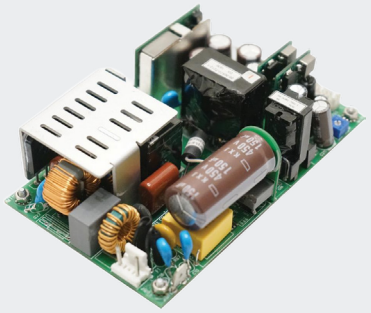
SL POWER
GB130Q SERIES

130 Watts Quad Output
Medical & Industrial Grade



Medical

Industrial

Advanced Energy's SL Power GB130Q series of open-frame AC-DC power supplies comprises five quad outputs models. All models feature medical safety approvals and accept a universal input of 90 to 264 VAC. These compact switch-mode power supplies feature output overvoltage, overload protection, with short-circuit protection on all outputs. GB130Q series power supplies provide 100 Watts of output power with free air convection cooling and 130 Watts with 200 LFM of forced air.

AT A GLANCE

Total Power

100 to 130 Watts

Input Voltage

90 to 264 VAC

# of Outputs

Quad

SPECIAL FEATURES

- 3" x 5" x 1.35" Package
- 130 W with air, 100 W Convection Cooled
- Universal Input 90 to 264 VAC
- Efficiency 87% Typical
- Meets Class B Radiated & Conducted EMI
- 5 V @ 1 A Standby Output, Remote Inhibit
- No Minimum Load Required
- >7 Year E-cap Life
- 3 Year Warranty
- RoHS Compliant
- Covered Versions Available

SAFETY

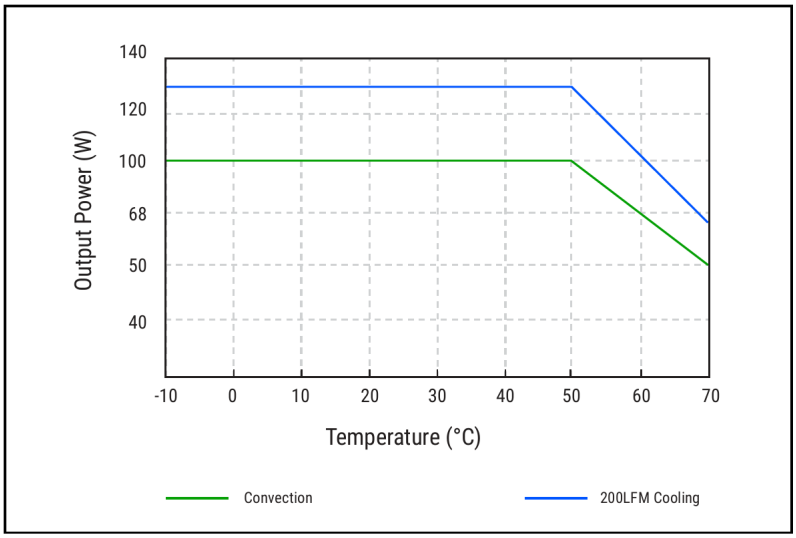
- CSA/IEC/EN/UL62368-1
- CSA/IEC/EN/UL60601-1, 3rd Ed. + Am1

ELECTRICAL SPECIFICATIONS

Input	
Input range	90 to 264 VAC, 47 to 63 Hz, 1Ø
Input current	2.0 A @ 115 VAC, 1.5 A @ 230 VAC
Inrush current	75 A max., cold start @ 264 VAC input
Input fuses	3.15 A, 250 VAC fuses provided in both line & neutral
Leakage current Earth Patient Touch	 <290 µA @ 264 VAC, 60 Hz, NC; <420 µA, SFC <100 µA @ 264 VAC, 60 Hz, NC; <500 µA, SFC <90 µA @ 264 VAC, 60 Hz, NC; <170 µA, SFC
Efficiency	87% typical @ 230 VAC
Isolation voltage	 Input/Ground: 1800 VAC (Basic) Input/Output: 4000 VAC (Reinforced) Output/Ground: 500 VAC (Operational)
Output	
Maximum power	Open frame: 130 W continuous with 200 LFM airflow, 100 W convection cooled Covered models: 104 W with airflow, 75 W convection cooled
Ripple and noise	See "Ordering Information"
Output voltage	See "Ordering Information"
Adjustment range	+/-10% from nominal on 5 V output
Turn on time	< 2 s @ 115 VAC (inversely proportional to input voltage and thermistor temperature)
Hold-up time	16 ms typical @ 110 W, 120 Vac input
Power factor	0.9 typical
Transient response	500 µs typ. for return to within 0.5% of nominal output voltage, 50% load step, $\Delta i/\Delta t$ <0.2 A/µs Max volt deviation = 3%
Reliability	
MTBF	250,000 hrs @ 25°C Ambient, 110 VAC input
E-Cap life	>7 years in use condition of 40°C ambient, at 12 hrs/day, 261 days/year. Additional information on other use profiles available on request
Protection	
Input fuse	3.15 A / 250 V internal fuse in both line & neutral
Input transient protection	4 KV (CM) and 2 KV (DM) surge
Short circuit protection	Provided - no damage will occur if the output is shorted. Hiccup mode.
Overload protection	150% to 300% above rating for V2, V3, & V4, 110% to 200% for V1. Hiccup mode.
Overvoltage protection	Latching type, recycle AC input to reset. See "Ordering Information" for trip ranges.
Auxiliary Signals	
AC power fail	Stays HIGH during normal operation. Signal will go LOW with at least 6 ms warning before loss of DC output from AC failure.
Remote inhibit	Via switch closure.
DC OK	Stays HIGH during normal operation. Signal will go LOW for output less than 90% (typical) of nominal. Green LED will light on PCB top side during normal operation.
5 V standby output	5 V @ 1.0 A output, always present when AC input is applied to the unit.

CHARACTERISTIC CURVES

Output vs. Temperature:
Open frame: 100 W convection cooled and 130 W continuous with 200 LFM airflow. Derate output power to 50% at 70°C.
Covered versions: Convection cooled output power is 75% of open frame ratings. Air-cooled output power is 80% of open frame ratings.



EMI/EMC COMPLIANCE

Conducted emissions	EN55011/22 Class B, FCC Part 15, Subpart B, Class B with 6 db margin
Radiated emissions	EN55011/22 Class B, FCC Part 15, Subpart A, Class B
Common mode noise: high frequency (100 KHz to 20 MHz)	<50 mA pk-pk, 6 mA rms CM current
Common mode noise: low frequency (50 to 120 Hz)	<5 Vrms
Static discharge immunity	EN55024/IEC61000-4-2, Level 4, 8 kV contact discharge, 15 kV air discharge, criteria A[1]
Radiated RF immunity	EN55022/IEC61000-4-3, Level 3, 10 V/m, criteria A[1]
EFT/Burst immunity	EN55024/IEC61000-4-4, Level 3, 4 kV (PS Output), criteria A; 2 kV (signal outputs), criteria B[1]
Line surge immunity	EN55024/IEC61000-4-5, Level 3, 1 kV diff., 2 kV common-mode, criteria A[1] Level 4, 2 kV diff., 4 kV common-mode, criteria B[1]
Conducted RF immunity	EN55022/IEC61000-4-6, Level 4, 3 V/m, 0.15 to 80 MHz; and 10 V/m in ISM and amateur radio bands between 0.15 and 80 MHz, 80%AM at 1 kHz, criteria A[1]
Power frequency magnetic field immunity	EN55024/IEC61000-4-8, Level 4, 30 A/m, criteria A[1]
Voltage dip immunity	EN55024/IEC61000-4-11, dips: 100%, 10 ms; 30%, 500 ms; 60%, 100 ms; Interruptions: 100%, 5000 mS; performance criteria A, A, B & B[1]
Line harmonic emissions	EN55024/IEC61000-3-2, class A
Flicker test	EN55024/IEC61000-3-3

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

ENVIRONMENTAL SPECIFICATIONS

Vibration	Operating: 0.003 g^2/Hz, 1.5 grms overall, 3 axes, 10 min/axis Non-operating: 0.026 g^2/Hz, 5.0 grms overall, 3 axes, 1 hr/axis
Shock	Operating: Half-sine, 20 gpk, 10 ms, 3 axes, 6 shocks total Non-operating: Half-sine, 40 gpk, 10 ms, 3 axes, 6 shocks total
Operating temperature	-20°C to +70°C
Temperature derating	Derate output power linearly above 50°C to 50% at 70°C
Storage temperature	-40°C to +85°C
Altitude	Operating: -500 to 15,000 ft. Non-operating: -500 to 40,000 ft.
Relative humidity	5% to 95%, non-condensing

Notes:
1. Specification are for convection rating at factory settings at 115 Vac input, 25°C ambient unless otherwise stated.
2. For DC input an external DC safety rated fuse must be used.

ORDERING INFORMATION

Model Number[2,3]	Output Voltage[1]		Minimum Load	Maximum Load with Convection Cooling	Maximum Load with 200LFM Forced Air	Peak Load	Total Regulation[2]	Ripple & Noise[3]	OVP Threshold
GB130QA	V1	5 V	0 A	12 A	16 A	16 A	± 3%	1.0% pk-pk	7.5V max.
	V2	12 V	0 A	3 A	4 A	5 A	± 3%	1.0% pk-pk	120% to 140%
	V3	-12 V	0 A	1 A	1.2 A	1.2 A	± 3%	1.0% pk-pk	120% to 140%
	V4	12 V	0 A	1 A	1.2 A	1.2 A	± 3%	1.0% pk-pk	120% to 140%
GB130QC[4]	V1	5 V	0 A	12 A	16 A	16 A	± 3%	1.0% pk-pk	7.5V max.
	V2	12 V	0 A	3 A	4 A	5 A	± 3%	1.0% pk-pk	120% to 140%
	V3	-15 V	0 A	1 A	1.2 A	1.2 A	± 3%	1.0% pk-pk	120% to 140%
	V4	15 V	0 A	1 A	1.2 A	1.2 A	± 3%	1.0% pk-pk	120% to 140%
GB130QD[4]	V1	5 V	0 A	12 A	16 A	16 A	± 3%	1.0% pk-pk	7.5V max.
	V2	24 V	0 A	2 A	3 A	5 A	± 3%	1.0% pk-pk	120% to 140%
	V3	-12 V	0 A	1.2 A	1 A	1.2 A	± 3%	1.0% pk-pk	120% to 140%
	V4	12 V	0 A	1.2 A	1 A	1.2 A	± 3%	1.0% pk-pk	120% to 140%
GB130QE[4]	V1	5 V	0 A	12 A	16 A	16 A	± 3%	1.0% pk-pk	7.5V max.
	V2	24 V	0 A	2 A	3 A	5 A	± 3%	1.0% pk-pk	120% to 140%
	V3	-15 V	0 A	1 A	1.2 A	1.2 A	± 3%	1.0% pk-pk	120% to 140%
	V4	15 V	0 A	1 A	1.2 A	1.2 A	± 3%	1.0% pk-pk	120% to 140%
GB130QP	V1	5 V	0 A	10 A	16 A	16 A	± 3%	1.0% pk-pk	7.5V max.
	V2	24 V	0 A	4 A	5 A	5 A	+ 10% / -5%	1.7% pk-pk	120% to 140%
	V3	-12 V	0 A	1 A	1.2 A	1.2 A	± 3%	1.0% pk-pk	120% to 140%
	V4	12 V	0 A	2 A	2 A	2 A	± 3%	1.0% pk-pk	120% to 140%

Notes:
1. 5 V output is adjustable with +/-10% range. Other output voltages available, consult factory.
2. Total regulation is defined as the maximum deviation from the nominal voltage for all steady state conditions of initial voltage setting, input line voltage,and output load.
3. Measured with noise probe directly across output terminals, and load terminated with 0.1 µF ceramic and 47 µF low ESR capacitors. Ripple & Noise of V2 at no load is 2% maximum. All specifications are typical at 230 Vac, full load, at 25°C ambient unless noted.
4. Contact factory for availability of specific models.
5. For models with optional cover/chassis, add "-C" suffix to above model numbers. Output power derates to 104 W with airflow, 75 W convection cooled.

PIN ASSIGNMENTS

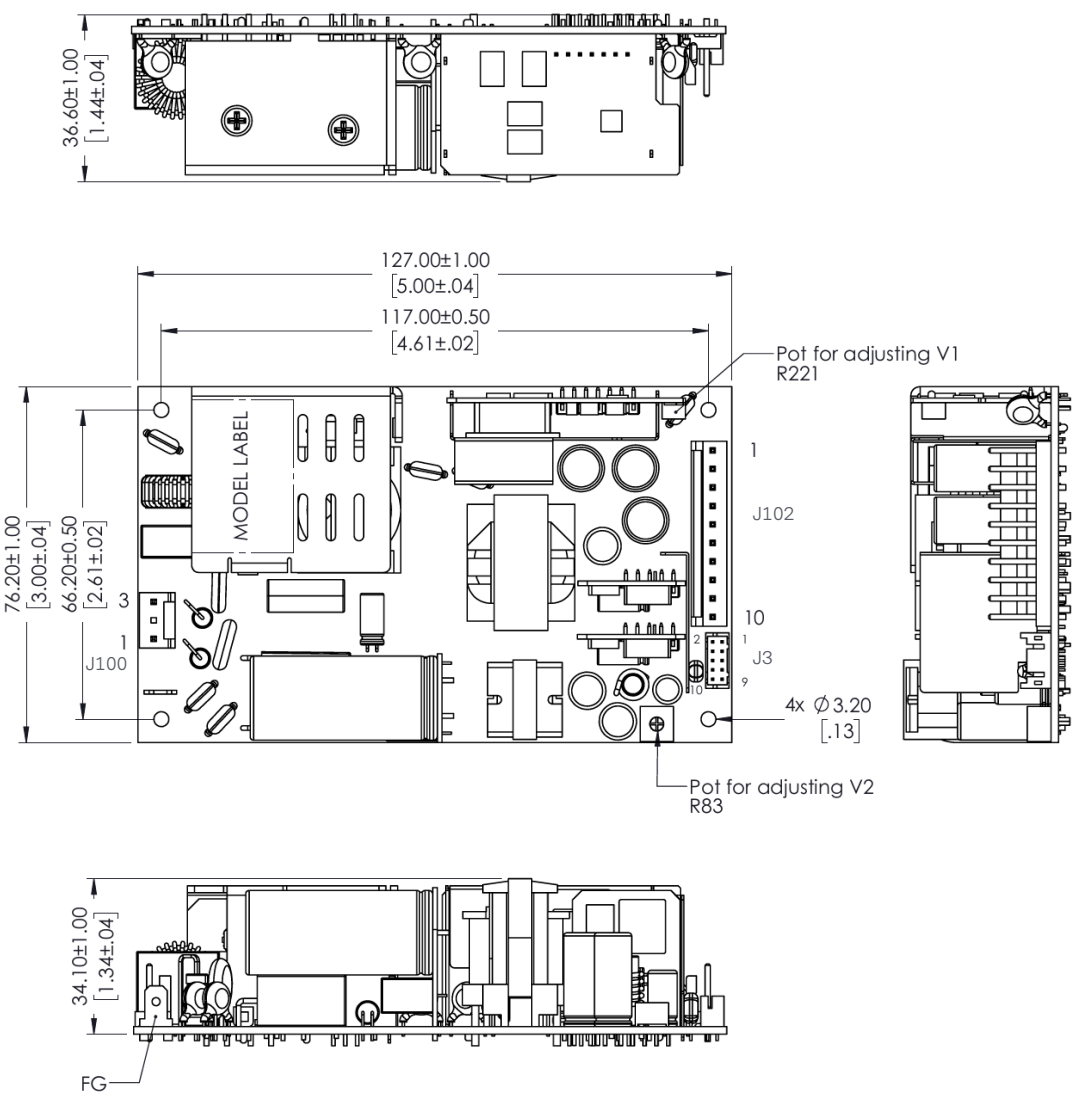
Connector	GB130Q	
J100 (Input connector)	PIN 1	AC Line
	PIN 2	SPARE
	PIN 3	AC Neutral
J102 (DC output connector)	PIN 1	+V1
	PIN 2	+V1
	PIN 3	+V1
	PIN 4	RTN
	PIN 5	RTN
	PIN 6	RTN
	PIN 7	RTN
	PIN 8	V2
	PIN 9	-V3
	PIN 10	V4
J3 (Signal connector)	PIN 1	AC Power Fail
	PIN 2	DC_OK
	PIN 3	Inhibit
	PIN 4	N/C
	PIN 5	5 V Standby
	PIN 6	5 V Standby
	PIN 7	5 V Standby
	PIN 8	Common
	PIN 9	Common
	PIN 10	Common

CONNECTORS

	Connector	Mating Connector
J100 (Input connector)	TE/AMP P/N 640445-3	TE/AMP P/N 640250-3. Terminals: 3-640252-1
J102 (DC output connector)	TE/AMP P/N 1-640445-0	TE/AMP P/N 1-640250-0. Terminals: 3-640252-1
J3 (Signal connector)		LANDWIN P/N 2050S10 00. Terminals: 2053T021 R
J101 (FG)		MOLEX 01-90020001

MECHANICAL DRAWING

Open Frame Models:

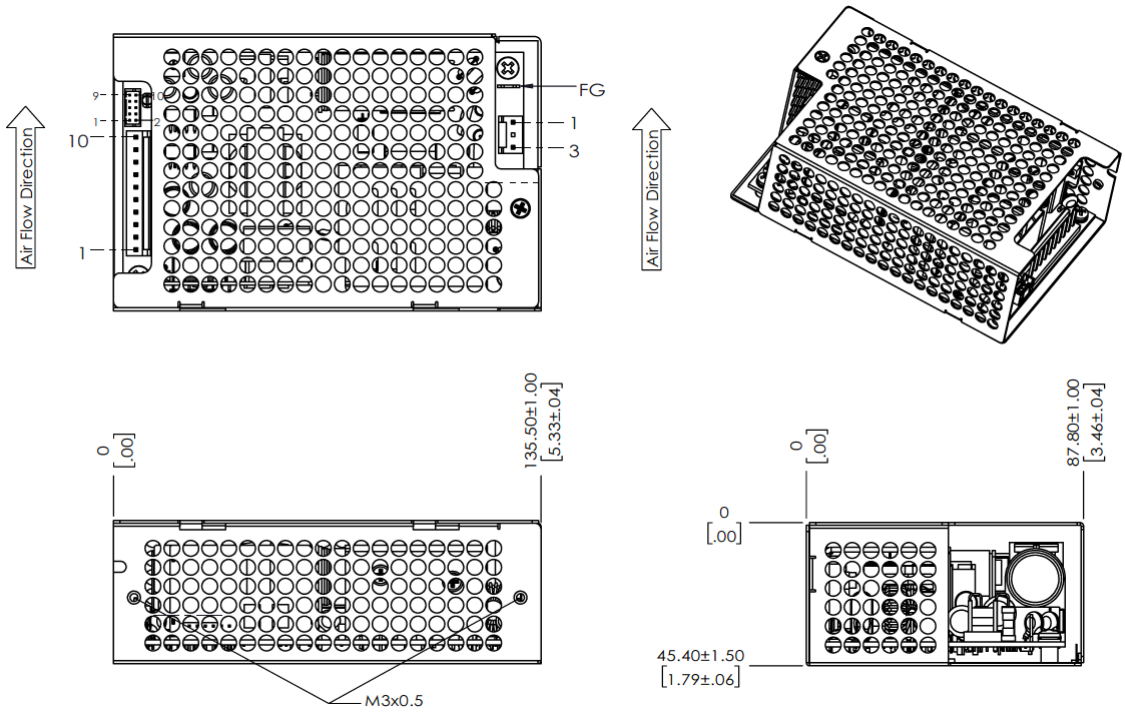


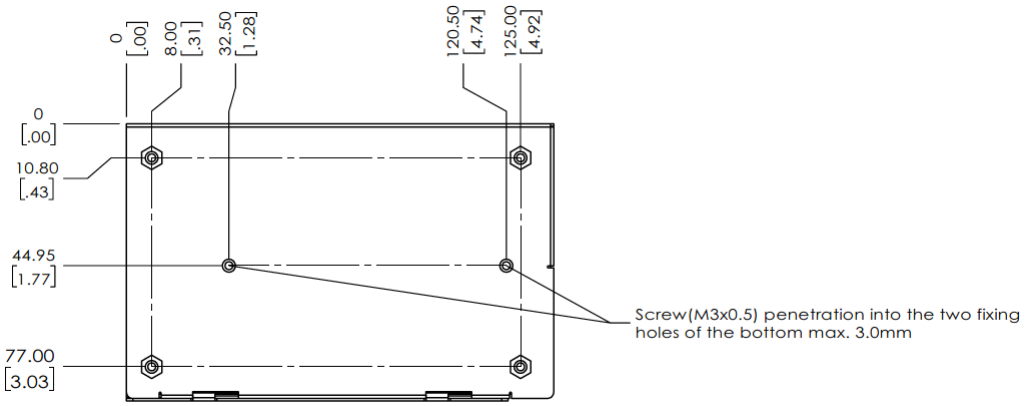
Notes:

1. All dimensions in mm [inch].
2. Mounting holes should be grounded for EMI purpose.
3. This power supply requires mounting on metal standoffs 0.20” (5 mm) in height.
4. Dimension: W: 3.0” x L: 5.0” x H: 1.44”
5. Weight: 300 g

MECHANICAL DRAWING

Covered Models:





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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For international contact information,
visit advancedenergy.com.

powersales@aei.com (Sales Support)
productsupport.ep@aei.com (Technical Support)
+1 888 412 7832

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