

Power Supply Selection

When selecting your next ac-dc industrial power supply, don't overlook these five important considerations, including hours of operation, peak load, and...

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The use of power supplies for industrial and control applications requires careful consideration of the operating conditions, environment, and power loads. Here is a listing of some frequently overlooked considerations when selecting ac-dc power supplies. Included are links to more information on each topic.



Baseplate / conduction-cooled power supplies can providing up to 1000 W without fans or forced-air cooling, for audible-noise-free operation, such as this one from Lambda Americas, a group company of the TDK Corp. The CPFE1000F series has a baseplate and ambient operating temperature range from -40 C to 85 C. The ac-dc power supplies are said to offer high-power, without a fan, for mounting in an enclosure. Courtesy: Lambda Americas

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www.us.tdk-lambda.com/lp/products/CPFE-series.htm

www.us.tdk-lambda.com/lp/products/hfe-series.htm

1. Hours of operation: Sometimes a low-cost power supply is selected for applications that require 24/7 operation. This is penny-wise and pound-foolish since the construction of low-cost supplies employ low-cost components (capacitors, active components, fans, etc.) that are unsuited for constant operation. The best solution for 24/7 applications is to find an industrial-rated power supply that includes a 5-year or longer warranty. The "warranty period" is a good indication of the type of components used in power-supply construction.

<http://power-topics.blogspot.com/search/label/Warranty>

2. Peak power loads: Many times industrial and control equipment includes dc motors, solenoids, pumps, etc. These types of loads typically have a peak start-up current that exceeds their steady state current. The system designer can either select a power supply that handles the peak current or consider a lower cost solution by employing a peak-rated power supply.

<http://power-topics.blogspot.com/2010/10/damaging-power-supplies-with-repetitive.html>

3. Ambient temperatures: One of the biggest killers of power supplies is "heat." Since all power supplies generate heat due to their inherent inefficiencies, they require cooling by conduction via heat sinks, natural air convection, forced air-cooling, or a combination of all three. However, whichever cooling method is employed, due consideration to the prevailing ambient air temperature range must be included in the end equipment design.

<http://power-topics.blogspot.com/search/label/Convection%20Cooling>

This power supply was certified to the 80 Plus Platinum level for redundant, server, and data center applications. The 80 Plus performance specification requires power supplies to be 80% or greater energy-efficient at 20%, 50%, and 100% of rated load with a true power factor of 0.90, substantially more efficient than typical supplies. It is TDK Corp.'s TDK-Lambda Model HFE2500-48. Courtesy: Lambda Americas



4. Corrosive or dusty environments: When fan-cooled power supplies are employed in corrosive or dusty environments, a scheduled maintenance program must be established to periodically clean air filters and replace fans because their bearings will wear out quickly under these conditions. In these environments, it would be wise to consider non-fan cooled power supplies that are cooled via conduction or natural airflow (without fans).

<http://power-topics.blogspot.com/search/label/Conduction%20Cooling>

5. AC line noise: Most ac-dc power supplies include electromagnetic (EMI) filters. These embedded EMI filters serve to protect the ac line from noise generated by the supply as well as to protect the supply from noise generated by other devices connected to the ac line. There are applications where the ac line noise is so extreme that additional EMI filtering is required. In these cases, it is wise to add an external EMI filter before the ac input to the power supply. Many power supply manufacturers can assist the end user in the selection of an appropriate external EMI filter.

<http://power-topics.blogspot.com/search/label/EMI%20Filter>

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www.us.tdk-lambda.com/lp