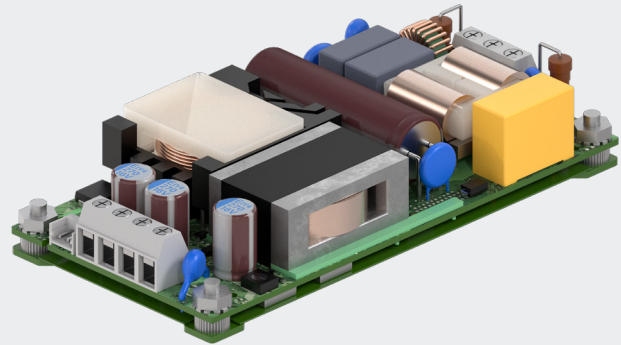


# SL POWER LPP200 SERIES

200 W Single Output Low Profile



Medical



Industrial

Advanced Energy's SL Power LPP200 AC-DC are low profile (0.75") open frame power supplies suitable for many medical and industrial applications where space is at a premium.

LPP200 series models are available with nominal main outputs of 12 V, 24 V, or 48 V, and provide up to 200 W output power (with airflow).

All models have output overvoltage, short circuit, and overload protection and a small 2" x 4" x 0.75" form factor.

## AT A GLANCE

### Total Power

200 W

### Input Voltage

85 to 264 VAC

### # of Outputs

Single

## SPECIAL FEATURES

- Low profile height of 0.75"
- Suitable for type BF applications
- 200 W max output power
- 2" x 4" x 0.75" size
- Industrial/medical safety
- -20°C to 70°C with derating
- 12 V fan output
- High efficiency 90% typical
- ±5% adjustment range

## EMI/EMC

- EMI Class B
- IEC/EN60601-1-2, 61000 4th Ed.

## SAFETY

- UL IEC/EN/cUL60601-1, Type BF
- CSA IEC/EN/cUL62368-1
- CB report
- CE

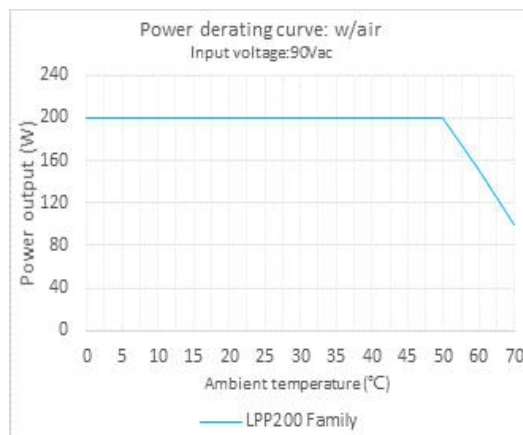
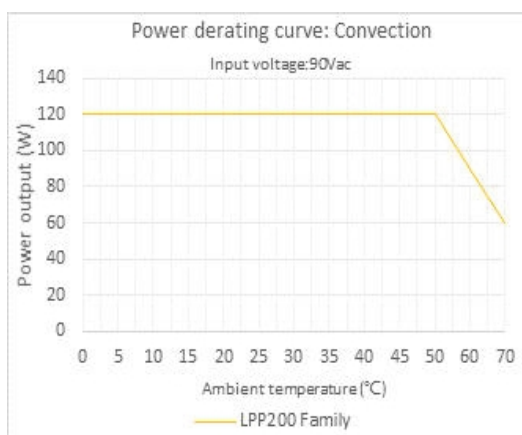


## ELECTRICAL SPECIFICATIONS

Input	
Input Voltage	85 to 264 VAC (operating range), derating below 90 VAC 100 to 240 VAC (safety rating)
Frequency	47 to 63 Hz
Power Factor	0.9 min.
Input Current	2 A max. at 115 VAC input, 1 A max. at 230 VAC input
Inrush Current	Cold start: 75 A peak at 264 VAC, 60 A peak at 230 VAC, 30 A peak at 115 VAC
Harmonics	Meets EN61000-3-2, Class A
Hold Up Time	16 ms min. at 120 W output, 10 ms min. at 185 W output
Turn On Time	2 s max. at 115 VAC input
Leakage Current	<500 $\mu$ A at 264 VAC, 60 Hz, NC (Input-Earth) per IEC60101-1 Fig.13
Complies with BF rated application requirements	<100 $\mu$ A at 264 VAC, 60 Hz, NC (Input-Output) per IEC60101-1 Fig.15 <5000 $\mu$ A at 264 VAC, 60 Hz, NC (Output-Earth) per IEC60101-1 Fig.16
Insulation Safety Rating	Input to GND: 2000 VAC (1 MOPP)
Complies with BF rated application requirements	Input to Output: 4400 VAC (2 MOPP) Output to GND: 2000 VAC (1 MOPP)
Output	
Output Power	120 W (Convection), 200 W (400 LFM airflow)
Load Regulation	$\pm 2\%$
Line Regulation	$\pm 1\%$
Minimum Load	None required
Ripple and Noise	1% of $V_{out}^{1,2}$
Output Adjustability	$\pm 5\%$
Over Load Protection	110% to 160% rated output current value, hiccup mode, auto-recovery
Short Circuit Protection	Short across the output terminals will not cause damage to the unit, hiccup mode
Over Voltage Protection	115% to 155% of nominal output voltage, latching, recycle AC power to recover
Over Temperature Protection	Will shut down upon an overtemperature condition, recycle AC power to reset

Note 1: 20 MHz Bandwidth, differential mode. Measured with noise probe directly across output terminals, and load terminated with 0.1  $\mu$ F ceramic and 47  $\mu$ F low ESR capacitors.

Note 2: Ripple and noise at  $<0^{\circ}\text{C}$  operating temperature will be  $<2.5\%$  of  $V_{out}$  at 0% to 30% output load.



## EMC/EMI COMPLIANCE

Conducted Emissions	EN55011/32/CISPR11/32 Class B, FCC Part 15.107, Class B: 3db margin, at 115 and 230 VAC
Radiated Emissions	EN55011/22/CISPR11/22 Class A, FCC Part 15.107, Class A: 3db margin, at 115 and 230 VAC See Note 3 below for class B compliance
Harmonic Current Emissions	EN 61000-3-2, Class A
Flicker Test	EN 61000-3-3
Electro-Static Discharge (ESD) Immunity	EN 61000-4-2, IEC60601-1-2, 4th Edition, Level 4: $\pm 15$ kV air, $\pm 8$ kV contact, Criteria A
Radiated RF EM Fields Susceptibility	EN 61000-4-3, IEC60601-1-2, 4th Edition, 10 V/m (80 MHz to 2700 MHz), 80% AM at 1 kHz, Criteria A
Electrical Fast Transients (EFT)/Bursts	EN 61000-4-4, IEC60601-1-2, 4th Edition, Criteria A
Surges, Line to Line (DM) and Line to GND (CM)	EN 61000-4-5, IEC60601-1-2, 4th Edition, Level 4: $\pm 2$ kV line to line (DM), $\pm 4$ kV line to GND (CM), Criteria A
Conducted Disturbances Induced by RF Fields	EN 61000-4-6, IEC60601-1-2, 4th Edition, 3 V/m, Level 4, (0.15 MHz to 80 MHz); and 12 V/m in ISM and amateur radio bands between 0.15 MHz and 80 MHz, 80% AM at 1 kHz IEC60601-1, Criteria A
Rated Power Frequency Magnetic Fields	EN 61000-4-8, IEC60601-1-2, 4th Edition, Level 4: 30 A/m, 50/60 Hz, Criteria A
Voltage Interruptions, Dips, Sags & Surges	EN 61000-4-11, IEC60601-1-2, 4th Edition 100% dip for 10 ms, at 0, 45, 90, 135, 180, 225, 270 and 315 deg., Criteria A 100% dip for 20 ms, 0 deg., Criteria A (100 W output) 100% dip for 5000 ms (250/300 cycles), Criteria B 30% dip for 500 ms, Criteria A

Note 1: EMI filtering is provided to meet the EMC requirements above. Unless otherwise stated, all tests are done at full load and 115 and 230Vac input. If any test would be marginal at other conditions, testing may be done at other stated conditions. All tests are to be performed in accordance with the stated standard. Acceptance is based on the supply continuing to function properly. Under some conditions, the outputs may pass through some level of signal.

Note 2: According to the standards, performance criteria are defined as following:

- A – Normal performance during and after the test
- B – Temporary degradation, self-recoverable
- C – Temporary degradation, operator intervention required to recover the operation
- D – Permanent damage

Note 3: Class B radiated emissions can be achieved by using Fair-Rite P/N 0443167251 or equiv. on the main output cable, and Fair-Rite P/N 0431173951 or equiv. on the fan output cable.

## ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to +70°C ambient (output power derated to 50% load at 70°C)
Storage Temperature	-40°C to +85°C
Humidity	5% to 95% RH, non-condensing
MTBF	> 500,000 hours
Operating Altitude	-500 m to 5,000 m
Vibration	Transportation Vibration ISTA-1A, Random Vibration per IEC60068-2-64; Shock Pulse per IEC60068-2-27, each of three axes
RoHS	ROHS compliant
REACH	REACH compliant

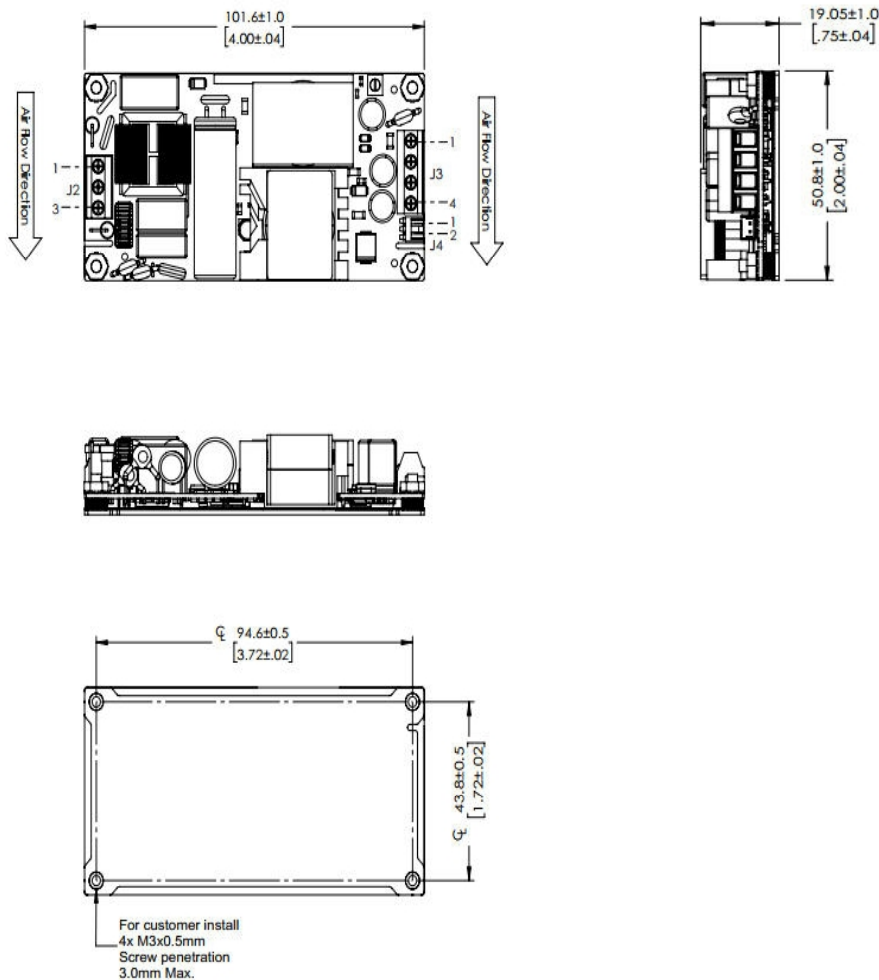
## ORDERING INFORMATION

Model Number	Output Voltage	Output Current (forced airflow)	Output Power (forced airflow)	Output Current (convection cooling)	Output Power (convection cooling)
LPP200S12K	12 V	15.67 A	200 W	9.00 A	120 W
LPP200S24K	24 V	7.84 A	200 W	4.50 A	120 W
LPP200S48K	48 V	3.92 A	200 W	2.25 A	120 W

## PIN ASSIGNMENT

Connector	Pin #	Assignment	Mating Connector
J2 (AC Input)	1	AC Line	Dinkle DN015xxD or Phoenix Contact 2100072
	2	NC	
	3	AC Neutral	
J3 (DC Output)	1	+Vout	Dinkle DN015xxD or Phoenix Contact 2100072
	2	-Vout	
	3	RTN	
	4	RTN	
J4 (Fan Output)	1	12V Fan Output	Molex 503728*00
	2	12V Fan Return	

## MECHANICAL DRAWING





For international contact information,  
visit [advancedenergy.com](https://advancedenergy.com).

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## ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than four 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 | TRUST**

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