

# 10 GDS Helpsheet

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*World Leaders in Computer Controlled Testing  
Systems for Geotechnical Engineers and Geologists*

Hardware

Power Supply

Mains Electricity Supply Requirements

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## 1. Introduction

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GDS systems normally include microprocessor based digital controllers which may be interfaced with a computer. This type of equipment needs a clean and stable electrical power supply. This is particularly important where long term tests are being carried out. Even a very short power interruption can cause the computer or a GDS controller to lose its program. The device will then need to be powered off then on again to establish normal operation.

This document briefly describes the main points which will help to minimise problems.

## 2. Voltage

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The supply voltage must be correct for the controllers and computer. Normally this is 220/240V or 110V. Corresponding frequencies are 50Hz or 60Hz. The actual voltage depends on your local supply voltage and on other factors described by the details on the back of the equipment and in the equipment handbooks.

## 3. Mains Power Loading

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The equipment should be connected to a power supply that is not shared by high powered electrical equipment such as large motors, compressors or welding machines. These high powered machines can cause variations in the power supply which will take the computer equipment out of its recommended operating voltage range. A schematic drawing showing a desirable arrangement is shown in Fig. 1.

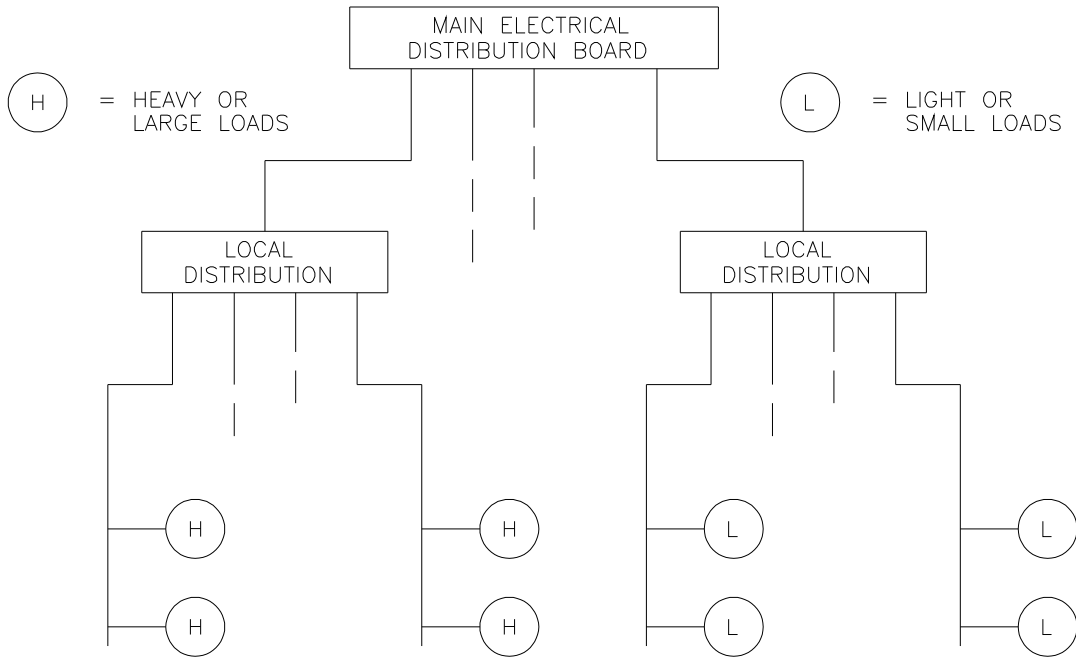


FIG. 1  
SEPARATION OF HEAVY ELECTRICAL AND LIGHT ELECTRONIC LOADS

## 4. Earth Loops

Interconnection between devices by IEEE and RS232 interface cables may give rise to circulating earth currents if the devices are connected to the mains at different points. To avoid this all of the associated equipment should be connected to one power point. This can be achieved most easily by using a short extension cable with multiple output sockets plugged into one mains socket as shown in Fig. 2.

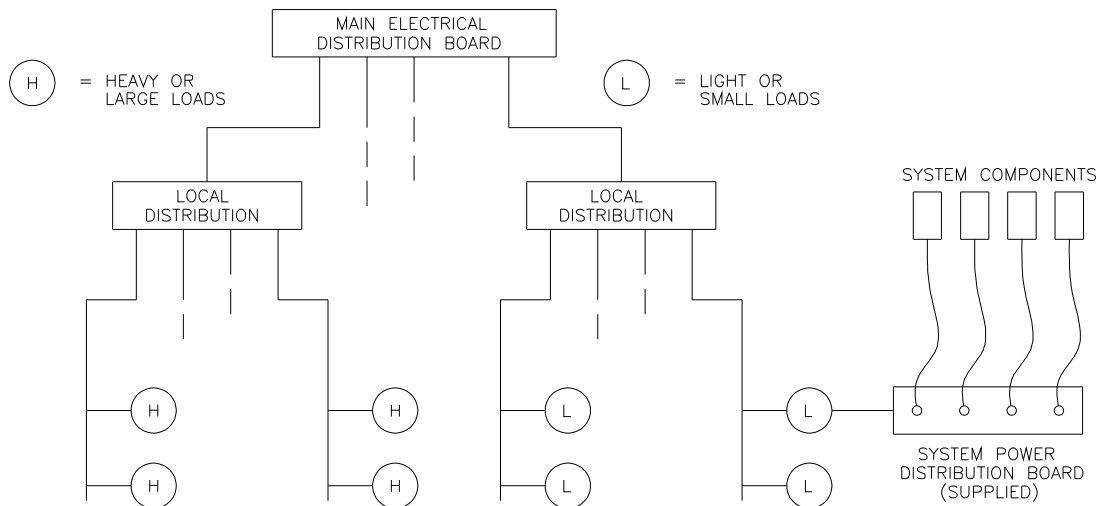


FIG. 2  
PREVENTION OF EARTH LOOPS

## 5. Uninterruptible Power Supply

Finally, if the above approaches fail to prevent occasional equipment malfunction then it is likely that the main power supply is subject to variations or short failures of supply. In this case a GDS uninterruptible power supply should be used as shown in Fig. 3. This has the dual advantages that the power supply is completely conditioned, and even short failures of supply, in the order of 10 minutes to one hour, can be accommodated.

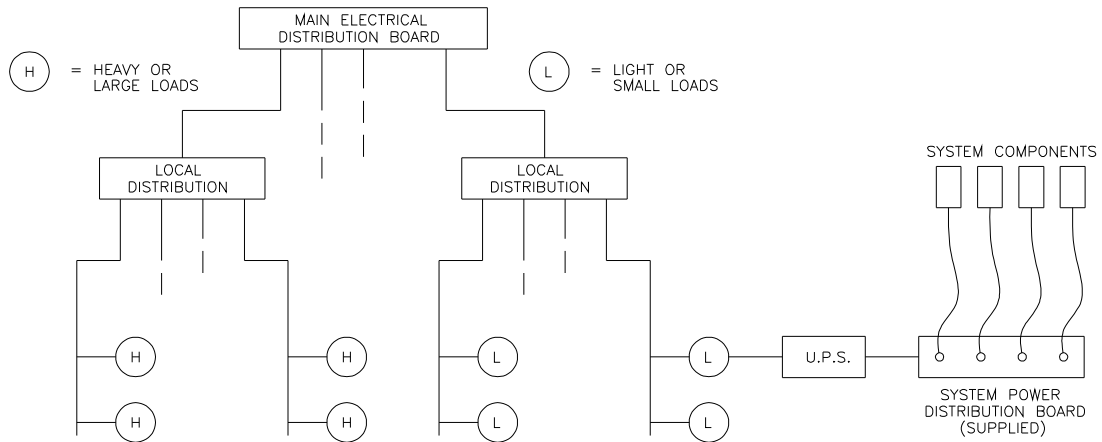


FIG. 3  
USE OF UNINTERRUPTIBLE POWER SUPPLY