

### Features

- ◆ Ultra wide 4:1 input voltage
- ◆ 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
- ◆ Low leakage current <2  $\mu$ A
- ◆ Very high efficiency up to 88%
- ◆ Extended operating temperature range -40°C to 88°C at full load.
- ◆ Input filter to meet EN55022 class A
- ◆ 3-year product warranty



The THM-6WI series is a range of high performance, regulated 6 Watt DC/DC converters in a DIP-24 plastic package. The reinforced I/O-isolation system complies with the medical safety requirements for MOPP (Means Of Patient Protection). Together with a wide 4:1 input voltage range, and an internal EMI filter to meet EN55022 class A the converters constitute also a reliable solution for many demanding applications such as transportation systems, industrial control equipments, measurement equipments, and some IGBT driver applications. With A high efficiency of up to 88% and highest grade components the converters can reliably operate in an ambient temperature range of -40 up to +88°C at full load.

### Models

| Order code   | Input voltage range             | Output voltage | Output current max. | Efficiency typ. |
|--------------|---------------------------------|----------------|---------------------|-----------------|
| THM 6-0510WI | 4.5 – 9 VDC<br>(5 VDC nominal)  | 3.3 VDC        | 1800 mA             | 81.5 %          |
| THM 6-0511WI |                                 | 5.0 VDC        | 1200 mA             | 86.0 %          |
| THM 6-0512WI |                                 | 12 VDC         | 500 mA              | 86.0 %          |
| THM 6-0513WI |                                 | 15 VDC         | 400 mA              | 86.0 %          |
| THM 6-0515WI |                                 | 24 VDC         | 250 mA              | 87.0 %          |
| THM 6-0521WI |                                 | ±5.0 VDC       | ±600 mA             | 84.0 %          |
| THM 6-0522WI |                                 | ±12 VDC        | ±250 mA             | 86.5 %          |
| THM 6-0523WI |                                 | ±15 VDC        | ±200 mA             | 87.5 %          |
| THM 6-2410WI | 9 – 36 VDC<br>(12 VDC nominal)  | 3.3 VDC        | 1800 mA             | 83.0 %          |
| THM 6-2411WI |                                 | 5.0 VDC        | 1200 mA             | 86.0 %          |
| THM 6-2412WI |                                 | 12 VDC         | 500 mA              | 89.0 %          |
| THM 6-2413WI |                                 | 15 VDC         | 400 mA              | 89.0 %          |
| THM 6-2415WI |                                 | 24 VDC         | 250 mA              | 88.5 %          |
| THM 6-2421WI |                                 | ±5.0 VDC       | ±600 mA             | 85.0 %          |
| THM 6-2422WI |                                 | ±12 VDC        | ±250 mA             | 88.5 %          |
| THM 6-2423WI |                                 | ±15 VDC        | ±200 mA             | 88.0 %          |
| THM 6-4810WI | 18 – 75 VDC<br>(48 VDC nominal) | 3.3 VDC        | 1800 mA             | 82.5 %          |
| THM 6-4811WI |                                 | 5.0 VDC        | 1200 mA             | 86.5 %          |
| THM 6-4812WI |                                 | 12 VDC         | 500 mA              | 88.0 %          |
| THM 6-4813WI |                                 | 15 VDC         | 400 mA              | 88.5 %          |
| THM 6-4815WI |                                 | 24 VDC         | 250 mA              | 88.0 %          |
| THM 6-4821WI |                                 | ±5.0 VDC       | ±600 mA             | 85.0 %          |
| THM 6-4822WI |                                 | ±12 VDC        | ±250 mA             | 88.0 %          |
| THM 6-4823WI |                                 | ±15 VDC        | ±200 mA             | 88.0 %          |



### General Specifications

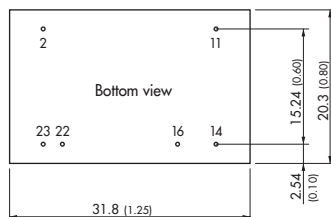
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|---|--------------------------------------|---|
| Temperature ranges  | - Operating<br>- Casing<br>- Storage | -40°C to +88°C (without derating)<br>+105°C max.<br>-55°C to +125°C   |
| Humidity (non condensing)   |                                      | 95 % rel H max.   |
| Temperature coefficient   |                                      | ±0.02 %/K typ.  |
| Switching frequency   |                                      | 250 kHz ±25 kHz. (puls width modulation)  |
| I/O isolation voltage<br>(50Hz, 60sec.)                               | - to meet UL/IEC/EN 60601-1          | 5000 VACrms, rated for 250 VACrms working voltage, 2 x MOPP   |
| Clearance/creepage  |                                      | 8 mm min.   |
| Leakage current   |                                      | 2 µA max. (at 240 VAC, 60 Hz)   |
| Isolation capacitance   | - Input/Output                       | 17 pF max. (at 100 KHz, 1 V)  |
| Safety standards  |                                      | ANSI/AAMI ES 60601-1:2005/(R)2012,<br>IEC/EN 60601-1 3rd edition  |
| Safety approvals  | - UL online certification UL 60601-1 | <a href="http://www.ul.com">www.ul.com</a> File e188913, copy: e188913qqhm2.pdf   |
| Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign) |                                      | >4.7 Mio. h   |
| Casing material   |                                      | non conductive plastic (UL 94V-0-rated)   |
| Potting material  |                                      | silicone (UL 94V-0-rated)   |
| Vibration and thermal shock resistance                                |                                      | according to MIL-STD-810F   |
| Weight  |                                      | 14.0 g (0.48oz)   |
| Soldering temperature   |                                      | max. 265°C / 10 sec.  |
| Environmental compliance  | - Reach<br>- RoHS                    | <a href="http://www.tracopower.com/overview/thm6wi">www.tracopower.com/overview/thm6wi</a><br>according RoHS directive 2011/65/EU |



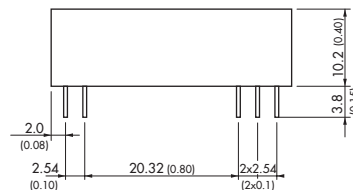
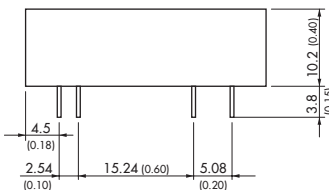
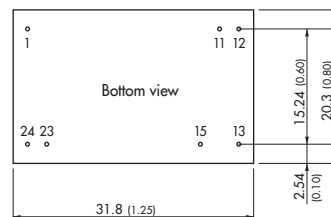
- The component is not be used in an oxygen rich environment.
- The component is not to be used in conjunction with flammable anaesthetics and agents.
- The component has to be disposed appropriately. Please refer to local regulations (Waste Electrical and Electronic Equipment).
- A modification of the component is not allowed.

### Outline Dimensions

Standard pinning



Optional pinning: suffix -A1



Dimensions in [mm], ( ) = Inch  
Pin  $\varnothing$  0.6 ±0.1 (0.024 ±0.004)

Tolerances ±0.5 (±0.02)  
Pin pitch tolerances ±0.25 (±0.01)

### Standard Pinout

| Pin | Single     | Dual       |
|-----|------------|------------|
| 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) |

### Optional Pinout

| Pin | Single     | Dual       |
|-----|------------|------------|
| 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) |

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