5 VDC          | 600 mA              |
| TDR 3-1212 |               | 12 VDC         | 250 mA              |
| TDR 3-1213 |               | 15 VDC         | 200 mA              |
| TDR 3-1222 | 36 – 75 VDC   | ± 12 VDC       | ± 125 mA            |
| TDR 3-1223 |               | ± 15 VDC       | ± 100 mA            |
| TDR 3-2411 | 36 – 75 VDC   | 5 VDC          | 600 mA              |
| TDR 3-2412 |               | 12 VDC         | 250 mA              |
| TDR 3-2413 |               | 15 VDC         | 200 mA              |
| TDR 3-2422 | 36 – 75 VDC   | ± 12 VDC       | ± 125 mA            |
| TDR 3-2423 |               | ± 15 VDC       | ± 100 mA            |
| TDR 3-4811 | 36 – 75 VDC   | 5 VDC          | 600 mA              |
| TDR 3-4812 |               | 12 VDC         | 250 mA              |
| TDR 3-4813 |               | 15 VDC         | 200 mA              |
| TDR 3-4822 | 36 – 75 VDC   | ± 12 VDC       | ± 125 mA            |
| TDR 3-4823 |               | ± 15 VDC       | ± 100 mA            |

Product with same electrical specifications available in SMD package.  
See TDR-3SM series page 22

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | - Vin (GND)   | - Vin (GND)   |
| 2   | Remote On/Off | Remote On/Off |
| 6   | No con.       | Common        |
| 7   | No con.       | - Vout        |
| 8   | + Vout        | + Vout        |
| 9   | - Vout        | Common        |
| 14  | + Vin (Vcc)   | + Vin (Vcc)   |

# TDR-3WI Series ▶ 3 W



- ▶ Smallest 3 Watt converter in DIP-14 package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Fully regulated outputs
- ▶ Low ripple & noise
- ▶ No minimum load required
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- ▶ Remote On/Off



## Specifications

|                             |  |
|-----------------------------|--|
| Line regulation             | 0.2% max.  |
| Load regulation             | – Single output models: 1.0% max.<br>– Dual output models: 1.0% max.   |
| Ripple & noise              | <30 mVpk-pk (20 MHz BW)<br>(no external output capacitor required)   |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 82% typ.   |
| Operating temperature range | $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$<br>above $70\text{ }^{\circ}\text{C}$ derating 3.5%/K |
| I/O isolation voltage       | 1500 VDC (60 sec.)   |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off               | shutdown input for low input current (2.5 mA)<br>in standby operation  |
| Casing                      | plastic over mold (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tdr3wi.pdf">www.tracopower.com/products/tdr3wi.pdf</a>                   |

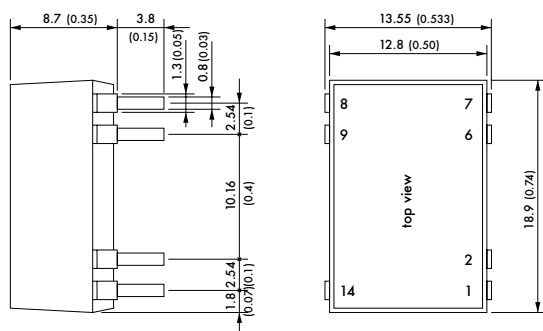
## Models

| Order code   | Input voltage | Output voltage | Output current max. |
|--------------|---------------|----------------|---------------------|
| TDR 3-1211WI |               | 5 VDC          | 600 mA              |
| TDR 3-1212WI |               | 12 VDC         | 250 mA              |
| TDR 3-1213WI | 4.5 – 18 VDC  | 15 VDC         | 200 mA              |
| TDR 3-1222WI |               | $\pm 12$ VDC   | $\pm 125$ mA        |
| TDR 3-1223WI |               | $\pm 15$ VDC   | $\pm 100$ mA        |
| TDR 3-2411WI |               | 5 VDC          | 600 mA              |
| TDR 3-2412WI |               | 12 VDC         | 250 mA              |
| TDR 3-2413WI | 9 – 36 VDC    | 15 VDC         | 200 mA              |
| TDR 3-2422WI |               | $\pm 12$ VDC   | $\pm 125$ mA        |
| TDR 3-2423WI |               | $\pm 15$ VDC   | $\pm 100$ mA        |
| TDR 3-4811WI |               | 5 VDC          | 600 mA              |
| TDR 3-4812WI |               | 12 VDC         | 250 mA              |
| TDR 3-4813WI | 18 – 75 VDC   | 15 VDC         | 200 mA              |
| TDR 3-4822WI |               | $\pm 12$ VDC   | $\pm 125$ mA        |
| TDR 3-4823WI |               | $\pm 15$ VDC   | $\pm 100$ mA        |

Product with same electrical specifications available in SMD package.

See TDR-3WISM series page 23

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | – Vin (GND)   | – Vin (GND)   |
| 2   | Remote On/Off | Remote On/Off |
| 6   | No con.       | Common        |
| 7   | No con.       | – Vout        |
| 8   | + Vout        | + Vout        |
| 9   | – Vout        | Common        |
| 14  | + Vin (Vcc)   | + Vin (Vcc)   |

# THL-3WI Series ▶ 3 W



- ▶ DIP-16 package, low profile
- ▶ Ultra wide 4:1 input voltage range
- ▶ Fully regulated outputs
- ▶ I/O-isolation 1500VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off



| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 0.5% max.  |
| Load regulation             | 1.5% max.  |
| Ripple & noise              | <60 mVpk-pk (20 MHz BW)  |
| Conducted EMI               | EN55022 class A  |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 81 % typ.  |
| Operating temperature range | -40 °C to +85 °C<br>above 65 °C derating 2.9%/K  |
| I/O isolation voltage       | 1500 VDC (60 sec.)   |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1 CB-report   |
| Remote On/Off               | shutdown input for low input current (5 mA)<br>in standby operation                                |
| Casing                      | plastic over mold (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/thl3wi.pdf">www.tracopower.com/products/thl3wi.pdf</a> |

| Models       |               |                |                     |
|--------------|---------------|----------------|---------------------|
| Order code   | Input voltage | Output voltage | Output current max. |
| THL 3-2410WI |               | 3.3 VDC        | 600 mA              |
| THL 3-2411WI |               | 5 VDC          | 600 mA              |
| THL 3-2412WI |               | 12 VDC         | 250 mA              |
| THL 3-2413WI | 9 – 36 VDC    | 15 VDC         | 200 mA              |
| THL 3-2415WI |               | 24 VDC         | 125 mA              |
| THL 3-2421WI |               | ± 5 VDC        | ± 300 mA            |
| THL 3-2422WI |               | ± 12 VDC       | ± 125 mA            |
| THL 3-2423WI |               | ± 15 VDC       | ± 100 mA            |
| THL 3-4810WI |               | 3.3 VDC        | 600 mA              |
| THL 3-4811WI |               | 5 VDC          | 600 mA              |
| THL 3-4812WI |               | 12 VDC         | 250 mA              |
| THL 3-4813WI | 18 – 75 VDC   | 15 VDC         | 200 mA              |
| THL 3-4815WI |               | 24 VDC         | 125 mA              |
| THL 3-4821WI |               | ± 5 VDC        | ± 300 mA            |
| THL 3-4822WI |               | ± 12 VDC       | ± 125 mA            |
| THL 3-4823WI |               | ± 15 VDC       | ± 100 mA            |

Product with same electrical specifications available in SMD package.  
See THL-3WISM series page 24

| Dimensions |  |
|------------|--|
|            |  |

() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | - Vin (GND)   | - Vin (GND)   |
| 2   | Remote On/Off | Remote On/Off |
| 7   | No con.       | No con.       |
| 8   | No con.       | Common        |
| 9   | + Vout        | + Vout        |
| 10  | - Vout        | - Vout        |
| 16  | + Vin (Vcc)   | + Vin (Vcc)   |

# TEM-3N Series ▶ 3 W



- ▶ Cost optimized design in DIP-24 package
- ▶ Operating temperature range  
-40 °C to +75 °C without derating
- ▶ short circuit protection
- ▶ Input filter to meet EN 55022, class A

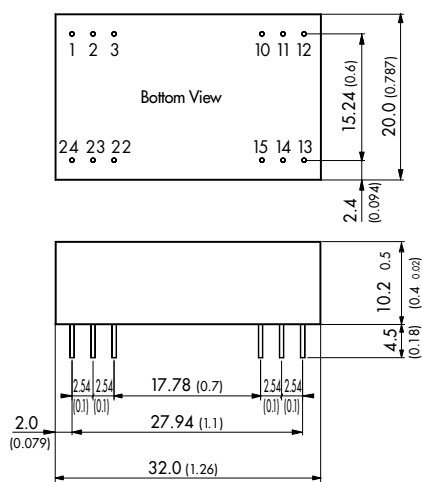
**NEW**  
Product



| Specifications               |  |
|------------------------------|--|
| Line regulation              | 0.5 % max.   |
| Load regulation              | 0.5 % max.   |
| Ripple & Noise               | 60 mVpk-pk max. (20 MHz BW)  |
| Input filter                 | EN 55022 class A   |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 79 % typ.  |
| Operating temperature range  | -40 °C to +85 °C<br>above 75 °C derating 5 %/K   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  |
| Casing                       | plastic (UL 94 V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tem3n.pdf">www.tracopower.com/products/tem3n.pdf</a> |

| Models      |               |                |                     |
|-------------|---------------|----------------|---------------------|
| Order code  | Input voltage | Output voltage | Output current max. |
| TEM 3-0511N |               | 5 VDC          | 600 mA              |
| TEM 3-0512N |               | 12 VDC         | 250 mA              |
| TEM 3-0513N | 5 VDC ±10%    | 15 VDC         | 200 mA              |
| TEM 3-0522N |               | ± 12 VDC       | ±125 mA             |
| TEM 3-0523N |               | ± 15 VDC       | ±100 mA             |
| TEM 3-1211N |               | 5 VDC          | 600 mA              |
| TEM 3-1212N |               | 12 VDC         | 250 mA              |
| TEM 3-1213N | 12 VDC ±10%   | 15 VDC         | 200 mA              |
| TEM 3-1222N |               | ± 12 VDC       | ±125 mA             |
| TEM 3-1223N |               | ± 15 VDC       | ±100 mA             |
| TEM 3-2411N |               | 5 VDC          | 600 mA              |
| TEM 3-2412N |               | 12 VDC         | 250 mA              |
| TEM 3-2413N | 24 VDC ±10%   | 15 VDC         | 200 mA              |
| TEM 3-2422N |               | ± 12 VDC       | ±125 mA             |
| TEM 3-2423N |               | ± 15 VDC       | ±100 mA             |

## Dimensions



() = Inches

| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc) |
| 2   | No con.       | - Vout      |
| 3   | No con.       | Common      |
| 10  | - Vout        | Common      |
| 11  | + Vout        | + Vout      |
| 12  | - Vin (GND)   | - Vin (GND) |
| 13  | - Vin (GND)   | - Vin (GND) |
| 14  | + Vout        | + Vout      |
| 15  | - Vout        | Common      |
| 22  | No con.       | Common      |
| 23  | No con.       | - Vout      |
| 24  | + Vin (Vcc)   | + Vin (Vcc) |

# TEL-3 Series ▶ 3 W



- ▶ Wide 2:1 input range
- ▶ Cost optimized design
- ▶ I/O isolation 1500VDC
- ▶ Operating temperature range -40 °C to +85 °C



| Specifications               |  | Models     |               |                |                     |
|------------------------------|--|------------|---------------|----------------|---------------------|
| Line regulation              | 0.5 % max.   | Order code | Input voltage | Output voltage | Output current max. |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                           | TEL 3-0511 | 4.5 – 9.0 VDC | 5 VDC          | 600 mA              |
| Ripple & Noise               | 60 mVpk-pk max. (20 MHz BW)  | TEL 3-0512 |               | 12 VDC         | 250 mA              |
| Input filter                 | Pi-filter  | TEL 3-0513 |               | 15 VDC         | 200 mA              |
| Short circuit protection     | continuous, automatic recovery   | TEL 3-0522 |               | ± 12 VDC       | ± 125 mA            |
| Efficiency                   | 80 % typ.  | TEL 3-0523 |               | ± 15 VDC       | ± 100 mA            |
| Operating temperature range  | -40 °C to +85 °C<br>above 70 °C derating 3.3 %/K   | TEL 3-1211 |               | 5 VDC          | 600 mA              |
| I/O isolation voltage        | 1500 VDC (60 sec.)   | TEL 3-1212 |               | 12 VDC         | 250 mA              |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  | TEL 3-1213 | 9 – 18 VDC    | 15 VDC         | 200 mA              |
| Casing                       | plastic (UL 94 V-0 rated)  | TEL 3-1222 |               | ± 12 VDC       | ± 125 mA            |
| Full datasheet               | <a href="http://www.tracopower.com/products/tel3.pdf">www.tracopower.com/products/tel3.pdf</a> | TEL 3-1223 |               | ± 15 VDC       | ± 100 mA            |
|                              |  | TEL 3-2011 |               | 5 VDC          | 600 mA              |
|                              |  | TEL 3-2012 |               | 12 VDC         | 250 mA              |
|                              |  | TEL 3-2013 | 10 – 30 VDC   | 15 VDC         | 200 mA              |
|                              |  | TEL 3-2022 |               | ± 12 VDC       | ± 125 mA            |
|                              |  | TEL 3-2023 |               | ± 15 VDC       | ± 100 mA            |
|                              |  | TEL 3-2411 |               | 5 VDC          | 600 mA              |
|                              |  | TEL 3-2412 |               | 12 VDC         | 250 mA              |
|                              |  | TEL 3-2413 | 18 – 36 VDC   | 15 VDC         | 200 mA              |
|                              |  | TEL 3-2422 |               | ± 12 VDC       | ± 125 mA            |
|                              |  | TEL 3-2423 |               | ± 15 VDC       | ± 100 mA            |
|                              |  | TEL 3-4811 |               | 5 VDC          | 600 mA              |
|                              |  | TEL 3-4812 |               | 12 VDC         | 250 mA              |
|                              |  | TEL 3-4813 | 36 – 75 VDC   | 15 VDC         | 200 mA              |
|                              |  | TEL 3-4822 |               | ± 12 VDC       | ± 125 mA            |
|                              |  | TEL 3-4823 |               | ± 15 VDC       | ± 100 mA            |

| Dimensions |                    | Pin |               |             |
|------------|--------------------|-----|---------------|-------------|
|            | <p>Bottom view</p> | Pin | Single output | Dual output |
|            |                    | 1   | + Vin (Vcc)   | + Vin (Vcc) |
|            |                    | 2   | No con.       | - Vout      |
|            |                    | 3   | No con.       | Common      |
|            |                    | 10  | - Vout        | Common      |
|            |                    | 11  | + Vout        | + Vout      |
|            |                    | 12  | - Vin (GND)   | - Vin (GND) |
|            |                    | 13  | - Vin (GND)   | - Vin (GND) |
|            |                    | 14  | + Vout        | + Vout      |
|            |                    | 15  | - Vout        | Common      |
|            |                    | 22  | No con.       | Common      |
|            |                    | 23  | No con.       | - Vout      |
|            |                    | 24  | + Vin (Vcc)   | + Vin (Vcc) |

() = Inches



# TEN-3N Series ▶ 3 W



- ▶ Wide 2:1 input voltage range
- ▶ I/O-isolation 1500VDC or 3000 VDC
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Short-circuit protection
- ▶ No minimum load required
- ▶ Input filter to meet EN 55022, class A

**NEW**  
Product

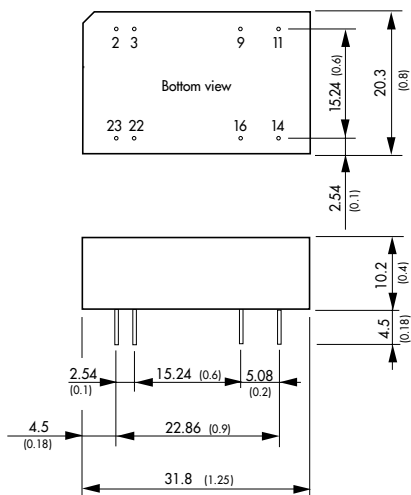


| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 1% max.  |
| Load regulation             | 1% max.  |
| Ripple & noise              | <70 mVpk-pk (20 MHz BW)  |
| Conducted EMI               | EN55022 class A  |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 82 % typ.  |
| Operating temperature range | -40 °C to +85 °C<br>above 70 °C derating 3.3%/K  |
| I/O isolation voltage       | 1500 VDC (60 sec.) or 3000 VDC (functional isolation)  |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1 CB-report   |
| Casing                      | plastic (UL 94 V-0 rated)  |
| Full datasheet              | <a href="http://www.tracopower.com/products/ten3n.pdf">www.tracopower.com/products/ten3n.pdf</a> |

| Models       |               |                |                     |         |
|--------------|---------------|----------------|---------------------|---------|
| Order code   | Input voltage | Output voltage | Output current max. |         |
| TEN 3-0510N  | 4.5 – 9.0 VDC | 3.3 VDC        | 750 mA              |         |
| TEN 3-0511N* |               | 5 VDC          | 600 mA              |         |
| TEN 3-0512N* |               | 12 VDC         | 250 mA              |         |
| TEN 3-0513N* |               | 15 VDC         | 200 mA              |         |
| TEN 3-0515N* |               | 24 VDC         | 125 mA              |         |
| TEN 3-0521N* |               | ± 5 VDC        | ± 250 mA            |         |
| TEN 3-0522N* |               | ± 12 VDC       | ± 125 mA            |         |
| TEN 3-0523N* |               | ± 15 VDC       | ± 100 mA            |         |
| TEN 3-1210N  |               | 9 – 18 VDC     | 3.3 VDC             | 750 mA  |
| TEN 3-1211N  |               |                | 5 VDC               | 600 mA  |
| TEN 3-1212N  | 12 VDC        |                | 250 mA              |         |
| TEN 3-1213N  | 15 VDC        |                | 200 mA              |         |
| TEN 3-1215N  | 24 VDC        |                | 125 mA              |         |
| TEN 3-1221N  | ± 5 VDC       |                | ± 250 mA            |         |
| TEN 3-1222N  | ± 12 VDC      |                | ± 125 mA            |         |
| TEN 3-1223N  | ± 15 VDC      |                | ± 100 mA            |         |
| TEN 3-2410N  | 18 – 36 VDC   |                | 3.3 VDC             | 750 mA  |
| TEN 3-2411N  |               |                | 5 VDC               | 600 mA  |
| TEN 3-2412N  |               | 12 VDC         | 250 mA              |         |
| TEN 3-2413N  |               | 15 VDC         | 200 mA              |         |
| TEN 3-2415N  |               | 24 VDC         | 125 mA              |         |
| TEN 3-2421N  |               | ± 5 VDC        | ± 250 mA            |         |
| TEN 3-2422N  |               | ± 12 VDC       | ± 125 mA            |         |
| TEN 3-2423N  |               | ± 15 VDC       | ± 100 mA            |         |
| TEN 3-4810N  |               | 36 – 75 VDC    | 3.3 VDC             | 7500 mA |
| TEN 3-4811N  |               |                | 5 VDC               | 600 mA  |
| TEN 3-4812N  | 12 VDC        |                | 250 mA              |         |
| TEN 3-4813N  | 15 VDC        |                | 200 mA              |         |
| TEN 3-4815N  | 24 VDC        |                | 125 mA              |         |
| TEN 3-4821N  | ± 5 VDC       |                | ± 250 mA            |         |
| TEN 3-4822N  | ± 12 VDC      |                | ± 125 mA            |         |
| TEN 3-4823N  | ± 15 VDC      |                | ± 100 mA            |         |

\* for 3000 VDC I/O isolation add suffix -HI

## Dimensions



( ) = Inches

| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 2   | - Vin (GND)   | - Vin (GND) |
| 3   | - Vin (GND)   | - Vin (GND) |
| 9   | No pin        | Common      |
| 11  | No con.       | - Vout      |
| 14  | + Vout        | + Vout      |
| 16  | - Vout        | Common      |
| 22  | + Vin (Vcc)   | + Vin (Vcc) |
| 23  | + Vin (Vcc)   | + Vin (Vcc) |

# TEN-3WIN Series ▶ 3 W



- ▶ Ultra wide 4:1 input voltage range
- ▶ I/O-isolation 1500 VDC or 3000 VDC
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Short-circuit protection
- ▶ No minimum load required
- ▶ Input filter to meet EN 55022, class A

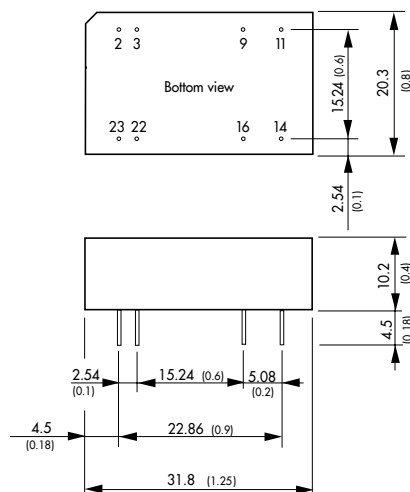


**NEW**  
Product

| Specifications              |  | Models            |                      |                       |                            |
|-----------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation             | 1% max.  | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation             | 1% max.  | TEN 3-2410WIN     |                      | 3.3 VDC               | 750 mA                     |
| Ripple & noise              | <70 mVpk-pk (20 MHz BW)  | TEN 3-2411WIN*    |                      | 5 VDC                 | 600 mA                     |
| Conducted EMI               | EN55022 class A  | TEN 3-2412WIN*    |                      | 12 VDC                | 250 mA                     |
| Short circuit protection    | continuous, automatic recovery   | TEN 3-2413WIN*    | 9.0 – 36 VDC         | 15 VDC                | 200 mA                     |
| Efficiency                  | 81 % typ.  | TEN 3-2415WIN*    |                      | 24 VDC                | 125 mA                     |
| Operating temperature range | -40 °C to +85 °C<br>above 70 °C derating 3.3%/K  | TEN 3-2421WIN*    |                      | ± 5 VDC               | ± 250 mA                   |
| I/O isolation voltage       | 1500 VDC (60 sec.) or 3000 VDC (functional isolation)  | TEN 3-2422WIN*    |                      | ± 12 VDC              | ± 125 mA                   |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1 CB-report   | TEN 3-2423WIN*    |                      | ± 15 VDC              | ± 100 mA                   |
| Casing                      | plastic (UL 94 V-0 rated)  | TEN 3-4810WIN     |                      | 3.3 VDC               | 750 mA                     |
| Full datasheet              | <a href="http://www.tracopower.com/products/ten3win.pdf">www.tracopower.com/products/ten3win.pdf</a> | TEN 3-4811WIN*    |                      | 5 VDC                 | 600 mA                     |
|                             |  | TEN 3-4812WIN*    |                      | 12 VDC                | 250 mA                     |
|                             |  | TEN 3-4813WIN*    | 18 – 75 VDC          | 15 VDC                | 200 mA                     |
|                             |  | TEN 3-4815WIN*    |                      | 24 VDC                | 125 mA                     |
|                             |  | TEN 3-4821WIN*    |                      | ± 5 VDC               | ± 250 mA                   |
|                             |  | TEN 3-4822WIN*    |                      | ± 12 VDC              | ± 125 mA                   |
|                             |  | TEN 3-4823WIN*    |                      | ± 15 VDC              | ± 100 mA                   |

\* for 3000 VDC I/O isolation add suffix -HI

## Dimensions



() = Inches

| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 2   | - Vin (GND)   | - Vin (GND) |
| 3   | - Vin (GND)   | - Vin (GND) |
| 9   | No pin        | Common      |
| 11  | No con.       | - Vout      |
| 14  | + Vout        | + Vout      |
| 16  | - Vout        | Common      |
| 22  | + Vin (Vcc)   | + Vin (Vcc) |
| 23  | + Vin (Vcc)   | + Vin (Vcc) |

# TVN-5WI Series ▶ 5 W



- ▶ Ultra low ripple & noise 10 mVpp typ.
- ▶ 6-side shielded metal casing
- ▶ Input filter to meet EN 55022 class B
- ▶ Ultra wide 4:1 input voltage range
- ▶ High efficiency up to 88%
- ▶ Operating temperature range  
-40 °C to +85 °C without derating
- ▶ I/O isolation 1500VDC
- ▶ No minimum load required
- ▶ Undervoltage lockout
- ▶ Remote On/Off

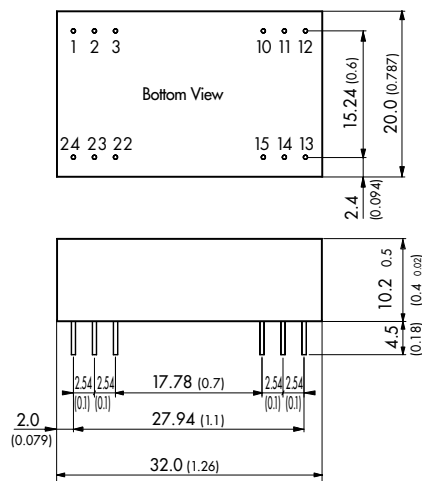
**NEW**  
Product



| Specifications               |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | 1% max.  |
| Ripple & noise               | 10 mVpk-pk typ. (20MHz BW)<br>no external output capacitor required                                |
| Input filter                 | EN 55022, class B  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 85% typ.   |
| Operating temperature range  | -40 °C to +85 °C (without derating)  |
| I/O isolation voltage        | 1500VDC (60 sec.)  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off                | shutdown input for low input current (3 mA) in standby operation                                   |
| Casing                       | 6 side shielded metal casing   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tvn5wi.pdf">www.tracopower.com/products/tvn5wi.pdf</a> |

| Models       |               |                |                     |
|--------------|---------------|----------------|---------------------|
| Order code   | Input voltage | Output voltage | Output current max. |
| TVN 5-2410WI |               | 3.3 VDC        | 1515 mA             |
| TVN 5-2411WI |               | 5 VDC          | 1000 mA             |
| TVN 5-2412WI |               | 12 VDC         | 416 mA              |
| TVN 5-2413WI |               | 15 VDC         | 333 mA              |
| TVN 5-2415WI | 9 – 36 VDC    | 24 VDC         | 208 mA              |
| TVN 5-2421WI |               | ± 5 VDC        | ± 500 mA            |
| TVN 5-2422WI |               | ± 12 VDC       | ± 208 mA            |
| TVN 5-2423WI |               | ± 15 VDC       | ± 166 mA            |
| TVN 5-2425WI |               | ± 24 VDC       | ± 104 mA            |
| TVN 5-4810WI |               | 3.3 VDC        | 1515 mA             |
| TVN 5-4811WI |               | 5 VDC          | 1000 mA             |
| TVN 5-4812WI |               | 12 VDC         | 416 mA              |
| TVN 5-4813WI |               | 15 VDC         | 333 mA              |
| TVN 5-4815WI | 18 – 75 VDC   | 24 VDC         | 208 mA              |
| TVN 5-4821WI |               | ± 5 VDC        | ± 500 mA            |
| TVN 5-4822WI |               | ± 12 VDC       | ± 208 mA            |
| TVN 5-4823WI |               | ± 15 VDC       | ± 166 mA            |
| TVN 5-4825WI |               | ± 24 VDC       | ± 104 mA            |

## Dimensions



| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | + Vin (Vcc)   | + Vin (Vcc)   |
| 3   | Case          | Case          |
| 10  | No pin        | Common        |
| 11  | No pin        | + Vout 1      |
| 12  | Case          | Case          |
| 13  | Trim          | Trim          |
| 14  | - Vout        | - Vout 2      |
| 15  | + Vout        | Common        |
| 22  | Remote On/Off | Remote On/Off |
| 23  | - Vin         | - Vin         |
| 24  | - Vin         | - Vin         |

( ) = Inches

# TEL-5 Series ▶ 5 – 6 W



- ▶ Wide 2:1 input range
- ▶ High efficiency up to 86 %
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Industry standard pinout
- ▶ Cost optimized design



| Specifications               |  | Models            |                      |                       |                            |
|------------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | 0.3 % max.   | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | - Single output models: 1.0 % max.<br>- Dual output models: 2.0 % max.                         | TEL 5-1210        |                      | 3.3 VDC               | 1200 mA                    |
| Ripple & noise               | <75 mVpk-pk (20 MHz BW)  | TEL 5-1211        |                      | 5 VDC                 | 1000 mA                    |
| Input filter                 | Pi-filter  | TEL 5-1212        | 9 – 18 VDC           | 12 VDC                | 500 mA                     |
| Short circuit protection     | continuous, automatic recovery   | TEL 5-1222        |                      | ± 12 VDC              | ± 250 mA                   |
| Efficiency                   | 84 % typ.  | TEL 5-1223        |                      | ± 15 VDC              | ± 200 mA                   |
| Operating temperature range  | -40 °C to +85 °C<br>above 70 °C derating 3.3 %/K   | TEL 5-2410        |                      | 3.3 VDC               | 1200 mA                    |
| I/O isolation voltage        | 1500 VDC (60 sec.)   | TEL 5-2411        |                      | 5 VDC                 | 1000 mA                    |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  | TEL 5-2412        | 18 – 36 VDC          | 12 VDC                | 500 mA                     |
| Casing                       | plastic (UL 94V-0 rated)   | TEL 5-2422        |                      | ± 12 VDC              | ± 250 mA                   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tel5.pdf">www.tracopower.com/products/tel5.pdf</a> | TEL 5-2423        |                      | ± 15 VDC              | ± 200 mA                   |

| Dimensions |  | Pin                  |                    |  |
|------------|--|----------------------|--------------------|--|
|            |  | <b>Single output</b> | <b>Dual output</b> |  |
|            |  | - Vin (GND)          | - Vin (GND)        |  |
|            |  | - Vin (GND)          | - Vin (GND)        |  |
|            |  | No pin               | Common             |  |
|            |  | No con.              | - Vout             |  |
|            |  | + Vout               | + Vout             |  |
|            |  | - Vout               | Common             |  |
|            |  | + Vin (Vcc)          | + Vin (Vcc)        |  |
|            |  | + Vin (Vcc)          | + Vin (Vcc)        |  |

( ) = Inches

## TEN-6N Series ▶ 6 W



- ▶ Wide 2:1 input range
- ▶ Operating temperature range  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- ▶ I/O isolation 1500 VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ Industry standard pinout



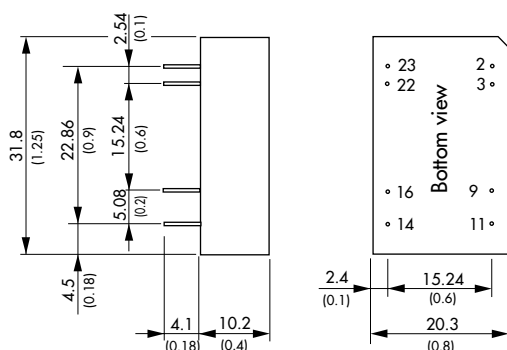
## Specifications

|                              |  |
|------------------------------|--|
| Line regulation              | 0.5 % max.   |
| Load regulation              | single output: 1.2% max.<br>dual output: 2% max.   |
| Ripple & noise               | <80 mVpk-pk (20 MHz BW)  |
| Conducted EMI                | EN 55022, class EN55022 class A (internal filter)  |
| Short circuit protection     | continuous   |
| Efficiency                   | 84% typ.<br>3.3 VDC models 77% typ.  |
| Operating temperature range  | $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$<br>3.3 & 5.0 VDC models, above $60^{\circ}\text{C}$ derating 2.5 %/K<br>other models, above $70^{\circ}\text{C}$ derating 3.3 %/K |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  |
| Casing                       | plastic (UL 94 V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten6n.pdf">www.tracopower.com/products/ten6n.pdf</a>   |

## Models

| Order code  | Input voltage | Output voltage | Output current max. |
|-------------|---------------|----------------|---------------------|
| TEN 6-1210N |               | 3.3 VDC        | 1200 mA             |
| TEN 6-1211N |               | 5 VDC          | 1200 mA             |
| TEN 6-1212N |               | 12 VDC         | 500 mA              |
| TEN 6-1213N | 9 – 18 VDC    | 15 VDC         | 400 mA              |
| TEN 6-1215N |               | 24 VDC         | 250 mA              |
| TEN 6-1221N |               | $\pm 5$ VDC    | $\pm 500$ mA        |
| TEN 6-1222N |               | $\pm 12$ VDC   | $\pm 250$ mA        |
| TEN 6-1223N |               | $\pm 15$ VDC   | $\pm 200$ mA        |
| TEN 6-2410N |               | 3.3 VDC        | 1200 mA             |
| TEN 6-2411N |               | 5 VDC          | 1200 mA             |
| TEN 6-2412N |               | 12 VDC         | 500 mA              |
| TEN 6-2413N | 18 – 36 VDC   | 15 VDC         | 400 mA              |
| TEN 6-2415N |               | 24 VDC         | 250 mA              |
| TEN 6-2421N |               | $\pm 5$ VDC    | $\pm 500$ mA        |
| TEN 6-2422N |               | $\pm 12$ VDC   | $\pm 250$ mA        |
| TEN 6-2423N |               | $\pm 15$ VDC   | $\pm 200$ mA        |
| TEN 6-4810N |               | 3.3 VDC        | 1200 mA             |
| TEN 6-4811N |               | 5 VDC          | 1200 mA             |
| TEN 6-4812N |               | 12 VDC         | 500 mA              |
| TEN 6-4813N | 36 – 75 VDC   | 15 VDC         | 400 mA              |
| TEN 6-4815N |               | 24 VDC         | 250 mA              |
| TEN 6-4821N |               | $\pm 5$ VDC    | $\pm 500$ mA        |
| TEN 6-4822N |               | $\pm 12$ VDC   | $\pm 250$ mA        |
| TEN 6-4823N |               | $\pm 15$ VDC   | $\pm 200$ mA        |

## Dimensions



| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 2   | - Vin (GND)   | - Vin (GND) |
| 3   | - Vin (GND)   | - Vin (GND) |
| 9   | No pin        | Common      |
| 11  | No con.       | - Vout      |
| 14  | + Vout        | + Vout      |
| 16  | - Vout        | Common      |
| 22  | + Vin (Vcc)   | + Vin (Vcc) |
| 23  | + Vin (Vcc)   | + Vin (Vcc) |

() = Inches

# TEN-6WIN Series ▶ 6 W

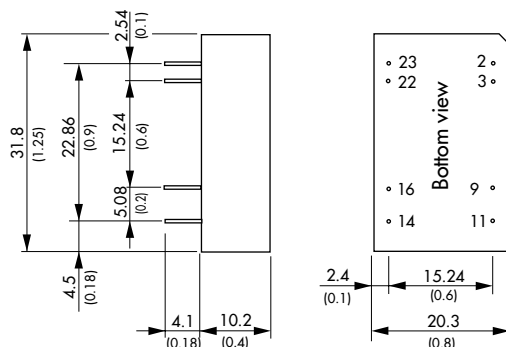


- ▶ Ultra wide 4:1 Input Range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1'500 VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ Industry standard pinout



| Specifications               |  | Models                          |                      |                       |                            |
|------------------------------|--|---------------------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | 0.5 % max.   | <b>Order code <sup>1)</sup></b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | single output: 1.2% max.<br>dual output: 2% max.   | TEN 6-2410WIN                   |                      | 3.3 VDC               | 1200 mA                    |
| Ripple & noise               | <80 mVpk-pk (20 MHz BW)  | TEN 6-2411WIN                   |                      | 5 VDC                 | 1200 mA                    |
| Conducted EMI                | EN 55022, class EN55022 class A (internal filter)  | TEN 6-2412WIN                   |                      | 12 VDC                | 500 mA                     |
| Short circuit protection     | continuous, automatic recovery   | TEN 6-2413WIN                   | 9 – 36 VDC           | 15 VDC                | 400 mA                     |
| Efficiency                   | 84% typ.<br>3.3 VDC models 77% typ.  | TEN 6-2415WIN                   |                      | 24 VDC                | 250 mA                     |
| Operating temperature range  | -40 °C to +85 °C<br>3.3 & 5.0 VDC models, above 60°C derating 2.5 %/K<br>other models, above 70°C derating 3.3 %/K | TEN 6-2421WIN                   |                      | ± 5 VDC               | ± 500 mA                   |
| I/O isolation voltage        | 1500 VDC   | TEN 6-2422WIN                   |                      | ± 12 VDC              | ± 250 mA                   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  | TEN 6-2423WIN                   |                      | ± 15 VDC              | ± 200 mA                   |
| Casing                       | plastic (UL 94 V-0 rated)  | TEN 6-4810WIN                   |                      | 3.3 VDC               | 1200 mA                    |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten6win.pdf">www.tracopower.com/products/ten6win.pdf</a>               | TEN 6-4811WIN                   |                      | 5 VDC                 | 1200 mA                    |
|                              |  | TEN 6-4812WIN                   |                      | 12 VDC                | 500 mA                     |
|                              |  | TEN 6-4813WIN                   | 18 – 75 VDC          | 15 VDC                | 400 mA                     |
|                              |  | TEN 6-4815WIN                   |                      | 24 VDC                | 250 mA                     |
|                              |  | TEN 6-4821WIN                   |                      | ± 5 VDC               | ± 500 mA                   |
|                              |  | TEN 6-4822WIN                   |                      | ± 12 VDC              | ± 250 mA                   |
|                              |  | TEN 6-4823WIN                   |                      | ± 15 VDC              | ± 200 mA                   |

## Dimensions



| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 2   | - Vin (GND)   | - Vin (GND) |
| 3   | - Vin (GND)   | - Vin (GND) |
| 9   | No pin        | Common      |
| 11  | No con.       | - Vout      |
| 14  | + Vout        | + Vout      |
| 16  | - Vout        | Common      |
| 22  | + Vin (Vcc)   | + Vin (Vcc) |
| 23  | + Vin (Vcc)   | + Vin (Vcc) |

( ) = Inches

# TEN-6WIN-HI Series ▶ 6 W



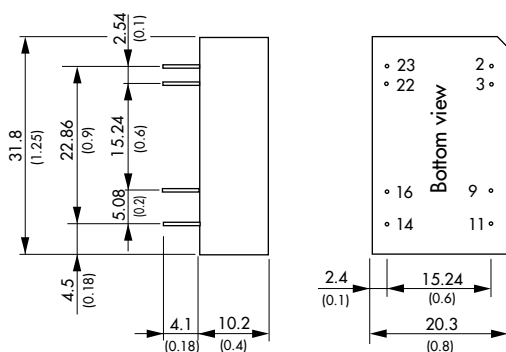
- ▶ Ultra wide 4:1 Input Range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 3'000 VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ Industry standard pinout



| Specifications               |  |
|------------------------------|--|
| Line regulation              | 0.5 % max.   |
| Load regulation              | 1.2% typ.  |
| Ripple & noise               | <80 mVpk-pk (20 MHz BW)  |
| Conducted EMI                | EN 55022, class EN55022 class A (internal filter)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 84% typ.<br>3.3 VDC models 77% typ.  |
| Operating temperature range  | -40 °C to +85 °C<br>3.3 & 5.0 VDC models, above 60°C derating 2.5 %/K<br>other models, above 70°C derating 3.3 %/K |
| I/O isolation voltage        | 3000 VDC functional insulation   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  |
| Casing                       | plastic (UL 94 V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten6win.pdf">www.tracopower.com/products/ten6win.pdf</a>               |

| Models                   |               |                |                     |
|--------------------------|---------------|----------------|---------------------|
| Order code <sup>1)</sup> | Input voltage | Output voltage | Output current max. |
| TEN 6-2410WIN-HI         |               | 3.3 VDC        | 1200 mA             |
| TEN 6-2411WIN-HI         |               | 5 VDC          | 1200 mA             |
| TEN 6-2412WIN-HI         |               | 12 VDC         | 500 mA              |
| TEN 6-2413WIN-HI         | 9 – 36 VDC    | 15 VDC         | 400 mA              |
| TEN 6-2415WIN-HI         |               | 24 VDC         | 250 mA              |
| TEN 6-2421WIN-HI         |               | ± 5 VDC        | ± 500 mA            |
| TEN 6-2422WIN-HI         |               | ± 12 VDC       | ± 250 mA            |
| TEN 6-2423WIN-HI         |               | ± 15 VDC       | ± 200 mA            |
| TEN 6-4810WIN-HI         |               | 3.3 VDC        | 1200 mA             |
| TEN 6-4811WIN-HI         |               | 5 VDC          | 1200 mA             |
| TEN 6-4812WIN-HI         |               | 12 VDC         | 500 mA              |
| TEN 6-4813WIN-HI         | 18 – 75 VDC   | 15 VDC         | 400 mA              |
| TEN 6-4815WIN-HI         |               | 24 VDC         | 250 mA              |
| TEN 6-4821WIN-HI         |               | ± 5 VDC        | ± 500 mA            |
| TEN 6-4822WIN-HI         |               | ± 12 VDC       | ± 250 mA            |
| TEN 6-4823WIN-HI         |               | ± 15 VDC       | ± 200 mA            |

## Dimensions



| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 2   | - Vin (GND)   | - Vin (GND) |
| 3   | - Vin (GND)   | - Vin (GND) |
| 9   | No pin        | Common      |
| 11  | No con.       | - Vout      |
| 14  | + Vout        | + Vout      |
| 16  | - Vout        | Common      |
| 22  | + Vin (Vcc)   | + Vin (Vcc) |
| 23  | + Vin (Vcc)   | + Vin (Vcc) |

() = Inches

# TEN-8 Series ▶ 8 W



- ▶ Wide 2:1 input range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off
- ▶ Industry standard pinout



| Specifications               |  | Models            |                      |                       |                            |
|------------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | 0.2% max.  | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | 1.0% max.  | TEN 8-1210        |                      | 3.3 VDC               | 2000 mA                    |
| Ripple & noise               | <50 mVpk-pk (20MHz BW)   | TEN 8-1211        |                      | 5 VDC                 | 1500 mA                    |
| Conducted EMI                | EN 55022, class EN55022 class A (internal filter)  | TEN 8-1212        |                      | 12 VDC                | 665 mA                     |
| Short circuit protection     | continuous, automatic recovery   | TEN 8-1213        | 9-18 VDC             | 15 VDC                | 535 mA                     |
| Efficiency                   | 83% typ.   | TEN 8-1221        |                      | ± 5 VDC               | ± 800 mA                   |
| Operating temperature range  | -40 °C to +85 °C<br>above 70°C derating 3.3%/K   | TEN 8-1222        |                      | ± 12 VDC              | ± 335 mA                   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   | TEN 8-1223        |                      | ± 15 VDC              | ± 265 mA                   |
| Safety standards / approvals | cUL /UL 60950-1, IEC/EN 60950-1  | TEN 8-2410        |                      | 3.3 VDC               | 2000 mA                    |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                             | TEN 8-2411        |                      | 5 VDC                 | 1500 mA                    |
| Casing                       | metal, with insulated baseplate  | TEN 8-2412        |                      | 12 VDC                | 665 mA                     |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten8.pdf">www.tracopower.com/products/ten8.pdf</a> | TEN 8-2413        | 18-36 VDC            | 15 VDC                | 535 mA                     |
|                              |  | TEN 8-2421        |                      | ± 5 VDC               | ± 800 mA                   |
|                              |  | TEN 8-2422        |                      | ± 12 VDC              | ± 335 mA                   |
|                              |  | TEN 8-2423        |                      | ± 15 VDC              | ± 265 mA                   |
|                              |  | TEN 8-4810        |                      | 3.3 VDC               | 2000 mA                    |
|                              |  | TEN 8-4811        |                      | 5 VDC                 | 1500 mA                    |
|                              |  | TEN 8-4812        |                      | 12 VDC                | 665 mA                     |
|                              |  | TEN 8-4813        | 36-75 VDC            | 15 VDC                | 535 mA                     |
|                              |  | TEN 8-4821        |                      | ± 5 VDC               | ± 800 mA                   |
|                              |  | TEN 8-4822        |                      | ± 12 VDC              | ± 335 mA                   |
|                              |  | TEN 8-4823        |                      | ± 15 VDC              | ± 265 mA                   |

| Dimensions          |               | Pin  |  |     |               |             |   |               |               |   |             |             |   |             |             |   |         |        |    |         |        |    |        |        |    |        |        |    |             |             |    |             |             |
|---------------------|---------------|--|--|-----|---------------|-------------|---|---------------|---------------|---|-------------|-------------|---|-------------|-------------|---|---------|--------|----|---------|--------|----|--------|--------|----|--------|--------|----|-------------|-------------|----|-------------|-------------|
|                     |               | <table border="1"> <thead> <tr> <th>Pin</th> <th>Single output</th> <th>Dual output</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Remote On/Off</td> <td>Remote On/Off</td> </tr> <tr> <td>2</td> <td>- Vin (GND)</td> <td>- Vin (GND)</td> </tr> <tr> <td>3</td> <td>- Vin (GND)</td> <td>- Vin (GND)</td> </tr> <tr> <td>9</td> <td>No con.</td> <td>Common</td> </tr> <tr> <td>11</td> <td>No con.</td> <td>- Vout</td> </tr> <tr> <td>14</td> <td>+ Vout</td> <td>+ Vout</td> </tr> <tr> <td>16</td> <td>- Vout</td> <td>Common</td> </tr> <tr> <td>22</td> <td>+ Vin (Vcc)</td> <td>+ Vin (Vcc)</td> </tr> <tr> <td>23</td> <td>+ Vin (Vcc)</td> <td>+ Vin (Vcc)</td> </tr> </tbody> </table> |  | Pin | Single output | Dual output | 1 | Remote On/Off | Remote On/Off | 2 | - Vin (GND) | - Vin (GND) | 3 | - Vin (GND) | - Vin (GND) | 9 | No con. | Common | 11 | No con. | - Vout | 14 | + Vout | + Vout | 16 | - Vout | Common | 22 | + Vin (Vcc) | + Vin (Vcc) | 23 | + Vin (Vcc) | + Vin (Vcc) |
| Pin                 | Single output | Dual output  |  |     |               |             |   |               |               |   |             |             |   |             |             |   |         |        |    |         |        |    |        |        |    |        |        |    |             |             |    |             |             |
| 1                   | Remote On/Off | Remote On/Off  |  |     |               |             |   |               |               |   |             |             |   |             |             |   |         |        |    |         |        |    |        |        |    |        |        |    |             |             |    |             |             |
| 2                   | - Vin (GND)   | - Vin (GND)  |  |     |               |             |   |               |               |   |             |             |   |             |             |   |         |        |    |         |        |    |        |        |    |        |        |    |             |             |    |             |             |
| 3                   | - Vin (GND)   | - Vin (GND)  |  |     |               |             |   |               |               |   |             |             |   |             |             |   |         |        |    |         |        |    |        |        |    |        |        |    |             |             |    |             |             |
| 9                   | No con.       | Common   |  |     |               |             |   |               |               |   |             |             |   |             |             |   |         |        |    |         |        |    |        |        |    |        |        |    |             |             |    |             |             |
| 11                  | No con.       | - Vout   |  |     |               |             |   |               |               |   |             |             |   |             |             |   |         |        |    |         |        |    |        |        |    |        |        |    |             |             |    |             |             |
| 14                  | + Vout        | + Vout   |  |     |               |             |   |               |               |   |             |             |   |             |             |   |         |        |    |         |        |    |        |        |    |        |        |    |             |             |    |             |             |
| 16                  | - Vout        | Common   |  |     |               |             |   |               |               |   |             |             |   |             |             |   |         |        |    |         |        |    |        |        |    |        |        |    |             |             |    |             |             |
| 22                  | + Vin (Vcc)   | + Vin (Vcc)  |  |     |               |             |   |               |               |   |             |             |   |             |             |   |         |        |    |         |        |    |        |        |    |        |        |    |             |             |    |             |             |
| 23                  | + Vin (Vcc)   | + Vin (Vcc)  |  |     |               |             |   |               |               |   |             |             |   |             |             |   |         |        |    |         |        |    |        |        |    |        |        |    |             |             |    |             |             |
| <p>( ) = Inches</p> |               |  |  |     |               |             |   |               |               |   |             |             |   |             |             |   |         |        |    |         |        |    |        |        |    |        |        |    |             |             |    |             |             |



# TEN-8WI Series ▶ 8 W



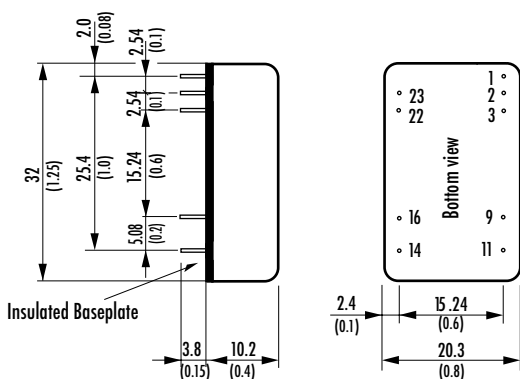
- ▶ Ultra wide 4:1 input range and high input voltage up to 160VDC
- ▶ Certified for railway applications EN 50155
- ▶ Operating temperature range -40°C to +85°C
- ▶ Input under voltage lockout
- ▶ I/O isolation 1500VDC
- ▶ Remote On/Off
- ▶ Industry standard pinout



| Specifications                      |  |
|-------------------------------------|--|
| Line regulation                     | 0.2% max.  |
| Load regulation                     | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                                 |
| Ripple & Noise                      | <50 mVpk-pk (20 MHz BW)<br><75 mVp-p (20 MHz BW) for 43-160 VDC input models                         |
| EMC                                 | - Conducted noise: EN 55022, class EN55022 class A (with external capacitor)<br>- Immunity: EN 50155 |
| Short circuit protection            | continuous, automatic recovery   |
| Efficiency                          | 86% typ.   |
| Operating temperature range         | -40 °C to +85 °C<br>above 80 °C derating 4.0 %/K   |
| I/O isolation voltage               | 1500 VDC (60 sec.)   |
| Safety standards / approvals        | cUL /UL 60950-1, IEC/EN 60950-1, EN 50155  |
| Thermal shock and shock & vibration | EN 61373 / MIL-STD-810F  |
| Remote On/Off                       | shutdown input for low input current (2.5 mA) in standby operation                                   |
| Casing                              | metal, with insulated baseplate  |
| Full datasheet                      | <a href="http://www.tracopower.com/products/ten8wi.pdf">www.tracopower.com/products/ten8wi.pdf</a>   |

| Models       |               |                |                     |
|--------------|---------------|----------------|---------------------|
| Order code   | Input voltage | Output voltage | Output current max. |
| TEN 8-2410WI |               | 3.3 VDC        | 2400 mA             |
| TEN 8-2411WI |               | 5 VDC          | 1600 mA             |
| TEN 8-2412WI |               | 12 VDC         | 666 mA              |
| TEN 8-2413WI | 9-36 VDC      | 15 VDC         | 533 mA              |
| TEN 8-2421WI |               | ± 5 VDC        | ± 800 mA            |
| TEN 8-2422WI |               | ± 12 VDC       | ± 333 mA            |
| TEN 8-2423WI |               | ± 15 VDC       | ± 267 mA            |
| TEN 8-4810WI |               | 3.3 VDC        | 2400 mA             |
| TEN 8-4811WI |               | 5 VDC          | 1600 mA             |
| TEN 8-4812WI |               | 12 VDC         | 666 mA              |
| TEN 8-4813WI | 18-75 VDC     | 15 VDC         | 533 mA              |
| TEN 8-4821WI |               | ± 5 VDC        | ± 800 mA            |
| TEN 8-4822WI |               | ± 12 VDC       | ± 333 mA            |
| TEN 8-4823WI |               | ± 15 VDC       | ± 267 mA            |
| TEN 8-7210WI |               | 3.3 VDC        | 2400 mA             |
| TEN 8-7211WI |               | 5 VDC          | 1600 mA             |
| TEN 8-7212WI |               | 12 VDC         | 666 mA              |
| TEN 8-7213WI | 43-160 VDC    | 15 VDC         | 533 mA              |
| TEN 8-7221WI |               | ± 5 VDC        | ± 800 mA            |
| TEN 8-7222WI |               | ± 12 VDC       | ± 333 mA            |
| TEN 8-7223WI |               | ± 15 VDC       | ± 267 mA            |

## Dimensions



| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | Remote On/Off | Remote On/Off |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | - Vin (GND)   | - Vin (GND)   |
| 9   | No con.       | Common        |
| 11  | No con.       | - Vout        |
| 14  | + Vout        | + Vout        |
| 16  | - Vout        | Common        |
| 22  | + Vin (Vcc)   | + Vin (Vcc)   |
| 23  | + Vin (Vcc)   | + Vin (Vcc)   |

() = Inches

# THD-10N Series ▶ 10 W



- ▶ Wide 2:1 input range
- ▶ High efficiency up to 87%
- ▶ Operating temperature range -40°C to +85°C
- ▶ Internal EMI-filter meets EN 55022, class A
- ▶ I/O isolation 1500VDC
- ▶ Remote On/Off



**NEW**  
Product

| Specifications               |  | Models            |                      |                       |                            |
|------------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | 1 % max.   | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | 1.2% typ.  | THD 10-1210N      |                      | 3.3 VDC               | 2700 mA                    |
| Ripple & noise               | 100 mVpk-pk typ. (20 MHz BW)   | THD 10-1211N      |                      | 5.1 VDC               | 2000 mA                    |
| Conducted EMI                | EN 55022, class EN55022 class A (internal filter)  | THD 10-1212N      | 9 – 18 VDC           | 12 VDC                | 833 mA                     |
| Short circuit protection     | continuous, automatic recovery   | THD 10-1213N      |                      | 15 VDC                | 666 mA                     |
| Efficiency                   | 86% typ.   | THD 10-1222N      |                      | ±12 VDC               | ±416 mA                    |
| Operating temperature range  | -40 °C to +85 °C<br>above 70°C derating 2.5 %/K  | THD 10-1223N      |                      | ±15 VDC               | ±333 mA                    |
| I/O isolation voltage        | 1500 VDC   | THD 10-2410N      |                      | 3.3 VDC               | 2700 mA                    |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, (report pending)   | THD 10-2411N      |                      | 5.1 VDC               | 2000 mA                    |
| Casing                       | metal  | THD 10-2412N      | 18 – 36 VDC          | 12 VDC                | 833 mA                     |
| Full datasheet               | <a href="http://www.tracopower.com/products/thd10n.pdf">www.tracopower.com/products/thd10n.pdf</a> | THD 10-2413N      |                      | 15 VDC                | 666 mA                     |
|                              |  | THD 10-2422N      |                      | ±12 VDC               | ±416 mA                    |
|                              |  | THD 10-2423N      |                      | ±15 VDC               | ±333 mA                    |
|                              |  | THD 10-4810N      |                      | 3.3 VDC               | 2700 mA                    |
|                              |  | THD 10-4811N      |                      | 5.1 VDC               | 2000 mA                    |
|                              |  | THD 10-4812N      | 36 – 75 VDC          | 12 VDC                | 833 mA                     |
|                              |  | THD 10-4813N      |                      | 15 VDC                | 666 mA                     |
|                              |  | THD 10-4822N      |                      | ±12 VDC               | ±416 mA                    |
|                              |  | THD 10-4823N      |                      | ±15 VDC               | ±333 mA                    |

| Dimensions |  | Pin                  |                    |  |
|------------|--|----------------------|--------------------|--|
|            |  | <b>Single output</b> | <b>Dual output</b> |  |
|            |  | 1 Remote On/Off      | Remote On/Off      |  |
|            |  | 2 - Vin (GND)        | - Vin (GND)        |  |
|            |  | 3 - Vin (GND)        | - Vin (GND)        |  |
|            |  | 9 No con.            | Common             |  |
|            |  | 11 No con.           | - Vout             |  |
|            |  | 14 + Vout            | + Vout             |  |
|            |  | 16 - Vout            | Common             |  |
|            |  | 22 + Vin (Vcc)       | + Vin (Vcc)        |  |
|            |  | 23 + Vin (Vcc)       | + Vin (Vcc)        |  |

() = Inches

# THD-10WIN Series ▶ 10 W



- ▶ Ultra wide 4:1 input range
- ▶ High efficiency up to 87%
- ▶ Operating temperature range -40°C to +85°C
- ▶ Internal EMI-filter meets EN 55022, class A
- ▶ No minimum load required
- ▶ I/O isolation 1500VDC
- ▶ Remote On/Off

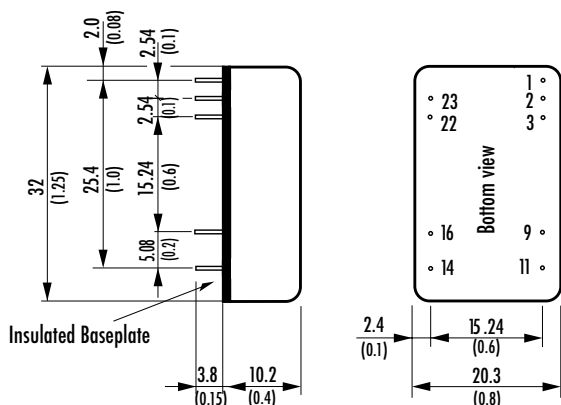
**NEW**  
Product



| Specifications               |  |
|------------------------------|--|
| Line regulation              | 1 % max.   |
| Load regulation              | 1.2% typ.  |
| Ripple & noise               | <100 mVpk-pk (20 MHz BW)   |
| Conducted EMI                | EN 55022, class EN55022 class A (internal filter)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 86% typ.   |
| Operating temperature range  | -40 °C to +85 °C<br>above 70°C derating 2.5 %/K  |
| I/O isolation voltage        | 1500 VDC   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, (report pending)   |
| Casing                       | metal  |
| Full datasheet               | <a href="http://www.tracopower.com/products/thd10win.pdf">www.tracopower.com/products/thd10win.pdf</a> |

| Models         |               |                |                     |
|----------------|---------------|----------------|---------------------|
| Order code     | Input voltage | Output voltage | Output current max. |
| THD 10-2410WIN |               | 3.3 VDC        | 2700 mA             |
| THD 10-2411WIN |               | 5.1 VDC        | 2000 mA             |
| THD 10-2412WIN | 9 – 36 VDC    | 12 VDC         | 833 mA              |
| THD 10-2413WIN |               | 15 VDC         | 666 mA              |
| THD 10-2415WIN |               | 24 VDC         | 416 mA              |
| THD 10-2422WIN |               | ±12 VDC        | ±416 mA             |
| THD 10-2423WIN |               | ±15 VDC        | ±333 mA             |
| THD 10-4810WIN |               | 3.3 VDC        | 2700 mA             |
| THD 10-4811WIN |               | 5.1 VDC        | 2000 mA             |
| THD 10-4812WIN | 18 – 75 VDC   | 12 VDC         | 833 mA              |
| THD 10-4813WIN |               | 15 VDC         | 666 mA              |
| THD 10-4815WIN |               | 24 VDC         | 416 mA              |
| THD 10-4822WIN |               | ±12 VDC        | ±416 mA             |
| THD 10-4823WIN |               | ±15 VDC        | ±333 mA             |

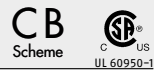
## Dimensions



| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | Remote On/Off | Remote On/Off |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | - Vin (GND)   | - Vin (GND)   |
| 9   | No con.       | Common        |
| 11  | No con.       | - Vout        |
| 14  | + Vout        | + Vout        |
| 16  | - Vout        | Common        |
| 22  | + Vin (Vcc)   | + Vin (Vcc)   |
| 23  | + Vin (Vcc)   | + Vin (Vcc)   |

() = Inches

# THL-10 Series ▶ 10 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ Wide 2:1 input voltage range
- ▶ High efficiency up to 87%
- ▶ I/O-isolation 1500 VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ No minimum load required

**NEW  
Product**



| Specifications              |   | Models            |                      |                       |                            |
|-----------------------------|---|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation             | 1% max.   | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation             | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                                    | THL 10-1210       |                      | 3.3 VDC               | 2500 mA                    |
| Ripple & noise              | 100 mVpk-pk typ. (20 MHz BW)  | THL 10-1211       |                      | 5.1 VDC               | 2000 mA                    |
| Conducted EMI               | EN 55022, class EN55022 class A (internal filter)   | THL 10-1212       |                      | 12 VDC                | 830 mA                     |
| Short circuit protection    | continuous, automatic recovery  | THL 10-1213       | 9 – 18 VDC           | 15 VDC                | 670 mA                     |
| Efficiency                  | 84% typ.  | THL 10-1221       |                      | ± 5 VDC               | ±1000 mA                   |
| Operating temperature range | -40 °C to +80 °C<br>above 60°C derating 2.5%/K<br>- optional heatsink for extended temp.: see datasheet | THL 10-1222       |                      | ± 12 VDC              | ± 416 mA                   |
| I/O isolation voltage       | 1500 VDC (60 sec.)  | THL 10-1223       |                      | ± 15 VDC              | ± 333 mA                   |
| Safety standards/ approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report   | THL 10-2410       |                      | 3.3 VDC               | 2500 mA                    |
| Casing                      | metal, with insulated baseplate   | THL 10-2411       |                      | 5.1 VDC               | 2000 mA                    |
| Full datasheet              | <a href="http://www.tracopower.com/products/thl10.pdf">www.tracopower.com/products/thl10.pdf</a>        | THL 10-2412       |                      | 12 VDC                | 830 mA                     |
|                             |   | THL 10-2413       | 18 – 36VDC           | 15 VDC                | 670 mA                     |
|                             |   | THL 10-2421       |                      | ± 5 VDC               | ±1000 mA                   |
|                             |   | THL 10-2422       |                      | ± 12 VDC              | ± 416 mA                   |
|                             |   | THL 10-2423       |                      | ± 15 VDC              | ± 333 mA                   |
|                             |   | THL 10-4810       |                      | 3.3 VDC               | 2500 mA                    |
|                             |   | THL 10-4811       |                      | 5.1 VDC               | 2000 mA                    |
|                             |   | THL 10-4812       |                      | 12 VDC                | 830 mA                     |
|                             |   | THL 10-4813       | 36 – 75 VDC          | 15 VDC                | 670 mA                     |
|                             |   | THL 10-4821       |                      | ± 5 VDC               | ±1000 mA                   |
|                             |   | THL 10-4822       |                      | ± 12 VDC              | ± 416 mA                   |
|                             |   | THL 10-4823       |                      | ± 15 VDC              | ± 333 mA                   |

Optional heatsink: THL-HS1

| Dimensions |            |                      |                    |
|------------|------------|----------------------|--------------------|
|            | <b>Pin</b> | <b>Single output</b> | <b>Dual output</b> |
|            | 1          | + Vin (Vcc)          | + Vin (Vcc)        |
|            | 2          | - Vin (GND)          | - Vin (GND)        |
|            | 3          | + Vout               | + Vout             |
|            | 4          | No pin               | Common             |
|            | 5          | - Vout               | - Vout             |

() = Inches

# THL-10WI Series ▶ 10 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input voltage range
- ▶ High efficiency up to 87%
- ▶ I/O-isolation 1500 VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off

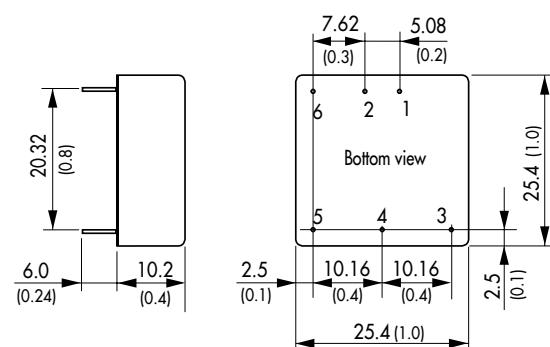


| Specifications              |   |
|-----------------------------|---|
| Line regulation             | 1% max.   |
| Load regulation             | - Single output models: 1.0% max.<br>- Dual output models: 2.0% max.                                    |
| Ripple & noise              | <100 mVpk-pk (20 MHz BW)  |
| Conducted EMI               | EN 55022, class EN55022 class A (internal filter)   |
| Short circuit protection    | continuous, automatic recovery  |
| Efficiency                  | 86% typ.  |
| Operating temperature range | -40 °C to +75 °C<br>above 60°C derating 2.5%/K<br>- optional heatsink for extended temp.: see datasheet |
| I/O isolation voltage       | 1500 VDC (60 sec.)  |
| Safety standards/ approvals | cUL/UL 60950-1, IEC/EN 60950-1 CB-report  |
| Remote On/Off               | shutdown input for low current (10 mA) in standby operation   |
| Casing                      | metal, with insulated baseplate   |
| Full datasheet              | <a href="http://www.tracopower.com/products/thl10wi.pdf">www.tracopower.com/products/thl10wi.pdf</a>    |

| Models        |               |                |                     |
|---------------|---------------|----------------|---------------------|
| Order code    | Input voltage | Output voltage | Output current max. |
| THL 10-2410WI |               | 3.3 VDC        | 2200 mA             |
| THL 10-2411WI |               | 5.1 VDC        | 2000 mA             |
| THL 10-2412WI |               | 12 VDC         | 830 mA              |
| THL 10-2413WI | 9-36 VDC      | 15 VDC         | 660 mA              |
| THL 10-2415WI |               | 24 VDC         | 410 mA              |
| THL 10-2421WI |               | ± 5 VDC        | ± 1000 mA           |
| THL 10-2422WI |               | ± 12 VDC       | ± 410 mA            |
| THL 10-2423WI |               | ± 15 VDC       | ± 330 mA            |
| THL 10-4810WI |               | 3.3 VDC        | 2200 mA             |
| THL 10-4811WI |               | 5.1 VDC        | 2000 mA             |
| THL 10-4812WI |               | 12 VDC         | 830 mA              |
| THL 10-4813WI | 18-75 VDC     | 15 VDC         | 660 mA              |
| THL 10-4815WI |               | 24 VDC         | 410 mA              |
| THL 10-4821WI |               | ± 5 VDC        | ± 1000 mA           |
| THL 10-4822WI |               | ± 12 VDC       | ± 410 mA            |
| THL 10-4823WI |               | ± 15 VDC       | ± 330 mA            |

Optional heatsink: THL-HS1

## Dimensions



| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | + Vout        | + Vout        |
| 4   | No pin        | Common        |
| 5   | - Vout        | - Vout        |
| 6   | Remote On/Off | Remote On/Off |

() = Inches

# THD-12 Series ▶ 12 W



- ▶ DIP-24 metal package
- ▶ Wide 2:1 input range
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range -40°C to + 85°C
- ▶ Input under voltage lockout
- ▶ Remote On/Off



| Specifications               |  | Models            |                      |                       |                            |
|------------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | 0.5% max.  | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                             | THD 12-1209       |                      | 2.5 VDC               | 3500 mA                    |
| Ripple & noise               | <85 mVpk-pk (20 MHz BW)  | THD 12-1210       |                      | 3.3 VDC               | 3500 mA                    |
| Conducted EMI                | EN 55022, class EN55022 class A (with external capacitor)  | THD 12-1211       | 9-18 VDC             | 5.1 VDC               | 2400 mA                    |
| Short circuit protection     | continuous, automatic recovery   | THD 12-1212       |                      | 12 VDC                | 1000 mA                    |
| Efficiency                   | 86% typ.   | THD 12-1222       |                      | ± 12 VDC              | ± 500 mA                   |
| Operating temperature range  | -40 °C to +85°C<br>above 65 °C derating 2.5%/K   | THD 12-1223       |                      | ± 15 VDC              | ± 400 mA                   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   | THD 12-2409       |                      | 2.5 VDC               | 3500 mA                    |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   | THD 12-2410       |                      | 3.3 VDC               | 3500 mA                    |
| Remote On/Off                | shutdown input for low current (2.5 mA) in standby operation                                     | THD 12-2411       | 18-36 VDC            | 5.1 VDC               | 2400 mA                    |
| Casing                       | metal, with insulated baseplate  | THD 12-2412       |                      | 12 VDC                | 1000 mA                    |
| Full datasheet               | <a href="http://www.tracopower.com/products/thd12.pdf">www.tracopower.com/products/thd12.pdf</a> | THD 12-2422       |                      | ± 12 VDC              | ± 500 mA                   |
|                              |  | THD 12-2423       |                      | ± 15 VDC              | ± 400 mA                   |
|                              |  | THD 12-4809       |                      | 2.5 VDC               | 3500 mA                    |
|                              |  | THD 12-4810       |                      | 3.3 VDC               | 3500 mA                    |
|                              |  | THD 12-4811       | 36-75 VDC            | 5.1 VDC               | 2400 mA                    |
|                              |  | THD 12-4812       |                      | 12 VDC                | 1000 mA                    |
|                              |  | THD 12-4822       |                      | ± 12 VDC              | ± 500 mA                   |
|                              |  | THD 12-4823       |                      | ± 15 VDC              | ± 400 mA                   |

| Dimensions |  | Pin                  |                    |
|------------|--|----------------------|--------------------|
|            |  | <b>Single output</b> | <b>Dual output</b> |
|            |  | 1 Remote On/Off      | Remote On/Off      |
|            |  | 2 - Vin (GND)        | - Vin (GND)        |
|            |  | 3 - Vin (GND)        | - Vin (GND)        |
|            |  | 9 No con.            | Common             |
|            |  | 11 No con.           | - Vout             |
|            |  | 14 + Vout            | + Vout             |
|            |  | 16 - Vout            | Common             |
|            |  | 22 + Vin (Vcc)       | + Vin (Vcc)        |
|            |  | 23 + Vin (Vcc)       | + Vin (Vcc)        |

() = Inches

# THD-12WI Series ▶ 12 W



- ▶ DIP-24 metal package
- ▶ Ultra wide 4:1 Input Range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input under voltage lockout
- ▶ Remote On/Off



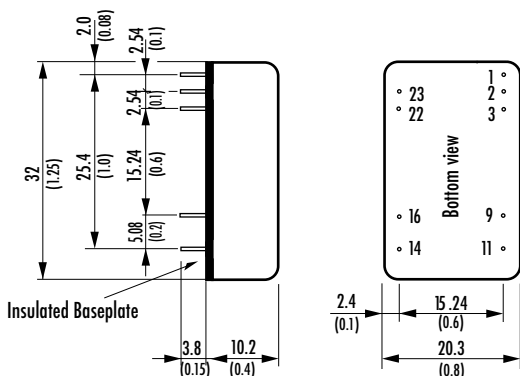
## Specifications

|                              |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                                 |
| Ripple & noise               | <85 mVpk-pk (20 MHz BW)  |
| Conducted EMI                | EN 55022, class EN55022 class A (with external capacitor)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 86% typ.   |
| Operating temperature range  | -40 °C to +85°C<br>above 65 °C derating 2.5%/K   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off                | shutdown input for low current (2.5 mA) in standby operation   |
| Casing                       | metal, 5-side shielded with insulated baseplate  |
| Full datasheet               | <a href="http://www.tracopower.com/products/thd12wi.pdf">www.tracopower.com/products/thd12wi.pdf</a> |

## Models

| Order code    | Input voltage | Output voltage | Output current max. |
|---------------|---------------|----------------|---------------------|
| THD 12-2410WI |               | 3.3 VDC        | 3500 mA             |
| THD 12-2411WI |               | 5.1 VDC        | 2400 mA             |
| THD 12-2412WI |               | 12 VDC         | 1000 mA             |
| THD 12-2413WI | 9 – 36 VDC    | 15 VDC         | 800 mA              |
| THD 12-2421WI |               | ± 5 VDC        | ± 1200 mA           |
| THD 12-2422WI |               | ± 12 VDC       | ± 500 mA            |
| THD 12-2423WI |               | ± 15 VDC       | ± 400 mA            |
| THD 12-4810WI |               | 3.3 VDC        | 3500 mA             |
| THD 12-4811WI |               | 5.1 VDC        | 2400 mA             |
| THD 12-4812WI |               | 12 VDC         | 1000 mA             |
| THD 12-4813WI | 18 – 75 VDC   | 15 VDC         | 800 mA              |
| THD 12-4821WI |               | ± 5 VDC        | ± 1200 mA           |
| THD 12-4822WI |               | ± 12 VDC       | ± 500 mA            |
| THD 12-4823WI |               | ± 15 VDC       | ± 400 mA            |

## Dimensions



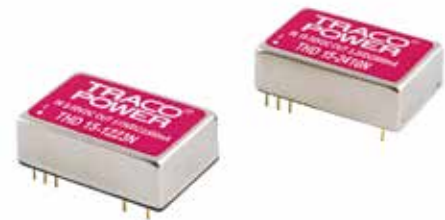
| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | Remote On/Off | Remote On/Off |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | - Vin (GND)   | - Vin (GND)   |
| 9   | No con.       | Common        |
| 11  | No con.       | - Vout        |
| 14  | + Vout        | + Vout        |
| 16  | - Vout        | Common        |
| 22  | + Vin (Vcc)   | + Vin (Vcc)   |
| 23  | + Vin (Vcc)   | + Vin (Vcc)   |

() = Inches

# THD-15N Series ▶ 15 W



- ▶ Highest power density in DIP 24 metal package
- ▶ Wide 2:1 input range
- ▶ Very high efficiency up to 90 %
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input under voltage lockout
- ▶ Low input current at no load
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off



| Specifications               |  | Models            |                      |                       |                            |
|------------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | 0.5% max.  | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                               | THD 15-1210N      |                      | 3.3 VDC               | 4000 mA                    |
| Ripple & noise               | <60 mVpk-pk (20 MHz BW)  | THD 15-1211N      |                      | 5.1 VDC               | 3000 mA                    |
| Conducted EMI                | EN 55022, class EN55022 class A (internal filter)  | THD 15-1212N      |                      | 12 VDC                | 1250 mA                    |
| Short circuit protection     | continuous, automatic recovery   | THD 15-1213N      | 9 – 18 VDC           | 15 VDC                | 1000 mA                    |
| Efficiency                   | 88% typ.   | THD 15-1221N      |                      | ± 5 VDC               | ± 1500 mA                  |
| Operating temperature range  | -40 °C to +85°C<br>above 70 °C derating 4.0%/K   | THD 15-1222N      |                      | ± 12 VDC              | ± 625 mA                   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   | THD 15-1223N      |                      | ± 15 VDC              | ± 500 mA                   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  | THD 15-2410N      |                      | 3.3 VDC               | 4000 mA                    |
| Remote On/Off                | shutdown input for low current (2.5 mA)<br>in standby operation                                    | THD 15-2411N      |                      | 5.1 VDC               | 3000 mA                    |
| Casing                       | metal, 6-side shielded with insulated baseplate  | THD 15-2412N      |                      | 12 VDC                | 1250 mA                    |
| Full datasheet               | <a href="http://www.tracopower.com/products/thd15n.pdf">www.tracopower.com/products/thd15n.pdf</a> | THD 15-2413N      | 18 – 36 VDC          | 15 VDC                | 1000 mA                    |
|                              |  | THD 15-2421N      |                      | ± 5 VDC               | ± 1500 mA                  |
|                              |  | THD 15-2422N      |                      | ± 12 VDC              | ± 625 mA                   |
|                              |  | THD 15-2423N      |                      | ± 15 VDC              | ± 500 mA                   |
|                              |  | THD 15-4810N      |                      | 3.3 VDC               | 4000 mA                    |
|                              |  | THD 15-4811N      |                      | 5.1 VDC               | 3000 mA                    |
|                              |  | THD 15-4812N      |                      | 12 VDC                | 1250 mA                    |
|                              |  | THD 15-4813N      | 36 – 75 VDC          | 15 VDC                | 1000 mA                    |
|                              |  | THD 15-4821N      |                      | ± 5 VDC               | ± 1500 mA                  |
|                              |  | THD 15-4822N      |                      | ± 12 VDC              | ± 625 mA                   |
|                              |  | THD 15-4823N      |                      | ± 15 VDC              | ± 500 mA                   |

| Dimensions |    | Pin                  |                    |
|------------|----|----------------------|--------------------|
|            |    | <b>Single output</b> | <b>Dual output</b> |
|            |    | 1                    | Remote On/Off      |
|            | 2  | - Vin (GND)          | - Vin (GND)        |
|            | 3  | - Vin (GND)          | - Vin (GND)        |
|            | 9  | No con.              | Common             |
|            | 11 | No con.              | - Vout             |
|            | 14 | + Vout               | + Vout             |
|            | 16 | - Vout               | Common             |
|            | 22 | + Vin (Vcc)          | + Vin (Vcc)        |
|            | 23 | + Vin (Vcc)          | + Vin (Vcc)        |

() = Inches



# THD-15WIN Series ▶ 15 W



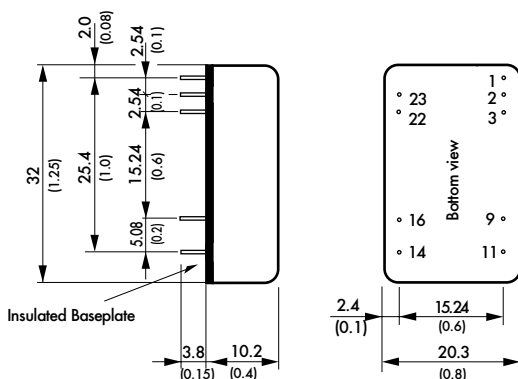
- ▶ Highest power density in DIP 24 metal package
- ▶ Ultra wide 4:1 input range
- ▶ Very high efficiency up to 90 %
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input under voltage lockout
- ▶ Low input current at no load
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off



| Specifications               |  |
|------------------------------|--|
| Line regulation              | 0.5% max.  |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                                   |
| Ripple & noise               | <60 mVpk-pk (20 MHz BW)  |
| Conducted EMI                | EN 55022, class EN55022 class A (internal filter)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 88% typ.   |
| Operating temperature range  | -40 °C to +85°C<br>above 70 °C derating 4.0%/K   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  |
| Remote On/Off                | shutdown input for low current (2.5 mA) in standby operation   |
| Casing                       | metal, 6-side shielded with insulated baseplate  |
| Full datasheet               | <a href="http://www.tracopower.com/products/thd15win.pdf">www.tracopower.com/products/thd15win.pdf</a> |

| Models         |               |                |                     |
|----------------|---------------|----------------|---------------------|
| Order code     | Input voltage | Output voltage | Output current max. |
| THD 15-2410WIN |               | 3.3 VDC        | 4000 mA             |
| THD 15-2411WIN |               | 5.1 VDC        | 3000 mA             |
| THD 15-2412WIN |               | 12 VDC         | 1250 mA             |
| THD 15-2413WIN | 9-36 VDC      | 15 VDC         | 1000 mA             |
| THD 15-2421WIN |               | ± 5 VDC        | ± 1500 mA           |
| THD 15-2422WIN |               | ± 12 VDC       | ± 625 mA            |
| THD 15-2423WIN |               | ± 15 VDC       | ± 500 mA            |
| THD 15-4810WIN |               | 3.3 VDC        | 4000 mA             |
| THD 15-4811WIN |               | 5.1 VDC        | 3000 mA             |
| THD 15-4812WIN |               | 12 VDC         | 1250 mA             |
| THD 15-4813WIN | 18-75 VDC     | 15 VDC         | 1000 mA             |
| THD 15-4821WIN |               | ± 5 VDC        | ± 1500 mA           |
| THD 15-4822WIN |               | ± 12 VDC       | ± 625 mA            |
| THD 15-4823WIN |               | ± 15 VDC       | ± 500 mA            |

## Dimensions



| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | Remote On/Off | Remote On/Off |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | - Vin (GND)   | - Vin (GND)   |
| 9   | No con.       | Common        |
| 11  | No con.       | - Vout        |
| 14  | + Vout        | + Vout        |
| 16  | - Vout        | Common        |
| 22  | + Vin (Vcc)   | + Vin (Vcc)   |
| 23  | + Vin (Vcc)   | + Vin (Vcc)   |

() = Inches

# TEL-15 Series ▶ 15 W



- ▶ Wide 2:1 input range
- ▶ I/O isolation 1500 VDC
- ▶ Cost optimized design



| Specifications               |   | Models            |                      |                       |                            |
|------------------------------|---|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | 1.0% max.   | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 2.0% max.                                      | TEL 15-1210       |                      | 3.3 VDC               | 3000 mA                    |
| Ripple & noise               | <75 mVpk-pk (20 MHz BW)   | TEL 15-1211       |                      | 5.1 VDC               | 3000 mA                    |
| Input filter                 | Pi-filter   | TEL 15-1212       | 9 – 18 VDC           | 12 VDC                | 1250 mA                    |
| Short circuit protection     | continuous, automatic recovery  | TEL 15-1213       |                      | 15 VDC                | 1000 mA                    |
| Efficiency                   | 86% typ.  | TEL 15-1222       |                      | ± 12 VDC              | ± 625 mA                   |
| Operating temperature range  | -40 °C to +71 °C<br>above 60 °C derating 2.5 %/K<br>- optional heatsink for extended temp.: see datasheet | TEL 15-1223       |                      | ± 15 VDC              | ± 500 mA                   |
| I/O isolation voltage        | 1500VDC (60 sec.)   | TEL 15-2410       |                      | 3.3 VDC               | 3000 mA                    |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report   | TEL 15-2411       |                      | 5.1 VDC               | 3000 mA                    |
| Casing                       | metal, 6-side shielded with insulated baseplate   | TEL 15-2412       | 18 – 36 VDC          | 12 VDC                | 1250 mA                    |
| Full datasheet               | <a href="http://www.tracopower.com/products/tel15.pdf">www.tracopower.com/products/tel15.pdf</a>          | TEL 15-2413       |                      | 15 VDC                | 1000 mA                    |
|                              |   | TEL 15-2422       |                      | ± 12 VDC              | ± 625 mA                   |
|                              |   | TEL 15-2423       |                      | ± 15 VDC              | ± 500 mA                   |
|                              |   | TEL 15-4810       |                      | 3.3 VDC               | 3000 mA                    |
|                              |   | TEL 15-4811       |                      | 5.1 VDC               | 3000 mA                    |
|                              |   | TEL 15-4812       | 36 – 75 VDC          | 12 VDC                | 1250 mA                    |
|                              |   | TEL 15-4813       |                      | 15 VDC                | 1000 mA                    |
|                              |   | TEL 15-4822       |                      | ± 12 VDC              | ± 625 mA                   |
|                              |   | TEL 15-4823       |                      | ± 15 VDC              | ± 500 mA                   |

Optional heatsink: [TEN-HS4](#)

| Dimensions   |             |                      |                    |
|--|-------------|----------------------|--------------------|
| <p>Side view dimensions: 50.8 (2.0) total height, 15.2 (0.6) mounting hole offset, 20.32 (0.8) mounting hole diameter, 6 (0.24) baseplate offset, 10.2 (0.4) baseplate width.</p> <p>Bottom view dimensions: 5.08 (0.2) pin 1 offset, 7.62 (0.3) pin 1 offset, 10.16 (0.4) pin spacing, 10.16 (0.4) pin spacing, 25.4 (1.0) total width, 2.5 (0.1) pin 5 offset.</p> | <b>Pin</b>  | <b>Single output</b> | <b>Dual output</b> |
|  | 1           | + Vin (Vcc)          | + Vin (Vcc)        |
| 2  | - Vin (GND) | - Vin (GND)          |                    |
| 3  | + Vout      | + Vout               |                    |
| 4  | No pin      | Common               |                    |
| 5  | - Vout      | - Vout               |                    |

() = Inches

# THN-15 Series ▶ 15 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ 6-side shielded metal casing
- ▶ Wide 2:1 input voltage range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input under voltage lockout
- ▶ Remote On/Off
- ▶ Adjustable output voltage



## Specifications

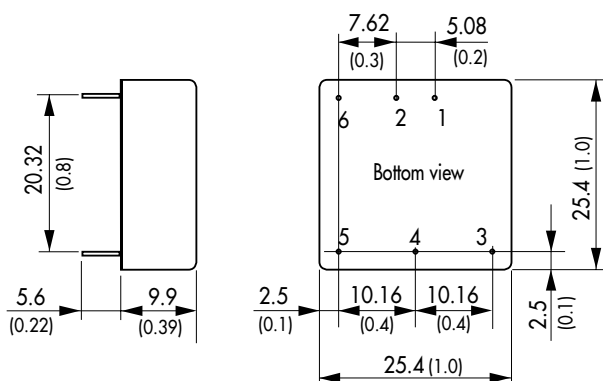
|                              |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                             |
| Output voltage adjustment    | ±10% by external resistor  |
| Ripple & noise               | <100 mVpk-pk (20 MHz BW)   |
| Conducted EMI                | EN 55022, class EN55022 class A (with external capacitor)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 86% typ.   |
| Operating temperature range  | -40 °C to +85 °C<br>above 70 °C derating 2.8%/K  |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  |
| Remote On/Off                | shutdown input for low current (2.5 mA) in standby operation                                     |
| Casing                       | metal, 6-side shielded with insulated baseplate  |
| Full datasheet               | <a href="http://www.tracopower.com/products/thn15.pdf">www.tracopower.com/products/thn15.pdf</a> |

## Models

| Order code  | Input voltage | Output voltage | Output current max. |
|-------------|---------------|----------------|---------------------|
| THN 15-1210 |               | 3.3 VDC        | 4000 mA             |
| THN 15-1211 |               | 5.0 VDC        | 3000 mA             |
| THN 15-1212 |               | 12 VDC         | 1300 mA             |
| THN 15-1213 | 9 – 18 VDC    | 15 VDC         | 1000 mA             |
| THN 15-1221 |               | ± 5 VDC        | ±1500 mA            |
| THN 15-1222 |               | ± 12 VDC       | ± 625 mA            |
| THN 15-1223 |               | ± 15 VDC       | ± 500 mA            |
| THN 15-2410 |               | 3.3 VDC        | 4000 mA             |
| THN 15-2411 |               | 5.0 VDC        | 3000 mA             |
| THN 15-2412 |               | 12 VDC         | 1300 mA             |
| THN 15-2413 | 18 – 36 VDC   | 15 VDC         | 1000 mA             |
| THN 15-2421 |               | ± 5 VDC        | ±1500 mA            |
| THN 15-2422 |               | ± 12 VDC       | ± 625 mA            |
| THN 15-2423 |               | ± 15 VDC       | ± 500 mA            |
| THN 15-4810 |               | 3.3 VDC        | 4000 mA             |
| THN 15-4811 |               | 5.0 VDC        | 3000 mA             |
| THN 15-4812 |               | 12 VDC         | 1300 mA             |
| THN 15-4813 | 36 – 75 VDC   | 15 VDC         | 1000 mA             |
| THN 15-4821 |               | ± 5 VDC        | ±1500 mA            |
| THN 15-4822 |               | ± 12 VDC       | ± 625 mA            |
| THN 15-4823 |               | ± 15 VDC       | ± 500 mA            |

Optional heatsink: **THN-HS1**

## Dimensions



| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | + Vout        | + Vout        |
| 4*  | Trim          | Common        |
| 5   | - Vout        | - Vout        |
| 6*  | Remote On/Off | Remote On/Off |

\* optional no pin on request

# THN-15WI Series ▶ 15 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ 6-side shielded metal casing
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input under voltage lockout
- ▶ Remote On/Off
- ▶ Adjustable output voltage



| Specifications               |  | Models            |                      |                       |                            |
|------------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | 0.5% max.  | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | - Single output models: 0.2% max.<br>- Dual output models: 1.0% max.                                 | THN 15-2410WI     |                      | 3.3 VDC               | 4000 mA                    |
| Output voltage adjustment    | ±10% by external resistor (single output models only)  | THN 15-2411WI     |                      | 5.0 VDC               | 3000 mA                    |
| Ripple & noise               | <100 mVpk-pk (20 MHz BW)   | THN 15-2412WI     |                      | 12 VDC                | 1300 mA                    |
| Conducted EMI                | EN 55022, class EN55022 class A (with external capacitor)  | THN 15-2413WI     | 9 – 36 VDC           | 15 VDC                | 1000 mA                    |
| Short circuit protection     | continuous, automatic recovery   | THN 15-2421WI     |                      | ± 5 VDC               | ± 1500 mA                  |
| Efficiency                   | 86% typ.   | THN 15-2422WI     |                      | ± 12 VDC              | ± 625 mA                   |
| Operating temperature range  | -40 °C to +85 °C<br>above 65 °C derating 2.5%/K  | THN 15-2423WI     |                      | ± 15 VDC              | ± 500 mA                   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   | THN 15-4810WI     |                      | 3.3 VDC               | 4000 mA                    |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  | THN 15-4811WI     |                      | 5.0 VDC               | 3000 mA                    |
| Remote On/Off                | shutdown input for low current (2.5mA) in standby operation  | THN 15-4812WI     |                      | 12 VDC                | 1300 mA                    |
| Casing                       | metal, 6-side shielded with insulated baseplate  | THN 15-4813WI     | 18 – 75 VDC          | 15 VDC                | 1000 mA                    |
| Full datasheet               | <a href="http://www.tracopower.com/products/thn15wi.pdf">www.tracopower.com/products/thn15wi.pdf</a> | THN 15-4821WI     |                      | ± 5 VDC               | ± 1500 mA                  |
|                              |  | THN 15-4822WI     |                      | ± 12 VDC              | ± 625 mA                   |
|                              |  | THN 15-4823WI     |                      | ± 15 VDC              | ± 500 mA                   |

Optional heatsink: THN-HS1

| Dimensions |  | Pin                          |                    |               |
|------------|--|------------------------------|--------------------|---------------|
|            |  | <b>Single output</b>         | <b>Dual output</b> |               |
|            |  | 1                            | + Vin (Vcc)        | + Vin (Vcc)   |
|            |  | 2                            | - Vin (GND)        | - Vin (GND)   |
|            |  | 3                            | + Vout             | + Vout        |
|            |  | 4*                           | Trim               | Common        |
|            |  | 5                            | - Vout             | - Vout        |
|            |  | 6*                           | Remote On/Off      | Remote On/Off |
|            |  | * optional no pin on request |                    |               |

() = Inches

# THN-20 Series ▶ 20 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ 6-side shielded metal casing
- ▶ Wide 2:1 input voltage range
- ▶ Very high efficiency up to 91%
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input undervoltage-lockout
- ▶ Low input current at no load
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off
- ▶ Adjustable output voltage

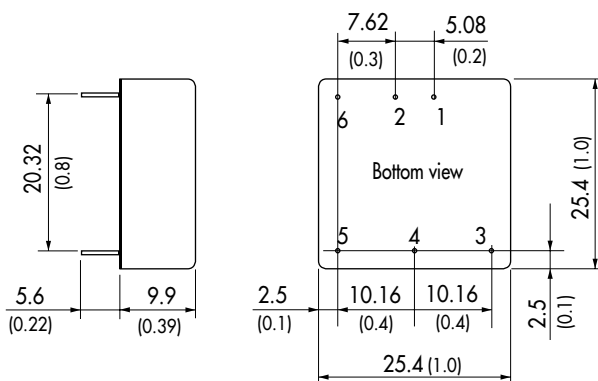


| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 0.5% max.  |
| Load regulation             | - Single output models: 0.2% max.<br>- Dual output models: 1.0% max.                             |
| Output voltage adjustment   | ±10% by external resistor  |
| Ripple & noise              | <100 mVpk-pk (20 MHz BW)   |
| Conducted EMI               | EN 55022, class EN55022 class A (internal filter)  |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 89% typ.   |
| Operating temperature range | -40 °C to +75 °C<br>above 60°C derating 3.0%/K   |
| I/O isolation voltage       | 1500 VDC (60 sec.)   |
| Safety standards            | CUL/UL 60950-1, IEC/EN 60950-1 CB-report   |
| Remote On/Off               | shutdown input for low current (1.5 mA) in standby operation                                     |
| Casing                      | metal, 6-side shielded with insulated baseplate  |
| Full datasheet              | <a href="http://www.tracopower.com/products/thn20.pdf">www.tracopower.com/products/thn20.pdf</a> |

| Models      |               |                |                     |
|-------------|---------------|----------------|---------------------|
| Order code  | Input voltage | Output voltage | Output current max. |
| THN 20-1210 |               | 3.3 VDC        | 4500 mA             |
| THN 20-1211 |               | 5.0 VDC        | 4000 mA             |
| THN 20-1212 | 9 – 18 VDC    | 12 VDC         | 1670 mA             |
| THN 20-1213 |               | 15 VDC         | 1330 mA             |
| THN 20-1222 |               | ± 12 VDC       | ± 833 mA            |
| THN 20-1223 |               | ± 15 VDC       | ± 667 mA            |
| THN 20-2410 |               | 3.3 VDC        | 4500 mA             |
| THN 20-2411 |               | 5.0 VDC        | 4000 mA             |
| THN 20-2412 | 18 – 36 VDC   | 12 VDC         | 1670 mA             |
| THN 20-2413 |               | 15 VDC         | 1330 mA             |
| THN 20-2422 |               | ± 12 VDC       | ± 833 mA            |
| THN 20-2423 |               | ± 15 VDC       | ± 667 mA            |
| THN 20-4810 |               | 3.3 VDC        | 4500 mA             |
| THN 20-4811 |               | 5.0 VDC        | 4000 mA             |
| THN 20-4812 | 36 – 75 VDC   | 12 VDC         | 1670 mA             |
| THN 20-4813 |               | 15 VDC         | 1330 mA             |
| THN 20-4822 |               | ± 12 VDC       | ± 833 mA            |
| THN 20-4823 |               | ± 15 VDC       | ± 667 mA            |

Optional heatsink: [THN-HS1](#)

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | + Vout        | + Vout        |
| 4*  | Trim          | Common        |
| 5   | - Vout        | - Vout        |
| 6*  | Remote On/Off | Remote On/Off |

\* optional no pin on request

# THN-20WI Series ▶ 20 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ 6-side shielded metal casing
- ▶ Ultra wide 4:1 input voltage range
- ▶ Very high efficiency up to 91%
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input undervoltage-lockout
- ▶ Low input current at no load
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off
- ▶ Adjustable output voltage



## Specifications

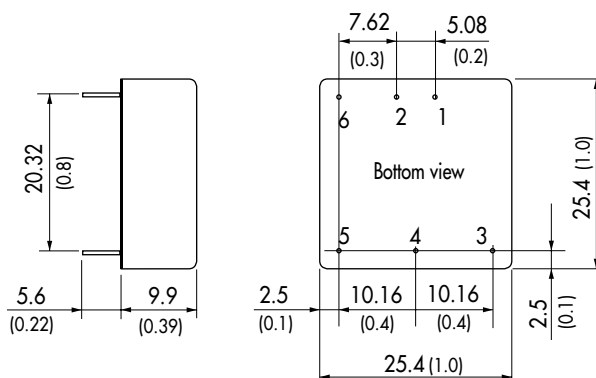
|                             |  |
|-----------------------------|--|
| Line regulation             | 0.5% max.  |
| Load regulation             | - Single output models: 0.2% max.<br>- Dual output models: 1.0% max.                                 |
| Output voltage adjustment   | ±10% by external resistor  |
| Ripple & noise              | <100 mVpk-pk (20 MHz BW)   |
| Conducted EMI               | EN 55022, class EN55022 class A (internal filter)  |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 89% typ.   |
| Operating temperature range | -40 °C to +75 °C<br>above 60 °C derating 3.0%/K  |
| I/O isolation voltage       | 1500 VDC (60 sec.)   |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1 CB-report   |
| Remote On/Off               | shutdown input for low current (1.5 mA) in standby operation   |
| Casing                      | metal, 6-side shielded with insulated baseplate  |
| Full datasheet              | <a href="http://www.tracopower.com/products/thn20wi.pdf">www.tracopower.com/products/thn20wi.pdf</a> |

## Models

| Order code    | Input voltage | Output voltage | Output current max. |
|---------------|---------------|----------------|---------------------|
| THN 20-2410WI | 9-36 VDC      | 3.3 VDC        | 4500 mA             |
| THN 20-2411WI |               | 5.0 VDC        | 4000 mA             |
| THN 20-2412WI |               | 12 VDC         | 1670 mA             |
| THN 20-2413WI |               | 15 VDC         | 1330 mA             |
| THN 20-2422WI |               | ± 12 VDC       | ± 833 mA            |
| THN 20-2423WI |               | ± 15 VDC       | ± 667 mA            |
| THN 20-4810WI | 18-75 VDC     | 3.3 VDC        | 4500 mA             |
| THN 20-4811WI |               | 5.0 VDC        | 4000 mA             |
| THN 20-4812WI |               | 12 VDC         | 1670 mA             |
| THN 20-4813WI |               | 15 VDC         | 1330 mA             |
| THN 20-4822WI |               | ± 12 VDC       | ± 833 mA            |
| THN 20-4823WI |               | ± 15 VDC       | ± 667 mA            |

Optional heatsink: [THN-HS1](#)

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | + Vout        | + Vout        |
| 4*  | Trim          | Common        |
| 5   | - Vout        | - Vout        |
| 6*  | Remote On/Off | Remote On/Off |

\* optional no pin on request

# THL-20WI Series ▶ 20 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input voltage range
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

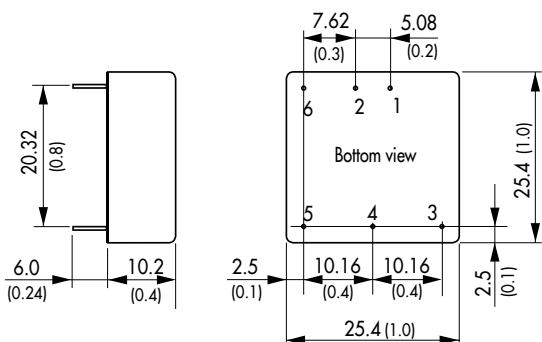


| Specifications              |   |
|-----------------------------|---|
| Line regulation             | 1% max.   |
| Load regulation             | - Single output models: 1.0% max.<br>- Dual output models: 2.0% max.                                    |
| Output voltage adjustment   | ±10% by external resistor (single output models)  |
| Ripple & noise              | <100 mVpk-pk (20 MHz BW)  |
| Short circuit protection    | continuous, automatic recovery  |
| Efficiency                  | 88% typ.  |
| Operating temperature range | -40 °C to +75 °C<br>above 60°C derating 2.2%/K<br>- optional heatsink for extended temp.: see datasheet |
| I/O isolation voltage       | 1500 VDC (60 sec.)  |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1 CB-report  |
| Remote On/Off               | shutdown input for low current in standby operation   |
| Casing                      | metal, with insulated baseplate   |
| Full datasheet              | <a href="http://www.tracopower.com/products/thl20wi.pdf">www.tracopower.com/products/thl20wi.pdf</a>    |

| Models        |               |                |                     |
|---------------|---------------|----------------|---------------------|
| Order code    | Input voltage | Output voltage | Output current max. |
| THL 20-2410WI |               | 3.3 VDC        | 4500 mA             |
| THL 20-2411WI |               | 5.1 VDC        | 4000 mA             |
| THL 20-2412WI |               | 12 VDC         | 1670 mA             |
| THL 20-2413WI | 9 – 36 VDC    | 15 VDC         | 1340 mA             |
| THL 20-2415WI |               | 24 VDC         | 835 mA              |
| THL 20-2422WI |               | ± 12 VDC       | ± 835 mA            |
| THL 20-2423WI |               | ± 15 VDC       | ± 670 mA            |
| THL 20-4810WI |               | 3.3 VDC        | 4500 mA             |
| THL 20-4811WI |               | 5.1 VDC        | 4000 mA             |
| THL 20-4812WI |               | 12 VDC         | 1670 mA             |
| THL 20-4813WI | 18 – 75 VDC   | 15 VDC         | 1340 mA             |
| THL 20-4815WI |               | 24 VDC         | 835 mA              |
| THL 20-4822WI |               | ± 12 VDC       | ± 835 mA            |
| THL 20-4823WI |               | ± 15 VDC       | ± 670 mA            |

Optional heatsink: [THL-HS1](#)

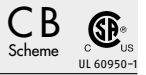
## Dimensions



| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | + Vout        | + Vout        |
| 4   | Trim          | Common        |
| 5   | - Vout        | - Vout        |
| 6   | Remote On/Off | Remote On/Off |

() = Inches

# TEN-20 Series ▶ 20 W



- ▶ 2" x 1" x 0.4" metal package
- ▶ Wide 2:1 input range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input filter to meet EN 55022 class A
- ▶ Remote On/Off

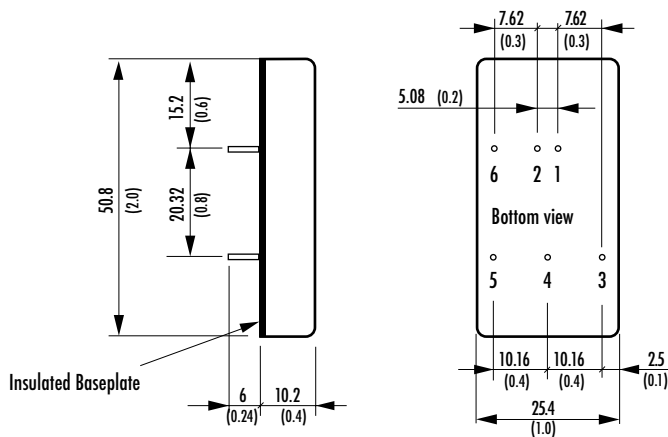


| Specifications               |  |
|------------------------------|--|
| Line regulation              | 0.3% max.  |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                             |
| Ripple & noise               | <80 mVpk-pk (20 MHz BW)  |
| Conducted EMI                | EN 55022, class EN55022 class A (internal filter)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 85% typ.   |
| Operating temperature range  | -40 °C to +85 °C<br>above 60 °C derating 2.5%/K  |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off                | shutdown input for low input current (5 mA) in standby operation                                 |
| Casing                       | metal, 6-side shielded with insulated baseplate  |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten20.pdf">www.tracopower.com/products/ten20.pdf</a> |

| Models      |               |                |                     |
|-------------|---------------|----------------|---------------------|
| Order code  | Input voltage | Output voltage | Output current max. |
| TEN 20-1210 |               | 3.3 VDC        | 4000 mA             |
| TEN 20-1211 |               | 5 VDC          | 4000 mA             |
| TEN 20-1212 | 9-18 VDC      | 12 VDC         | 1670 mA             |
| TEN 20-1213 |               | 15 VDC         | 1340 mA             |
| TEN 20-1222 |               | ± 12 VDC       | ± 835 mA            |
| TEN 20-1223 |               | ± 15 VDC       | ± 670 mA            |
| TEN 20-2410 |               | 3.3 VDC        | 4000 mA             |
| TEN 20-2411 |               | 5 VDC          | 4000 mA             |
| TEN 20-2412 | 18-36 VDC     | 12 VDC         | 1670 mA             |
| TEN 20-2413 |               | 15 VDC         | 1340 mA             |
| TEN 20-2422 |               | ± 12 VDC       | ± 835 mA            |
| TEN 20-2423 |               | ± 15 VDC       | ± 670 mA            |
| TEN 20-4810 |               | 3.3 VDC        | 4000 mA             |
| TEN 20-4811 |               | 5 VDC          | 4000 mA             |
| TEN 20-4812 | 36-75 VDC     | 12 VDC         | 1670 mA             |
| TEN 20-4813 |               | 15 VDC         | 1340 mA             |
| TEN 20-4822 |               | ± 12 VDC       | ± 835 mA            |
| TEN 20-4823 |               | ± 15 VDC       | ± 670 mA            |

Optional heatsink: [TEN-HS4](#)

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | + Vout        | + Vout        |
| 4   | No pin        | Common        |
| 5   | - Vout        | - Vout        |
| 6 * | Remote On/Off | Remote On/Off |

\* optional no pin on request



# TEN-20WIN Series ▶ 20 W



- ▶ 2" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage



## Specifications

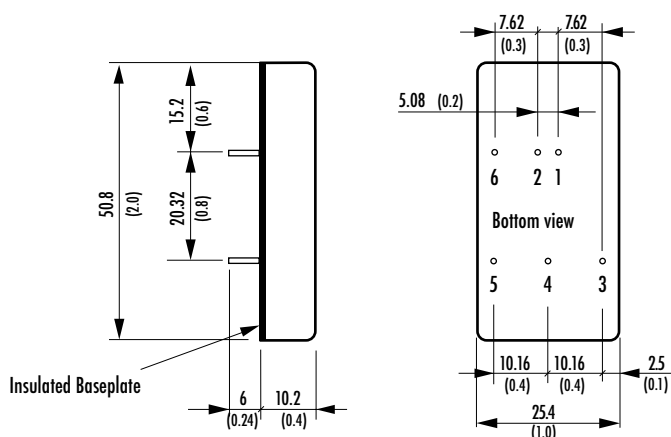
|                              |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                                   |
| Output voltage adjustment    | Single output models only: ±10% (by external resistor)   |
| Ripple & noise               | - Single output models: <75 mVpk-pk (20 MHz BW)<br>- Dual output models: <100 mVpk-pk (20 MHz BW)      |
| Conducted EMI                | EN 55022, class EN55022 class A (with external capacitor)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 85% typ.   |
| Operating temperature range  | -40 °C to +85 °C<br>above 70 °C derating 2.8%/K  |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                                     |
| Casing                       | metal, 6-side shielded with insulated baseplate  |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten20win.pdf">www.tracopower.com/products/ten20win.pdf</a> |

## Models

| Order code     | Input voltage | Output voltage | Output current max. |
|----------------|---------------|----------------|---------------------|
| TEN 20-2410WIN |               | 3.3 VDC        | 5500 mA             |
| TEN 20-2411WIN |               | 5 VDC          | 4000 mA             |
| TEN 20-2412WIN |               | 12 VDC         | 1670 mA             |
| TEN 20-2413WIN | 9-36 VDC      | 15 VDC         | 1330 mA             |
| TEN 20-2421WIN |               | ± 5 VDC        | ± 2000 mA           |
| TEN 20-2422WIN |               | ± 12 VDC       | ± 835 mA            |
| TEN 20-2423WIN |               | ± 15 VDC       | ± 665 mA            |
| TEN 20-4810WIN |               | 3.3 VDC        | 5500 mA             |
| TEN 20-4811WIN |               | 5 VDC          | 4000 mA             |
| TEN 20-4812WIN |               | 12 VDC         | 1670 mA             |
| TEN 20-4813WIN | 18-75 VDC     | 15 VDC         | 1330 mA             |
| TEN 20-4821WIN |               | ± 5 VDC        | ± 2000 mA           |
| TEN 20-4822WIN |               | ± 12 VDC       | ± 835 mA            |
| TEN 20-4823WIN |               | ± 15 VDC       | ± 665 mA            |

Optional heatsink: TEN-HS1

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | + Vout        | + Vout        |
| 4   | Trim          | Common        |
| 5   | - Vout        | - Vout        |
| 6*  | Remote On/Off | Remote On/Off |

\* optional no pin on request

# TEN-20WIR Series ▶ 20 W



- ▶ 2" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input range up to 160 VDC
- ▶ Certified for railway applications EN 50155
- ▶ High efficiency across load range
- ▶ Low input current at no load
- ▶ Input undervoltage-lockout
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input filter to meet EN 55022 class A
- ▶ Remote On/Off



| Specifications                      |   | Models            |                      |                       |                            |
|-------------------------------------|---|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation                     | 0.2% max.   | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation                     | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                                    | TEN 20-2410WIR    |                      | 3.3 VDC               | 4500 mA                    |
| Ripple & Noise                      | <75 mVpk-pk (20 MHz BW)   | TEN 20-2411WIR    |                      | 5 VDC                 | 4000 mA                    |
| EMC                                 | - Conducted noise: EN 55022, class EN55022 class A (without external capacitor)<br>- Immunity: EN 50155 | TEN 20-2412WIR    |                      | 12 VDC                | 1670 mA                    |
| Short circuit protection            | continuous, automatic recovery  | TEN 20-2413WIR    | 9 – 36 VDC           | 15 VDC                | 1330 mA                    |
| Efficiency                          | 88% typ.  | TEN 20-2422WIR    |                      | ± 12 VDC              | ± 833 mA                   |
| Operating temperature range         | -40 °C to +85 °C<br>above 70 °C derating 4.0%/K   | TEN 20-2423WIR    |                      | ± 15 VDC              | ± 667 mA                   |
| I/O isolation voltage               | 1500 VDC (60 sec.)  | TEN 20-4810WIR    |                      | 3.3 VDC               | 4500 mA                    |
| Safety standards / approvals        | cUL /UL 60950-1, IEC/EN 60950-1, EN 50155   | TEN 20-4811WIR    |                      | 5 VDC                 | 4000 mA                    |
| Thermal shock and shock & vibration | EN 61373 / MIL-STD-810F   | TEN 20-4812WIR    |                      | 12 VDC                | 1670 mA                    |
| Remote On/Off                       | shutdown input for low input current (2.5 mA) in standby operation                                      | TEN 20-4813WIR    | 18 – 75 VDC          | 15 VDC                | 1330 mA                    |
| Casing                              | metal, 6-side shielded with insulated baseplate   | TEN 20-4822WIR    |                      | ± 12 VDC              | ± 833 mA                   |
| Full datasheet                      | <a href="http://www.tracopower.com/products/ten20wir.pdf">www.tracopower.com/products/ten20wir.pdf</a>  | TEN 20-4823WIR    |                      | ± 15 VDC              | ± 667 mA                   |
|                                     |   | TEN 20-7210WIR    |                      | 3.3 VDC               | 4500 mA                    |
|                                     |   | TEN 20-7211WIR    |                      | 5 VDC                 | 4000 mA                    |
|                                     |   | TEN 20-7212WIR    |                      | 12 VDC                | 1670 mA                    |
|                                     |   | TEN 20-7213WIR    | 43 – 160 VDC         | 15 VDC                | 1330 mA                    |
|                                     |   | TEN 20-7222WIR    |                      | ± 12 VDC              | ± 833 mA                   |
|                                     |   | TEN 20-7223WIR    |                      | ± 15 VDC              | ± 667 mA                   |

Optional heatsink: TEN-HS1

| Dimensions |  | Pin                  |                    |               |
|------------|--|----------------------|--------------------|---------------|
|            |  | <b>Single output</b> | <b>Dual output</b> |               |
|            |  | 1                    | + Vin (Vcc)        | + Vin (Vcc)   |
|            |  | 2                    | - Vin (GND)        | - Vin (GND)   |
|            |  | 3                    | + Vout             | + Vout        |
|            |  | 4                    | No pin             | Common        |
|            |  | 5                    | - Vout             | - Vout        |
|            |  | 6                    | Remote On/Off      | Remote On/Off |

( ) = Inches

# TMDC-20 Series ▶ 20 W



- ▶ Fully encapsulated low profile plastic casing
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range -40°C to +85°C
- ▶ Highest efficiency up to 91%
- ▶ I/O isolation 2500 VDC
- ▶ Remote On/Off
- ▶ Power-good LED indicator
- ▶ Reverse input protection
- ▶ Optional DIN-rail mount adapter

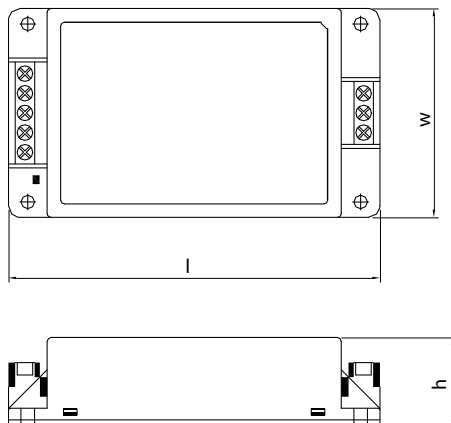
**NEW**  
Product



| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 0.5% max.  |
| Load regulation             | 0.5% max.  |
| Ripple & noise              | 5.1 VDC modes: <100 mVpk-pk (20 MHz BW)<br>12 & 24 VDC modes: <150 mVpk-pk (20 MHz BW)<br>48 VDC modes: <200 mVpk-pk (20 MHz BW) |
| Conducted EMI               | EN 55022, class EN55022 class A  |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 90% typ.   |
| Operating temperature range | -40 °C to +80 °C<br>above 65°C derating 3.3%/K   |
| I/O isolation voltage       | 2500 VDC (60 sec.) reinforced insulation   |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)   |
| Remote On/Off               | shutdown input for low current in standby operation  |
| Casing                      | metal, with insulated baseplate  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tmdc20.pdf">www.tracopower.com/products/tmdc20.pdf</a>                               |

| Models       |               |                |                     |
|--------------|---------------|----------------|---------------------|
| Order code   | Input voltage | Output voltage | Output current max. |
| TMDC 20-2411 | 9 – 36 VDC    | 5.1 VDC        | 4000 mA             |
| TMDC 20-2412 |               | 12 VDC         | 1670 mA             |
| TMDC 20-2415 |               | 24 VDC         | 835 mA              |
| TMDC 20-2418 | 18 – 75 VDC   | 48 VDC         | 420 mA              |
| TMDC 20-4811 |               | 5.1 VDC        | 4000 mA             |
| TMDC 20-4812 |               | 12 VDC         | 1670 mA             |
| TMDC 20-4815 |               | 24 VDC         | 835 mA              |
| TMDC 20-4818 |               | 48 VDC         | 420 mA              |

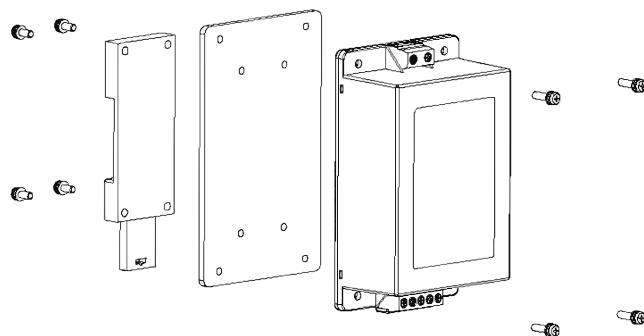
| Dimensions   |           |             |             |
|--------------|-----------|-------------|-------------|
| Type         | Length l  | Width w     | Height h    |
| TMDC 20-xxxx | 96 (3.78) | 54.0 (2.13) | 23.3 (0.88) |



( ) = Inches

## DIN-rail mount adapter

TMP-MK1



# THL-25 Series ▶ 25 W



- ▶ High power density 25 W converter
- ▶ 1" x 1" x 0.4" metal package
- ▶ Wide 2:1 input voltage range
- ▶ Highest efficiency up to 90 %
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

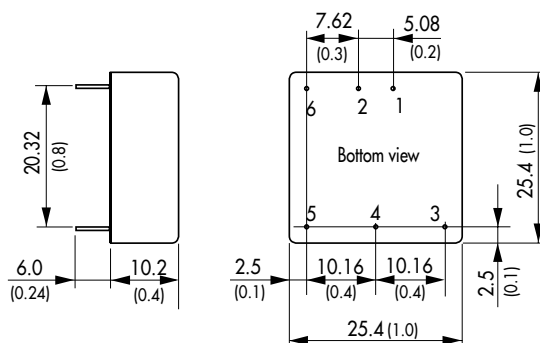


| Specifications              |   |
|-----------------------------|---|
| Line regulation             | 1% max.   |
| Load regulation             | - Single output models: 1.0% max.<br>- Dual output models: 2.0% max.                                    |
| Output voltage adjustment   | ±10% by external resistor (single output models)  |
| Ripple & noise              | <100 mVpk-pk (20 MHz BW)  |
| Short circuit protection    | continuous, automatic recovery  |
| Efficiency                  | 89% typ.  |
| Operating temperature range | -40 °C to +80 °C<br>above 50°C derating 1.7%/K<br>- optional heatsink for extended temp.: see datasheet |
| I/O isolation voltage       | 1500 VDC (60 sec.)  |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)  |
| Remote On/Off               | shutdown input for low current in standby operation   |
| Casing                      | metal, with insulated baseplate   |
| Full datasheet              | <a href="http://www.tracopower.com/products/thl25.pdf">www.tracopower.com/products/thl25.pdf</a>        |

| Models      |               |                |                     |
|-------------|---------------|----------------|---------------------|
| Order code  | Input voltage | Output voltage | Output current max. |
| THL 25-1210 |               | 3.3 VDC        | 6000 mA             |
| THL 25-1211 |               | 5.0 VDC        | 5000 mA             |
| THL 25-1212 | 9 – 18 VDC    | 12 VDC         | 2085 mA             |
| THL 25-1213 |               | 15 VDC         | 1670 mA             |
| THL 25-1222 |               | ± 12 VDC       | ± 1042 mA           |
| THL 25-1223 |               | ± 15 VDC       | ± 835 mA            |
| THL 25-2410 |               | 3.3 VDC        | 6000 mA             |
| THL 25-2411 |               | 5.0 VDC        | 5000 mA             |
| THL 25-2412 | 18 – 36 VDC   | 12 VDC         | 2085 mA             |
| THL 25-2413 |               | 15 VDC         | 1670 mA             |
| THL 25-2422 |               | ± 12 VDC       | ± 1042 mA           |
| THL 25-2423 |               | ± 15 VDC       | ± 835 mA            |
| THL 25-4810 |               | 3.3 VDC        | 6000 mA             |
| THL 25-4811 |               | 5.0 VDC        | 5000 mA             |
| THL 25-4812 | 36 – 75 VDC   | 12 VDC         | 2085 mA             |
| THL 25-4813 |               | 15 VDC         | 1670 mA             |
| THL 25-4822 |               | ± 12 VDC       | ± 1042 mA           |
| THL 25-4823 |               | ± 15 VDC       | ± 835 mA            |

Optional heatsink: THL-HS1

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | + Vout        | + Vout        |
| 4   | Trim          | Common        |
| 5   | - Vout        | - Vout        |
| 6   | Remote On/Off | Remote On/Off |

# THL-25WI Series ▶ 25 W



- ▶ High power density 25 W converter
- ▶ 1" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Highest efficiency up to 90 %
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage
- ▶ Industry standard pinout

**NEW**  
Product



## Specifications

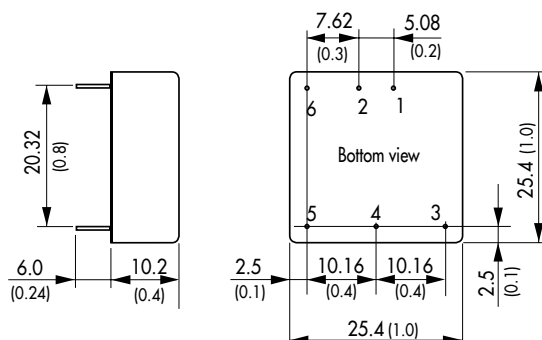
|                             |  |
|-----------------------------|--|
| Line regulation             | 0.2% max.  |
| Load regulation             | – Single output models: 0.2% max.<br>– Dual output models: 1.0% max.   |
| Output voltage adjustment   | ±10 % by external resistor (single output models)  |
| Ripple & noise              | <150 mVpk-pk (20 MHz BW)   |
| Conducted EMI               | EN 55022, class EN55022 class A  |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 89% typ.   |
| Operating temperature range | –40 °C to +80 °C<br>above 50°C derating 1.7%/K (depending on model)<br>– optional heatsink for extended temp.: see datasheet |
| I/O isolation voltage       | 1500 VDC (60 sec.)   |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)   |
| Remote On/Off               | shutdown input for low current in standby operation  |
| Casing                      | metal, with insulated baseplate  |
| Full datasheet              | <a href="http://www.tracopower.com/products/thl25wi.pdf">www.tracopower.com/products/thl25wi.pdf</a>                         |

## Models

| Order code    | Input voltage | Output voltage | Output current max. |
|---------------|---------------|----------------|---------------------|
| THL 25-2410WI |               | 3.3 VDC        | 6000 mA             |
| THL 25-2411WI |               | 5.0 VDC        | 5000 mA             |
| THL 25-2412WI | 9 – 36 VDC    | 12 VDC         | 2090 mA             |
| THL 25-2413WI |               | 15 VDC         | 1670 mA             |
| THL 25-2422WI |               | ± 12 VDC       | ± 1040 mA           |
| THL 25-2423WI |               | ± 15 VDC       | ± 840 mA            |
| THL 25-4810WI |               | 3.3 VDC        | 6000 mA             |
| THL 25-4811WI |               | 5.0 VDC        | 5000 mA             |
| THL 25-4812WI | 18 – 75 VDC   | 12 VDC         | 2090 mA             |
| THL 25-4813WI |               | 15 VDC         | 1670 mA             |
| THL 25-4822WI |               | ± 12 VDC       | ± 1040 mA           |
| THL 25-4823WI |               | ± 15 VDC       | ± 840 mA            |

Optional heatsink: **THL-HS1**

## Dimensions



| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | – Vin (GND)   | – Vin (GND)   |
| 3   | + Vout        | + Vout        |
| 4   | Trim          | Common        |
| 5   | – Vout        | – Vout        |
| 6   | Remote On/Off | Remote On/Off |

() = Inches

# TEN-30 Series ▶ 30 W



- ▶ 2" x 1" x 0.4" shielded metal package
- ▶ Wide 2:1 input voltage range
- ▶ Very high efficiency up to 91%
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Over-temperature protection
- ▶ I/O-isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage



## Specifications

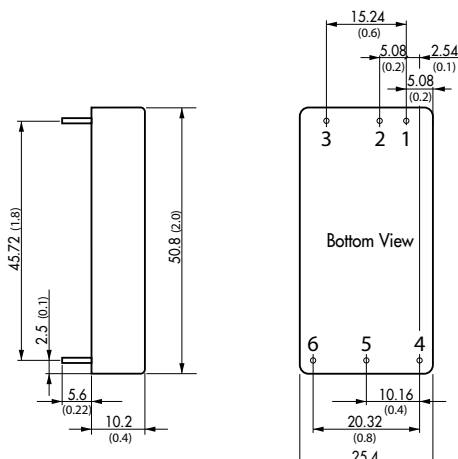
|                              |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                               |
| Output voltage adjustment    | ±10% by external resistor (single output models only)  |
| Ripple & noise               | - Single output models: <100 mVpk-pk (20 MHz BW)<br>- Dual output models: <150 mVpk-pk (20 MHz BW) |
| Conducted EMI                | EN 55022, class EN55022 class A (with external capacitor)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 89% typ.   |
| Operating temperature range  | -40 °C to +85 °C<br>above 65 °C derating 2.6%/K  |
| Thermal protection           | shutdown at 115 °C   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1 CB-report   |
| Remote On/Off                | shutdown input for low input current (3 mA) in standby operation                                   |
| Casing                       | 6-side shielded metal, with insulated baseplate  |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten30.pdf">www.tracopower.com/products/ten30.pdf</a>   |

## Models

| Order code  | Input voltage | Output voltage | Output current max. |
|-------------|---------------|----------------|---------------------|
| TEN 30-1207 |               | 1.5 VDC        | 8500 mA             |
| TEN 30-1209 |               | 2.5 VDC        | 8000 mA             |
| TEN 30-1210 |               | 3.3 VDC        | 8000 mA             |
| TEN 30-1211 |               | 5.1 VDC        | 6000 mA             |
| TEN 30-1212 | 9 – 18 VDC    | 12 VDC         | 2500 mA             |
| TEN 30-1213 |               | 15 VDC         | 2000 mA             |
| TEN 30-1221 |               | ±5 VDC         | ±3000 mA            |
| TEN 30-1222 |               | ±12 VDC        | ±1250 mA            |
| TEN 30-1223 |               | ±15 VDC        | ±1000 mA            |
| TEN 30-2407 |               | 1.5 VDC        | 8500 mA             |
| TEN 30-2409 |               | 2.5 VDC        | 8000 mA             |
| TEN 30-2410 |               | 3.3 VDC        | 8000 mA             |
| TEN 30-2411 |               | 5.1 VDC        | 6000 mA             |
| TEN 30-2412 | 18 – 36 VDC   | 12 VDC         | 2500 mA             |
| TEN 30-2413 |               | 15 VDC         | 2000 mA             |
| TEN 30-2421 |               | ±5 VDC         | ±3000 mA            |
| TEN 30-2422 |               | ±12 VDC        | ±1250 mA            |
| TEN 30-2423 |               | ±15 VDC        | ±1000 mA            |
| TEN 30-4807 |               | 1.5 VDC        | 8500 mA             |
| TEN 30-4809 |               | 2.5 VDC        | 8000 mA             |
| TEN 30-4810 |               | 3.3 VDC        | 8000 mA             |
| TEN 30-4811 |               | 5.1 VDC        | 6000 mA             |
| TEN 30-4812 | 36 – 75 VDC   | 12 VDC         | 2500 mA             |
| TEN 30-4813 |               | 15 VDC         | 2000 mA             |
| TEN 30-4821 |               | ±5 VDC         | ±3000 mA            |
| TEN 30-4822 |               | ±12 VDC        | ±1250 mA            |
| TEN 30-4823 |               | ±15 VDC        | ±1000 mA            |

Optional heatsink: [TEN-HS1](#)

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | Remote On/Off | Remote On/Off |
| 4   | + Vout        | + Vout        |
| 5   | - Vout        | Common        |
| 6   | Trim          | - Vout        |

# TEN-30WIN Series ▶ 30 W



- ▶ 2" x 1" x 0.4" shielded metal package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Single- dual- and triple output models
- ▶ Very high efficiency up to 91%
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Over temperature protection
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage



## Specifications

|                              |   |
|------------------------------|---|
| Line regulation              | - Single and dual output models: 0.2% max.<br>- Triple output models: 1.0% max.   |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.<br>- Triple output models: Vout 1: 1% max, Vout 2: 5.0% max. |
| Output voltage adjustment    | ±10% by external resistor (single output models only)   |
| Ripple & noise               | - Single output models: <100 mVpk-pk (20 MHz BW)<br>- Dual output models: <150 mVpk-pk (20 MHz BW)                                |
| Conducted EMI                | EN 55022, class EN55022 class A (with external capacitor)   |
| Short circuit protection     | continuous, automatic recovery  |
| Efficiency                   | 87% typ.  |
| Operating temperature range  | -40 °C to +85 °C<br>above 60 °C derating 2.4%/K   |
| Thermal protection           | shutdown at 115 °C  |
| I/O isolation voltage        | 1500 VDC (60 sec.)  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1 CB-report  |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation  |
| Casing                       | 6-side shielded metal, with insulated baseplate   |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten30win.pdf">www.tracopower.com/products/ten30win.pdf</a>                            |

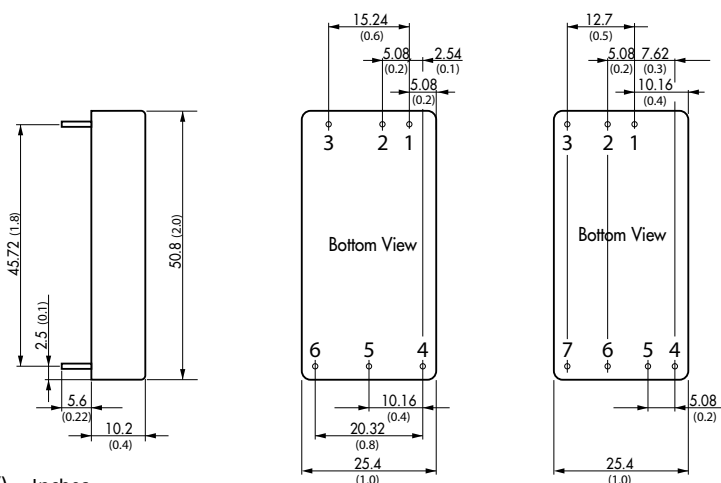
## Models

| Order code     | Input voltage | Output 1<br>Vout / Iout max. | Output 2<br>Vout / Iout max. |
|----------------|---------------|------------------------------|------------------------------|
| TEN 30-2407WIN |               | 1.5 VDC / 8.5 A              |                              |
| TEN 30-2409WIN |               | 2.5 VDC / 8.0 A              |                              |
| TEN 30-2410WIN |               | 3.3 VDC / 7.5 A              |                              |
| TEN 30-2411WIN |               | 5.1 VDC / 6.0 A              |                              |
| TEN 30-2412WIN |               | 12 VDC / 2.5 A               |                              |
| TEN 30-2413WIN |               | 15 VDC / 2.0 A               |                              |
| TEN 30-2421WIN | 9-36 VDC      | +5 VDC / 3.0 A               | -5 VDC / 3.0 A               |
| TEN 30-2422WIN |               | +12 VDC / 1.25 A             | -12 VDC / 1.25 A             |
| TEN 30-2423WIN |               | +15 VDC / 1.0 A              | -15 VDC / 1.0 A              |
| TEN 30-2433WIN |               | 3.3 VDC / 5.0 A              | ±12 VDC / ±0.42 A            |
| TEN 30-2434WIN |               | 3.3 VDC / 5.0 A              | ±15 VDC / ±0.33 A            |
| TEN 30-2431WIN |               | 5 VDC / 4.0 A                | ±12 VDC / ±0.42 A            |
| TEN 30-2432WIN |               | 5 VDC / 4.0 A                | ±15 VDC / ±0.33 A            |
| TEN 30-4807WIN |               | 1.5 VDC / 8.5 A              |                              |
| TEN 30-4809WIN |               | 2.5 VDC / 8.0 A              |                              |
| TEN 30-4810WIN |               | 3.3 VDC / 7.5 A              |                              |
| TEN 30-4811WIN |               | 5.1 VDC / 6.0 A              |                              |
| TEN 30-4812WIN |               | 12 VDC / 2.5 A               |                              |
| TEN 30-4813WIN |               | 15 VDC / 2.0 A               |                              |
| TEN 30-4821WIN | 18-75 VDC     | +5 VDC / 3.0 A               | -5 VDC / 3.0 A               |
| TEN 30-4822WIN |               | +12 VDC / 1.25 A             | -12 VDC / 1.25 A             |
| TEN 30-4823WIN |               | +15 VDC / 1.0 A              | -15 VDC / 1.0 A              |
| TEN 30-4833WIN |               | 3.3 VDC / 5.0 A              | ±12 VDC / ±0.42 A            |
| TEN 30-4834WIN |               | 3.3 VDC / 5.0 A              | ±15 VDC / ±0.33 A            |
| TEN 30-4831WIN |               | 5 VDC / 4.0 A                | ±12 VDC / ±0.42 A            |
| TEN 30-4832WIN |               | 5 VDC / 4.0 A                | ±15 VDC / ±0.33 A            |

Optional heatsink: TEN-HS1

## Dimensions

Single- and dual output models      Triple output models



| Pin | Single output | Dual output   | Triple output |
|-----|---------------|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   | - Vin (GND)   |
| 3   | Remote On/Off | Remote On/Off | Remote On/Off |
| 4   | + Vout        | Output 1      | Output 2      |
| 5   | - Vout        | Common        | Output 3      |
| 6   | Trim          | Output 2      | Common        |
| 7   | No pin        | No pin        | Output 1      |

# THN-30 Series ▶ 30 W



- ▶ Highest power density 30 W converter
- ▶ 1" x 1" x 0.4" 6-side shielded metal casing
- ▶ Wide 2:1 input voltage range
- ▶ Very high efficiency up to 91%
- ▶ Low input current at no load
- ▶ High efficiency accross load range
- ▶ Operating temperature range -40 °C to +80 °C
- ▶ Over-temperature protection
- ▶ I/O-isolation 1500 VDC
- ▶ Input undervoltage-lockout
- ▶ Remote On/Off and output trim

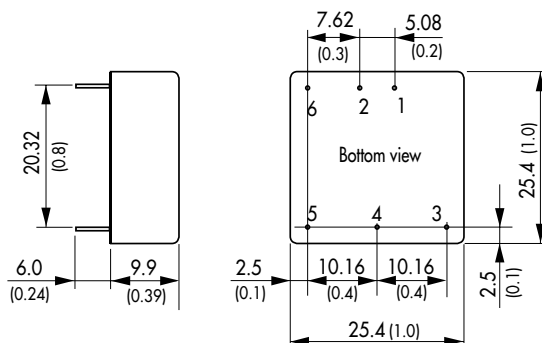


| Specifications               |  |
|------------------------------|--|
| Line regulation              | - Single output models: 0.2% max.<br>- Dual output models: 0.5% max.                             |
| Load regulation              | - Single output models: 0.2% max.<br>- Dual output models: 1.0% max.                             |
| Output voltage adjustment    | 12 & 15 VDC models: +20 / -10%<br>other single output models: ±10%<br>by external resistor       |
| Ripple & noise               | <100 mVpk-pk (20 MHz BW)   |
| Conducted EMI                | EN 55022, class EN55022 class A<br>(with external capacitor and inductor)                        |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 90% typ.   |
| Operating temperature range  | -40 °C to +80 °C<br>above 55 °C derating 2.2%/K  |
| Thermal protection           | shutdown at 115 °C   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)   |
| Remote On/Off                | shutdown input for low input current (2mA)<br>in standby operation                               |
| Casing                       | 6-side shielded metal, with insulated baseplate  |
| Full datasheet               | <a href="http://www.tracopower.com/products/thn30.pdf">www.tracopower.com/products/thn30.pdf</a> |

| Models      |               |                |                     |
|-------------|---------------|----------------|---------------------|
| Order code  | Input voltage | Output voltage | Output current max. |
| THN 30-1210 |               | 3.3 VDC        | 7000 mA             |
| THN 30-1211 |               | 5.0 VDC        | 6000 mA             |
| THN 30-1212 |               | 12 VDC         | 2500 mA             |
| THN 30-1213 | 9 – 18 VDC    | 15 VDC         | 2000 mA             |
| THN 30-1215 |               | 24 VDC         | 1250 mA             |
| THN 30-1222 |               | ±12 VDC        | ±1250 mA            |
| THN 30-1223 |               | ±15 VDC        | ±1000 mA            |
| THN 30-2410 |               | 3.3 VDC        | 7000 mA             |
| THN 30-2411 |               | 5.0 VDC        | 6000 mA             |
| THN 30-2412 |               | 12 VDC         | 2500 mA             |
| THN 30-2413 | 18 – 36 VDC   | 15 VDC         | 2000 mA             |
| THN 30-2415 |               | 24 VDC         | 1250 mA             |
| THN 30-2422 |               | ±12 VDC        | ±1250 mA            |
| THN 30-2423 |               | ±15 VDC        | ±1000 mA            |
| THN 30-4810 |               | 3.3 VDC        | 7000 mA             |
| THN 30-4811 |               | 5.0 VDC        | 6000 mA             |
| THN 30-4812 |               | 12 VDC         | 2500 mA             |
| THN 30-4813 | 36 – 75 VDC   | 15 VDC         | 2000 mA             |
| THN 30-4815 |               | 24 VDC         | 1250 mA             |
| THN 30-4822 |               | ±12 VDC        | ±1250 mA            |
| THN 30-4823 |               | ±15 VDC        | ±1000 mA            |

Optional heatsink: THN-HS1

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | Remote On/Off | Remote On/Off |
| 4   | + Vout        | + Vout        |
| 5   | - Vout        | Common        |
| 6   | Trim          | - Vout        |



# THN-30WI Series ▶ 30 W



- ▶ Highest power density 30 W converter
- ▶ 1" x 1" x 0.4" 6-side shielded metalcase
- ▶ Ultra wide 4:1 input voltage range
- ▶ Very high efficiency up to 91%
- ▶ Low input current at no load
- ▶ High efficiency accross load range
- ▶ Operating temperature range -40 °C to +80 °C
- ▶ Over-temperature protection
- ▶ I/O-isolation 1500 VDC
- ▶ Input undervoltage-lockout
- ▶ Remote On/Off and output trim



## Specifications

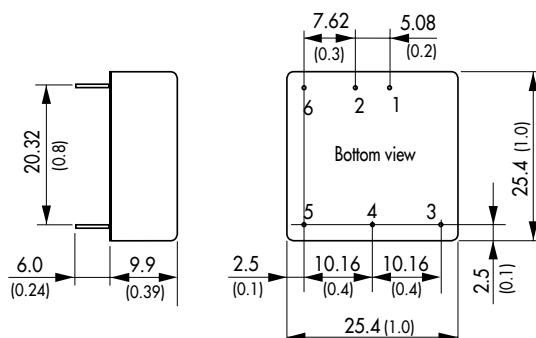
|                              |  |
|------------------------------|--|
| Line regulation              | - Single output models: 0.2% max.<br>- Dual output models: 0.5% max.                                 |
| Load regulation              | - Single output models: 0.2% max.<br>- Dual output models: 1.0% max.                                 |
| Output voltage adjustment    | 12 & 15 VDC models: +20 / -10%<br>other single output models: ±10%<br>by external resistor           |
| Ripple & noise               | <100 mVpk-pk (20 MHz BW)   |
| Conducted EMI                | EN 55022, class EN55022 class A<br>(with external capacitor and inductor)                            |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 90% typ.   |
| Operating temperature range  | -40 °C to +80 °C<br>above 55 °C derating 2.4%/K  |
| Thermal protection           | shutdown at 115 °C   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)   |
| Remote On/Off                | shutdown input for low input current (2 mA)<br>in standby operation                                  |
| Casing                       | 6-side shielded metal, with insulated baseplate  |
| Full datasheet               | <a href="http://www.tracopower.com/products/thn30wi.pdf">www.tracopower.com/products/thn30wi.pdf</a> |

## Models

| Order code    | Input voltage | Output voltage | Output current max. |
|---------------|---------------|----------------|---------------------|
| THN 30-2410WI |               | 3.3 VDC        | 7000 mA             |
| THN 30-2411WI |               | 5.0 VDC        | 6000 mA             |
| THN 30-2412WI |               | 12 VDC         | 2500 mA             |
| THN 30-2413WI | 9 – 36 VDC    | 15 VDC         | 2000 mA             |
| THN 30-2415WI |               | 24 VDC         | 1250 mA             |
| THN 30-2422WI |               | ±12 VDC        | ±1250 mA            |
| THN 30-2423WI |               | ±15 VDC        | ±1000 mA            |
| THN 30-4810WI |               | 3.3 VDC        | 7000 mA             |
| THN 30-4811WI |               | 5.0 VDC        | 6000 mA             |
| THN 30-4812WI |               | 12 VDC         | 2500 mA             |
| THN 30-4813WI | 18 – 75 VDC   | 15 VDC         | 2000 mA             |
| THN 30-4815WI |               | 24 VDC         | 1250 mA             |
| THN 30-4822WI |               | ±12 VDC        | ±1250 mA            |
| THN 30-4823WI |               | ±15 VDC        | ±1000 mA            |

Optional heatsink: **THN-HS1**

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | Remote On/Off | Remote On/Off |
| 4   | + Vout        | + Vout        |
| 5   | - Vout        | Common        |
| 6   | Trim          | - Vout        |

# TEN-40 Series ▶ 40 W



- ▶ Models with 2 isolated outputs (3.3 V / 5 V)
- ▶ Triple output models
- ▶ Wide 2:1 input range
- ▶ High efficiency up to 90 %
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage



| Specifications               |  | Models      |               |                          |                         |
|------------------------------|--|-------------|---------------|--------------------------|-------------------------|
| Line regulation              | 1.0% max.  | Order code  | Input voltage | Output 1<br>Vout / Imax. | Output 2<br>Vout / Imax |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.<br>- Triple output models: Vout 1: 1% max, Vout 2: 5.0% max.  | TEN 40-1210 |               | 3.3 VDC / 8.0 A          |                         |
| Output voltage adjustment    | ±10 % by external resistor (only for single and symmetric dual output models)  | TEN 40-1211 |               | 5 VDC / 8.0 A            |                         |
| Ripple & noise (20 MHz BW)   | - 3.3 / 5 VDC output models: <50 mVpk-pk<br>- Symmetric dual output models: <150 mVpk-pk<br>- Asymmetric dual output models: <100 mVpk-pk<br>- all other output models <75 mVpk-pk | TEN 40-1212 |               | 12 VDC / 3.3 A           |                         |
| Conducted EMI                | EN 55022, class EN55022 class A (with external capacitor)  | TEN 40-1220 |               | *3.3 VDC / 8.0 A         | *5 VDC / 8.0 A          |
| Short circuit protection     | continuous, automatic recovery   | TEN 40-1222 | 9 – 18 VDC    | +12 VDC / 1.8 A          | -12 VDC / 1.8 A         |
| Efficiency                   | 86% typ.   | TEN 40-1223 |               | + 15 VDC / 1.4 A         | -15 VDC / 1.4 A         |
| Operating temperature range  | -40 °C to +75 °C for derating see datasheet  | TEN 40-1233 |               | 3.3 VDC / 6.0 A          | ± 12 VDC / ± 0.4 A      |
| Thermal protection           | shutdown at 115 °C   | TEN 40-1234 |               | 3.3 VDC / 6.0 A          | ± 15 VDC / ± 0.3 A      |
| I/O isolation voltage        | 1500 VDC (60 sec.)   | TEN 40-1231 |               | 5 VDC / 6.0 A            | ± 12 VDC / ± 0.4 A      |
| Safety standards / approvals | cUL / UL 60950-1, IEC/EN 60950-1 CB-report   | TEN 40-1232 |               | 5 VDC / 6.0 A            | ± 15 VDC / ± 0.3 A      |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation   | TEN 40-2410 |               | 3.3 VDC / 8.0 A          |                         |
| Casing                       | 6-side shielded metal, with insulated baseplate  | TEN 40-2411 |               | 5 VDC / 8.0 A            |                         |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten40.pdf">www.tracopower.com/products/ten40.pdf</a>   | TEN 40-2412 |               | 12 VDC / 3.3 A           |                         |
|                              |  | TEN 40-2420 |               | *3.3 VDC / 8.0 A         | *5 VDC / 8.0 A          |
|                              |  | TEN 40-2422 | 18 – 36 VDC   | +12 VDC / 1.8 A          | -12 VDC / 1.8 A         |
|                              |  | TEN 40-2423 |               | + 15 VDC / 1.4 A         | -15 VDC / 1.4 A         |
|                              |  | TEN 40-2433 |               | 3.3 VDC / 6.0 A          | ± 12 VDC / ± 0.4 A      |
|                              |  | TEN 40-2434 |               | 3.3 VDC / 6.0 A          | ± 15 VDC / ± 0.3 A      |
|                              |  | TEN 40-2431 |               | 5 VDC / 6.0 A            | ± 12 VDC / ± 0.4 A      |
|                              |  | TEN 40-2432 |               | 5 VDC / 6.0 A            | ± 15 VDC / ± 0.3 A      |
|                              |  | TEN 40-4810 |               | 3.3 VDC / 8.0 A          |                         |
|                              |  | TEN 40-4811 |               | 5 VDC / 8.0 A            |                         |
|                              |  | TEN 40-4812 |               | 12 VDC / 3.3 A           |                         |
|                              |  | TEN 40-4820 |               | *3.3 VDC / 8.0 A         | *5 VDC / 8.0 A          |
|                              |  | TEN 40-4822 | 36 – 75 VDC   | +12 VDC / 1.8 A          | -12 VDC / 1.8 A         |
|                              |  | TEN 40-4823 |               | + 15 VDC / 1.4 A         | -15 VDC / 1.4 A         |
|                              |  | TEN 40-4833 |               | 3.3 VDC / 6.0 A          | ± 12 VDC / ± 0.4 A      |
|                              |  | TEN 40-4834 |               | 3.3 VDC / 6.0 A          | ± 15 VDC / ± 0.3 A      |
|                              |  | TEN 40-4831 |               | 5 VDC / 6.0 A            | ± 12 VDC / ± 0.4 A      |
|                              |  | TEN 40-4832 |               | 5 VDC / 6.0 A            | ± 15 VDC / ± 0.3 A      |

\*dynamic current allocation, max. 8 A total output current  
Optional heatsink: TEN-HS3

| Dimensions |  | Pin |               |                       |                        |               |
|------------|--|-----|---------------|-----------------------|------------------------|---------------|
|            |  | Pin | Single output | Dual output symmetric | Dual output asymmetric | Triple output |
|            |  | 1   | + Vin (Vcc)   | + Vin (Vcc)           | + Vin (Vcc)            | + Vin (Vcc)   |
|            |  | 2   | - Vin (GND)   | - Vin (GND)           | - Vin (GND)            | - Vin (GND)   |
|            |  | 3   | Remote On/Off |                       |                        |               |
|            |  | 4   | No con.       | No pin                | +Vout 1                | +Vout 2       |
|            |  | 5   | -Sense        | Vout 1                | -Vout 1                | Common 2      |
|            |  | 6   | +Sense        | Common 1/2            | No con.                | -Vout 2       |
|            |  | 7   | +Vout         | Common 1/2            | No con.                | +Vout 1       |
|            |  | 8   | -Vout         | Vout 2                | +Vout 2                | -Vout 1       |
|            |  | 9   | Trim          | Trim                  | -Vout 2                | No con.       |

() = Inches

# TEN-40WI Series ▶ 40 W



- ▶ Ultra wide 4:1 input range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Over temperature protection
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage



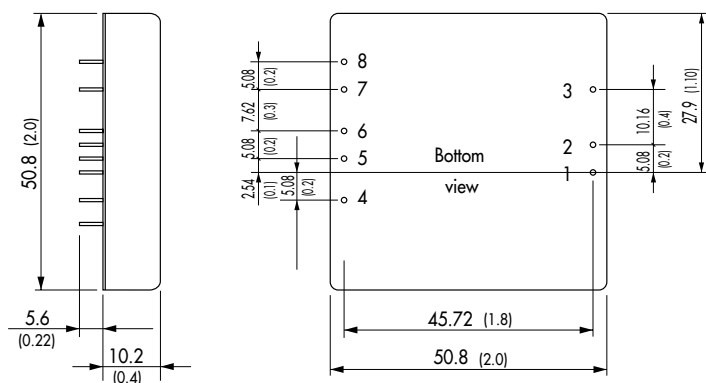
| Specifications               |   |
|------------------------------|---|
| Line regulation              | 0.2% max.   |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual/Triple output models: 1.0% max.   |
| Output voltage adjustment    | ±10% by external resistor   |
| Ripple & noise (20MHz BW)    | - 3.3 / 5 VDC output models: <50 mVpk-pk<br>- other single output models: <75 mVpk-pk<br>- dual output models: <150 mVpk-pk |
| Conducted EMI                | EN 55022, class EN55022 class A (with external capacitor)   |
| Short circuit protection     | continuous, automatic recovery  |
| Efficiency                   | 86% typ.  |
| Operating temperature range  | -40 °C to +85 °C<br>above 55 °C derating 2.0%/K   |
| Thermal protection           | shutdown at 110 °C  |
| I/O isolation voltage        | 1500 VDC (60 sec.)  |
| Safety standards / approvals | cUL /UL 60950-1, IEC/EN 60950-1 CB-report   |
| Remote On/Off                | shutdown input for low input current (3 mA) in standby operation  |
| Casing                       | 6-side shielded metal, with insulated baseplate   |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten40wi.pdf">www.tracopower.com/products/ten40wi.pdf</a>                        |

| Models        |               |                |                     |
|---------------|---------------|----------------|---------------------|
| Order code    | Input voltage | Output voltage | Output current max. |
| TEN 40-2410WI | 9-36 VDC      | 3.3 VDC        | 10000 mA            |
| TEN 40-2411WI |               | 5 VDC          | 8000 mA             |
| TEN 40-2412WI |               | 12 VDC         | 3330 mA             |
| TEN 40-2413WI | 18-75 VDC     | 15 VDC         | 2660 mA             |
| TEN 40-2422WI |               | ± 12 VDC       | ± 1667 mA           |
| TEN 40-2423WI |               | ± 15 VDC       | ± 1333 mA           |
| TEN 40-4810WI | 18-75 VDC     | 3.3 VDC        | 10000 mA            |
| TEN 40-4811WI |               | 5 VDC          | 8000 mA             |
| TEN 40-4812WI |               | 12 VDC         | 3333 mA             |
| TEN 40-4813WI | 18-75 VDC     | 15 VDC         | 2666 mA             |
| TEN 40-4822WI |               | ± 12 VDC       | ± 1667 mA           |
| TEN 40-4823WI |               | ± 15 VDC       | ± 1333 mA           |

Optional heatsink: [TEN-HS3](#)

## Dimensions

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | Remote On/Off | Remote On/Off |
| 4   | - Sense       | + Vout        |
| 5   | + Sense       | Common        |
| 6   | + Vout        | Common        |
| 7   | - Vout        | - Vout        |
| 8   | Trim          | Trim          |



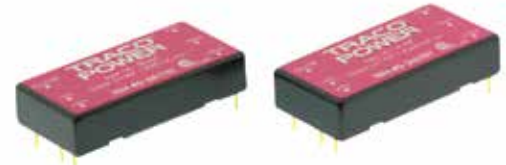
() = Inches

# TEN-40N Series ▶ 40 W



- ▶ High power density 40 W converter
- ▶ 2" x 1" x 0.4" metal package
- ▶ Wide 2:1 input range
- ▶ High efficiency up to 92 %
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

**NEW Models**



| Specifications               |  | Models            |                      |                       |                            |
|------------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | 0.5% max.  | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | - Single output models: 1.0% max.<br>- Dual output models: 2.0% max.                               | TEN 40-1210N      |                      | 3.3 VDC               | 8000 mA                    |
| Output voltage adjustment    | ±10% by external resistor (single output models)   | TEN 40-1211N      |                      | 5.0 VDC               | 8000 mA                    |
| Ripple & noise               | 100 mVpk-pk typ. (20 MHz BW)   | TEN 40-1212N      |                      | 12 VDC                | 3333 mA                    |
| Conducted EMI                | EN 55022, class EN55022 class A (external capacitors)  | TEN 40-1213N      | 9 – 18 VDC           | 15 VDC                | 2666 mA                    |
| Short circuit protection     | continuous, automatic recovery   | TEN 40-1215N      |                      | 24 VDC                | 1670 mA                    |
| Efficiency                   | 90% typ.   | TEN 40-1222N      |                      | ±12 VDC               | ±1666 mA                   |
| Operating temperature range  | -40 °C to +75 °C<br>above 45 °C derating 1.6%/K  | TEN 40-1223N      |                      | ±15 VDC               | ±1333 mA                   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   | TEN 40-2410N      |                      | 3.3 VDC               | 8000 mA                    |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1 CB-report   | TEN 40-2411N      |                      | 5.0 VDC               | 8000 mA                    |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                                 | TEN 40-2412N      |                      | 12 VDC                | 3333 mA                    |
| Casing                       | metal, with insulated baseplate  | TEN 40-2413N      | 18 – 36 VDC          | 15 VDC                | 2666 mA                    |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten40n.pdf">www.tracopower.com/products/ten40n.pdf</a> | TEN 40-2415N      |                      | 24 VDC                | 1670 mA                    |
|                              |  | TEN 40-2422N      |                      | ±12 VDC               | ±1666 mA                   |
|                              |  | TEN 40-2423N      |                      | ±15 VDC               | ±1333 mA                   |
|                              |  | TEN 40-4810N      |                      | 3.3 VDC               | 8000 mA                    |
|                              |  | TEN 40-4811N      |                      | 5.0 VDC               | 8000 mA                    |
|                              |  | TEN 40-4812N      |                      | 12 VDC                | 3333 mA                    |
|                              |  | TEN 40-4813N      | 36 – 75 VDC          | 15 VDC                | 2666 mA                    |
|                              |  | TEN 40-4815N      |                      | 24 VDC                | 1670 mA                    |
|                              |  | TEN 40-4822N      |                      | ±12 VDC               | ±1666 mA                   |
|                              |  | TEN 40-4823N      |                      | ±15 VDC               | ±1333 mA                   |

Optional heatsink: TEN-HS4

| Dimensions |                    | Pin                  |                    |               |  |
|------------|--------------------|----------------------|--------------------|---------------|--|
|            | <p>Bottom View</p> | <b>Single output</b> | <b>Dual output</b> |               |  |
|            |                    | 1                    | + Vin (Vcc)        | + Vin (Vcc)   |  |
|            |                    | 2                    | - Vin (GND)        | - Vin (GND)   |  |
|            |                    | 3                    | Remote On/Off      | Remote On/Off |  |
|            |                    | 4                    | + Vout             | + Vout        |  |
|            |                    | 5                    | - Vout             | Common        |  |
|            |                    | 6                    | Trim               | - Vout        |  |

() = Inches

# TEN-40WIN Series ▶ 40 W



- ▶ High power density 40 W converter
- ▶ 2" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input range
- ▶ High efficiency up to 90 %
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

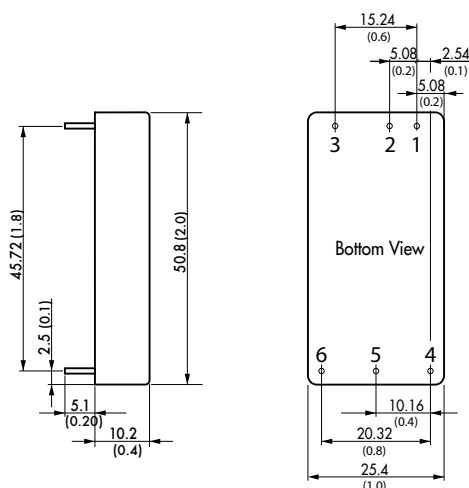


| Specifications               |  |
|------------------------------|--|
| Line regulation              | 0.5% max.  |
| Load regulation              | - Single output models: 0.5% max.<br>- Dual/Triple output models: 1.0% max.                            |
| Output voltage adjustment    | ±10% by external resistor  |
| Ripple & noise (20MHz BW)    | - 3.3 / 5 VDC output models: <100 mVpk-pk<br>- other output models: <150 mVpk-pk                       |
| Conducted EMI                | EN 55022, class EN55022 class A (with external capacitors)   |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 89% typ.   |
| Operating temperature range  | -40 °C to +75 °C<br>above 45 °C derating 1.6%/K  |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL /UL 60950-1, IEC/EN 60950-1, CB-report   |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                                     |
| Casing                       | metal, shielded with insulated baseplate   |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten40win.pdf">www.tracopower.com/products/ten40win.pdf</a> |

| Models         |               |                |                     |
|----------------|---------------|----------------|---------------------|
| Order code     | Input voltage | Output voltage | Output current max. |
| TEN 40-2410WIN | 9 – 36 VDC    | 3.3 VDC        | 8000 mA             |
| TEN 40-2411WIN |               | 5.0 VDC        | 8000 mA             |
| TEN 40-2412WIN |               | 12 VDC         | 3330 mA             |
| TEN 40-2413WIN |               | 15 VDC         | 2670 mA             |
| TEN 40-2415WIN |               | 24 VDC         | 1670 mA             |
| TEN 40-2422WIN |               | ±12 VDC        | ±1670 mA            |
| TEN 40-2423WIN |               | ±15 VDC        | ±1330 mA            |
| TEN 40-4810WIN | 18 – 75 VDC   | 3.3 VDC        | 8000 mA             |
| TEN 40-4811WIN |               | 5.0 VDC        | 8000 mA             |
| TEN 40-4812WIN |               | 12 VDC         | 3330 mA             |
| TEN 40-4813WIN |               | 15 VDC         | 2670 mA             |
| TEN 40-4815WIN |               | 24 VDC         | 1670 mA             |
| TEN 40-4822WIN |               | ±12 VDC        | ±1670 mA            |
| TEN 40-4823WIN |               | ±15 VDC        | ±1330 mA            |

Optional heatsink: [TEN-HS4](#)

## Dimensions



( ) = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | Remote On/Off | Remote On/Off |
| 4   | + Vout        | + Vout        |
| 5   | - Vout        | Common        |
| 6   | Trim          | - Vout        |

# TEN-40WIR Series ▶ 40 W



- ▶ High power density 40 W converter
- ▶ 2" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input range up to 160 VDC
- ▶ Certified for railway applications EN 50155
- ▶ High efficiency across load range
- ▶ Low input current at no load
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Over temperature protection
- ▶ I/O isolation 1500 VDC
- ▶ Input undervoltage-lockout
- ▶ Remote On/Off and output trim



## Specifications

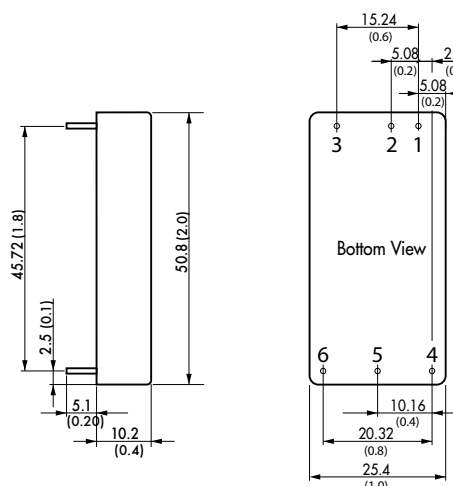
|                                     |  |
|-------------------------------------|--|
| Line regulation                     | 0.5% max.  |
| Load regulation                     | - Single output models: 0.5% max.<br>- Dual output models: 1.0% max.                                   |
| Output voltage adjustment           | ±10% by external resistor (single output models)   |
| Ripple & noise                      | 100 mVpk-pk typ. (20 MHz BW)   |
| EMC                                 | - Conducted noise: EN 55022, class EN55022 class A (with external capacitor)<br>- Immunity: EN 50155   |
| Short circuit protection            | continuous, automatic recovery   |
| Efficiency                          | 90% typ.   |
| Operating temperature range         | -40 °C to +85 °C<br>above 60 °C derating 2.6%/K  |
| Thermal protection                  | shutdown at 115 °C   |
| I/O isolation voltage               | 1500 VDC (60 sec.)   |
| Thermal shock and shock & vibration | EN 61373 / MIL-STD-810F  |
| Safety standards / approvals        | cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, CB-report  |
| Remote On/Off                       | shutdown input for low input current (3 mA) in standby operation                                       |
| Casing                              | 6-side shielded metal, with insulated baseplate  |
| Full datasheet                      | <a href="http://www.tracopower.com/products/ten40wir.pdf">www.tracopower.com/products/ten40wir.pdf</a> |

## Models

| Order code     | Input voltage | Output voltage | Output current max. |
|----------------|---------------|----------------|---------------------|
| TEN 40-2410WIR |               | 3.3 VDC        | 10'000 mA           |
| TEN 40-2411WIR |               | 5 VDC          | 8000 mA             |
| TEN 40-2412WIR |               | 12 VDC         | 3333 mA             |
| TEN 40-2413WIR | 9 – 36 VDC    | 15 VDC         | 2666 mA             |
| TEN 40-2415WIR |               | 24 VDC         | 1666 mA             |
| TEN 40-2422WIR |               | ± 12 VDC       | ± 1666 mA           |
| TEN 40-2423WIR |               | ± 15 VDC       | ± 1333 mA           |
| TEN 40-4810WIR |               | 3.3 VDC        | 10'000 mA           |
| TEN 40-4811WIR |               | 5 VDC          | 8000 mA             |
| TEN 40-4812WIR |               | 12 VDC         | 3333 mA             |
| TEN 40-4813WIR | 18 – 75 VDC   | 15 VDC         | 2666 mA             |
| TEN 40-4815WIR |               | 24 VDC         | 1666 mA             |
| TEN 40-4822WIR |               | ± 12 VDC       | ± 1666 mA           |
| TEN 40-4823WIR |               | ± 15 VDC       | ± 1333 mA           |
| TEN 40-7210WIR |               | 3.3 VDC        | 10'000 mA           |
| TEN 40-7211WIR |               | 5 VDC          | 8000 mA             |
| TEN 40-7212WIR |               | 12 VDC         | 3333 mA             |
| TEN 40-7213WIR | 43 – 160 VDC  | 15 VDC         | 2666 mA             |
| TEN 40-7215WIR |               | 24 VDC         | 1666 mA             |
| TEN 40-7222WIR |               | ± 12 VDC       | ± 1666 mA           |
| TEN 40-7223WIR |               | ± 15 VDC       | ± 1333 mA           |

Optional heatsink: TEN-HS1

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | Remote On/Off | Remote On/Off |
| 4   | + Vout        | + Vout        |
| 5   | - Vout        | Common        |
| 6   | Trim          | - Vout        |

# TMDC-40 Series ▶ 40 W



- ▶ Fully encapsulated low profile plastic casing
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- ▶ Highest efficiency up to 91%
- ▶ I/O isolation 2500 VDC
- ▶ Remote On/Off
- ▶ Power-good LED indicator
- ▶ Reverse input protection
- ▶ Optional DIN-rail mount adapter

**NEW**  
Product



## Specifications

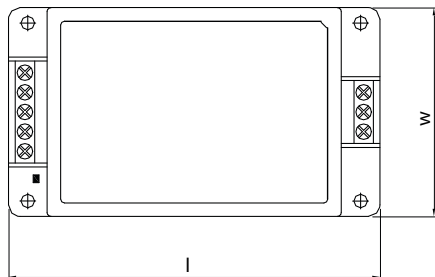
|                             |  |
|-----------------------------|--|
| Line regulation             | 0.5% max.  |
| Load regulation             | 1.0% max.  |
| Ripple & noise              | 5.1 VDC modes: <100 mVpk-pk (20 MHz BW)<br>12 & 24 VDC modes: <150 mVpk-pk (20 MHz BW)<br>48 VDC modes: <200 mVpk-pk (20 MHz BW) |
| Conducted EMI               | EN 55022, class EN55022 class A  |
| Short circuit protection    | continuous, automatic recovery   |
| Efficiency                  | 90% typ.   |
| Operating temperature range | $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$<br>above $70^{\circ}\text{C}$ derating 3.3%/K                                     |
| I/O isolation voltage       | 2500 VDC (60 sec.) reinforced insulation   |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)   |
| Remote On/Off               | shutdown input for low current in standby operation  |
| Casing                      | metal, with insulated baseplate  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tmdc40.pdf">www.tracopower.com/products/tmdc40.pdf</a>                               |

## Models

| Order code   | Input voltage | Output voltage | Output current max. |
|--------------|---------------|----------------|---------------------|
| TMDC 40-2411 | 9 – 36 VDC    | 5.1 VDC        | 8000 mA             |
| TMDC 40-2412 |               | 12 VDC         | 3330 mA             |
| TMDC 40-2415 |               | 24 VDC         | 1670 mA             |
| TMDC 40-2418 | 18 – 75 VDC   | 48 VDC         | 835 mA              |
| TMDC 40-4811 |               | 5.1 VDC        | 8000 mA             |
| TMDC 40-4812 |               | 12 VDC         | 3330 mA             |
| TMDC 40-4815 |               | 24 VDC         | 1670 mA             |
| TMDC 40-4818 |               | 48 VDC         | 835 mA              |

## Dimensions

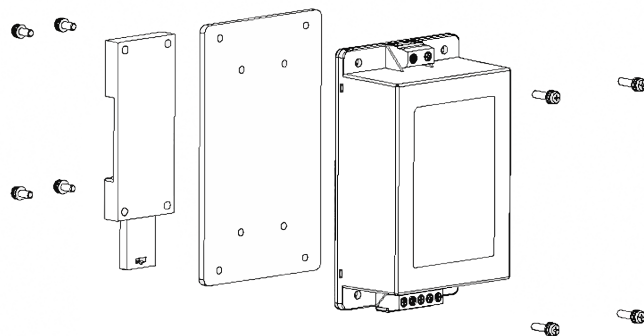
| Type         | Length l   | Width w     | Height h    |
|--------------|------------|-------------|-------------|
| TMDC 40-xxxx | 112 (4.41) | 63.8 (2.51) | 25.6 (1.01) |



( ) = Inches

## DIN-rail mount adapter

TMP-MK2



# TEN-50 Series ▶ 50 W



- ▶ High power density 50 W converter
- ▶ 2" x 1" x 0.4" metal package
- ▶ Wide 2:1 input range
- ▶ High efficiency up to 92 %
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ EN 55022, class A
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

**NEW Models**



## Specifications

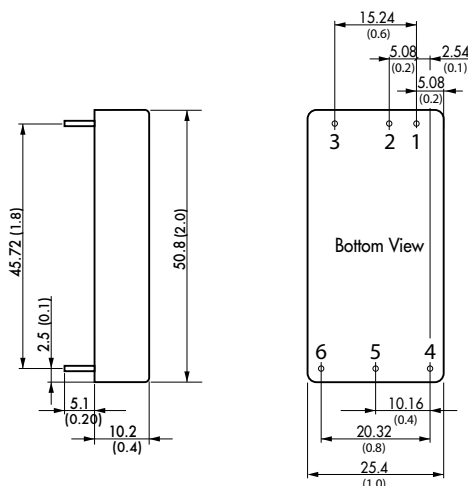
|                              |  |
|------------------------------|--|
| Line regulation              | 0.5% max.  |
| Load regulation              | 0.5% max.  |
| Output voltage adjustment    | ±10% by external resistor  |
| Conducted EMI                | EN 55022, class A (with external capacitor)  |
| Ripple & noise               | 100 mVpk-pk typ. (20 MHz BW)   |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 92% typ.   |
| Operating temperature range  | -40 °C to +75 °C<br>above 55 °C derating 2.0%/K  |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                               |
| Casing                       | metal, with insulated baseplate  |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten50.pdf">www.tracopower.com/products/ten50.pdf</a> |

## Models

| Order code  | Input voltage | Output voltage | Output current max. |
|-------------|---------------|----------------|---------------------|
| TEN 50-1210 |               | 3.3 VDC        | 10000 mA            |
| TEN 50-1211 |               | 5 VDC          | 10000 mA            |
| TEN 50-1212 | 9 – 18 VDC    | 12 VDC         | 4167 mA             |
| TEN 50-1213 |               | 15 VDC         | 3333 mA             |
| TEN 50-1215 |               | 24 VDC         | 2080 mA             |
| TEN 50-2410 |               | 3.3 VDC        | 10000 mA            |
| TEN 50-2411 |               | 5 VDC          | 10000 mA            |
| TEN 50-2412 | 18 – 36 VDC   | 12 VDC         | 4167 mA             |
| TEN 50-2413 |               | 15 VDC         | 3333 mA             |
| TEN 50-2415 |               | 24 VDC         | 2080 mA             |
| TEN 50-4810 |               | 3.3 VDC        | 10000 mA            |
| TEN 50-4811 |               | 5 VDC          | 10000 mA            |
| TEN 50-4812 | 36 – 75 VDC   | 12 VDC         | 4167 mA             |
| TEN 50-4813 |               | 15 VDC         | 3333 mA             |
| TEN 50-4815 |               | 24 VDC         | 2080 mA             |

Optional heatsink: **TEN-HS4**

## Dimensions



( ) = Inches

## Pin

| Pin | Single output |
|-----|---------------|
| 1   | + Vin (Vcc)   |
| 2   | - Vin (GND)   |
| 3   | Remote On/Off |
| 4   | + Vout        |
| 5   | - Vout        |
| 6   | Trim          |



# TEN-50WI Series ▶ 50 W



- ▶ High power density 50 W converter
- ▶ 2" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input range
- ▶ High efficiency up to 92 %
- ▶ Operating temperature range -40 °C to +80 °C
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage



**NEW**  
Product

## Specifications

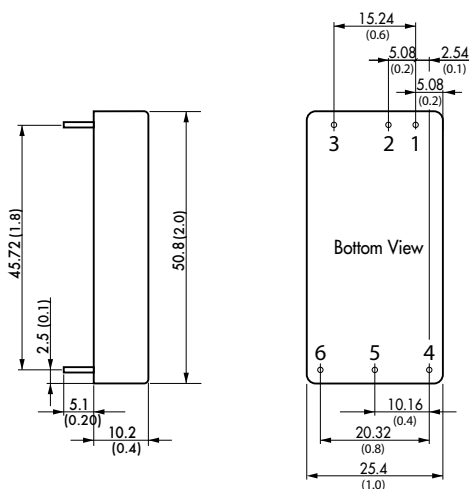
|                              |  |
|------------------------------|--|
| Line regulation              | 0.5 % max.   |
| Load regulation              | 0.5 % max.   |
| Output voltage adjustment    | ±10 % by external resistor<br>24 VDC models: +20 / -10 %   |
| Ripple & noise               | 3.3 & 5 VDC models: <100 mVpk-pk typ. (20 MHz BW)<br>other models: <150 mVpk-pk typ. (20 MHz BW)     |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 91% typ.   |
| Operating temperature range  | -40 °C to +80 °C<br>above 55 °C derating 2.0 %/K   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                                   |
| Casing                       | metal, with insulated baseplate  |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten50wi.pdf">www.tracopower.com/products/ten50wi.pdf</a> |

## Models

| Order code    | Input voltage | Output voltage | Output current max. |
|---------------|---------------|----------------|---------------------|
| TEN 50-2410WI |               | 3.3 VDC        | 10000 mA            |
| TEN 50-2411WI |               | 5 VDC          | 10000 mA            |
| TEN 50-2412WI | 9-36 VDC      | 12 VDC         | 4170 mA             |
| TEN 50-2413WI |               | 15 VDC         | 3330 mA             |
| TEN 50-2415WI |               | 24 VDC         | 2080 mA             |
| TEN 50-4810WI |               | 3.3 VDC        | 10000 mA            |
| TEN 50-4811WI |               | 5 VDC          | 10000 mA            |
| TEN 50-4812WI | 18-75 VDC     | 12 VDC         | 4170 mA             |
| TEN 50-4813WI |               | 15 VDC         | 3330 mA             |
| TEN 50-4815WI |               | 24 VDC         | 2080 mA             |

Optional heatsink: TEN-HS4

## Dimensions



() = Inches

| Pin | Single output |
|-----|---------------|
| 1   | + Vin (Vcc)   |
| 2   | - Vin (GND)   |
| 3   | Remote On/Off |
| 4   | + Vout        |
| 5   | - Vout        |
| 6   | Trim          |

# TEN-60N Series ▶ 60 W



- ▶ Highest power density 60 W converter
- ▶ 6-sided shielded metal casing
- ▶ 2" x 1" x 0.4" metal package
- ▶ Wide 2:1 input range
- ▶ Highest efficiency up to 92 %
- ▶ High efficiency across load range
- ▶ Operating temperature range -40 °C to +70 °C
- ▶ Low no-load current
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

**NEW**  
Product



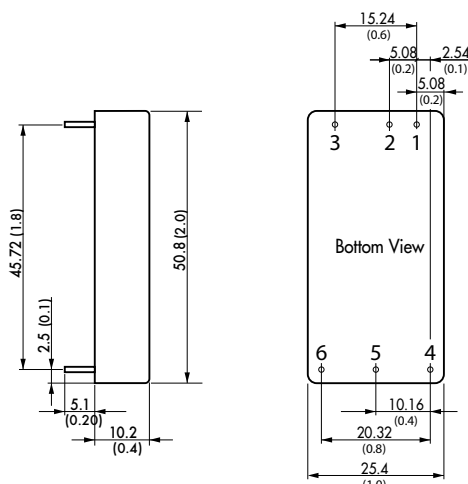
## Specifications

|                              |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | 1.0% max.  |
| Output voltage adjustment    | ±10% by external resistor<br>15 & 24 VDC models: +20/-10 %   |
| Input current at no load     | 10mA typ.  |
| Ripple & noise (20 MHz BW)   | - 24 VDC output models: <200 mVpk-pk<br>- other output models: <125 mVpk-pk                        |
| Conducted EMI                | EN 55022, class EN55022 class A (with external components)   |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 91% typ.   |
| Operating temperature range  | -40 °C to 70 °C<br>above 40 °C derating 1.7%/K   |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL /UL 60950-1, IEC/EN 60950-1, CB-report   |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                                 |
| Casing                       | 6-side shielded metal case with insulated baseplate  |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten60n.pdf">www.tracopower.com/products/ten60n.pdf</a> |

## Models

| Order code   | Input voltage | Output voltage | Output current max. |
|--------------|---------------|----------------|---------------------|
| TEN 60-1211N |               | 5.0 VDC        | 12000 mA            |
| TEN 60-1212N |               | 12 VDC         | 5000 mA             |
| TEN 60-1213N | 9 – 18 VDC    | 15 VDC         | 4000 mA             |
| TEN 60-1215N |               | 24 VDC         | 2500 mA             |
| TEN 60-1222N |               | ±12 VDC        | ±2500 mA            |
| TEN 60-1223N |               | ±15 VDC        | ±2000 mA            |
| TEN 60-2411N |               | 5.0 VDC        | 12000 mA            |
| TEN 60-2412N |               | 12 VDC         | 5000 mA             |
| TEN 60-2413N | 18 – 36 VDC   | 15 VDC         | 4000 mA             |
| TEN 60-2415N |               | 24 VDC         | 2500 mA             |
| TEN 60-2422N |               | ±12 VDC        | ±2500 mA            |
| TEN 60-2423N |               | ±15 VDC        | ±2000 mA            |
| TEN 60-4811N |               | 5.0 VDC        | 12000 mA            |
| TEN 60-4812N |               | 12 VDC         | 5000 mA             |
| TEN 60-4813N | 36 – 75 VDC   | 15 VDC         | 4000 mA             |
| TEN 60-4815N |               | 24 VDC         | 2500 mA             |
| TEN 60-4822N |               | ±12 VDC        | ±2500 mA            |
| TEN 60-4823N |               | ±15 VDC        | ±2000 mA            |

## Dimensions



() = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | Remote On/Off | Remote On/Off |
| 4   | + Vout        | + Vout        |
| 5   | - Vout        | Common        |
| 6   | Trim          | - Vout        |

# TEN-60WIN Series ▶ 60 W



- ▶ Highest power density 60 W converter
- ▶ 6-sided shielded metal casing
- ▶ 2" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input range
- ▶ Highest efficiency up to 92 %
- ▶ High efficiency across load range
- ▶ Operating temperature range -40 °C to +70 °C
- ▶ Low no-load current
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

**NEW**  
Product



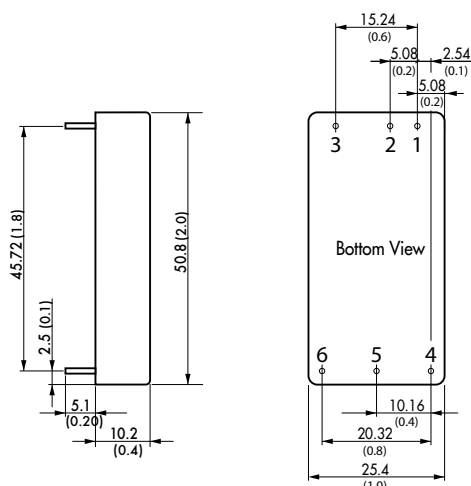
## Specifications

|                              |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | 1.0% max.  |
| Output voltage adjustment    | ±10% by external resistor<br>15 & 24 VDC models: +20/-10 %   |
| Ripple & noise (20 MHz BW)   | - 24 VDC output models: <200 mVpk-pk<br>- other output models: <125 mVpk-pk                            |
| Conducted EMI                | EN 55022, class EN55022 class A (with external components)   |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 91% typ.   |
| Operating temperature range  | -40 °C to +70 °C<br>above 42 °C derating 1.7%/K  |
| I/O isolation voltage        | 1500 VDC (60 sec.)   |
| Safety standards / approvals | cUL /UL 60950-1, IEC/EN 60950-1, CB-report   |
| Remote On/Off                | shutdown input for low input current (2.5 mA) in standby operation                                     |
| Casing                       | 6-side shielded metal case with insulated baseplate  |
| Full datasheet               | <a href="http://www.tracopower.com/products/ten60win.pdf">www.tracopower.com/products/ten60win.pdf</a> |

## Models

| Order code     | Input voltage | Output voltage | Output current max. |
|----------------|---------------|----------------|---------------------|
| TEN 60-2411WIN |               | 5.0 VDC        | 12000 mA            |
| TEN 60-2412WIN |               | 12 VDC         | 5000 mA             |
| TEN 60-2413WIN | 9 – 36 VDC    | 15 VDC         | 4000 mA             |
| TEN 60-2415WIN |               | 24 VDC         | 2500 mA             |
| TEN 60-2422WIN |               | ±12 VDC        | ±2500 mA            |
| TEN 60-2423WIN |               | ±15 VDC        | ±2000 mA            |
| TEN 60-4811WIN |               | 5.0 VDC        | 12000 mA            |
| TEN 60-4812WIN |               | 12 VDC         | 5000 mA             |
| TEN 60-4813WIN | 18 – 75 VDC   | 15 VDC         | 4000 mA             |
| TEN 60-4815WIN |               | 24 VDC         | 2500 mA             |
| TEN 60-4822WIN |               | ±12 VDC        | ±2500 mA            |
| TEN 60-4823WIN |               | ±15 VDC        | ±2000 mA            |

## Dimensions



( ) = Inches

| Pin | Single output | Dual output   |
|-----|---------------|---------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc)   |
| 2   | - Vin (GND)   | - Vin (GND)   |
| 3   | Remote On/Off | Remote On/Off |
| 4   | + Vout        | + Vout        |
| 5   | - Vout        | Common        |
| 6   | Trim          | - Vout        |

# TMDC-60 Series ▶ 60 W



- ▶ Fully encapsulated low profile plastic casing
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range -40°C to +80°C
- ▶ Highest efficiency up to 91%
- ▶ I/O isolation 2500 VDC
- ▶ Remote On/Off
- ▶ Power-good LED indicator
- ▶ Reverse input protection
- ▶ Optional DIN-rail mount adapter

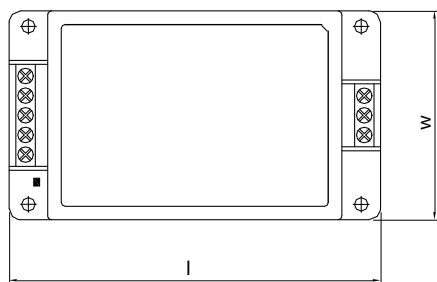
**NEW**  
Product



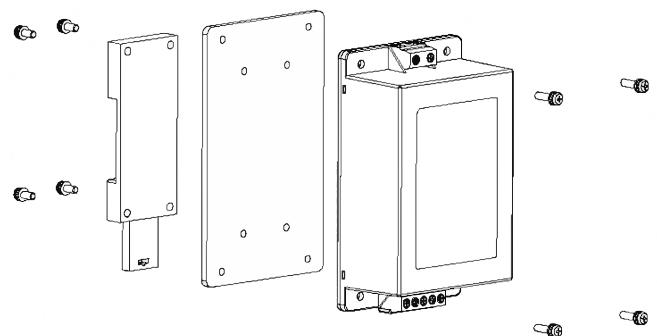
| Specifications              |   | Models            |                      |                       |                            |
|-----------------------------|---|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation             | 0.5% max.   | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation             | 1.0% max.   | TMDC 60-2411      | 9 – 36 VDC           | 5.1 VDC               | 12000 mA                   |
| Ripple & noise              | 5.1 VDC modesl: <100 mVpk-pk (20 MHz BW)<br>12 & 24 VDC modesl: <150 mVpk-pk (20 MHz BW)<br>48 VDC modesl: <200 mVpk-pk (20 MHz BW) | TMDC 60-2412      |                      | 12 VDC                | 5000 mA                    |
|                             |   | TMDC 60-2415      |                      | 24 VDC                | 2500 mA                    |
| Conducted EMI               | EN 55022, class EN55022 class A   | TMDC 60-2418      |                      | 48 VDC                | 1250 mA                    |
| Short circuit protection    | continuous, automatic recovery  | TMDC 60-4811      | 18 – 75 VDC          | 5.1 VDC               | 12000 mA                   |
| Efficiency                  | 90% typ.  | TMDC 60-4812      |                      | 12 VDC                | 5000 mA                    |
| Operating temperature range | -40 °C to +80 °C<br>above 70 °C derating 3.3%/K   | TMDC 60-4815      |                      | 24 VDC                | 2500 mA                    |
| I/O isolation voltage       | 2500 VDC (60 sec.) reinforced insulation  | TMDC 60-4818      |                      | 48 VDC                | 1250 mA                    |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)  |                   |                      |                       |                            |
| Remote On/Off               | shutdown input for low current in standby operation   |                   |                      |                       |                            |
| Casing                      | metal, with insulated baseplate   |                   |                      |                       |                            |
| Full datasheet              | <a href="http://www.tracopower.com/products/tmdc60.pdf">www.tracopower.com/products/tmdc60.pdf</a>                                  |                   |                      |                       |                            |

## Dimensions DIN-rail mount adapter TMP-MK2

| Type         | Length l   | Width w     | Height h    |
|--------------|------------|-------------|-------------|
| TMDC 60-xxxx | 112 (4.41) | 67.8 (2.67) | 38.0 (1.50) |



( ) = Inches



# TEP-75WI Series ▶ 75 W



- ▶ Rugged compact metal casing
- ▶ Ultra wide 4:1 input voltage range up to 160 VDC
- ▶ Very high efficiency up to 90 %
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Certified for railway applications EN 50155
- ▶ Input under voltage lockout
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC
- ▶ Adjustable output voltage
- ▶ Optional chassis mount adapter with screw terminal and adapter for DIN-rail mount



(Models pictured with chassis mount adapter and heat-sink)

| Specifications                      |   |
|-------------------------------------|---|
| Line regulation                     | 0.2% max.   |
| Load regulation                     | 0.3% max.   |
| Output voltage                      | +10% / -20% adjustable by external resistor   |
| Ripple & noise                      | <1% of Vout (20 MHz BW)   |
| EMC                                 | - Conducted noise: EN 55022, class EN55022 class A (with CMF option). On request: Common mode chokes for filter proposals to meet EN55022 class A/B<br>- Immunity: EN 50155 |
| Short circuit protection            | continuous, automatic recovery  |
| Reverse input protection            | parallel diode  |
| Efficiency                          | 88% typ.  |
| Operating temperature range         | -40 °C to +85°C with heat-sink for derating see datasheet   |
| Thermal protection                  | shutdown at 115 °C  |
| I/O isolation voltage               | 2250 VDC (60 sec.), basic insulation  |
| Safety standards / approvals        | cUL/UL 60950-1, IEC/EN 60950-1, EN50155   |
| Remote On/Off                       | shutdown input for low input current (3 mA) in standby operation  |
| Thermal shock and shock & vibration | EN 61373 / MIL-STD-810F   |
| Full datasheet                      | <a href="http://www.tracopower.com/products/tep75wi.pdf">www.tracopower.com/products/tep75wi.pdf</a>  |

## Models

| Order code    | Input voltage | Output voltage | Output current max. |
|---------------|---------------|----------------|---------------------|
| TEP 75-2411WI |               | 5.0 VDC        | 15.0 A              |
| TEP 75-2412WI |               | 12 VDC         | 6.3 A               |
| TEP 75-2413WI | 9 – 36 VDC    | 15 VDC         | 5.0 A               |
| TEP 75-2415WI |               | 24 VDC         | 3.2 A               |
| TEP 75-2416WI |               | 28 VDC         | 2.7 A               |
| TEP 75-2418WI |               | 48 VDC         | 1.6 A               |
| TEP 75-4811WI |               | 5.0 VDC        | 15.0 A              |
| TEP 75-4812WI |               | 12 VDC         | 6.3 A               |
| TEP 75-4813WI | 18 – 75 VDC   | 15 VDC         | 5.0 A               |
| TEP 75-4815WI |               | 24 VDC         | 3.2 A               |
| TEP 75-4816WI |               | 28 VDC         | 2.7 A               |
| TEP 75-4818WI |               | 48 VDC         | 1.6 A               |
| TEP 75-7211WI |               | 5.0 VDC        | 15.0 A              |
| TEP 75-7212WI |               | 12 VDC         | 6.3 A               |
| TEP 75-7213WI | 43 – 160 VDC  | 15 VDC         | 5.0 A               |
| TEP 75-7215WI |               | 24 VDC         | 3.2 A               |
| TEP 75-7216WI |               | 28 VDC         | 2.7 A               |
| TEP 75-7218WI |               | 48 VDC         | 1.6 A               |

### Options

Heat-sink: **TEP-HS1** (separate part, assembling on demand)

Chassis mount adapter with EMI-filter: add suffix **-CMF\***

DIN-rail mounting clip for chassis mount versions: **TEP-MK1**

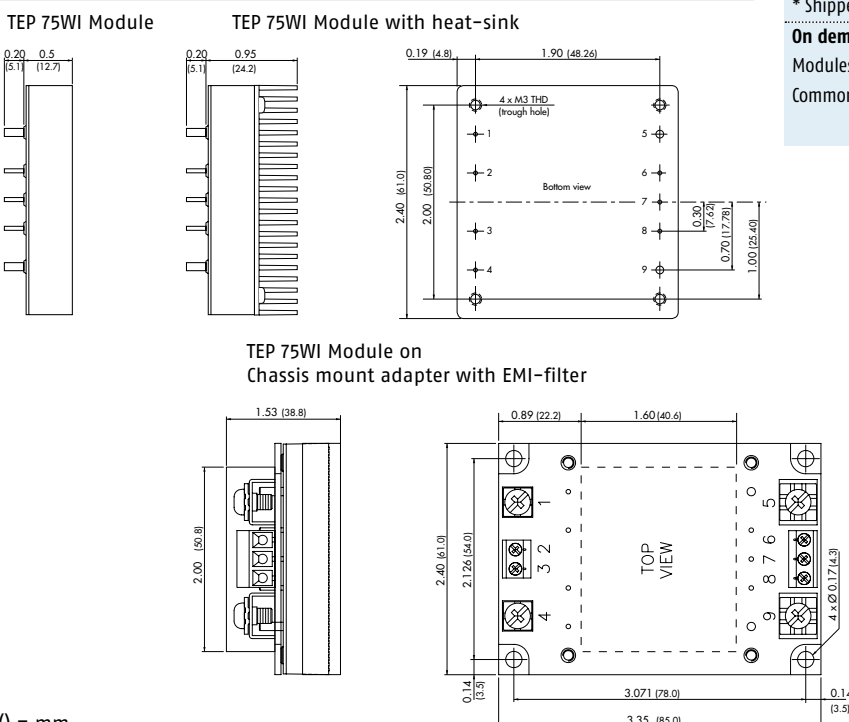
\* Shipped assembled with converter module

### On demand:

Modules with output voltages of 3.3 VDC

Common mode chokes for filter proposals to meet EN55022 class A/B

## Dimensions



| Pin |               |
|-----|---------------|
| 1   | - Vin (GND)   |
| 2   | Case          |
| 3   | Remote On/Off |
| 4   | + Vin (Vcc)   |
| 5   | - Vout        |
| 6   | - Sense       |
| 7   | Trim          |
| 8   | + Sense       |
| 9   | + Vout        |

# TEP-100 Series ▶ 100 W



- ▶ Rugged compact metal casing
- ▶ Wide 2:1 input voltage range
- ▶ Excellent efficiency up to 93 %
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Input under voltage lockout
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC
- ▶ Adjustable output voltage
- ▶ Optional chassis mount adapter with screw terminal and adapter for DIN-rail mount

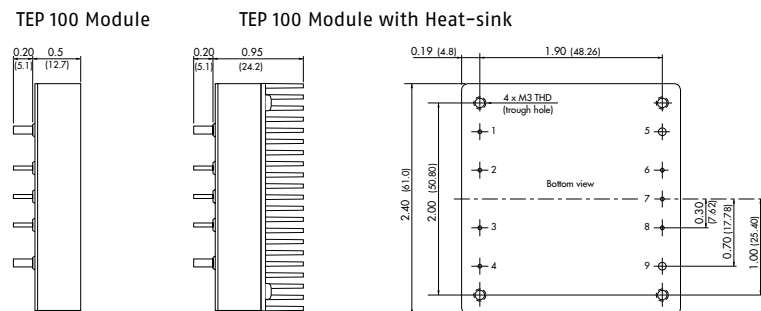


(Models pictured with chassis mount adapter and heat-sink)

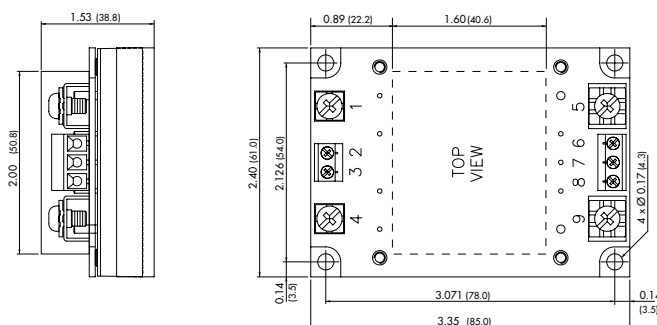
| Specifications               |  |
|------------------------------|--|
| Line regulation              | 0.2% max.  |
| Load regulation              | 0.3% max.  |
| Output voltage adjustmt      | +10 % / -20% adjustable by external resistor   |
| Ripple & noise (20 MHz BW)   | - 5 VDC output models: <75 mVpk-pk<br>- other output models: <1 % of Vout  |
| Conducted EMI                | EN 55022, class EN55022 class A (with CMF option)<br>On request: Common mode chokes for filter proposals to meet EN55022 class A/B |
| Short circuit protection     | continuous, automatic recovery   |
| Reverse input protection     | parallel diode   |
| Efficiency                   | 92 % typ.  |
| Operating temperature range  | -40 °C to +85 °C (with heat-sink)<br>for derating see datasheet  |
| Thermal protection           | shutdown at 115 °C   |
| I/O isolation voltage        | 2250 VDC (60 sec.), basic insulation   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Remote On/Off                | shutdown input for low input current (3 mA)<br>in standby operation  |
| Casing                       | shielded metal case with aluminium baseplate   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tep100.pdf">www.tracopower.com/products/tep100.pdf</a>                                 |

| Models       |               |                |                     |
|--------------|---------------|----------------|---------------------|
| Order code   | Input voltage | Output voltage | Output current max. |
| TEP 100-1210 |               | 3.3 VDC        | 25.0 A              |
| TEP 100-1211 |               | 5.0 VDC        | 20.0 A              |
| TEP 100-1212 |               | 12 VDC         | 8.4 A               |
| TEP 100-1213 | 9 – 18 VDC    | 15 VDC         | 6.7 A               |
| TEP 100-1215 |               | 24 VDC         | 4.2 A               |
| TEP 100-1216 |               | 28 VDC         | 3.6 A               |
| TEP 100-1218 |               | 48 VDC         | 2.1 A               |
| TEP 100-2410 |               | 3.3 VDC        | 25.0 A              |
| TEP 100-2411 |               | 5.0 VDC        | 20.0 A              |
| TEP 100-2412 |               | 12 VDC         | 8.4 A               |
| TEP 100-2413 | 18 – 36 VDC   | 15 VDC         | 6.7 A               |
| TEP 100-2415 |               | 24 VDC         | 4.2 A               |
| TEP 100-2416 |               | 28 VDC         | 3.6 A               |
| TEP 100-2418 |               | 48 VDC         | 2.1 A               |
| TEP 100-4810 |               | 3.0 VDC        | 25.0 A              |
| TEP 100-4811 |               | 5.0 VDC        | 20.0 A              |
| TEP 100-4812 |               | 12 VDC         | 8.4 A               |
| TEP 100-4813 | 36 – 75 VDC   | 15 VDC         | 6.7 A               |
| TEP 100-4815 |               | 24 VDC         | 4.2 A               |
| TEP 100-4816 |               | 28 VDC         | 3.6 A               |
| TEP 100-4818 |               | 48 VDC         | 2.1 A               |

## Dimensions



TEP 100 Module on Chassis mount adapter      TEP 100 Module on Chassis mount adapter with EMI-filter



( ) = mm

**Options**  
 Heat-sink: **TEP-HS1** (separate part, assembling on demand)  
 Chassis mount adapter with EMI-filter: add suffix **-CMF\***  
 DIN-rail mounting clip for chassis mount versions: **TEP-MK1**  
 \* Shipped assembled with converter module

**On demand:**  
 Common mode chokes for filter proposals to meet EN55022 class A/B

| Pin |               |
|-----|---------------|
| 1   | - Vin (GND)   |
| 2   | Case          |
| 3   | Remote On/Off |
| 4   | + Vin (Vcc)   |
| 5   | - Vout        |
| 6   | - Sense       |
| 7   | Trim          |
| 8   | + Sense       |
| 9   | + Vout        |

# TEP-100WIR Series ▶ 100 W



- ▶ High power density
- ▶ Ultra wide 4:1 input voltage range up to 160 VDC
- ▶ Very high efficiency up to 92 %
- ▶ Certified for railway applications EN 50155
- ▶ Over temperature protection
- ▶ Input under voltage lockout
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC
- ▶ Adjustable output voltage
- ▶ Shielded metal case with aluminium baseplate

**NEW**  
Product



(Model pictured with mounted heat-sink)

| Specifications                      |   |
|-------------------------------------|---|
| Line regulation                     | 0.1% max.   |
| Load regulation                     | 0.1% max.   |
| Output voltage                      | +10 % / -20 % adjustable by external resistor   |
| Ripple & noise (20 MHz BW)          | <1 % of Vout  |
| EMC                                 | - Conducted noise: Common mode chokes for filter proposals to meet EN55022 class A/B on demand<br>- Immunity: EN50155 |
| Short circuit protection            | continuous, automatic recovery  |
| Reverse input protection            | parallel diode  |
| Efficiency                          | 90 % typ.   |
| Operating temperature range         | -40 °C to +75°C with heat-sink<br>for derating see datasheet  |
| Thermal protection                  | shutdown at 120 °C  |
| I/O isolation voltage               | 2250 VDC (60 sec.), basic insulation  |
| Safety standards / approvals        | cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, (reports pending)   |
| Thermal shock and shock & vibration | EN 61373 / MIL-STD-810F   |
| Remote On/Off                       | shutdown input for low input current (3 mA) in standby operation  |
| Full datasheet                      | <a href="http://www.tracopower.com/products/tep100wir.pdf">www.tracopower.com/products/tep100wir.pdf</a>              |

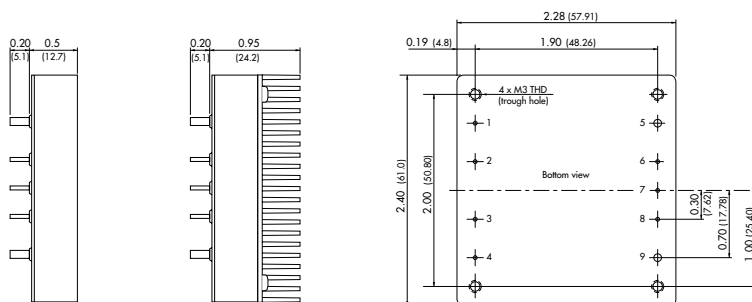
| Models          |               |                |                     |
|-----------------|---------------|----------------|---------------------|
| Order code      | Input voltage | Output voltage | Output current max. |
| TEP 100-2412WIR |               | 12 VDC         | 8.4 A               |
| TEP 100-2415WIR | 8.5 – 36 VDC  | 24 VDC         | 4.2 A               |
| TEP 100-2416WIR |               | 28 VDC         | 3.6 A               |
| TEP 100-2418WIR |               | 48 VDC         | 2.1 A               |
| TEP 100-4812WIR |               | 12 VDC         | 8.4 A               |
| TEP 100-4815WIR | 16.5 – 75 VDC | 24 VDC         | 4.2 A               |
| TEP 100-4816WIR |               | 28 VDC         | 3.6 A               |
| TEP 100-4818WIR |               | 48 VDC         | 2.1 A               |
| TEP 100-7212WIR |               | 12 VDC         | 8.4 A               |
| TEP 100-7215WIR | 43 – 160 VDC  | 24 VDC         | 4.2 A               |
| TEP 100-7216WIR |               | 28 VDC         | 3.6 A               |
| TEP 100-7218WIR |               | 48 VDC         | 2.1 A               |

**Options**  
 Heat-sink: TEP-HS1 (separate part, assembling on demand)  
 Chassis mount adapter with EMI-filter: add suffix **-CMF\***  
 DIN-rail mounting clip for chassis mount versions: **TEP-MK1**  
 \* Shipped assembled with converter module

**On demand:**  
 Modules with output voltages of 3.3 VDC  
 Common mode chokes for filter proposals to meet EN55022 class A/B

## Dimensions

TEP 100WIR Modul      TEP 100WIR Module with heat-sink



| Pin |               |
|-----|---------------|
| 1   | - Vin (GND)   |
| 2   | Case          |
| 3   | Remote On/Off |
| 4   | + Vin (Vcc)   |
| 5   | - Vout        |
| 6   | - Sense       |
| 7   | Trim          |
| 8   | + Sense       |
| 9   | + Vout        |

( ) = mm

# TEQ-100WIR Series ▶ 100 W



- ▶ High power block with excellent thermal convection
- ▶ Operating temperature  $-40^{\circ}\text{C}$  up to  $+85^{\circ}\text{C}$  without derating!
- ▶ Increased shock & vibration resistance
- ▶ Ultra wide 4:1 input voltage range up to 160 VDC
- ▶ Certified for railway applications EN 50155
- ▶ UL 508 approval
- ▶ Excellent efficiency up to 90%
- ▶ Low no-load input current
- ▶ Input filter to meet EN 55022, class A
- ▶ I/O isolation 2250 VDC
- ▶ Input undervoltage-lockout circuit

**NEW**  
Product



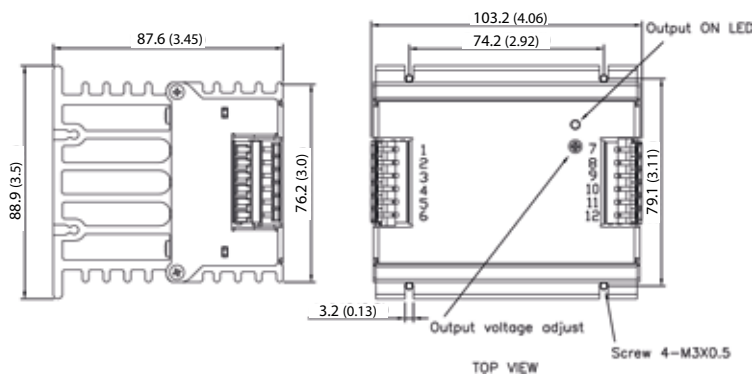
## Specifications

|                                     |   |
|-------------------------------------|---|
| Line regulation                     | 0.1% max.   |
| Load regulation                     | 0.1% max.   |
| Output voltage                      | +10% / -20% adjustable by external resistor   |
| Ripple & noise (20 MHz BW)          | <1% of Vout   |
| EMC                                 | - Conducted noise: EN5022 class A<br>- Immunity: EN50155  |
| Short circuit protection            | continuous, automatic recovery  |
| Reverse input protection            | parallel diode  |
| Efficiency                          | 90% typ.  |
| Operating temperature range         | $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ without derating<br>up to $+105^{\circ}\text{C}$ with derating |
| Thermal protection                  | shutdown at $120^{\circ}\text{C}$   |
| I/O isolation voltage               | 2250 VDC (60 sec.), basic insulation  |
| Safety standards / approvals        | cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, UL508   |
| Thermal shock and shock & vibration | EN 61373 / MIL-STD-810F   |
| Remote On/Off                       | shutdown input for low input current (3 mA) in standby operation  |
| Full datasheet                      | <a href="http://www.tracopower.com/products/teq100wir.pdf">www.tracopower.com/products/teq100wir.pdf</a>      |

## Models

| Order code      | Input voltage | Output voltage | Output current max. |
|-----------------|---------------|----------------|---------------------|
| TEQ 100-2412WIR | 8.5 - 36 VDC  | 12 VDC         | 8.4 A               |
| TEQ 100-2415WIR |               | 24 VDC         | 4.2 A               |
| TEQ 100-2416WIR | 16.5 - 75 VDC | 28 VDC         | 3.6 A               |
| TEQ 100-2418WIR |               | 48 VDC         | 2.1 A               |
| TEQ 100-4812WIR | 43 - 160 VDC  | 12 VDC         | 8.4 A               |
| TEQ 100-4815WIR |               | 24 VDC         | 4.2 A               |
| TEQ 100-4816WIR | 48 VDC        | 28 VDC         | 3.6 A               |
| TEQ 100-4818WIR |               | 48 VDC         | 2.1 A               |
| TEQ 100-7212WIR | 48 VDC        | 12 VDC         | 8.4 A               |
| TEQ 100-7215WIR |               | 24 VDC         | 4.2 A               |
| TEQ 100-7216WIR | 48 VDC        | 28 VDC         | 3.6 A               |
| TEQ 100-7218WIR |               | 48 VDC         | 2.1 A               |

## Dimensions



| Pin |               |
|-----|---------------|
| 1   | - Vin (GND)   |
| 2   | - Vin (GND)   |
| 3   | No con.       |
| 4   | Remote On/Off |
| 5   | + Vin         |
| 6   | + Vin         |
| 7   | - Vout        |
| 8   | - Vout        |
| 9   | - Sense       |
| 10  | + Sense       |
| 11  | + Vout        |
| 12  | + Vout        |

() = Inches



# TEP-150WI Series ▶ 150 W



CB  
Scheme



- ▶ Highest power density
- ▶ Wide 4:1 input voltage range
- ▶ Over temperature protection
- ▶ Constant current characteristic at 100 % load for battery load applications
- ▶ Certified for railway applications EN 50155
- ▶ Input under voltage lockout
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC (basic insulation)
- ▶ Easy chassis and wall mounting

**NEW**  
Models



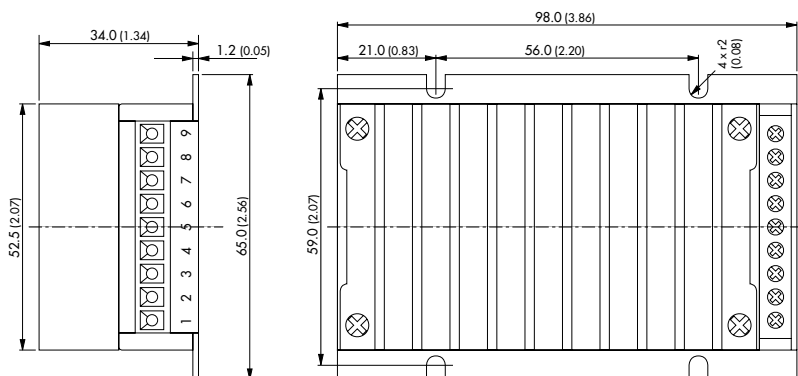
| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 0.2% max.  |
| Load regulation             | 0.4 % max.   |
| Output voltage adjustment   | +20 % by external resistor   |
| Ripple & noise (20 MHz BW)  | <1 % of Vout   |
| EMC                         | EN 55022, class EN55022 class A<br>EN 55022, class B with filter module (suffix -F)<br>EN 50155  |
| Short circuit protection    | continuous, automatic recovery   |
| Over-temperature protection | switch off at over-temperature, automatic restart.   |
| Reverse input protection    | parallel diode   |
| Efficiency                  | 86 % typ.  |
| Operating temperature range | -40 °C to +75 °C<br>for derating see datasheet   |
| I/O isolation voltage       | 2250 VDC (60 sec.), basic insulation   |
| Safety standards            | cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, CB test report   |
| Remote On/Off               | shutdown input for low input current (3 mA) in standby operation (passive input = On)<br>On demand: reverse function (passive input = off) |
| Casing                      | shielded metal case, IP55  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tep150wi.pdf">www.tracopower.com/products/tep150wi.pdf</a>                                     |

| Models         |               |                |                     |
|----------------|---------------|----------------|---------------------|
| Order code     | Input voltage | Output voltage | Output current max. |
| TEP 150-2412WI |               | 12 VDC         | 12.5 A              |
| TEP 150-2413WI |               | 15 VDC         | 10.0 A              |
| TEP 150-2415WI | 9 – 36 VDC    | 24 VDC         | 6.3 A               |
| TEP 150-2416WI |               | 28 VDC         | 5.4 A               |
| TEP 150-2418WI |               | 48 VDC         | 3.2 A               |
| TEP 150-4812WI |               | 12 VDC         | 12.5 A              |
| TEP 150-4813WI |               | 15 VDC         | 10.0 A              |
| TEP 150-4815WI | 18 – 75 VDC   | 24 VDC         | 6.3 A               |
| TEP 150-4816WI |               | 28 VDC         | 5.4 A               |
| TEP 150-4818WI |               | 48 VDC         | 3.2 A               |
| TEP 150-7212WI |               | 12 VDC         | 12.5 A              |
| TEP 150-7213WI |               | 15 VDC         | 10.0 A              |
| TEP 150-7215WI | 43 – 160 VDC  | 24 VDC         | 6.3 A               |
| TEP 150-7216WI |               | 28 VDC         | 5.4 A               |
| TEP 150-7218WI |               | 48 VDC         | 3.2 A               |

Modules with input filter to meet EN 55022 class B. Add suffix **-F**



## Dimensions



( ) = Inches

| Con. |               |
|------|---------------|
| 1    | + Vin (Vcc)   |
| 2    | + Vin (Vcc)   |
| 3    | - Vin (GND)   |
| 4    | - Vin (GND)   |
| 5    | Remote On/Off |
| 6    | + Vout        |
| 7    | - Vout        |
| 8    | Trim          |
| 9    | Trim          |

# TEP-160 Series ▶ 150 to 196 W



- ▶ High power density
- ▶ Wide 2:1 input voltage range
- ▶ Excellent efficiency up to 93 %
- ▶ Over temperature protection
- ▶ Input under voltage lockout
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC (basic insulation)
- ▶ Adjustable output voltage
- ▶ Shielded metal case with aluminium baseplate



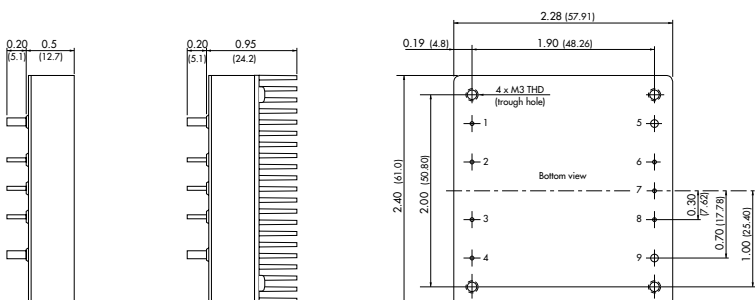
(Model pictured with mounted heat-sink)

| Specifications               |  | Models   |                      |                       |                            |
|------------------------------|--|--|----------------------|-----------------------|----------------------------|
| Line regulation              | 0.2% max.  | <b>Order code</b>  | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | 0.3% max.  | TEP 160-2412   |                      | 12 VDC                | 13 A                       |
| Output voltage               | +10 % / -20 % adjustable by external resistor  | TEP 160-2413   |                      | 15 VDC                | 10 A                       |
| Ripple & noise (20 MHz BW)   | - 5 VDC output models: <75 mVpk-pk<br>- other output models: <1 % of Vout                          | TEP 160-2415   | 16.5 – 36 VDC        | 24 VDC                | 6.5 A                      |
| Short circuit protection     | continuous, automatic recovery   | TEP 160-2416   |                      | 28 VDC                | 5.5 A                      |
| Reverse input protection     | parallel diode   | TEP 160-2418   |                      | 48 VDC                | 3.3 A                      |
| Efficiency                   | 90% typ.   | TEP 160-4812   |                      | 12 VDC                | 16 A                       |
| Operating temperature range  | -40 °C to +75°C, for derating see datasheet  | TEP 160-4813   |                      | 15 VDC                | 13 A                       |
| Thermal protection           | shutdown at 115 °C   | TEP 160-4815   | 33 – 75 VDC          | 24 VDC                | 8 A                        |
| I/O isolation voltage        | 2250 VDC (60 sec.), basic insulation   | TEP 160-4816   |                      | 28 VDC                | 7 A                        |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   | TEP 160-4818   |                      | 48 VDC                | 4 A                        |
| Remote On/Off                | shutdown input for low input current (3 mA) in standby operation                                   | TEP 160-48153  |                      | 53 VDC                | 3.7 A                      |
| Full datasheet               | <a href="http://www.tracopower.com/products/tep160.pdf">www.tracopower.com/products/tep160.pdf</a> | <b>Options:</b><br>Heat-sink: <b>TEP-HS1</b> (separate part, factory assembling on demand)<br><b>On demand:</b><br>Modules with input voltage range of 8.5 – 22 VDC<br>Modules with output voltages of 3.3 or 5.0 VDC<br>Common mode chokes for filter proposals to meet EN55022 class A/B |                      |                       |                            |

## Dimensions

TEP 160 Module

TEP 160 Module with heat-sink



() = mm

| Pin |               |
|-----|---------------|
| 1   | - Vin (GND)   |
| 2   | Case          |
| 3   | Remote On/Off |
| 4   | + Vin (Vcc)   |
| 5   | - Vout        |
| 6   | - Sense       |
| 7   | Trim          |
| 8   | + Sense       |
| 9   | + Vout        |

## TEP-160WIR Series ▶ 144 to 182 W



- ▶ High power density
- ▶ Ultra wide 4:1 input voltage range up to 160 VDC
- ▶ Very high efficiency up to 91%
- ▶ Certified for railway applications EN 50155
- ▶ Over temperature protection
- ▶ Input under voltage lockout
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC (basic insulation)
- ▶ Adjustable output voltage
- ▶ Shielded metal case with aluminium baseplate



(Model pictured with mounted heat-sink)

## Specifications

|                                     |   |
|-------------------------------------|---|
| Line regulation                     | 0.2% max.   |
| Load regulation                     | 0.25% max.  |
| Output voltage                      | +10% / -20% adjustable by external resistor   |
| Ripple & noise<br>(20 MHz BW)       | <1% of Vout   |
| EMC                                 | - Conducted noise: Common mode chokes for filter proposals to meet EN55022 class A/B on demand<br>- Immunity: EN50155 |
| Short circuit protection            | continuous, automatic recovery  |
| Reverse input protection            | parallel diode  |
| Efficiency                          | 88% typ.  |
| Operating temperature range         | -40 °C to +75°C with heat-sink<br>for derating see datasheet  |
| Thermal protection                  | shutdown at 120 °C  |
| I/O isolation voltage               | 2250 VDC (60 sec.), basic insulation  |
| Safety standards / approvals        | cUL/UL 60950-1, IEC/EN 60950-1, EN 50155  |
| Thermal shock and shock & vibration | EN 61373 / MIL-STD-810F   |
| Remote On/Off                       | shutdown input for low input current (3 mA)<br>in standby operation   |
| Full datasheet                      | <a href="http://www.tracopower.com/products/tep160wir.pdf">www.tracopower.com/products/tep160wir.pdf</a>              |

## Models

| Order code      | Input voltage | Output voltage | Output current max. |
|-----------------|---------------|----------------|---------------------|
| TEP 160-2412WIR |               | 12 VDC         | 12 A                |
| TEP 160-2413WIR |               | 15 VDC         | 9.5 A               |
| TEP 160-2415WIR | 8.5 – 36 VDC  | 24 VDC         | 6.0 A               |
| TEP 160-2416WIR |               | 28 VDC         | 5.0 A               |
| TEP 160-2418WIR |               | 48 VDC         | 3.0 A               |
| TEP 160-4812WIR |               | 12 VDC         | 13 A                |
| TEP 160-4813WIR |               | 15 VDC         | 10 A                |
| TEP 160-4815WIR | 16.5 – 75 VDC | 24 VDC         | 6.5 A               |
| TEP 160-4816WIR |               | 28 VDC         | 5.5 A               |
| TEP 160-4818WIR |               | 48 VDC         | 3.2 A               |
| TEP 160-7212WIR |               | 12 VDC         | 15 A                |
| TEP 160-7213WIR |               | 15 VDC         | 12 A                |
| TEP 160-7215WIR | 43 – 160 VDC  | 24 VDC         | 7.5 A               |
| TEP 160-7216WIR |               | 28 VDC         | 6.5 A               |
| TEP 160-7218WIR |               | 48 VDC         | 3.8 A               |

## Options:

Heat-sink: **TEP-HS1** (separate part, factory assembling on demand)

## On demand:

Modules with output voltages of 3.3 or 5.0 VDC

Adapter for Chassis mount and DIN-rail mount (with screw terminal)

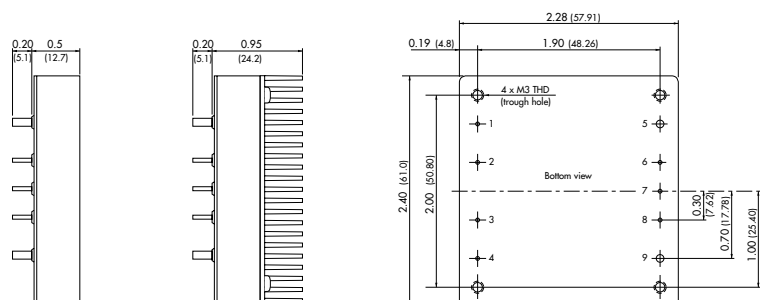
Chassis mount models with input filter to meet EN 55022 class A

Common mode chokes for filter proposals to meet EN55022 class A/B

## Dimensions

TEP 160WIR Module

TEP 160WIR Module with heat-sink



## Pin

|   |               |
|---|---------------|
| 1 | - Vin (GND)   |
| 2 | Case          |
| 3 | Remote On/Off |
| 4 | + Vin (Vcc)   |
| 5 | - Vout        |
| 6 | - Sense       |
| 7 | Trim          |
| 8 | + Sense       |
| 9 | + Vout        |

() = mm

# TEQ-160WIR Series ▶ 156 to 182 W



- ▶ High power block with excellent thermal convection
- ▶ Operating temperature  $-40^{\circ}\text{C}$  up to  $+75^{\circ}\text{C}$  without derating!
- ▶ Increased shock & vibration resistance
- ▶ Ultra wide 4:1 input voltage range up to 160 VDC
- ▶ Certified for railway applications EN 50155
- ▶ UL 508 approval
- ▶ Excellent efficiency up to 90%
- ▶ Low no-load input current
- ▶ Input filter to meet EN 55022, class A
- ▶ I/O isolation 2250 VDC
- ▶ Inout undervoltage-lockout circuit

**NEW**  
Product



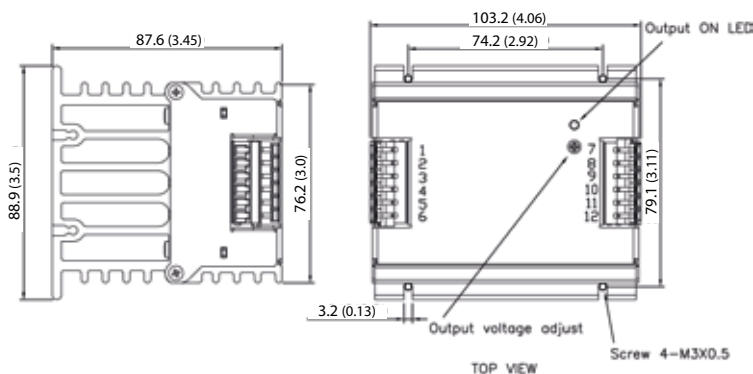
## Specifications

|                                     |   |
|-------------------------------------|---|
| Line regulation                     | 0.1% max.   |
| Load regulation                     | 0.1% max.   |
| Output voltage                      | +10% / -20% adjustable by external resistor   |
| Ripple & noise (20 MHz BW)          | <1% of Vout   |
| EMC                                 | - Conducted noise: EN5022 class A<br>- Immunity: EN50155  |
| Short circuit protection            | continuous, automatic recovery  |
| Reverse input protection            | parallel diode  |
| Efficiency                          | 89% typ.  |
| Operating temperature range         | $-40^{\circ}\text{C}$ to $+75^{\circ}\text{C}$ without derating<br>up to $+105^{\circ}\text{C}$ with derating |
| Thermal protection                  | shutdown at $120^{\circ}\text{C}$   |
| I/O isolation voltage               | 2250 VDC (60 sec.), basic insulation  |
| Safety standards / approvals        | cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, UL508   |
| Thermal shock and shock & vibration | EN 61373 / MIL-STD-810F   |
| Remote On/Off                       | shutdown input for low input current (3 mA) in standby operation  |
| Full datasheet                      | <a href="http://www.tracopower.com/products/teq160wir.pdf">www.tracopower.com/products/teq160wir.pdf</a>      |

## Models

| Order code      | Input voltage | Output voltage | Output current max. |
|-----------------|---------------|----------------|---------------------|
| TEQ 160-4812WIR |               | 12 VDC         | 13 A                |
| TEQ 160-4815WIR | 18 - 75 VDC   | 24 VDC         | 6.5 A               |
| TEQ 160-4816WIR |               | 28 VDC         | 5.5 A               |
| TEQ 160-4818WIR |               | 48 VDC         | 3.2 A               |
| TEQ 160-7212WIR |               | 12 VDC         | 15 A                |
| TEQ 160-7215WIR | 43 - 160 VDC  | 24 VDC         | 7.5 A               |
| TEQ 160-7216WIR |               | 28 VDC         | 6.5 A               |
| TEQ 160-7218WIR |               | 48 VDC         | 3.8 A               |

## Dimensions



| Pin |               |
|-----|---------------|
| 1   | - Vin (GND)   |
| 2   | - Vin (GND)   |
| 3   | No con.       |
| 4   | Remote On/Off |
| 5   | + Vin         |
| 6   | + Vin         |
| 7   | - Vout        |
| 8   | - Vout        |
| 9   | - Sense       |
| 10  | + Sense       |
| 11  | + Vout        |
| 12  | + Vout        |

() = Inches

# TEP-200WIR Series ▶ 180 to 240 W



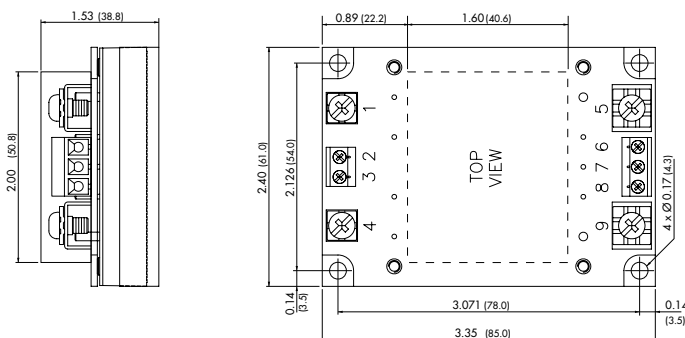
- ▶ Chassis mount converter with screw terminal
- ▶ Ultra wide 4:1 input voltage range
- ▶ EMI filter to meet EN 55022 class A
- ▶ Very high efficiency up to 91%
- ▶ Certified for railway applications EN 50155
- ▶ Input under voltage lockout
- ▶ Over temperature protection
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC
- ▶ Adjustable output voltage
- ▶ Low no-load input current



| Specifications                      |  |
|-------------------------------------|--|
| Line regulation                     | 0.2% max.  |
| Load regulation                     | 0.3% max.  |
| Output voltage                      | +10% / -20% adjustable by external resistor  |
| Ripple & noise                      | <1% of Vout (20 MHz BW)  |
| EMC                                 | - Conducted noise: EN55022 class A<br>- Immunity: EN50155  |
| Short circuit protection            | continuous, automatic recovery   |
| Reverse input protection            | parallel diode   |
| Efficiency                          | 90% typ.   |
| Operating temperature range         | -40 °C to +75°C with heat-sink<br>for derating see datasheet   |
| Thermal protection                  | shutdown at 120 °C   |
| I/O isolation voltage               | 2250 VDC (60 sec.), basic insulation   |
| Safety standards / approvals        | cUL/UL 60950-1, IEC/EN 60950-1, EN 50155   |
| Thermal shock and shock & vibration | EN 61373 / MIL-STD-810F  |
| Remote On/Off                       | shutdown input for low input current (3 mA)<br>in standby operation                                      |
| Full datasheet                      | <a href="http://www.tracopower.com/products/tep200wir.pdf">www.tracopower.com/products/tep200wir.pdf</a> |

| Models   |               |                |                     |
|--|---------------|----------------|---------------------|
| Order code   | Input voltage | Output voltage | Output current max. |
| TEP 200-2412WIRCMF   |               | 12 VDC         | 15 A                |
| TEP 200-2413WIRCMF   |               | 15 VDC         | 12 A                |
| TEP 200-2415WIRCMF   | 8.5 – 36 VDC  | 24 VDC         | 7.5 A               |
| TEP 200-2416WIRCMF   |               | 28 VDC         | 6.5 A               |
| TEP 200-2418WIRCMF   |               | 48 VDC         | 3.7 A               |
| TEP 200-4812WIRCMF   |               | 12 VDC         | 18 A                |
| TEP 200-4813WIRCMF   |               | 15 VDC         | 14 A                |
| TEP 200-4815WIRCMF   | 16.5 – 75 VDC | 24 VDC         | 9.0 A               |
| TEP 200-4816WIRCMF   |               | 28 VDC         | 7.5 A               |
| TEP 200-4818WIRCMF   |               | 48 VDC         | 4.5 A               |
| TEP 200-7212WIRCMF   |               | 12 VDC         | 20 A                |
| TEP 200-7213WIRCMF   |               | 15 VDC         | 16 A                |
| TEP 200-7215WIRCMF   | 43 – 160 VDC  | 24 VDC         | 10 A                |
| TEP 200-7216WIRCMF   |               | 28 VDC         | 8.5 A               |
| TEP 200-7218WIRCMF   |               | 48 VDC         | 5 A                 |
| <b>On demand</b>   |               |                |                     |
| Models with 3.3 VDC or 5.0 VDC output                                      |               |                |                     |
| Models with 53 VDC output (input voltage range 33 – 75 VDC)                |               |                |                     |
| Negative (passive = Off) Remote On/Off function (standard is passive = On) |               |                |                     |

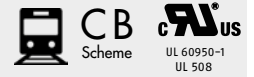
## Dimensions



( ) = mm

| Pin |               |
|-----|---------------|
| 1   | - Vin (GND)   |
| 2   | Case          |
| 3   | Remote On/Off |
| 4   | + Vin (Vcc)   |
| 5   | - Vout        |
| 6   | - Sense       |
| 7   | Trim          |
| 8   | + Sense       |
| 9   | + Vout        |

# TEQ-200WIR Series ▶ 216 to 240 W



- ▶ High power block with excellent thermal convection
- ▶ Operating temperature  $-40^{\circ}\text{C}$  up to  $+70^{\circ}\text{C}$  without derating!
- ▶ Increased shock & vibration resistance
- ▶ Ultra wide 4:1 input voltage range up to 160 VDC
- ▶ Certified for railway applications EN 50155
- ▶ UL 508 approval
- ▶ Excellent efficiency up to 90%
- ▶ Low no-load input current
- ▶ Input filter to meet EN 55022, class A
- ▶ I/O isolation 2250 VDC
- ▶ Inout undervoltage-lockout circuit

**NEW**  
Product



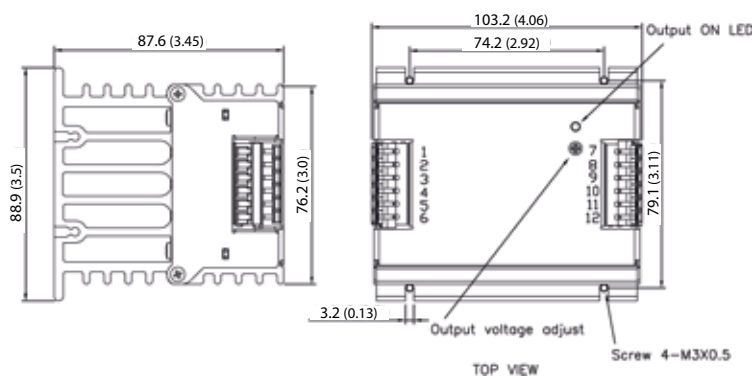
## Specifications

|                                     |   |
|-------------------------------------|---|
| Line regulation                     | 0.1% max.   |
| Load regulation                     | 0.1% max.   |
| Output voltage                      | +10% / -20% adjustable by external resistor   |
| Ripple & noise (20 MHz BW)          | <1% of Vout   |
| EMC                                 | - Conducted noise: EN55022 class A<br>- Immunity: EN50155   |
| Short circuit protection            | continuous, automatic recovery  |
| Reverse input protection            | parallel diode  |
| Efficiency                          | 89% typ.  |
| Operating temperature range         | $-40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ without derating<br>above $70^{\circ}\text{C}$ derating 3%/K |
| Thermal protection                  | shutdown at $120^{\circ}\text{C}$   |
| I/O isolation voltage               | 2250 VDC (60 sec.), basic insulation  |
| Safety standards / approvals        | cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, UL508   |
| Thermal shock and shock & vibration | EN 61373 / MIL-STD-810F   |
| Remote On/Off                       | shutdown input for low input current (3 mA) in standby operation  |
| Full datasheet                      | <a href="http://www.tracopower.com/products/teq200wir.pdf">www.tracopower.com/products/teq200wir.pdf</a>    |

## Models

| Order code      | Input voltage | Output voltage | Output current max. |
|-----------------|---------------|----------------|---------------------|
| TEQ 200-4812WIR |               | 12 VDC         | 18 A                |
| TEQ 200-4815WIR | 18 - 75 VDC   | 24 VDC         | 9.0 A               |
| TEQ 200-4816WIR |               | 28 VDC         | 7.5 A               |
| TEQ 200-4818WIR |               | 48 VDC         | 4.5 A               |
| TEQ 200-7212WIR |               | 12 VDC         | 20 A                |
| TEQ 200-7215WIR | 43 - 160 VDC  | 24 VDC         | 10 A                |
| TEQ 200-7216WIR |               | 28 VDC         | 8.5 A               |
| TEQ 200-7218WIR |               | 48 VDC         | 5.0 A               |

## Dimensions



| Pin |               |
|-----|---------------|
| 1   | - Vin (GND)   |
| 2   | - Vin (GND)   |
| 3   | No con.       |
| 4   | Remote On/Off |
| 5   | + Vin         |
| 6   | + Vin         |
| 7   | - Vout        |
| 8   | - Vout        |
| 9   | - Sense       |
| 10  | + Sense       |
| 11  | + Vout        |
| 12  | + Vout        |

( ) = Inches

# TEQ-300WIR Series ▶ 300 W



- ▶ High power block with excellent thermal convection
- ▶ Operating temperature  $-40^{\circ}\text{C}$  up to  $+55^{\circ}\text{C}$  without derating!
- ▶ Increased shock & vibration resistance
- ▶ Ultra wide 4:1 input voltage range
- ▶ Certified for railway applications EN 50155
- ▶ Excellent efficiency up to 90%
- ▶ Input filter to meet EN 55022, class A
- ▶ I/O isolation 3000 VDC
- ▶ Undervoltage lockout circuit
- ▶ Soft start
- ▶ Constant current characteristic at 100 % load

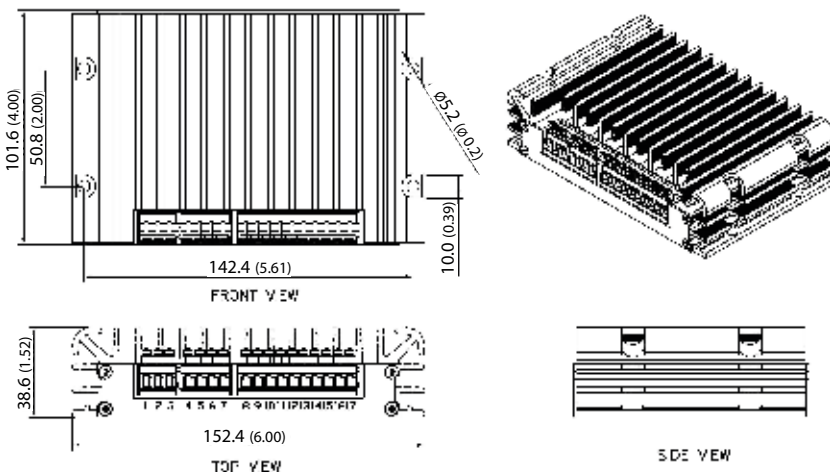
**NEW**  
Product



| Specifications                      |  |
|-------------------------------------|--|
| Line regulation                     | 0.1% max.  |
| Load regulation                     | 0.1% max.  |
| Output voltage                      | +10 % / -20 % adjustable by external resistor  |
| Ripple & noise (20 MHz BW)          | <1 % of Vout   |
| EMC                                 | - Conducted noise: EN55022 class A<br>- Immunity: EN50155  |
| Short circuit protection            | continuous, automatic recovery   |
| Reverse input protection            | parallel diode   |
| Efficiency                          | 89% typ.   |
| Operating temperature range         | $-40^{\circ}\text{C}$ to $+55^{\circ}\text{C}$ without derating<br>up to $+75^{\circ}\text{C}$ with derating |
| Thermal protection                  | shutdown at $120^{\circ}\text{C}$  |
| I/O isolation voltage               | 2250 VDC (60 sec.), basic insulation   |
| Safety standards / approvals        | cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, UL508 (reports pending)  |
| Thermal shock and shock & vibration | EN 61373 / MIL-STD-810F  |
| Remote On/Off                       | shutdown input for low input current (3 mA) in standby operation   |
| Full datasheet                      | <a href="http://www.tracopower.com/products/teq300wir.pdf">www.tracopower.com/products/teq300wir.pdf</a>     |

| Models          |               |                |                     |
|-----------------|---------------|----------------|---------------------|
| Order code      | Input voltage | Output voltage | Output current max. |
| TEQ 300-4812WIR | 18 - 75 VDC   | 12 VDC         | 25 A                |
| TEQ 300-4815WIR |               | 24 VDC         | 12.5 A              |
| TEQ 300-4816WIR | 43 - 160 VDC  | 28 VDC         | 11 A                |
| TEQ 300-4818WIR |               | 48 VDC         | 6.5 A               |
| TEQ 300-7212WIR |               | 12 VDC         | 27 A                |
| TEQ 300-7215WIR |               | 24 VDC         | 13.5 A              |
| TEQ 300-7216WIR | 48 VDC        | 28 VDC         | 12 A                |
| TEQ 300-7218WIR |               | 48 VDC         | 7 A                 |

## Dimensions



| Pin        |                |
|------------|----------------|
| 1, 2, 3    | + Vin          |
| 4, 5, 6    | - Vin          |
| 7          | Remote On/Off  |
| 8, 9, 10   | + Vout         |
| 11, 12, 13 | - Vout         |
| 14         | + Sense        |
| 15         | Trim           |
| 16         | - Sense        |
| 17         | Current share* |

\* Option

( ) = Inches

# TMV-EN Series ▶ 1 W



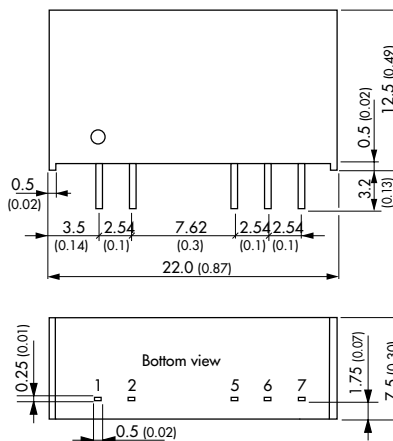
- ▶ SIP package
- ▶ Reinforced insulation rated for 300 VAC working voltage
- ▶ IEC/UL 60950-1 safety approvals
- ▶ I/O isolation voltage 3000 VACrms
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Over voltage category OCV III



| Specifications               |  |
|------------------------------|--|
| Line regulation              | non regulated  |
| Load regulation              | ±10 % max.   |
| Ripple & noise               | <120 mVpk-pk (20 MHz BW)   |
| Short circuit protection     | limited 1 sec.   |
| Efficiency                   | 67% typ.   |
| Operating temperature range  | -40 °C to +85 °C<br>above 70 °C derating 3.3 %/K   |
| I/O isolation voltage        | 3000 VACrms (60 sec.), reinforced insulation, rated for 300 VAC working voltage                    |
| I/O isolation test voltage   | 4500Vpk (1 sec.)   |
| I/O isolation capacitance    | 15 pF typ.   |
| I/O isolation resistance     | >10 GOhm   |
| Safety standards / approvals | UL 60950-1, IEC/EN 60950-1, CB-report  |
| Casing                       | plastic (UL 94 V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmv-en.pdf">www.tracopower.com/products/tmv-en.pdf</a> |

| Models      |               |                |                     |
|-------------|---------------|----------------|---------------------|
| Order code  | Input voltage | Output voltage | Output current max. |
| TMV 0505EN  |               | 5 VDC          | 200 mA              |
| TMV 0512EN  |               | 12 VDC         | 80 mA               |
| TMV 0515EN  | 5VDC ± 10 %   | 15 VDC         | 65 mA               |
| TMV 0505DEN |               | ± 5 VDC        | ± 100 mA            |
| TMV 0512DEN |               | ± 12 VDC       | ± 40 mA             |
| TMV 0515DEN |               | ± 15 VDC       | ± 30 mA             |
| TMV 1205EN  |               | 5 VDC          | 200 mA              |
| TMV 1212EN  |               | 12 VDC         | 80 mA               |
| TMV 1215EN  | 12VDC ± 10 %  | 15 VDC         | 65 mA               |
| TMV 1205DEN |               | ± 5 VDC        | ± 100 mA            |
| TMV 1212DEN |               | ± 12 VDC       | ± 40 mA             |
| TMV 1215DEN |               | ± 15 VDC       | ± 30 mA             |

## Dimensions



() = Inches

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



# TES-2M Series ▶ 2 W



- ▶ Ultracompact SMD package
- ▶ I/O isolation 4000 VACrms
- ▶ Reinforced insulation rated for working voltage up to 300 VAC
- ▶ Industrial and medical safety approval
- ▶ Operating temperature range -40 °C to +71 °C
- ▶ Low leakage current <2µA
- ▶ Optional tape & reel package

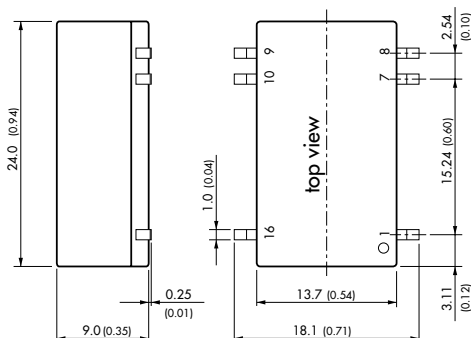


| Specifications               |  |
|------------------------------|--|
| Line regulation              | non regulated  |
| Load regulation              | 10 % max.  |
| Ripple & noise               | <150 mVpk-pk (20 MHz BW)   |
| Input filter                 | Pi-filter  |
| Short circuit protection     | limited 0.5 sec.   |
| Efficiency                   | 70 % typ.  |
| Operating temperature range  | -25 °C to +71 °C<br>above 60 °C derating 2.5 %/K   |
| I/O isolation voltage        | 4000 VACrms (reinforced), rated for 300 VAC working voltage                                      |
| I/O isolation test voltage   | 6000Vpk (1 sec.)   |
| I/O isolation capacitance    | 20 pF typ.   |
| I/O isolation resistance     | >10,000 MΩhm   |
| Leakage current              | 2µA max. (at 240VAC / 60Hz)  |
| Safety standards / approvals | UL 60950-1, IEC/EN 60950-1, ES 60601-1, IEC/EN 60601-1, CB-report                                |
| Casing                       | plastic, insert mold (UL 94-0 rated)   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tes2m.pdf">www.tracopower.com/products/tes2m.pdf</a> |

| Models      |               |                |                     |
|-------------|---------------|----------------|---------------------|
| Order code  | Input voltage | Output voltage | Output current max. |
| TES 2-0511M |               | 5 VDC          | 400 mA              |
| TES 2-0512M |               | 12 VDC         | 165 mA              |
| TES 2-0513M | 5 VDC ± 10 %  | 15 VDC         | 133 mA              |
| TES 2-0522M |               | ± 12 VDC       | ± 83 mA             |
| TES 2-0523M |               | ± 15 VDC       | ± 66 mA             |
| TES 2-1211M |               | 5 VDC          | 400 mA              |
| TES 2-1212M |               | 12 VDC         | 165 mA              |
| TES 2-1213M | 12 VDC ± 10 % | 15 VDC         | 133 mA              |
| TES 2-1222M |               | ± 12 VDC       | ± 83 mA             |
| TES 2-1223M |               | ± 15 VDC       | ± 66 mA             |
| TES 2-2411M |               | 5 VDC          | 400 mA              |
| TES 2-2412M |               | 12 VDC         | 165 mA              |
| TES 2-2413M | 24 VDC ± 10 % | 15 VDC         | 133 mA              |
| TES 2-2422M |               | ± 12 VDC       | ± 83 mA             |
| TES 2-2423M |               | ± 15 VDC       | ± 66 mA             |

Product with same electrical specifications available in DIP package.  
See THI-2M series page 113

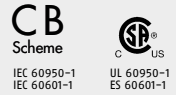
## Dimensions



| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | - Vin (GND)   | - Vin (GND) |
| 7   | No con.       | No con.     |
| 8   | No con.       | Common      |
| 9   | + Vout        | + Vout      |
| 10  | - Vout        | - Vout      |
| 16  | + Vin (Vcc)   | + Vin (Vcc) |

() = Inches

# THI-2M Series ▶ 2 W



- ▶ Ultra compact DIP 16 package
- ▶ I/O isolation 4000 VACrms
- ▶ Reinforced insulation rated for working voltage up to 300 VAC
- ▶ Industrial and medical safety approval
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+71\text{ }^{\circ}\text{C}$
- ▶ Low leakage current  $<2\mu\text{A}$



## Specifications

|                              |   |
|------------------------------|---|
| Line regulation              | non regulated   |
| Load regulation              | 10 % max.   |
| Ripple & noise               | $<150\text{ mVpk-pk}$ (20 MHz BW)   |
| Input filter                 | Pi-filter   |
| Short circuit protection     | limited 0.5 sec.  |
| Efficiency                   | 70 % typ.   |
| Operating temperature range  | $-40\text{ }^{\circ}\text{C}$ to $+71\text{ }^{\circ}\text{C}$<br>above $60\text{ }^{\circ}\text{C}$ derating 2.5 %/K |
| I/O isolation voltage        | 4000 VACrms (60 sec.), reinforced insulation, rated for 300 VAC working voltage                                       |
| I/O isolation test voltage   | 6000Vpk (1 sec.)  |
| I/O isolation capacitance    | 20 pF typ.  |
| I/O isolation resistance     | $>10,000\text{ M}\Omega\text{hm}$   |
| Leakage current              | $2\mu\text{A}$ max. (at 240VAC / 60Hz)  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, ES 60601-1, IEC/EN 60601-1, CB-report   |
| Casing                       | plastic (UL 94V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/thi2m.pdf">www.tracopower.com/products/thi2m.pdf</a>                      |

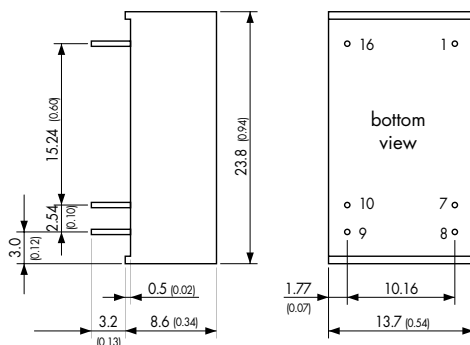
## Models

| Order code  | Input voltage     | Output voltage      | Output current max. |
|-------------|-------------------|---------------------|---------------------|
| THI 2-0511M |                   | 5 VDC               | 400 mA              |
| THI 2-0512M |                   | 12 VDC              | 165 mA              |
| THI 2-0513M | 5 VDC $\pm 10\%$  | 15 VDC              | 133 mA              |
| THI 2-0522M |                   | $\pm 12\text{ VDC}$ | $\pm 83\text{ mA}$  |
| THI 2-0523M |                   | $\pm 15\text{ VDC}$ | $\pm 66\text{ mA}$  |
| THI 2-1211M |                   | 5 VDC               | 400 mA              |
| THI 2-1212M |                   | 12 VDC              | 165 mA              |
| THI 2-1213M | 12 VDC $\pm 10\%$ | 15 VDC              | 133 mA              |
| THI 2-1222M |                   | $\pm 12\text{ VDC}$ | $\pm 83\text{ mA}$  |
| THI 2-1223M |                   | $\pm 15\text{ VDC}$ | $\pm 66\text{ mA}$  |
| THI 2-2411M |                   | 5 VDC               | 400 mA              |
| THI 2-2412M |                   | 12 VDC              | 165 mA              |
| THI 2-2413M | 24 VDC $\pm 10\%$ | 15 VDC              | 133 mA              |
| THI 2-2422M |                   | $\pm 12\text{ VDC}$ | $\pm 83\text{ mA}$  |
| THI 2-2423M |                   | $\pm 15\text{ VDC}$ | $\pm 66\text{ mA}$  |

Product with same electrical specifications available in SMD package.

See TES-2M series page 112

## Dimensions



| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | - Vin (GND)   | - Vin (GND) |
| 7   | No con.       | No con.     |
| 8   | No con.       | Common      |
| 9   | + Vout        | + Vout      |
| 10  | - Vout        | - Vout      |
| 16  | + Vin (Vcc)   | + Vin (Vcc) |

() = Inches

# THI-3 Series ▶ 3 W

CB  
Scheme  
IEC 60950-1  
IEC 60601-1

UL  
ES 60601-1

- ▶ Supplementary and reinforced insulation
- ▶ I/O isolation 4000 VACrms rated for 300 VACrms working voltage
- ▶ 2 x MOOP medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Industrial safety to IEC/EN 60950-1
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ Low leakage current <2µA

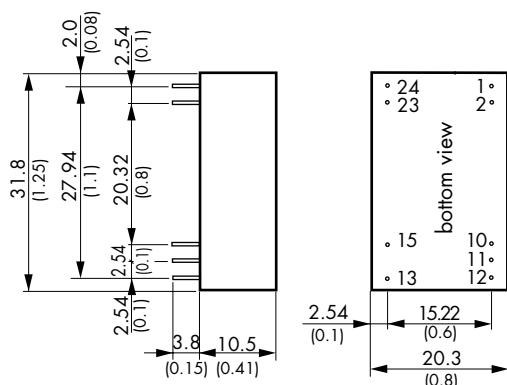
**NEW**  
Product



| Specifications               |  |
|------------------------------|--|
| Line regulation              | 0.5%   |
| Load regulation              | 1% max.  |
| Ripple & noise               | <50 mVpk-pk (20 MHz BW)  |
| Input filter                 | Pi-filter  |
| Short circuit protection     | limited 0.5 sec.   |
| Efficiency                   | 60 % typ.  |
| Operating temperature range  | -40 °C to +75 °C<br>above 60 °C derating 2.8 %/K   |
| I/O isolation voltage        | 4000 VACrms (reinforced), rated for 300 VAC working voltage  |
| I/O isolation test voltage   | 6000Vpk (1 sec.)   |
| I/O isolation capacitance    | 20 pF typ.   |
| I/O isolation resistance     | >10,000 MOhm   |
| Leakage current              | 2µA max. (at 240VAC / 60Hz)  |
| Safety standards / approvals | IEC/EN 60950-1, IEC/EN 60601-1 3rd Edition,<br>ANSI/AAMI ES60601-1 and CAN/CSA-C22.2<br>No. 60601-1, CB report |
| Casing                       | plastic (UL 94-0 rated plastic)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/thi3.pdf">www.tracopower.com/products/thi3.pdf</a>                 |

| Models     |               |                |                     |
|------------|---------------|----------------|---------------------|
| Order code | Input voltage | Output voltage | Output current max. |
| THI 3-0511 |               | 5 VDC          | 600 mA              |
| THI 3-0512 |               | 12 VDC         | 250 mA              |
| THI 3-0513 | 5 VDC ± 10 %  | 15 VDC         | 200 mA              |
| THI 3-0522 |               | ± 12 VDC       | ±125 mA             |
| THI 3-0523 |               | ± 15 VDC       | ±100 mA             |
| THI 3-1211 |               | 5 VDC          | 600 mA              |
| THI 3-1212 |               | 12 VDC         | 250 mA              |
| THI 3-1213 | 12 VDC ± 10 % | 15 VDC         | 200 mA              |
| THI 3-1222 |               | ± 12 VDC       | ±125 mA             |
| THI 3-1223 |               | ± 15 VDC       | ±100 mA             |
| THI 3-2411 |               | 5 VDC          | 600 mA              |
| THI 3-2412 |               | 12 VDC         | 250 mA              |
| THI 3-2413 | 24 VDC ± 10 % | 15 VDC         | 200 mA              |
| THI 3-2422 |               | ± 12 VDC       | ±125 mA             |
| THI 3-2423 |               | ± 15 VDC       | ±100 mA             |

## Dimensions



() = Inches

| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc) |
| 2   | + Vin (Vcc)   | + Vin (Vcc) |
| 10  | No pin        | Common      |
| 11  | No pin        | Common      |
| 12  | - Vout        | No pin      |
| 13  | + Vout        | - Vout      |
| 15  | No pin        | + Vout      |
| 23  | - Vin (GND)   | - Vin (GND) |
| 24  | - Vin (GND)   | - Vin (GND) |

# THB-3 Series ▶ 3 W



- ▶ Wide 2:1 input voltage range
- ▶ I/O isolation voltage 4800 VACrms
- ▶ Reinforced insulation rated for working voltage 1000VAC
- ▶ Medical safety to UL 60601-1 and IEC/EN 60601-1 3rd edition, 2 x M00P
- ▶ Industrial safety to IEC/EN/UL 60950-1
- ▶ Low coupling capacitance (13pF)
- ▶ Input filter to meet EN 55022, class A
- ▶ Low leakage current <2µA



| Specifications               |  | Models            |                      |                       |                            |
|------------------------------|--|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | ±0.5% max.   | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | - Single output models: 1% max.<br>- Dual output models: 2% max.                               | THB 3-0511        |                      | 5 VDC                 | 600 mA                     |
| Ripple & noise               | <150 mVpk-pk (20 MHz BW)   | THB 3-0512        |                      | 12 VDC                | 250 mA                     |
| Conducted EMI                | EN 55022, class A (internal filter)  | THB 3-0515        | 4.5 – 9 VDC          | 24 VDC                | 125 mA                     |
| Short circuit protection     | continuous, automatic recovery   | THB 3-0522        |                      | ± 12 VDC              | ± 125 mA                   |
| Efficiency                   | 83% typ.   | THB 3-0523        |                      | ± 15 VDC              | ± 100 mA                   |
| Operating temperature range  | -40 °C to +75 °C<br>above 60 °C derating 3.3%/K  | THB 3-1211        |                      | 5 VDC                 | 600 mA                     |
| I/O isolation voltage        | 4800 VACrms (60 sec.) reinforced insulation, rated for 1000VAC working voltage                 | THB 3-1212        |                      | 12 VDC                | 250 mA                     |
| I/O isolation test voltage   | 6000 Vpk (1sec)  | THB 3-1215        | 9 – 18 VDC           | 24 VDC                | 125 mA                     |
| I/O isolation capacitance    | 13 pF max.   | THB 3-1222        |                      | ± 12 VDC              | ± 125 mA                   |
| Leakage current              | 2µA max. (at 240VAC / 60Hz)  | THB 3-1223        |                      | ± 15 VDC              | ± 100 mA                   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, ES 60601-1, IEC/EN 60601-1, CB-report                          | THB 3-2411        |                      | 5 VDC                 | 600 mA                     |
| Casing                       | plastic (UL 94V-0 rated)   | THB 3-2412        |                      | 12 VDC                | 250 mA                     |
| Full datasheet               | <a href="http://www.tracopower.com/products/thb3.pdf">www.tracopower.com/products/thb3.pdf</a> | THB 3-2415        | 18 – 36 VDC          | 24 VDC                | 125 mA                     |
|                              |  | THB 3-2422        |                      | ± 12 VDC              | ± 125 mA                   |
|                              |  | THB 3-2423        |                      | ± 15 VDC              | ± 100 mA                   |
|                              |  | THB 3-4811        |                      | 5 VDC                 | 600 mA                     |
|                              |  | THB 3-4812        |                      | 12 VDC                | 250 mA                     |
|                              |  | THB 3-4815        | 36 – 75 VDC          | 24 VDC                | 125 mA                     |
|                              |  | THB 3-4822        |                      | ± 12 VDC              | ± 125 mA                   |
|                              |  | THB 3-4823        |                      | ± 15 VDC              | ± 100 mA                   |

| Dimensions |  | Pin                  |                    |             |  |
|------------|--|----------------------|--------------------|-------------|--|
|            |  | <b>Single output</b> | <b>Dual output</b> |             |  |
|            |  | 1                    | + Vin (Vcc)        | + Vin (Vcc) |  |
|            |  | 11                   | No pin             | Common      |  |
|            |  | 12                   | - Vout             | No pin      |  |
|            |  | 13                   | + Vout             | - Vout      |  |
|            |  | 15                   | No pin             | + Vout      |  |
|            |  | 23                   | - Vin (GND)        | - Vin (GND) |  |
|            |  | 24                   | - Vin (GND)        | - Vin (GND) |  |

() = Inches

# THP-3 Series ▶ 3 W



- ▶ Ultra wide 4:1 input voltage range up to 160VDC
- ▶ I/O isolation voltage 4000VACrms
- ▶ Reinforced insulation rated for working voltage 300VAC
- ▶ Industrial and medical safety approvals
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- ▶ Low coupling capacitance (13pF)
- ▶ Input filter to meet EN 55022, class A
- ▶ Low leakage current  $<2\mu\text{A}$



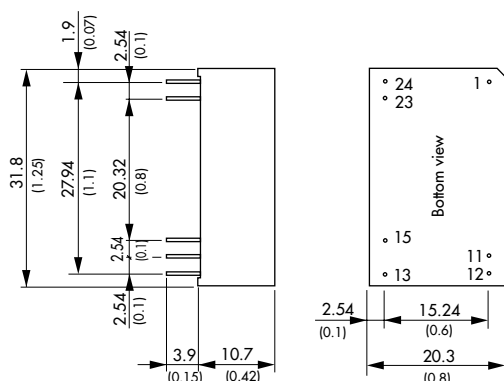
## Specifications

|                               |  |
|-------------------------------|--|
| Line regulation               | 0.5% max.  |
| Load regulation               | - Single output models: 1% max.<br>- Dual output models: 2% max.   |
| Ripple & noise<br>(20 MHz BW) | <100 mVpk-pk for 5 VDC models<br><150 mVpk-pk for other models   |
| Conducted EMI                 | EN 55022, class A (internal filter)  |
| Short circuit protection      | continuous, automatic recovery   |
| Efficiency                    | 83% typ.   |
| Operating temperature range   | $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$<br>above $70\text{ }^{\circ}\text{C}$ derating 3.3%/K |
| I/O isolation voltage         | 4000 VACrms (60 sec.) reinforced insulation, rated for 300VAC working voltage  |
| I/O isolation test voltage    | 6000Vpk (1sec)   |
| I/O isolation capacitance     | 13 pF max.   |
| Leakage current               | $2\mu\text{A}$ max. (at 240VAC / 60Hz)   |
| Safety standards / approvals  | cUL/UL 60950-1, IEC/EN 60950-1, ES 60601-1, IEC/EN 60601-1, CB-report  |
| Casing                        | plastic (UL 94V-0 rated)   |
| Full datasheet                | <a href="http://www.tracopower.com/products/thp3.pdf">www.tracopower.com/products/thp3.pdf</a>                       |

## Models

| Order code | Input voltage | Output voltage | Output current max. |
|------------|---------------|----------------|---------------------|
| THP 3-2411 | 9 - 40 VDC    | 5 VDC          | 600 mA              |
| THP 3-2412 |               | 12 VDC         | 250 mA              |
| THP 3-2422 |               | $\pm 12$ VDC   | $\pm 125$ mA        |
| THP 3-2423 |               | $\pm 15$ VDC   | $\pm 100$ mA        |
| THP 3-4811 | 18 - 80 VDC   | 5 VDC          | 600 mA              |
| THP 3-4812 |               | 12 VDC         | 250 mA              |
| THP 3-4822 |               | $\pm 12$ VDC   | $\pm 125$ mA        |
| THP 3-4823 |               | $\pm 15$ VDC   | $\pm 100$ mA        |
| THP 3-7211 | 36 - 160 VDC  | 5 VDC          | 600 mA              |
| THP 3-7212 |               | 12 VDC         | 250 mA              |
| THP 3-7222 |               | $\pm 12$ VDC   | $\pm 125$ mA        |
| THP 3-7223 |               | $\pm 15$ VDC   | $\pm 100$ mA        |

## Dimensions



| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc) |
| 11  | No pin        | Common      |
| 12  | - Vout        | No pin      |
| 13  | + Vout        | - Vout      |
| 15  | No pin        | + Vout      |
| 23  | - Vin (GND)   | - Vin (GND) |
| 24  | - Vin (GND)   | - Vin (GND) |

() = Inches

# THM-3WI Series ▶ 3 W



- ▶ Ultra wide 4:1 input voltage range
- ▶ I/O isolation 5000 VACrms rated for 250 VACrms working voltage
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Extended operating temperature range -40 °C to +94 °C at full load !
- ▶ Low leakage current < 2µA
- ▶ Input filter to meet EN 55022, class A

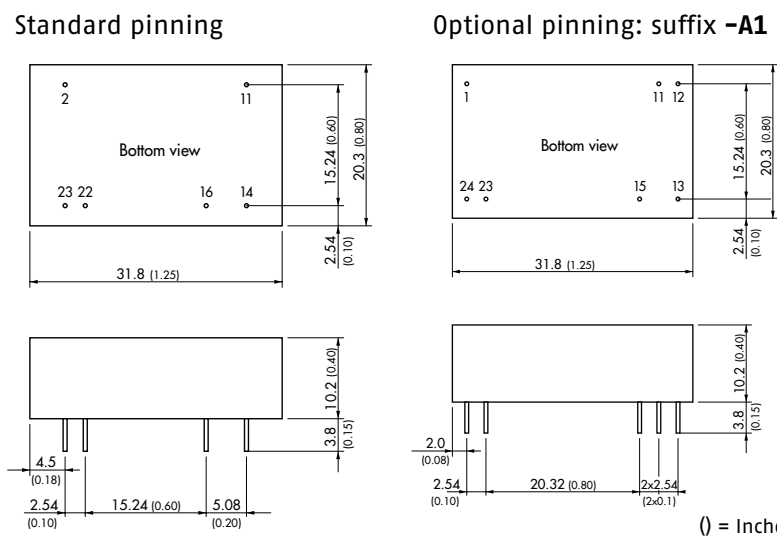
**NEW Product**



| Specifications               |   |
|------------------------------|---|
| Line regulation              | 0.5% max.   |
| Load regulation              | - Single output models: 0.2% max.<br>- Dual output models: 1% max.  |
| Ripple & noise               | 3.3 & 5 VDC models: 30 mVpk-pk typ. (20MHz BW)<br>12 & 15 VDC models: 40 mVpk-pk typ. (20MHz BW)<br>24 VDC models: 50 mVpk-pk typ. (20MHz BW) |
| Conducted EMI                | EN 55022, class A (internal filter)   |
| Short circuit protection     | continuous, automatic recovery  |
| Efficiency                   | 83% typ.  |
| Operating temperature range  | -40 °C to +94 °C without derating   |
| I/O isolation voltage        | 5000 VACrms (60 sec.) reinforced insulation, rated for 250VAC working voltage   |
| I/O isolation test voltage   | 6000Vpk (1sec)  |
| I/O isolation capacitance    | 17pF max.   |
| Safety standards / approvals | ANSI/AAMI ES 60601-1:2005(R)2012,<br>IEC/EN 60601-1 3rd edition, CB-report  |
| Casing                       | plastic (UL 94V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/thm3wi.pdf">www.tracopower.com/products/thm3wi.pdf</a>  |

| Models       |               |                |                     |
|--------------|---------------|----------------|---------------------|
| Order code   | Input voltage | Output voltage | Output current max. |
| THM 3-0510WI |               | 3.3 VDC        | 1000 mA             |
| THM 3-0511WI |               | 5 VDC          | 600 mA              |
| THM 3-0512WI |               | 12 VDC         | 250 mA              |
| THM 3-0513WI | 4.5 - 9 VDC   | 15 VDC         | 200 mA              |
| THM 3-0515WI |               | 24 VDC         | 125 mA              |
| THM 3-0521WI |               | ± 5 VDC        | ± 300 mA            |
| THM 3-0522WI |               | ± 12 VDC       | ± 125 mA            |
| THM 3-0523WI |               | ± 15 VDC       | ± 100 mA            |
| THM 3-2410WI |               | 3.3 VDC        | 1000 mA             |
| THM 3-2411WI |               | 5 VDC          | 600 mA              |
| THM 3-2412WI |               | 12 VDC         | 250 mA              |
| THM 3-2413WI | 9 - 36 VDC    | 15 VDC         | 200 mA              |
| THM 3-2415WI |               | 24 VDC         | 125 mA              |
| THM 3-2421WI |               | ± 5 VDC        | ± 300 mA            |
| THM 3-2422WI |               | ± 12 VDC       | ± 125 mA            |
| THM 3-2423WI |               | ± 15 VDC       | ± 100 mA            |
| THM 3-4810WI |               | 3.3 VDC        | 1000 mA             |
| THM 3-4811WI |               | 5 VDC          | 600 mA              |
| THM 3-4812WI |               | 12 VDC         | 250 mA              |
| THM 3-4813WI | 18 - 75 VDC   | 15 VDC         | 200 mA              |
| THM 3-4815WI |               | 24 VDC         | 125 mA              |
| THM 3-4821WI |               | ± 5 VDC        | ± 300 mA            |
| THM 3-4822WI |               | ± 12 VDC       | ± 125 mA            |
| THM 3-4823WI |               | ± 15 VDC       | ± 100 mA            |

## Dimensions



| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 2   | - Vin (GND)   | - Vin (GND) |
| 11  | No con.       | - Vout      |
| 14  | + Vout        | + Vout      |
| 16  | - Vout        | Common      |
| 22  | + Vin (Vcc)   | + Vin (Vcc) |
| 23  | + Vin (Vcc)   | + Vin (Vcc) |

# THB-6 Series ▶ 6 W

CB  
Scheme  
IEC 60950-1  
IEC 60601-1

ES  
ES 60601-1

UL  
UL 60950-1

- ▶ Wide 2:1 input voltage range
- ▶ I/O isolation voltage 4800 VACrms
- ▶ Reinforced insulation rated for working voltage 1000 VAC
- ▶ Medical safety to UL 60601-1 and IEC/EN 60601-1 3rd edition, 2 x M00P
- ▶ Operating temperature range  $-40\text{ °C}$  to  $+71\text{ °C}$
- ▶ Industrial safety to IEC/EN/UL 60950-1
- ▶ Low coupling capacitance (13 pF)
- ▶ Input filter to meet EN 55022, class A
- ▶ Low leakage current  $<2\mu\text{A}$



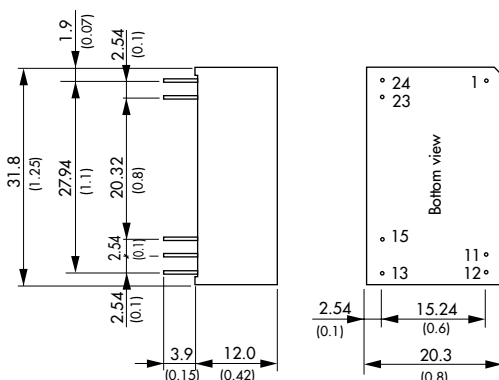
## Specifications

|                              |  |
|------------------------------|--|
| Line regulation              | 1.0 % max.   |
| Load regulation              | - Single output models: 1% max.<br>- Dual output models: 2% max.                               |
| Ripple & noise (20 MHz BW)   | <100 mVpk-pk for 5 VDC models<br><150 mVpk-pk for other models                                 |
| Conducted EMI                | EN 55022, class A (internal filter)  |
| Short circuit protection     | continuous, automatic recovery   |
| Efficiency                   | 80% typ.   |
| Operating temperature range  | $-40\text{ °C}$ to $+71\text{ °C}$<br>above $60\text{ °C}$ derating 3%/K                       |
| I/O isolation voltage        | 4000 VACrms (60 sec.) reinforced insulation, rated for 300 VAC working voltage                 |
| I/O isolation test voltage   | 6000 Vpk (1sec)  |
| I/O isolation capacitance    | 13 pF max.   |
| Leakage current              | $2\mu\text{A}$ max. (at 240VAC / 60Hz)   |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, ES 60601-1, IEC/EN 60601-1, CB-report                          |
| Casing                       | plastic (UL 94V-0 rated)   |
| Full datasheet               | <a href="http://www.tracopower.com/products/thb6.pdf">www.tracopower.com/products/thb6.pdf</a> |

## Models

| Order code | Input voltage | Output voltage | Output current max. |
|------------|---------------|----------------|---------------------|
| THB 6-1211 | 9 – 18 VDC    | 5 VDC          | 1000 mA             |
| THB 6-1212 |               | 12 VDC         | 500 mA              |
| THB 6-1222 |               | $\pm 12$ VDC   | $\pm 250$ mA        |
| THB 6-1223 |               | $\pm 15$ VDC   | $\pm 200$ mA        |
| THB 6-2411 | 18 – 36 VDC   | 5 VDC          | 1000 mA             |
| THB 6-2412 |               | 12 VDC         | 500 mA              |
| THB 6-2422 |               | $\pm 12$ VDC   | $\pm 250$ mA        |
| THB 6-2423 |               | $\pm 15$ VDC   | $\pm 200$ mA        |
| THB 6-4811 | 36 – 75 VDC   | 5 VDC          | 1000 mA             |
| THB 6-4812 |               | 12 VDC         | 500 mA              |
| THB 6-4822 |               | $\pm 12$ VDC   | $\pm 250$ mA        |
| THB 6-4823 |               | $\pm 15$ VDC   | $\pm 200$ mA        |

## Dimensions



() = Inches

| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc) |
| 11  | No pin        | Common      |
| 12  | - Vout        | No pin      |
| 13  | + Vout        | - Vout      |
| 15  | No pin        | + Vout      |
| 23  | - Vin (GND)   | - Vin (GND) |
| 24  | - Vin (GND)   | - Vin (GND) |

# THM-6WI Series ▶ 6 W



- ▶ Ultra wide 4:1 input voltage range
- ▶ I/O isolation 5000 VACrms rated for 250 VACrms working voltage
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Extended operating temperature range -40 °C to +88 °C at full load !
- ▶ Low leakage current < 2µA
- ▶ Input filter to meet EN 55022, class A

**NEW Product**

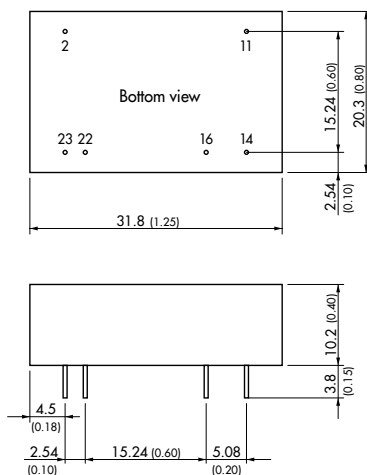


| Specifications               |   |
|------------------------------|---|
| Line regulation              | 0.5% max.   |
| Load regulation              | - Single output models: 0.2% max.<br>- Dual output models: 1% max.  |
| Ripple & noise               | 3.3 & 5 VDC models: 30 mVpk-pk typ. (20MHz BW)<br>12 & 15 VDC models: 40 mVpk-pk typ. (20MHz BW)<br>24 VDC models: 50 mVpk-pk typ. (20MHz BW) |
| Conducted EMI                | EN 55022, class A (internal filter)   |
| Short circuit protection     | continuous, automatic recovery  |
| Efficiency                   | 86% typ.  |
| Operating temperature range  | -40 °C to +88 °C without derating   |
| I/O isolation voltage        | 5000 VACrms (60 sec.) reinforced insulation, rated for 250VAC working voltage   |
| I/O isolation test voltage   | 6000Vpk (1sec)  |
| I/O isolation capacitance    | 17 pF max.  |
| Leakage current              | 2µA max. (at 240VAC / 60Hz)   |
| Safety standards / approvals | ANSI/AAMI ES 60601-1:2005/(R)2012, IEC/EN 60601-1 3rd edition, CB-report  |
| Casing                       | plastic (UL 94V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/thm6wi.pdf">www.tracopower.com/products/thm6wi.pdf</a>  |

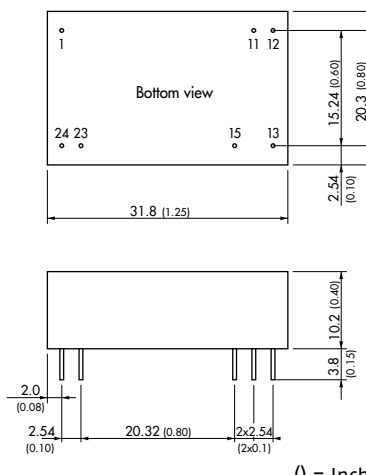
| Models       |               |                |                     |
|--------------|---------------|----------------|---------------------|
| Order code   | Input voltage | Output voltage | Output current max. |
| THM 6-0510WI |               | 3.3 VDC        | 1800 mA             |
| THM 6-0511WI |               | 5 VDC          | 1200 mA             |
| THM 6-0512WI |               | 12 VDC         | 500 mA              |
| THM 6-0513WI | 4.5 - 9 VDC   | 15 VDC         | 400 mA              |
| THM 6-0515WI |               | 24 VDC         | 250 mA              |
| THM 6-0521WI |               | ± 5 VDC        | ± 600 mA            |
| THM 6-0522WI |               | ± 12 VDC       | ± 250 mA            |
| THM 6-0523WI |               | ± 15 VDC       | ± 200 mA            |
| THM 6-2410WI |               | 3.3 VDC        | 1800 mA             |
| THM 6-2411WI |               | 5 VDC          | 1200 mA             |
| THM 6-2412WI |               | 12 VDC         | 500 mA              |
| THM 6-2413WI | 9 - 36 VDC    | 15 VDC         | 400 mA              |
| THM 6-2415WI |               | 24 VDC         | 250 mA              |
| THM 6-2421WI |               | ± 5 VDC        | ± 600 mA            |
| THM 6-2422WI |               | ± 12 VDC       | ± 250 mA            |
| THM 6-2423WI |               | ± 15 VDC       | ± 200 mA            |
| THM 6-4810WI |               | 3.3 VDC        | 1800 mA             |
| THM 6-4811WI |               | 5 VDC          | 1200 mA             |
| THM 6-4812WI |               | 12 VDC         | 500 mA              |
| THM 6-4813WI | 18 - 75 VDC   | 15 VDC         | 400 mA              |
| THM 6-4815WI |               | 24 VDC         | 250 mA              |
| THM 6-4821WI |               | ± 5 VDC        | ± 600 mA            |
| THM 6-4822WI |               | ± 12 VDC       | ± 250 mA            |
| THM 6-4823WI |               | ± 15 VDC       | ± 200 mA            |

## Dimensions

### Standard pinning



### Optional pinning: suffix -A1

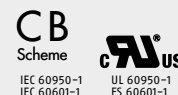


| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 2   | - Vin (GND)   | - Vin (GND) |
| 11  | No con.       | - Vout      |
| 14  | + Vout        | + Vout      |
| 16  | - Vout        | Common      |
| 22  | + Vin (Vcc)   | + Vin (Vcc) |
| 23  | + Vin (Vcc)   | + Vin (Vcc) |

( ) = Inches



# THB-10 Series ▶ 10 W



- ▶ Wide 2:1 input voltage range
- ▶ I/O isolation voltage 4000 VACrms
- ▶ Reinforced insulation rated for working voltage 300 VAC
- ▶ Industrial and medical safety approvals
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+75\text{ }^{\circ}\text{C}$
- ▶ Input filter to meet EN 55022, class A
- ▶ Low leakage current



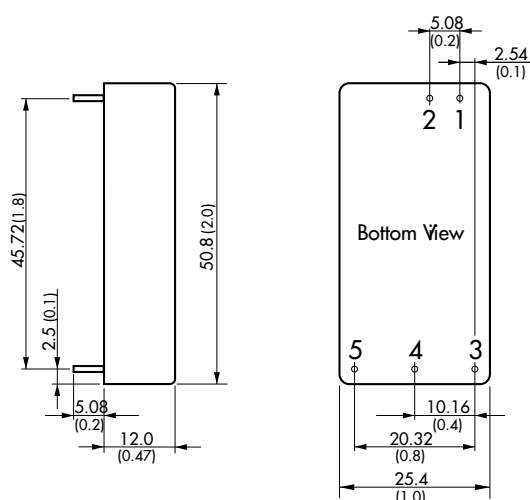
## Specifications

|                                 |  |
|---------------------------------|--|
| Line regulation                 | 0.5% max.  |
| Load regulation                 | 1% max.  |
| Ripple & noise<br>(20 MHz BW)   | <100 mVpk-pk for 5 VDC models<br><150 mVpk-pk for other models   |
| Conducted EMI                   | EN 55022, class A (internal filter)  |
| Short circuit protection        | continuous, automatic recovery   |
| Efficiency                      | 80% typ.   |
| Operating temperature<br>range  | $-40\text{ }^{\circ}\text{C}$ to $+75\text{ }^{\circ}\text{C}$<br>above $55\text{ }^{\circ}\text{C}$ derating 2.5%/K |
| I/O isolation voltage           | 4000 VACrms (60 sec.) reinforced, rated for 300 VAC working voltage  |
| I/O isolation test voltage      | 6000 Vpk (1sec)  |
| I/O isolation capacitance       | 60 pF typ.   |
| Leakage current                 | 10 $\mu\text{A}$ max. (at 240 VAC / 60 Hz)   |
| Safety standards /<br>approvals | cUL/UL 60950-1, IEC/EN 60950-1, UL 60601-1, IEC/EN 60601-1,<br>(reports pending)                                     |
| Casing                          | plastic (UL 94V-0 rated)   |
| Full datasheet                  | <a href="http://www.tracopower.com/products/thb10.pdf">www.tracopower.com/products/thb10.pdf</a>                     |

## Models

| Order code  | Input voltage | Output voltage | Output current<br>max. |
|-------------|---------------|----------------|------------------------|
| THB 10-1211 | 9 – 18 VDC    | 5.1 VDC        | 1600 mA                |
| THB 10-1212 |               | 12 VDC         | 835 mA                 |
| THB 10-1222 |               | $\pm 12$ VDC   | $\pm 417$ mA           |
| THB 10-1223 |               | $\pm 15$ VDC   | $\pm 333$ mA           |
| THB 10-2411 | 18 – 36 VDC   | 5.1 VDC        | 1600 mA                |
| THB 10-2412 |               | 12 VDC         | 835 mA                 |
| THB 10-2422 |               | $\pm 12$ VDC   | $\pm 417$ mA           |
| THB 10-2423 |               | $\pm 15$ VDC   | $\pm 333$ mA           |
| THB 10-4811 | 36 – 75 VDC   | 5.1 VDC        | 1600 mA                |
| THB 10-4812 |               | 12 VDC         | 835 mA                 |
| THB 10-4822 |               | $\pm 12$ VDC   | $\pm 417$ mA           |
| THB 10-4823 |               | $\pm 15$ VDC   | $\pm 333$ mA           |

## Dimensions



( ) = Inches

| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | + Vin (Vcc)   | + Vin (Vcc) |
| 2   | - Vin (GND)   | - Vin (GND) |
| 3   | + Vout        | + Vout      |
| 4   | No pin        | Common      |
| 5   | - Vout        | - Vout      |

# THM-10WI Series ▶ 10 W



- ▶ Ultra wide 4:1 input voltage range
- ▶ I/O isolation 5000 VACrms rated for 250 VACrms working voltage
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Extended operating temperature range -40 °C to +77 °C at full load !
- ▶ Low leakage current < 2µA
- ▶ Input filter to meet EN 55022, class A



**NEW Product**

| Specifications               |   | Models            |                      |                       |                            |
|------------------------------|---|-------------------|----------------------|-----------------------|----------------------------|
| Line regulation              | 0.5% max.   | <b>Order code</b> | <b>Input voltage</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Load regulation              | - Single output models: 0.2% max.<br>- Dual output models: 1% max.  | THM 10-0510WI     |                      | 3.3 VDC               | 2500 mA                    |
| Ripple & noise               | 3.3 & 5 VDC models: 30 mVpk-pk typ. (20MHz BW)<br>12 & 15 VDC models: 40 mVpk-pk typ. (20MHz BW)<br>24 VDC models: 50 mVpk-pk typ. (20MHz BW) | THM 10-0511WI     |                      | 5 VDC                 | 2000 mA                    |
| Conducted EMI                | EN 55022, class A (internal filter)   | THM 10-0512WI     |                      | 12 VDC                | 830 mA                     |
| Short circuit protection     | continuous, automatic recovery  | THM 10-0513WI     | 4.5 - 9 VDC          | 15 VDC                | 670 mA                     |
| Efficiency                   | 87% typ.  | THM 10-0515WI     |                      | 24 VDC                | 416 mA                     |
| Operating temperature range  | -40 °C to +77 °C without derating<br>above 77°C derating 3.6%/K   | THM 10-0521WI     |                      | ± 5 VDC               | ±1000 mA                   |
| I/O isolation voltage        | 5000 VACrms (60 sec.) reinforced insulation, rated for 250VAC working voltage   | THM 10-0522WI     |                      | ±12 VDC               | ± 416 mA                   |
| I/O isolation test voltage   | 6000Vpk (1sec)  | THM 10-0523WI     |                      | ±15 VDC               | ± 333 mA                   |
| I/O isolation capacitance    | 17 pF max.  | THM 10-2410WI     |                      | 3.3 VDC               | 2500 mA                    |
| Leakage current              | 2µA max. (at 240VAC / 60Hz)   | THM 10-2411WI     |                      | 5 VDC                 | 2000 mA                    |
| Safety standards / approvals | ANSI/AAMI ES 60601-1:2005/(R)2012,<br>IEC/EN 60601-1 3rd edition, CB-report   | THM 10-2412WI     |                      | 12 VDC                | 830 mA                     |
| Casing                       | plastic (UL 94V-0 rated)  | THM 10-2413WI     | 9 - 36 VDC           | 15 VDC                | 670 mA                     |
| Full datasheet               | <a href="http://www.tracopower.com/products/thm10wi.pdf">www.tracopower.com/products/thm10wi.pdf</a>  | THM 10-2415WI     |                      | 24 VDC                | 416 mA                     |
|                              |   | THM 10-2421WI     |                      | ± 5 VDC               | ±1000 mA                   |
|                              |   | THM 10-2422WI     |                      | ±12 VDC               | ± 416 mA                   |
|                              |   | THM 10-2423WI     |                      | ±15 VDC               | ± 333 mA                   |
|                              |   | THM 10-4810WI     |                      | 3.3 VDC               | 2500 mA                    |
|                              |   | THM 10-4811WI     |                      | 5 VDC                 | 2000 mA                    |
|                              |   | THM 10-4812WI     |                      | 12 VDC                | 830 mA                     |
|                              |   | THM 10-4813WI     | 18 - 75 VDC          | 15 VDC                | 670 mA                     |
|                              |   | THM 10-4815WI     |                      | 24 VDC                | 416 mA                     |
|                              |   | THM 10-4821WI     |                      | ± 5 VDC               | ±1000 mA                   |
|                              |   | THM 10-4822WI     |                      | ±12 VDC               | ± 416 mA                   |
|                              |   | THM 10-4823WI     |                      | ±15 VDC               | ± 333 mA                   |

| Dimensions       |                              | Pin |               |             |
|------------------|------------------------------|-----|---------------|-------------|
| Standard pinning | Optional pinning: suffix -A1 | Pin | Single output | Dual output |
|                  |                              | 2   | - Vin (GND)   | - Vin (GND) |
|                  |                              | 11  | No con.       | - Vout      |
|                  |                              | 14  | + Vout        | + Vout      |
|                  |                              | 16  | - Vout        | Common      |
|                  |                              | 22  | + Vin (Vcc)   | + Vin (Vcc) |
|                  |                              | 23  | + Vin (Vcc)   | + Vin (Vcc) |

( ) = Inches

# THV / PHV Series ▶ 2/5 W

- ▶ Ultra compact high voltage converter up to 2000 VDC
- ▶ Full SMD-design with ceramic capacitors for high reliability
- ▶ Very low electromagnetic interference
- ▶ Excellent output stability
- ▶ Low temperature drift
- ▶ Remote voltage programming
- ▶ Short circuit protection
- ▶ Positive or negative output models
- ▶ PCB-mount or flying lead version
- ▶ Shielded metal casing



## Specifications

|                             |  |
|-----------------------------|--|
| Line regulation             | 0.03% for THV<br>0.01% for PHV   |
| Load regulation             | THV models: 0.08%<br>PHV models: 0.1%  |
| Output voltage adjustment   | 0...100% (by external resistor or reference voltage)   |
| Ripple & noise              | THV: < 30 mVpk-pk (20 MHz BW)<br>PHV: <100 mVpk-pk (20 MHz BW)   |
| Short circuit protection    | continuous   |
| Efficiency                  | 65% typ.   |
| Operating temperature range | THV models: -10 °C to +60 °C, above 50 °C derating 4%/K<br>PHV models: -10 °C to +50 °C, above 40 °C derating 4%/K   |
| Temperature coefficient     | 0.01%/K  |
| Stability                   | 0.05%/8 h drift  |
| Remote On/Off               | for THV 500-2,000 VDC and PHV models   |
| Casing                      | metal  |
| Full datasheet              | <a href="http://www.tracopower.com/products/thv.pdf">www.tracopower.com/products/thv.pdf</a><br><a href="http://www.tracopower.com/products/phv.pdf">www.tracopower.com/products/phv.pdf</a> |

## THV Models 2 Watt

| Order code * | Input voltage range | Output voltage | Output current max. | Case |
|--------------|---------------------|----------------|---------------------|------|
| THV 12-180P  |                     | 0 - 180 VDC    | 15 mA               | A    |
| THV 12-300P  | 10.8 - 13.2 VDC     | 0 - 300 VDC    | 10 mA               | A    |
| THV 12-350P  |                     | 0 - 350 VDC    | 7 mA                | A    |
| THV 12-500P  |                     | 0 - 500 VDC    | 6 mA                | B    |
| THV 12-1000P |                     | 0 - 1000 VDC   | 2 mA                | B    |
| THV 12-1500P | 10.8 - 16.5 VDC     | 0 - 1500 VDC   | 1.3 mA              | B    |
| THV 12-2000P |                     | 0 - 2000 VDC   | 1 mA                | B    |

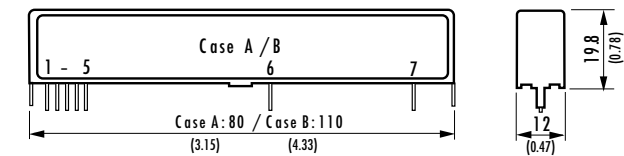
\* replace suffix P by suffix N for negative output

## PHV Models 5 Watt

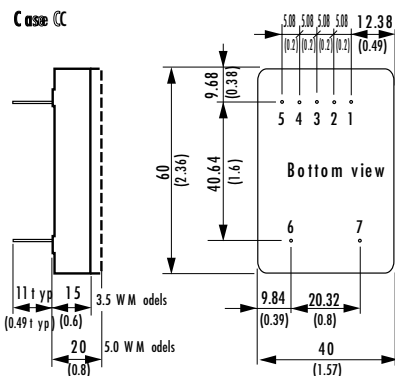
| Order code *       | Input voltage range | Output voltage | Output current max. | Case |
|--------------------|---------------------|----------------|---------------------|------|
| PHV 12-350 S 10P   |                     | 0 - 350 VDC    | 10 mA               | C    |
| PHV 12-0.5 K 1000P | 10.8 - 16.5 VDC     | 0 - 500 VDC    | 10 mA               | C    |
| PHV 12-1.0 K 5000P |                     | 0 - 1000 VDC   | 5 mA                | C    |
| PHV 12-2.0 K 2500P |                     | 0 - 2000 VDC   | 2.5 mA              | C    |

\* replace suffix P by suffix N for negative output

## Dimensions



Models with flying lead connection available on request



| Pin | Case A      | Case B        | Case C        |
|-----|-------------|---------------|---------------|
| 1   | + Vin (Vcc) | + Vin (VCC)   | + Vin (Vcc)   |
| 2   | - Vin (GND) | - Vin (GND)   | - Vin (GND)   |
| 3   | Vadj.       | Vadj.         | Vadj.         |
| 4   | Vref.       | Vref.         | Vref.         |
| 5   | No pin      | Remote On/Off | Remote On/Off |
| 6   | - Vout      | - Vout        | - Vout        |
| 7   | + Vout      | + Vout        | + Vout        |

() = Inches

# TCL-DC Series ▶ 24 to 60 W



- ▶ Slim plastic case
- ▶ For industrial-, office- and residential environments
- ▶ Available with detachable screw terminals or spring clamps
- ▶ Standard models with 5, 12 and 24VDC output
- ▶ Models with: 9.5–18 VDC and 18–75 VDC output
- ▶ Worldwide safety approval package
- ▶ Adjustable output voltage
- ▶ Power Good signal
- ▶ Parallel and redundant operation



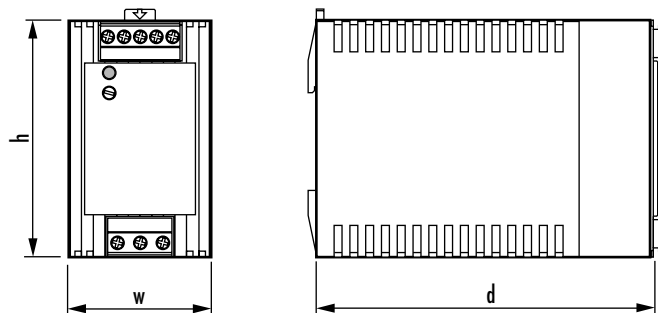
| Specifications               |  |
|------------------------------|--|
| Output regulation            | 1.25 % max.  |
| Ripple & noise               | <50 mVpk-pk (20 MHz BW)  |
| EMI emission                 | EN 55011, class B, EN 55022, class B, EN61000-6-3  |
| EMC immunity                 | EN 61000-6-2 (industrial environment)  |
| Output current limitation    | at 130 % of Iout max.  |
| Over voltage protection      | at 140 % of Vout nom.  |
| Efficiency                   | 90 % typ.  |
| DC-OK Signal                 | open collector / max. 30 mA  |
| Operating temperature        | -25 °C to +70 °C<br>above 50 °C derating 1.5%/K  |
| Safety standards / approvals | cUL/UL 60950-1, UL 508C listed, IEC/EN 60950-1, CB-Report EN 50178, EN 60204                       |
| Connection                   | detachable screw terminals or spring clamp terminals   |
| Casing                       | plastic (UL 94V-0 rated)   |
| Mounting                     | snap-on mounting on 35 mm DIN-rail or chassis mounting with mounting bracket (included)            |
| Options                      | output current characteristics set for battery charging applications                               |
| Full datasheet               | <a href="http://www.tracopower.com/products/tcl-dc.pdf">www.tracopower.com/products/tcl-dc.pdf</a> |

| Models        |                   |                                    |                     |
|---------------|-------------------|------------------------------------|---------------------|
| Order code    | Output power max. | Output voltage (adjustable output) | Output current max. |
| TCL 012-124DC | 9.5 – 18 VDC      | 24 VDC                             | 1.0 A               |
| TCL 024-105DC |                   | 5 VDC                              | 5.0 A               |
| TCL 024-112DC | 18 – 75 VDC       | 12 VDC                             | 2.0 A               |
| TCL 024-124DC |                   | 24 VDC                             | 1.0 A               |
| TCL 060-112DC | 18 – 75 VDC       | 12 VDC                             | 5.0 A               |
| TCL 060-124DC |                   | 24 VDC                             | 2.5 A               |

without suffix: detachable screw terminal block  
with suffix C: spring clamps

| Redundancy Module |                                |                |                     |
|-------------------|--------------------------------|----------------|---------------------|
| Order code        | 2 Inputs                       | Output voltage | Output current max. |
| TCL-REM240        | 5 – 60 VDC<br>144 W max./input | Vin – 0.9 VDC  | 8.0 A               |

## Dimensions



| Type          | Width w   | Height h  | Depth d    |
|---------------|-----------|-----------|------------|
| TCL 012       | 27 (1.06) | 75 (2.95) | 100 (3.94) |
| TCL 024 & REM | 27 (1.06) | 75 (2.95) | 100 (3.94) |
| TCL 060       | 45 (1.77) | 75 (2.95) | 100 (3.94) |

() = Inches

# TZL Series ▶ 60 to 300 W

- ▶ Compact metal casing with screw terminal block
- ▶ Wide 2:1 input voltage range
- ▶ I/O isolation 1500VDC
- ▶ Input reverse polarity protection
- ▶ Soft start, low inrush current
- ▶ Overload and short circuit protection
- ▶ Adjustable output voltage
- ▶ Cost optimized design



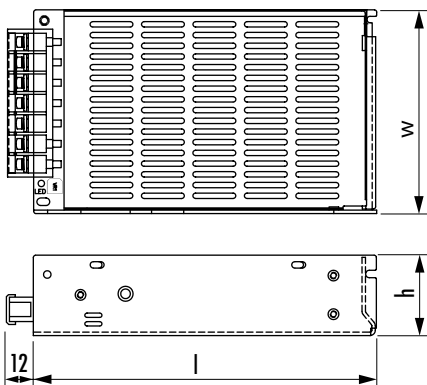
## Specifications

|                             |  |
|-----------------------------|--|
| Line regulation             | 1.0% max.  |
| Load regulation             | 1.0% max.  |
| Output voltage adjustment   | ±10% (by internal potentiometer)   |
| Ripple & noise              | 12VDC output models: <100 mVpk-pk (20 MHz BW)<br>24VDC output models: <150 mVpk-pk (20 MHz BW) |
| Conducted EMI               | EN 55022 class EN55022 class B   |
| EMC immunity                | EN 61000-6-1 (light industry)  |
| Short circuit protection    | foldback, automatic recovery   |
| Efficiency                  | 80% typ.   |
| Operating temperature range | -10 °C to +60 °C<br>above 50 °C derating 2.5%/K  |
| I/O isolation voltage       | 1500VDC (60 sec.)  |
| Safety standards            | IEC/EN 60950-1 (no report)   |
| Casing                      | aluminium / steel  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tzl.pdf">www.tracopower.com/products/tzl.pdf</a>   |

## Models

| Order code   | Input voltage range | Output voltage | Output current max. |
|--------------|---------------------|----------------|---------------------|
| TZL 060-2412 | 18-36 VDC           | 12 VDC         | 5.0 A               |
| TZL 060-2424 |                     | 24 VDC         | 2.5 A               |
| TZL 060-4812 | 36-72 VDC           | 12 VDC         | 5.0 A               |
| TZL 060-4824 |                     | 24 VDC         | 2.5 A               |
| TZL 100-2412 | 19-36 VDC           | 12 VDC         | 8.5 A               |
| TZL 100-2424 |                     | 24 VDC         | 4.2 A               |
| TZL 100-4812 | 36-72 VDC           | 12 VDC         | 8.5 A               |
| TZL 100-4824 |                     | 24 VDC         | 4.2 A               |
| TZL 150-2412 | 19-32 VDC           | 12 VDC         | 12.5 A              |
| TZL 150-2424 |                     | 24 VDC         | 6.3 A               |
| TZL 150-4812 | 36-72 VDC           | 12 VDC         | 12.5 A              |
| TZL 150-4824 |                     | 24 VDC         | 6.3 A               |
| TZL 300-4812 | 36-72 VDC           | 12 VDC         | 26.7 A              |
| TZL 300-4824 |                     | 24 VDC         | 13.4 A              |

## Dimensions



| Type    | Length<br>l | Width<br>w | Height<br>h |
|---------|-------------|------------|-------------|
| TZL 060 | 159 (6.26)  | 95 (3.74)  | 38 (1.50)   |
| TZL 100 | 198 (7.80)  | 95 (3.74)  | 38 (1.50)   |
| TZL 150 | 198 (7.80)  | 99 (3.90)  | 50 (1.97)   |
| TZL 300 | 212 (8.35)  | 115 (4.53) | 50 (1.97)   |

() = Inch

# TSC Series ▶ 150 to 5000 W

- ▶ Modular system for individual power solution
- ▶ Robust mechanical design for industrial applications
- ▶ Input voltages from 10 to 800 VDC
- ▶ Input under voltage lockout
- ▶ Standard models with output voltages up to 400 VDC
- ▶ Also AC input 115/230 VAC or 400/480 VAC 3P available
- ▶ EMI complies with EN 55022, class A
- ▶ Available with many options

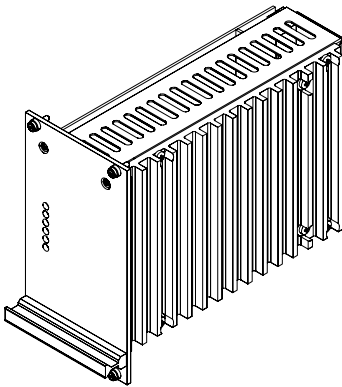


## Specifications

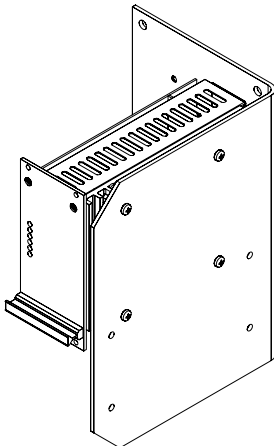
|                             |  |
|-----------------------------|--|
| Line regulation             | 0.1% max.  |
| Load regulation             | 0.2% max.  |
| Ripple & noise              | <1% Vout + 30 mVpk-pk (20 MHz BW)  |
| Conducted EMI               | EN 55022, Class A  |
| Short circuit protection    | continuous, automatic recovery   |
| Overvoltage protection      | 105% of Vout (factory adjustable)  |
| Efficiency                  | 85% typ.   |
| Operating temperature range | -20 °C to +75 °C   |
| I/O isolation voltage       | 2100 VDC (Vin < 60 VDC)<br>3500 VDC (Vin > 60 VDC & VAC input models)                        |
| Safety standards            | IEC/EN 60950-1 (no report)   |
| Full datasheet              | <a href="http://www.tracopower.com/products/tsc.pdf">www.tracopower.com/products/tsc.pdf</a> |

## 4 Package styles available

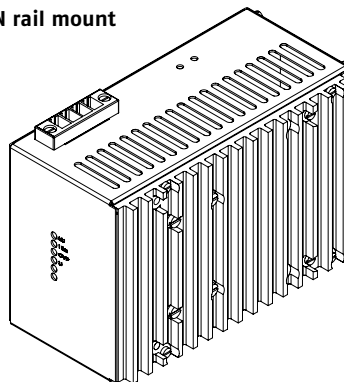
### Rack mount



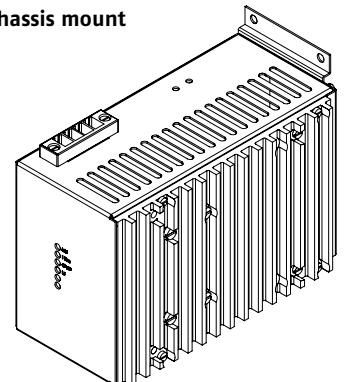
### Wall mount



### DIN rail mount



### Chassis mount



For higher power modules DIN rail mount and chassis mount might not be suitable because of static reasons (weight)

## Models

| Input voltage range | Output power                             | Output voltage range |
|---------------------|--|----------------------|
| 10 – 16 VDC         | Models with<br>150W – 5000W<br>available | 4.5 – 5.5 VDC        |
| 18 – 36 VDC         |  | 8 – 10 VDC           |
| 36 – 75 VDC         |  | 11 – 13 VDC          |
| 80 – 160 VDC        |  | 14 – 16 VDC          |
| 160 – 320 VDC       |  | 23 – 26 VDC          |
| 320 – 640 VDC       |  | 26 – 30 VDC          |
| 450 – 800 VDC       |  | 45 – 55 VDC          |
|                     |  | 58 – 68 VDC          |
|                     |  | 100 – 130 VDC        |
|                     |  | 200 – 250 VDC        |
|                     |  | 380 – 400 VDC        |

Other input and output voltages on demand

### Options (examples):

- ▶ Inrush current limiting
- ▶ Input voltage: 115/230 VAC, single phase or 200/400/480 VAC, three phase
- ▶ Input polarity protection
- ▶ Output decoupling diode for redundant / parallel operation
- ▶ Active current sharing for parallel operation
- ▶ Remote On/Off (inhibit)
- ▶ Output programmable via analogue signal
- ▶ Monitoring of input and output voltage
- ▶ RS232 or IEEE488 interface
- ▶ Increased mechanical strength
- ▶ Tropical protection

for model selection visit TRACOPOWER website

# TSC 19" Series ▶ 5 to 22 kW

- ▶ Modular system for individual power solution
- ▶ Robust mechanical design for industrial applications
- ▶ Input voltages from 20 to 800VDC
- ▶ Standard models with output voltages up to 800VDC
- ▶ Also AC input 115/230 VAC or 400/480 VAC 3P available
- ▶ EMI complies with EN 55022, Class A
- ▶ Available with many options



| Specifications              |  |
|-----------------------------|--|
| Line regulation             | 0.1% max.  |
| Load regulation             | 0.2% max.  |
| Ripple & noise              | 0.5% Vrms  |
| Conducted EMI               | EN 55022-A   |
| Noise Immunity              | EN 50082   |
| Short circuit protection    | continuous, automatic recovery   |
| Overvoltage protection      | 105% of Vout   |
| Efficiency                  | 90% typ.   |
| Operating temperature range | -10 °C to +50 °C   |
| I/O isolation voltage       | 2100VDC (Vin < 60VDC)<br>3500VDC (Vin > 60VDC & VAC input models)                            |
| Safety standards            | IEC/EN 60950-1   |
| Full datasheet              | <a href="http://www.tracopower.com/products/tsc.pdf">www.tracopower.com/products/tsc.pdf</a> |

| Models  |  |                      |  |
|---|--|----------------------|--|
| Input voltage range   | Output power                             | Output voltage range |  |
| <b>40 – 64 VDC</b><br><b>50 – 80 VDC</b><br><b>80 – 160 VDC</b><br><b>160 – 320 VDC</b><br><b>320 – 640 VDC</b><br><b>450 – 800 VDC</b> | Models with<br>5 kW – 22 kW<br>available | 4.5 – 5.5 VDC        |  |
|   |  | 8 – 10 VDC           |  |
|   |  | 11 – 13 VDC          |  |
|   |  | 14 – 16 VDC          |  |
|   |  | 23 – 26 VDC          |  |
|   |  | 26 – 30 VDC          |  |
|   |  | 45 – 55 VDC          |  |
|   |  | 58 – 68 VDC          |  |
|   |  | 100 – 130 VDC        |  |
|   |  | 200 – 250 VDC        |  |
| 380 – 400 VDC   |  |                      |  |
| 570 – 600 VDC   |  |                      |  |
| 760 – 800 VDC   |  |                      |  |
| Other input and output voltages on demand   |  |                      |  |

**Options (examples):**

- ▶ Input voltage: 115/230 VAC, single phase or 200/400/480 VAC, three phase
- ▶ Input polarity protection
- ▶ Output decoupling diode for redundant / parallel operation
- ▶ Active current sharing for parallel operation
- ▶ Remote On/Off (inhibit)
- ▶ Output programmable via analogue signal
- ▶ Monitoring of input and output voltage
- ▶ RS232 or IEEE488 interface
- ▶ Wall mounting
- ▶ Increased mechanical strength
- ▶ Automatic/manual setting of output characteristic
- ▶ Temperature compensated battery charging voltage
- ▶ Digital Volt- and Ampere meter
- ▶ Tropical protection

for model selection visit TRACOPOWER website

| Dimensions |            |
|------------|------------|
| Power [kW] | Width [mm] |
| 5/7.5/10   | 19"        |
| 6/8/12     | 19"        |
| 22         | 19"        |

| Power [kW] | Width [mm] | Depth [mm] | Height [mm]    |
|------------|------------|------------|----------------|
| 5/7.5/10   | 19"        | 600        | 178 (4U)       |
| 6/8/12     | 19"        | 360/460*   | 267/400 (6/9U) |
| 22         | 19"        | 600        | 356 (8U)       |

\* depending on output current

# TSD Series ▶ 200 VA to 30 kVA

- ▶ True sine wave output (40–400 Hz)
- ▶ 19" subracks or plug-in modules for 19" subrack
- ▶ Single phase or 3-phase output
- ▶ DC input 10 – 800 VDC
- ▶ AC input (for frequency conversion)
- ▶ Isolation between input and output
- ▶ Compact and robust design for industrial environment
- ▶ Low standby power consumption



| Specifications   | Models  |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
|--|---|---|--------------|----------------|--|--|---|---|-------------|-----------|---|--|---|-----------|-----|-----|-----------|-----------|-----|-----|----------|-----|--------------|--|--|--|----------------------------|--|--|--|-------------|------------|------------|-------------|--------|-----|-----|----------|----------|-------------|---|--|--|--|--|--|--|--|
| Line regulation  | 0.1% to 2% depending on model   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Load regulation  | 1% typ.   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Harmonic distortion  | 3% typ.   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| EMC suppression  | EN 55022, Class A   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| EMC immunity   | according to EN 61000-6-2   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Output current limitation at 105% of I <sub>out</sub> max. (steady state)  |   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Short circuit current  | electronically limited to 3x I <sub>out</sub> max.  |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Surge power  | 2 x P <sub>nom.</sub> for 1 sec.  |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Efficiency   | 75–94%  |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| No-load input power  | 20 Watt typ.  |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Operating temperature  | –20 °C to +75 °C<br>above 55 °C derating 2.5%/K   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| I/O isolation voltage  | 3000VDC   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Safety standards   | IEC/EN60950-1   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Full datasheet   | <a href="http://www.tracopower.com/products/tsd.pdf">www.tracopower.com/products/tsd.pdf</a>  |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
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| Input voltage range  | Output power  | Output voltage  |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| 10 – 16 VDC<br>20 – 32 VDC<br>40 – 64 VDC<br>50 – 80 VDC<br>80 – 160 VDC<br>160 – 320 VDC<br>340 – 400 VDC<br>340 – 640 VDC<br>450 – 800 VDC | <b>Inverte</b><br>models with<br>200 VA – 30 kVA  | Single-phase<br>115/230 VAC<br>Three-phase<br>200/400/480 VAC |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Other input and output voltages on demand  |   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Single-phase<br>115/230 VAC<br>Three-phase<br>200/400/480 VAC  | <b>Frequency converter</b><br>models with<br>600 VA – 36 kVA  | Single-phase<br>115/230 VAC<br>Three-phase<br>200/400/480 VAC |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
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| Models with 1-phase output   |   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Power [kVA]  | Depth [mm]  | Width [mm]  | Height [mm]  |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| up to 0.6  | 160   | 213   | 267 (6U)     |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| up to 1.2  | 220   | 284   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| up to 1.6  |   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| up to 2.5  | 300   | 19"   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| up to 10   | 460   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| 19" = 483 mm   |   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Models with 3-phase output   |   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| Power [kVA]  | Depth [mm]  | Width [mm]  | Height [mm]  |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| 0.6–10   | 460   | 19"   | 267 (6U)     |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| up to 30   |   |   | 267 (3x 6U)  |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| * for low input voltages there will be less power in relation to the size  |   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
| ° for power ratings >3.6 kVA the transformer needs to be installed externally because of weight and size                                     |   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |
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| Dimensions   |   |   |              |                |  |  |   |   |             |           |   |  |   |           |     |     |           |           |     |     |          |     |              |  |  |  |                            |  |  |  |             |            |            |             |        |     |     |          |          |             |   |  |  |  |  |  |  |  |



# TOP-60 Series ▶ 60 W



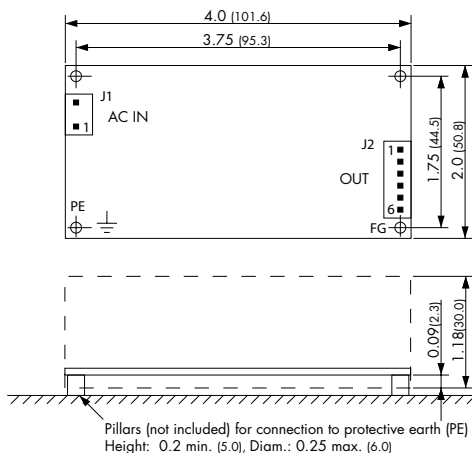
- ▶ 4.0" x 2.0" footprint
- ▶ Supplies 60 W with convection cooling
- ▶ Single-, dual- and triple output models
- ▶ Compliance with EN 61000-3-2



| Specifications               |  | Models     |                   |                                |                                     |
|------------------------------|--|------------|-------------------|--------------------------------|-------------------------------------|
| Input voltage range          | 90–264 VAC, 47–63 Hz   | Order code | Output power max. | Output 1                       | Output 2/3                          |
| Line regulation              | 1.0% max.  | TOP 60105  | 55 W              | 5.0 VDC / 11.0 A               |                                     |
| Load regulation              | 2.0% max. for single output models<br>3.0% max. for multi output models                          | TOP 60112  | 60 W              | 12 VDC / 5.0 A                 |                                     |
| Ripple & noise (20 MHz BW)   | <100 mVpk-pk for 3.3 and 5 VDC models<br><120 mVpk-pk for other models                           | TOP 60115  | 64 W              | 15 VDC / 4.3 A                 |                                     |
| EMI emission                 | EN 55011/22 class B, harmonic current EN 61000-3-2   | TOP 60124  | 64 W              | 24 VDC / 2.7 A                 |                                     |
| EMC immunity                 | EN 61000-6-1   | TOP 60148  | 64 W              | 48 VDC / 1.35 A                |                                     |
| Output current limitation    | >110% of I <sub>out</sub> max.   | TOP 60252  | 55 W              | +5.0 VDC / 6.0 A <sup>1)</sup> | +12 VDC / 3.0 A                     |
| Efficiency                   | 85% typ.   | TOP 60254  | 55 W              | +5.0 VDC / 6.0 A <sup>1)</sup> | +24 VDC / 1.5 A                     |
| Oversvoltage protection      | >110% of V <sub>out</sub> nom.   | TOP 60522  | 55 W              | +5.0 VDC / 6.0 A <sup>1)</sup> | +12 VDC / 3.0 A<br>-12 VDC / 0.5 A  |
| Operating temperature        | -10 °C to +70 °C (convection cooling)<br>derating 2.0%/K above 50 °C,                            | TOP 60533  | 55 W              | +5.0 VDC / 6.0 A <sup>1)</sup> | +15 VDC / 2.4 A<br>-15 VDC / 0.5 A  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1 CB-report   | TOP 60316  | 38 W              | +3.3 VDC / 6.0 A <sup>1)</sup> | +5.2 VDC / 3.0 A<br>+12 VDC / 0.5 A |
| Degree of protection         | class I  | TOP 60317  | 38 W              | +5.0 VDC / 6.0 A <sup>1)</sup> | +3.3 VDC / 1.5 A<br>+12 VDC / 0.5 A |
| Full datasheet               | <a href="http://www.tracopower.com/products/top60.pdf">www.tracopower.com/products/top60.pdf</a> | TOP 60318  | 55 W              | +5.0 VDC / 6.0 A <sup>1)</sup> | +24 VDC / 1.5 A<br>-12 VDC / 0.5 A  |

1) 8.0 A peak current for max. 10 sec. or with forced air cooling  
Total power of multi output models not to exceed nominal power

## Dimensions



Pillars (not included) for connection to protective earth (PE)  
Height: 0.2 min. (5.0), Diam.: 0.25 max. (6.0)  
To comply with EN 55022 class B:  
Field ground (FG) and protective earth (PE)  
are to be connected to chassis

( ) = mm

# TOP-100 Series ▶ 100 W



- ▶ Low profile 2.0" x 4.0" footprint
- ▶ Full load operation up to +50°C with convection cooling
- ▶ High efficiency of 90% typ.
- ▶ Operating temperature range -25 °C to +70 °C
- ▶ Compliance with EN 61000-3-2
- ▶ Safety class I and class II
- ▶ Optional case version



## Specifications

|                              |   |
|------------------------------|---|
| Input voltage range          | 90-132 VAC / 187-264 VAC (autorange) 47-63 Hz   |
| Line regulation              | 0.5% max.   |
| Load regulation              | 1.0% max.   |
| Output voltage adjustment    | approx. +5 % of Vout nom. by internal potentiometer   |
| Ripple & noise (20 MHz BW)   | <100 mVpk-pk<br><200 mVpk-pk for 48 V models  |
| EMI emission                 | EN 55011/22 class B, harmonic current EN 61000-3-2  |
| EMC immunity                 | EN61000-6-1   |
| Output current limitation    | >125% Inom. foldback, automatic recovery  |
| Efficiency                   | 90% typ.  |
| Operating temperature        | -25 °C to +70 °C (convection cooling)<br>derating 2.0%/K above 50 °C,<br>for 3.3 & 5.0 VDC models: 2.0%/K above 40 °C |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report   |
| Degree of protection         | class I, class II prepared with second fuse   |
| Full datasheet               | <a href="http://www.tracopower.com/products/top100.pdf">www.tracopower.com/products/top100.pdf</a>                    |

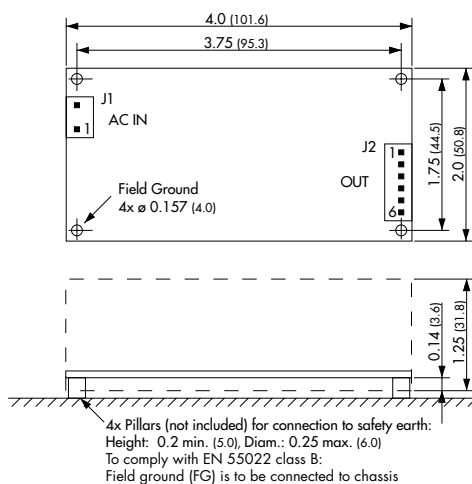
## Models open frame

| Order code  | Output power max. | Output voltage | Output current max. |
|-------------|-------------------|----------------|---------------------|
| TOP 100-105 |                   | 5 VDC          | 20 A                |
| TOP 100-112 |                   | 12 VDC         | 8.3 A               |
| TOP 100-115 | 100 W             | 15 VDC         | 6.7 A               |
| TOP 100-124 |                   | 24 VDC         | 4.2 A               |
| TOP 100-148 |                   | 48 VDC         | 2.1 A               |

## Models chassis cover

| Order code   | Output power max. | Output voltage | Output current max. |
|--------------|-------------------|----------------|---------------------|
| TOP 100-105C |                   | 5 VDC          | 20 A                |
| TOP 100-112C |                   | 12 VDC         | 8.3 A               |
| TOP 100-115C | 100 W             | 15 VDC         | 6.7 A               |
| TOP 100-124C |                   | 24 VDC         | 4.2 A               |
| TOP 100-148C |                   | 48 VDC         | 2.1 A               |

## Dimensions



() = mm

# TPI-100 Series ▶ 100 W



- ▶ Highest power density open frame  
100 W power supply in 2" x 3" package
- ▶ Ready to meet ErP directive,  
< 0.3 W no load power consumption
- ▶ Highest efficiency 91 to 92%  
across 10% – 100% load range
- ▶ Active power factor correction (>95)
- ▶ Protection class II prepared
- ▶ Operating up to 5000 m altitude
- ▶ Optional case version

**NEW**  
Product



## Specifications

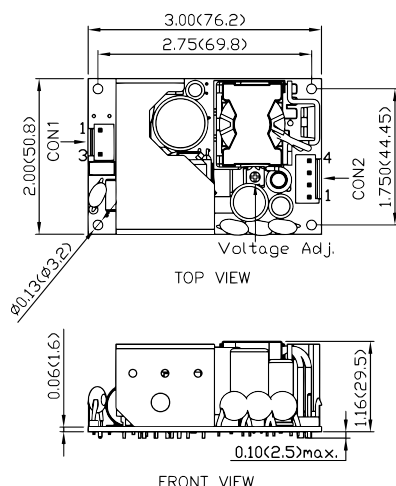
|                              |  |
|------------------------------|--|
| Input voltage range          | universal input 85-264VAC  |
| Line regulation              | 0.2% max.  |
| Load regulation              | 0.5% max.  |
| Output voltage adjustment    | approx. +5 % of Vout nom. by internal potentiometer  |
| Ripple & noise (20 MHz BW)   | 120 – 340 mVpk-pk depending on model with external capacitor                                       |
| EMI emission                 | EN 55011/22 class B, harmonic current EN 61000-3-2   |
| EMC immunity                 | EN61000-6-2  |
| Output current limitation    | >125% Inom. foldback, automatic recovery   |
| Efficiency                   | 91% typ.   |
| Operating temperature        | -40 °C to +80 °C (convection cooling)<br>derating 2.0%/K above 50 °C                               |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  |
| Degree of protection         | class II prepared  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tpi100.pdf">www.tracopower.com/products/tpi100.pdf</a> |

## Models

| Order code     | Output power max. | Output voltage | Output current max. |
|----------------|-------------------|----------------|---------------------|
| TPI 100-112A-J |                   | 12 VDC         | 8.34 A              |
| TPI 100-115A-J |                   | 15 VDC         | 6.67 A              |
| TPI 100-124A-J | 100 W             | 24 VDC         | 4.17 A              |
| TPI 100-136A-J |                   | 36 VDC         | 2.78 A              |
| TPI 100-148A-J |                   | 48 VDC         | 2.09 A              |

on demand: case version

## Dimensions



( ) = mm

# TPI-150 Series ▶ 150 W



- ▶ Highest power density open frame  
150 W power supply in 2" x 4" package
- ▶ EN 55022 without ground plane
- ▶ Ready to meet ErP directive,  
< 0.3 W no load power consumption
- ▶ Highest efficiency 91 to 92%  
across 10% – 100% load range
- ▶ Active power factor correction (>95)
- ▶ Protection class II prepared
- ▶ Operating up to 5000 m altitude

**NEW  
Product**

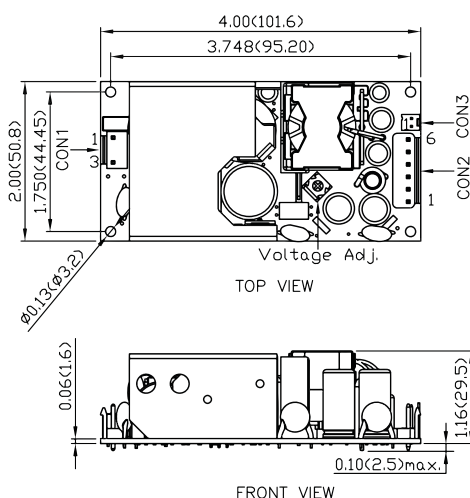


|                              |  |
|------------------------------|--|
| Input voltage range          | universal input 85-264VAC  |
| Line regulation              | 0.2% max.  |
| Load regulation              | 0.5% max.  |
| Output voltage adjustment    | approx. +5 % of Vout nom. by internal potentiometer  |
| Ripple & noise (20 MHz BW)   | 120 – 250 mVpk-pk depending on model with external capacitor                                       |
| EMI emission                 | EN 55011/22 class B, harmonic current EN 61000-3-2   |
| EMC immunity                 | EN61000-6-2  |
| Output current limitation    | >125% Inom. foldback, automatic recovery   |
| Efficiency                   | 91% typ.   |
| Operating temperature        | -40 °C to +80 °C (convection cooling)<br>derating 2.0%/K above 50 °C                               |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  |
| Degree of protection         | class II prepared  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tpi150.pdf">www.tracopower.com/products/tpi150.pdf</a> |

| Order code     | Output power max.* | Output voltage | Output current max. |
|----------------|--------------------|----------------|---------------------|
| TPI 150-112A-J |                    | 12 VDC         | 12.5 A              |
| TPI 150-115A-J |                    | 15 VDC         | 10.0 A              |
| TPI 150-124A-J | 150 W              | 24 VDC         | 6.25 A              |
| TPI 150-136A-J |                    | 36 VDC         | 4.17 A              |
| TPI 150-148A-J |                    | 48 VDC         | 3.13 A              |

\* for 100-150 W operation forced air cooling with 10 CFM is required

## Dimensions



( ) = mm

# TOP-200 Series ▶ 200 W



- ▶ High power density in 3.0" x 5.0" footprint
- ▶ Supplies 200 W (without fan!)
- ▶ Highest efficiency of 90% typ.
- ▶ Operating temperature range  $-25\text{ }^{\circ}\text{C}$  to  $+70\text{ }^{\circ}\text{C}$
- ▶ Universal input 85–264 VAC
- ▶ Compliance with EN 61000-3-2
- ▶ Protection class I and class II
- ▶ Optional case version



## Specifications

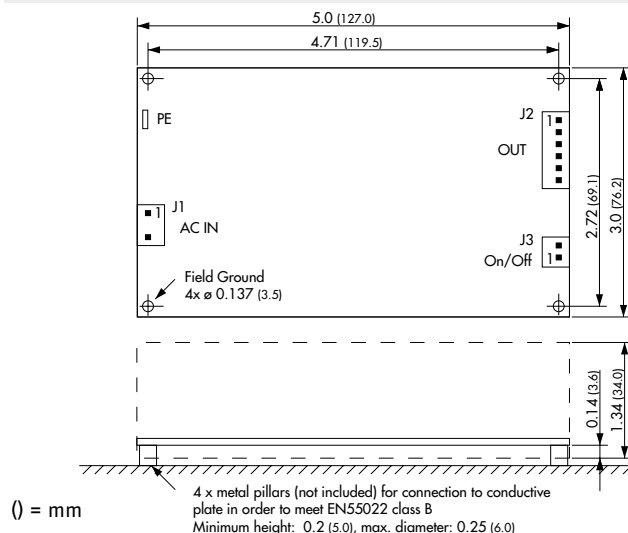
|                                 |   |
|---------------------------------|---|
| Input voltage range             | 85–264 VAC, 47–63 Hz  |
| Line regulation                 | 0.5% max.   |
| Load regulation                 | 1.0% max.   |
| Ripple & noise<br>(20 MHz BW)   | <120 mVpk-pk for other models<br><150 mVpk-pk for 48 VDC models   |
| EMI emission                    | EN 55011/22 class B, harmonic current EN 61000-3-2  |
| EMC immunity                    | EN 61000-6-1  |
| Output current limitation       | >110% of I <sub>out</sub> max.  |
| Efficiency                      | 90% typ.  |
| Overvoltage protection          | >130% of V <sub>out</sub> nom.  |
| Operating temperature           | $-25\text{ }^{\circ}\text{C}$ to $+70\text{ }^{\circ}\text{C}$ (convection cooling)<br>derating 2.0%/K above $40\text{ }^{\circ}\text{C}$ for 12 & 15 VDC models<br>derating 2.0%/K above $50\text{ }^{\circ}\text{C}$ for 24 & 48 VDC models |
| Safety standards /<br>approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report   |
| Degree of protection            | class I, class II prepared  |
| Full datasheet                  | <a href="http://www.tracopower.com/products/top200.pdf">www.tracopower.com/products/top200.pdf</a>  |

## Models

| Order code     | Output power<br>max. | Output voltage | Output current<br>max. |
|----------------|----------------------|----------------|------------------------|
| TOP 200-112(C) | 200 W                | 12 VDC         | 16 A                   |
| TOP 200-115(C) |                      | 15 VDC         | 13 A                   |
| TOP 200-124(C) |                      | 24 VDC         | 8.3 A                  |
| TOP 200-148(C) |                      | 48 VDC         | 4.2 A                  |

\* with suffix C: case version

## Dimensions



# TMSB-2 Series ▶ 2 W



- ▶ Standby power module to comply with ErP directive; no load input power < 30mW
- ▶ EN 60335 household appliance
- ▶ Constant power characteristics at 2W (no current limitation)
- ▶ Suitable to drive relays, solenoids, capacitive loads and LED's
- ▶ Constant voltage auxiliary outputs 3.3 and 5 VDC
- ▶ Operating temperature range -30°C to +70°C
- ▶ EMI meets EN 55022, class B

**NEW Product**



## Specifications

|                              |  |
|------------------------------|--|
| Input voltage range          | 85–264 VAC, 47–63 Hz   |
| Line regulation              | Output 1: 1.0 %<br>Output 2: 0.3%  |
| Load regulation              | Output 1: 1.0 %<br>Output 2: 0.5%  |
| Ripple & noise (20 MHz BW)   | Output 1: 1 % of Vout [Vp-p] typ.<br>Output 2: 0.1 % of Vout [Vp-p] typ.                         |
| EMI emission                 | EN 55022 class B   |
| EMC immunity                 | EN 61000-6-1   |
| Efficiency                   | 72 % typ.  |
| Operating temperature        | -30 °C to +70 °C (convection cooling)<br>derating 2.0%/K above 60 °C                             |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, EN 60335, CB-report  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmsb2.pdf">www.tracopower.com/products/tmsb2.pdf</a> |

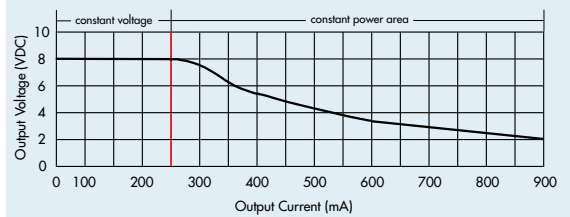
## Models

| Order code  | Output power max. | Output 1                      | Output 2                       |
|-------------|-------------------|-------------------------------|--------------------------------|
| TMSB 2-108  |                   | 8 VDC / 250 mA                | ---                            |
| TMSB 2-114  |                   | 14 VDC / 143 mA               | ---                            |
| TMSB 2-124  |                   | 24 VDC / 83 mA                | ---                            |
| TMSB 2-283  | 2 W               | 8 VDC / 250 mA <sup>1)</sup>  | 3.3 VDC / 160 mA <sup>1)</sup> |
| TMSB 2-285  |                   | 8 VDC / 250 mA <sup>1)</sup>  | 5.0 VDC / 250 mA <sup>1)</sup> |
| TMSB 2-2143 |                   | 14 VDC / 143 mA <sup>2)</sup> | 3.3 VDC / 70 mA <sup>2)</sup>  |
| TMSB 2-2145 |                   | 14 VDC / 143 mA <sup>2)</sup> | 5.0 VDC / 83 mA <sup>2)</sup>  |

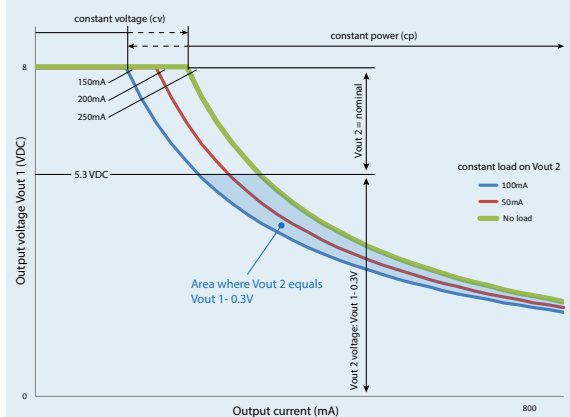
<sup>1)</sup> Total output current must not exceed 250 mA

<sup>2)</sup> Total output current must not exceed 143 mA

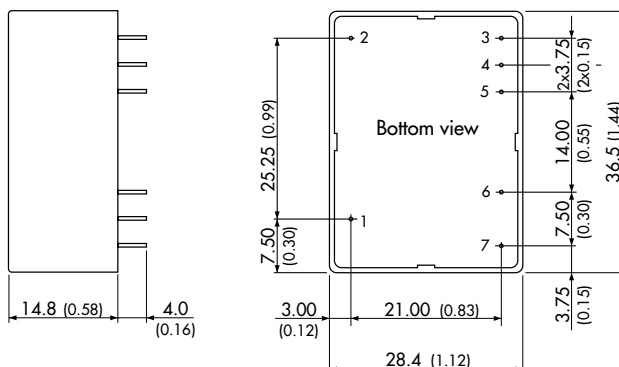
### Output characteristics (single output)



### Output characteristics (dual output)



## Dimensions



( ) = Inches

| Pin | Single output | Dual output |
|-----|---------------|-------------|
| 1   | No con.       | No con.     |
| 2   | No con.       | No con.     |
| 3   | + Vout        | + Vout 1    |
| 4   | - Vout        | Common      |
| 5   | No pin        | + Vout 2    |
| 6   | AC(N)         | AC(N)       |
| 7   | AC(L)         | AC(L)       |

# TMPS-03 Series ▶ 3 W



**UL**  
UL 60950-1

- ▶ Compact 1" x 1" package
- ▶ EN 60335 household appliance
- ▶ Standby power module to comply with ErP directive; no load input power < 300mW
- ▶ Operating temperature range -25°C to +70°C
- ▶ EMI meets EN 55022, class B
- ▶ Short circuit and overload protection
- ▶ Peak current +30%
- ▶ Protection class II prepared

**NEW**  
Product



## Specifications

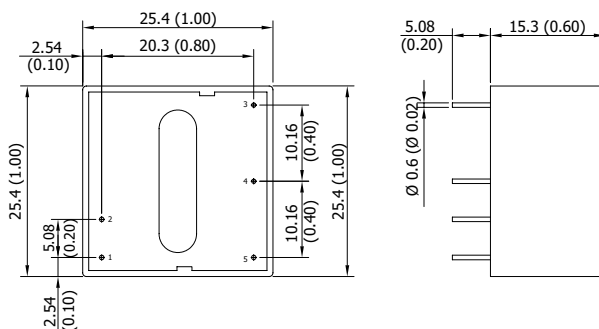
|                              |  |
|------------------------------|--|
| Input voltage range          | 85–264 VAC, 47–63 Hz   |
| Line regulation              | 1.0% max.  |
| Load regulation              | 1.0% max.  |
| Ripple & noise (20 MHz BW)   | 1% of Vout nom.  |
| EMI emission                 | EN 55022 class B   |
| EMC immunity                 | EN 61000-6-1   |
| Efficiency                   | 75% typ.   |
| Operating temperature        | -25 °C to +70 °C (convection cooling)<br>derating 5.0%/K above 60°C                                |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, EN 60335   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmps03.pdf">www.tracopower.com/products/tmps03.pdf</a> |

## Models

| Order code  | Out. power max. | Out. voltage | Nom. current | Output current max.* |
|-------------|-----------------|--------------|--------------|----------------------|
| TMPS 03-103 |                 | 3.3 VDC      | 900 mA       | 1170 mA              |
| TMPS 03-105 |                 | 5.0 VDC      | 600 mA       | 780 mA               |
| TMPS 03-109 | 3 W             | 9.0 VDC      | 333 mA       | 430 mA               |
| TMPS 03-112 |                 | 12 VDC       | 250 mA       | 320 mA               |
| TMPS 03-115 |                 | 15 VDC       | 200 mA       | 260 mA               |
| TMPS 03-124 |                 | 24 VDC       | 125 mA       | 160 mA               |

\* < 30s with maximum duty cycle of 10%  
average output power must not exceed 3W

## Dimensions



() = Inches

## Pin

|   |         |
|---|---------|
| 1 | AC(N)   |
| 2 | AC(L)   |
| 3 | No con. |
| 4 | - Vout  |
| 5 | + Vout  |

# TMPS-05 Series ▶ 5 W



- ▶ Compact 1" x 1" package
- ▶ EN 60335 household appliance
- ▶ Standby power module to comply with ErP directive; no load input power < 300mW
- ▶ Operating temperature range -25°C to +70°C
- ▶ EMI meets EN 55022, class B
- ▶ Short circuit and overload protection
- ▶ Peak current +30%
- ▶ Protection class II prepared



**NEW**  
Product

## Specifications

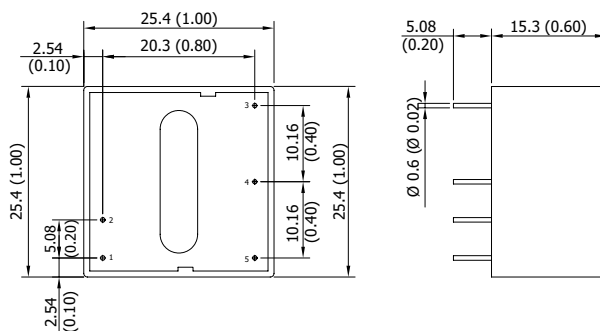
|                              |  |
|------------------------------|--|
| Input voltage range          | 85–264 VAC, 47–63 Hz   |
| Line regulation              | 1.0% max.  |
| Load regulation              | 1.0% max.  |
| Ripple & noise (20 MHz BW)   | 1% of Vout nom.  |
| EMI emission                 | EN 55022 class B   |
| EMC immunity                 | EN 61000-6-1   |
| Efficiency                   | 81% typ.   |
| Operating temperature        | -25 °C to +70 °C (convection cooling)<br>derating 2.5%/K above 50° C                               |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, EN 60335   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmps05.pdf">www.tracopower.com/products/tmps05.pdf</a> |

## Models

| Order code  | Out. power max. | Out. voltage | Nom. current | Output current max.* |
|-------------|-----------------|--------------|--------------|----------------------|
| TMPS 05-103 |                 | 3.3 VDC      | 1515 mA      | 1970 mA              |
| TMPS 05-105 |                 | 5.0 VDC      | 1000 mA      | 1300 mA              |
| TMPS 05-109 |                 | 9.0 VDC      | 555 mA       | 721 mA               |
| TMPS 05-112 | 5 W             | 12 VDC       | 416 mA       | 540 mA               |
| TMPS 05-115 |                 | 15 VDC       | 333 mA       | 433 mA               |
| TMPS 05-124 |                 | 24 VDC       | 208 mA       | 270 mA               |
| TMPS 05-148 |                 | 48 VDC       | 104 mA       | 135 mA               |

\* < 30s with maximum duty cycle of 10%  
average output power must not exceed 5W

## Dimensions



() = Inches

## Pin

|   |         |
|---|---------|
| 1 | AC(N)   |
| 2 | AC(L)   |
| 3 | No con. |
| 4 | - Vout  |
| 5 | + Vout  |



# TMS Series ▶ 6 to 25 W



- ▶ Miniature encapsulated power supplies
- ▶ 3 package styles available:
  - for PCB mount with solder pins
  - for chassis mount with FASTON-tabs
  - for chassis mount with screw terminal block
- ▶ Universal input 85–264 VAC
- ▶ EMI meets 55022, class B
- ▶ Short circuit protection

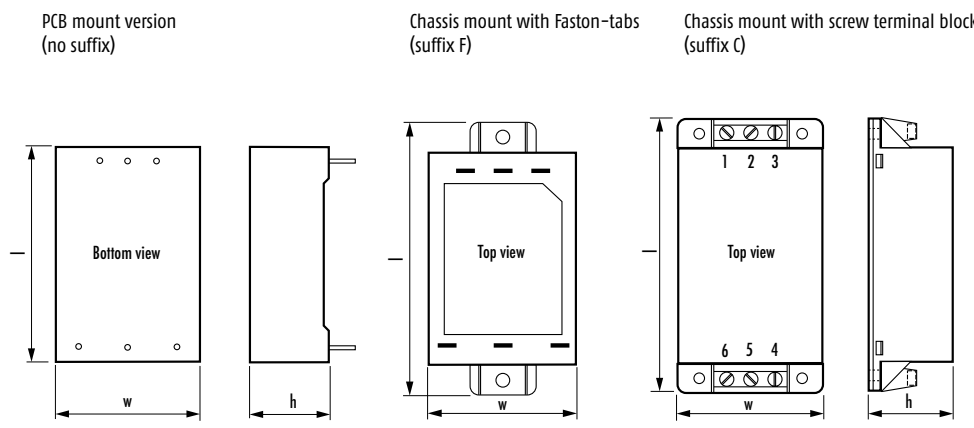


| Specifications               |  |
|------------------------------|--|
| Input voltage range          | 85–264 VAC, 47–63 Hz<br>110–375 VDC  |
| Line regulation              | 0.4% max.  |
| Load regulation              | 1.0% max. for single output models<br>2.0% max. for dual output models                       |
| Ripple & noise               | <100 mVpk-pk (20 MHz BW)   |
| EMI suppression              | EN 55011 class B, EN 55022 class EN55022 class B   |
| EMC immunity                 | EN61000-6-1  |
| Output current limitation    | >130% Iout max., foldback, automatic recovery  |
| Efficiency                   | 78% typ.   |
| Operating temperature        | –25 °C to +60 °C<br>above 50 °C derating 5%/K<br>5 Vout models: above 40 °C derating 2.5%/K  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1 CB-report   |
| Degree of protection         | safety class I   |
| Casing                       | plastic (UL 94V-0 rated)   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tms.pdf">www.tracopower.com/products/tms.pdf</a> |

| Models      |              |                   |                   |
|-------------|--------------|-------------------|-------------------|
| Order code* | Output power | Output 1          | Output 2          |
| TMS 06105   |              | 5 VDC / 1200 mA   |                   |
| TMS 06112   |              | 12 VDC / 500 mA   |                   |
| TMS 06115   | 6 W          | 15 VDC / 400 mA   |                   |
| TMS 06124   |              | 24 VDC / 250 mA   |                   |
| TMS 06212   |              | +12 VDC / 250 mA  | –12 VDC / 250 mA  |
| TMS 06215   |              | +15 VDC / 200 mA  | –15 VDC / 200 mA  |
| TMS 10105   |              | 5 VDC / 2000 mA   |                   |
| TMS 10112   |              | 12 VDC / 900 mA   |                   |
| TMS 10115   | 10 W         | 15 VDC / 700 mA   |                   |
| TMS 10124   |              | 24 VDC / 450 mA   |                   |
| TMS 10212   |              | +12 VDC / 450 mA  | –12 VDC / 450 mA  |
| TMS 10215   |              | +15 VDC / 350 mA  | –15 VDC / 350 mA  |
| TMS 15105   |              | 5 VDC / 3000 mA   |                   |
| TMS 15112   |              | 12 VDC / 1300 mA  |                   |
| TMS 15115   | 15 W         | 15 VDC / 1000 mA  |                   |
| TMS 15124   |              | 24 VDC / 650 mA   |                   |
| TMS 15212   |              | +12 VDC / 650 mA  | –12 VDC / 650 mA  |
| TMS 15215   |              | +15 VDC / 500 mA  | –15 VDC / 500 mA  |
| TMS 25105   |              | 5 VDC / 4600 mA   |                   |
| TMS 25112   |              | 12 VDC / 2000 mA  |                   |
| TMS 25115   | 25 W         | 15 VDC / 1600 mA  |                   |
| TMS 25124   |              | 24 VDC / 1000 mA  |                   |
| TMS 25212   |              | +12 VDC / 1000 mA | –12 VDC / 1000 mA |
| TMS 25215   |              | +15 VDC / 800 mA  | –15 VDC / 800 mA  |

\* For PCB mount version – no suffix  
 For chassis mount with Faston-Tabs add suffix F (not for 6 W models)  
 For chassis mount with screw terminal block add suffix C (not for 6 & 10 W models)

## Dimensions



| Type    | Length l  | Width w   | Height h    |
|---------|-----------|-----------|-------------|
| TMS 06  | 50 (1.97) | 40 (1.57) | 20 (0.79)   |
| TMS 10  | 55 (2.17) | 45 (1.77) | 24 (0.94)   |
| TMS 15  | 64 (2.52) | 45 (1.77) | 24 (0.94)   |
| TMS 25  | 76 (2.99) | 51 (2.01) | 28 (1.10)   |
| TMS 10F | 75 (2.95) | 45 (1.77) | 24 (0.94)   |
| TMS 15F | 84 (3.31) | 45 (1.77) | 24 (0.94)   |
| TMS 25F | 96 (3.78) | 51 (2.01) | 29 (1.14)   |
| TMS 15C | 84 (3.31) | 45 (1.77) | 26.5 (1.04) |
| TMS 25C | 96 (3.78) | 51 (2.01) | 29.5 (1.16) |

() = Inch

# TMP & TPM Series ▶ 4 to 10 W



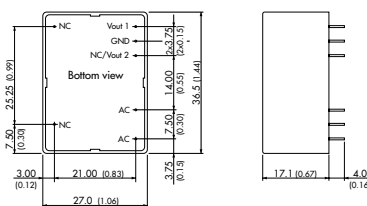
- ▶ Fully encapsulated low profile plastic casing
- ▶ Single and dual output models
- ▶ Meets ErP directive (green mode), <0.3 W no load power consumption, high efficiency across full load range
- ▶ Universal input 85–264 VAC, 47–440 Hz
- ▶ Protection against short circuit, overload and over-temperature
- ▶ EMI meets 55022, class B



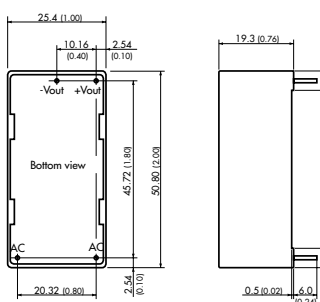
| Specifications               |  | Models     |              |                   |                   |
|------------------------------|--|------------|--------------|-------------------|-------------------|
| Input voltage range          | 85–264 VAC, 47–440 Hz<br>120–370 VDC   | Order code | Output power | Output 1          | Output 2          |
| Line regulation              | 1.0 % max.<br>3.0 % typ. output 2  | TMPM 04103 |              | 3.3 VDC / 1200 mA |                   |
| Load regulation              | 1.0 % typ. output 1<br>2.5 % typ. output 2   | TMPM 04105 |              | 5.0 VDC / 800 mA  |                   |
| Ripple & noise (20 MHz BW)   | <1.8 % of Vout nom. for 3.3 & 5 VDC outputs<br><1.0 % of Vout nom. for other outputs         | TMPM 04109 |              | 9.0 VDC / 444 mA  |                   |
| EMI suppression              | EN 55022 class EN55022 class B   | TMPM 04112 |              | 12 VDC / 333 mA   |                   |
| EMC immunity                 | EN61000–6–2  | TMPM 04115 | 4 W          | 15 VDC / 267 mA   |                   |
| Output current limitation    | >105% Inom. foldback, automatic recovery   | TMPM 04124 |              | 24 VDC / 167 mA   |                   |
| Efficiency                   | 78 % typ.  | TMPM 04212 |              | +12 VDC / 166 mA  | -12 VDC / 166 mA  |
| Operating temperature        | -25 °C to +60 °C<br>above 40 °C derating 2.5%/K  | TMPM 04215 |              | +15 VDC / 133 mA  | -15 VDC / 133 mA  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report,   | TMPM 04253 |              | +5.0 VDC / 600 mA | +3.3 VDC / 150 mA |
| Degree of protection         | safety class II prepared   | TMPM 04225 |              | +12 VDC / 250 mA  | +5.0 VDC / 120 mA |
| Casing                       | plastic (UL 94V-0 rated)   | TMP 07103  | 4.6 W        | 3.3 VDC / 1400 mA |                   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmp.pdf">www.tracopower.com/products/tmp.pdf</a> | TMP 07105  |              | 5.0 VDC / 1400 mA |                   |
|                              |  | TMP 07112  | 7 W          | 12 VDC / 585 mA   |                   |
|                              |  | TMP 07115  |              | 15 VDC / 465 mA   |                   |
|                              |  | TMP 07124  |              | 24 VDC / 290 mA   |                   |
|                              |  | TMPM 10103 | 8.6 W        | 3.3 VDC / 2500 mA |                   |
|                              |  | TMPM 10105 |              | 5.0 VDC / 2000 mA |                   |
|                              |  | TMPM 10112 | 10 W         | 12 VDC / 830 mA   |                   |
|                              |  | TMPM 10115 |              | 15 VDC / 665 mA   |                   |
|                              |  | TMPM 10124 |              | 24 VDC / 415 mA   |                   |
|                              |  | TMP 10103  | 6.6 W        | 3.3 VDC / 2000 mA |                   |
|                              |  | TMP 10105  |              | 5.0 VDC / 2000 mA |                   |
|                              |  | TMP 10112  |              | 12 VDC / 830 mA   |                   |
|                              |  | TMP 10115  | 10 W         | 15 VDC / 665 mA   |                   |
|                              |  | TMP 10124  |              | 24 VDC / 415 mA   |                   |
|                              |  | TMP 10212  |              | +12 VDC / 380 mA  | -12 VDC / 380 mA  |
|                              |  | TMP 10215  |              | +15 VDC / 300 mA  | -15 VDC / 300 mA  |

## Dimensions

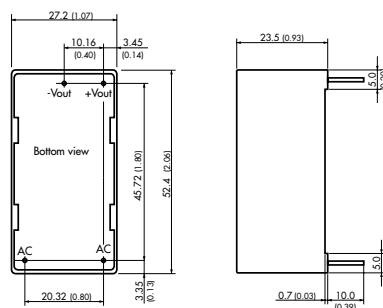
TMPM 04 Models:



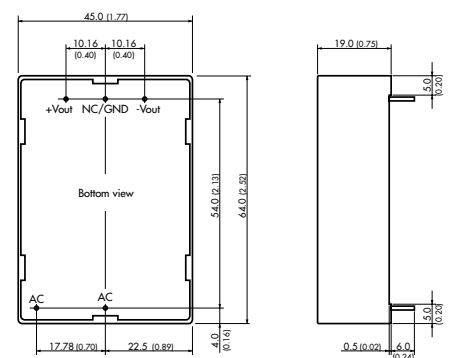
TMP 07 Models:



TPM 10 Models:



TMP 10 Models:



( ) = Inches

# TMP Series ▶ 15 to 60 W

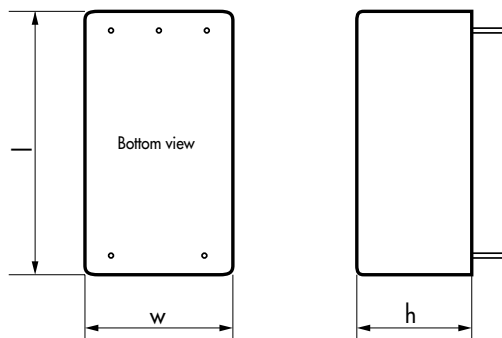


- ▶ Fully encapsulated low profile plastic casing
- ▶ PCB mount
- ▶ Single-, dual- and triple output models
- ▶ Universal input 85–264 VAC, 47–440 Hz
- ▶ Protection class II prepared
- ▶ EMI meets 55022, class B
- ▶ Protection against short circuit, overload and over-temperature



| Specifications               |  |
|------------------------------|--|
| Input voltage range          | 85–264 VAC, 47–440 Hz (47–63 Hz for 60 W models)<br>120–370 VDC                              |
| Line regulation              | 1.0 % max.   |
| Load regulation              | 1.0 % typ. output 1<br>3.0 % typ. output 2 & 3   |
| Ripple & noise (20MHz BW)    | <2% of Vout nom. for 5 VDC outputs<br><1.3% of Vout nom. for other outputs                   |
| EMI suppression              | EN 55011 class B, EN 55022 class B   |
| EMC immunity                 | EN61000-6-1  |
| Output current limitation    | >105% Inom. foldback, automatic recovery   |
| Efficiency                   | 80 % typ.  |
| Operating temperature        | -25 °C to +65 °C<br>above 50 °C derating 3.3%/K  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, CB-report  |
| Degree of protection         | safety class II prepared   |
| Casing                       | plastic (UL 94V-0 rated)   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmp.pdf">www.tracopower.com/products/tmp.pdf</a> |

| Dimensions |           |             |             |             |
|------------|-----------|-------------|-------------|-------------|
|            | Type      | Length l    | Width w     | Height h    |
| PCB mount  | TMP 15xxx | 74.0 (2.91) | 54.0 (2.13) | 19.3 (0.76) |
|            | TMP 30xxx | 89.0 (3.50) | 63.5 (2.50) | 21.5 (0.85) |
|            | TMP 60xxx | 89.0 (3.50) | 67.5 (2.66) | 34.0 (1.34) |



() = Inches

| Models      |              |                     |  |
|-------------|--------------|---------------------|--|
| Order code* | Output power | Output 1            | Output 2/3                             |
| TMP 15105   |              | 5.0 VDC / 3000 mA   |  |
| TMP 15112   |              | 12 VDC / 1250 mA    |  |
| TMP 15115   |              | 15 VDC / 1000 mA    |  |
| TMP 15124   |              | 24 VDC / 625 mA     |  |
| TMP 15148   | 15 W         | 48 VDC / 310 mA     |  |
| TMP 15212   |              | +12 VDC / 650 mA    | -12 VDC / 650 mA                       |
| TMP 15215   |              | +15 VDC / 500 mA    | -15 VDC / 500 mA                       |
| TMP 15252   |              | +5.0 VDC / 1500 mA  | +12 VDC / 625 mA                       |
| TMP 15512   |              | +5.0 VDC / 2000 mA  | +12 VDC / 200 mA<br>-12 VDC / 200 mA   |
| TMP 15515   |              | +5.0 VDC / 2000 mA  | +15 VDC / 150 mA<br>-15 VDC / 150 mA   |
| TMP 30105   |              | 5.0 VDC / 6000 mA   |  |
| TMP 30112   |              | 12 VDC / 2500 mA    |  |
| TMP 30115   |              | 15 VDC / 2000 mA    |  |
| TMP 30124   |              | 24 VDC / 1250 mA    |  |
| TMP 30148   |              | 48 VDC / 625 mA     |  |
| TMP 30212   |              | +12 VDC / 1300 mA   | -12 VDC / 1300 mA                      |
| TMP 30215   |              | +15 VDC / 1000 mA   | -15 VDC / 1000 mA                      |
| TMP 30252   |              | +5.0 VDC / 3000 mA  | +12 VDC / 1250 mA                      |
| TMP 30512   | 30 W         | +5.0 VDC / 3000 mA  | +12 VDC / 600 mA<br>-12 VDC / 600 mA   |
| TMP 30515   |              | +5.0 VDC / 3000 mA  | +15 VDC / 500 mA<br>-15 VDC / 500 mA   |
| TMP 30522   |              | +5.0 VDC / 1500 mA  | +12 VDC / 1000 mA<br>-12 VDC / 250 mA  |
| TMP 30316   |              | +3.3 VDC / 4000 mA  | +5.0 VDC / 1500 mA<br>+12 VDC / 250 mA |
| TMP 30317   |              | +5.0 VDC / 4500 mA  | +3.3 VDC / 1000 mA<br>+12 VDC / 250 mA |
| TMP 60105   |              | 5.1 VDC / 10'000 mA |  |
| TMP 60112   |              | 12 VDC / 5000 mA    |  |
| TMP 60115   | 60 W         | 15 VDC / 4000 mA    |  |
| TMP 60124   |              | 24 VDC / 2500 mA    |  |
| TMP 60136   |              | 36 VDC / 1670 mA    |  |
| TMP 60148   |              | 48 VDC / 1250 mA    |  |

# TMP-C Series ▶ 15 to 60 W

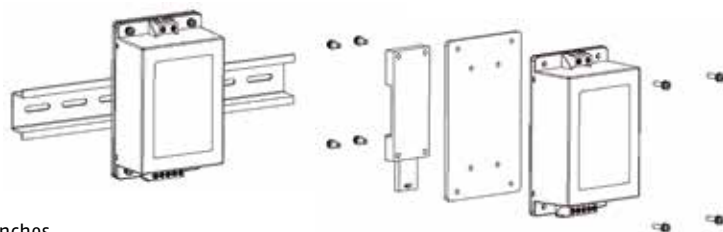
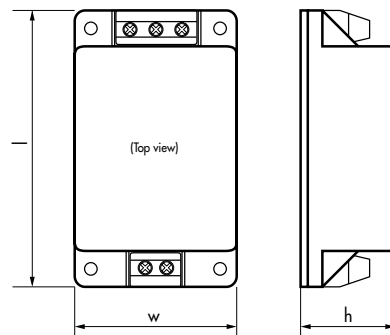


- ▶ Fully encapsulated low profile plastic case
- ▶ For DIN-rail mount or chassis mount
- ▶ Screw terminal block
- ▶ Single-, dual- and triple output models
- ▶ Universal input 85–264 VAC, 47–440 Hz
- ▶ UL 508 listed
- ▶ Protection class II
- ▶ Protection against short circuit, overload and over-temperature
- ▶ Power-good LED indicator



| Specifications               |   |
|------------------------------|---|
| Input voltage range          | 85–264 VAC, 47–440 Hz (47–63 Hz for 60 W models)<br>120–370 VDC   |
| Line regulation              | 1.0 % max.  |
| Load regulation              | 1.0% typ. Output 1<br>3.0% typ. Output 2 & 3  |
| Ripple & noise (20 MHz BW)   | <2% of Vout nom. for 5 VDC outputs<br><1.3% of Vout nom. for other outputs                              |
| EMI suppression              | EN 55011 class B, EN 55022 class EN55022 class B  |
| EMC immunity                 | EN61000–6–1   |
| Output current limitation    | >105% Inom. foldback, automatic recovery  |
| Efficiency                   | 80% typ.  |
| Operating temperature        | –25 °C to +65 °C<br>above 50 °C derating 3.3%/K   |
| Safety standards / approvals | cUL/UL 60950–1, IEC/EN 60950–1, UL 508 (single output and symmetric dual output models only), CB-report |
| Degree of protection         | class II  |
| Casing                       | plastic (UL 94V–0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmp.pdf">www.tracopower.com/products/tmp.pdf</a>            |

| Dimensions |            |             |             |
|------------|------------|-------------|-------------|
| Type       | Length l   | Width w     | Height h    |
| TMP 15xxxC | 96 (3.78)  | 54.0 (2.13) | 23.3 (0.88) |
| TMP 30xxxC | 112 (4.41) | 63.8 (2.51) | 25.6 (1.01) |
| TMP 60xxxC | 112 (4.41) | 67.8 (2.67) | 38.0 (1.50) |



( ) = Inches

| Models     |              |                     |  |
|------------|--------------|---------------------|--|
| Order code | Output power | Output 1            | Output 2/3                             |
| TMP 15105C |              | 5.0 VDC / 3000 mA   |  |
| TMP 15112C |              | 12 VDC / 1250 mA    |  |
| TMP 15115C |              | 15 VDC / 1000 mA    |  |
| TMP 15124C |              | 24 VDC / 625 mA     |  |
| TMP 15148C | 15 W         | 48 VDC / 310 mA     |  |
| TMP 15212C |              | +12 VDC / 650 mA    | –12 VDC / 650 mA                       |
| TMP 15215C |              | +15 VDC / 500 mA    | –15 VDC / 500 mA                       |
| TMP 15252C |              | +5.0 VDC / 1500 mA  | +12 VDC / 625 mA                       |
| TMP 15512C |              | +5.0 VDC / 2000 mA  | +12 VDC / 200 mA<br>–12 VDC / 200 mA   |
| TMP 15515C |              | +5.0 VDC / 2000 mA  | +15 VDC / 150 mA<br>–15 VDC / 150 mA   |
| TMP 30105C |              | 5.0 VDC / 6000 mA   |  |
| TMP 30112C |              | 12 VDC / 2500 mA    |  |
| TMP 30115C |              | 15 VDC / 2000 mA    |  |
| TMP 30124C |              | 24 VDC / 1250 mA    |  |
| TMP 30148C |              | 48 VDC / 625 mA     |  |
| TMP 30212C |              | +12 VDC / 1300 mA   | –12 VDC / 1300 mA                      |
| TMP 30215C |              | +15 VDC / 1000 mA   | –15 VDC / 1000 mA                      |
| TMP 30252C |              | +5.0 VDC / 3000 mA  | +12 VDC / 1250 mA                      |
| TMP 30512C | 30 W         | +5.0 VDC / 3000 mA  | +12 VDC / 600 mA<br>–12 VDC / 600 mA   |
| TMP 30515C |              | +5.0 VDC / 3000 mA  | +15 VDC / 500 mA<br>–15 VDC / 500 mA   |
| TMP 30522C |              | +5.0 VDC / 1500 mA  | +12 VDC / 1000 mA<br>–12 VDC / 250 mA  |
| TMP 30316C |              | +3.3 VDC / 4000 mA  | +5.0 VDC / 1500 mA<br>+12 VDC / 250 mA |
| TMP 30317C |              | +5.0 VDC / 4500 mA  | +3.3 VDC / 1000 mA<br>+12 VDC / 250 mA |
| TMP 60105C |              | 5.1 VDC / 10'000 mA |  |
| TMP 60112C |              | 12 VDC / 5000 mA    |  |
| TMP 60115C | 60 W         | 15 VDC / 4000 mA    |  |
| TMP 60124C |              | 24 VDC / 2500 mA    |  |
| TMP 60136C |              | 36 VDC / 1670 mA    |  |
| TMP 60148C |              | 48 VDC / 1250 mA    |  |

| DIN-rail mount adapter |                            |
|------------------------|----------------------------|
| TMP-MK1                | for 15 W version           |
| TMP-MK2                | for 30 W and 60 W versions |

# TMLM Series ▶ 4 to 20 W



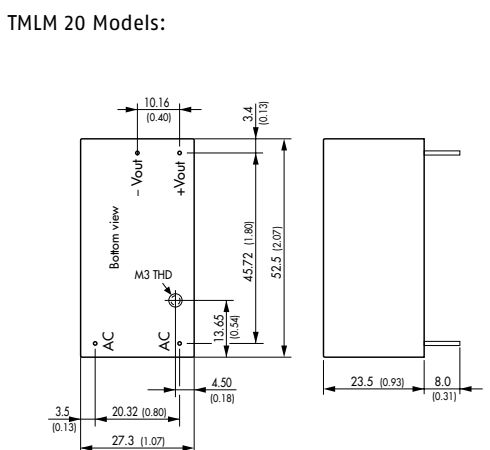
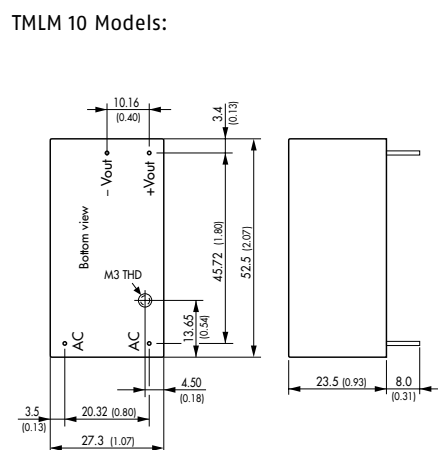
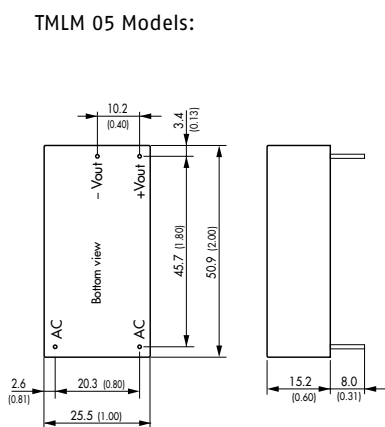
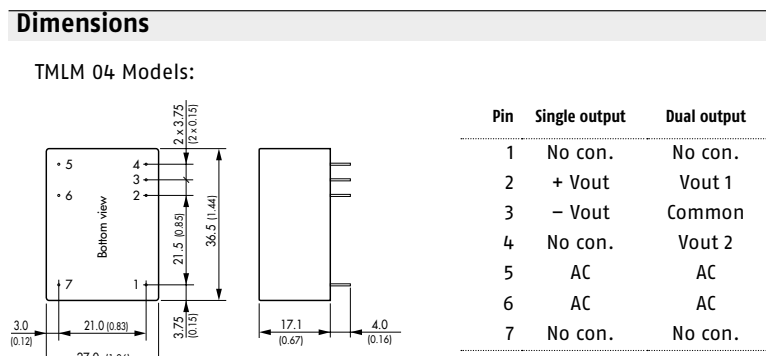
- ▶ Ultra compact 20 W in 2" x 1" package
- ▶ Fully encapsulated modules for PCB mount
- ▶ Universal input 90–264 VAC, 47–440 Hz
- ▶ TMLM04 with extended input range 85–305 VAC
- ▶ EMI meets EN 55022, class B
- ▶ Low ripple and noise
- ▶ Short circuit and overload protection
- ▶ Protection class II prepared



| Specifications                |   |
|-------------------------------|---|
| Input voltage range           | 90–264 VAC, 47–440 Hz<br>120–370 VDC  |
| Line regulation               | 0.3% max.   |
| Load regulation               | 0.5% typ.   |
| Ripple & noise<br>(20 MHz BW) | <1.0% of Vout<br><1.5% of Vout for 3.3 & 5 VDC models   |
| EMI suppression               | EN 55011 class B, EN 55022 class EN55022 class B  |
| EMC immunity                  | EN61000–6–1   |
| Output current limitation     | foldback, automatic recovery  |
| Efficiency                    | 78% typ.  |
| Operating temperature         | –25 °C to +60 °C<br>TMLM 04 models: above 50 °C derating 3.75%/K<br>other models: above 40 °C derating 2.5%/K |
| Safety standards / approvals  | cUL/UL 60950–1, EN 60950–1  |
| Degree of protection          | class II prepared   |
| Casing                        | plastic (UL 94V–0 rated)  |
| Full datasheet                | <a href="http://www.tracopower.com/products/tmlm.pdf">www.tracopower.com/products/tmlm.pdf</a>                |

| Models      |              |            |            |          |
|-------------|--------------|------------|------------|----------|
| Order code  | Output power | Output 1   |            | Output 2 |
| TMLM 04103* | 4 W          | 3.3 VDC /  | 1200 mA    |          |
| TMLM 04105* | 4 W          | 5.0 VDC /  | 800 mA     |          |
| TMLM 04109* | 4 W          | 9.0 VDC /  | 444 mA     |          |
| TMLM 04112* | 4 W          | 12 VDC /   | 333 mA     |          |
| TMLM 04115* | 4 W          | 15 VDC /   | 267 mA     |          |
| TMLM 04124* | 4 W          | 24 VDC /   | 167 mA     |          |
| TMLM 04253* | 3.5 W        | +5.0 VDC / | +3.3 VDC / | 150 mA   |
| TMLM 04225* | 3.6 W        | +12 VDC /  | +5.0 VDC / | 120 mA   |
| TMLM 05103  | 4.1 W        | 3.3 VDC /  | 1250 mA    |          |
| TMLM 05105  | 5 W          | 5.0 VDC /  | 1000 mA    |          |
| TMLM 05112  | 5 W          | 12 VDC /   | 420 mA     |          |
| TMLM 05115  | 5 W          | 15 VDC /   | 330 mA     |          |
| TMLM 05124  | 5.5 W        | 24 VDC /   | 230 mA     |          |
| TMLM 10103  | 8.2 W        | 3.3 VDC /  | 2500 mA    |          |
| TMLM 10105  | 10 W         | 5.0 VDC /  | 2000 mA    |          |
| TMLM 10112  | 10 W         | 12 VDC /   | 830 mA     |          |
| TMLM 10115  | 10 W         | 15 VDC /   | 665 mA     |          |
| TMLM 10124  | 10 W         | 24 VDC /   | 420 mA     |          |
| TMLM 20103  | 12 W         | 3.3 VDC /  | 3600 mA    |          |
| TMLM 20105  | 18 W         | 5.0 VDC /  | 3600 mA    |          |
| TMLM 20112  | 20 W         | 12 VDC /   | 1670 mA    |          |
| TMLM 20115  | 20 W         | 15 VDC /   | 1330 mA    |          |
| TMLM 20124  | 20 W         | 24 VDC /   | 830 mA     |          |

\* Add suffix -EI for extended input range version (85–305 VAC)



( ) = Inches

# TML Series ▶ 20 to 40 W



- ▶ 2 Package styles available:
  - for PCB mount with solder pins
  - for chassis mount with screw terminal block
- ▶ Single-, dual- and triple output models
- ▶ Universal input 90–264 VAC, 47–440 Hz
- ▶ Protection class I (TML 20) and class II (TML 40)
- ▶ EMI meets EN 55022, class B
- ▶ Short circuit and overload protection



| Specifications               |  | Models      |              |                 |                 |
|------------------------------|--|-------------|--------------|-----------------|-----------------|
| Input voltage range          | 90–264 VAC, 47–440 Hz<br>100–370 VDC   | Order code* | Output power | Output 1        | Output 2/3      |
| Line regulation              | 1.0% max. for output 1<br>5.0% max. for output 2/3   | TML 20103   |              | 3.3 VDC 4500 mA |                 |
| Load regulation              | 1.0% max. for single output models<br>2.0% max. for output 1, 7.0% max. for output 2/3       | TML 20105   |              | 5 VDC 4000 mA   |                 |
| Ripple & noise (20 MHz BW)   | <1.0% of Vout<br><1.5% of Vout for 3.3 & 5 VDC models  | TML 20112   |              | 12 VDC 1670 mA  |                 |
| EMI suppression              | EN 55011 class B, EN 55022 class EN55022 class B   | TML 20115   |              | 15 VDC 1340 mA  |                 |
| EMC immunity                 | EN61000–6–1  | TML 20124   | 20 W         | 24 VDC 840 mA   |                 |
| Output current limitation    | foldback, automatic recovery   | TML 20205   |              | +5 VDC 2000 mA  | –5 VDC 2000 mA  |
| Efficiency                   | 80% typ.   | TML 20212   |              | +12 VDC 830 mA  | –12 VDC 830 mA  |
| Operating temperature        | –25 °C to +60 °C<br>above 50 °C derating 4%/K  | TML 20215   |              | +15 VDC 670 mA  | –15 VDC 670 mA  |
| Safety standards / approvals | cUL/UL 60950–1, IEC/EN 60950–1 CB-report   | TML 20512   |              | 5 VDC 2800 mA   | ±12 VDC ±250 mA |
| Degree of protection         | safety class I (TML 40 W models safety class II)   | TML 20515   |              | 5 VDC 2800 mA   | ±15 VDC ±200 mA |
| Casing                       | plastic (UL 94V–0 rated)   | TML 40103   |              | 3.3 VDC 8000 mA |                 |
| Full datasheet               | <a href="http://www.tracopower.com/products/tml.pdf">www.tracopower.com/products/tml.pdf</a> | TML 40105   |              | 5 VDC 8000 mA   |                 |
|                              |  | TML 40112   |              | 12 VDC 3330 mA  |                 |
|                              |  | TML 40115   |              | 15 VDC 2670 mA  |                 |
|                              |  | TML 40124   |              | 24 VDC 1670 mA  |                 |
|                              |  | TML 40205   | 40 W         | +5 VDC 4000 mA  | –5 VDC 4000 mA  |
|                              |  | TML 40212   |              | +12 VDC 1670 mA | –12 VDC 1670 mA |
|                              |  | TML 40215   |              | +15 VDC 1330 mA | –15 VDC 1330 mA |
|                              |  | TML 40252   |              | 5 VDC 5000 mA   | 12 VDC 1250 mA  |
|                              |  | TML 40254   |              | 5 VDC 5000 mA   | 24 VDC 625 mA   |
|                              |  | TML 40512   |              | 5 VDC 5000 mA   | ±12 VDC ±600 mA |
|                              |  | TML 40515   |              | 5 VDC 5000 mA   | ±15 VDC ±500 mA |

\* For chassis mount version add suffix C

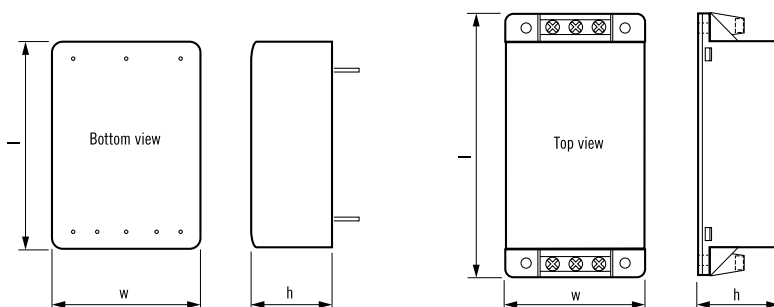
| DIN-rail mount adapter |                                |
|------------------------|--------------------------------|
| TMP-MK1                | for 20 W chassis mount version |
| TMP-MK2                | for 40 W chassis mount version |

|               | Type       | Length l     | Width w     | Height h    |
|---------------|------------|--------------|-------------|-------------|
| PCB mount     | TML 20xxx  | 70.0 (2.76)  | 48.0 (1.89) | 22.0 (0.87) |
|               | TML 40xxx  | 89.0 (3.50)  | 63.5 (2.50) | 25.0 (0.98) |
| Chassis mount | TML 20xxxC | 96.0 (3.78)  | 54.6 (2.15) | 27.5 (1.08) |
|               | TML 40xxxC | 112.9 (4.44) | 64.7 (2.55) | 31.5 (1.24) |

() = Inch

PCB Mount Version

Chassis Mount with Screw Terminals



# TMT Series ▶ 10 to 50 W



- ▶ Industrial (UL508) and medical safety approvals
- ▶ 2 packages styles available:
  - PCB mount with solder pins
  - Chassis mount with screw terminal block
- ▶ Adapter for DIN-rail mount
- ▶ Single-, dual- and triple output models
- ▶ Universal input 85 – 264 VAC
- ▶ Short circuit and overload protection

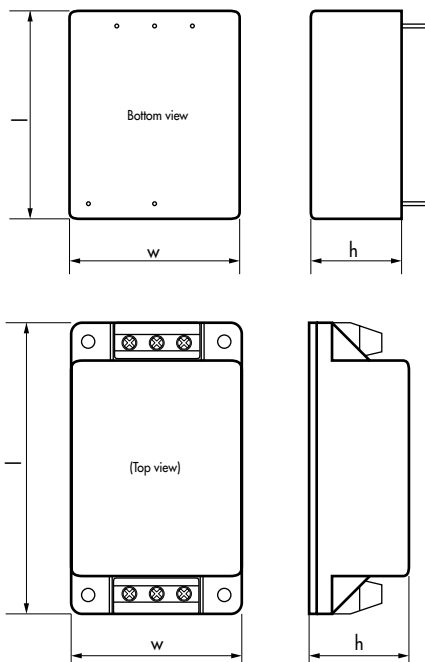


| Specifications               |  |
|------------------------------|--|
| Input voltage range          | 85–264 VAC, 47–63 Hz<br>85–370 VDC (derating below 110 VDC input)  |
| Line regulation              | 0.4% max.  |
| Load regulation              | 1.0% max. for single output models<br>3.0% max. for multi output models                                      |
| Ripple & noise               | <150 mVpk-pk (20 MHz BW)   |
| EMI suppression              | EN 55011 class B, EN 55022 class EN55022 class B   |
| EMC immunity                 | EN 60601-1-2   |
| Output current limitation    | >105% Inom. foldback, automatic recovery   |
| Efficiency                   | 83% typ.   |
| Operating temperature        | -25 °C to +50 °C<br>above 40 °C derating 5%/K  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1, UL 60601-1, IEC/EN 60601-1, CB-report, UL 508 listed (chassis mount modules) |
| Degree of protection         | class II prepared  |
| Casing                       | plastic (UL 94V-0 rated)   |
| Option                       | DIN-rail mount adapter   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmt.pdf">www.tracopower.com/products/tmt.pdf</a>                 |

| Models     |              |                   |                                      |
|------------|--------------|-------------------|--------------------------------------|
| Order code | Output power | Output 1          | Output 2/3                           |
| TMT 10105  | 10 W         | 5 VDC / 2000 mA   |                                      |
| TMT 10112  |              | 12 VDC / 840 mA   |                                      |
| TMT 10115  |              | 15 VDC / 670 mA   |                                      |
| TMT 10124  |              | 24 VDC / 420 mA   |                                      |
| *TMT 15105 | 15 W         | 5 VDC / 3000 mA   |                                      |
| *TMT 15112 |              | 12 VDC / 1250 mA  |                                      |
| *TMT 15115 |              | 15 VDC / 1000 mA  |                                      |
| *TMT 15124 |              | 24 VDC / 625 mA   |                                      |
| *TMT 15212 |              | +12 VDC / 625 mA  | -12 VDC / 625 mA                     |
| *TMT 15215 |              | +15 VDC / 500 mA  | -15 VDC / 500 mA                     |
| *TMT 30105 | 30 W         | 5 VDC / 6000 mA   |                                      |
| *TMT 30112 |              | 12 VDC / 2500 mA  |                                      |
| *TMT 30115 |              | 15 VDC / 2000 mA  |                                      |
| *TMT 30124 |              | 24 VDC / 1250 mA  |                                      |
| *TMT 30212 |              | +12 VDC / 1250 mA | -12 VDC / 1250 mA                    |
| *TMT 30215 |              | +15 VDC / 1000 mA | -15 VDC / 1000 mA                    |
| *TMT 30252 |              | 5 VDC / 3000 mA   | 12 VDC / 1200 mA                     |
| *TMT 30522 |              | 5 VDC / 3000 mA   | 12 VDC / 1000 mA<br>12 VDC / 250 mA  |
| *TMT 30515 |              | 5 VDC / 3000 mA   | 15 VDC / 500 mA<br>15 VDC / 500 mA   |
| TMT 30503  |              | 3.3 VDC / 6000 mA | 5 VDC / 1500 mA<br>12 VDC / 250 mA   |
| TMT 30505  |              | 5 VDC / 5000 mA   | 3.3 VDC / 1000 mA<br>12 VDC / 250 mA |
| *TMT 50105 | 50 W         | 5 VDC / 9000 mA   |                                      |
| *TMT 50112 |              | 12 VDC / 4200 mA  |                                      |
| *TMT 50115 |              | 15 VDC / 3400 mA  |                                      |
| *TMT 50124 |              | 24 VDC / 2300 mA  |                                      |
| *TMT 50148 |              | 48 VDC / 1150 mA  |                                      |

\* For chassis mount version add suffix c

## Dimensions



() = Inch

| DIN-rail mount adapter |                                      |
|------------------------|--------------------------------------|
| TMT-MK1                | for 15 W                             |
| TMT-MK2                | for 30 W single and symmetric dual   |
| TMT-MK3                | for 30 W asymmetric dual and tripple |
| TMT-MK5                | for 50 W                             |

| Dimensions |           |           |             |               |           |             |
|------------|-----------|-----------|-------------|---------------|-----------|-------------|
| Type       | PCB mount |           |             | Chassis mount |           |             |
|            | Length l  | Width w   | Height h    | Length l      | Width w   | Height h    |
| TMT 10xxx  | 51 (2.00) | 33 (1.30) | 21.6 (0.79) |               |           |             |
| TMT 15xxx  | 55 (2.16) | 45 (1.77) | 24 (0.95)   | 77 (3.03)     | 45 (1.77) | 26.4 (1.04) |
| TMT 301xx  | 76 (2.99) | 51 (2.00) | 28 (1.10)   | 96 (3.78)     | 51 (2.01) | 29.5 (1.16) |
| TMT 3021x  | 76 (2.99) | 51 (2.00) | 28 (1.10)   | 96 (3.78)     | 51 (2.01) | 29.5 (1.16) |
| TMT 30252  | 86 (3.39) | 58 (2.28) | 28 (1.10)   | 106 (4.17)    | 58 (2.28) | 29.5 (1.16) |
| TMT 305xx  | 86 (3.39) | 58 (2.28) | 28 (1.10)   | 106 (4.17)    | 58 (2.28) | 29.5 (1.16) |
| TMT 50xxx  | 89 (3.50) | 64 (2.52) | 28 (1.10)   | 110 (4.33)    | 64 (2.52) | 31.5 (1.24) |

# TMM Series ▶ 24 to 60 W

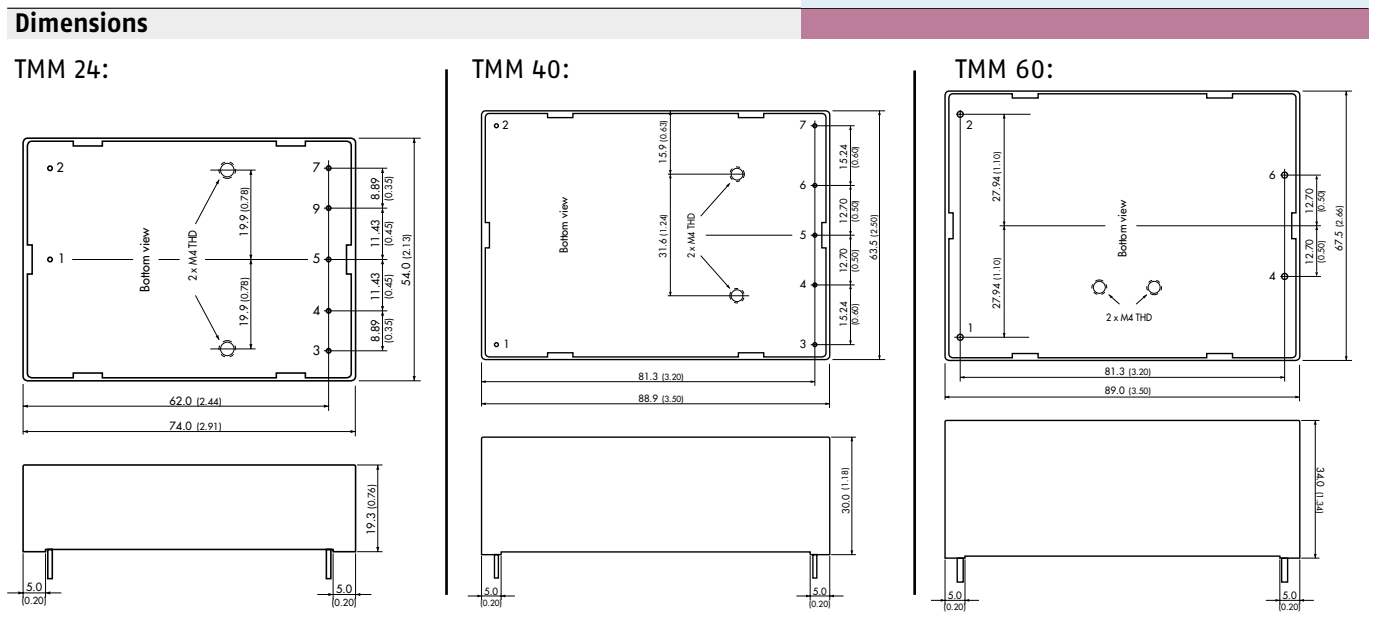


- ▶ Fully encapsulated low profile plastic (PCB mount)
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ IT and industrial safety according to IEC/EN/UL 60950-1 and UL 508
- ▶ Ready to meet ErP directive <0.3W no load power consumption
- ▶ Operating temperature -40°C up to +60°C without derating
- ▶ Protection class II prepared
- ▶ Power-good LED indicator

**NEW Product**



| Specifications               |  | Models      |              |                  |                 |
|------------------------------|--|-------------|--------------|------------------|-----------------|
| Input voltage range          | 85–264 VAC, 47–63 Hz<br>85–370 VDC (derating below 110 VDC input)  | Order code* | Output power | Output 1         | Output 2        |
| Line regulation              | 0.5% typ.  | TMM 24105   | 15 W         | 5.0 VDC 3000 mA  |                 |
| Load regulation              | Singel output:<br>– 24 & 60 W models: 0.5% typ.<br>– 40 W models: 1.0% typ.<br><br>Dual output:<br>– 24 W models: 2.5% typ.<br>– 40 W models: 2.0% typ.  | TMM 24112   |              | 12 VDC 2000 mA   |                 |
| Ripple & noise               | 5.0 VDC models: 2% max.<br>5.1 VDC model: 3% max.<br>other models: 1.5% max.   | TMM 24115   | 24 W         | 15 VDC 1600 mA   |                 |
| EMI suppression              | EN 55011 class B, EN 55022 class B   | TMM 24124   |              | 24 VDC 1000 mA   |                 |
| EMC immunity                 | EN 60601-1-2, EN 61000-6-2   | TMM 24212   |              | +12 VDC 1000 mA  | -12 VDC 1000 mA |
| Output current limitation    | >105% Inom. foldback, automatic recovery   | TMM 24215   |              | +15 VDC 800 mA   | -15 VDC 800 mA  |
| Leakage current              | 80µA max.  | TMM 40105   |              | 5.0 VDC 8000 mA  |                 |
| Efficiency                   | 83% typ.   | TMM 40112   |              | 12 VDC 3300 mA   |                 |
| Operating temperature        | -40 °C to +80 °C<br>above 60°C derating 3%/K   | TMM 40115   | 40 W         | 15 VDC 2660 mA   |                 |
| Safety standards / approvals | UL 60950-1, IEC/EN 60950-1, UL508<br>IEC/EN 60601-1 3rd edition, 2 x MOPP<br>ANSI/AAMI ES60601-1:2005(R)2012   | TMM 40124   |              | 24 VDC 1660 mA   |                 |
| Degree of protection         | class II prepared  | TMM 40212   |              | +12 VDC 1660 mA  | -12 VDC 1660 mA |
| Casing                       | plastic (UL 94V-0 rated)   | TMM 40215   |              | +15 VDC 1330 mA  | -15 VDC 1330 mA |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmm24.pdf">www.tracopower.com/products/tmm24.pdf</a><br><a href="http://www.tracopower.com/products/tmm40.pdf">www.tracopower.com/products/tmm40.pdf</a><br><a href="http://www.tracopower.com/products/tmm60.pdf">www.tracopower.com/products/tmm60.pdf</a> | TMM 60105   |              | 5.1 VDC 10000 mA |                 |
|                              |  | TMM 60112   |              | 12 VDC 5000 mA   |                 |
|                              |  | TMM 60115   | 60 W         | 15 VDC 4000 mA   |                 |
|                              |  | TMM 60124   |              | 24 VDC 2500 mA   |                 |
|                              |  | TMM 60148   |              | 48 VDC 1250 mA   |                 |





# TMM-C Series ▶ 24 to 60 W



- ▶ Fully encapsulated low profile plastic (chassis mount)
- ▶ -40°C start-up temperature
- ▶ IT and industrial safety according to IEC/EN/UL 60950-1 and UL 508
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Ready to meet ErP directive <0.3W no load power consumption
- ▶ Protection class II prepared
- ▶ Power-good LED indicator

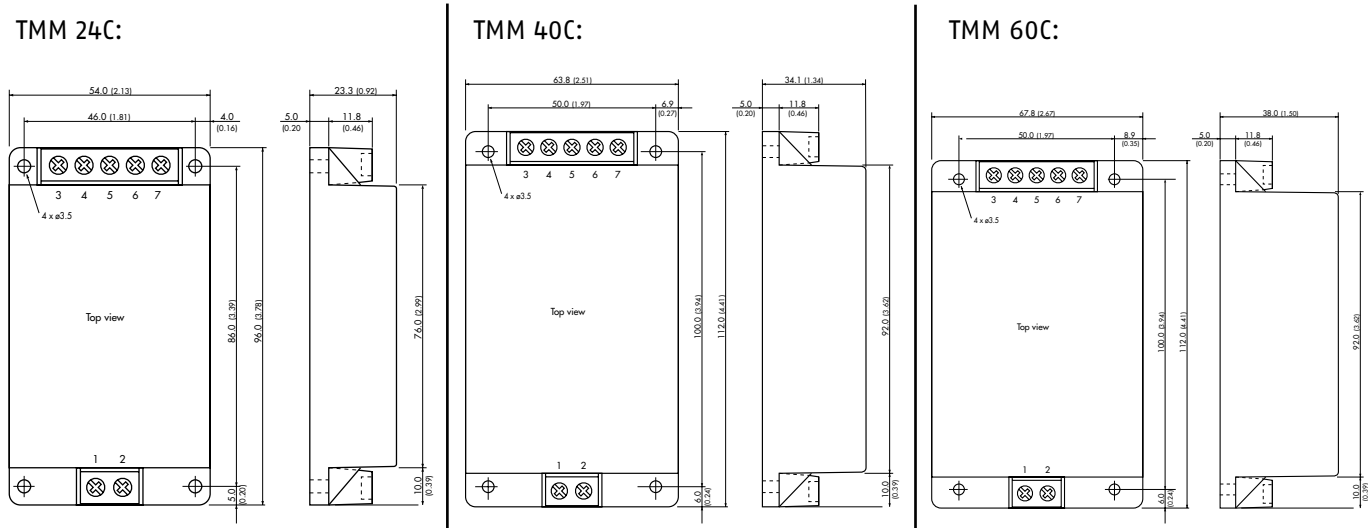
**NEW Product**



| Specifications               |  |
|------------------------------|--|
| Input voltage range          | 85–264 VAC, 47–63 Hz<br>85–370 VDC (derating below 110 VDC input)  |
| Line regulation              | 60W models: 0.2% typ.<br>other models: 0.5% typ.   |
| Load regulation              | Singel output:<br>– 24 & 60 W models: 0.5% typ.<br>– 40 W models: 1.0% typ.<br>Dual output:<br>– 24 W models: 2.5% typ.<br>– 40 W models: 2.0% typ.  |
| Ripple & noise               | 5.0 VDC models: 2% max.<br>5.1 VDC model: 3% max.<br>other models: 1.5% max.   |
| EMI suppression              | EN 55011 class B, EN 55022 class B   |
| EMC immunity                 | EN 60601-1-2, EN 61000-6-2   |
| Output current limitation    | >105% Inom. foldback, automatic recovery   |
| Leakage current              | 80µA max.  |
| Efficiency                   | 83% typ.   |
| Operating temperature        | -40 °C to +80 °C<br>above 60°C derating 3%/K   |
| Safety standards / approvals | UL 60950-1, IEC/EN 60950-1, UL 508<br>IEC/EN 60601-1 3rd edition, 2 x MOPP<br>ANSI/AAMI ES60601-1:2005(R)2012  |
| Degree of protection         | class II prepared  |
| Casing                       | plastic (UL 94V-0 rated)   |
| Option                       | DIN-Rail clip  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tmm24.pdf">www.tracopower.com/products/tmm24.pdf</a><br><a href="http://www.tracopower.com/products/tmm40.pdf">www.tracopower.com/products/tmm40.pdf</a><br><a href="http://www.tracopower.com/products/tmm60.pdf">www.tracopower.com/products/tmm60.pdf</a> |

| Models      |              |          |          |          |         |
|-------------|--------------|----------|----------|----------|---------|
| Order code* | Output power | Output 1 |          | Output 2 |         |
| TMM 24105C  | 15 W         | 5.0 VDC  | 3000 mA  |          |         |
| TMM 24112C  |              | 12 VDC   | 2000 mA  |          |         |
| TMM 24115C  | 24 W         | 15 VDC   | 1600 mA  |          |         |
| TMM 24124C  |              | 24 VDC   | 1000 mA  |          |         |
| TMM 24212C  |              | +12 VDC  | 1000 mA  | -12 VDC  | 1000 mA |
| TMM 24215C  |              | +15 VDC  | 800 mA   | -15 VDC  | 800 mA  |
| TMM 40105C  |              | 5.0 VDC  | 8000 mA  |          |         |
| TMM 40112C  |              | 12 VDC   | 3300 mA  |          |         |
| TMM 40115C  | 40 W         | 15 VDC   | 2660 mA  |          |         |
| TMM 40124C  |              | 24 VDC   | 1660 mA  |          |         |
| TMM 40212C  |              | +12 VDC  | 1660 mA  | -12 VDC  | 1660 mA |
| TMM 40215C  |              | +15 VDC  | 1330 mA  | -15 VDC  | 1330 mA |
| TMM 60105C  |              | 5.1 VDC  | 10000 mA |          |         |
| TMM 60112C  |              | 12 VDC   | 5000 mA  |          |         |
| TMM 60115C  | 60 W         | 15 VDC   | 4000 mA  |          |         |
| TMM 60124C  |              | 24 VDC   | 2500 mA  |          |         |
| TMM 60148C  |              | 48 VDC   | 1250 mA  |          |         |

## Dimensions



# TML-100C Series ▶ 100 W



- ▶ Very compact power modules with a low profile and screw terminal connection
- ▶ Active PFC, power factor >0.95 (230VAC), >0.99 (115 VAC)
- ▶ High efficiency up to 93%
- ▶ Remote On/Off input
- ▶ Power-good LED indicator

**NEW**  
Product

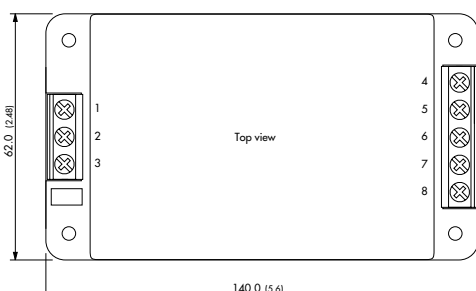
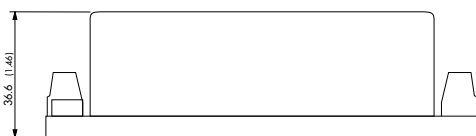


## Specifications

|                              |  |
|------------------------------|--|
| Input voltage range          | 85–264 VAC, 47–63 Hz<br>85–370 VDC (derating below 110 VDC input)  |
| Line regulation              | 1.0% max   |
| Load regulation              | 1.0% max.  |
| Ripple & noise               | 12 VDC model: 120 mV max.<br>15 VDC model: 150 mV max.<br>24 VDC model: 200 mV max.<br>48 VDC model: 240 mV max. |
| EMC immunity                 | EN 61000–6–2   |
| Output current limitation    | >105% Inom. foldback, automatic recovery   |
| Efficiency                   | 91% typ.   |
| Operating temperature        | –25 °C to +70 °C<br>above 50°C derating of 2.0%/K  |
| Safety standards / approvals | IEC 60950–1 2nd ed +Am1<br>UL 60950–1 2nd ed +Am1<br>EN 60950–1:2006/A11:2009/A1:2010/A12:2011                   |
| Degree of protection         | class I and class II prepared  |
| Casing                       | plastic (UL 94V–0 rated)   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tml100c.pdf">www.tracopower.com/products/tml100c.pdf</a>             |

## Models

| Order code*  | Output power | Output 1 | Output 2 |
|--------------|--------------|----------|----------|
| TML 100–112C | 85 W         | 12 VDC   | 7000 mA  |
| TML 100–115C |              | 15 VDC   | 5660 mA  |
| TML 100–124C | 100 W        | 24 VDC   | 4200 mA  |
| TML 100–148C |              | 48 VDC   | 2100 mA  |



() = Inches

# TIW Series ▶ 4 to 24 W



- ▶ Easy installation into standard flush boxes
- ▶ Dust and waterproof to IP 67
- ▶ Meets ERP directive (green mode), <0.3 W no load power consumption, high efficiency across full load range
- ▶ Regulated output voltage
- ▶ Safety approval to EN 60950-1 and EN 60335-1
- ▶ Protection class II
- ▶ Short circuit and overload protection

**NEW Models**

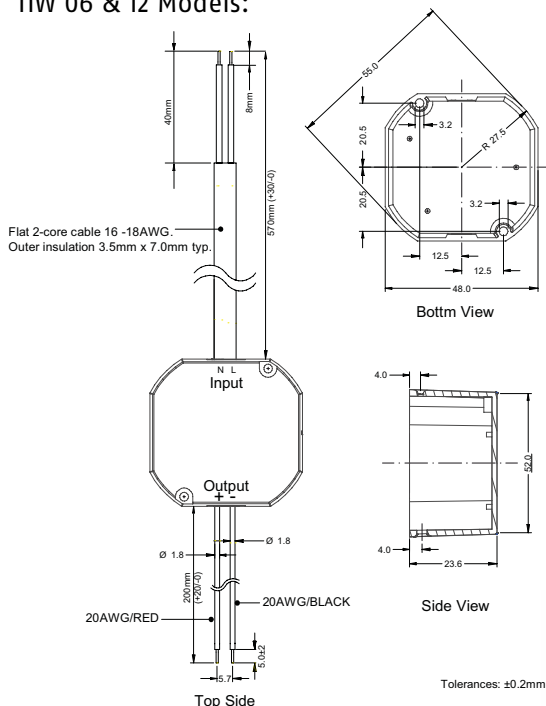


| Specifications               |  |
|------------------------------|--|
| Input voltage range          | 93–264 VAC, 47–63 Hz   |
| Line regulation              | 1.0 % max.   |
| Load regulation              | 2.0 %  |
| Ripple & noise (20 MHz BW)   | <300 mVp-p for 3.3 – 6.0 VDC models<br><500 mVp-p for other models                           |
| EMI suppression              | EN 55022 class B   |
| EMC immunity                 | EN 61000-6-2   |
| Output current limitation    | >2.5 A for 3.3 – 6.0 VDC models<br>>3.5 A for other models                                   |
| Efficiency                   | 81% typ.   |
| Operating temperature        | -25 °C to +50 °C   |
| Safety standards / approvals | IEC/EN 60950-1, EN 50178, EN 60335-1, CB-report (UL approvals pending)                       |
| Degree of protection         | class II as per IEC/EN 61140   |
| Casing                       | IP 67, plastic (UL 94V-0 rated)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tiw.pdf">www.tracopower.com/products/tiw.pdf</a> |

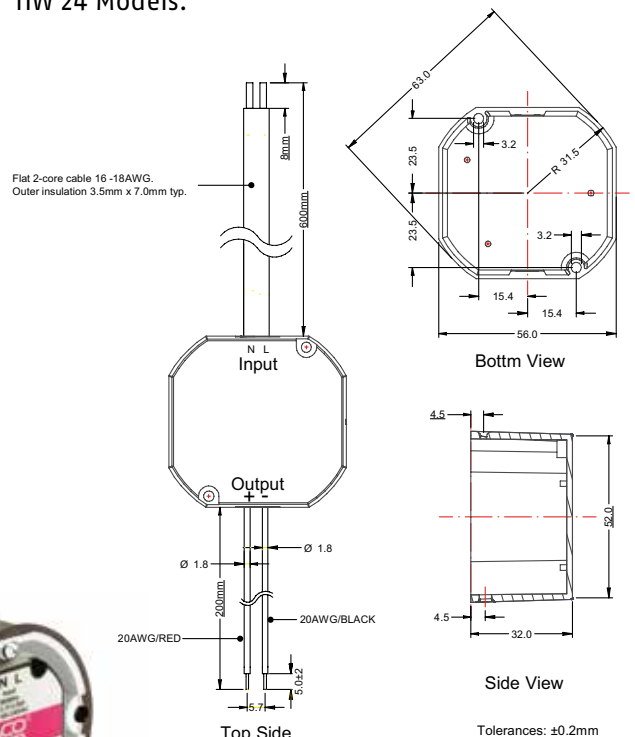
| Models     |              |                |                     |
|------------|--------------|----------------|---------------------|
| Order code | Output power | Output voltage | Output current max. |
| TIW 06-103 | 4 W          | 3.3 VDC        | 1200 mA             |
| TIW 06-105 | 5 W          | 5.0 VDC        | 1000 mA             |
| TIW 06-106 | 6 W          | 6.0 VDC        | 1000 mA             |
| TIW 12-112 | 12 W         | 12 VDC         | 1000 mA             |
| TIW 12-115 | 12 W         | 15 VDC         | 800 mA              |
| TIW 12-124 | 12 W         | 24 VDC         | 500 mA              |
| TIW 24-112 | 24 W         | 12 VDC         | 2000 mA             |
| TIW 24-124 | 24 W         | 24 VDC         | 1000 mA             |

## Dimensions

### TIW 06 & 12 Models:



### TIW 24 Models:



( ) = Inches

(Mounted in standard flush

# TPP 40 Series ▶ 40 W



- ▶ High power density encased 40 W power supply
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Ready to meet ErP directive, < 0.3 W no load power consumption
- ▶ Highest efficiency 91 to 92% across 10% – 100% load range
- ▶ Protection class II prepared

**NEW Product**



## Specifications

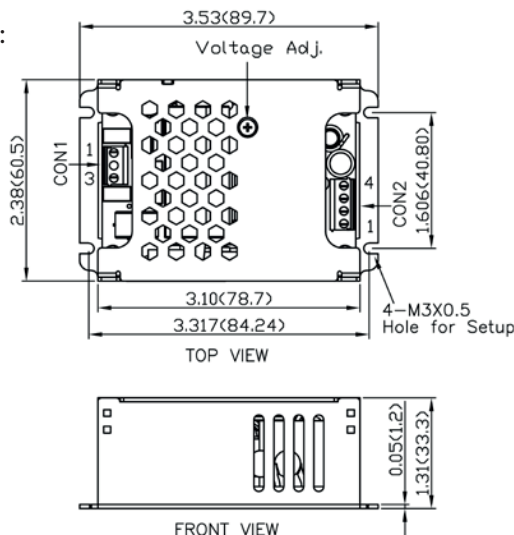
|                              |  |
|------------------------------|--|
| Input voltage range          | 85-264VAC (47-63Hz) / 120-370VDC   |
| Line regulation              | 0.2% max.  |
| Load regulation              | 0.7% max.  |
| Output voltage adjustment    | approx. +10 % of Vout nom. by internal potentiometer   |
| Ripple & noise (20 MHz BW)   | 75 – 100 mVpk-pk typ. depending on model with external capacitor                                 |
| EMI emission                 | EN 55011/22 class B, harmonic current EN 61000-3-2   |
| EMC immunity                 | EN61000-6-1, EN 60601-1-2  |
| Output current limitation    | >150% Inom. continuous, automatic recovery   |
| Efficiency                   | 91% typ.   |
| Operating temperature        | -40 °C to +73 °C (convection cooling) with derating up to +80°C                                  |
| Leakage current              | 75µA max. at 264 VAC   |
| Altitude                     | Operating up to 5000m altitude   |
| Safety standards / approvals | IEC/EN 60601-1 3rd edition, CB-report ANSI/AAMI ES60601-1:2005(R)2012                            |
| Degree of protection         | class II prepared  |
| Casing                       | Encased with screw terminal  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tpp40.pdf">www.tracopower.com/products/tpp40.pdf</a> |

## Models

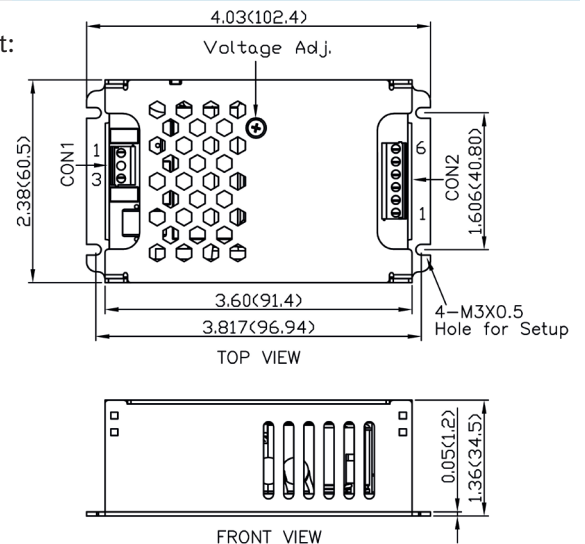
| Order code   | Output power max. | Output voltage     | Output current max. |
|--------------|-------------------|--------------------|---------------------|
| TPP 40-105   |                   | 5 VDC              | 8.0 A               |
| TPP 40-112   |                   | 12 VDC             | 3.34 A              |
| TPP 40-115   |                   | 15 VDC             | 2.67 A              |
| TPP 40-124   |                   | 24 VDC             | 1.67 A              |
| TPP 40-221   | 40 W              | +12 / +5 VDC       | 3.34 / 6.0 A        |
| TPP 40-231   |                   | +15 / +5 VDC       | 2.67 / 6.0 A        |
| TPP 40-251   |                   | +24 / +5 VDC       | 1.67 / 6.0 A        |
| TPP 40-321M2 |                   | +12 / +5 / -12 VDC | 3.34 / 6.0 / 0.5 A  |
| TPP 40-331M3 |                   | +15 / +5 / -15 VDC | 2.67 / 6.0 / 0.5 A  |
| TPP 40-3512  |                   | +24 / +5 / +12 VDC | 1.67 / 6.0 / 0.5 A  |

## Dimensions

Single output:



Multi output:



( ) = Inches

# TPP 65 Series ▶ 65 W



- ▶ High power density encased 65 W power supply
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Ready to meet ErP directive, < 0.3 W no load power consumption
- ▶ Highest efficiency 91 to 92% across 10% – 100% load range
- ▶ Protection class II prepared

**NEW Product**



## Specifications

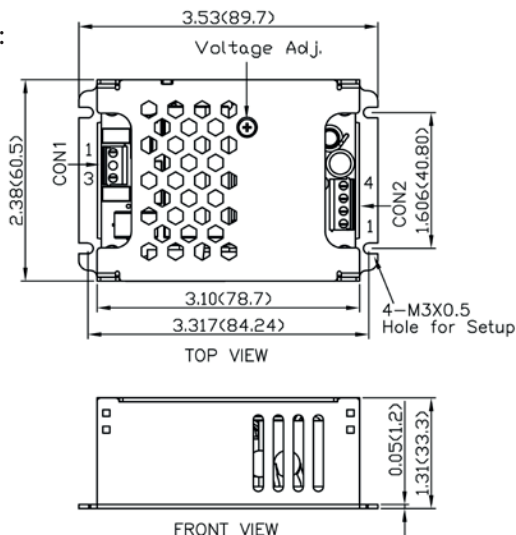
|                              |  |
|------------------------------|--|
| Input voltage range          | 85–264VAC (47–63Hz) / 120–370VDC   |
| Line regulation              | 0.2% max.  |
| Load regulation              | 0.7% max.  |
| Output voltage adjustment    | approx. +10 % of Vout nom. by internal potentiometer   |
| Ripple & noise (20 MHz BW)   | 75 – 100 mVpk-pk typ. depending on model with external capacitor                                 |
| EMI emission                 | EN 55011/22 class B, harmonic current EN 61000-3-2   |
| EMC immunity                 | EN61000-6-1, EN60601-1-2   |
| Output current limitation    | >150% Inom. continuous, automatic recovery   |
| Efficiency                   | 90% typ.   |
| Operating temperature        | –40 °C to +60 °C (convection cooling) with derating up to +80°C                                  |
| Leakage current              | 75µA max. at 264 VAC   |
| Altitude                     | Operating up to 5000m altitude   |
| Safety standards / approvals | IEC/EN 60950-1, CB-report<br>IEC/EN 60601-1 3rd edition,<br>ANSI/AAMI ES60601-1:2005(R)2012      |
| Degree of protection         | class II prepared  |
| Casing                       | Encased with screw terminal  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tpp65.pdf">www.tracopower.com/products/tpp65.pdf</a> |

## Models

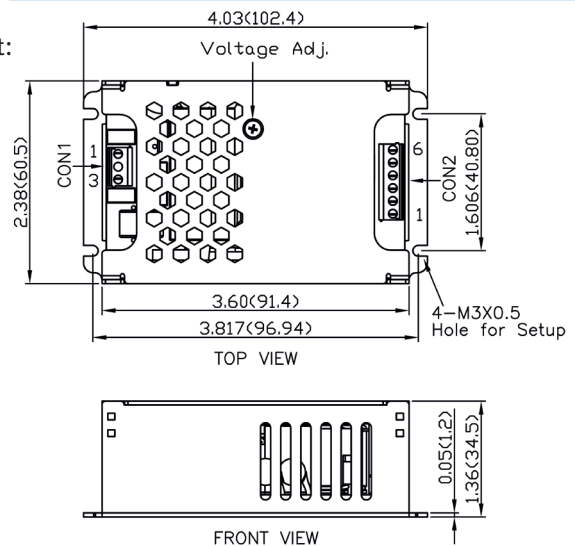
| Order code   | Output power max. | Output voltage     | Output current max. |
|--------------|-------------------|--------------------|---------------------|
| TPP 65-105   |                   | 5 VDC              | 10.0 A              |
| TPP 65-112   |                   | 12 VDC             | 5.42 A              |
| TPP 65-115   |                   | 15 VDC             | 4.34 A              |
| TPP 65-124   |                   | 24 VDC             | 2.71 A              |
| TPP 65-221   | 65 W              | +12 / +5 VDC       | 5.42 / 8.0 A        |
| TPP 65-231   |                   | +15 / +5 VDC       | 4.34 / 8.0 A        |
| TPP 65-251   |                   | +24 / +5 VDC       | 2.71 / 8.0 A        |
| TPP 65-321M2 |                   | +12 / +5 / -12 VDC | 5.42 / 8.0 / 0.6 A  |
| TPP 65-331M3 |                   | +15 / +5 / -15 VDC | 4.34 / 8.0 / 0.6 A  |
| TPP 65-3512  |                   | +24 / +5 / +12 VDC | 2.71 / 8.0 / 0.6 A  |

## Dimensions

Single output:



Multi output:



( ) = Inches

# TPP 100 Series ▶ 100 W



- ▶ Highest power density encased 100 W power supply
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Ready to meet ErP directive, < 0.3 W no load power consumption
- ▶ Highest efficiency 91 to 92% across 10% – 100% load range
- ▶ Active power factor correction (>95)
- ▶ Protection class II prepared

**NEW Product**



## Specifications

|                              |  |
|------------------------------|--|
| Input voltage range          | 85-264VAC (47-63Hz) / 120-370VDC   |
| Line regulation              | 0.2% max.  |
| Load regulation              | 0.5% max.  |
| Output voltage adjustment    | approx. +10 % of Vout nom. by internal potentiometer   |
| Ripple & noise (20 MHz BW)   | 120 – 340 mVpk-pk depending on model with external capacitor                                       |
| EMI emission                 | EN 55011/22 class B, harmonic current EN 61000-3-2   |
| EMC immunity                 | EN61000-6-1, EN 60601-1-2  |
| Output current limitation    | >150% Inom. continuous, automatic recovery   |
| Efficiency                   | 91% typ.   |
| Operating temperature        | -25 °C to +80 °C (convection cooling) derating 2.33%/K above 50 °C                                 |
| Altitude                     | Operating up to 5000m altitude   |
| Safety standards / approvals | UL 60950-1, IEC/EN 60950-1, IEC/EN 60601-1 3rd edition, ANSI/AAMI ES60601-1:2005(R)2012            |
| Degree of protection         | class II prepared  |
| Casing                       | Encased with screw terminal  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tpp100.pdf">www.tracopower.com/products/tpp100.pdf</a> |

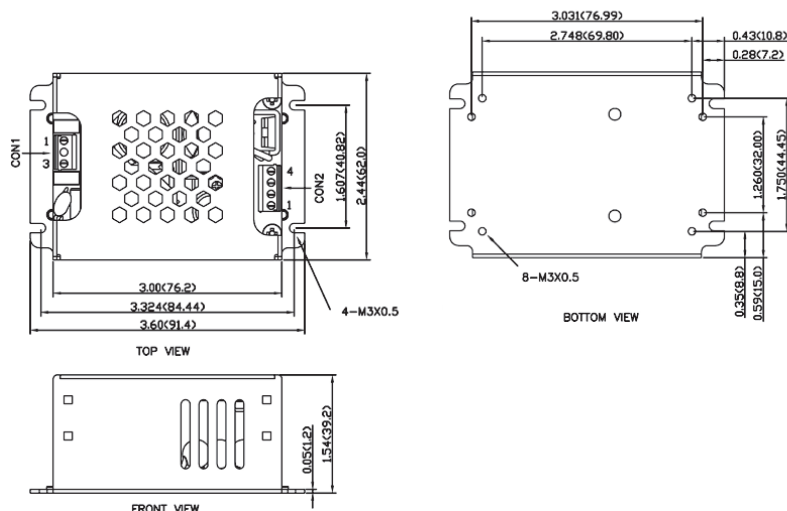
## Models

| Order code  | Output power max. | Output voltage | Output current max. |
|-------------|-------------------|----------------|---------------------|
| TPP 100-112 |                   | 12 VDC         | 8.34 A              |
| TPP 100-115 |                   | 15 VDC         | 6.67 A              |
| TPP 100-124 | 100 W             | 24 VDC         | 4.17 A              |
| TPP 100-136 |                   | 36 VDC         | 2.78 A              |
| TPP 100-148 |                   | 48 VDC         | 2.09 A              |

### Options on demand:

- open frame
- pin connector
- DIN-rail clip

## Dimensions



() = Inches

# TPP 150 Series ▶ 150 W



- ▶ Highest power density encased 150 W power supply
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Ready to meet ErP directive, < 0.3 W no load power consumption
- ▶ Highest efficiency 91 to 92% across 10% – 100% load range
- ▶ Active power factor correction (>95)
- ▶ Protection class II prepared

**NEW Product**



## Specifications

|                              |  |
|------------------------------|--|
| Input voltage range          | 85–264VAC (47–63Hz) / 120–370VDC   |
| Line regulation              | 0.2% max.  |
| Load regulation              | 0.5% max.  |
| Output voltage adjustment    | approx. +10 % of Vout nom. by internal potentiometer   |
| Ripple & noise (20 MHz BW)   | 120 – 480 mVpk-pk depending on model with external capacitor                                       |
| EMI emission                 | EN 55011/22 class B, harmonic current EN 61000-3-2   |
| EMC immunity                 | EN61000-6-1, EN 60601-1-2  |
| Output current limitation    | >150% Inom. continuous, automatic recovery   |
| Efficiency                   | 91% typ.   |
| Operating temperature        | -25 °C to +80 °C<br>derating 2.33%/K above 50 °C   |
| Altitude                     | Operating up to 5000m altitude   |
| Safety standards / approvals | UL 60950-1, IEC/EN 60950-1, IEC/EN 60601-1 3rd edition, ANSI/AAMI ES60601-1:2005(R)2012            |
| Degree of protection         | class II prepared  |
| Casing                       | Encased with screw terminal  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tpp150.pdf">www.tracopower.com/products/tpp150.pdf</a> |

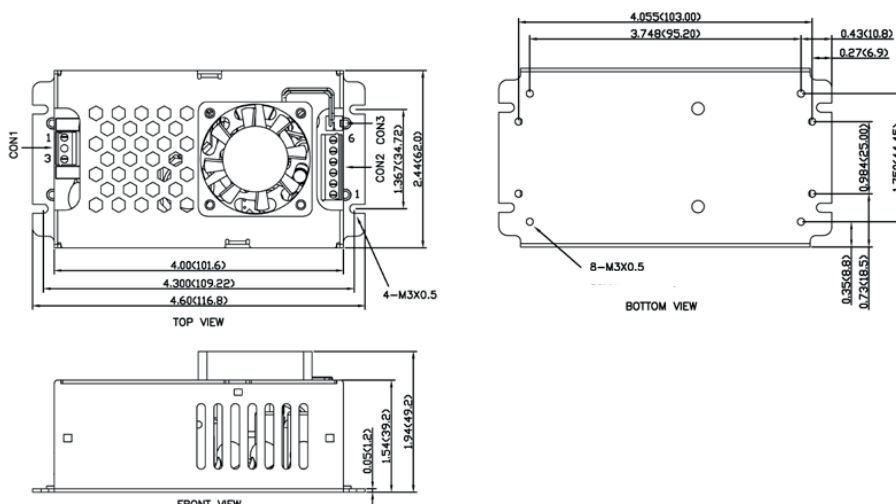
## Models

| Order code  | Output power max. | Output voltage | Output current max. |
|-------------|-------------------|----------------|---------------------|
| TPP 150-112 |                   | 12 VDC         | 12.5 A              |
| TPP 150-115 |                   | 15 VDC         | 10.0 A              |
| TPP 150-124 | 150 W             | 24 VDC         | 6.25 A              |
| TPP 150-136 |                   | 36 VDC         | 4.17 A              |
| TPP 150-148 |                   | 48 VDC         | 3.13 A              |

### Options on demand:

- open frame
- pin connector
- DIN-rail clip

## Dimensions



() = Inches

# TXM Series ▶ 15 to 320 W



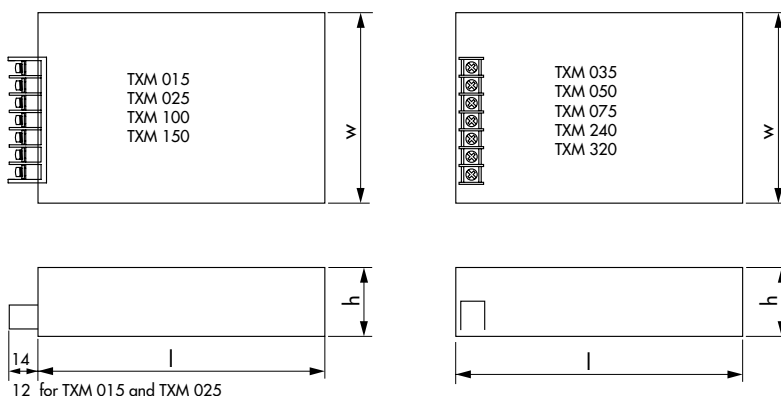
- ▶ Very compact enclosed power supplies
- ▶ Cost optimized design
- ▶ Low no load power consumption <0.5 W up to 75 W units
- ▶ Screw terminal block
- ▶ No internal fan up to 150 W models
- ▶ Universal input 88–264 VAC
- ▶ Adjustable output voltage
- ▶ Short circuit and overvoltage protection
- ▶ PCB solder side conformal coated



| Specifications               |  |
|------------------------------|--|
| Input voltage range          | 88–264 VAC, 47–63 Hz   |
| Line regulation              | 0.5%   |
| Load regulation              | 2.0%   |
| Output voltage adjustment:   | ±10% of Vout nom. with potentiometer   |
| Ripple & noise               | <1% of Vout nom.   |
| EMI suppression              | EN 55011, class B, EN 55022, class B and FCC, part 15, level B, EN 61000-3-2                 |
| EMC immunity                 | EN 61000-6-1   |
| Output current limitation    | >105% of Iout max.   |
| Overvoltage protection       | >110% of Vout nom.   |
| Efficiency                   | 85% typ.   |
| Operating temperature        | -20 °C to +70 °C<br>above 45 °C derating 2.5%/K  |
| Safety standards / approvals | cUL/UL 60950-1, IEC/EN 60950-1   |
| Connection                   | screw terminal block   |
| Casing                       | Metal enclosure,<br>240 & 320 Watt models with internal fan                                  |
| Full datasheet               | <a href="http://www.tracopower.com/products/txm.pdf">www.tracopower.com/products/txm.pdf</a> |

| Dimensions |            |           |           |
|------------|------------|-----------|-----------|
| Type       | Length l   | Width w   | Height h  |
| TXM 015    | 79 (3.11)  | 51 (2.01) | 29 (1.14) |
| TXM 025    | 79 (3.11)  | 51 (2.01) | 29 (1.14) |
| TXM 035    | 102 (4.02) | 64 (2.52) | 33 (1.30) |
| TXM 050    | 99 (3.90)  | 82 (3.23) | 35 (1.38) |
| TXM 075    | 129 (5.08) | 99 (3.90) | 38 (1.50) |
| TXM 100    | 179 (7.05) | 99 (3.90) | 50 (1.97) |
| TXM 150    | 179 (7.05) | 99 (3.90) | 50 (1.97) |
| TXM 240    | 199 (7.83) | 99 (3.90) | 50 (1.97) |
| TXM 320    | 199 (7.83) | 99 (3.90) | 50 (1.97) |

() = Inch



| Models      |                   |                |                     |
|-------------|-------------------|----------------|---------------------|
| Order code  | Output power max. | Output voltage | Output current max. |
| TXM 015-103 | 13 W              | 3.3 VDC        | 4.0 A               |
| TXM 015-105 |                   | 5.0 VDC        | 3.0 A               |
| TXM 015-112 | 15 W              | 12 VDC         | 1.3 A               |
| TXM 015-115 |                   | 15 VDC         | 1.0 A               |
| TXM 015-124 |                   | 24 VDC         | 0.7 A               |
| TXM 025-103 | 20 W              | 3.3 VDC        | 5.0 A               |
| TXM 025-105 |                   | 5.0 VDC        | 5.0 A               |
| TXM 025-112 | 25 W              | 12 VDC         | 2.1 A               |
| TXM 025-115 |                   | 15 VDC         | 1.6 A               |
| TXM 025-124 |                   | 24 VDC         | 1.1 A               |
| TXM 035-105 | 30 W              | 5.0 VDC        | 6.0 A               |
| TXM 035-112 |                   | 12 VDC         | 3.0 A               |
| TXM 035-115 | 35 W              | 15 VDC         | 2.4 A               |
| TXM 035-124 |                   | 24 VDC         | 1.5 A               |
| TXM 035-148 |                   | 48 VDC         | 0.75 A              |
| TXM 050-105 | 40 W              | 5.0 VDC        | 8.0 A               |
| TXM 050-112 |                   | 12 VDC         | 4.2 A               |
| TXM 050-115 | 50 W              | 15 VDC         | 3.4 A               |
| TXM 050-124 |                   | 24 VDC         | 2.2 A               |
| TXM 050-148 |                   | 48 VDC         | 1.1 A               |
| TXM 075-105 | 60 W              | 5.0 VDC        | 12.0 A              |
| TXM 075-112 |                   | 12 VDC         | 6.0 A               |
| TXM 075-115 | 75 W              | 15 VDC         | 5.0 A               |
| TXM 075-124 |                   | 24 VDC         | 3.2 A               |
| TXM 075-148 |                   | 48 VDC         | 1.6 A               |
| TXM 100-105 |                   | 5.0 VDC        | 20.0 A              |
| TXM 100-112 |                   | 12 VDC         | 8.5 A               |
| TXM 100-115 | 100 W             | 15 VDC         | 6.7 A               |
| TXM 100-124 |                   | 24 VDC         | 4.2 A               |
| TXM 100-148 |                   | 48 VDC         | 2.15 A              |
| TXM 150-112 |                   | 12 VDC         | 12.5 A              |
| TXM 150-124 | 150 W             | 24 VDC         | 6.3 A               |
| TXM 150-148 |                   | 48 VDC         | 3.2 A               |
| TXM 240-112 |                   | 12 VDC         | 16.7 A              |
| TXM 240-124 | 240 W             | 24 VDC         | 8.4 A               |
| TXM 240-148 |                   | 48 VDC         | 4.2 A               |
| TXM 320-112 |                   | 12 VDC         | 25.0 A              |
| TXM 320-124 | 320 W             | 24 VDC         | 13.0 A              |
| TXM 320-136 |                   | 36 VDC         | 8.8 A               |
| TXM 320-148 |                   | 48 VDC         | 6.7 A               |



# TXL Series ▶ 15 to 1000 W



- ▶ Metal casing with screw terminal block
- ▶ Single-, dual- and triple output models
- ▶ Multi output models with isolated outputs
- ▶ Universal input 85–264VAC
- ▶ Adjustable output voltage
- ▶ Short circuit and overvoltage protection

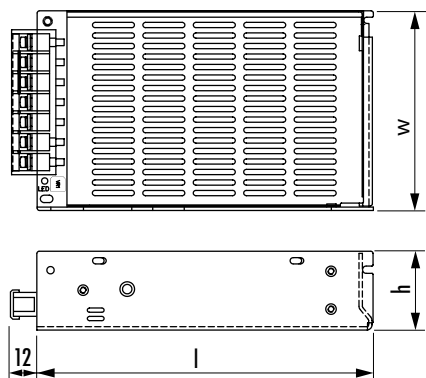


## Specifications

|                              |  |
|------------------------------|--|
| Input voltage range          | 85–264 VAC, 50/60 Hz<br>120–370 VDC  |
| Line regulation              | 1.0 %  |
| Load regulation              | 2.0 %  |
| Output voltage adjustment:   | ±10 % of Vout nom. with potentiometer  |
| Ripple & noise               | <1% of Vout nom.   |
| EMI suppression              | EN 55011, class B, EN 55022, class B and FCC, part 15, level B, EN 61000-3-2                 |
| EMC immunity                 | EN 61000-6-1   |
| Output current limitation    | at 105–150 % of Iout max. (foldback, automatic recovery)                                     |
| Overvoltage protection       | at 115–140 % of Vout nom.  |
| Efficiency                   | 80 % typ.  |
| Operating temperature        | -10 °C to +70 °C<br>above 45 °C derating 2%/K  |
| Safety standards / approvals | cUL/UL 60950-1, EN 60950-1, CB-report  |
| Connection                   | screw terminal block   |
| Casing                       | aluminium / steel, 230 -1000 W models with internal fan                                      |
| Full datasheet               | <a href="http://www.tracopower.com/products/txl.pdf">www.tracopower.com/products/txl.pdf</a> |

## Dimensions

| Case Type | Length l    | Width w    | Height h  |
|-----------|-------------|------------|-----------|
| B         | 62 (2.48)   | 51 (2.01)  | 28 (1.10) |
| C         | 79 (3.11)   | 51 (2.01)  | 29 (1.14) |
| D         | 99 (3.90)   | 82 (3.23)  | 35 (1.38) |
| E         | 160 (6.30)  | 95 (3.74)  | 38 (1.50) |
| J         | 198 (7.80)  | 95 (3.74)  | 38 (1.50) |
| L         | 198 (7.80)  | 99 (3.90)  | 50 (1.97) |
| N         | 198 (7.80)  | 99 (3.90)  | 45 (1.77) |
| O         | 212 (8.35)  | 115 (4.53) | 50 (1.97) |
| P         | 275 (10.83) | 125 (4.92) | 63 (2.48) |
| Q         | 295 (11.61) | 127 (5.00) | 40 (1.57) |



( ) = Inch

## Models

| Order code   | Output power max. | Output voltage nom. | Output current max. | Case |
|--------------|-------------------|---------------------|---------------------|------|
| TXL 015-3.3S | 10 W              | 3.3 VDC             | 3.0 A               | B    |
| TXL 015-05S  |                   | 5 VDC               | 3.0 A               | B    |
| TXL 015-12S  |                   | 12 VDC              | 1.3 A               | B    |
| TXL 015-15S  | 15 W              | 15 VDC              | 1.0 A               | B    |
| TXL 015-24S  |                   | 24 VDC              | 0.63 A              | B    |
| TXL 015-48S  |                   | 48 VDC              | 0.32 A              | B    |
| TXL 025-3.3S | 20 W              | 3.3 VDC             | 6.0 A               | C    |
| TXL 025-05S  |                   | 5 VDC               | 5.0 A               | C    |
| TXL 025-12S  |                   | 12 VDC              | 2.1 A               | C    |
| TXL 025-15S  | 25 W              | 15 VDC              | 1.7 A               | C    |
| TXL 025-24S  |                   | 24 VDC              | 1.1 A               | C    |
| TXL 025-48S  |                   | 48 VDC              | 0.57 A              | C    |
| TXL 035-3.3S | 30 W              | 3.3 VDC             | 9.0 A               | D    |
| TXL 035-05S  |                   | 5 VDC               | 7.0 A               | D    |
| TXL 035-12S  |                   | 12 VDC              | 3.0 A               | D    |
| TXL 035-15S  | 35 W              | 15 VDC              | 2.4 A               | D    |
| TXL 035-24S  |                   | 24 VDC              | 1.5 A               | D    |
| TXL 035-48S  |                   | 48 VDC              | 0.8 A               | D    |
| TXL 050-05S  | 50 W              | 5 VDC               | 10.0 A              | D    |
| TXL 060-3.3S | 50 W              | 3.3 VDC             | 15.0 A              | E    |
| TXL 060-05S  |                   | 5 VDC               | 12.0 A              | E    |
| TXL 060-12S  | 60 W              | 12 VDC              | 5.0 A               | D    |
| TXL 060-15S  |                   | 15 VDC              | 4.0 A               | D    |
| TXL 060-24S  |                   | 24 VDC              | 2.5 A               | D    |
| TXL 070-12S  |                   | 12 VDC              | 6.0 A               | E    |
| TXL 070-15S  | 70 W              | 15 VDC              | 4.8 A               | E    |
| TXL 070-24S  |                   | 24 VDC              | 3.0 A               | E    |
| TXL 070-48S  |                   | 48 VDC              | 1.5 A               | E    |
| TXL 100-05S  |                   | 5 VDC               | 20.0 A              | J    |
| TXL 100-12S  |                   | 12 VDC              | 8.5 A               | J    |
| TXL 100-15S  | 100 W             | 15 VDC              | 6.8 A               | J    |
| TXL 100-24S  |                   | 24 VDC              | 4.5 A               | J    |
| TXL 100-48S  |                   | 48 VDC              | 2.1 A               | J    |
| TXL 150-05S  |                   | 5 VDC               | 30.0 A              | L    |
| TXL 150-12S  | 150 W             | 12 VDC              | 12.5 A              | L    |
| TXL 150-24S  |                   | 24 VDC              | 6.3 A               | L    |
| TXL 150-48S  |                   | 48 VDC              | 3.2 A               | L    |
| TXL 230-12S  |                   | 12 VDC              | 19.2 A              | N    |
| TXL 230-24S  | 230 W             | 24 VDC              | 9.6 A               | N    |
| TXL 230-48S  |                   | 48 VDC              | 4.8 A               | N    |
| TXL 350-24S  | 350 W             | 24 VDC              | 14.7 A              | O    |
| TXL 350-48S  |                   | 48 VDC              | 7.5 A               | O    |
| TXL 750-24S  | 750 W             | 24 VDC              | 31.3 A              | P    |
| TXL 750-48S  |                   | 48 VDC              | 15.8 A              | P    |
| TXL 1000-24S | 1000 W            | 24 VDC              | 40 A                | Q    |
| TXL 1000-48S |                   | 48 VDC              | 21 A                | Q    |

## Multi Output Models

| Order code     | Output power | Output 1* max.  | Output 2*       | Output 3*      | Case |
|----------------|--------------|-----------------|-----------------|----------------|------|
| TXL 035-0512D  | 35 W         | +5 VDC / 4.0 A  | +12 VDC / 2.5 A |                | D    |
| TXL 035-0524D  |              | +5 VDC / 4.0 A  | +24 VDC / 1.3 A |                | D    |
| TXL 035-1212D  |              | +12 VDC / 1.5 A | -12 VDC / 1.5 A |                | D    |
| TXL 035-1515D  |              | +15 VDC / 1.3 A | -15 VDC / 1.3 A |                | D    |
| TXL 060-0512DI | 60 W         | 5 VDC / 8.0 A   | 12 VDC / 4.0 A  |                | E    |
| TXL 060-0524DI |              | 5 VDC / 8.0 A   | 24 VDC / 2.2 A  |                | E    |
| TXL 060-0521TI |              | 5 VDC / 8.0 A   | 12 VDC / 3.5 A  | 5 VDC / 1.0 A  | E    |
| TXL 060-0522TI |              | 5 VDC / 7.0 A   | 12 VDC / 3.5 A  | 12 VDC / 1.0 A | E    |
| TXL 060-0533TI |              | 5 VDC / 7.0 A   | 15 VDC / 3.0 A  | 15 VDC / 1.0 A | E    |
| TXL 060-0534TI |              | 5 VDC / 6.0 A   | 12 VDC / 1.5 A  | 24 VDC / 1.2 A | E    |
| TXL 100-0512DI | 100 W        | 5 VDC / 12 A    | 12 VDC / 6.0 A  |                | J    |
| TXL 100-0524DI |              | 5 VDC / 10 A    | 24 VDC / 4.0 A  |                | J    |
| TXL 100-0521TI |              | 5 VDC / 12 A    | 12 VDC / 5.0 A  | 5 VDC / 1.5 A  | J    |
| TXL 100-0522TI |              | 5 VDC / 12 A    | 12 VDC / 5.0 A  | 12 VDC / 1.5 A | J    |
| TXL 100-0533TI |              | 5 VDC / 12 A    | 15 VDC / 3.0 A  | 15 VDC / 1.5 A | J    |
| TXL 100-0534TI |              | 5 VDC / 12 A    | 12 VDC / 3.0 A  | 24 VDC / 2.0 A | J    |

60 & 100 Watt models with fully isolated outputs  
\*Total power not to exceed specified output power

# TXH Series ▶ 120 to 480 W



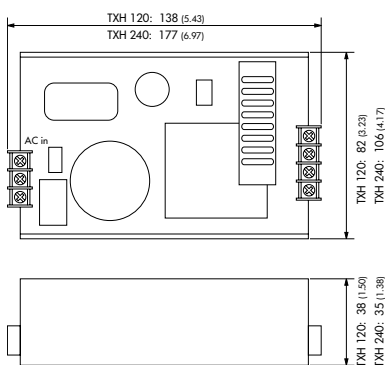
- ▶ Compact U-bracket and enclosed power supplies
- ▶ Screw terminal block
- ▶ Very high efficiency up to 93%
- ▶ No internal fan for 120 W & 240 W models
- ▶ Universal input 90–264 VAC
- ▶ Short circuit and overvoltage protection



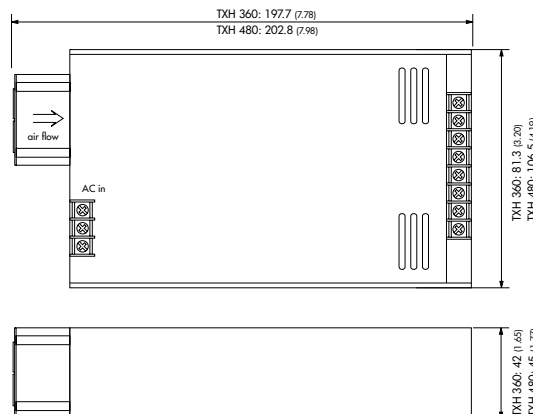
| Specifications               |  | Models                                    |                          |                       |                            |
|------------------------------|--|---|--------------------------|-----------------------|----------------------------|
| Input voltage range          | 90–264 VAC, 50/60 Hz<br>120–370 VDC  | <b>Order code</b>                         | <b>Output power max.</b> | <b>Output voltage</b> | <b>Output current max.</b> |
| Line regulation              | 1.0%   | TXH 120-112                               | 120 W                    | 12 VDC                | 10 A                       |
| Load regulation              | 1.0%   | TXH 120-124                               |                          | 24 VDC                | 5 A                        |
| Output voltage adjustment:   | ±10% of Vout nom. with potentiometer<br>TXH 360 and TXH 480 models only  | TXH 120-148                               |                          | 48 VDC                | 2.5 A                      |
| Ripple & noise               | <1% of Vout nom.   | TXH 240-112                               | 240 W                    | 12 VDC                | 20 A                       |
| EMI suppression              | EN 55011, class B, EN 55022, class B and FCC, part 15, level B, EN 61000-3-2   | TXH 240-124                               |                          | 24 VDC                | 10 A                       |
| EMC immunity                 | EN 61000-6-1   | TXH 240-148                               |                          | 48 VDC                | 5 A                        |
| Output current limitation    | >110% of Iout max.   | TXH 360-112                               | 360 W                    | 12 VDC                | 30 A                       |
| Overvoltage protection       | >110% of Vout nom.   | TXH 360-124                               |                          | 24 VDC                | 15 A                       |
| Efficiency                   | 90% typ.   | TXH 360-148                               |                          | 48 VDC                | 7.5 A                      |
| Operating temperature        | -10 °C to +70 °C<br>above 50 °C derating 2.5%/K  | TXH 480-112*                              | 480 W                    | 12 VDC                | 40 A                       |
| Safety standards / approvals | cUL/UL 60950-1, EN 60950-1, CB-report  | TXH 480-124*                              |                          | 24 VDC                | 20 A                       |
| Connection                   | screw terminal block<br>TXH 480: connector for control functions (remote On/Off, sense line, standby / auxillary output) | TXH 480-148*                              |                          | 48 VDC                | 10 A                       |
| Casing                       | 120 & 240 W models: U-bracket (optional cover)<br>360 & 480 W models: Metal enclosure                                    | * Standby / auxillary output 5 V / 600 mA |                          |                       |                            |
| Full datasheet               | <a href="http://www.tracopower.com/products/txh.pdf">www.tracopower.com/products/txh.pdf</a>                             | <b>Cover</b>                              |                          |                       |                            |
|                              |  | TXH 120-COV                               | Cover for TXH 120 models |                       |                            |
|                              |  | TXH 240-COV                               | Cover for TXH 240 models |                       |                            |

## Dimensions

120 W & 240 W models:



360 & 480 W models:



() = Inches

# TXH-600 Series ▶ 600 W



- ▶ Universal input: 90–264 VAC or 120–370 VDC
- ▶ Active power factor correction (>0.95)
- ▶ Very high efficiency up to 93%
- ▶ Current share function for up to 3 units in parallel
- ▶ Adjustable output voltage
- ▶ Protection against over-voltage, overtemperature, overload and short circuit
- ▶ Rear side IEC-C13 line socket, including mains switch and fuse

**NEW**  
Product



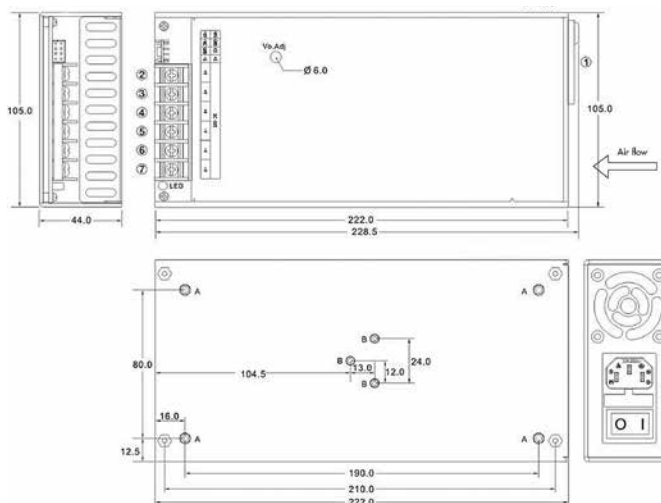
## Specifications

|                              |  |
|------------------------------|--|
| Input voltage range          | 90–264 VAC, 50/60 Hz<br>120–370 VDC  |
| Line regulation              | 1.0 % max.   |
| Load regulation              | 1.0 % max.   |
| Output voltage adjustment:   | ±5% of Vout nom. with potentiometer  |
| Ripple & noise               | <1% of Vout nom. [mVpk-pk]   |
| EMI suppression              | EN 55011, class B, EN 55022, class B and FCC, part 15, level B, EN 61000-3-2                       |
| EMC immunity                 | EN 61000-6-1   |
| Output current limitation    | auto recovery  |
| Overvoltage protection       | >120 % of Vout nom.  |
| Efficiency                   | 92 % typ.  |
| Operating temperature        | –25 °C to +65 °C<br>above 50 °C derating 4%/K  |
| Safety standards / approvals | cUL/UL 60950-1, EN 60950-1, CB-report  |
| Connection                   | screw terminal block   |
| Casing                       | Metal enclosure  |
| Full datasheet               | <a href="http://www.tracopower.com/products/txh600.pdf">www.tracopower.com/products/txh600.pdf</a> |

## Models

| Order code  | Output power max. | Output voltage | Output current max. |
|-------------|-------------------|----------------|---------------------|
| TXH 600-112 | 600 W             | 12 VDC         | 45 A                |
| TXH 600-124 |                   | 24 VDC         | 25 A                |
| TXH 600-148 |                   | 48 VDC         | 12.5 A              |
| TXH 600-154 |                   | 54 VDC         | 11.1 A              |

## Dimensions



( ) = Inches

# TEX Series ▶ 120 W



- ▶ Sealed, rugged die-cast aluminium casing
- ▶ Dust- and water resistant to IP67 & NEMA 4X
- ▶ Wide operating temperature range -40 °C to +85 °C
- ▶ Easy connection via waterproof plugs
- ▶ Universal input voltage 85–264 VAC, 85–375 VDC
- ▶ Adjustable output voltage
- ▶ Short circuit and overload protection
- ▶ Certificate for test and measurements EN 61010 3rd edition
- ▶ UL 508 listed
- ▶ Class I, zone 2 approval incl. ATEX certification for hazardous locations (Class I, Div. 2)



## Specifications

|                              |   |
|------------------------------|---|
| Input voltage range          | 85–264 VAC, 47–63 Hz<br>85–375 VDC  |
| Output regulation            | 2.5 % max.  |
| Output voltage adjustment    | 12 V model: 12 – 15 VDC, 24 V model: 24 – 28 VDC, with internal potentiometer   |
| Ripple & noise               | <50 mVpk-pk (20 MHz BW)   |
| EMI suppression              | EN 55022 class B, harmonic current EN 61000-3-2, class A  |
| EMC immunity                 | EN61000-6-2, SEMI F47   |
| Output current limitation    | >125% Inom.   |
| Efficiency                   | 90 % typ.   |
| Operating temperature        | -40 °C to +85 °C (convection cooling)<br>above 60 °C derating 2.0%/K  |
| Safety standards / approvals | UL 508, UL 1604, EN 61010 3rd edition, IEC/EN 60950-1 (CB-Report), EN 50178, EN 60204, EN 61558-2-8, IEC/EN 60079-15 (class I, div.2), UL 60079-15, ANSI/ISA 12.12.01 (class I, div. 2), EN 50021, ATEX 94/9/EC |
| Degree of protection         | safety class I, (IEC 536)   |
| Case protection              | IP 67 (IEC 60529), NEMA 4X rated, UL 50   |
| Shock & vibration            | meets IEC 60068-2-6, IEC 60068-2-27   |
| Humidity                     | up to 100 % rel. H with condensation  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tex120.pdf">www.tracopower.com/products/tex120.pdf</a>  |

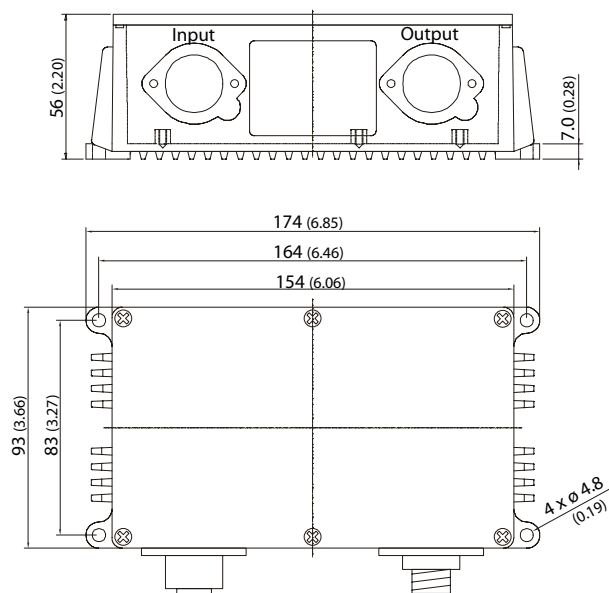
## Models

| Order code  | Output power | Output voltage | Output current max. |
|-------------|--------------|----------------|---------------------|
| TEX 120-112 | 96 W         | 12 VDC         | 8 A                 |
| TEX 120-124 | 120 W        | 24 VDC         | 5 A                 |

## Accessories

|         |  |
|---------|--|
| TEX-P11 | AC input connector                             |
| TEX-P21 | DC output connector                            |
| TEX-C11 | Input cable assembly 2m (for UL508 compliance) |
| TEX-C21 | Output cable assembly 2m                       |

## Dimensions



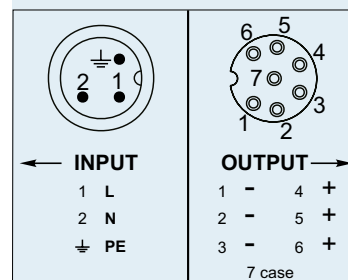
( ) = Inches

## Mating Connectors (not included in shipment)

AC Input: Binder 3-pin female circular plug 693 series: 99-4222-14-04

DC Output: Binder 7-pin male circular plug 693 series: 99-4225-160-07

units are supplied with sealing connector caps



# TBL Series ▶ 15 to 150 W



- ▶ Low profile plastic case
- ▶ For building- and industrial automation applications
- ▶ Model with battery controller for UPS system
- ▶ Fits into flat control panels
- ▶ Meets NEC class II (limited power source)
- ▶ Safety class II
- ▶ Universal input voltage 85–264 VAC
- ▶ Adjustable output voltage
- ▶ Short circuit and overload protection
- ▶ UL 508 listed



## Specifications

|                                 |  |
|---------------------------------|--|
| Input voltage range             | 85–264 VAC, 47–63 Hz<br>TBL 150 models: 85–132 / 187–264 VAC (autorange)                     |
| Output regulation               | 1.0% max.  |
| Output voltage adjustment range | 5 V models: 5.0 – 5.2 VDC<br>12 V models: 12.0 – 16.0 VDC<br>24 V models: 24.0 – 28.0 VDC    |
| Ripple & noise                  | <100 mVpk-pk (20MHz BW)  |
| EMI emission                    | EN 55011/22, class B, EN61000-6-3  |
| EMC immunity                    | EN 61000-6-2   |
| Output current limitation       | >105% of I <sub>out</sub> max.   |
| Over voltage protection         | at 140% of V <sub>out</sub> nom.   |
| Efficiency                      | 80% typ.   |
| Operating temperature           | -25 °C to +70 °C<br>above 60 °C derating 2.5%/K  |
| Safety standards / approvals    | UL 1310, IEC/EN 60950-1, CB-Report, cUL/UL 508 listed, EN 50178, EN 60204, EN 61558-2-8      |
| Connection                      | screw terminals  |
| Casing                          | plastic (UL 94V-0 rated)   |
| Mounting                        | snap-on mounting on 35 mm DIN-rail or wall mount with included brackets                      |
| Full datasheet                  | <a href="http://www.tracopower.com/products/tbl.pdf">www.tracopower.com/products/tbl.pdf</a> |

## Models

| Order code   | Output power max. | Output voltage | Output current max. |
|--------------|-------------------|----------------|---------------------|
| TBL 015-105* |                   | 5.0 VDC        | 2.4 A               |
| TBL 015-112* | 15 W              | 12 VDC         | 1.25 A              |
| TBL 015-124* |                   | 24 VDC         | 0.63 A              |
| TBL 030-112* | 30 W              | 12 VDC         | 2.5 A               |
| TBL 030-124* |                   | 24 VDC         | 1.25 A              |
| TBL 060-112* | 60 W              | 12 VDC         | 4.5 A               |
| TBL 060-124* |                   | 24 VDC         | 2.5 A               |
| TBL 090-112  | 90 W              | 12 VDC         | 6.0 A               |
| TBL 090-124* |                   | 24 VDC         | 3.75 A              |
| TBL 150-112  | 120 W             | 12 VDC         | 10 A                |
| TBL 150-124  | 150 W             | 24 VDC         | 6.25 A              |

\* Models meet NEC class II (limited power source) acc. UL 1310

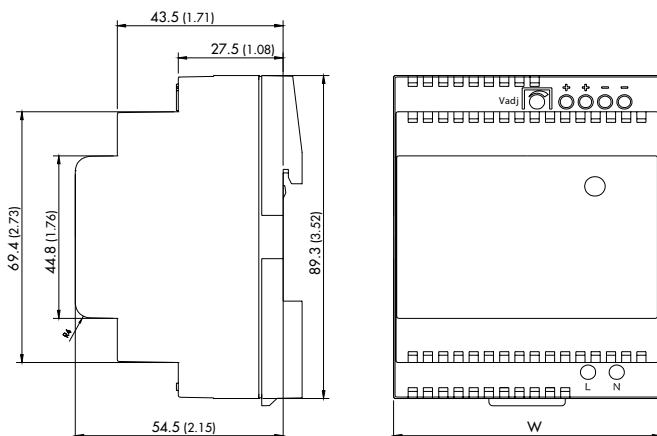
## Model with Battery Controller (For UPS-System)

| Order code    | Battery voltage | Max. Battery load current | Output voltage adj. | Power max. |
|---------------|-----------------|---------------------------|---------------------|------------|
| TBL 060-124BC | 24 VDC          | 2 A                       | 26–29.5 VDC         | 60 W       |



For details see datasheet: [www.tracopower.com/products/tbl-bc.pdf](http://www.tracopower.com/products/tbl-bc.pdf)

## Dimensions



() = Inches

## Type

| Type          | Width (w)   |
|---------------|-------------|
| TBL 015       | 26.3 (1.03) |
| TBL 030       | 52.5 (2.07) |
| TBL 060       | 70 (2.78)   |
| TBL 090       | 105 (4.13)  |
| TBL 150       | 175 (6.89)  |
| TBL 060-124BC | 175 (6.89)  |

# TCL / TCL-DC Series ▶ 24 to 240 W



- ▶ For industrial-, office- and residential environments
- ▶ Available with detachable screw terminals or spring clamps
- ▶ Standard models with 5, 12, 24 and 48 VDC output
- ▶ Models with DC input: 9.5–18 VDC and 18–75 VDC
- ▶ Universal input 85–264 VAC
- ▶ Worldwide safety approval package
- ▶ Adjustable output voltage
- ▶ Power Good signal
- ▶ Parallel and redundant operation



## Specifications

|                              |  |
|------------------------------|--|
| Input voltage range          | 85–264 VAC, 47–63 Hz, 85–375 VDC<br>TCL 240 models: 85–132 / 187–264 VAC (autorange)<br>DC Input models: 18–75 VDC<br>TCL 012–124 DC: 9.5–18 VDC   |
| Output regulation            | 1.25% max.   |
| Ripple & noise               | <50 mVpk-pk (20 MHz BW)  |
| EMI emission                 | EN 55011, class B, EN 55022, class B, EN61000–6–3  |
| EMC immunity                 | EN 61000–6–2 (industrial environment), SEMI F47  |
| Output current limitation    | at 130% of Iout max.   |
| Over voltage protection      | at 140% of Vout nom.   |
| Efficiency                   | 90% typ.   |
| DC-OK Signal                 | open collector / max. 30 mA  |
| Operating temperature        | –10 °C to +70 °C , –25 °C to +70 °C for DC input models<br>above 50 °C derating 1.7%/K   |
| Safety standards / approvals | cUL/UL 60950–1, UL 508C listed, IEC/EN 60950–1, CB-Report<br>EN 50178, EN 60204, EN 61558–2–8  |
| Connection                   | detachable screw terminals or spring clamp terminals   |
| Casing                       | plastic (UL 94V–0 rated)   |
| Mounting                     | snap-on mounting on 35 mm DIN-rail or chassis mounting<br>with mounting bracket (included)   |
| Options                      | output current characteristics set for battery charging<br>applications  |
| Full datasheet               | AC/DC: <a href="http://www.tracopower.com/products/tcl.pdf">www.tracopower.com/products/tcl.pdf</a><br>DC/DC: <a href="http://www.tracopower.com/products/tcl-dc.pdf">www.tracopower.com/products/tcl-dc.pdf</a> |

## Models

| Order code      | Output power max. | Output voltage (adjustable output) | Output current max. |
|-----------------|-------------------|------------------------------------|---------------------|
| TCL 024-105     | 24 Watt           | 5.1 VDC                            | 4.0 A               |
| TCL 024-112     |                   | 12 VDC                             | 2.0 A               |
| TCL 024-124 (C) |                   | 24 VDC                             | 1.0 A               |
| TCL 060-112 (C) | 60 Watt           | 12 VDC                             | 4.0 A               |
| TCL 060-124 (C) |                   | 24 VDC                             | 2.5 A               |
| TCL 060-148 (C) |                   | 48 VDC                             | 1.25 A              |
| TCL 120-112 (C) | 120 Watt          | 12 VDC                             | 8.0 A               |
| TCL 120-124 (C) |                   | 24 VDC                             | 5.0 A               |
| TCL 240-124     | 240 Watt          | 24 VDC                             | 10.0 A              |

without suffix: detachable screw terminal block  
with suffix C: spring clamps

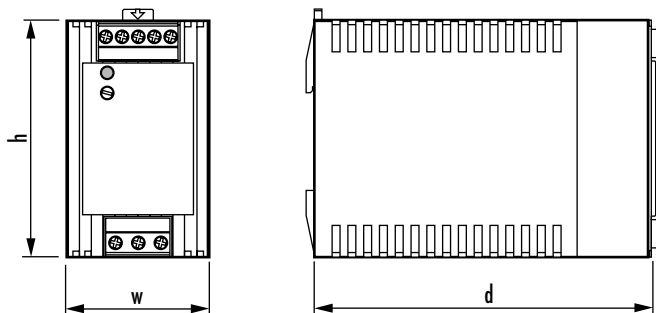
## Redundancy Module

| Order code | 2 Inputs                       | Output voltage | Output current max. |
|------------|--------------------------------|----------------|---------------------|
| TCL-REM240 | 5 – 60 VDC<br>144 W max./input | Vin – 0.9 VDC  | 8.0 A               |

## Models with DC Input

| Order code    | Input voltage range | Output voltage (adjustable output) | Output current max. |
|---------------|---------------------|------------------------------------|---------------------|
| TCL 012-124DC | 9.5–18 VDC          | 24 VDC                             | 1.0 A               |
| TCL 024-105DC | 18–75 VDC           | 5 VDC                              | 5.0 A               |
| TCL 024-112DC |                     | 12 VDC                             | 2.0 A               |
| TCL 024-124DC |                     | 24 VDC                             | 1.0 A               |
| TCL 060-112DC | 18–75 VDC           | 12 VDC                             | 5.0 A               |
| TCL 060-124DC |                     | 24 VDC                             | 2.5 A               |

## Dimensions



| Type          | Width w   | Height h   | Depth d    |
|---------------|-----------|------------|------------|
| TCL 012       | 27 (1.06) | 75 (2.95)  | 100 (3.94) |
| TCL 024 & REM | 27 (1.06) | 75 (2.95)  | 100 (3.94) |
| TCL 060       | 45 (1.77) | 75 (2.95)  | 100 (3.94) |
| TCL 120       | 85 (3.35) | 75 (2.95)  | 100 (3.94) |
| TCL 240       | 85 (3.35) | 110 (4.33) | 125 (4.92) |

# TPC Series ▶ 30 to 120 W



- ▶ Slim plastic casing
- ▶ For industrial-, office- and residential environments
- ▶ Meets ErP directive (green mode), <0.3 W no load power consumption, high efficiency across full load range
- ▶ Universal input 85–264 VAC
- ▶ Worldwide safety approval package
- ▶ Adjustable output voltage +20% of nominal
- ▶ Power Good signal
- ▶ Remote On/Off
- ▶ Parallel and redundant operation



## Specifications

|                           |   |
|---------------------------|---|
| Input voltage range       | 85–264 VAC, 47–63 Hz universal input<br>90–375 VDC  |
| Line regulation           | 0.5% max.   |
| Load regulation           | 0.5% max.   |
| Ripple & noise            | <80 mVpk-pk (20 MHz BW)   |
| EMI emission              | EN61000-6-3 (residential environment)   |
| EMC immunity              | EN 61000-6-2 (industrial environment), SEMI F47   |
| Output current limitation | 100 – 200% of Iout max. (constant current)  |
| Overvoltage protection    | at 160% of Vout nom.  |
| Efficiency                | 87% average at power consumption 25–100%.<br>– standby power loss: TPC 030: <0.3W, other models <0.5W |
| Operating temperature     | –25°C to +70°C<br>above 50°C derating 2.5% / K  |
| Safety standard           | IEC/EN 60950-1, EN 50178, EN 60204, UL 508, UL 60950-1  |
| Connection                | screw terminals   |
| Casing                    | plastic   |
| Mounting                  | snap-on mounting on 35 mm DIN-rail or chassis mounting with mounting bracket (included)               |
| Remote On/Off             | shutdown input for standby operation<br>– power loss: TPC 030: <0.3 W, other models <0.5 W            |
| Full datasheet            | <a href="http://www.tracopower.com/products/tpc.pdf">www.tracopower.com/products/tpc.pdf</a>          |

## Models

| Order code  | Output power max. | Output voltage nominal | Output voltage adjustable range | Output current max. |
|-------------|-------------------|------------------------|---------------------------------|---------------------|
| TPC 030-105 | 20 W              | 5 VDC                  | 5.0–6.0 VDC                     | 4.0 A               |
| TPC 030-112 | 30 W              | 12 VDC                 | 12–15 VDC                       | 2.2 A               |
| TPC 030-124 | 30 W              | 24 VDC                 | 24–28.8 VDC                     | 1.25 A              |
| TPC 030-148 | 30 W              | 48 VDC                 | 48–56 VDC                       | 0.6 A               |
| TPC 055-112 | 42 W              | 12 VDC                 | 12–15 VDC                       | 3.5 A               |
| TPC 055-124 | 55 W              | 24 VDC                 | 24–28.8 VDC                     | 2.3 A               |
| TPC 055-148 | 55 W              | 48 VDC                 | 48–56 VDC                       | 1.15 A              |
| TPC 080-112 | 72 W              | 12 VDC                 | 12–15 VDC                       | 6.0 A               |
| TPC 080-124 | 80 W              | 24 VDC                 | 24–28.8 VDC                     | 3.3 A               |
| TPC 080-148 | 80 W              | 48 VDC                 | 48–56 VDC                       | 1.7 A               |
| TPC 120-112 | 96 W              | 12 VDC                 | 12–15 VDC                       | 8.0 A               |
| TPC 120-124 | 120 W             | 24 VDC                 | 24–28.8 VDC                     | 5.0 A               |
| TPC 120-148 | 120 W             | 48 VDC                 | 48–56 VDC                       | 2.5 A               |

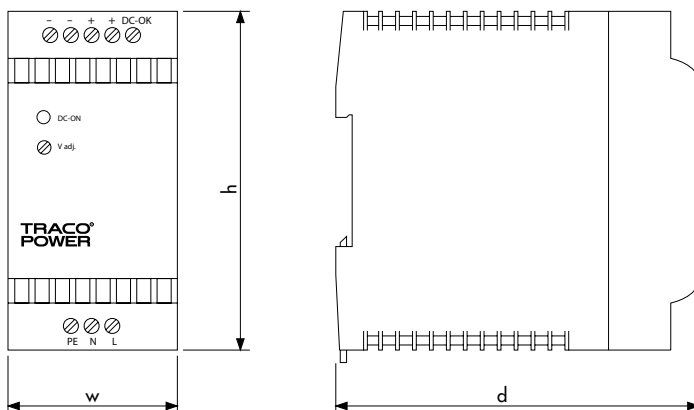
## Redundancy Module

| Order code    | 2 Inputs                  | Output voltage            | Output current max. |
|---------------|---------------------------|---------------------------|---------------------|
| TPC-REM240-24 | 24 VDC<br>5 A max / input | 24 – 27 VDC<br>adjustable | 10.0 A              |



- Active current sharing
- DC-OK signal output

## Dimensions



| Type          | Width w     | Height h  | Depth d     |
|---------------|-------------|-----------|-------------|
| TPC 030       | 26.5 (1.04) | 90 (3.54) | 96.5 (3.80) |
| TPC 055       | 45 (1.77)   | 90 (3.54) | 96.5 (3.80) |
| TPC-REM240-24 | 45 (1.77)   | 90 (3.54) | 96.5 (3.80) |
| TPC 080       | 63 (2.48)   | 90 (3.54) | 96.5 (3.80) |
| TPC 120       | 72 (2.83)   | 90 (3.54) | 110 (4.33)  |

() = Inches

# TSPC Series ▶ 50 to 480 W



- ▶ Cost optimized design in rugged, compact metal casing for harsh industrial environments
- ▶ Operating temperature range -25 °C to +70 °C
- ▶ Boost power up to 120%
- ▶ Industrial safety approval package
- ▶ ATEX certification for hazardous locations
- ▶ Power Good signal
- ▶ Overload and over temperature protection
- ▶ Vibration and shock proof



**NEW Models**

## Specifications

|                              |   |
|------------------------------|---|
| Input voltage range          | 85-132 VAC / 187-264 VAC by selection switch, 47-63 Hz  |
| Line regulation              | 1.0% max.   |
| Load regulation              | 1.0% max  |
| Ripple & Noise               | <200 mVpk-pk  |
| EMI emission                 | EN 61204-3, EN 61000-6-3  |
| EMC immunity                 | EN 61204-3, EN 61000-6-2 (industrial environment), SEMI F47   |
| Output current limitation    | at 120% of Iout max.  |
| Over-temperature protection  | switch off at over-temperature, automatic restart.  |
| Over voltage protection      | 45 V  |
| Efficiency                   | 90% typ.  |
| Operating temperature        | -25 °C to +70 °C<br>above 60 °C derating 2.5%/K   |
| Safety standards / approvals | IEC/EN 60950-1, UL 60950-1, CSA 22.2 No 60950-1-07<br>UL 508, CSA-C22.2 No.107, EN 60204-1, EN 50178<br>EN 61558-2-4, EN 60079-15- IIG EX nA IIC T4 |
| Degree of protection         | safety class I (IEC 536).   |
| Case protection              | IP20 (IEC 529)  |
| Vibration/Shock              | IEC 60068-2-6 / IEC 60068-2-27  |
| Connection                   | screw terminals   |
| Casing                       | aluminium (chassis) / stainless steel (cover)   |
| Mounting                     | - snap-on mounting on 35 mm DIN-Rail<br>- wall mounting brackets (option)   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tspc.pdf">www.tracopower.com/products/tspc.pdf</a>  |

## Models

| Order code   | Output power max. | Output voltage nom. | Output current max. |
|--------------|-------------------|---------------------|---------------------|
| TSPC 050-112 | 50 W              | 12 VDC              | 4.0 A               |
| TSPC 050-124 | 50 W              | 24 VDC              | 2.1 A               |
| TSPC 080-112 | 80 W              | 12 VDC              | 6.6 A               |
| TSPC 080-124 | 80 W              | 24 VDC              | 3.3 A               |
| TSPC 120-124 | 120 W             | 24 VDC              | 5.0 A               |
| TSPC 120-148 | 120 W             | 48 VDC              | 2.5 A               |
| TSPC 240-124 | 240 W             | 24 VDC              | 10 A                |
| TSPC 240-148 | 240 W             | 48 VDC              | 5.0 A               |
| TSPC 480-124 | 480 W             | 24 VDC              | 20 A                |
| TSPC 480-148 | 480 W             | 48 VDC              | 10 A                |

## Decoupling Module

| Order code  | Input voltage   | Input current | Voltage drop across the diodes |
|-------------|-----------------|---------------|--------------------------------|
| TSPC-DCM600 | 5 - 28 VDC max. | 25 A max.     | 0.75 V typ. / 1.2 V max.       |



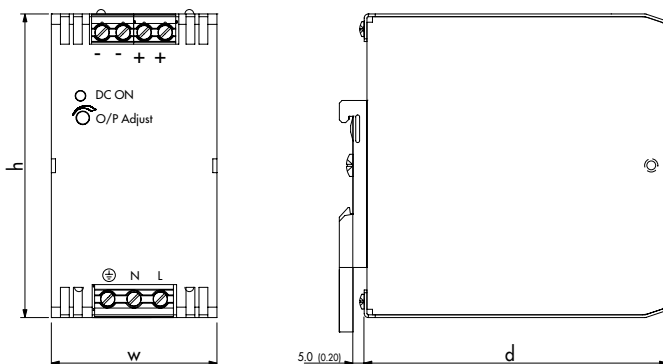
The module contains two diodes for redundant operation of two power supplies of any series. There is no active current sharing and no signal output.

[www.tracopower.com/products/tspc-dcm.pdf](http://www.tracopower.com/products/tspc-dcm.pdf)

## Wall mount brackets

|           |                                |
|-----------|--------------------------------|
| TSP-WMK03 | for 80 - 240 W and -DCM models |
| TSP-WMK02 | for 480 W model                |

| Type        | Width w     | Height h   | Depth d    |
|-------------|-------------|------------|------------|
| TSPC 050    | 35.5 (1.45) | 110 (4.33) | 87 (3.56)  |
| TSPC 080    | 40 (1.57)   | 110 (4.33) | 110 (4.33) |
| TSPC 120    | 46 (1.81)   | 110 (4.33) | 110 (4.33) |
| TSPC 240    | 60 (2.36)   | 110 (4.33) | 110 (4.33) |
| TSPC 480    | 150 (5.90)  | 110 (4.33) | 115 (4.53) |
| TSPC-DCM600 | 54 (2.13)   | 110 (4.33) | 110 (4.33) |





## TSP Series ▶ 72 to 600 W



- ▶ Rugged, ultra compact metal casing for harsh industrial environments
- ▶ Operating temperature range  $-25\text{ }^{\circ}\text{C}$  to  $+70\text{ }^{\circ}\text{C}$
- ▶ Industrial safety approval package
- ▶ ATEX certification for hazardous locations (Opt.)
- ▶ Add-on function modules for system application
- ▶ Power Good signal, remote On/Off
- ▶ Overload and over temperature protection
- ▶ Vibration and shock proof
- ▶ Detachable screw terminal block



## Specifications

|                              |   |
|------------------------------|---|
| Input voltage range          | 85–264 VAC, 47–63 Hz, autorange   |
| Line regulation              | 0.5% max.   |
| Load regulation              | 0.5% max  |
| Ripple & Noise               | <150 mVpk-pk  |
| EMI emission                 | EN 61204-3, EN 61000-6-3  |
| EMC immunity                 | EN 61204-3, EN 61000-6-2 (indust. environment), SEMI F47  |
| Output current limitation    | at max. output current (constant current, automatic restart)  |
| Over-temperature protection  | switch off at over-temperature, automatic restart.  |
| Output characteristic        | selectable for parallel operation or battery charging application   |
| Over voltage protection      | 20 V for 12 VDC models, 35 V for 24 VDC models, 60V for 48 VDC models   |
| Efficiency                   | 87% typ.  |
| Operating temperature        | $-25\text{ }^{\circ}\text{C}$ to $+70\text{ }^{\circ}\text{C}$<br>above $40\text{ }^{\circ}\text{C}$ derating see datasheet   |
| Safety standards / approvals | IEC/EN 60950-1, UL 60950-1, CSA-C22.2 No. 60950-1-03<br>UL 508, CSA-C22.2 No. 107, EN 60204, EN 50178,<br>EN 61558-2-4, with option -EX: UL 60079-15 (Class I,<br>Division 2, Groups A,B,C,D AEx n C II C T4 U), EN 60079-15<br>IIIG EEX nAC IIC T4 |
| Degree of protection         | safety class I (IEC 536).   |
| Case protection              | IP20 (IEC 529)  |
| Vibration/Shock              | IEC 60068-2-6 / IEC 60068-2-27  |
| Connection                   | detachable screw terminals  |
| Casing                       | aluminium (chassis) / stainless steel (cover)   |
| Mounting                     | – snap-on mounting on 35 mm DIN-Rail<br>– wall mounting brackets (option)   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tsp.pdf">www.tracopower.com/products/tsp.pdf</a>  |

## Models

| <sup>1)</sup> Order code   | Output power max. | <sup>2)</sup> Output voltage nom. | <sup>3)</sup> Output current max. |
|----------------------------|-------------------|-----------------------------------|-----------------------------------|
| TSP 070-112                | 72 W              | 12 VDC                            | 6.0 A                             |
| TSP 090-124                |                   | 24 VDC                            | 3.75 A                            |
| TSP 090-124N <sup>4)</sup> | 90 W              | 24 VDC                            | 3.75 A                            |
| TSP 090-148                |                   | 48 VDC                            | 2.0 A                             |
| TSP 140-112                |                   | 12 VDC                            | 12.0 A                            |
| TSP 180-124                | 180 W             | 24 VDC                            | 7.5 A                             |
| TSP 180-148                |                   | 48 VDC                            | 4.0 A                             |
| TSP 360-124                | 360 W             | 24 VDC                            | 15.0 A                            |
| TSP 360-148                |                   | 48 VDC                            | 7.5 A                             |
| TSP 600-124                |                   | 24 VDC                            | 25.0 A                            |
| TSP 600-136                | 600 W             | 36 VDC                            | 16.5 A                            |
| TSP 600-148                |                   | 48 VDC                            | 12.5 A                            |

<sup>1)</sup> Suffix EX: For ATEX certified models (Example TSP 180-124 EX)

<sup>2)</sup> Output voltage adjustable 12-14 VDC, 24-28 VDC, 48-56 VDC

<sup>3)</sup> Max. current at nominal output voltage and max. 40°C ambient temperature

<sup>4)</sup> Model meets EN 60950-1 sect. 2.5 and NEC Class2 (limited power source)

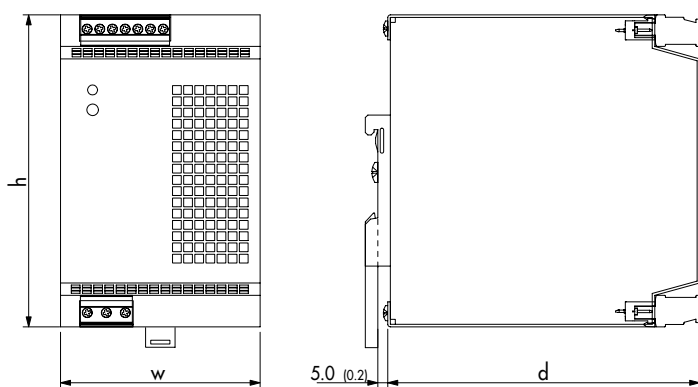
## Add-on function modules

See page 163

## Wall mount brackets

|           |                        |
|-----------|------------------------|
| TSP-WMK03 | for 72 - 180 W models  |
| TSP-WMK02 | for 360 - 600 W models |

## Dimensions



() = Inches

| Type          | Width w    | Height h   | Depth d    |
|---------------|------------|------------|------------|
| TSP 070 / 090 | 35 (1.38)  | 110 (4.33) | 110 (4.33) |
| TSP 140 / 180 | 54 (2.13)  | 110 (4.33) | 110 (4.33) |
| TSP 360       | 80 (3.15)  | 125 (4.92) | 125 (4.92) |
| TSP 600       | 165 (6.50) | 125 (4.92) | 125 (4.92) |

# TSP-3P Series ▶ 240 – 960 W



- ▶ Low cost-weight-size alternative to 3-phase transformers
- ▶ 3AC 320–440 V or 3AC 400–550 VAC input ranges
- ▶ Rugged, ultra compact metal casing for harsh industrial environments
- ▶ Industrial safety approval package
- ▶ ATEX certification for hazardous locations
- ▶ Operating temperature range –25 °C to +70 °C
- ▶ 200% peak current for up to 5 seconds (electronic controlled)
- ▶ Power Good signal
- ▶ Overload and over temperature protection



## Specifications

|                              |   |
|------------------------------|---|
| Input voltage ranges:        | 3xAC 320–440 V or 3xAC 400–550 V  |
| Line regulation              | 1.0% max  |
| Load regulation              | 3.0% max.   |
| Ripple & noise               | <100 mVpk-pk  |
| EMI emission                 | EN 61000-6-3  |
| EMC immunity                 | EN 61000-6-2 (industrial environment)   |
| Output current limitation    | at 220% of nominal current (constant current, automatic restart)  |
| Over-temperature protection  | switch off at over-temperature, automatic restart   |
| Over voltage protection      | at 35 VDC   |
| Efficiency                   | 92% typ.  |
| Operating temperature        | –25°C to +70°C<br>above 60°C derating 2.5%/K  |
| Safety standards / approvals | cUL/UL 60950-1 recognized, IEC/EN 60950-1, UL 508, (CB-Report), EN 50178, EN 60204, EN 61558-2-4, FM 3611, EN 60079-15, ANSI/ISA 12.12.01 (Class I, Div. 2), ATEX 94/9/EC |
| Degree of protection         | safety class I (IEC 536)  |
| Case protection              | IP20 (IEC 529)  |
| Vibration/Shock              | IEC 60068-2-6 / IEC 60068-2-27  |
| Connection                   | detachable screw terminals  |
| Casing                       | aluminium (chassis) / stainless steel (cover)   |
| Mounting                     | – snap-on mounting on 35 mm DIN-Rail<br>– wall mounting brackets (option)   |
| Full datasheet               | <a href="http://www.tracopower.com/products/tsp3p.pdf">www.tracopower.com/products/tsp3p.pdf</a>  |

## Models

### 240 W Models

| Order code          | Input voltage nom. | Output voltage nom. | Output current nom.* |
|---------------------|--------------------|---------------------|----------------------|
| TSP 240-124-3PAC400 | 3 AC 400 V         | 24 VDC              | 10 A                 |
| TSP 240-124-3PAC500 | 3 AC 500 V         | 24 VDC              | 10 A                 |

### 480 W Models

| Order code          | Input voltage nom. | Output voltage nom. | Output current nom.* |
|---------------------|--------------------|---------------------|----------------------|
| TSP 480-124-3PAC400 | 3 AC 400 V         | 24 VDC              | 20 A                 |
| TSP 480-124-3PAC500 | 3 AC 500 V         | 24 VDC              | 20 A                 |

### 960 W Models

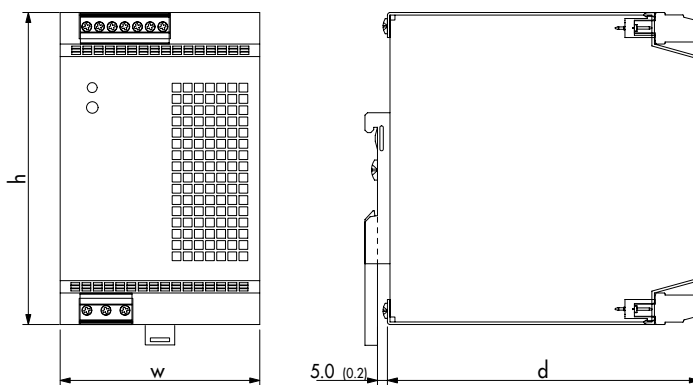
| Order code          | Input voltage nom. | Output voltage nom. | Output current nom.* |
|---------------------|--------------------|---------------------|----------------------|
| TSP 960-124-3PAC400 | 3 AC 400 V         | 24 VDC              | 40 A                 |
| TSP 960-124-3PAC500 | 3 AC 500 V         | 24 VDC              | 40 A                 |

\*200% peak current for up to 5 sec.

## Wall mount brackets

|           |                        |
|-----------|------------------------|
| TSP-WMK03 | for 240 W models       |
| TSP-WMK02 | for 480 – 960 W models |

## Dimensions



| Type    | Width w    | Height h   | Depth d    |
|---------|------------|------------|------------|
| TSP 240 | 54 (2.13)  | 110 (4.33) | 110 (4.33) |
| TSP 480 | 80 (3.15)  | 125 (4.92) | 125 (4.92) |
| TSP 960 | 165 (6.50) | 125 (4.92) | 125 (4.92) |

() = Inches

# TSP-WR Series ▶ 180 to 600 W



- ▶ For worldwide operation, with ultra wide input voltage ranges from 100 to 500 VAC, for single phase and two phase operation
- ▶ Rugged, ultra compact metal casing for harsh industrial environments
- ▶ Operating temperature range -25 °C to +70 °C
- ▶ Industrial safety approval package
- ▶ Add-on function modules for system application
- ▶ Overload and over temperature protection
- ▶ Power Good signal, remote On/Off
- ▶ Vibration and shock proof
- ▶ Detachable screw terminal block



## Specifications

|                              |  |
|------------------------------|--|
| Applicable 3-phase networks  | - TN, TT: 500 VAC Star configuration (EN60950+UL508)<br>500 VAC Delta (UL508 only)<br>- IT: 400 VAC Delta (IEC-62103)<br>230 VAC Delta (IEC-60950)<br>500 VAC (UL508 only) |
| Input voltage ranges         | 85-132VAC / 187-264VAC / 323-550VAC  |
| Line regulation              | 0.5% max   |
| Load regulation              | 0.5% max.  |
| Ripple & noise               | <150 mVpk-pk   |
| EMI emission                 | EN 61204-3, EN 61000-6-3   |
| EMC immunity                 | EN 61204-3, EN 61000-6-2 (industrial environment), SEMI F47  |
| Output current limitation    | at max. output current (constant current, automatic restart)   |
| Over-temperature protection  | switch off at over-temperature, automatic restart  |
| Output characteristic        | selectable for parallel operation or battery charging application  |
| Efficiency                   | 88% typ.   |
| Operating temperature        | -25 °to +70 °C<br>above 40 °C derating see datasheet   |
| Safety standards / approvals | cUL/UL 60950-1 recognized, UL 508, IEC/EN 60950-1, (CB-Report), EN 50178, EN 60204, EN 61558-2-16, FM 3611, IEC/EN 60079-15 (Class I, Div. 2)                              |
| Degree of protection         | safety class I (IEC 536)   |
| Case protection              | IP20 (IEC 529)   |
| Vibration/Shock              | IEC 60068-2-6 / IEC 60068-2-27   |
| Connection                   | detachable screw terminals   |
| Casing                       | aluminium (chassis) / stainless steel (cover)  |
| Mounting                     | - snap-on mounting on 35 mm DIN-Rail<br>- wall mounting brackets (option)  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tsp-wr.pdf">www.tracopower.com/products/tsp-wr.pdf</a>   |

## Models

| <sup>1)</sup> Order code | Output power max. | <sup>2)</sup> Output voltage nom. | <sup>2)</sup> Output current max. |
|--------------------------|-------------------|-----------------------------------|-----------------------------------|
| TSP 180-124WR            | 180 Watt          | 24 VDC                            | 7.5 A                             |
| TSP 360-124WR            | 360 Watt          | 24 VDC                            | 15.0 A                            |
| TSP 600-124WR            | 600 Watt          | 24 VDC                            | 25.0 A                            |

<sup>1)</sup> Output voltage adjustable 24-28 VDC

<sup>2)</sup> Max. current at nominal output voltage and max. 40°C ambient temperature

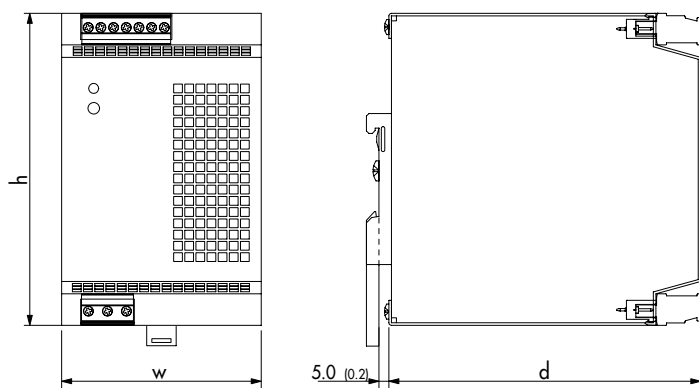
## Add-on function modules

See page 163

## Wall mount brackets

|           |                        |
|-----------|------------------------|
| TSP-WMK03 | for 180 W models       |
| TSP-WMK02 | for 360 - 600 W models |

## Dimensions



( ) = Inches

| Type    | Width w    | Height h   | Depth d    |
|---------|------------|------------|------------|
| TSP 180 | 54 (2.13)  | 110 (4.33) | 110 (4.33) |
| TSP 360 | 80 (3.15)  | 125 (4.92) | 125 (4.92) |
| TSP 600 | 190 (7.48) | 125 (4.92) | 125 (4.92) |

# TSP / TSP-WR Series ▶ Function Modules

- ▶ **TSP-REM:** Module for true current sharing operation
- ▶ Alarm outputs, redundancy OK signal
- ▶ Hot swappable inputs
  
- ▶ **TSP-BCM:** Battery protection for over voltage, deep discharge, short circuit and reverse connection
- ▶ Alarm outputs for input, output and battery condition
  
- ▶ **TSP-BAT:** Battery pack for TSP-BCM battery controller modules

**NEW Models**



## Description

### Redundancy Modules

With this module and two power supplies of the TSP series a highly reliable, true redundant power system can be configured without any additional components. This module provides:



- Operation with true current sharing
- Alarm outputs and redundancy OK signal
- Hot swappable inputs can be loaded up to 15A each (resp. 25A with model TSP REM600)

Full datasheet: [www.tracopower.com/products/tsp-rem.pdf](http://www.tracopower.com/products/tsp-rem.pdf)

### TSP-BCM

This module provides a professional battery controller to charge and monitor an external lead-acid battery. Together with a power supply of the TSP series and a battery pack a perfect DC-UPS system can be configured. This module provides:



- Battery protection for over voltage, deep discharge, short circuit and reverse connection
- Remote On/Off for battery and power supply
- Alarm outputs for input, output and battery condition
- Controlled end of charge voltage by temperature sensor

### Battery Packs

Sealed, maintenance free Lead-Acid batteries incl. wall mounting kit. Available with 1.2, 3.4, 7.2 and 12 Ah capacity.



Full datasheet: [www.tracopower.com/products/tsp-bcm.pdf](http://www.tracopower.com/products/tsp-bcm.pdf)

### TSP-BFM

This module will maintain the output voltage of a 24VDC power supply during typical mains faults, short time blackouts or voltage dips of up to ten full 50 Hz cycles. During this buffer period no deterioration of the 24VDC output voltage will occur. This module provides:



- Capacitor bank for energy storage, no battery needed!
- Maintenance free, long lifetime, high performance also at low temperature.
- Guaranteed Hold-up-time 200 ms/25A to 4 s/1.2A max.
- Output 24 to 28VDC, 600W max.
- Active ready and inhibit signals

Full datasheet: [www.tracopower.com/products/tsp-bfm.pdf](http://www.tracopower.com/products/tsp-bfm.pdf)

## Redundancy Module

| Order code | Input                     | Max. power per input | Output voltage | Output power max. |
|------------|---------------------------|----------------------|----------------|-------------------|
| TSP-REM360 | 2 x 24 VDC<br>2 x Control | 360 W                | 24 VDC         | 360 W             |
| TSP-REM600 |                           | 600 W                | (24 – 27 VDC)  | 600 W             |

## Battery Controller Modules

| Order code | Input                      | Max. power | Output voltage nom. | Output power max. |
|------------|----------------------------|------------|---------------------|-------------------|
| TSP-BCM12  | 12 VDC and                 | 180 W      | 12 VDC              | 180 W             |
| TSP-BCM24  | 24 VDC and<br>24 V Battery | 360 W      | 24 VDC              | 360 W             |
| TSP-BCM24A |                            | 600 W      | 24 VDC              | 600 W             |
| TSP-BCM48  | 48 VDC and<br>48 V Battery | 360 W      | 48 VDC              | 360 W             |
| TSP-BCM48A |                            | 600 W      | 48 VDC              | 600 W             |

## Battery Pack

| Order code       | Nominal voltage                     | Charge current max. | Nominal capacity (at 25°C, 77°F) |
|------------------|-------------------------------------|---------------------|----------------------------------|
| TSP-BAT12-072    | 12 VDC                              | 1.08 A              | 7.2 Ah                           |
| TSP-BAT24-012    |                                     | 0.30 A              | 1.2 Ah                           |
| TSP-BAT24-034    |                                     | 0.51 A              | 3.4 Ah                           |
| TSP-BAT24-072    | 24 VDC                              | 1.08 A              | 7.2 Ah                           |
| TSP-BAT24-120    |                                     | 1.80 A              | 12.0 Ah                          |
| TSP-BAT24-072KIT | Installation rack without batteries |                     |                                  |
| TSP-BAT24-120KIT | Installation rack without batteries |                     |                                  |

## Buffer Module

| Order code | Input voltage | Buffer time                            | Output voltage | Output power       |
|------------|---------------|--|----------------|--------------------|
| TSP-BFM24  | 24 VDC nom.   | 200 ms typ. @ 25 A<br>4.0s max. @ 1.2A | 24 VDC         | 600 W<br>25 A max. |

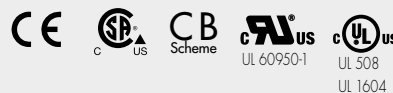
## Dimensions Function Modules

| Type       | Width     | Height     | Depth      |
|------------|-----------|------------|------------|
| TSP-REM360 | 35 (1.38) | 110 (4.33) | 110 (4.33) |
| TSP-REM600 | 54 (2.13) | 110 (4.33) | 110 (4.33) |
| TSP-BCM212 | 35 (1.38) | 110 (4.33) | 110 (4.33) |
| TSP-BCM24  | 35 (1.38) | 110 (4.33) | 110 (4.33) |
| TSP-BCM24A | 54 (2.13) | 110 (4.33) | 110 (4.33) |
| TSP-BCM48  | 35 (1.38) | 110 (4.33) | 110 (4.33) |
| TSP-BCM48A | 54 (2.13) | 110 (4.33) | 110 (4.33) |
| TSP-BFM24  | 54 (2.13) | 110 (4.33) | 110 (4.33) |

## Dimensions Battery Packs

| Type          | Width      | Height h   | Depth      |
|---------------|------------|------------|------------|
| TSP-BAT24-034 | 137 (5.39) | 140 (5.51) | 76 (2.99)  |
| TSP-BAT24-072 | 133 (5.24) | 157 (6.18) | 110 (4.33) |
| TSP-BAT24-120 | 199 (7.83) | 157 (6.18) | 110 (4.33) |

# TIS Series ▶ 50 to 600 W



- ▶ Low profile metal casing
- ▶ Standard models with 12, 24, 48 and 72VDC
- ▶ For system applications expandable with built-in function modules (see datasheet)
- ▶ Adjustable output voltage
- ▶ Overload protection
- ▶ Worldwide safety approvals



## Specifications

|                             |  |
|-----------------------------|--|
| Input voltage range         | – 93–132 VAC / 187–264 VAC (user selectable) 50/60 Hz<br>– TIS 50 models: 93–264 VAC (universal input) 50/60 Hz<br>– TIS 500–124–230: 187–264 VAC 50/60 Hz<br>– TIS 500–124–115: 93–132 VAC 50/60 Hz / 113 – 187 VDC |
| Line regulation             | 0.2% max.  |
| Load regulation             | 1.0% max.  |
| Ripple & noise              | <50 mVpk-pk (20 MHz BW)  |
| EMI suppression             | EN 55011, class B, EN 55022, class B and FCC, level B  |
| EMC immunity                | EN 61000-6-2   |
| Output current limitation   | at 110% of Iout max. (constant current)  |
| Overvoltage protection      | at 140% of Vout nom.   |
| Efficiency                  | 90% typ.   |
| Operating temperature       | –25°C to +70°C<br>above 50°C derating 2% / K   |
| Safety standard / approvals | cUL/UL 60950-1, UL 508C listed, UL 1604 listed (except for models with options), IEC/EN 60950-1, CB-report   |
| Connection                  | detachable screw terminals (plugs included)<br>(TIS 600 models: screw terminal blocks)   |
| Casing                      | stainless steel, aluminium   |
| Mounting                    | snap-on mounting on 35 mm DIN-Rail or chassis mounting   |
| Note                        | Output current characteristics suitable for battery charging applications  |
| Full datasheet              | <a href="http://www.tracopower.com/products/tis.pdf">www.tracopower.com/products/tis.pdf</a>   |

## Models

| Order code      | Output power max. | Output voltage (adjustable range) | Output current max. |
|-----------------|-------------------|-----------------------------------|---------------------|
| TIS 50-112      | 50 Watt           | 12 VDC (12–14 VDC)                | 3.5 A               |
| TIS 50-124      |                   | 24 VDC (24–28 VDC)                | 2 A                 |
| TIS 75-112      |                   | 12 VDC (12–14 VDC)                | 6 A                 |
| TIS 75-124      | 75 Watt           | 24 VDC (24–28 VDC)                | 3 A                 |
| TIS 75-148      |                   | 48 VDC (48–52 VDC)                | 1.5 A               |
| TIS 150-124     | 150 Watt          | 24 VDC (24–28 VDC)                | 6 A                 |
| TIS 150-148     |                   | 48 VDC (48–52 VDC)                | 3 A                 |
| TIS 300-124     |                   | 24 VDC (24–28 VDC)                | 12 A                |
| TIS 300-148     | 300 Watt          | 48 VDC (48–52 VDC)                | 6 A                 |
| TIS 300-172     |                   | 72 VDC (60–76 VDC)                | 4.2 A               |
| TIS 500-124-230 | 500 Watt          | 24 VDC (24–28 VDC)                | 20 A                |
| TIS 500-124-115 |                   | 24 VDC (24–28 VDC)                | 20 A                |
| TIS 600-124     |                   | 24 VDC (24–28 VDC)                | 24 A                |
| TIS 600-148     | 600 Watt          | 48 VDC (48–52 VDC)                | 12 A                |
| TIS 600-172     |                   | 72 VDC (60–76 VDC)                | 8.5 A               |

## Models with internal redundancy module

|                 |       |        |      |
|-----------------|-------|--------|------|
| TIS 150-124 RED | 150 W | 24 VDC | 6 A  |
| TIS 150-148 RED | 150 W | 48 VDC | 3 A  |
| TIS 300-124 RED | 300 W | 24 VDC | 12 A |
| TIS 300-148 RED | 300 W | 48 VDC | 6 A  |
| TIS 600-124 RED | 600 W | 24 VDC | 24 A |
| TIS 600-148 RED | 600 W | 48 VDC | 12 A |

## Models with internal battery controller module

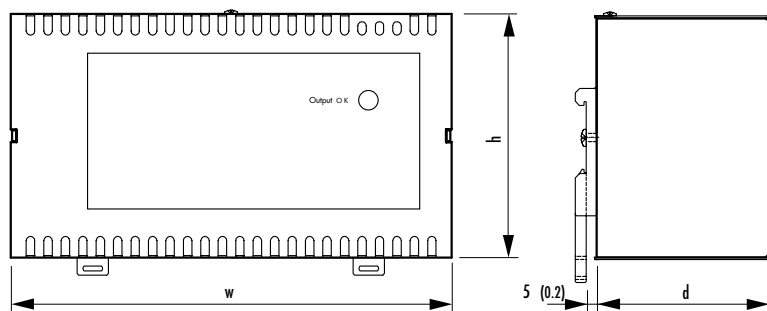
|                 |       |        |      |
|-----------------|-------|--------|------|
| TIS 300-124 UDS | 300 W | 24 VDC | 12 A |
| TIS 600-124 UDS | 600 W | 24 VDC | 24 A |

## Battery Pack

|              |        |        |
|--------------|--------|--------|
| TIS 24-32 AP | 24 VDC | 3.2 Ah |
| TIS 24-70 AP | 24 VDC | 7 Ah   |

\* order code for power supply with built in function module and terminal plugs

## Dimensions



| Type    | Width w    | Height h     | Depth d     |
|---------|------------|--------------|-------------|
| TIS 50  | 75 (2.95)  | 100 (3.94)   | 56.7 (2.23) |
| TIS 75  | 90 (3.54)  | 114.6 (4.51) | 56.7 (2.23) |
| TIS 150 | 157 (6.18) | 114.6 (4.51) | 56.7 (2.23) |
| TIS 300 | 207 (8.15) | 114.6 (4.51) | 83.0 (3.27) |
| TIS 500 | 220 (8.66) | 130 (8.66)   | 83.0 (3.27) |
| TIS 600 | 243 (9.57) | 177.2 (6.98) | 83.0 (3.27) |

() = Inches

# TFP Series ▶ 250 to 750 W



- ▶ Robust and compact low profile
- ▶ Low heat dissipation and a high efficiency of 92% typical
- ▶ Worldwide Safety approval package.
- ▶ ATEX certification
- ▶ Wide AC and DC input voltage range  
85 – 264 VAC and 90 – 280 VDC
- ▶ Industrial operating temperature range:  
–40 °C to +70 °C
- ▶ Active isolation diode
- ▶ Mains current with power factor >98%
- ▶ Extended functional features (opt.)

**NEW  
Product**



## Specifications

|                             |  |
|-----------------------------|--|
| Input voltage range         | 85–264 VAC (50/60 Hz) / 90–280 VDC   |
| Line regulation             | 0.5% max.  |
| Load regulation             | 1.0% max.  |
| Ripple & noise              | <100 mVpk-pk (20 MHz BW)   |
| EMI suppression             | EN 55011, class B, EN 55022, class B and FCC, class B  |
| EMC immunity                | EN 61000-6-2   |
| Output current limitation   | at 110 % of Iout max. (constant current)   |
| Overvoltage protection      | at 140 % of Vout nom.  |
| Efficiency                  | 92% typ.   |
| Operating temperature       | –40 °C to +70 °C<br>above 60°C derating 3%/K   |
| Safety standard / approvals | IEC/EN 60950-1, UL 60950-1, CSA 22.2 No. 60950-1-03<br>UL 508, CSA-C22.2 No.107, EN 60204-1, EN 61552-2-4<br>IEC/EN 60079-15 |
| Connection                  | detachable screw terminals (plugs included)  |
| Casing                      | stainless steel, aluminium   |
| Mounting                    | snap-on mounting on 35 mm DIN-Rail or chassis mounting   |
| Note                        | Output current characteristics suitable for battery charging applications  |
| Full datasheet              | <a href="http://www.tracopower.com/products/TFP.pdf">www.tracopower.com/products/TFP.pdf</a>                                 |

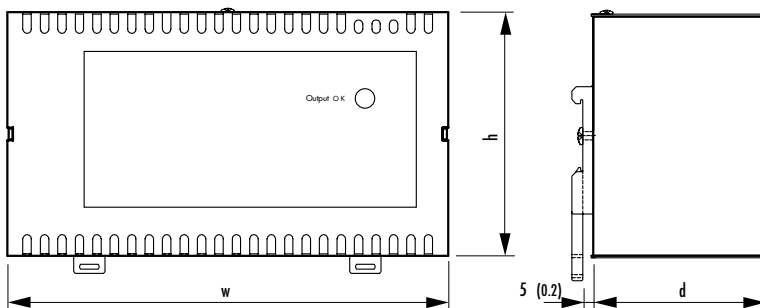
## Models

| Order code  | Output power max. | Output voltage (adjustable range) | Output current max. |
|-------------|-------------------|-----------------------------------|---------------------|
| TFP 250-124 | 250 W             | 24 VDC (24–28,8 VDC)              | 10 A                |
| TFP 500-124 | 500 W             | 24 VDC (24–28,8 VDC)              | 20 A                |
| TFP 750-124 | 750 W             | 24 VDC (24–28,8 VDC)              | 30 A                |

### Options:

- CS: Active current share module
- CAN: CAN-bus interface and current share function
- NET: Lan interface current share function
- BC: Battery charger module

## Dimensions



| Type    | Width w    | Height h   | Depth d   |
|---------|------------|------------|-----------|
| TFP 250 | 176 (6.93) | 111 (4.37) | 62 (2.44) |
| TFP 500 | 200 (7.87) | 125 (4.92) | 62 (2.44) |
| TFP 750 | 250 (9.84) | 125 (4.92) | 62 (2.44) |

# TSP-BCMU360 / TSPC-240UPS Series ▶ UPS Systems

- ▶ **TSP-BCMU360:** Universal battery controller module for uninterruptible 24 VDC and 48 VDC bus voltage
- ▶ Redundant inputs for two independent sources
- ▶ **TSPC-240UPS:** Compact universal 24 VDC power supply with integrated battery controller module
- ▶ Battery protection for over voltage, deep discharge, short circuit and reverse connection
- ▶ Alarm outputs for input, output and battery condition
- ▶ Remote On/Off for battery and power supply

**NEW**  
Product



## Description

### TSP-BCMU360



The TSP-BCMU360 module extends any 24VDC or 48VDC power supply to a DC-USP (uninterruptible DC Power supply). This module is a standalone unit and is designed to function with the Traco TSP series; however it can be used in conjunction with any fully stabilized 24V or 48V DC power supply output. The module also offers the unique feature of redundant inputs as well as the battery backup. Redundancy is achieved by two internal decoupling diodes which allow operation with two independent voltage sources in order to increase the reliability of the output even further.

Full datasheet:

[www.tracopower.com/products/tsp-bcmu360.pdf](http://www.tracopower.com/products/tsp-bcmu360.pdf)

### TSPC-240UPS



This power supply provides an integrated professional battery management system to charge and monitor an external lead-acid battery. The result is a complete DCUPS system in a compact housing with no additional parts needed. The external connected 12 V battery will be charged and held in charged mode by the power supply. In the event of a mains power failure the battery will supply the output power until the battery is discharged. As a consequence, the output voltage of the system is equivalent to the battery voltage. To avoid overcharging the battery, an external temperature sensor adjusts the battery voltage automatically to the required end of charge voltage. This can extend the battery life. The battery is protected against deep discharge.

|                              |  |
|------------------------------|--|
| Input voltage range          | 85-132 / 187-264 VAC (autorange)   |
| Output regulation            | 1% max.  |
| Ripple & noise               | <100 mVpk-pk (20 MHz BW)   |
| Output current limitation    | >120% of Iout nom.   |
| Over voltage protection      | at 30 VDC  |
| Efficiency                   | 90% typ.   |
| Operating temperature        | -25 °C to +70 °C<br>above 60 °C derating 2.5%/K  |
| Safety standards / approvals | IEC/EN 60950-1, CUL/UL 508 listed  |
| Full datasheet               | <a href="http://www.tracopower.com/products/tspc-240ups.pdf">www.tracopower.com/products/tspc-240ups.pdf</a> |

## Models

| Order code  | Input                   | Max. power | Output voltage nom. | Output power max. |
|-------------|-------------------------|------------|---------------------|-------------------|
| TSP-BCMU360 | 24 or 48 VDC or Battery | 600 W      | 24 or 48 VDC        | 600 W             |

## Models

| Order code       | Input                     | Max. power | Output voltage nom. | Output current max. |
|------------------|---------------------------|------------|---------------------|---------------------|
| TSPC 240-124 UPS | 85-132 VAC<br>187-264 VAC | 240 W      | 24 VDC              | 12 A                |

\* A 12 VDC lead acid back up battery is required (to purchase on local market no Traco Power stocking item)

## Dimensions Function Modules

| Type             | Width     | Height     | Depth      |
|------------------|-----------|------------|------------|
| TSPC 240-124 UPS | pending   | pending    | pending    |
| TSP-BCMU360      | 54 (2.13) | 110 (4.33) | 110 (4.33) |

# TRACO POWER

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Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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**Факс:** 8 (812) 320-02-42

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