SL POWER
SLB1000

1000 Watt Bulk Front End

Medical Data Center Telecom Industrial

Advanced Energy's SL Power SLB1000 provides a low cost solution to Industrial and Medical single output high power requirements. Full featured, the 2.4" x 5.2" x 10.0" enclosed form factor utilizes smart fans for self contained thermal management at very low acoustic noise levels. Voltage output for the series ranges from 12 V to 48V nominal at a continuous output power of 1000 W.

AT A GLANCE

Total Power

1000 W

# of Outputs

Single

Outputs

12 to 48 VDC
5 VDC standby

SPECIAL FEATURES

- 1000 W output power
- 2.4" x 5.2" x 10.0"
- 7.7 Watts per cubic inch
- Industrial/Medical safety
- -20 °C to 70 °C with derating
- High efficiency: 90% typical
- Variable speed "Smart Fans"
- ± 5% voltage adjustment range
- Low acoustic noise
- DC OK signal and inhibit function

COMPLIANCE

- EMI: CE Class B, RE Class A
- EN61000 Immunity, Heavy Industrial

SAFETY

- UL/cUL Recognized ITE (UL/CSA62368-1)
- UL/cUL Recognized Medical (ANSI/AAMI ES60601-1 Type BF)
- CE LVD (EN62368-1 + ROHS)
- CB Report
- CE Mark
- EMC according to the medical standard IEC 60601-1-2 4th Edition

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ELECTRICAL SPECIFICATIONS

Input	
Input Range	90 to 264 VAC (Operating) 115/230 VAC (Nominal) TERMINAL BLOCK
Frequency	47 to 63 Hz, Nominal 50/60
Input Fusing	Internal 15 A fuses, both lines fused
Inrush Current	40 A peak, cold start
Power Factor	0.99 typical, meets EN61000-3-2
Harmonics	Meets IEC 1000-3-2 requirements
Input Current	12 A RMS max input current, at 100 VAC
Hold Up Time	16 mS minimum for Main O/P, at full rated load
Efficiency	> 90% typical
Leakage Current	Input-Earth: <500µA @ 264VAC; Input-Output: <100uA @ 264VAC; Output-Ground: <250uA @ 264VAC
Power Line Transient	MOV directly after the fuse
Isolation	PRI-Chassis 2087 VAC Basic PRI-SEC 4000 VAC Reinforced 2xMOPP SEC-Chassis 500 VDC
Switching Frequency	PFC: Variable, 30kHz to 125kHz; Main Switch: TBD
No Load Input Power	<30 W, with main output disabled and no load on 5Vsb output

Output		
Output Rating	See 'ORDERING INFORMATION' Section	90 to 264 VAC
Set Point	± 1.0%	50% Load, 115 VAC, 25°C Ambient
Total Regulation Range	Main output ± 5%	Combined line/load/transient when measured at output terminal
Rated Load	1000 W maximum	Derate linear to 50% from 50°C to 70°C
Minimum Load	0 A	
Ripple and Noise	1.5% Vout max p-p	20 MHz Bandwidth, differential mode. Measured with noise probe directly across output terminals, and load terminated with 0.1µF ceramic and 47µF low ESR capacitors.
Output Voltage Overshoot	<10% overshoot at turn-on <1% overshoot at turn-off	All conditions
Transient Response	Max. voltage deviation is ±3.5% of final value	50% load step @ 0.2 A/µs, between 25% to 100% of output rating Recovery time < 500 µS for return to within 0.5% of set point
Output Voltage Adjustability	±5% (+0%, -5% for 48V model)	
Short Circuit Protection	Protected, no damage to occur	Auto-Recovery
Remote Sense	Compensation up to 250 mV	
Overload Protection (OCP)	105% to 125%	Hiccup Mode; 5Vsb output: 110% to 170%
Overvoltage Protection (OVP)	115% to 155%	
Overtemp Protection		Latch Mode, will require AC recycle to reset
Capacitive Load	12V: 2000uF, 24V: 10000uF, 48V: 5000uF	5Vsb outout: 5270uF
MTBF	>250K Hours	Telcordia SR-332, Issue 3, 110V/220V, for both 25°C and 50°C

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to 70°C (with linear 50% derating from 40°C to 70°C)
Storage Temperature	-40°C to +85°C
Humidity	5% to 95%, non-condensing
Fan Noise	<TBD dBA, 100% load at 30°C, Tested per ISO7999
Altitude	Operating: -500m to 5000m Storage: -500m to 12,192m
Shock	Per IEC60068-2-6
Vibration	Per IEC60068-2-27

EMI/EMC COMPLIANCE

Conducted Emissions	EN55011/32: Class B, CISPR11/32: Class B, FCC Part 15.107, Class B; 3dB margin typ, at 120 and 230VAC.
Radiated Emissions	EN55011/32: Class A, CISPR11/32: Class A, FCC Part 15.107, Class A, 3dB margin typ, at 120 and 230VAC[2]
Harmonic Current Emissions	EN61000-3-2, Class A (230VAC, 100% load)
Voltage Fluctuations & Flicker	IEC61000-3-3
Electro Static Discharge Immunity	EN55024/IEC61000-4-2, Level 4: +/- 8kV contact, +/- 15kV air, Criteria A, IEC60601-1-2, 4th Edition, Table 4
Radiated RF EM Fields Susceptibility	EN55022/EN61000-4-3, 10V/m, 80MHz-2.7GHz, 80% AM at 1kHz, IEC60601-1-2, 4th Edition, Table 4
Electrical Fast Transients/Bursts	EN55024/IEC61000-4-4, Level 4, +/- 4kV, 100Khz rep rate, 40A, Criteria A, IEC60601-1-2, 4th Edition, Table 5
Surges Line to Line (DM) and Line to Ground (CM)	EN55024/IEC61000-4-5, Level 3, +/-1kV DM, +/-2kV CM, Criteria A; Level 4, +/-2kV DM, +/-4kV CM, Criteria C; Surpasses IEC60601-1-2, 4th Ed.requirements.
Conducted Disturbances Induced by RF Fields	EN55022/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	EN55024/IEC1000-4-8, Level 4: 30A/m, 50/60 Hz, IEC60601-1-2, 4th Edition, Table 4
Voltage Dips	EN55024/IEC/EN61000-4-11: --100% dip for 10 mS, at 0, 45, 90, 135, 180, 225, 270 and 315 degrees: --100% dip for 20mS, 0 deg., Criteria B, TBDW load for Criteria A --100% dip for 5000mS (250/300 cycles), Criteria B -- 60% dip for 100mS, Criteria B

Notes:

1. 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
2. With external ferrite core on the output cable for the 48V model.

ORDERING INFORMATION

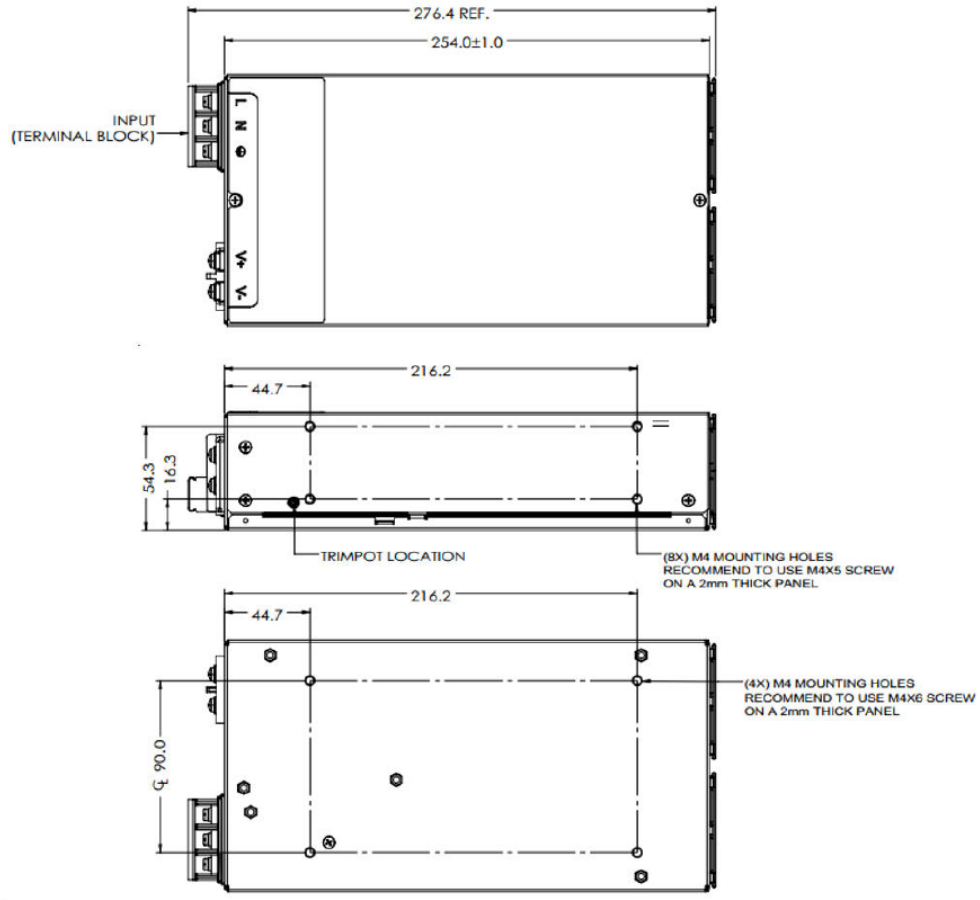
Model Number	Output Voltage	Vin = 100 to 264 VAC		Vin < 100 VAC	
		Output Current	Output Power	Output Current	Output Power
SLB1000S12K	12 V	84.0 A	1000 W	66.6 A	800 W
SLB1000S24K	24 V	42.0 A	1000 W	33.3 A	800 W
SLB1000S48K	48 V	21.0 A	1000 W	16.6 A	800 W

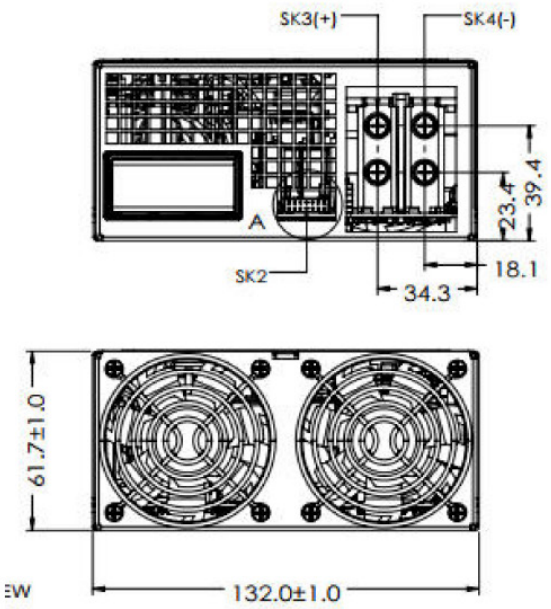
PIN ASSIGNMENT

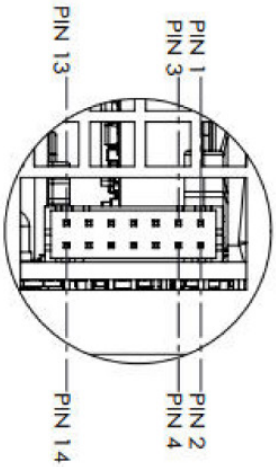
Input Voltage Pin	Description	Connector Information
L	AC LINE	Terminal Block with (3) M4 Screws
N	AC NEUTRAL	Torque = 16kgf-cm
G	GROUND	13mm centers
Output Voltage Pin	**Description**	**Connector Information**
+Vout	SK3, Power rail	Mating part: Molex 19141-0058 or equivalent
GND	SK4, Power GND	Mating part: Molex 19141-0058 or equivalent
Output Control Signals	**Description**	**SK2 Pin Number**
5Vsb	5V @ 2A Standby Output	1
-VS	Remote Sense Return	2
5Vsb	5V @ 2A Standby Output	3
GND	Signal Return	4
G_DCOK_E	DC OK Signal	5
-VPROG	Programming Signal Return	6
G_DCOK_C	DC OK Signal	7
NC	No Connection	8
+VPROG	Programming Signal	9
+Vsense	Remote Sense Positive	10
SCL	TBD	11
INH_EN	Inhibit Signal	12
SDA	TBD	13
GND	Signal Return	14

Note: Mating connector for SK2 is:
LANDWIN: PN 2050S2000 Housing and PN 2053T021V Contact
CIVILUX: PN CI0120SD000 Housing and PN CI01TD21PE0 Contact

MECHANICAL DRAWINGS







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.

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