

DHF030 Series | ITE & Medical Safety

30W/45W Peak

- 1.57" x 2.76" x 0.9" compact size
- Flexible installation for Class I/II
- 5,000 m operating altitude
- -40°C to 70°C convection cooling operation
- Up to 12,000uF loading start-up
- Level VI compliant eco-friendly design



Description

The **DHF030 Series** is a 30W, open-frame, Level VI compliant power supply that is a compact 1.57" x 2.76" x 0.9" in size. In addition to being an eco-friendly design, the series has an expanded, -40°C to +70°C, operating temperature range and is rated to an operating altitude of 5,000 m. The series has a 45W peak-power rating making it ideal for motor-starting/in-rush currents for ITE and Medical equipment, including MOOP and 2xMOPP, applications.

Specifications

Input

Input Voltage	• 90 VAC to 264 VAC
Input Frequency	• 47 Hz to 63 Hz
Inrush Current	• 40/80A at 115/230 VAC, cold start, 25°C
Input Protection	• Internal T3.15A / 250 VAC fuse in line
No Load Input Power	• < 0.5W (< 1.5W for "A" version)
Input Current	• 2A _{rms} max/115 VAC, 1 A _{rms} max/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	• 16 ms typical
Line Regulation	• ±0.5% typical
Load Regulation	• ±1.0% typical
Ripple & Noise	• < 1% pk-pk typical, 20MHz Bandwidth
Over-voltage Protection	• latch off
Over-load Protection	• auto recovery
Short Circuit Protection	• auto recovery

Environmental

Operating Temperature	• -40°C to 70°C derating: 2.5% / °C > 50°C
Cooling	• 30W, free air convection 40W, 18CFM forced air
Operating Humidity	• 5-95% RH, non-condensing
Storage Temperature	• -40°C to +85°C
Altitude	• 0 to 5000 m

General

Efficiency	• 85% ("A" version: > 80%) typical
Energy Saving	• Energy Star, Level VI, std. (non "A") version
Isolation	• 4000 VAC Input to Output, 2xMOPP 1500 VAC Input to Ground, 1xMOPP 1500 VDC Output to Ground, 1xMOPP
Isolation Resistance	• 50 MΩ
Switching Frequency	• 120 kHz typical
MTBF	• >TBD kWhrs to MIL-HDBK-217F at 50°C

EMC & Safety

Safety Approvals:	• UL/CSA/EN 60950-1, 2nd edition (ITE) • ANSI/AMMI/CSA/EN 60601-1, 3rd edition • CE Mark and CB report
Harmonic Currents	• EN 61000-3-2 class A
EMI	• EN 55022/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, 2kV/L-L, 4kV/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, 100% dips 10ms, 100% dips 20ms, 30% dips 500ms, 60% dips 200ms, 100% 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.	Output Rail	Load				Initial Accuracy	Step Efficiency			Avg. Eff.
		Min	Rated	Max	Peak		@20% Load	@50% Load	@100% Load	
DHF030-7 DHF030-7A	+12V	0A	2.5A	3A	3.8A	+11.9V~+12.1V	86% 76%	87% 83%	86% 84%	86% 80%
DHF030-8 DHF030-8A	+15V	0A	2A	2.4A	3A	+14.9V~+15.1V	86% 76%	87% 83%	86% 84%	86% 80%
DHF030-9 DHF030-9A	+24V	0A	1.25A	1.5A	1.9A	+23.8V~+24.2V	86% 76%	87% 83%	86% 84%	86% 80%
DHF030-14 DHF030-14A	+48V	0A	0.63A	0.75A	1A	+47.6V~+48.4V	86% 76%	87% 83%	86% 84%	86% 80%

Notes

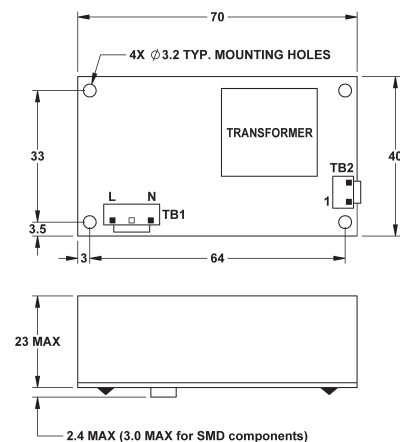
- Output Load:**
Convection cooling: 30W, forced-air cooling: 36W
- Peak Load Duration:**
45W peak rating for durations up to 5 secs. Ideal for motor-starting/in-rush conditions.
- Engineering Specification:**
Contact Tri-Mag for full engineering specification for the specific part number used in your 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 0.5W with system.
- Audible Noise:**
For the DHF030-x energy saving series, achieving level VI (<0.3W) standby power consumption is accomplished through burst mode operation of the controller. The burst operation frequency is dependent on load conditions and is approx. 114Hz, within the audible frequency range.
- 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 82%, 85%, 86%; average efficiency is the average of step efficiency.
- Model Ordering Table:**

Safety/Application	w/o Audible Noise	Energy Saving
ITE & Medical	DHF030-xA	DHF030-x

Mechanical Specifications

Notes

- Mechanical drawing dimensions in mm, Tolerance: $\pm 0.4\text{mm}$
- Size: 40.0 x 70.0 x 23.5 Max. (mm)
1.57 x 2.76 x 0.93 Max. (inches)
Net weight: Approx. 61g/unit
- Connections: AC Input PCB Header: JST B2P3-VH or equivalent
Mating Connector: JST VAR-2, VHR-3N or equivalent
DC Output: PCB Header: JST B2P-VH or equivalent
Mating Connector: JST VHR-2N or equivalent
- RoHS Compliant



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