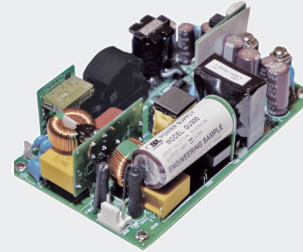


SL POWER GU300 SERIES

300 Watts Single Output
Medical & Industrial Grade



Medical



Industrial

Advanced Energy's SL Power GU300 is a superior performance 300 Watts AC to DC converter, designed for medical/industrial applications. It support PMBus monitoring and control. All models are approved to CSA/EN/IEC/UL62368-1 and CSA/EN/IEC/UL60601-1 3rd Edition. It meets Heavy Industrial and IEC60601-1-2 4th Edition Levels of EMC and meets Class B Radiated & Conducted Emissions with margin. The GU300 is offered in both Class I and Class II input.

AT A GLANCE

Total Power

300 Watts

Input Voltage

85 to 264 VAC

of Outputs

Single



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

SPECIAL FEATURES

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

SAFETY

- EN/CSA/IEC/UL62368-1
- EN/CSA/IEC/UL60601-1-1, 3rd Ed

ELECTRICAL SPECIFICATIONS

Input	
Input Voltage and Frequency	85 to 264 VAC, 47 to 63 Hz, 1Ø. See derating curve for operation below 90 VAC. (Safety Rated to 100 VAC to 240 VAC, $\pm 10\%$)
Input Current	115 VAC: 3 A, 230V AC: 1.5 A
Inrush Current	Active circuit limits inrush current to 15 A peak at 264 VAC, cold start. Options available for passive inrush limiting (75 A peak). Contact Advanced Energy for more information.
Input Fuses	3.15 A, 250 VAC fuse in both line and neutral
Leakage Current	Input to Earth Output to Earth <400 μA @ 264 VAC, 60 Hz, NC <80 μA @ 264 VAC, 60 Hz, NC
Efficiency	12 V to 18 V: 91%, typical 24 V: 92%, typical 48 V to 56 V: 93%, typical
Isolation Safety Rating	Input-Output: 4000 VAC (2 MOPP) Input-Ground: 1500 VAC (1 MOPP) Output-Ground: 1500 VAC (1 MOPP)
Hipot Test Voltage	Input-Output: 4500 VAC Input-Ground: 1900 VAC Output-Ground: 1900 VAC
Output	
Output Voltage	See "Ordering Information" section
Output Power	See "Ordering Information" section
Turn on Time	< 500 ms
Hold-up Time	20 ms / 100 VAC at full load
Output Voltage Adjustment	+/-5% on main output only
Transient Response	500 μ s response time for return to within 0.5% of final value for any 50% load step from 5% to 100% of rated load, $\Delta i / \Delta t < 0.2 \text{ A} / \mu\text{s}$. Max. voltage deviation: +/-3.5%.
Minimum Load	Not required
Transient Response	500 μ s 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 $\pm 3\%$
Line Regulation	$\pm 1\%$
Load Regulation	$\pm 2\%$
Reliability	
MTBF	>500,000 hours, full load, 110 VAC & 220 VAC 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

Note 1- All specifications are typical at 230VAC input, full load, at 25°C ambient unless noted.

ELECTRICAL SPECIFICATIONS

Protection	
Overvoltage Protection - Main Output	118% $\pm$ 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 I ² C (if enabled). Digital control via PMBus or I ² C can allow selection of latching or programmable number of retries and variation of over voltage trip levels.
Overvoltage Protection - 5V Standby Output	120% to 150% of nominal output voltage. Latch mode. Requires AC power cycle to reset.
Overvoltage Protection - 12V Fan Output	120% to 150% of nominal output voltage. Latch mode. Requires AC power cycle to reset.
Short Circuit Protection	All outputs. Hiccup mode for main output. Latch mode for standby.
Overload Protection - Main Output	120% to 160% of rated output current value, 3 retries. Digital control via PMBus or I ² C can allow selection of latching or programmable number of retries, and variation of overload trip levels.
Overload Protection - 5V Standby Output	Trips between 2.8 A and 5.0 A, hiccup mode, with no load on 12 V 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 I ² C can allow selection of latching, programmable number of retries or auto-recovery.

Note 1- Specifications are for convection rating at factory settings at 115VAC input, 25°C ambient unless otherwise stated.

Note 2- 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 4th Edition, Table 4
Radiated RF EM Fields Susceptibility ³	EN55022/EN61000-4-3, 10V/m, 80MHz 2.7GHz, 80% AM at 1kHz IEC60601-1-2 4th Edition, Table 4
EFT/Burst Immunity	EN55024/IEC61000-4-4, Level 4, +/- 4kV, 100kHz rep rate, 40A, Criteria A IEC60601-1-2 4th 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 4th 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 4th Edition, Table 5
Power Frequency Magnetic Field Immunity	EN55024/IEC1000-4-8, Level 4: 30A/m, 50/60 Hz IEC60601-1-2 4th Edition, Table 4
Voltage Dip Immunity	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., Crit. A; 100% dip for 500ms (250/300 cycles), Crit. A; 60% dip for 100ms, Criteria A; 30% dip for 500ms, Crit. A; IEC60601-1-2, 4th Edition, Table 5
Harmonic Current Emissions	EN55011/EN61000-3-2, Class A
Flicker Test	EN61000-3-3
Common Mode Noise: High Freq. (100Khz to 20MHz)	10mA pk-pk
Common Mode Noise: Low Frequency (50 to 120Hz)	5V pk-pk

Note 1 - 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.

Note 2 - 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.

Note 3 - Consult factory for Table 9 compliance information.

ORDERING INFORMATION

Model Number ^{2,3}	Output Voltage	Ripple & Noise ¹	Output Current			Standby Output	Fan Output	Total Output Power ⁵		
			Convection	Conduction	Fan Cooled			Convection	Conduction	Fan Cooled
GU300S12K	12 V	120mV pk-pk	15.5A (184W)	19.5A (234W)	23.5A (284W)	5VDC @ 2A (10W)	12VDC @ 0.5A (6W)	200W	250W	300W
GU300S15K	15 V	150mV pk-pk	12.3A (184W)	15.6A (234W)	19.0A (284W)					
GU300S18K	18 V	180mV pk-pk	10.2A (184W)	13.0A (234W)	15.7A (284W)					
GU300S24K	24 V	240mV pk-pk	7.7A (184W)	9.7A (234W)	11.8A (284W)					
GU300S48K	48 V	480mV pk-pk	3.8A (184W)	4.9A (234W)	5.9A (284W)					
GU300S56K	56 V	560mV pk-p	3.3A (184W)	4.2A (234W)	5.0A (284W)					

Note 1 - Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μF & 47μF parallel capacitor.

Note 2 - Other output voltages available, consult factory.

Note 3 - For input Class II models, change the "K" in the model number to "C".

Note 4 - All specifications are typical at 230VAC, full load, at 25°C ambient unless noted.

Note 5 - Total output power includes 5VSB and 12V fan output ratings.

Note 6 - Models available without PMBus monitoring, contact Advanced Energy for more information.

Note 7 - Total power from standby and fan outputs combined is 12W.

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 "PMBus Communication AN" for more information.
ADDR MODE (pin 7)	See GU300 "PMBus Communication AN" for more information.
ON/OFF (Pin 3) ¹	Allows remote control of main DC output. Logic high or no connection (open) inhibits the main output. Logic low or short to Pin 4 enables the main output. Behavior can be modified using PMBUS command. See GU300 "PMBus Communication AN" for more information.
EXT_BIAS (Pin 9)	See GU300 "PMBus Communication AN" for more information.
SDA (Pin 10)	See GU300 "PMBus Communication AN" for more information.
SCL (Pin 12)	See GU300 "PMBus Communication AN" 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.

Note 1- Pin3 input voltage can't exceed 3.3V, otherwise the MCU might be damaged.

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to +70°C, see derating curve for operation above 50°C and below 0°C
Storage Temperature	-40°C to +85°C
Relative Humidity	5% to 95%, non-condensing
Cooling	Convection, Conduction, or Fan cooled (16cfm) to achieve applicable ratings detailed on the "Ordering Information" table on page 4
Vibration	Operating: 0.003 g/Hz, 1.5 grams overall, 3 axes, 10 min/axis, 1Hz-500Hz. Non-Operating: 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

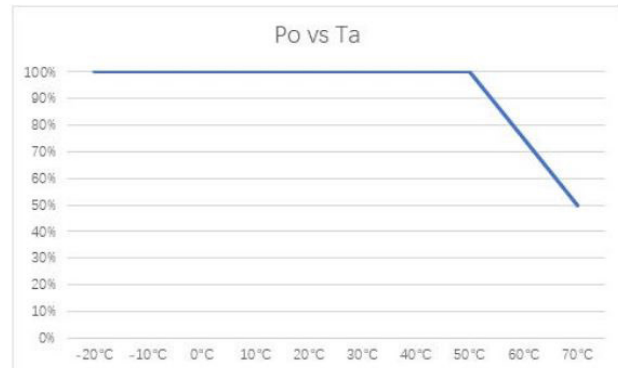
PIN ASSIGNMENTS

Type	Connector	Pin #	Assignment
INPUT	J100	1	AC Line
		2	AC Neutral
	J101	-	Ground
OUTPUT	J103	-	Vmain+
	J104	-	Vmain RTN
	J2	1	Vfan+
		2	Vfan RTN
	J300	1	RTN
		2	S+
		3	ON_OFF
		4	RTN
		5	S-
		6	SMB Alert
		7	ADDR _ MODE
		8	Power_Good
		9	EXT _ BIAS
		10	SDA
		11	RTN
		12	SCL
		13	5VSB
		14	5VSB

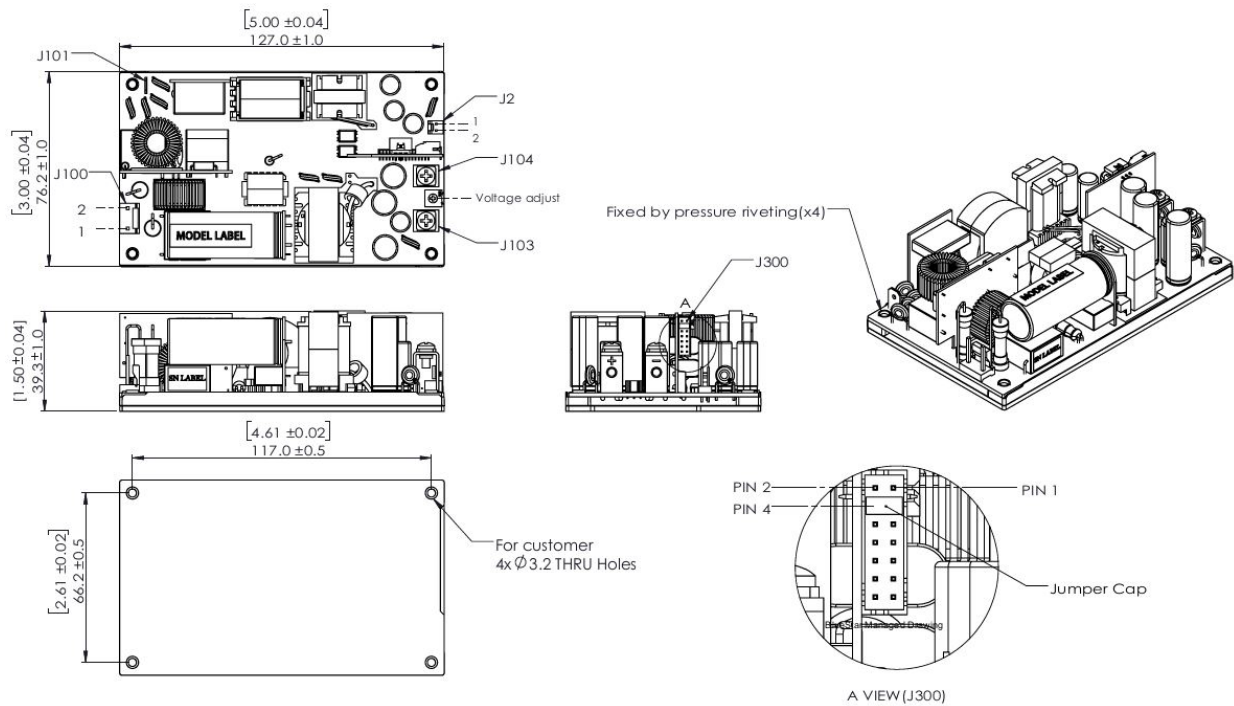
CONNECTORS

Name	Connector	Mating Connector	Mating Pin
J100	TE-CONNECTIVITY 641937-1	TE-CONNECTIVITY 640250-3	TE-CONNECTIVITY 640250-2
J101	Zierick 836	MOLEX 01-90020001	-
J103/J104	SCREW TERMINAL	MOLEX 19141-0058/0063/0083	-
J2	TE-CONNECTIVITY 640456-2	TE-CONNECTIVITY 1375820-2	TE-CONNECTIVITY 1375819
J300	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-PO.5)

DERATING CURVE



MECHANICAL DRAWING



- Notes:
1. All dimensions in mm [inches].
 2. Dimensions: 76.2 x 127 x 38.1mm (3.0 x 5.0 x 1.5 inch).
 3. Weight: 420g.



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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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