

# 42 GDS Helpsheet



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

Hardware

Standard Controller

Setting Zero and Gain of Pressure Measurement

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## 1. Introduction

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Sometimes the output of pressure measurement may change owing to movement of the zero or gain setting potentiometer caused by thermal effects or vibration during transportation, or by ageing of the electronic components. This effect is rare but when it occurs it may be necessary to perform one of two actions:

- a) Reset the controller hard zero: if the zero has shifted a long way from zero, the controller may 'beep' as it continuously believes it is below its minimum pressure limit (around  $-80$  to  $-100$  kPa).
- b) Reset the controller gain: it may be necessary to reset the gain against a standard pressure i.e. to recalibrate. Note: when adjusting the zero (see option a) it is not always necessary to also adjust the gain.

## 2. Re-setting the controller hard zero

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To set the hard zero on a Standard controller the following procedure should be followed:

1. Remove the soft zero offset by using the keystroke sequence RESET, ZERO, EIGHT
2. Remove the six screws holding on the top-plate then gently lift the front edge of the top-plate by about 150mm so that access can be gained to VR4, VR3, VR2 and CON5, on the main board directly beneath the control panel. Note: VR2 and VR3 are beneath the screening plate, see figure 1 below. On later versions of the controller the metal plate has holes in place for access to VR2 and VR3 and a label indicating the positions of these potentiometers.

**WARNING: Do NOT touch the POWER SUPPLY to the right of the main PCB.**

3. Use the potentiometer VR3 (ZERO) to adjust the pressure reading to 0 kPa. This is located beneath the right hand lower hole in the screening plate.

Replace the top plate and screws.

### 3. Recalibration (gain of pressure measurement)

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To set the gain on a Standard controller the following procedure should be followed:

1. Ensure that the controller has been on continuously for a period of 24 hours.
2. Remove the soft zero offset by using the keystroke sequence RESET, ZERO, EIGHT
3. Remove the six screws holding on the top-plate then gently lift the front edge of the top-plate by about 150mm so that access can be gained to VR4, VR3, VR2 and CON5, on the main board directly beneath the control panel. Note: VR2 and VR3 are beneath the screening plate, see figure 1 below. On later versions of the controller the metal plate has holes in place for access to VR2 and VR3 and a label indicating the positions of these potentiometers.

**WARNING: Do NOT touch the POWER SUPPLY to the right of the main PCB.**

4. Using a calibrated voltmeter check that the reference voltage across the two pins, toward the top of the PCB, labelled V+, V- on CON5 is exactly 10.000 volts. If it is not it can be adjusted with potentiometer VR4, located in the centre of the PCB.
5. Connect the pressure outlet to a zero reference pressure\* and use the potentiometer VR3 (ZERO) to set the pressure reading to zero. This is located beneath the right hand lower hole in the metal screening plate.
6. Connect the pressure outlet to a reference pressure\* of 2000 kPa and use the potentiometer VR2 (GAIN) to adjust the pressure reading to 2000 kPa. This is located beneath the left hand lower hole in the screening plate.
7. Replace the top plate and screws.

**\* The pressure reference could be a GDS digital controller that has also been powered on for at least 24 hours.**

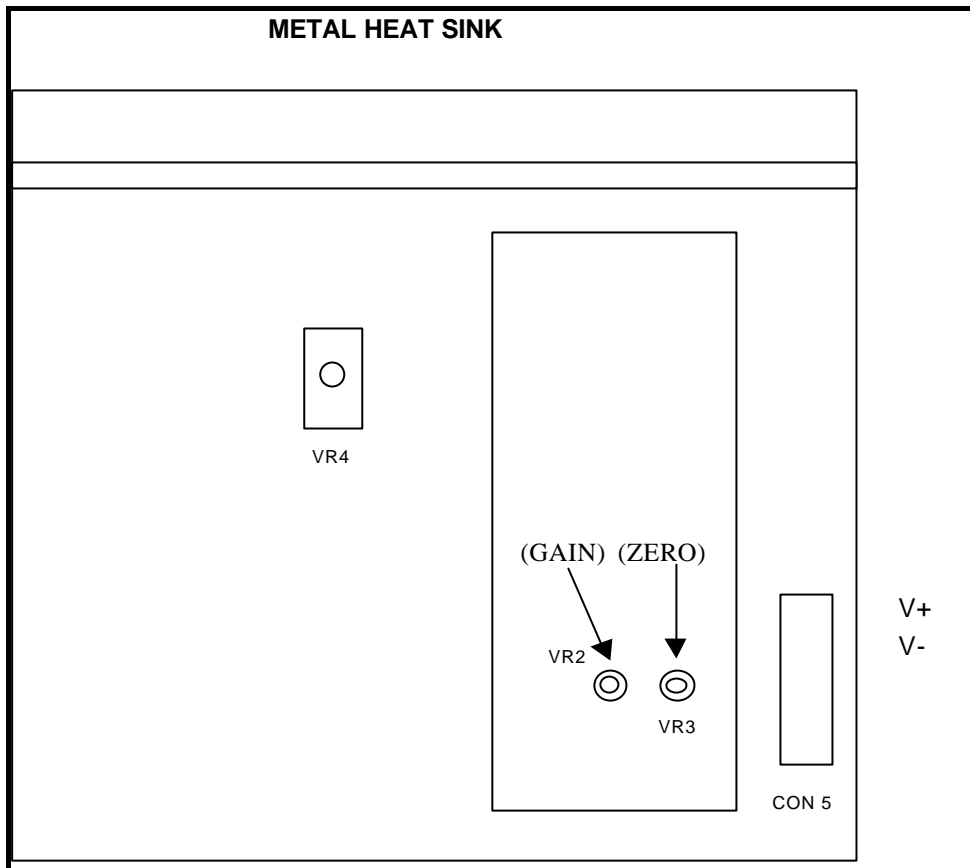


Figure 1: *Layout of components at bottom right of Standard circuit board*