

DG040 Series | ITE & Medical Safety

40W/55W Peak

- Built-in active PFC
- UL/CSA/EN 60950-1, 2nd edition (ITE)
ANSI/AMMI/CSA/EN 60601-1, 3rd ed. (Medical)
- Efficiency: $\geq 86\%$ typical
- Operation from -20°C to 70°C - convection
- Approved for 2xMOPP applications
- 10 year warranty



GREEN POWER

Description

The **DG040 (ITE)** and **DG040M (Medical) Series** is a 40 Watt Open Frame power supply that is small, 2" x 3" x 0.91", in size and big on performance. The DG040(M) is compliant with Green power, Energy Star ver. 6 and ErP EC 1275/2008 with typical rated load efficiency ratings $> 86\%$ and no-load power consumption $< 0.3\text{W}$.

Specifications

Input

Input Voltage	• 90 VAC to 264 VAC, 115/230V nominal
Input Frequency	• 47 Hz to 63 Hz
Inrush Current	• $< 30/60\text{A}$ at 115/230VAC, cold start, 25°C
Input Protection	• Internal T3.15 A / 250 VAC fuse in line
No Load Input Power	• $< 0.3\text{W}$
Input Current	• 2A max at 115 VAC/1A max at 230VAC

Output

Output Voltage	• See tables on page 2
Initial Set Accuracy	• See tables on page 2
Minimum Load	• No minimum load required
Start Up Rise Time	• 2 ms typical
Hold Up Time	• > 18 ms typical
Line Regulation	• $\pm 0.5\%$ typical
Load Regulation	• $\pm 1.0\%$ typical
Ripple & Noise	• $< 1\%$ pk-pk typical, 20MHz Bandwidth
Overvoltage Protection	• latch off
Overload Protection	• auto recovery
Short Circuit Protection	• auto recovery

Environmental

Operating Temperature	• -20°C to 70°C derating: 2.5% / $^{\circ}\text{C} > 50^{\circ}\text{C}$
Cooling	• 40W; free air convection
Operating Humidity	• 5-95% RH, non-condensing
Storage Temperature	• -40°C to $+85^{\circ}\text{C}$
Altitude	• 0 to 3000 m

General

Efficiency	• $\geq 86\%$ typical at rated load
Energy Saving	• Energy Star, Level V
Isolation	• 4000 VAC Input to Output, 2x MOPP 1500 VAC Input to Ground, 1x MOPP 1500 VDC Output to Ground, 1x MOPP
Isolation Resistance	• 50 M Ω
Switching Frequency	• 120 kHz typical
MTBF	• > 500 kHrs to MIL-HDBK-217F at 50°C

EMC & Safety

Safety Approvals:	• UL/CSA/EN 60950-1, 2nd edition • ANSI/AMMI/CSA/EN 60601-1, 3rd edition • CB report, CE mark, RM report
Harmonic Currents	• EN 61000-3-2 class D
EMI	• EN55022 (CISPR 22) Class B, EN 61000-3-3
ESD Immunity	• EN 61000-4-2, 6kV/contact, 8kV/air
Radiated Immunity	• EN 61000-4-3, 10V/m with 80% AM
EFT Burst	• EN 61000-4-4, 2kV
Surge	• EN 61000-4-5, 1kV/L-L, 2kV/L-G
Conducted Immunity	• EN 61000-4-6, 10V with 80% AM
Magnetic Fields	• E61000-4-8, 10A/m
Dips & Interruptions	• EN 61000-4-11, 30% dips 10ms, 60% dips 100ms, 95% dips 5000ms

Warranty

Manufacturer's Warranty	• 10 years. Call Tri-Mag or go to www.Tri-Mag.com for details.
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Output Specifications

Model No.	Application	Output Rail	Load				Initial Accuracy	Ripple Noise	Line Reg.	Load Reg.
			Min	Rated	Max	Peak				
DG040(M)-7 DG040(M)-7A	ITE/Medical	+12V	0A	3.33A	-	4.7A	+11.9V~+12.1V	< 100mVpp	+ 0.5%	+ 1%
DG040(M)-8 DG040(M)-8A	ITE/Medical	+15V	0A	2.66A	-	3.8A	+14.8V~+15.2V	< 100mVpp	+ 0.5%	+ 1%
DG040(M)-3 DG040(M)-3A	ITE/Medical	+18V	0A	2.22A	-	3.2A	+17.8V~+18.2V	< 100mVpp	+ 0.5%	+ 1%
DG040(M)-9 DG040(M)-9A	ITE/Medical	+24V	0A	1.66A	-	2.4A	+23.7V~+24.3V	< 150mVpp	+ 0.5%	+ 1%
DG040(M)-G DG040(M)-GA	ITE/Medical	+28V	0A	1.42A	-	2.0A	+27.7V~+28.3V	< 150mVpp	+ 0.5%	+ 1%
DG040(M)-J DG040(M)-JA	ITE/Medical	+36V	0A	1.11A	-	1.6A	+35.8V~+36.2V	< 150mVpp	+ 0.5%	+ 1%
DG040(M)-14 DG040(M)-14A	ITE/Medical	+48V	0A	0.83A	-	1.16A	+47.5V~+48.5V	< 150mVpp	+ 0.5%	+ 1%

Notes

- Output Load:**
Convection cooling: 40W
- Peak Load Duration:**
55W peak rating for durations up to 3 secs. (duty cycle <10%, average power <40W). Ideal for motor-starting/in-rush conditions.
- Engineering Specification:**
Contact Tri-Mag for full engineering specification for the specific part number used in your design application.
- Standby Power Consumption with System:**
This is required by ENERGY STAR in U.S. and ErP regulation in Europe for appliances such as computers and displays. The latest requirement is measured input power to be less than 0.3W with system.
- Step Efficiency and Average Efficiency:**
Test conditions in step efficiency are referred to 3.2.2 IPS (Internal Power Supply) of the ENERGY STAR program requirements for computers. ENERGY STAR required for efficiency @ 20%, 50%, 100% load is 84.5%, 89%, 86.5%; average efficiency is the average of step efficiency.
- Model Ordering Table:**

Safety/Application	Series
ITE	DG040-x
Medical	DG040M-x

Mechanical Specifications

Notes

- Mechanical drawing dimensions in mm Tolerance: $\pm 0.4\text{mm}$
- Size: 50.8 x 76.2 x 23.1 (mm)
2.0 x 3.0 x 0.91 (inches)
Net weight: 89 g approx. / unit
- Connections: AC Input: PCB Header: Molex 09-65-2029 (5277-02A) or equivalent
Mating Connector: Molex 09-50-9030 (41695-N-A02) or equivalent
DC Output: PCB Header: Molex 09-65-2048 (5273-07A) or equivalent
Mating Connector: Molex 09-52-4044 (5239-04) or equivalent
Terminal Block (optional)

