

CONTHERM SCIENTIFIC LTD

TECHNICAL MEMORANDUM

PRODUCT : ZP10b PCB

No : 0068

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FROM : Contherm Scientific Ltd

DATE : 18/3/97

TO : All Agents

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=SUBJECT : Replacing ZP10b HUMIDITY PCB & SENSOR.

The MITRE series of CO₂ incubators (4150/4200/4400) have a new humidity sensor PCB (ZP10b). The ZP10b is essentially the same as the original ZP10a pcb except that it is designed to have the actual humidity sensor mounted REMOTELY from the PCB.

The SPAN trimpot on the PCB (Blue 10 Turn) should NOT be adjusted in the field unless the sensor is replaced with two precision capacitors (121pf and 160pf) and the correct procedure is carried out. There is normally NO NEED to adjust this trimpot when changing sensors. If there is a problem with the humidity readout it is usually best to check the CALIBRATION and if not satisfactory then replace the Philips SENSOR before suspecting the ZP10b PCB.

A) To replace SENSOR: Switch power off at wall socket, and after opening both the outer and inner doors undo the TWO knurled nuts holding the top element cover to the incubator roof. It may be necessary to remove the topmost shelf and runners to gain easy access to the element cover. Remove the element cover from the incubator, the sensor housing can now be seen on the RHS of the incubator roof. Remove the Philips Sensor (white) by unsoldering from the small pcb and replace it with a new sensor.

Replace the element cover and shelves and power up the incubator.

The humidity readout will need to be carried out to reflect the actual humidity in the cabinet (within +/- 5% RH).

B) To replace the ZP10b PCB: Switch power off at wall socket and remove plug. Using a special allen key open and remove the incubator outside top cover (the small earth wire at the rear LHS will need to be disconnected). The ZP10b PCB is mounted on a metal bracket and held in place by 4mm nuts and screws. Remove the two 4mm nuts holding the PCB to its bracket and also remove the two cable clamps holding the multicore cables to the bracket to allow the PCB to be fully accessed. Unsolder the wires at each end of the ZP10b PCB and remove the faulty board, replace with the new PCB and resolder wires back into respective positions. Reassemble PCB and cable clamps back onto bracket. The Humidity calibration procedure will need to be carried out.

NB: When replacing the cabinet top cover ENSURE the EARTH wire

is FIRMLY connected to the EARTH terminal on the cover.

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C) CALIBRATION: Calibration is best carried out by placing a WET & DRY bulb thermometer in the workspace, allowing the thermometers to stabilize and reading the actual Humidity from the WET & DRY bulb tables. To adjust the reading turn the small GREEN trimmer capacitor in one direction by 2-3 degrees of rotation and note if the displayed humidity reading (press the CO₂ button briefly to display the humidity) increases or decreases. Repeat the adjust in the correct direction until the displayed humidity is in agreement with the WET & DRY bulb readings.

An alternative method is to place a tray of water in the bottom of the cabinet and allow the temperature to stabilize at the desired operating temperature for at least 1 hour, adjust the humidity display to read 95% RH under these conditions.

NB: when the humidity has been correctly calibrated a CO₂ AUTO-CAL should be started.

WIRING COLOURS: (Looking at PCB from component side and reading from Top to Bottom)

			T	1	Yel
			O	2	Brn
Yel	T			3	Gry
Brn	O		C	4	Blk
Org		ZP10b PCB	O	5	Grn
Gry	S		N	6	Pnk
Blk	E		N	7	Pale Grn
Pnk	N		E	8	Org
Pale Grn	S		C	9	Red
Blu	O		T	10	Wht
Pur	R		O	11	Blu
			R	12	Pur
