

Picture for reference only

## Features and Benefits

- 40W Open Frame and PCB-mount Power Supply
- 1.9" x 4.0" x 1.0" Package
- Universal Input 90-264Vac
- <0.1W no load input power
- Approved to CSA/EN/IEC/UL66368-1
- Approved to CSA/EN/IEC/UL60601-1, 3rd Edition
- Meets Class B Radiated & Conducted EMI with margin
- Meets Heavy Industrial and IEC60601-1-2 4<sup>th</sup> Edition Levels of EMC
- E-Cap life of >8 years
- >1,000,000 hours MTBF
- 3 year warranty



## Description

The GB40 Series are designed for superior performance to minimize the effort required to integrate the power supplies into medical, industrial, and test & measurement applications. The GB40 Series AC-DC power supplies are approved to medical and industrial safety standards: EN/IEC/UL60601-1, 3rd edition (with 2 MOPP isolation), and EN/IEC/UL62368-1. The GB40 Series models are designed to meet the EMC requirements per UL/EN/IEC60601-1-2, 4th edition (Heavy Industrial levels of EN61000-4-x standards)\*. The GB40 Series models will operate at universal input range of 90 to 264Vac over the wide temperature range of -20°C to +70°C, delivering full rated output power up to +40°C and applicable output power derating up to 70°C. These models are available in open frame and PCB mount versions for flexibility.

\*Consult Factory for Table 9 compliance information.

## Model Selection

Model Number <sup>2</sup>	Output Volts	Rated Current	Output Power	Ripple & Noise <sup>1</sup>	Line Regulation	Load Regulation	Input Class/Termination	Output Termination
GB40S05K01	5.0V	5.0A	25W	75mV pk-pk	±1%	±5%	Class I (Grounded) input, 3-pin AMP/Molex type connector.	4-pin AMP/Molex type connector for "K" and "C" versions.
GB40S09K01	9.0V	4.0A	36W	90mV pk-pk				
GB40S12K01	12.0V	3.4A	40W	120mV pk-pk				
GB40S18K01	18.0V	2.22A	40W	120mV pk-pk			Change "K" to "P" for PCB mount pins, class I input	PCB mount pins for "P" and "V" versions
GB40S24K01	24.0V	1.7A	40W	240mV pk-pk				
GB40S48K01	48.0V	0.83A	40W	480mV pk-pk				

Notes: 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 Specifications

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

Notes: 1. All specifications are typical at 230Vac input, full load, at 25°C ambient unless noted.

## Output Specifications

<b>Output Voltage</b>	See Model Selection Table on pg 1.	<b>Hold-up Time</b>	20ms / 100VAC at full load
<b>Output Power</b>	25W-40W continuous – See model selection table for specific voltage model ratings.	<b>Turn On Time</b>	<700ms
<b>Transient response</b>	500 $\mu$ s resp.time for return to w/in 0.5% of final value for any 50% load step from 5% to 100% of rated load, $\Delta i/\Delta t < 0.2A/\mu s$ . Max. voltage deviation: +/-3.5%.	<b>Line/Load Regulation</b>	See Model Selection Table on pg 1.

Notes: 1. All specifications are typical at 230Vac input, full load, at 25°C ambient unless noted.

## Environmental Specifications

<b>Operating Temperature</b>	-25 ~ +70°C, see derating curve for operation above 40°C	<b>Cooling</b>	Convection
<b>Storage Temperature</b>	-40 ~ +85°C	<b>Relative Humidity</b>	5% to 90%, non-condensing
<b>Vibration</b>	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	<b>Shock</b>	Operating: Half-sine, 20gpk, 10mS, 3 axes, 6 shocks total Non-Operating: Half-sine waveform, impact acceleration of 50G, Pulse duration of 6 mS, Number of shocks: 3 for each of the three axis
<b>Dimensions</b>	48.3 x 101.6 x 25mm 1.9 x 4.0 x 1.0 inch	<b>Weight</b>	220g

## Protection

<b>Overvoltage Protection</b>	120% to 150% of nominal output voltage. Hiccup Mode	<b>Overtemperature Protection</b>	Will shut down upon an overtemperature condition, auto recovery.
<b>Short Circuit Protection</b>	Hiccup Mode	<b>Overload Protection</b>	130% - 160% or rated output current value, hiccup mode

## Isolation Specifications

<b>Isolation</b>	Input-Output: 4000Vac (2 MOPP) Input-Ground: 1500Vac (1 MOPP) Output-Ground: 1500Vac (1 MOPP)	<b>Isolation Resistance</b>	I/P-O/P, I/P-FG, O/P-FG: TBD
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## Safety & Reliability

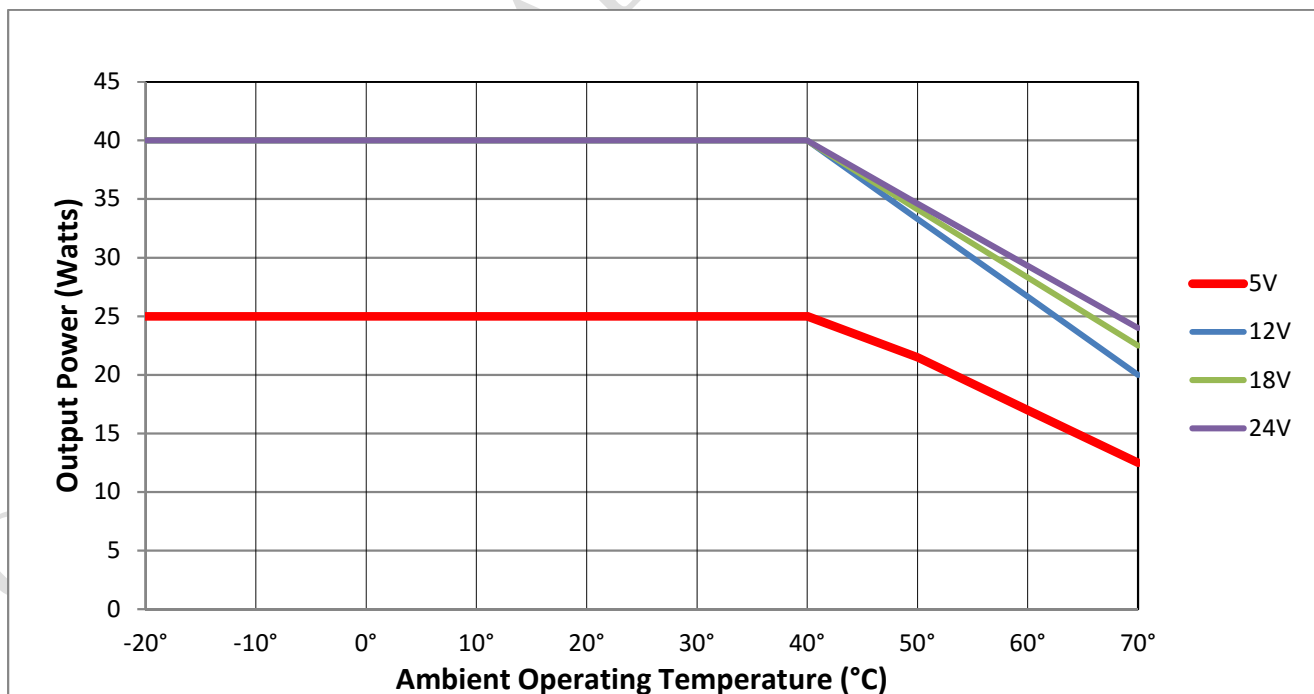
<b>ITE/Industrial Safety</b>	EN/IEC/UL62368-1	<b>MTBF</b>	>1,000,000 hours, full load, 110 & 220Vac input, 25°C amb., per Telcordia 332 Issue 6, Stress Method.
<b>Medical Safety</b>	EN/IEC/UL60601-1, 3rd Edition	<b>E-Cap Life</b>	>8 year life based on calculations at 115Vac/60Hz & 230Vac/50Hz, ambient 25°C at 24 hrs per day, 365 days/year, 6 power up cycles per day.

## EMI/EMC Compliance

<b>Conducted Emissions:</b>	EN55032, EN55011/CISPR11 Class B, FCC Part 15.107, Class B: 6db margin typ, at 115 and 230Vac
<b>Radiated Emissions:</b>	EN55032, EN55011/CISPR11 Class B, FCC Part 15.109, Class B: 3db margin typ, at 115 and 230Vac
<b>Electro-Static Discharge (ESD) Immunity on Power ports:</b>	EN55024/IEC61000-4-2, Level 4: +/- 8kV contact, +/- 15kV air, Criteria A IEC60601-1-2, 4th Edition, Table 4
<b>Radiated RF EM Fields Susceptibility</b>	EN55022/EN61000-4-3, 10V/m, 80MHz-2.7GHz, 80% AM at 1kHz IEC60601-1-2, 4th Edition, Table 4
<b>Electrical Fast Transients (EFT) /Bursts:</b>	EN55024/IEC61000-4-4, Level 4, +/- 4.4kV, 100Khz rep rate, 40A, Criteria A IEC60601-1-2, 4th Edition, Table 5
<b>Surges, Line to Line (Diff Mode) and Line to GND (CMN Mode)</b>	EN55024/IEC61000-4-5, Level 4, +/-2kV DM, +/-4kV CM, Criteria A Surpasses IEC60601-1-2, 4th Edition requirements.
<b>Conducted Disturbances induced by RF Fields</b>	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, 4th Edition, Table 5
<b>Rated Power frequency magnetic fields</b>	EN55024/IEC1000-4-8, Level 4: 30 A/m, 50/60 Hz IEC60601-1-2, 4th Edition, Table 4
<b>Voltage Interruptions, Dips, Sags &amp; Surges</b>	EN55024/IECEN61000-4-11: --100% dip for 10 mS, at 0, 45, 90, 135, 180, 225, 270 and 315 degrees, 100% dip for 20mS, 0 deg., Criteria A --100% dip for 5000mS (250/300 cycles), Criteria B --60% dip for 100mS, Criteria B --30% dip for 500mS, Criteria A  IEC60601-1-2, 4th Edition, Table 5
<b>Harmonic Current Emissions</b>	EN55011/EN61000-3-2, Class A
<b>Flicker Test</b>	EN61000-3-3

- Notes:
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:**

**Outline Drawing coming soon!**

**Connector and Termination Information**

Input Connections				Output Connections	
Version	Connector Pinout	Ground	Connector Type/Part No.	Connector Pinout	Connector Type/Part Number
Open Frame: "K", "C"	Pin 1: AC LINE Pin 2: EMPTY Pin 3: AC NEUTRAL	0.125: ground tab (N/A on "C" versions)	Connector: TE/AMP P/N 640445-3 Mating Connector: TE/AMP P/N 640250-3, 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"	P1: AC Line P2: AC Neutral	PG: AC Ground (N/A on "V" version)	Pencom PI3207 or equivalent	P4: +Vout P5: +Vout P6: -Vout P7: -Vout	Pencom PI3207 or equivalent