



Medical



Industrial

FEATURES AND BENEFITS

20W Open Frame and PCB-mount Power Supply

1.6" x 3.38" 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 >7 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
GB20S05K01	5.0V	3.0A	15W	75mV 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	7.5V	2.0A	15W	75mV pk-pk	±1%	±5%		
GB20S09K01	9.0V	2.0A	18W	90mV pk-pk	±1%	±5%		
GB20S12K01	12.0V	1.5A	18W	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
GB20S15K01	15.0V	1.2A	18W	120mV pk-pk	±1%	±5%		
GB20S24K01	24.0V	0.8A	20W	240mV pk-pk	±1%	±5%		
GB20S48K01	48.0V	0.4A	20W	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: 0.5A, 230VAC: 0.2A
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	15W-20W 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	>7 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 40°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	41 x 86 x 25mm 1.6 x 3.38 x 1.0 inch
Weight	120g

Note: Same dimensions for PCB & Pin Variants.

SAFETY

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

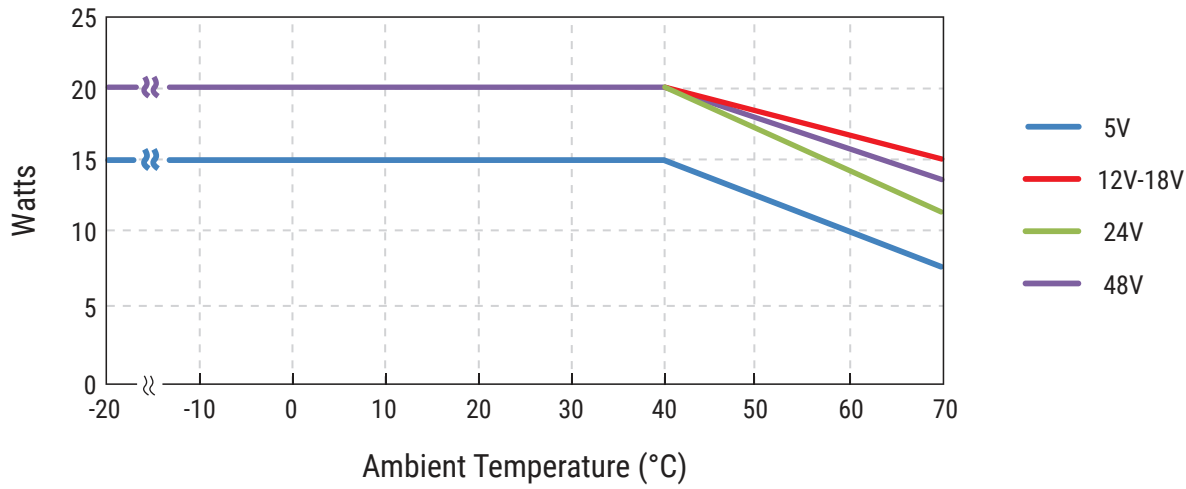
EMI/EMC COMPLIANCE

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 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, 4 th edition, Table 5
Harmonic Current Emissions	EN55011/EN61000-3-2, Class A
Flicker Test	EN61000-3-3

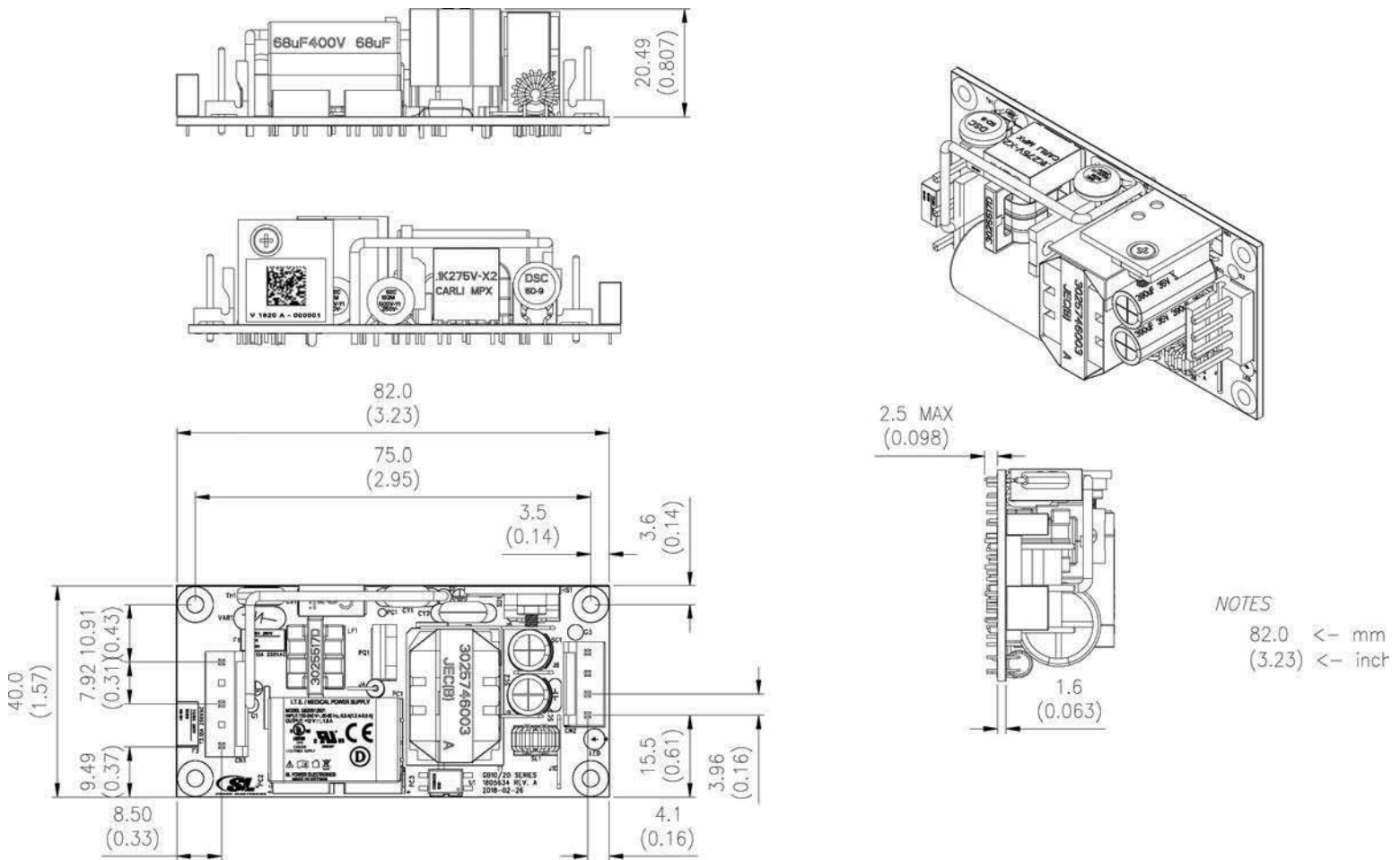
Note: 1. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.
2. All specifications are typical at nominal input, full load, at 25°C ambient unless noted. Consult factory for information regarding testing for or usage under special environments.

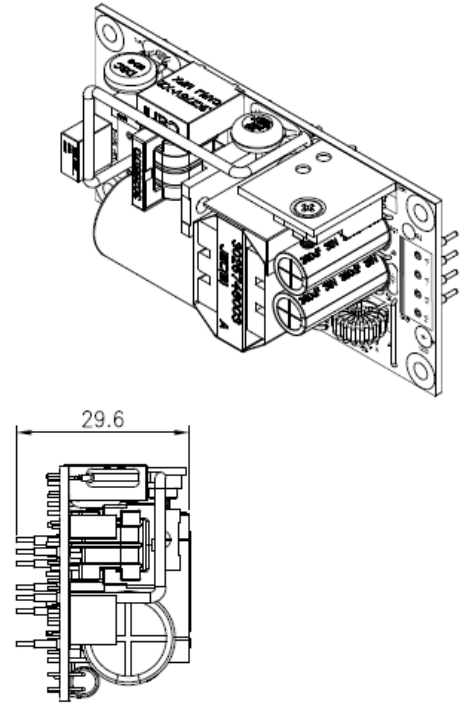
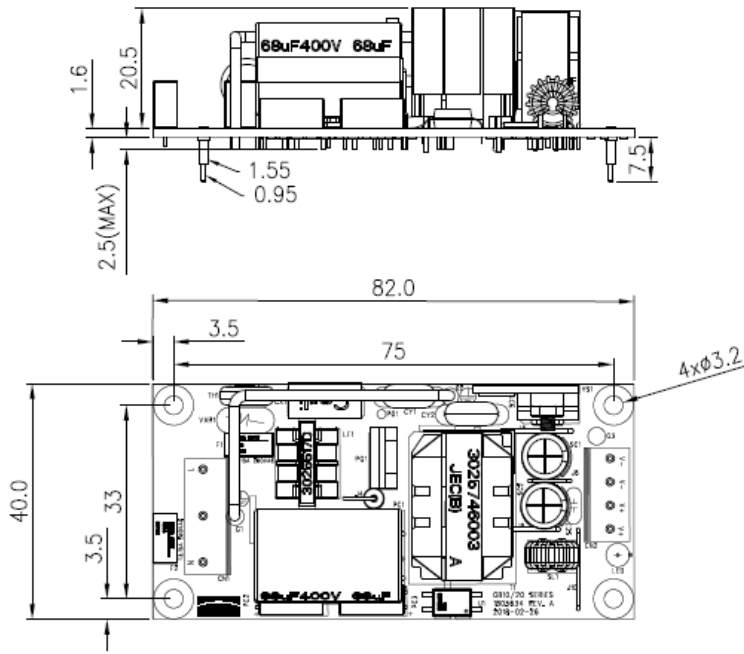


DERATING CURVE



MECHANICAL DRAWING





CONNECTOR AND TERMINATION INFORMATION

Input Connections				Output Connections	
Version	Connector Pinout	Ground	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 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: AC Neutral	PG: AC Ground (N/A on "V" version)	Pencom PI3207 or equivalent	Pin 4: +Vout Pin 5: +Vout Pin 6: -Vout Pin 7: -Vout	Pencom PI3207 or equivalent