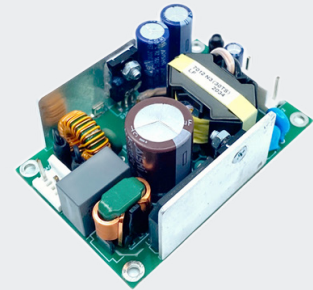


SL POWER SLB65 SERIES

65 Watts Single Output
Medical & Industrial Grade



Medical



Industrial

Advanced Energy's SL Power SLB65 medically-approved AC-DC power supplies are available with a nominal main output of 5 V, 12 V, 15 V, 18 V, 24 V, or 48 V. SLB65 power supplies provide up to 65 Watts convection. All models have output overvoltage, short circuit and overload protection and a small 2 x 3 x 1.2 inch form factor.

AT A GLANCE

Total Power

65 Watts

Input Voltage

80 to 264 VAC

of Outputs

Single

SPECIAL FEATURES

- 65 Watts Convection
- Small 2" x 3" x 1.2" Form Factor
- Universal Input 80 to 264 VAC
- For 1U Applications
- 2 x MOPP Isolation
- Meets Heavy Industrial/4th Edition EMC
- -20°C To 70°C Operating Temperature Range
- 3 Years Warranty

SAFETY

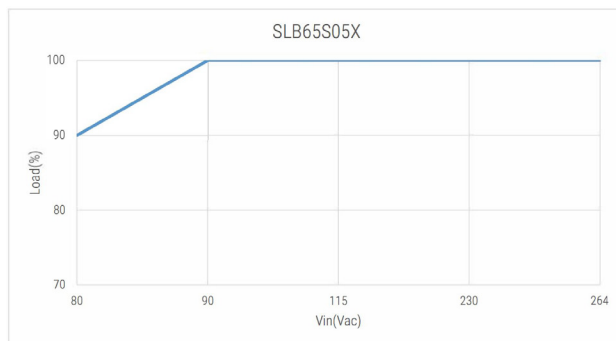
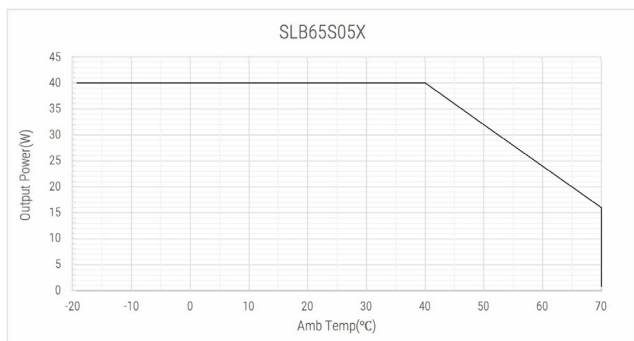
- UL/CSA/IEC/IEC60601-1, 3rd. Ed.
- UL/CSA/IEC62368-1



ELECTRICAL SPECIFICATIONS

Input	
Input range	80 to 264 VAC, 47 to 63 Hz, 1Ø
Input current	1.0 A max at 230 VAC
Inrush current	85 A max., cold start @ 264 VAC input, 25°C
Input fuses	3.15 A, 250 VAC
Leakage current	Earth <500 µA @ 264 VAC, 60 Hz, NC Patient <100 µA @ 264 VAC, 60 Hz
Efficiency (typ. @ 25°C)	SLB65S12x, SLB65S15x 89% @ 230 VAC, 86.5% @ 115 VAC, full load SLB65S18x 89% @ 230 VAC, 87.0% @ 115 VAC, full load SLB65S24x 89% @ 230 VAC, 87.0% @ 115 VAC, full load SLB65S48x 88% @ 230 VAC, 88% @ 115 VAC, full load
Isolation voltage	Input/Ground: 1500 VAC (1 MOPP) Input/Output: 4000 VAC (2 MOPP) Output/Ground: 1500 VAC
Output	
Maximum power	Max of 65 Watts for convection cooled. See "Ordering information" section.
Ripple and noise	0.5% RMS, 1% to 1.5% pk-pk for all models. (20 MHz bandwidth, differential mode. Measured with noise probe directly across output terminals, and load terminated with 0.1µF ceramic and 10µF low ESR capacitors)
Total regulation	±2% (Maximum deviation from nominal voltage for all loading conditions)
Minimum load	Not required
Overshoot	<5% overshoot at turn-on, <5% overshoot at turn-off, under all conditions
Transient response	500 µs response time for return to within 0.5% of final value for a 50% load step change, $\Delta i/\Delta t < 0.2 \text{ A}/\mu\text{s}$. Max. voltage deviation is ±3.5%, @ 25°C
Hold-up time	12 ms typical from loss of AC input at 115 VAC
Turn on time	<2 s @ 115 VAC (<3 s for 12 V output model)
Cooling	Convection (65 W Output)
Reliability	
MTBF	>500K hours, 25°C, full rated load (Calculation is done based on Telcordia reports)
Warranty	3 years
Protection	
Overvoltage protection	115% to 130% of nominal output voltage. Requires AC recycle to reset. Latch mode.
Short circuit protection	Short across the output terminals will not cause damage to the unit. Hiccup mode.
Thermal protection	Will shutdown upon an over temperature condition. Auto-recovery mode.
Overload protection	120% to 180% of rated output current value. Hiccup mode.

DERATING CURVES



EMI/EMC COMPLIANCE

Conducted emissions	EN55011/22 Class B; FCC Part 15, EN55015/CISPR15:2013, CISPR22 2006 Class B, CISPR32 Class B, FCC Part 15.107, Class B: at 115 and 230 Vac
Radiated emissions	EN55011/22 Class A; FCC Part 15, CISPR15 radiated EN55032/CISPR22 Class B, CISPR32 Class B, FCC Part 15.109, Class B: at 115 and 230 Vac
Harmonic current emissions	EN61000-3-2, Class A, B, C & D
Voltage fluctuations & flicker	IEC61000-3-3
Electro static discharge immunity	EN61000-4-2, Level 4: 8kV contact, 15kV air, Criteria A
Radiated RF fields susceptibility	EN61000-4-3, Level 3 (3V/m), Criteria A. EN55032/EN61000-4-3, 10V/m, 80MHz to 2.7GHz, 80% AM at 1kHz, IEC60601-1-2, 4th Edition, Table 4
Electrical fast transients / bursts	EN61000-4-4, Level 3 (PS: 2kV-40A, other lines 1kV-20A), Criteria A, EN55024/IEC61000-4-4, Level 4, ±4kV, 100Khz rep rate, 40A, Criteria A, IEC60601-1-2, 4th Edition, Table 5
Surge susceptibility	EN61000-4-5, Installation Class 3 (1kV diff. mode, 2kV common mode), Criteria A, EN55024/IEC61000-4-5, Level 4, ±2kV DM, ±4kV CM, Criteria A, Surpasses IEC60601-1-2, 4th Edition requirements.
Conducted RF susceptibility	EN61000-4-6, Level 3 (3Vrms), Criteria A, EN55032/IEC61000-4-6, 3V/m – Level 4, 0.15 to 80Mhz; and 12V/m) in ISM and amateur radio bands between 0.15Mhz and 80Mhz, 80% AM at 1KHz, IEC60601-1-2, 4th Edition, Table 5.
Rated power frequency magnetic fields test	EN61000-4-8, Level 3 (3A/m), Criteria A, EN55024/IEC1000-4-8, Level 4: 30A/m, 50/60 Hz, IEC60601-1-2, 4th Edition, Table 4
Voltage Sags & Surges	EN61000-4-11, 95% dip/0.5 cycle (Criteria A), 60%/5 cycles (Criteria B), 30%/25 cycles (Criteria A), Loading is 70% of 100W with 100VAC EN55024/IEC/EN61000-4-11: --100% dip for 10 ms, at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° --100% dip for 20 ms, 0°, Criteria A --100% dip for 5000 ms (250/300 cycles), Criteria B --60% dip for 100 ms, Criteria B --30% dip for 500 ms, Criteria A IEC60601-1-2, 4th Edition, Table 5

Notes:

Performance criteria are based on EN55024. According to the standards, performance criteria are decoded 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

ENVIRONMENTAL SPECIFICATIONS

Vibration	Random vibration per MIL-STD-810E, Method 514.4, Cat. 1, Figure 514.4-1, 1 hr in each of three axes
Shock	Non-operating: Half-sine, 40 gpk, 10ms, 3 axes, 6 shocks total
Cooling	Convection
Operating temperature	-20°C to +70°C
Temperature derating	40% derating at 70°C
Storage temperature	-40°C to +85°C
Altitude	Operating: 500 to 5,000 m. Non-operating: 500 to 40,000 ft
Relative humidity	5% to 95%, non-condensing

ORDERING INFORMATION

Model Number	Output Voltage	Output Current	Output Power	Total Regulation	OVP Threshold	Ripple & Noise
SLB65S05x	5 V	8.0 A	40 W	±2%	7.9 ± 1.1V	0.5%RMS, 1.5% pk-pk
SLB65S12x	12 V	5.0 A	60 W	±2%	14.0 ± 1.1V	0.5%RMS, 1.5% pk-pk
SLB65S15x	15 V	4.0 A	60 W	±2%	18.0 ± 1.5V	0.5%RMS, 1.0% pk-pk
SLB65S18x	18 V	3.3 A	60 W	±2%	21.0 ± 3.0V	0.5%RMS, 1.0% pk-pk
SLB65S24x	24 V	2.71 A	65 W	±2%	28.0 ± 4.0V	0.5%RMS, 1.0% pk-pk
SLB65S48x	48 V	1.35 A	65 W	±2%	55.0 ± 4.0V	0.5%RMS, 1.0% pk-pk

Notes: Replace the "x" at the end of the model number with "C" for class II (ungrounded) input or replace with "K" for class I (grounded) input.

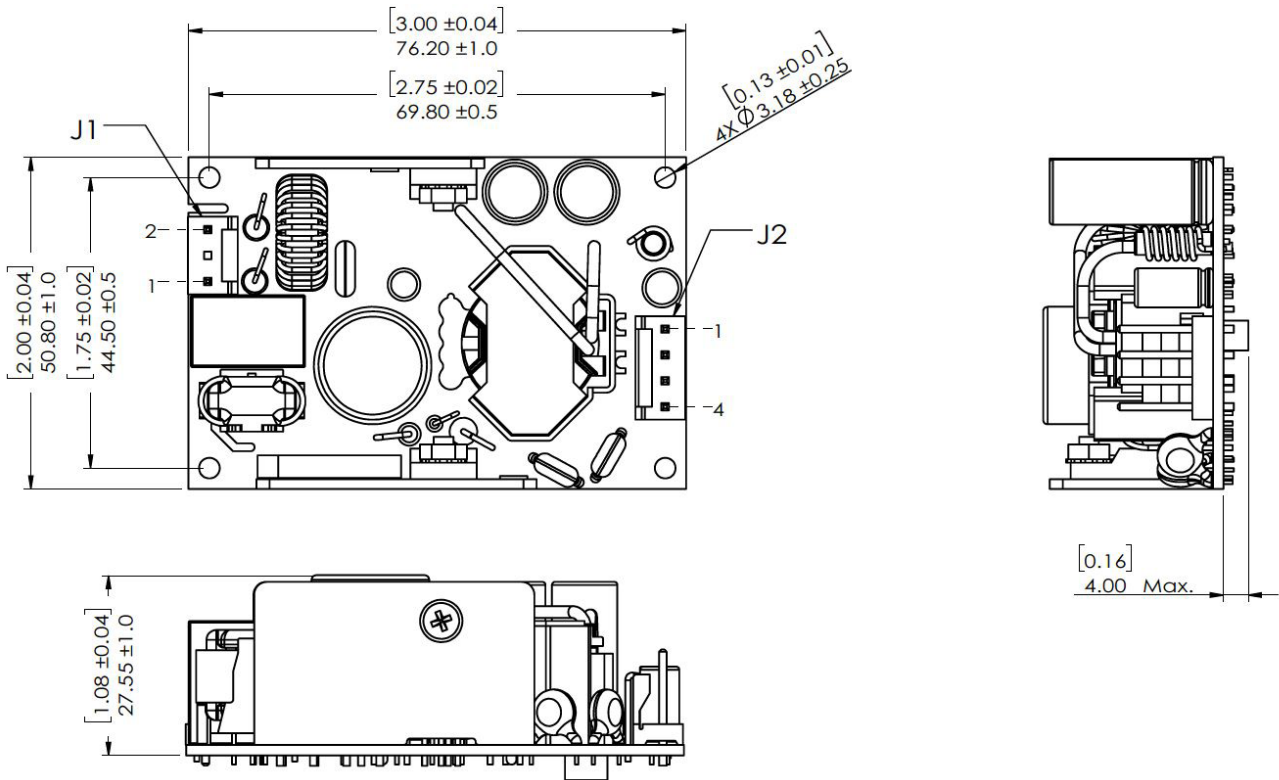
SAFETY

UL/CSA/Demko	EN/CSA/UL/IEC 60601-1 3rd edition BF Rated & EN62368-1
CB report	Yes
Isolation type	Double/Reinforced between input and output

PIN ASSIGNMENTS

Connector	SLB65		Mating Connector	Mating Pin
J1 (Input connector)	PIN 1	AC Line	AMP: 640250-3	AMP: 640252-2
	PIN 2	SPARE		
	PIN 3	AC Neutral		
J2 (Output connector)	PIN 1	+Vo	AMP: 640250-4	AMP: 640252-2
	PIN 2	+Vo		
	PIN 3	RTN		
	PIN 4	RTN		
G1 (Ground)	-	-	Ring type terminal or similar	

MECHANICAL DRAWING



Notes:
 1. All dimensions in inches (mm).



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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 | TRUST

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