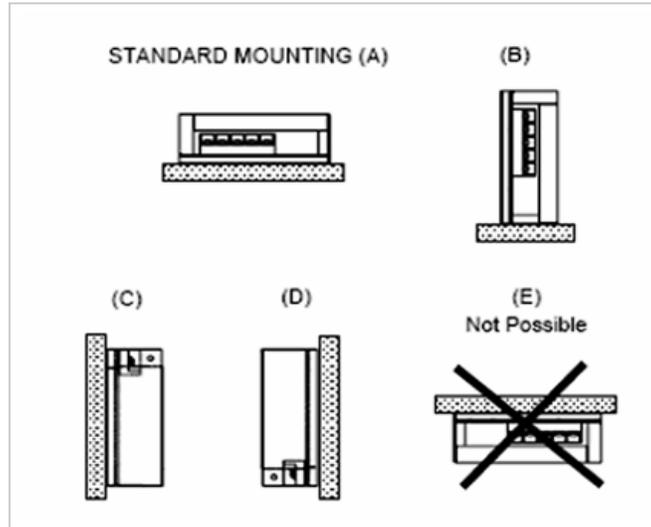


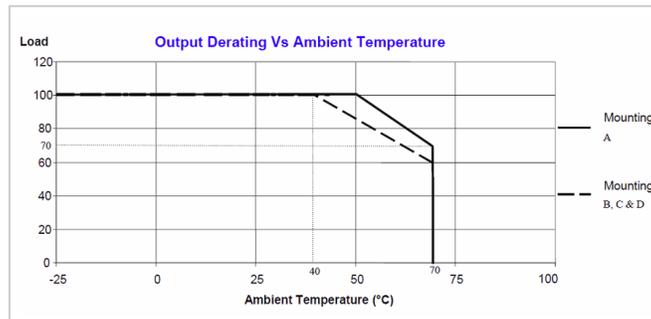
Thursday, November 3, 2011

Mounting Precautions for Power Supplies

Before mounting your power supply, be sure to read its installation manual if you intend to mount it in an orientation other than along the horizontal plane (Fig. A). Many power supplies have restrictions regarding mounting. For example, since heat rises, if you mount some power supplies on a vertical plane (Fig. B, C, & D), the heat from the lower section of the power supply will rise and further heat the upper part of the supply, which may cause over heating problems. Likewise, with some power supplies you are not allowed to mount them upside down (Fig. E) because this traps the heat and restricts the normal convection air cooling around the power supply.



In some cases, vertical mounting of power supplies is permitted as long as you reduce the amount of power that will be drawn from the supply. This is referred to as "Derating" the power supply. Below are the derating curves for the TDK-Lambda's model LS150-12, a convection cooled 150-Watt, 12V output, AC-DC power supply.



This graph shows the percentage of rated output power on the vertical axis and the operating ambient temperatures on the horizontal axis. Notice when mounting this power supply on the horizontal plane (Fig. A), the power supply is rated at 100% output power from -25°C up to +50°C. However, if you mount this supply on a vertical plane (Fig. B, C, & D), the maximum ambient temperature is reduced to +40°C before the power must be derated.

It is worth mentioning that many low cost competitors do not mention the preferred mounting orientation, and some do not even have an installation manual on their website!

An incorrectly mounted power supply will get too hot resulting in premature electrolytic capacitor degradation, catastrophic semiconductor failure or even a fire due to transformers overheating.

Other general power supply mounting considerations include the following:

- Make sure there is adequate space around the power supply to allow air to circulate.

- Do not block off vent holes on convection cooled supplies or restrict air inlet or outlet ports on fan cooled supplies.
- In the event fans are employed within power supply, a system, or an enclosure make sure the airflow direction for all fans are the same

Posted by [Power Guy](#)