



**THE DATASHEET OF
TLP150N-99S24FJ**



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—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 watts of output power with free air convection cooling and 150 watts 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 60950-1

DATA SHEET

Total Power:

150 Watt

Input Voltage:

85 - 264 Vac

of Outputs:

Single

ELECTRICAL SPECIFICATIONS

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	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	260g (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 - 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.

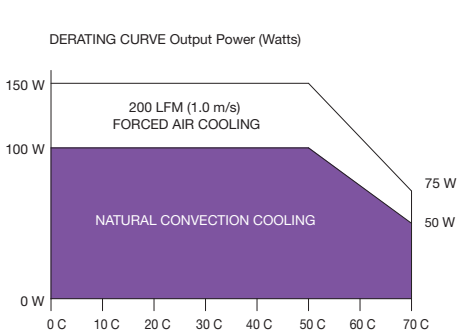


Figure 1: Derating Curve

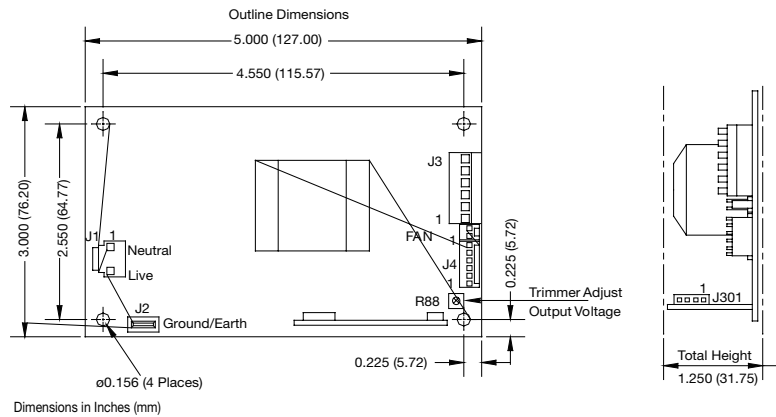


Figure 2: Mechanical Drawing

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 with 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 with Molex 08-52-0072 (2478 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 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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