

0 GDS Helpsheet



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

Troubleshooting and Faultfinding

1. Introduction

Sometimes your GDS system may appear to malfunction. There may be a genuine fault (e.g. a component like a pressure transducer may have failed) or you may have a procedural error (not understanding the way the system works i.e. you have not cheated and read the Handbook!) or you may have a problem extraneous to the GDS system (e.g. mains supply problems). This helpsheet will enable you to track down the problem area before you telephone GDS. We will then suggest the best remedial action.

2. Systems

GDS systems are not really all that complicated. A controlling computer is linked to various GDS devices by interface cables. GDS software in the computer controls the flow of information in the interface cables. In this way the computer uses the devices to carry out some kind of test.

If your system "hangs up" i.e. appears to freeze and do nothing or you get a "TIME OUT" message on the computer screen you should check out the following logical steps.

2.1 Interface cables

Check that your interface cables are OK. You may find that one of your GDS devices does not display a computer control message ("COMPUTER CONTROL", "HIGH PRECISION", or "ENHANCED PRECISION"). This means that the computer has been unable to address it. Try moving the location of this device in the daisy chain and see if the problem (i.e. no computer control) goes with the device or stays with the location. If it stays with the location you should suspect that the cable at that location is faulty. To check this now try moving the cable in the daisy chain and see if the problem moves to another device now connected to the suspect cable. If it does then you have confirmed that the cable is faulty. GDS can also provide you with test software to help check communications from the computer.

2.2 Device code conflict

Check that your device codes or IEEE addresses are unique i.e. they do not conflict with each other. Make sure your printer and plotter do not have the same addresses as a GDS controller say. Then check that you have allocated the correct addresses in the software when you start up the GDS program.

2.3 Corrupted software

Remember that GDS software has evolved over many years and has been used by hundreds of

users all over the world. This probably means that most "bugs" have been eliminated though one can never be sure! Therefore you should not suspect a software bug. If your GDS software is misbehaving it may be that the disc has become corrupted. It also may be that you have made some changes to the software which have influenced the way it works!

Check this out by retrieving the GDS master software (this version you must not change!) from its' safe place. Make a working copy. Put the master in a safe place. Using the copy check the system again.

2.4 Mains supply variations

Here you should refer to GDS Helpsheet # 10 on electrical supply requirements. Remember the best solution to these problems is a UPS (uninterruptible power supply) which not only supports the system for up to 20 minutes if you have a power cut but also smoothes out any spikes during normal operation.

3. GDS pressure/volume controllers

The GDS pressure/volume controller comprises two main elements. The top plate carries the motor, display, keyboard and transducer. The bottom case carries the fan, power supply (a pcb which converts mains AC into DC at 5v for the logic, 12v for the transducer and 24v for the motor) and the main board which runs the controller.

If a controller appears to be malfunctioning you can carry out a number of checks to isolate the problem. First you should carry out the diagnostic checks available through the keyboard functions i.e. RESET 1- 2, 3, 4, 5, 6, 7, 8, 9.

Further diagnosis is made easier if you have another controller that is behaving OK. By swapping the tops over you can see if the problem goes with the top or stays with case. If it goes with the top then you may have a transducer down (erratic pressure display). GDS can quickly mail you a new transducer. If it stays with the case then the power supply or main board are at fault. Either or both of these components can be easily mailed to GDS for checking.

Before opening up your GDS controllers you must read GDS Helpsheet # 7 "Board removal and replacement" and GDS Helpsheet # 8 "Checking connectors and 5 volts".

3.1 Pressure transducer

The quickest way to see if you have a pressure transducer problem is to put the suspect controller alongside one that is OK. Then unplug the transducer leads from their respective PCBs and swap them over. You do not have to physically remove the tops to do this. See if the problem moves to the OK controller or stays with the suspect one. If it moves the transducer is malfunctioning. If the problem stays with the suspect controller then the problem is with either the power supply board or with the main board.

3.2 Main board

Again we use the famous GDS "SWAP" Principle! Be careful to first label the boards with the controller serial numbers. Then swap the suspect one with an OK one and see if the problem moves or not. Again in this way you can see where the problem lies.

3.3 Power supply

By the above process of elimination you may discover that the transducer and the main board are both OK. Suspicion now falls on the power supply! This is the smaller PCB near the transducer end of the case.

Having gone through these procedures you are now in a position to call GDS who will suggest remedial action. When you call GDS it is wise to be sitting in front of your GDS system so we can take you through additional diagnostic procedures if necessary.