

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



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: <500 μ A @ 264VAC; Input-Output: <100 μ A @ 264VAC; Output-Ground: <250 μ A @ 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	$\pm 1.0\%$	50% Load, 115 VAC, 25°C Ambient
Total Regulation Range	Main output $\pm 5\%$	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 0.1 μ F ceramic and 47 μ F low ESR capacitors.
Output Voltage Overshoot	<10% overshoot at turn-on <1% overshoot at turn-off	All conditions
Transient Response	Max. voltage deviation is $\pm 3.5\%$ of final value	50% load step @ 0.2 A/ μ s, between 25% to 100% of output rating Recovery time < 500 μ S for return to within 0.5% of set point
Output Voltage Adjustability	$\pm 5\%$ (+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: 2000 μ F, 24V: 10000 μ F, 48V: 5000 μ F	5Vsb outout: 5270 μ F
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:

- Performance criteria are based on EN55024. According to the standards, performance criteria are decoded as following:
 - Normal performance during and after the test
 - Temporary degradation, self-recoverable
 - Temporary degradation, operator intervention required to recover the operation
 - Permanent damage
- 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 C10120SD000 Housing and PN C101TD21PE0 Contact

MECHANICAL DRAWINGS

