



Medical



Industrial

FEATURES AND BENEFITS

40W Open Frame and PCB-mount Power Supply

2.0" x 4.0" x 1.0" Package

Universal Input 90-264VAC

<0.1W No Load Input Power

Approved to CSA/EN/IEC/UL62368-1

Meets Heavy Industrial and IEC60601-1-2 4th Edition Levels of EMC

Approved to CSA/EN/IEC/UL60601-1, 3rd Edition

E-cap Life of >8 Years

>1,000,000 Hours MTBF

3 Year Warranty

Meets Class B Radiated & Conducted EMI, with Margin

Note: *Consult Factory for compliance information.



MODEL SELECTION

| Model Number ² | Volts | Rated Current | Output Power | Ripple & Noise ¹ | Line Regulation | Load Regulation | Input Class/Termination | Output Termination |
|---------------------------|-------|---------------|--------------|-----------------------------|-----------------|-----------------|---|---|
| GB40S05K01 | 5.0V | 5.0A | 25W | 75mV pk-pk | ±1% | ±5% | Class I (Grounded) input, 5-pin AMP/Molex type connector (2 pins removed) Change "K" to "C" for class II input | 4-pin AMP/Molex type connector for "K" and "C" versions |
| GB40S09K01 | 9.0V | 4.0A | 36W | 90mV pk-pk | ±1% | ±5% | | |
| GB40S12K01 | 12.0V | 3.4A | 40W | 120mV pk-pk | ±1% | ±5% | | |
| GB40S18K01 | 18.0V | 2.22A | 40W | 120mV pk-pk | ±1% | ±5% | Change "K" to "P" for PCB mount pins, class I input Change "K" to "V" for PCB mount pins", class II input | PCB mount pins for "P" and "V" versions |
| GB40S24K01 | 24.0V | 1.7A | 40W | 240mV pk-pk | ±1% | ±5% | | |
| GB40S48K01 | 48.0V | 0.83A | 40W | 480mV pk-pk | ±1% | ±5% | | |

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

2. Other output voltages available, consult factory.

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

INPUT

| | |
|--|--|
| Input Voltage and Frequency | 100-240VAC, ±10%, 47-63Hz, 1Ø |
| Input Current | 115VAC: 1.2A, 230VAC: 0.6A |
| Inrush Current | 264VAC, cold start: will not exceed 40A peak |
| Input Fuses | 3.15A, 250VAC fuse in both line and neutral |
| Earth Leakage Current (Input to Ground) | <500µA@264VAC, 60Hz, NC <1mA@264VAC, 60Hz, SFC |
| Earth Leakage Current (Output to Ground) | <100µA@264VAC, 60Hz, NC <500µA@264VAC, 60Hz, SFC |
| Efficiency | >88%, typical |
| Power Factor | 0.9, min., 230VAC, 80-100% load vector, 25°C ambient |

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

OUTPUT

| | |
|--------------------|--|
| Turn On Time | <700ms |
| Hold-Up Time | 20ms/100VAC at full load |
| Output Power | 25W-40W continuous – See models chart for specific voltage model ratings |
| Output Voltage | See models chart |
| 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, Δi/Δt<0.2A/µs Max voltage deviation is +/-3.5% |
| Regulation | See models chart |

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



PROTECTION

| | |
|----------------------------|--|
| Overtemperature Protection | Will shutdown upon an overtemperature condition, Auto-recovery |
| Overload Protection | 130% to 160% of rated output current value, Hiccup mode |
| Short Circuit Protection | Hiccup mode |
| Overvoltage Protection | 120% to 150% of nominal output voltage, Hiccup Mode |

RELIABILITY

| | |
|------------|---|
| MTBF | >1,000,000 hours, full load, 110 & 220VAC input, 25°C amb., per telcordia 332 issue 6, stress method |
| E-cap Life | >8 year life based on calculations at 115VAC/60Hz & 230VAC/50Hz, ambient 25°C at 24 hrs per day, 365 days/year, 6 power up cycles per day |

ISOLATION SPECIFICATIONS

| | | |
|----------------------|------------------------------|--------------------|
| Isolation | Input-Output | : 4000VAC (2 MOPP) |
| | Input-Ground | : 1500VAC (1 MOPP) |
| | Output-Ground | : 1500VAC (1 MOPP) |
| Isolation Resistance | I/P-O/P, I/P-FG, O/P-FG: TBD | |

ENVIRONMENT

| | |
|-----------------------|---|
| Operating Temperature | -25 ~ +70°C, see derating curve for operation above 60°C |
| Storage Temperature | -40°C ~ +85°C |
| Cooling | Convection |
| Relative Humidity | 5% to 90%, Non-condensing |
| Vibration | Operating: 0.003g/Hz, 1.5grms overall, 3 axes, 10 min/axis, 1-500Hz Non-Oper.: random waveform, 3 minutes per axis, 3 axes and sine waveform, vib. frequency/acceleration: 10-500Hz/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 three axis |
| Dimensions | 48.3 x 101.6 x 25mm 2.0 x 4.0 x 0.97 inch (Height is from top of tallest component to max. component pin protrusion on the bottom) |
| Weight | 110g |

Note: Same dimensions for PCB & Pin Variants.

SAFETY

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|-----------------------|---|
| ITE/Industrial Safety | EN/IEC/UL62368-1 |
| Medical Safety | EN/IEC/UL60601-1, 3 rd edition |

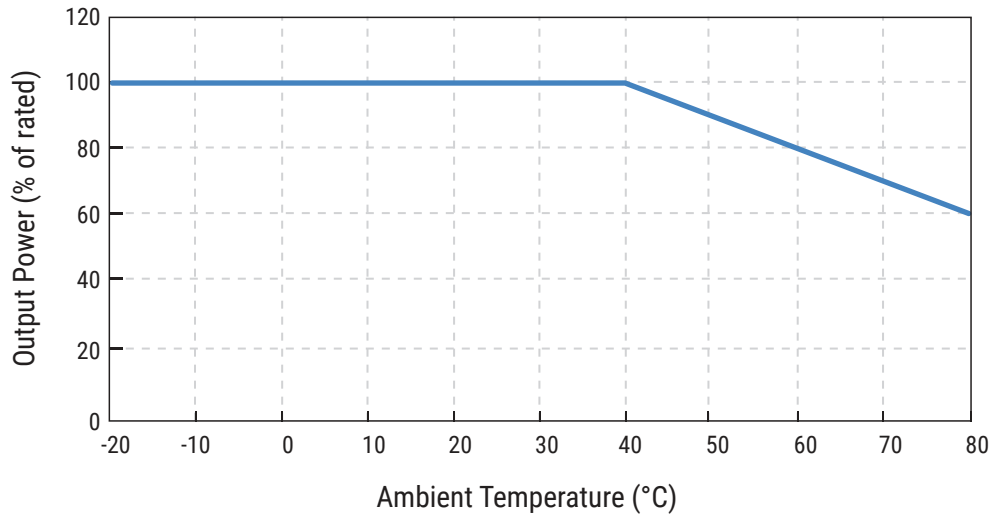
EMI/EMC COMPLIANCE

| | |
|---|---|
| Conducted Emissions | EN55032, EN55011/CISPR11 Class B, FCC Part 15.107, Class B: 6db margin type, at 115 and 230VAC |
| Radiated Emissions | EN55032, EN55011/CISPR11 Class B, FCC Part 15.109, Class B: 3db margin type, at 115 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 Susceptibility | EN55022/EN61000-4-3, 10V/m, 80MHz-2.7GHz, 80% AM at 1kHz IEC60601-1-2, 4 th 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, 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 Disturbances Induced by RF Fields | EN55022/IEC61000-4-6, 3.6V/m – Level 4, (0.15 to 80Mhz; and 12V/m) in ISM and amateur radio bands between 0.15Mhz and 80Mhz, 80% AM at 1KHz IEC60601-1-2, 4 th edition, Table 5 |
| Rated Power Frequency Magnetic Fields | EN55024/IEC1000-4-8, Level 4: 30 A/m, 50/60Hz IEC60601-1-2, 4 th edition, Table 4 |
| Voltage Interruptions, Dips, Sags & Surges | EN55024/IECEN61000-4-11: --100% dip for 10ms, at 0, 45, 90, 135, 180, 225, 270 and 315 degrees, 100% dip for 20ms, 0 deg., Criteria A --100% dip for 5000 ms (250/300 cycles), Criteria B --60% dip for 100ms, Criteria B --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 |

- 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.
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 under special environments.

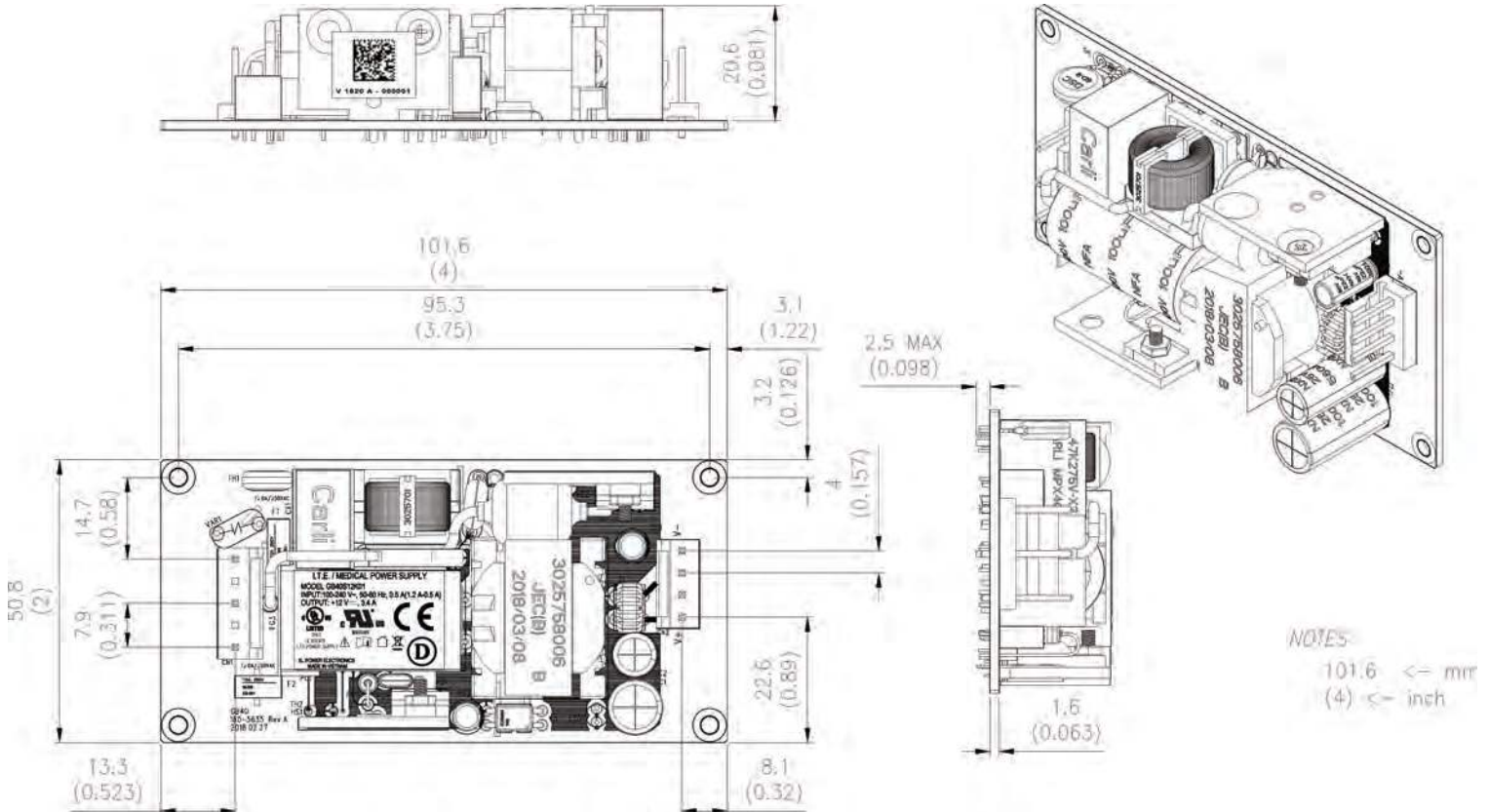


DERATING CURVE



MECHANICAL DRAWING

Mounting hole diameter: 3.2mm (0.125") 4 places





CONNECTOR AND TERMINATION INFORMATION

| Input Connections | | | Output Connections | |
|-------------------------|--|--|--|--|
| Version | Connector Pinout | Connector Type/Part No. | Connector Pinout | Connector Type/Part No. |
| Open Frame: "K", "C" | Pin 1: AC LINE Pin 2: N/C Pin 3: GROUND Pin 4: N/C Pin 5: AC NEUTRAL | Connector: TE/AMP P/N 640445-5 (2 pins removed) Mating Connector: TE/AMP P/N 640250-5, Pins= 770476-1 | Pin 1: +Vout Pin 2: +Vout Pin 3: -Vout Pin 4: -Vout | Connector: TE/AMP P/N 640445-4 Mating Connector: TE/AMP P/N 640250-4, Pins= 770476-1 |
| PCB Mount: "P", "V" | Pin 1: AC Line Pin 2: GND Pin 3: AC Neutral | Pencom PI3207 or equivalent | Pin 4: +Vout Pin 5: +Vout Pin 6: -Vout Pin 7: -Vout | Pencom PI3207 or equivalent |