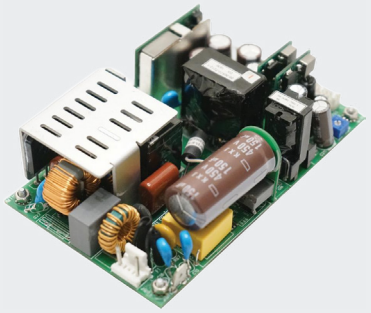
# SL POWER
# GB130Q SERIES

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

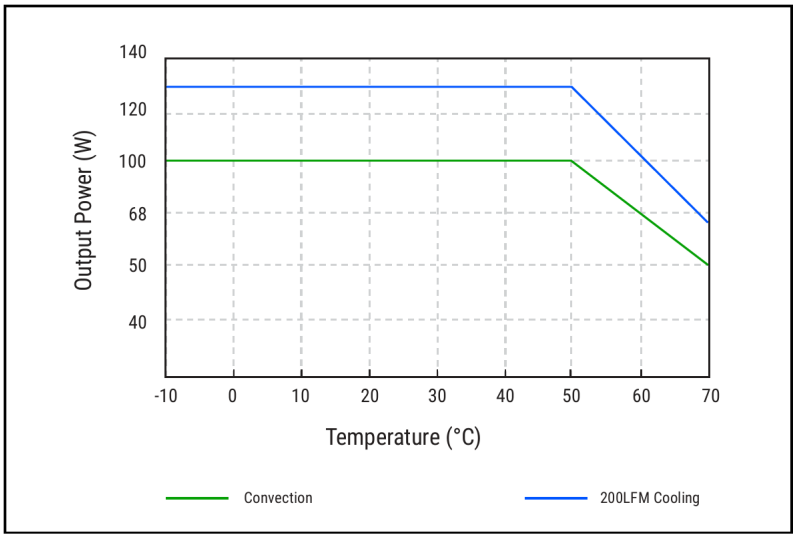
- CSA/IEC/EN/UL62368-1
- CSA/IEC/EN/UL60601-1, 3rd Ed. + Am1

## 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<br>Earth<br>Patient<br>Touch | <br><290 µA @ 264 VAC, 60 Hz, NC; <420 µA, SFC<br><100 µA @ 264 VAC, 60 Hz, NC; <500 µA, SFC<br><90 µA @ 264 VAC, 60 Hz, NC; <170 µA, SFC |
| Efficiency | 87% typical @ 230 VAC |
| Isolation voltage | <br>Input/Ground: 1800 VAC (Basic)<br>Input/Output: 4000 VAC (Reinforced)<br>Output/Ground: 500 VAC (Operational) |
| **Output** | |
| Maximum power | Open frame: 130 W continuous with 200 LFM airflow, 100 W convection cooled<br>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<br>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]<br>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;<br>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<br>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<br>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 A | 1.2 A | 1.2 A | ± 3% | 1.0% pk-pk | 120% to 140% |
| | V4 | 12 V | 0 A | 1 A | 12 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

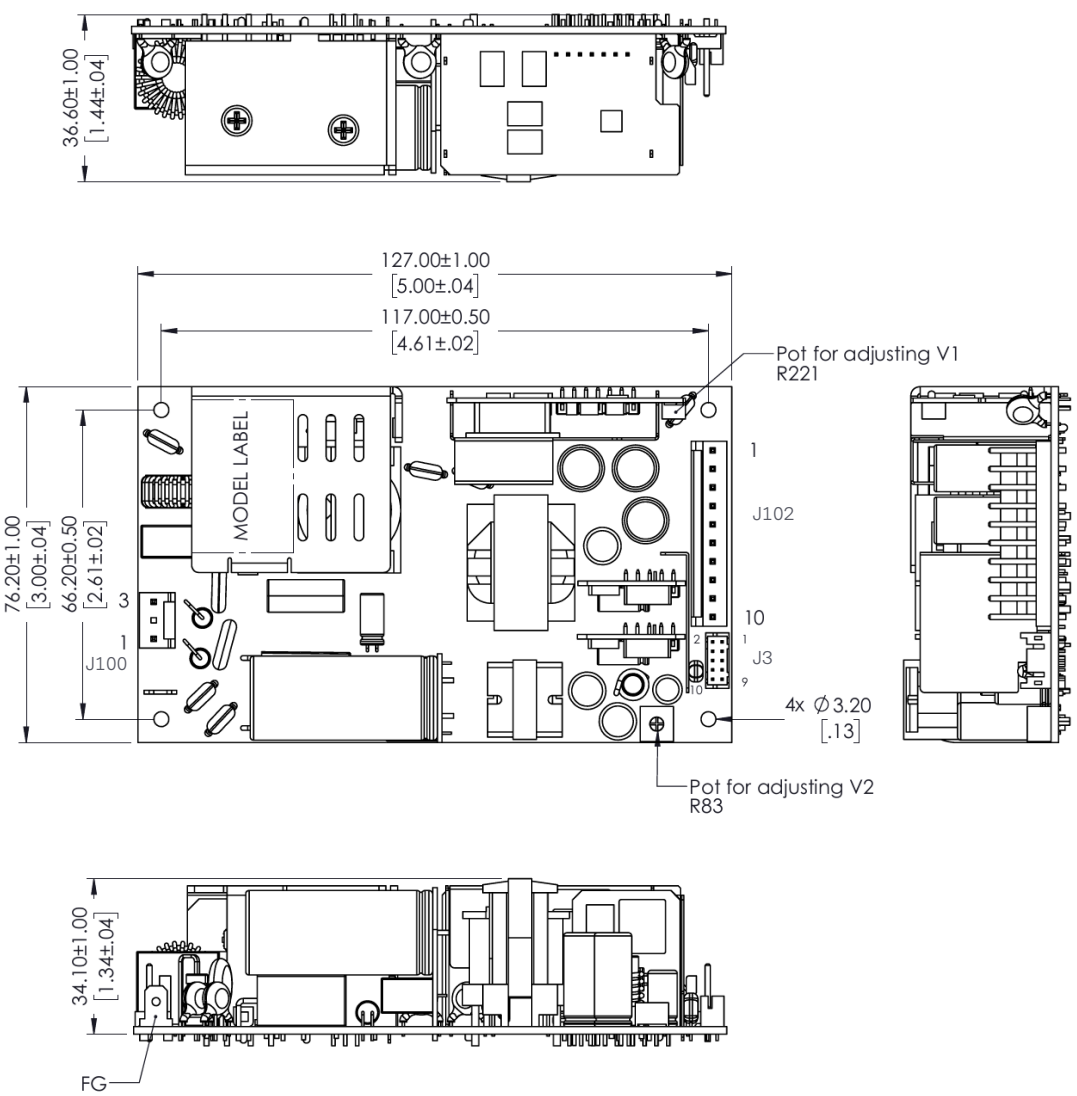
| Connector | GB130Q | |
|---|---|---|
| J100 (Input connector) | PIN 1 | AC Line |
| | PIN 2 | SPARE |
| | PIN 3 | AC Neutral |
| J102 (DC output connector) | PIN 1 | +V1 |
| | PIN 2 | +V1 |
| | PIN 3 | +V1 |
| | PIN 4 | RTN |
| | PIN 5 | RTN |
| | PIN 6 | RTN |
| | PIN 7 | RTN |
| | PIN 8 | V2 |
| | 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:

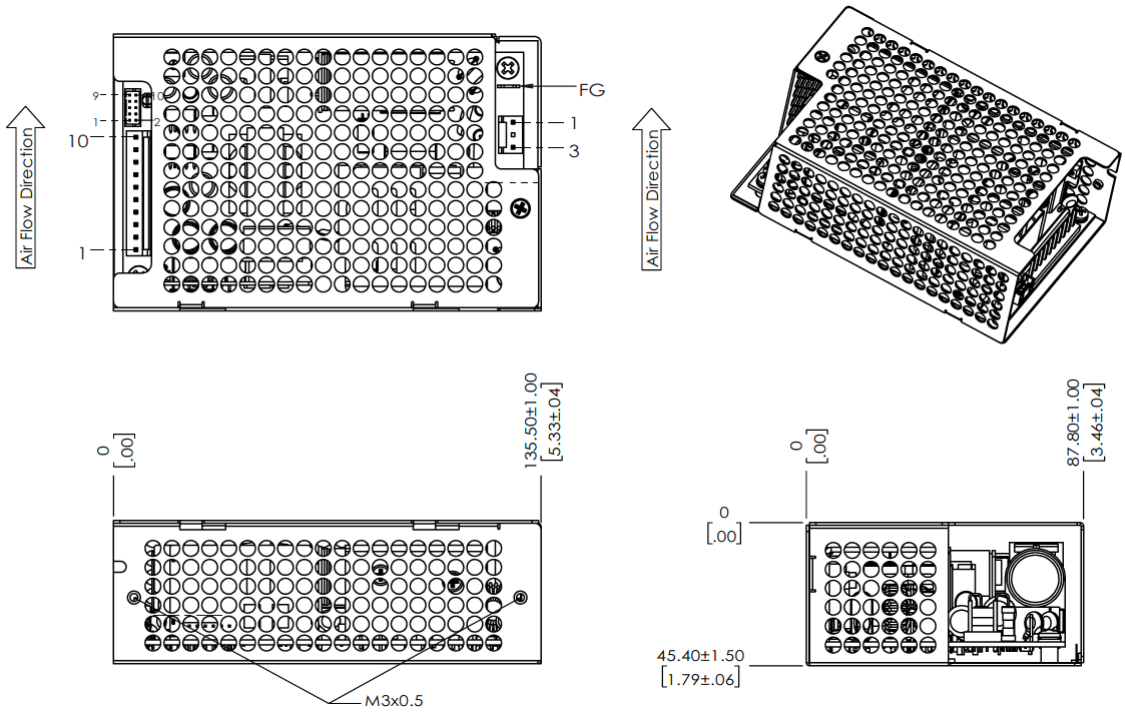


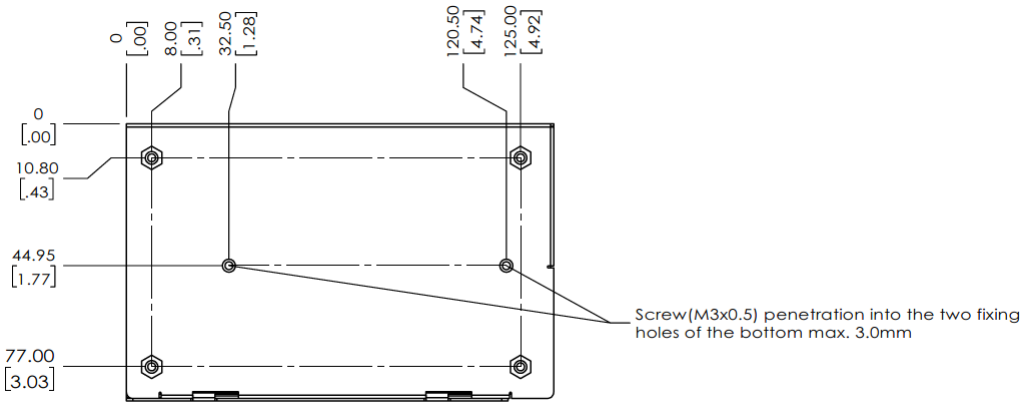

Notes:

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.

PRECISION | POWER | PERFORMANCE | TRUST

For international contact information,
visit advancedenergy.com.

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



ENG-GB130Q-01.10.24

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Advanced Energy:

GB130QA GB130QC GB130QD GB130QE GB130QP GB130QA-C GB130QC-C GB130QD-C GB130QE-C GB130QP-C