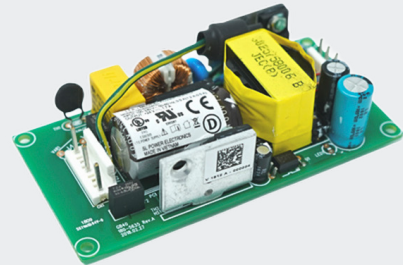


# SL POWER GB20 SERIES

20 Watts Single Output  
Medical & Industrial Grade



Medical



Industrial

Advanced Energy's SL Power GB20 series of open-frame AC-DC power supplies comprises seven single output 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 the output. GB20 series power supplies provide 20 Watts of output power with free air convection cooling.

## AT A GLANCE

### Total Power

20 Watts

### Input Voltage

90 to 264 VAC

### # of Outputs

Single

### SPECIAL FEATURES

- 1.6" x 3.38" x 1.0"
- 20 W Open Frame and PCB-mount Power Supply
- Universal Input 90 to 264 VAC
- <0.1 W No Load Input Power
- Meets Class B Radiated & Conducted EMI, with margin
- Meets Heavy Industrial and IEC60601-1-2 4<sup>th</sup> Edition Levels of EMC
- >7 Year E-cap Life
- >1,000,000 Hours MTBF
- 3 Year Warranty

### SAFETY

- CSA/IEC/EN/UL62368-1
- CSA/IEC/EN/UL60601-1, 3.2 Ed.



Note: Consult Factory for compliance information.

## ELECTRICAL SPECIFICATIONS

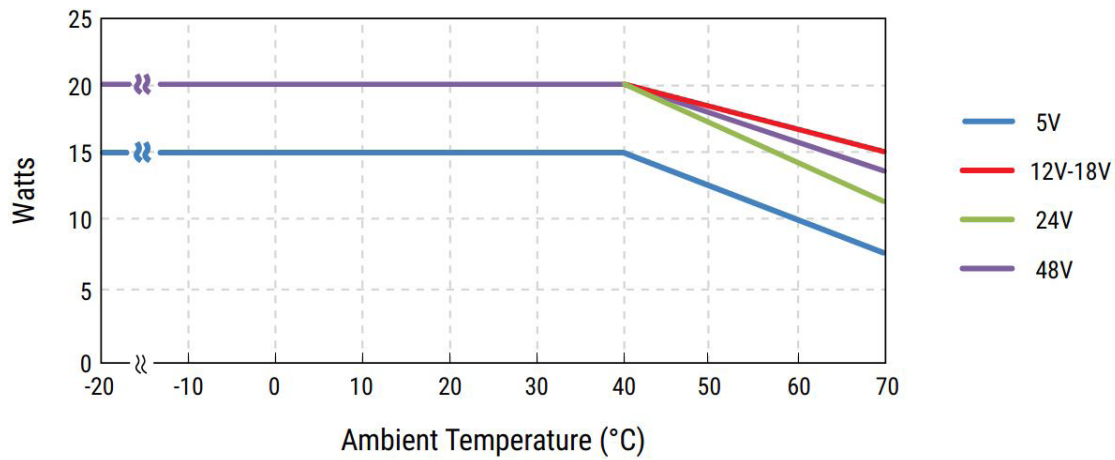
| Input                      |  |
|----------------------------|--|
| Input Range                | 90 to 264 VAC, 47 to 63 Hz, 1 $\emptyset$  |
| Input Current              | 0.5 A @ 115 VAC, 0.2 A @ 230 VAC   |
| Inrush Current             | 40 A max., cold start @ 264 VAC input  |
| Input Fuses                | 3.15 A, 250 VAC fuses provided in both line & neutral  |
| Leakage Current            | Input to Earth <500 $\mu$ A @ 264 VAC, 60 Hz, NC; <1 mA @ 264 VAC, 60 Hz, SFC<br>Output to Earth <100 $\mu$ A @ 264 VAC, 60 Hz, NC; <500 $\mu$ A @ 264 VAC, 60 Hz, SFC               |
| Efficiency                 | 88% typical  |
| Isolation Voltage          | Input/Ground: 1500 VAC (1 MOPP)<br>Input/Output: 4000 VAC (2 MOPP)<br>Output/Ground: 1500 VAC (1 MOPP)   |
| Power Factor               | 0.9, min., 230 VAC, 80 to 100% load vector, 25°C ambient   |
| Output                     |  |
| Maximum Power              | 15 to 20 W continuous. See "Ordering Information" for specific voltage model ratings   |
| Hold-up Time               | 20 ms @ 100 VAC, full load   |
| Output Voltage             | See "Ordering Information"   |
| Total Load Regulation      | See "Ordering Information"   |
| Turn On Time               | <700 ms  |
| Transient Response         | 500 $\mu$ s typ. for return to within 0.5% of nominal output voltage, 50% load step from 5% to 100% of rated load, $\Delta i/\Delta t$ <0.2 A/ $\mu$ s. Max voltage deviation = 3.5% |
| Reliability                |  |
| MTBF                       | >1,000,000 hours, full load, 110 VAC & 220 VAC input, 25°C ambient, per telcordia 332 issue 6, stress method   |
| E-Cap Life                 | >7 years life based on calculations at 115 VAC/60Hz & 230 VAC/50Hz, ambient 25°C at 24 hrs/day, 365 days/year, 6 power up cycles/day   |
| Protection                 |  |
| Input Fuse                 | 3.15 A / 250 V internal fuse in both line & neutral  |
| Overtemperature Protection | Will shutdown upon an overtemperature condition, auto-recovery   |
| Short Circuit Protection   | Hiccup mode  |
| Overload Protection        | 130% to 160% of rated output current value. Hiccup mode.   |
| Overvoltage Protection     | 120% to 150% of nominal output voltage. Hiccup Mode.   |

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

## ENVIRONMENTAL SPECIFICATIONS

|                       |  |
|-----------------------|--|
| Vibration             | Operating: 0.003 g/Hz, 1.5 grms overall, 3 axes, 10 min/axis, 1Hz to 500Hz<br>Non-operating: random waveform, 3 mins/axis, 3 axes and sine waveform, vib. frequency/acceleration: 10Hz to 500Hz/1g, sweep rate of 1 octave/minutes, vibration time of 10 sweeps/axes, 3 axes |
| Shock                 | Operating: Half-sine, 20 gpk, 10 ms, 3 axes, 6 shocks total<br>Non-operating: Half-sine waveform, impact acceleration of 50g, pulse duration of 6ms, number of shocks: 3 for each of the 3 axis  |
| Operating Temperature | -25°C to +70°C, see derating curve for operation above 40°C  |
| Storage Temperature   | -40°C to +85°C   |
| Cooling               | Convection   |
| Relative Humidity     | 5% to 90%, non-condensing  |

DERATING CURVE



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 <sup>3</sup>      | EN55022/EN61000-4-3, 10V/m, 80MHz to 2.7GHz, 80% AM at 1 kHz IEC60601-1-2 4th Edition, Table 4   |
| Electrical Fast Transients (EFT)/Bursts                | EN55024/IEC61000-4-4, Level 4, ±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 4, ±2kV DM, ±4kV CM, Criteria A Surpasses IEC60601-1-2 4th Edition requirements  |
| Conducted RF Immunity                                  | EN55022/IEC61000-4-6, 3.6V/m – Level 4, (0.15MHz 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   |
| Power Frequency Magnetic Field Immunity                | EN55024/IEC1000-4-8, Level 4: 30A/m, 50Hz/60Hz, IEC60601-1-2 4th Edition, Table 4  |
| Voltage Dip Immunity                                   | EN55024/IECEN61000-4-11:<br>--100% dip for 10ms, at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°, 100% dip for 20ms, 0°, Criteria A (Criteria B for “P” option)<br>--100% dip for 500ms (250/300 cycles), Criteria B<br>--60% dip for 100ms, Criteria B<br>--30% dip for 500ms, Criteria A<br>IEC60601-1-2 4 <sup>th</sup> Edition, Table 5 |
| Line Harmonic Emissions                                | EN55011/EN61000-3-2, class A   |
| Flicker Test   | EN61000-3-3  |

Notes:

1. The power supply is considered a component which will be installed into a final equipment.
2. All specifications are typical at nominal input, full load, at 25°C ambient unless noted. Consult factory for information regarding testing or for usage under special environments.

## ORDERING INFORMATION

| Model Number <sup>2</sup> | Output Voltage | Maximum Load | Maximum Power | Ripple & Noise <sup>1</sup> | Line Regulation | Load Regulation | Input Class/<br>Termination   | Output Termination                                      |
|---------------------------|----------------|--------------|---------------|-----------------------------|-----------------|-----------------|---|---|
| GB20S05K01                | 5.0 V          | 3.0 A        | 15 W          | 75 mV pk-pk                 | ± 1%            | ± 5%            | Class I (Grounded) input, 3-pin AMP/Molex type connector. Change "K" to "C" for Class II input              | 4-pin AMP/Molex type connector for "K" and "C" versions |
| GB20S07K01                | 7.5 V          | 2.0 A        | 15 W          | 75 mV pk-pk                 | ± 1%            | ± 5%            |   |   |
| GB20S09K01                | 9.0 V          | 2.0 A        | 18 W          | 90 mV pk-pk                 | ± 1%            | ± 5%            |   |   |
| GB20S12K01                | 12.0 V         | 1.5 A        | 18 W          | 120 mV pk-pk                | ± 1%            | ± 5%            | Change "K" to "P" for PCB mount pins, class I input<br>Change "K" to "V" for PCB mount pins, class II input | PCB mount pins for "P" and "V" versions                 |
| GB20S15K01                | 15.0 V         | 1.2 A        | 18 W          | 120 mV pk-pk                | ± 1%            | ± 5%            |   |   |
| GB20S24K01                | 24.0 V         | 0.8 A        | 20 W          | 240 mV pk-pk                | ± 1%            | ± 5%            |   |   |
| GB20S48K01                | 48.0 V         | 0.4 A        | 20 W          | 480 mV pk-pk                | ± 1%            | ± 5%            |   |   |

## Notes:

- Ripple & noise are measured at 20 MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1  $\mu$ F & 47  $\mu$ F parallel capacitor.
- Other output voltages available, consult factory.
- All specifications are typical at 230 VAC, full load, at 25°C ambient unless noted.

## PIN ASSIGNMENTS

| Connector                                | GB130Q |                             |
|--|--------|-----------------------------|
| Input Connector ("K"/"C" open frame)     | PIN 1  | AC Line                     |
|  | PIN 2  | Spare                       |
|  | PIN 3  | Ground (N/A on "C" version) |
|  | PIN 4  | Spare                       |
|  | PIN 5  | AC Neutral                  |
| Input Connector ("P"/"V" PCB mount)      | PIN 1  | AC Line                     |
|  | PIN 2  | AC Neutral                  |
|  | PG     | Ground (N/A on "V" version) |
| DC Output Connector ("K"/"C" open frame) | PIN 1  | +Vout                       |
|  | PIN 2  | +Vout                       |
|  | PIN 3  | -Vout                       |
|  | PIN 4  | -Vout                       |
| DC Output Connector ("P"/"V" PCB mount)  | PIN 1  | +Vout                       |
|  | PIN 2  | +Vout                       |
|  | PIN 3  | -Vout                       |
|  | PIN 4  | -Vout                       |

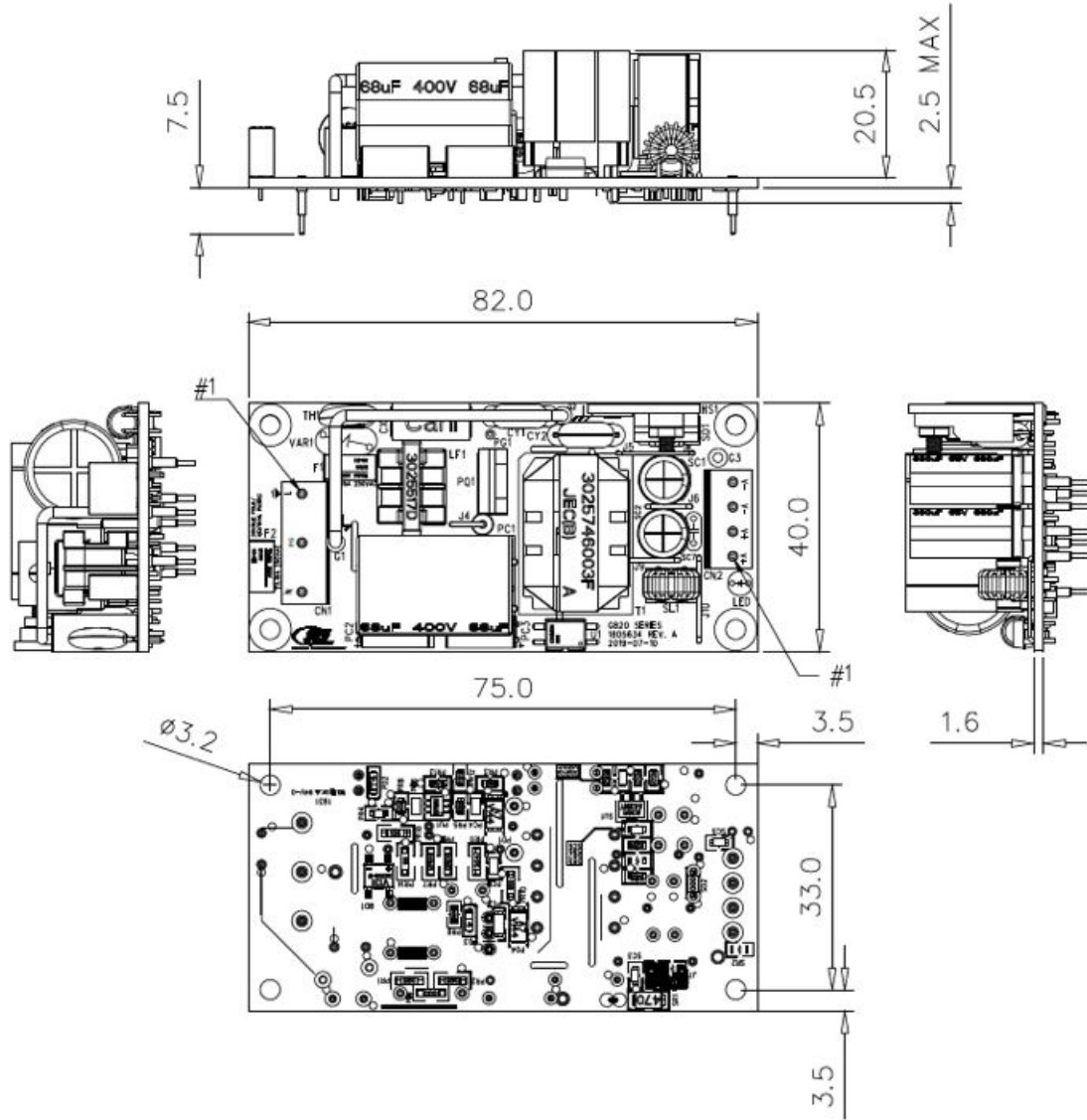
## CONNECTORS

| Connector                                | Mating Connector            |  |
|--|-----------------------------|--|
| Input Connector ("K"/"C" open frame)     | TE/AMP P/N 640445-5         | TE/AMP P/N 640250-5. Terminals: 770476-1 |
| Input Connector ("P"/"V" open frame)     | Pencom PI3207 or equivalent | -  |
| DC Output Connector ("K"/"C" open frame) | TE/AMP P/N 640445-4         | TE/AMP P/N 640250-4. Terminals: 770476-1 |
| DC Output Connector ("P"/"V" open frame) | Pencom PI3207 or equivalent | -  |



MECHANICAL DRAWING

“P” and “V” versions



Notes:

1. All dimensions in mm
2. Dimension: 1.60" x 3.38" x 1.0" (41mm x 86mm x 25mm)
3. Weight: 120 g



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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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