

## TLP150 Series

### Single output

**Total Power:** 150 W  
**Input Voltage:** 85 - 264 VAC  
**# of Outputs:** Single



### Special Features

- 150 W on main channel with only 200 LFM
- Low profile fits 1U applications
- Active PFC and EN61000-3-2 compliant
- Integrated Or-ing diode
- Active current sharing
- Integrated control and monitoring features
- Overcurrent, overvoltage and overtemperature protection
- Compliance to EN55022-B conducted noise standard
- 12 V fan output
- 5 V standby output (optional)
- RoHS compliant
- 2 year warranty

### Safety

- VDE EN60950-1/IEC60950-1
- UL60950-1/CSA22.2 No. 60950-1

## Electrical Specifications

| Output                               |                                                |                                              |
|--------------------------------------|------------------------------------------------|----------------------------------------------|
| Adjustment range:                    |                                                | ± 10%                                        |
| Total regulation:<br>(line and load) | Main output<br>Auxiliary outputs<br>Fan output | ± 3%<br>± 5%<br>± 10%                        |
| Turn-on delay                        | @120 Vac input                                 | 2.0 s max.                                   |
| Transient response                   | Main output<br>25% to 75%<br>step at 0.5 A/μs  | 5%<br>max. dev., 1 ms max.<br>recovery to 1% |
| Temperature coefficient              |                                                | ±0.02%/°C                                    |
| Overvoltage protection               | Main outputs                                   | 125% ± 5%                                    |
| Short circuit protection             | Current limited                                | Continuous                                   |
| Minimum output current               | Singles                                        | 0 A                                          |
| Fan voltage output                   | See Note 9                                     | 12 V @ 0.5 A                                 |
| Standby output                       | See Note 9                                     | 5 V @ 1.0 A                                  |
| Input                                |                                                |                                              |
| Input voltage range:                 | Universal input                                | 85-264 Vac                                   |
| Input frequency range:               |                                                | 47-63 Hz                                     |
| Input surge current:                 | 264 Vac (cold start)                           | 40 A max.                                    |
| Safety ground leakage current:       | 264 Vac, 50 Hz                                 | 1 mA                                         |
| Input current:                       | 120 Vac @ 250 W<br>230 Vac @ 250 W             | 1.8 A rms<br>0.8 A rms                       |
| Input fuse:                          | UL/iEC127                                      | T 3.15 A, 250 Vac                            |

| EMC Characteristics               |                                                                  |                                          |
|-----------------------------------|------------------------------------------------------------------|------------------------------------------|
| Conducted emissions:              | EN55022, FCC part 15                                             | Level B                                  |
| harmonic current correction:      | EN61000-3-2                                                      | Compliant                                |
| ESD air:                          | EN61000-4-2                                                      | Level 3                                  |
| ESD contact:                      | EN61000-4-2                                                      | Level 3                                  |
| Fast transients:                  | EN61000-4-4                                                      | Level 4                                  |
| Surge:                            | EN61000-4-5                                                      | Level 3                                  |
| Conducted immunity:               | EN61000-4-6                                                      | Level 3                                  |
| General Specifications            |                                                                  |                                          |
| Hold-up time:                     | 85 Vac @ 60 Hz                                                   | 20 ms @ 150 W                            |
| Efficiency:                       | 115 Vac @ 150 W<br>230 Vac @ 150 W                               | 81% typ.<br>84% typ.                     |
| Isolation voltage:                | Input/output<br>Input/chassis                                    | 3000 Vac<br>1500 Vac                     |
| Safety approvals:<br>(see note 6) | UL/cUL UL60950-1/CSA22.2 No. 60950-1<br>VDE EN60950-1/IEC60950-1 |                                          |
| Weight:                           | 260g (9.2 oz)                                                    |                                          |
| MTBF (@25 °C)                     | Telcordia SR-332<br>MIL-HDBK-217F                                | 900,000 hours min.<br>350,000 hours min. |

## Environmental Specifications

|                         |                                              |                             |
|-------------------------|----------------------------------------------|-----------------------------|
| Thermal performance:    | Operating ambient,<br>(See derating curve)   | 0° C to +70 °C              |
|                         | Non-operating                                | -40 °C to +85 °C            |
|                         | 0 °C to 50 °C ambient,<br>200 LFM forced air | 150 W                       |
|                         | 0 °C to 50 °C ambient,<br>convection cooled  | 100 W                       |
|                         | 50 °C to 70 °C ambient,                      | Derate linearly to 50% load |
|                         | Relative humidity:                           | Non-condensing              |
| Altitude:               | Operating                                    | 10,000 feet max.            |
|                         | Non-operating                                | 30,000 feet max.            |
| Vibration (See Note 7): | 5 - 500 Hz                                   | 2.4 G rms peak              |
| Shock:                  | per MIL-STD-810E                             | 516.4 Part IV               |

## Ordering Information

| Output Voltage | Output Currents |                                  |                                    | Ripple <sup>(3)</sup> | Total Regulation | Model Numbers <sup>(9, 10)</sup> |
|----------------|-----------------|----------------------------------|------------------------------------|-----------------------|------------------|----------------------------------|
|                | Min             | Max (free air) <sup>(1, 4)</sup> | Max (forced air) <sup>(2, 4)</sup> |                       |                  |                                  |
| 12 V           | 0 A             | 8.4 A                            | 12.5 A                             | 120 mV                | ± 3.0%           | TLP150R-96S12J                   |
| 24 V           | 0 A             | 4.2 A                            | 6.3 A                              | 240 mV                | ± 3.0%           | TLP150R-96S24J                   |
| 36 V           | 0 A             | 2.7 A                            | 4.2 A                              | 360 mV                | ± 3.0%           | TLP150R-96S36J                   |
| 48 V           | 0 A             | 2.1 A                            | 3.2 A                              | 480 mV                | ± 3.0%           | TLP150R-96S48J                   |

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## Notes

- Free air convection. Maximum continuous output power not to exceed 100 W. Refer to Figure 1 for the derating curve.
- 200 LFM forced air cooling from the ac input side. Maximum continuous output power not to exceed 150 W.
- Figure is peak-to-peak for room temperature rating. Output noise measurements are made across a 20 MHz bandwidth using a 6 inch twisted pair, terminated with a 10  $\mu$ F tantalum capacitor and a 0.1  $\mu$ F ceramic capacitor.
- CAUTION: Allow a minimum of 1 second after disconnecting line power when making thermal measurements. For optimum reliability no part of the heatsink should exceed 115 °C and no semi-conductor case temperature should exceed 120 °C.
- No external filtering required during conducted emissions testing but some applications may require additional filtering to achieve system compliance. Compliance with radiated EMI specifications may require mounting in a suitable enclosure.
- This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
- Three orthogonal axes, random vibration 10 minutes for each axes, 2.4 G
- Replace the 'J' at the end of the model number with 'FJ' when the optional standby output and/or remote ON/OFF control is required e.g. TLP150R-96S12FJ.
- 12 V (fan) present when main output is present. An optional 5 Vsb (standby) output is available whenever ac input is present, regardless of remote ON/OFF signal status.
- The 'J' suffix indicates that these parts are Pb-free (RoHS 6/6) compliant.
- NOTICE: Some models do not support all options. Please contact your local Emerson Network Power representative or use the on-line model number search tool at <http://www.Emerson.com/EmbeddedPower>.
- Power good signal required 100 mA load on the main output (check with engineering on all models).

DERATING CURVE Output Power (Watts)

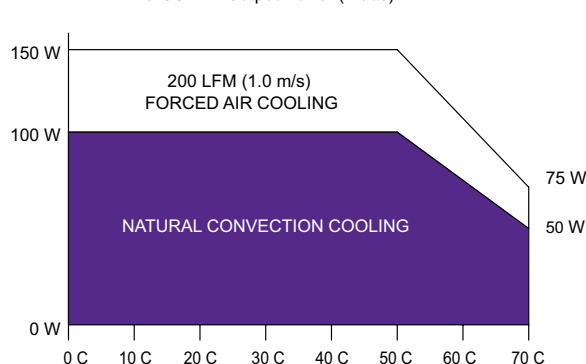


Figure 1: Derating Curve

Outline Dimensions

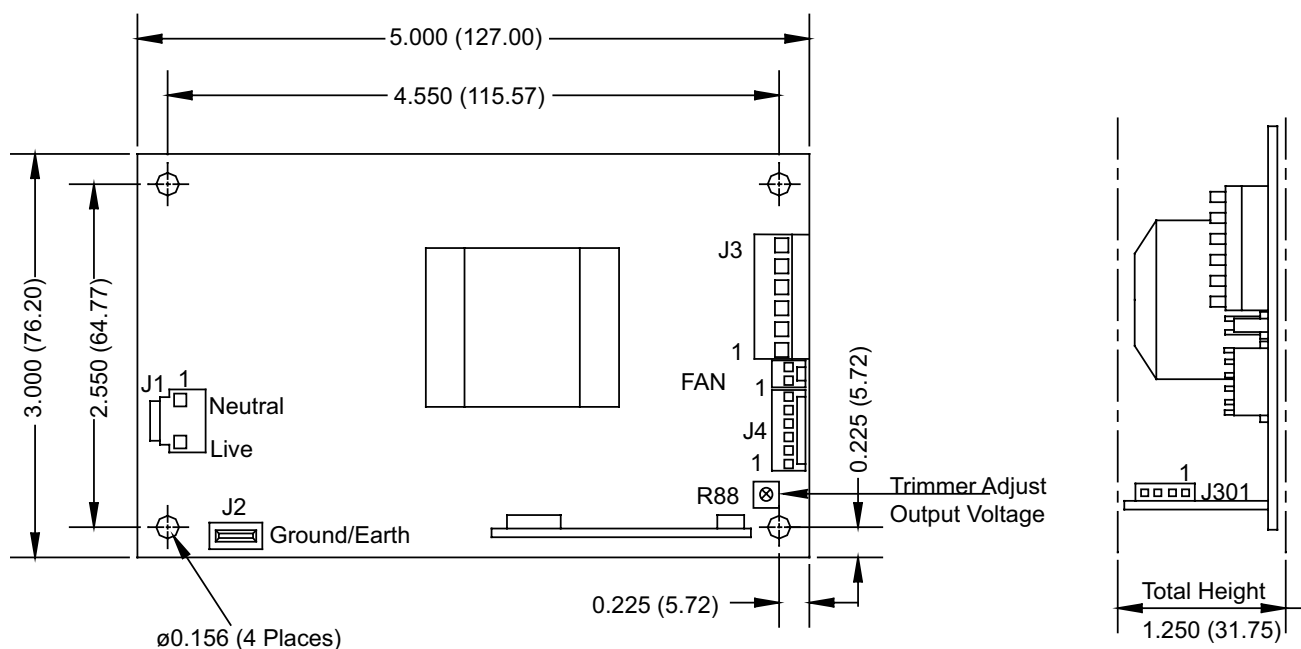


Figure 2: Mechanical Drawing

## Connector and Mating Connector Types

| Connector       | Type                                                    | Mating Connector Type                                                                                                                                                                                                    |
|-----------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| J1              | Molex 09-65-2038 (5273 series) void pin 2 or equivalent | Molex 09-52-4034 (5239 series) or equivalent with Molex 08-52-0072 (2478 series) or equivalent crimp terminals                                                                                                           |
| J2              | AMP 63849-1 or equivalent (6.35 mm straight)            | AMP 2-520263-4 or equivalent (straight spade for 22-18 AWG wire)                                                                                                                                                         |
| J3              | Molex 09-65-2068 (5273 series) or equivalent            | Molex 09-52-4064 (5239 series) or equivalent with Molex 08-52-0072 (2478 series) or equivalent crimp terminals                                                                                                           |
| J4              | Molex 22-23-2061(6373 series) or equivalent             | Molex 22-01-3067 (2695 series) or equivalent with Molex 08-50-0113 (2759 series) or equivalent crimp terminals                                                                                                           |
| J301 (Optional) | Leoco 2421P04H000 (2421 series) or equivalent           | Leoco 2420S04000 (2420 series) or equivalent with Leoco 2453TPB00V1 (2453T series) or equivalent crimp terminals or JST EHR-4 (EH series) or equivalent with JST SEH-001T-P0.6 (EH series) or equivalent crimp terminals |
| Fan             | Molex 22-23-2021(6373 series) or equivalent             | Molex 22-01-3027 (2695 series) or equivalent with Molex 08-50-0113 (2759 series) or equivalent crimp terminals                                                                                                           |

## Pin Connections

| J1 Pin Connections |              |
|--------------------|--------------|
| Pin 1              | Neutral      |
| Pin 2              | Live         |
| J2 Tab Connections |              |
| Tab                | Ground/Earth |

| J3 Pin Connections              |          |                      |
|---------------------------------|----------|----------------------|
| Pin 1                           | RTN      | Main Return          |
| Pin 2                           | RTN      | Main Return          |
| Pin 3                           | RTN      | Main Return          |
| Pin 4                           | Vo       | +Main Output         |
| Pin 5                           | Vo       | +Main Output         |
| Pin 6                           | Vo       | +Main Output         |
| J4 Pin Connections              |          |                      |
| Pin 1                           | -S       | -Vo Remote Sense     |
| Pin 2                           | DC OK    | DC Power Good Signal |
| Pin 3                           | PW OK    | Power Good*          |
| Pin 4                           | LS       | Load Share Signal    |
| Pin 5                           | +S       | +Vo Remote Sense     |
| Pin 6                           | SGND     | Signal Common        |
| J301 Pin Connections (Optional) |          |                      |
| Pin 1                           | 5 Vsn    | Standby Voltage      |
| Pin 2                           | SGND     | Signal Common        |
| Pin 3                           | Reserved | Do Not Connect       |
| Pin 4                           | PS OFF   | Remote ON/OFF Signal |
| Fan Pin Connections             |          |                      |
| Pin 1                           | + 12 V   | Fan Voltage          |
| Pin 2                           | +SGND    | Return               |

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