Apple Equipment: Using On 12 Volts (2/97)

Article Created: 19 November 1986
Article Reviewed/Updated: 13 February 1997

TOPIC ---

This article discusses using Apple equipment with a 12V DC power supply.

DISCUSSION ---

Apple Computer, Inc. is not responsible for any damages, real or implied, resulting from the use of this information. The responsibility for any damage lies completely with the user.

If you want to use Apple equipment on 12V DC, bear in mind the following precautions prior to powering up.

An inverter is a power converter that takes a direct current voltage, commonly 11.4 to 14.4 volts DC, and changes it to a nominal 120 Volts AC. Care must be taken to ensure an adequate supply of direct current to the inverter so the output voltage will be within the normal requirements of the attached equipment. This means that the minimum power capability of the converter would have to be at least 50% higher than the combined maximum current of the attached equipment.

Example: To connect a Macintosh Plus and an ImageWriter II to a 12v inverter, the maximum current draw of the equipment is 300 watts. The minimum safe rating of an inverter would be 450 watts, and 500-600 would be better. This allows a high enough safety factor so the inverter will not overheat, and the current draw will not be high enough to drop the AC output voltage.

The majority of the inverters on the market output the AC power as a square wave. Most Apple CPUs use switching power supplies which can handle this square wave power without any difficulties. However, square wave power causes the equipment to generate more than the normal amount of heat. You can eliminate the cause, the high frequency component of the square wave, by placing a line filter between the square wave power source (the inverter) and the attached equipment to provide a modified sine wave. The filter doesn't reduce the power but does soften the waveform enough to minimize the effect of abnormal heat. The line filter should have a current (or power) rating equal to the rating of the inverter. While a matching filter is not absolutely necessary, it should be considered if the life of the equipment is a factor.

Damage to the equipment can occur when too much heat or too little power is running through the system. Be very sure to observe power and current ratings to match an inverter to any electronic equipment so that the inverter will supply the proper amount of power.

Powering computer equipment with an inverter gets you and your computer into many different environments: boats, planes, trains, as well as some solar powered homes, and other places that previously could not support electronic equipment.

Article Change History:
13 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Keywords: <None>

==========

This information is from the Apple Technical Information Library.

ArticleID: TECHINFO-0002092

19970218 12:34:27.00

Tech Info Library Article Number: 2092