

# CONTHERM *Scientific Limited*

TECHNICAL MEMORANDUM

PRODUCT : MITRE 4000

No : 0094

FROM : Contherm Scientific Ltd

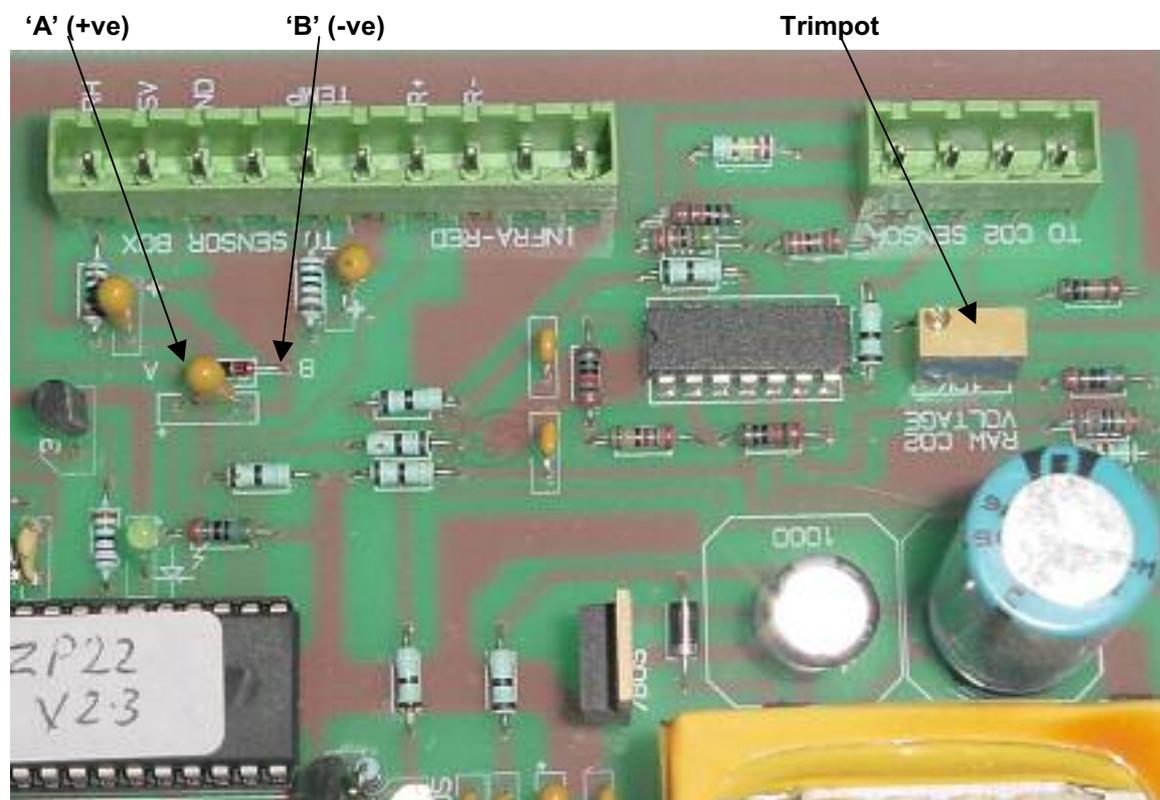
DATE : 30/03/2005

TO : ALL AGENTS

## Installation & Configuration settings on a MITRE 4000 CO<sub>2</sub> Incubator fitted with Thermal Conductivity Sensors

Whenever a ZP22 Interface PCB is installed into a 4000 Series Mitre CO<sub>2</sub> cabinet which is fitted with the Thermal Conductivity type of CO<sub>2</sub> sensor (The sensor with the large stainless steel block). The RAW A/D converter scale setting must be checked, this is always carried out at the desired operating temperature.

- Install the ZP22 Interface PCB into the system.
- Power up the cabinet and set the temperature setting to the desired operating temperature (usually 37°C), set the CO<sub>2</sub> set point to 0.0 (To prevent any gas from being injected into the cabinet).
- Allow the cabinet to stabilise at the desired operating temperature.
- ADJUST the RAW CO<sub>2</sub> VOLTAGE trimpot to obtain +500mV ( $\pm$  50mV) DC across the diode at points 'A' and 'B' on the ZP22 PCB. Point 'A' is positive.



View of topside of ZP22 PCB

## TECHMEMO\_094 (Continued)

- Allow the cabinet to stabilise for at least another 30 minutes and recheck the RAW TRIMPOT setting again. If the setting has changed by more than  $\pm 50\text{mV}$  repeat the trimpot adjustment procedure.
- Fan the doors (by opening the outer door and 'sweeping' the inner glass door open & closed to help dissipate any  $\text{CO}_2$  inside the cabinet) and then adjust the temperature set point to initiate an 'AUTO-CAL' procedure (This is indicated by the  $\text{CO}_2$  display 'flashing').
- When the AUTO-CAL has finished (usually after 2 – 4 hours) the cabinet should be ready for use.

### **Troubleshooting:**

If for some reason the display is not stable (IE Continuously ramps UP or Down) this usually indicates that the above procedure has not been correctly carried out OR possibly one of the sensors is broken or damaged.

Check the MEASuring thermistor (Yellow & Brown wires) by unplugging the connector from the PCB and checking its resistance using a multimeter, it is typically between  $6\text{K}\Omega$  and  $12\text{K}\Omega$  depending on temperature (Quoted values at  $20^\circ\text{C}$ ) but must NOT be open circuit. Also measure between the Yellow & brown thermistor sensor wires and cabinet ground (metalwork) (This should be open circuit).

Check the COMPensating thermistor (Purple & Blue wires) in a similar manner but its resistance should be between  $200\text{K}\Omega$  and  $350\text{K}\Omega$ .

If alarm No: '7—' is sounding then the above procedure has not been carried out correctly, check the troubleshooting section and then repeat the whole installation procedure again.