

ARTESYN TLP150 MEDICAL SERIES

Single Output



Advanced Energy's Artesyn TLP150 series of open-frame AC-DC power supplies comprises two single output models, offering a main voltage of 12 V or 24 V. Each model also provides 12 V fan and 5 V standby outputs. Both models feature medical safety approvals and accept a universal input of 85 to 264 VAC. Comprehensive overcurrent, overvoltage and overtemperature protection is provided as standard. Additional features include main output remote sense, active current sharing and integrated control and monitoring facilities. TLP150-M series power supplies provide 100 W of output power with free air convection cooling and 150 W with 200 LFM of forced air. Less than 1U high, they are ideal for systems that implement distributed power architectures (DPA) and point-of-load (POL) schemes, as well as for powering electromechanical devices and non-patient contact and non-patient critical medical applications.

SPECIAL FEATURES

- 150 W on main channel with only 200 LFM
- Low profile fits 1U applications
- Active PFC and EN61000-3-2 compliant
- 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
- Two years warranty

SAFETY

- TUV EN60601-1, IEC60601-1
- VDE CB Certificate and Report
- UL 62368-1
- UKCA Mark

DATA SHEET

Total Power:

150 W

Input Voltage:

85 to 264 VAC

of Outputs:

Single



ELECTRICAL SPECIFICATIONS

| Input | | |
|----------------------------------|---|--|
| Input voltage range | Universal Input | 85 to 264 VAC |
| Input frequency range | | 47 to 63 Hz |
| Input surge current | 264 VAC (cold start) | 40 A max. |
| Safety ground leakage current | 264 VAC, 50 Hz | 150 μ A |
| Input current | 120 VAC @ 150 W 230 VAC @ 150 W | 1.8 A rms 0.8 A rms |
| Input fuse: | UL/IEC127 | T 3.15 A, 250 VAC |
| Output | | |
| Adjustment range | | \pm 10% |
| Total regulation (line and load) | Main output Auxiliary outputs Fan output | \pm 3% \pm 5% \pm 10% |
| Turn-on delay | @120 VAC Input | 2.0 s max.. |
| Transient response | Main output 25% to 75% step at 0.5 A/ μ s | 5% max. dev., 1 ms max. recovery to 1% |
| Temperature coefficient | | \pm 0.02%/ $^{\circ}$ C |
| Overvoltage protection | Main outputs | 125%, \pm 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 |

EMC CHARACTERISTICS⁽⁵⁾

| | | |
|-----------------------------|----------------------|-----------|
| 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 |
| Radiated immunity | EN61000-4-3 | 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 | 850 VAC @ 60 Hz | 20 ms @ 150 W |
| Efficiency | 115 VAC @ 150 W 230 VAC @ 150 W | 81% typ. 84% typ. |
| Isolation voltage | Input/output Input/chassis | 4000 VAC 1500 VAC |
| Weight | 260 g (9.2 oz) | |
| MTBF (@ 25 °C) | Telcordia SR-332 MIL-HDBK-217F | 900,000 hours min. 350,000 hours min. |

ENVIRONMENTAL SPECIFICATIONS

| | | |
|------------------------|--|-----------------------------|
| Thermal performance | Operating ambient, (See derating curve) | 0 °C to +70 °C |
| | Non-operating | -40 °C to +85 °C |
| | 0 °C to 50 °C ambient, 200 LFM forced air | 150 W |
| | 0 °C to 50 °C ambient, convection cooled | 100 W |
| | 50 °C to 70 °C ambient, convection cooled | Derate linearly to 50% load |
| Relative humidity | Non-condensing | 5 to 95% RH |
| 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 | Total Regulation | Model Numbers ^(6,10) |
|----------------|-----------------|---------------------------------|-----------------------------------|--------|------------------|---------------------------------|
| | Min | Max (free air) ^(1,4) | Max (forced air) ^(2,4) | | | |
| 12 V | 0 A | 8.4 A | 12.5 A | 120 mV | ± 3.0% | TLP150N-99S12J |
| 24 V | 0 A | 4.2 A | 6.3 A | 240 mV | ± 3.0% | TLP150N-99S24J |

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 µF tantalum capacitor and a 0.1 µF 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. TLP150N-99S12FJ.
- 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 Artesyn representative or use the on-line model number search tool at <http://www.artesyn.com> to find a suitable alternative.
- Power good signal required 100 mA load on the main output.
- This product is a Component Power Supply and is only for inclusion by professional installers within other equipment and must not be operated as a standalone product. EMC compliance to appropriate standards must be verified at the system level. This product is for sale to OEMs and System Integrators, including through Distribution Channels. It is not intended for sale to End Users.

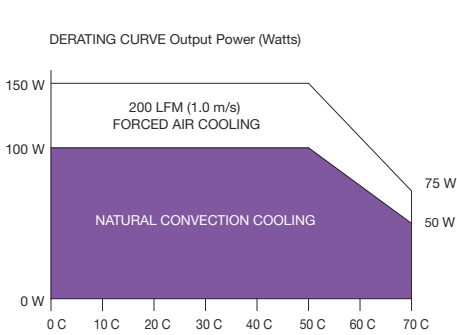


Figure 1: Derating Curve

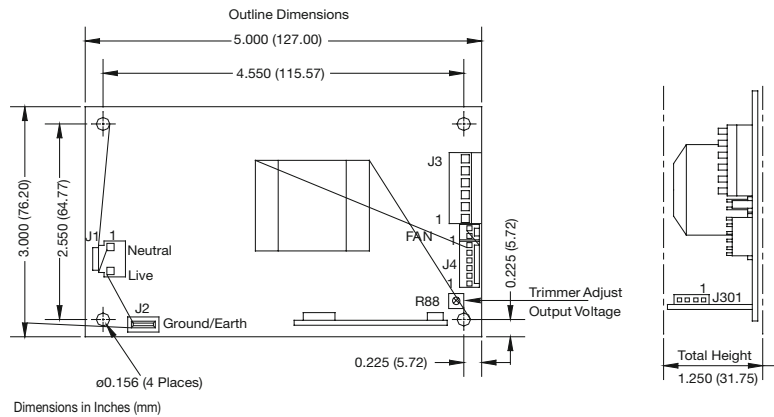


Figure 2: Mechanical Drawing

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 Molex 08-52-0072 (2478 series) or equivalent crimp terminals |
| J3 | Molex 09-65-2068 (5273 series) or equivalent | Molex 09-52-4064 (5239 series) or equivalent Molex 08-52-0072 (2478 series) or equivalent crimp terminals |
| J301 (Optional) | Leoco 2421P04H000 (2421 series) or equivalent | Leoco 2420S04000 (2420 series) or equivalent Leoco 2453TPB00V1 (2453T series) or equivalent crimp terminals or JST EHR-4 (EH series) or equivalent 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 Molex 08-50-0113 (2759 series) or equivalent crimp terminals |

PIN CONNECTIONS

| J1 Pin Connections | |
|--------------------|--------------|
| Pin 1 | Neutral |
| Pin 3 | Live |
| J2 Tab Connections | |
| Tan | Ground/Earth |

PIN CONNECTIONS (CONTINUED)

| 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 Vsb | 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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ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

PRECISION | POWER | PERFORMANCE

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