

# GEM600

600W Single Output Economy/Technology Switchers

Commercial and Medical



2 Year Warranty

- 600W Single Output AC-DC Power Supply
- Universal Input 90-264 VAC
- Standard: Active PFC, OVP, Power Fail and Inhibit (low)
- Modified and Customized Designs also available
- Complies with EMI/RFI Standards
- Approved to EN/IEC/UL/CSA 60950-1 for ITE
- Approved to EN/IEC/UL60601-1 for Medical
- CE Compliant (LVD, RoHS)



## International Safety Standard Approvals



## Specifications

All Specifications are typical at nominal input, full load at 25°C unless otherwise stated.

<b>AC Input</b> 90-264VAC, 47-63 Hz single phase.	<b>Turn On Time</b> Less than 2 seconds under all rated load conditions.
<b>Input Current</b> 120VAC: 9A, 230VAC: 4.5A.	<b>Hold-up Time</b> ≥20 ms from loss of AC input at 600W load, 120VAC input.
<b>Inrush Current</b> Limited by internal thermistor. The inrush at 240VAC, averaged over the first AC half-cycle under cold start conditions will not exceed 40A.	<b>Over/Undershoot</b> 3.5% max. at turn-on, 1% max. at turn-off.
<b>Input Fuse</b> F1, F2: 12A, 250VAC fuses provided on all models.	<b>Output Overload &amp; Short Circuit Protection</b> Foldback, then cycle-by-cycle current limiting, automatic recovery.
<b>Power Factor</b> 0.99 typical, 0.96 minimum.	<b>Overvoltage Protection</b> Latching type, recycle AC input to reset. See chart for trip levels.
<b>Earth Leakage Current</b> 120VAC: 75µA max. NC, 120µA max. SFC. 264VAC: 160µA max. NC, 300µA max. SFC.	<b>Ripple and Noise</b> 1% pk-pk max., 20MHz BW, differential mode. Measured with noise probe directly across output terminals.
<b>Output Power</b> 600W continuous.	<b>ITE Safety Standards</b> CSA/EN/IEC/UL 60950-1
<b>Peak Output Power</b> 650W for 1 minute, 10% duty cycle.	<b>Medical Safety Standards</b> EN/IEC/UL 60601-1
<b>Output Voltage</b> See chart.	<b>Efficiency</b> >80% typical at full rated load
<b>Voltage Adjustability</b> Adjustable potentiometer, capable of ±5% change from nominal.	<b>Switching Frequency</b> 140KHz main inverter and 70kHz PFC (synchronized).
<b>Minimum Load</b> Not required.	<b>MTBF</b> 208K hours per Telcordia.
<b>Total Regulation</b> See chart.	<b>Overtemperature Protection</b> Automatic.
<b>Transient Response</b> 500µs max., 50% load step, $\Delta i/\Delta t < 0.2A/\mu s$ .	<b>Weight</b> 3.75 lbs. (1.70kg)
<b>Enclosure Dimensions</b> See outline drawing	<b>Signals</b> AC Power Fail: TTL "0" 10ms before the output drops to <97% of nom. Inhibit: Short inhibit pin to output common to Inhibit.

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Model Number	Volts (V)	Output Current		Ripple & Noise	Total Regulation	OVP Threshold
		Nominal	Peak			
GEM600-24G	24V	25.0A	27.0A	240mV	±1.0%	30.0 ± 2V
GEM600-28G	28V	21.5A	23.5A	280mV	±1.0%	33.0 ± 3V
GEM600-36G	36V	16.7A	18.0A	360mV	±1.0%	43.0 ± 3V
GEM600-48G	48V	12.5A	13.5A	480mV	±1.0%	56.0 ± 4V

## Environmental Specifications

<b>Operating Temperature</b> -20° to 70°C. Derate output power for operation above 50°C. Fan integral to the power supply.	<b>Temperature Coefficient</b> 0.03% per °C typical on all units.
<b>Storage Temperature</b> -40 to +85°C	<b>Output Power Derating</b> Derate Output Power by 2.5% per °C up to 70°C maximum.
<b>Relative Humidity</b> 5% to 95%, non-condensing	<b>Thermal Shutdown</b> Provided to avoid prolonged over-temperature condition.
<b>Vibration</b> Operating: 0.003 g <sup>2</sup> /Hz, 1.5 g <sub>rms</sub> overall, 3 axes, 10 min. / axis Non-Operating: 0.026 g <sup>2</sup> /Hz, 5.0 g <sub>rms</sub> overall, 3 axes, 1 hr. / axis	<b>Operating Altitude</b> -500 to 10,000 ft.
<b>Shock</b> Operating: Half-sine, 20 g <sub>pk</sub> , 10 ms, 3 axes, 6 shocks total Non-Operating: Half-sine, 40 g <sub>pk</sub> , 10 ms, 3 axes, 6 shocks total	<b>Non-operating Altitude</b> -500 to 40,000 ft.

## EMI/EMC Compliance

<b>RF Emissions</b>	EN55011/22 and FCC Part 15, radiated Class A, conducted Class B.
<b>Static Discharge Immunity</b>	EN61000-4-2, 6kV Contact Discharge, 8kV air discharge
<b>Radiated RF Immunity</b>	EN61000-4-3, 3V/m.
<b>EFT/Burst Immunity</b>	EN61000-4-4, 2kV/5kHz..
<b>Line Surge Immunity</b>	EN61000-4-5, 1kV differential, 2kV common-mode
<b>Conducted RF Immunity</b>	EN61000-4-6, 3V
<b>Power Frequency Magnetic Field Immunity</b>	EN61000-4-8, 3A/m
<b>Voltage Dip Immunity</b>	EN61000-4-11, see EN60601-1-2: 2001 chart below.
<b>Line Frequency Harmonics</b>	EN61000-3-2, Class A
<b>Voltage Fluctuations/Flicker</b>	EN61000-3-3, Complies (clause 5b)

## EN60601-1-2: 2001 Voltage Sag Compliance

Voltage Test Level Input Voltage	Voltage Dip Input Voltage	Duration Periods	Output Voltage Deviation
100VAC	<5 VAC	10mS	<3.5%
100VAC	40 VAC	100mS	<3.5%
100VAC	70 VAC	500mS	<3.5%
240VAC	<12 VAC	10mS	<3.5%
240VAC	96 VAC	100mS	<3.5%
240VAC	168 VAC	500mS	<3.5%

Note:

During 100mS voltage dip (5 cycles at 40%VAC), the AC Power Fail warning may trigger. During low line 100mS voltage dip, reduced loading to 50% rated load is required to meet the deviation requirement and regulation.

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## Connector Information

### INPUT CONNECTOR (TB1):

Option:	Pin 1	Pin 2	Pin 3	Manufacturer's P/N:
A	AC Line	Neutral	Ground	EBY P/N 6002-03-N-01
T	Ground	Neutral	AC Line	Phoenix Contact P/N 1706785

### MATING CONNECTORS:

Option:	Mate For:	Manufacturer's P/N:
C	TB2, TB3	Phoenix Contact P/N 1913523
All	J4	AMP P/N 1375820-4

All other options' connector is a terminal block or has a direct wire connection.



"A" Option Input Connector:



"A" Option Output Connectors:



"D" Option Output Connector:

### DC OUTPUT CONNECTORS (TB2, TB3):

Option:	TB2 All Pins	TB3 All Pins	Manufacturer's P/N:
A	+Vout	-Vout	EBY P/N 6002-03-N-01
B	+Vout	-Vout	Bussbar #10-32UNC x 0.375 Screw
C	+Vout	-Vout	Phoenix Contact P/N 1998959
D	+Vout	-Vout	Phoenix Contact P/N 1731721

### SIGNAL CONNECTOR (J4) (all options):

Pin 1	Pin 2	Pin 3	Pin 4	Manufacturer's P/N:
Pwr Good	Pwr Fail	N/C	Inhibit	AMP P/N 640456-4



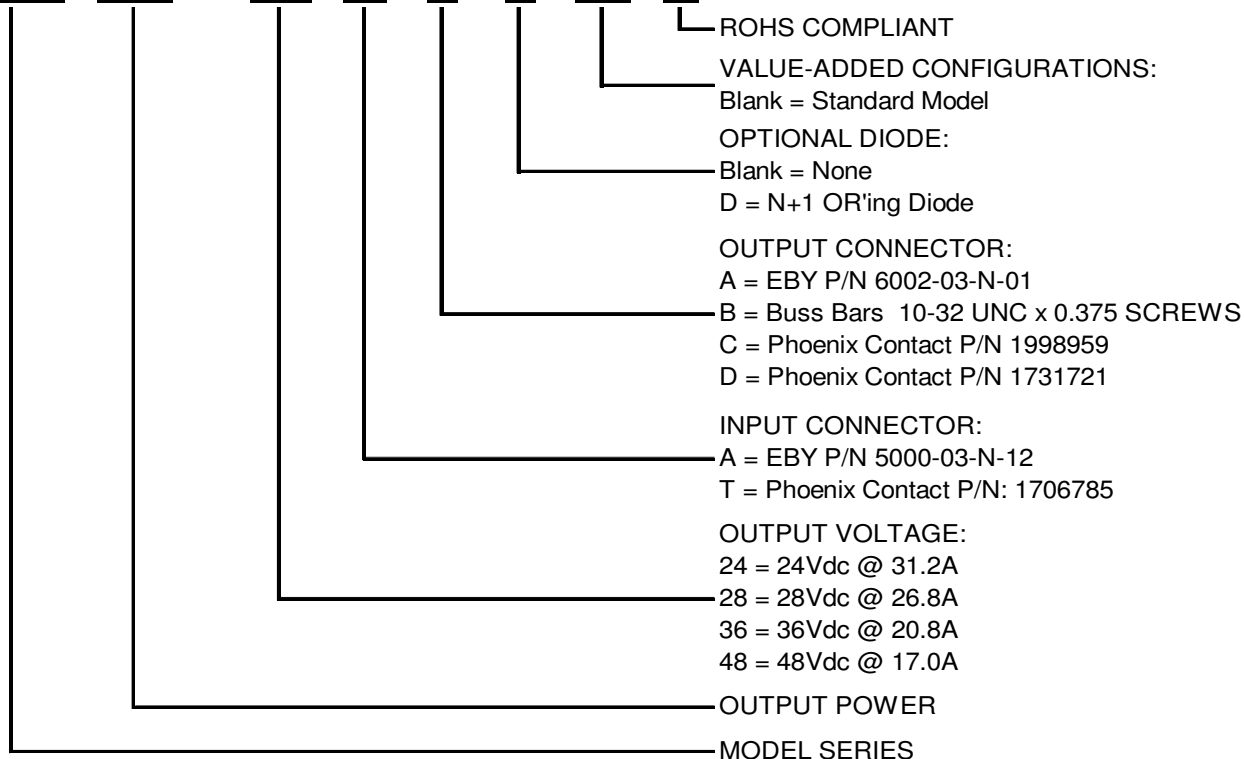
"T" Option Input Connector:



"C" Option Output Connector:

## Model Number Configuration

**GEM 600 - VV W X Y ZZ G**



# GEM600

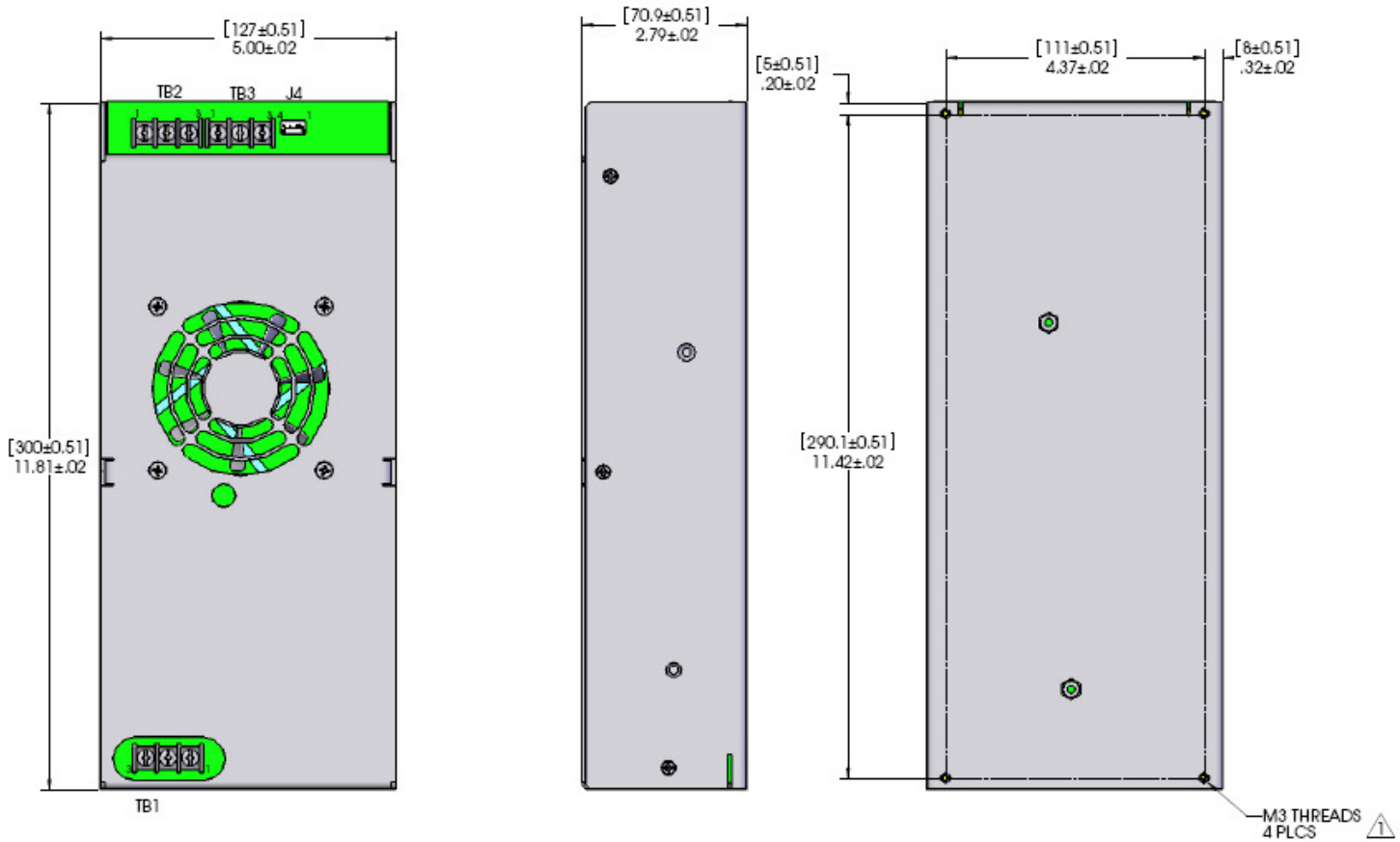
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## Mechanical Specifications



NOTES: Unless otherwise specified.

⚠ MAX MOUNTING SCREW DEPTH .25" [6.4] FROM OUTSIDE OF CHASSIS.