

Medical



Industrial

FEATURES AND BENEFITS

300W Open Frame Power Supply	Meets Class B Radiated & Conducted EMI, with Margin
3.0" x 5.0" x 1.5" Size	Approved to CSA/EN/IEC/UL62368-1 3 rd Edition
PMBus Monitoring and Control Functionality	Electrolytic Capacitor Life of >7 Years
Universal Input 85VAC-264VAC, Class I and Class II Input Versions	>500,000 Hours MTBF
<1.0W No Load Input Power	Meets Heavy Industrial & IEC60601-1-2 4 th Edition Levels of EMC
Approved to CSA/EN/IEC/UL66368-1	3 Year Warranty



(SL Power Electronics is a member of PMBus.org [industry standard group]. PMBus is a registered trade mark of SMIF, Inc.)

MODEL SELECTION

Model Number ^{2,3}	Volts	Output Current			Standby Output	Fan Output	Total Output Power ⁵			Ripple & Noise ¹	Regulation	
		Convection	Conduction	Fan Cooled			Convection	Conduction	Fan Cooled		Line	Load
GU300S12K	12.0V	15.5A (184W)	19.5A (234W)	23.5A (284W)	5VDC @ 2A (10W)	12VDC @ 0.5A (6W)	200W	250W	300W	120mV pk-pk	± 1%	± 2%
GU300S15K	15.0V	12.3A (184W)	15.6A (234W)	19.0A (284W)						150mV pk-pk		
GU300S18K	18.0V	10.2A (184W)	13.0A (234W)	15.7A (284W)						180mV pk-pk		
GU300S24K	24.0V	7.7A (184W)	9.7A (234W)	11.8A (284W)						240mV pk-pk		
GU300S48K	48.0V	3.8A (184W)	4.9A (234W)	5.9A (284W)						480mV pk-pk		
GU300S56K	56.0V	3.3A (184W)	4.2A (234W)	5.0A (284W)						560mV pk-pk		

Notes:

- Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1µF & 47µF parallel capacitor.
- Other output voltages available, consult factory.
- For input Class II models, change the "K" in the model number to "C".
- All specifications are typical at 230VAC, full load, at 25°C ambient unless noted.
- Total output power includes 5VSB and 12V fan output ratings.
- Models available without PMBus monitoring, contact SL Power for more information.
- Total power from standby and fan outputs combined is 12W.



INPUT

Input Voltage and Frequency	85VAC–264VAC, 47Hz–63Hz, 1. See derating curve for operation below 90VAC. (Safety Rated to 100VAC–240VAC, ±10%)
Input Current	115VAC: 3A, 230VAC: 1.5A
Inrush Current	Active circuit limits inrush current to 15A peak at 264VAC, cold start. Options available for passive inrush limiting (75A peak). Contact SL Power for more information.
Input Fuses	3.15A, 250VAC fuse in both line and neutral
Earth Leakage Current (Input-Earth)	<400µA@264VAC, 60Hz, NC
Earth Leakage Current (Output-Earth)	<80µA@264VAC, 60Hz, NC
Efficiency	12V–18V : 91%, typical 24V : 92%, typical 48V–56V : 93%, typical

Notes:

- All specifications are typical at 230VAC input, full load, at 25°C ambient unless noted.

SAFETY

ITE/Industrial Safety	EN/IEC/UL62368-1
Medical Safety	EN/IEC/UL60601-1 3 rd Edition

RELIABILITY

MTBF	>500,000 hours, full load, 110VAC & 220VAC input, 25°C ambient, per Telcordia 332 Issue 6, Stress Method
Electrolytic Capacitor Life	>7 year life based on calculations at 115VAC/60Hz & 230VAC/50Hz, ambient 40°C at 24 hours/day, 365 days/year, 6 power up cycles/day

ISOLATION

Isolation Safety Rating	Input-Output: 4000VAC (2 MOPP) Input-Ground: 1500VAC (1 MOPP) Output-Ground: 1500VAC (1 MOPP)
Hipot Test Voltage	Input-Output: 4500VAC Input-Ground: 1900VAC Output-Ground: 1900VAC

OUTPUT

Output Voltage	See models chart
Output Power	See models chart
Turn On Time	<500mS
Hold-up Time	20mS/100VAC at full load
Output Voltage Adjustment	+/-5% on main output only
Transient Response	500µs resp.time for return to w/in 0.5% of final value for any 50% load step from 5% to 100% of rated load, $\Delta i / \Delta t < 0.2A/\mu s$. Max. voltage deviation: +/-3.5%.
Minimum Load	None required
Line/Load Regulation	See models selection chart

Notes:

- All specifications are typical at 230VAC input, full load, at 25°C ambient unless noted.

ENVIRONMENT

Operating Temperature	-20°C to +70°C, see derating curve for operation above 50°C and below -0°C
Relative Humidity	5% to 95%, non-condensing
Weight	420 grams
Dimensions	76.2 x 127 x 38.1mm 3.0 x 5.0 x 1.5 inch
Cooling	Convection, Conduction, or Fan cooled (16cfm) to achieve applicable ratings detailed on the Model Selection table on pg.1
Storage Temperature	-40°C to +85°C
Vibration	Operating: 0.003 g/Hz, 1.5 grams overall, 3 axes, 10 min/axis, 1Hz-500Hz. Non-Oper.: random waveform, 3 minutes /axis, 3 axes and Sine waveform, Vibration frequency/acceleration: 10Hz–500Hz/1g, sweep rate of 1 octave/minutes, Vibration time of 10 sweeps/axes, 3 axes
Shock	Operating: Half-sine, 20gpk, 10mS, 3 axes, 6 shocks total Non-Operating: Half-sine waveform, impact acceleration of 50g, Pulse duration of 6mS, Number of shocks: 3 for each of the 3 axis



PROTECTION

Overvoltage Protection - Main Output	118%+/- 3.5% of nominal output voltage 118% +/-3.5% of nominal output voltage. (106% for 56V) Default is 1 retry and then latch, requiring AC Power Cycle, on/off pin to toggle or turn on command via I2C (if enabled) Digital control via PMBus or I2C can allow selection of latching or programmable number of retries and variation of over voltage trip levels.
Overvoltage Protection - 5V standby Output	120%–150% of nominal output voltage. Latching. Requires AC Power Cycle to reset.
Overvoltage Protection - 12V Fan Output	120%–150% of nominal output voltage. Latching. Requires AC Power Cycle to reset.
Short circuit Protection	All outputs - Hiccup Mode Main - latched
Overload Protection - Main Output	120%–160% or rated output current value, 3 retries. Digital control via PMBus or I2C can allow selection of latching or programmable number of retries, and variation of overload trip levels.
Overload Protection - 5V standby Output	Trips between 2.8A and 5.0A, Hiccup mode, with no load on 12V output
Overload Protection - 12V Fan Output	Trips between 0.6A and 1.0A, Hiccup mode, with no load on 5V output
Overtemperature Protection	Will shut down upon an over-temp. condition, Auto-recovery. Digital control via PMBus or I2C can allow selection of latching, programmable number of retries or Auto-recovery.

Notes:

- Specifications are for convection rating at factory settings at 115VAC input, 25°C ambient unless otherwise stated.
- For DC input an external DC safety rated fuse must be used.

EMI/EMC COMPLIANCE

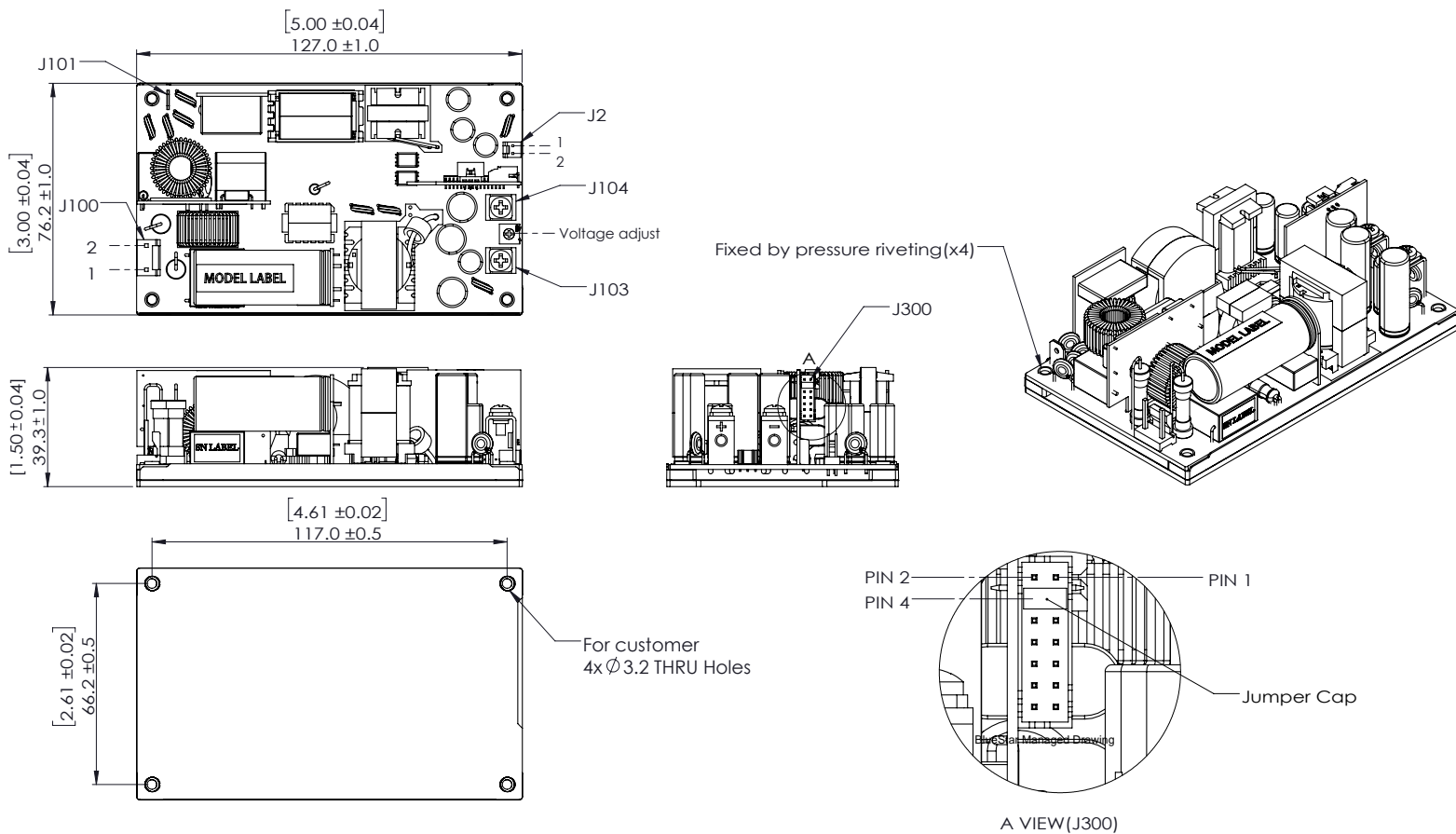
Conducted Emissions	EN55032, EN55011/CISPR11 Class B, FCC Part 15.107, Class B: 6db margin type, at 115VAC and 230VAC
Radiated Emissions	EN55032, EN55011/CISPR11 Class B, FCC Part 15.109, Class B: 3db margin type, at 115VAC and 230VAC
Electro-Static Discharge (ESD) Immunity on Power ports	EN55024/IEC61000-4-2, Level 4: +/-8kV contact, +/-15kV air, Criteria A IEC60601-1-2 4 th Edition, Table 4
Radiated RF EM Fields Susceptibility³	EN55022/EN61000-4-3, 10V/m, 80MHz-2.7GHz, 80% AM at 1kHz IEC60601-1-2 4 th Edition, Table 4
EFT/Burst Immunity	EN55024/IEC61000-4-4, Level 4, +/- 4kV, 100kHz rep rate, 40A, Criteria A IEC60601-1-2 4 th Edition, Table 5
Surges, Line to Line (Diff Mode) and Line to GND (CMN Mode)	EN55024/IEC61000-4-5, Level 4, +/-2kV DM, +/-4kV CM, Criteria A Surpasses IEC60601-1-2 4 th Edition requirements.
Conducted RF Immunity	EN55022/IEC61000-4-6, 3V – Level 4, 0.15 to 80MHz; and 6V in ISM and amateur radio bands between 0.15MHz and 80MHz, 80% AM at 1kHz IEC60601-1-2 4 th Edition, Table 5
Power Frequency Magnetic Field Immunity	EN55024/IEC1000-4-8, Level 4: 30A/m, 50/60 Hz IEC60601-1-2 4 th Edition, Table 4
Voltage Dip Immunity	EN55024/IECEN61000-4-11: –100% dip for 10 ms, at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°, –100% dip for 20ms, 0 deg., Criteria A –100% dip for 5000ms (250/300 cycles), Criteria A –60% dip for 100ms, Criteria A –30% dip for 500ms, Criteria A IEC60601-1-2 4 th Edition, Table 5
Harmonic Current Emissions	EN55011/EN61000-3-2, Class A
Flicker Test	EN61000-3-3
Common Mode Noise: High Freq. (100Khz-20MHz)	10mA pk-pk
Common Mode Noise: Low Frequency (50-120Hz)	5.0V pk-pk

Notes:

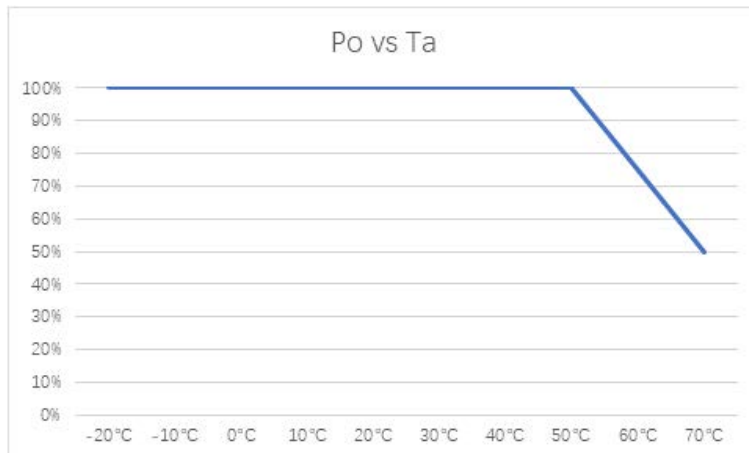
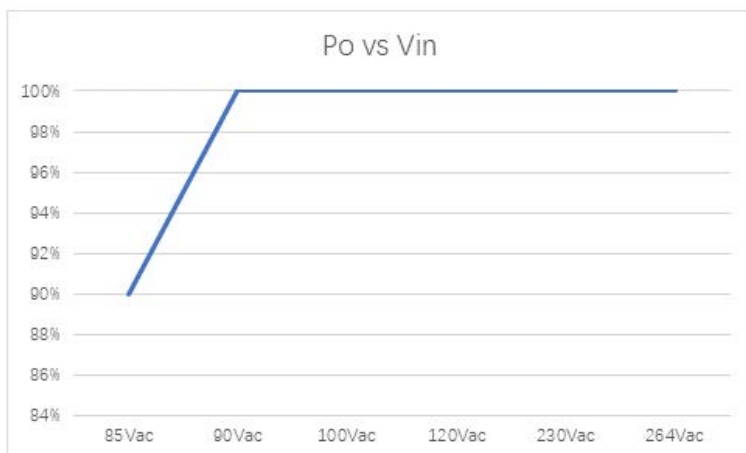
- The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.
- All specifications are typical at nominal input, full load, at 25°C ambient unless noted. Consult factory for information regarding testing for or usage underspecial environments.
- Consult factory for Table 9 compliance information.



MECHANICAL DRAWING



DERATING CURVES





CONNECTOR INFORMATION

	Conn	Pin#	Assignment	Connector	Mating Connector	Mating Pin
Input	J100	1	LINE	TE-CONNECTIVITY 641937-1	TE-CONNECTIVITY 640250-3	TE-CONNECTIVITY 640250-2
		2	NEUTRAL			
	J101		GND	Zierick 836	MOLEX 01-90020001	
Output	J104		Vmain RTN	SCREW TERMINAL	MOLEX 19141-0058/0063/0083	
	J103		Vmain+	SCREW TERMINAL	MOLEX 19141-0058/0063/0083	
	J2	1	Vfan+	TE-CONNECTIVITY 640456-2	TE-CONNECTIVITY 1375820-2	TE-CONNECTIVITY 1375819
		2	Vfan RTN			
	J300	1	RTN	Sullins: SWR204-NRTN-D07- RA-GA (JST- MFG: S14B-PHDSS - B(LF) (SN))	Sullins: SWH204-NULN-D07- UU-WH (JST-WFG: PHDR-14VS)	Sullins: SWT204 SERIES TERMINAL (JST-MFG: SPHD-001T-P0.5)
		2	S+			
		3	ON _ OFF			
		4	RTN			
		5	S-			
		6	DC OK			
		7	ADDR _ MODE			
		8	Power_Good			
		9	EXT _ BIAS			
		10	SDA			
11		RTN				
12		SCL				
13	5VSB					
14	5VSB					

SIGNALS/CONTROL & MONITORING

RTN (Pins 1, 4, 11)	Return for standby output and signals.
Remote Sense (Pins 2, 5)	Allows for remotes sensing operation.
Power_Good (Pin 8)	High: When output voltage is >94% of rated output voltage Low: When output voltage is <91% of rated output voltage
SMB Alert (Pin 6)	Advises specifications out of range. See GU300 Control and Programming manual for more information.
ADDR MODE (pin 7)	See GU300 Control and Programming manual for more information.
ON/OFF (Pin 8)	Allows remote control of main DC output. Logic high no connection (open) or short inhibits the main output. Logic low or enables the main output. Behavior can be modified using PMBUS command. See GU300 Control and Programming manual for more information.
EXT_BIAS (Pin 9)	See GU300 Control and Programming manual for more information.
SDA (Pin 10)	See GU300 Control and Programming manual for more information.
SCL (Pin 12)	See GU300 Control and Programming manual for more information.
5VSB (Pins 13, 14)	5V @ 2A standby output. Is always present upon application of AC input. Does not disable if inhibit function is used.