

- Ultra compact 8 W converter in DIP-16 metal casing
- Operating temperature range -40°C to +80°C
- Wide 2:1 input range
- Fully regulated outputs
- Protection against short circuit and overload condition
- Built-In EN 55032 class A filter



The TEL 8 series is a range of isolated 8 Watt converters which come in a very compact DIP-16 metal package. They offer a 2:1 input voltage range and feature a high efficiency of up to 86% which allows an operation temperature of up to +70°C at full load. An internal input filter makes the converters comply with conducted emission EN 55032 class A.

The TEL 8 Series models are an economical solution for space critical and cost sensitive applications in instrumentation, IT and industrial electronics.

| Models | | | | |
|------------|--|----------------|---------------------|-----------------|
| Order code | Input voltage | Output voltage | Output current max. | Efficiency typ. |
| TEL 8-1210 | 9 - 18 VDC (nominal 12 VDC) | 3.3 VDC | 1600 mA | 78 % |
| TEL 8-1211 | | 5.0 VDC | 1600 mA | 81 % |
| TEL 8-1212 | | 12 VDC | 665 mA | 84 % |
| TEL 8-1213 | | 15 VDC | 535 mA | 84 % |
| TEL 8-1215 | | 24 VDC | 335 mA | 85 % |
| TEL 8-1222 | | ±12 VDC | ±335 mA | 85 % |
| TEL 8-1223 | | ±15 VDC | ±265 mA | 84 % |
| TEL 8-2410 | 18 - 36 VDC (nominal 24 VDC) | 3.3 VDC | 1600 mA | 78 % |
| TEL 8-2411 | | 5.0 VDC | 1600 mA | 82 % |
| TEL 8-2412 | | 12 VDC | 665 mA | 85 % |
| TEL 8-2413 | | 15 VDC | 535 mA | 85 % |
| TEL 8-2415 | | 24 VDC | 335 mA | 86 % |
| TEL 8-2422 | | ±12 VDC | ±335 mA | 85 % |
| TEL 8-2423 | | ±15 VDC | ±265 mA | 86 % |
| TEL 8-4810 | 36 - 75 VDC (nominal 48 VDC) | 3.3 VDC | 1600 mA | 78 % |
| TEL 8-4811 | | 5.0 VDC | 1600 mA | 81 % |
| TEL 8-4812 | | 12 VDC | 665 mA | 85 % |
| TEL 8-4813 | | 15 VDC | 535 mA | 85 % |
| TEL 8-4815 | | 24 VDC | 335 mA | 86 % |
| TEL 8-4822 | | ±12 VDC | ±335 mA | 86 % |
| TEL 8-4823 | | ±15 VDC | ±265 mA | 86 % |

Input Specifications

| | |
|-----------------------------|--|
| Input current no load | 12 Vin models: 10 mA typ. 24 Vin models: 10 mA typ. 48 Vin models: 8 mA typ. |
| Surge voltage (1 sec. max.) | 12 Vin models: 25 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max. |
| Start-up voltage | 12 Vin models: 9 VDC (or lower) 24 Vin models: 18 VDC (or lower) 48 Vin models: 36 VDC (or lower) |
| Under voltage shut down | 12 Vin models: 8 VDC typ. 24 Vin models: 16 VDC typ. 48 Vin models: 34 VDC typ. |
| EMC emissions | – Conducted RI suppression on input EN 55032 class A (internal filter) |
| EMC immunity | EN 55024 – ESD (electrostatic discharge) – Radiated immunity – Fast transient / surge (with external input capacitor) External input capacitor: Nippon chemi-con KY 220 µF / 100 V – Conducted immunity – Magnetic field immunity EN 61000-4-2, ±8 kV/±6 kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±1 kV perf. criteria A EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8, 3 A/m, perf. criteria A |

Output Specifications

| | |
|--------------------------------------|---|
| Voltage set accuracy | ±2 % max. |
| Voltage balance (dual output models) | 2 % max. |
| Regulation | – Input variation – Load variation 0 – 100 % 0.8 % max. 1 % max. |
| Minimum load | not required |
| Temperature coefficient | ±0.02 %/K typ. |
| Ripple and noise (20 MHz Bandwidth) | 55 mVp-p max. |
| Transient Response | – Recovery time (25% load step change) – Deviation 500 µs max. ±5.0 % max. |
| Current limitation | at 150 % typ. of Iout max. |
| Short circuit protection | hiccup mode, automatic recovery |
| Capacitive load | –Single output 3.3 & 5.0 VDC models: 680 µF max. 12 & 15 VDC models: 330 µF max. 24 VDC models: 150 µF max. –Dual output ±12 & ±15 VDC models: 150 µF max. (each output) |

General Specifications

| | |
|--------------------------------------|---|
| Temperature ranges | – Operating (convection cooling 20LFM, 0,1m/s) – Case temperature – Storage temperature –40°C to +80°C +105°C max. –50°C to +125°C |
| Derating | 5 %/K above 70°C |
| Humidity (non condensing) | 95 % rel H max. |
| Isolation voltage | – Isolation test voltage (tested for 1 sec.) – I/O isolation voltage (60 sec.) 1'800 Vpk 1'500 VDC |
| Isolation capacitance (input/output) | 500 pF typ. |
| Isolation resistance (input/output) | >1 Gohm |
| Altitude during operation | 5000 m |

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

General Specifications

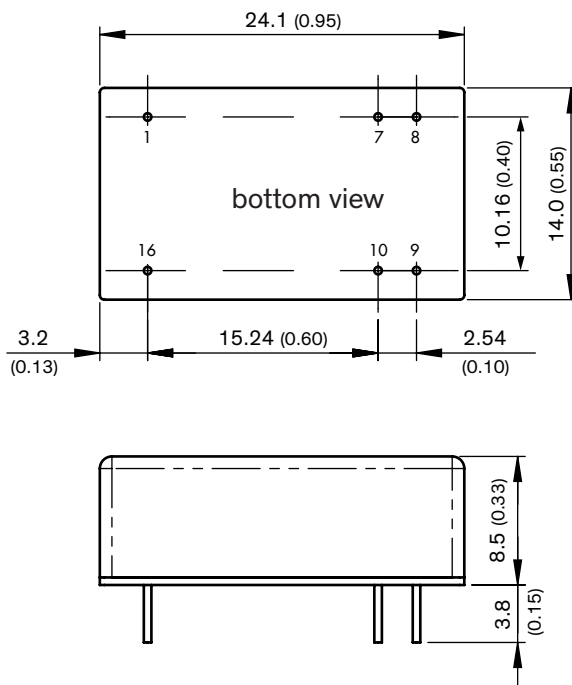
| | |
|--|---|
| Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign) | 1'000'000 h min. |
| Switching frequency | 370 kHz typ. |
| Safety standards /approvals | IEC/EN 60950-1 UL 60950-1 www.tracopower.com/overview/tel8 |
| Environmental compliance | www.tracopower.com/info/reach-declaration.pdf RoHS directive 2011/65/EU |

Physical Specifications

| | |
|-----------------------|---|
| Casing material | aluminium alloy, black anodized coating |
| Pin material | tinned copper |
| Package weight | 6.1 g (0,22 oz) |
| Soldering temperature | max. 260°C / 10 sec. |

Supporting Documents: www.tracopower.com/overview/tel8

Outline Dimensions



| Pin-Out | | |
|---------|------------|------------|
| Pin | Single | Dual |
| 1 | -Vin (GND) | -Vin (GND) |
| 7 | ntc | ntc |
| 8 | ntc | Common |
| 9 | +Vout | +Vout |
| 10 | -Vout | -Vout |
| 16 | +Vin | +Vin |

ntc = not to connect

Dimensions in [mm], () = Inch
Tolerances: ± 0.5 (0.02)
Pin pitch tolerance: ± 0.25 (0.01)
Pin diameter: 0.5 (0.02) ± 0.05 (0.002)