



INSTRUCTION MANUAL

**CAT 1050T – 1400T
TROPICOOOL INCUBATORS**

**CONTHERM SCIENTIFIC LIMITED
P O BOX 30-605 LOWER HUTT 5040**

TEL: (0064-4) 568 8034

FAX: (0064-4) 568 8095

EMAIL: contherm@xtra.co.nz



WARRANTY STATEMENT

*** * * * ***

CONTHERM Scientific Company will guarantee CONTHERM equipment for a period of twelve months from the date of installation against faulty workmanship and fabricated materials. This guarantee covers the replacement of component parts found to be defective and authorised labour charges during this period.

Should a malfunction occur or condition develop beyond reasonable acceptance the company will accept responsibility for returning the unit to its factory specification at no cost to the Purchaser providing that the operating instructions have been observed and the defect is due solely to faulty design, material and workmanship. That the defective part be returned, freight paid to the nearest sales service office. Units outside the warranty period will be accepted and repairs will be covered under an extension of the above for 90 days.

In remote installations where it is not possible for the company's or agents' engineers to attend, authority may be given to allow the Purchaser to arrange such service.

The Purchaser is required to remit the purchase price of the unit to the supplier within the terms of that supplier's condition of sale. CONTHERM Scientific Company will accept no liability or shall its agents for consequent damage of any kind due to a malfunction or component failure.

*** * * * ***



STATEMENT of CONFORMITY

This **CONTHERM** cabinet conforms to the following standards:

- **Electrical Safety:** Complies with AS/NZS3350:1:1994
- **EMC:** Complies with EN 61326-1:1997



CONTENTS

- SECTION 1** Definition of Terms
- SECTION 2** Introduction and Specifications
- SECTION 3** Operating Instructions
- SECTION 4** Theory of Operation
- SECTION 5** Customer Troubleshooting and Maintenance
- SECTION 6** Parts Lists for Spares and Accessories

IMPORTANT

All electrical servicing **must** be carried out by suitably qualified personnel only.

SECTION 1 DEFINITION OF TERMS

For the purpose of our standard specifications the following definitions shall apply:

- a) **WORKING SPACE**
That portion of the internal space which is above the lowest shelf and not less than 3cm from any wall (including roof).
 - b) **CABINET TEMPERATURE**
That temperature at the centre of the working space.
 - c) **SPATIAL VARIATION**
The difference between the midrange of all measured temperatures obtained at one site and that at another site for those sites which give the greatest difference.
 - d) **TEMPORAL VARIATION**
The maximum value of the temperature range obtained for the standard site with the greatest range throughout the test interval.
 - e) **TEMPERATURE OVERSHOOT**
Any excess of actual over desired cabinet temperature during a heating up period.
 - f) **TEMPERATURE REPRODUCIBILITY**
Temperature regained without alteration to controls.
 - g) **TEST INTERVAL**
Interval of time to which the steady state characteristics apply (Max 1 hour).
- NB:** All the above apply with an **empty** chamber.
For definitions and test methods refer: **AS2853 : 1986** (and Appendices)

SECTION 2 INTRODUCTION AND SPECIFICATIONS

The CONTHERM 1000T series TROPICOOOL range of cabinets have been expressly designed to give the widest choice of operating conditions consistent with high reliability and low cost, the addition of a peltier cooling device allows the flexibility to operate at or slightly below ambient conditions.

All specifications are quoted for a cabinet temperature of 20°C with an ambient temperature of 20°C.

- **Construction** - High quality stainless steel interior, full fibreglass insulation, with non-jar magnetic door catch and corrosive resistant epoxy powder coated exterior.
- **Safety** - Fitted with an independent user adjustable Hi-Limit completely separate from normal controls.
- **Convection** - All units come with mechanical convection fan systems.
- **Electrical** - All quoted at 20°C - ZP21 Micro-Controller mechanical Convection.
 - Complies with AS/NZS 3350.1.1994 220-250V AC M.E.N
- **EMC** - Complies with AS/NZS 2064: 1997

PERFORMANCE:

- a) **Temperature:**
- | | | | |
|---------------------|-------------------|---|-----------------|
| Nominal Range | 6°C below Ambient | - | 50.0°C |
| Temporal Variation | | | ± 0.2°C |
| Spatial Variation | | | ± 0.6°C |
| Initial Overshoot | | | +2.0°C |
| Reproducibility | | | ±0.4°C |
| Dial resolution | | | 0.1°C |
| Operating Ambient | | | 10°C - 35°C |
| Mains Voltage Range | | | 220-250 AC 50Hz |
- b) **Timer:**
- | | |
|-------------------|--------------------------------|
| Timing range | 1 minute - 99 hours 59 minutes |
| Timing Resolution | 1 minute |

NB: Timer does not start timing down **UNTIL** within 2.5°C of the temperature **SET POINT**.

SECTION 3 OPERATING INSTRUCTIONS

This appliance is NOT intended for use by young children or infirm persons without supervision.

To set up unit for operation after unpacking and checking for damage proceed as follows:

- 1) Fit shelf runners, then shelves.
- 2) Select a location handy to a 10amp electrical outlet.
- 3) Bench Units - Place on solid top with clearance underneath to allow ventilation around entire cabinet.
- 4) Ensure a space of at least 150mm is allowed at the rear of the cabinet for air circulation.

NB: Ensure **ALL** of the distinctly coloured cable ties (If fitted inside cabinet) are **REMOVED BEFORE** operating the incubator.

OPERATING CONTROLLER:

- 1) Plug cabinet into 220-250V Mains outlet.
- 2) Turn on main switch - The LED should show all 8888s then display the current temperature in the cabinet. Do NOT press any buttons until after the 8888's have gone from the display.
- 3) Press and HOLD the temperature button (top) UNTIL the 'SET' LED comes ON then RELEASE. The 'SET' LED above the LED display should now be ON!
- 4) While the 'SET' LED is On use the 'UP' & DOWN' buttons to adjust the SET POINT to the desired temperature.
- 5) WAIT for the display to return to normal; the 'SET' LED will then go off
- 6) The TIMER must now be set to run the cabinet - use the SAME method as for the temperature EXCEPT press the 'TIME' button instead. To obtain the special '[.]' symbol for continuous operation, first adjust the timer down until '0.00' is reached, then press the down button once more to get '99:59' then the 'up' button to go 1 step above '99:59' the special '[.]' symbol should now be shown.

NB: The symbol '[.]' means run **CONTINUOUSLY**.

Setting the TIMER to **0.00** turns the cabinet **OFF**.

If the cabinet has **TURNED OFF** after the completion of a TIMED operating period it is only necessary to PRESS and HOLD the TIMER button until the 'SET' LED comes on to **REPEAT** the TIMED run.

NB: The 'PROG' button has NO FUNCTION on these models.

- 7) The cabinet will now attempt to obtain the SET POINT and control until the TIMER runs out of time.
- 8) To look at the current TIME press the 'TIME' button for 2 seconds - the amount of time left will now be displayed continuously.
To display the TEMPERATURE continuously - press the 'TEMP' button for 2 seconds.
- 9) To CANCEL any Alarm (ie. 1- - -) PRESS and HOLD the 'TEMP' button until the 'SET' LED comes ON.

Ensure the mechanical user HI-LIMIT is set correctly as described in the following section. The cabinet usually leaves the factory with the user HI-LIMIT set fully anticlockwise, if left in this position the HI-LIMIT will not allow the cabinet to heat and control correctly.

MECHANICAL HI-LIMIT MONITOR

The mechanical hi-limit is provided as a secondary safety device to protect the cabinet from over temperature in the event of electronic controller failure.

To set the Mechanical Hi-Limit

Turn the Hi-Limit control **FULLY CLOCKWISE**.

Allow the cabinet to stabilise at the required operating temperature (for at least 1 hour), then turn the Hi-Limit control anti-clockwise until the **MONITOR** neon comes on (or a slight 'click' is felt). Now turn the Hi-Limit control **SLOWLY CLOCKWISE** until the **MONITOR** neon goes off, then advance the Hi-limit clockwise 1-2 scale markings. This will set the Hi-Limit trip point about 3 - 4°C above the current cabinet temperature.

WARNING: To prevent **FIRE** or **SHOCK** hazard, **DO NOT** expose this product to rain or any type of moisture.

FOR YOUR SAFETY

To ensure safe operation the three-pin plug supplied must be inserted **ONLY** into a standard three-pin power outlet that is effectively earthed through the normal building wiring.

Extension cords are **NOT** recommended.

The fact that the equipment operates satisfactorily does **NOT** imply that the power outlet is earthed and that the installation is completely safe. For your safety, if in any doubt about the effective earthing of the power outlet, consult a qualified electrician.

PERIODIC ELECTRICAL SAFETY CHECKS

This appliance should be regularly tested (at intervals not exceeding 12 months) according to the procedures prescribed in **AS/NZS 3760**. The basic safety checks and tests on electrical appliances required by **AS/NZS 3760** are:

- a) A visual check to ensure that there is no mechanical damage, that controls etc. are in good working order and that no parts are missing.
- b) An earth continuity test.
- c) An insulation resistance test.

ALARMS

All alarms are indicated by a number and three dashes on the LED display and are accompanied by an audible alarm.

To **CANCEL** any Alarm (ie 1---) PRESS and HOLD the `TEMP' button until the 'SET' LED comes ON.

ALARM MEANING

- 1--- This means the cabinet is OVER or UNDER temperature. If UNDER temperature it could be due to the door being opened, otherwise check the cabinet to determine if the Internal fan is still operating and that the MECHANICAL Hi-Limit control is not interfering with normal operation.
- 3--- Preset alarm - The cabinet has lost its control settings due to an internal memory failure. Reset all control settings as desired and check the calibration setting.
- 4--- This means that the TEMPERATURE sensing probe has failed (1000 Ω RTD). The connections to the probe and the probe condition should be investigated.
- 9--- This is a WATCHDOG alarm - The Electronic PCB has failed - Replace the controller.

CALIBRATION

Calibration should be carried out at 20.0°C or at the temperature of interest, with the thermometer in the centre of the working chamber with the chamber empty.

NB: A Tropicool incubator will typically cool to a temperature of 6°C below the current ambient temperature, the calibration temperature must be within the achievable operating range of the tropicool incubator.

- 1) Place the Calibration Thermometer probe in the workspace centre, close the door and set the controller for 20.0°C or the temperature of interest, allow at least 1 hour to stabilise.
- 2) Read the temperature on the Calibration Thermometer.
- 3) To calibrate the cabinet -
 - a) Press and HOLD the `TEMP' button until the 'SET' LED comes ON and then release. The 'SET' led should now be ON.
 - b) WHILE the 'SET' led is ON: Press BOTH `UP' & `DOWN' buttons **TOGETHER** - a beep will be heard and the word `CAL' will appear briefly on the LED display. Adjust the reading on the LED display using the `UP' & `DOWN' buttons until it agrees with the Calibration Thermometer.

NB: If when attempting to press BOTH buttons together, the temperature SET POINT adjusts either up or down - it means you are NOT pressing BOTH buttons at the SAME TIME! - if the 'SET' led is still on you should attempt 3(b) again, if the 'SET' led is OFF you should repeat from 3 (a).
 - c) WAIT for a further beep to occur, the LED display will briefly show `----' and then the **CALIBRATION CONSTANT**, this will be a number in the range 0.0 to 19.9. This figure SHOULD BE NOTED as it may be used to return to this calibration setting. The LED will then briefly show another `---' the controller will then resume its role of normal operation.

NB: If a '[][][]' sign appears on the display the cabinet is OUTSIDE its calibration display range and calibration should be performed at a slightly higher temperature.
- 4) Allow to stabilise again - the temperature should now be correct. If NOT repeat the procedure.

NB: The calibration can only be performed within limits, if the calibration cannot be achieved a further fault exists.

VERIFYING CABINET PERFORMANCE

There are two basic tests that may be carried out to verify cabinet performance.

NB: These tests **MUST** be carried out with the cabinet **EMPTY** and at the specified ambient of +20°C.

TEMPORAL PERFORMANCE:

The cabinet should be set to operate at the Contherm specified calibration conditions.

Temporal performance is tested by placing a suitable (calibrated) test probe in the centre of the workspace and recording the readings for up to 1 hour **AFTER** the cabinet has **FULLY STABILISED**.

The cabinet has fully stabilised when the average temperature is no longer increasing or decreasing over time.

The result should be within the quoted specification.

This result is a function of the cabinet control system, sensor and airflow.

SPATIAL PERFORMANCE:

The cabinet should be set to operate at the Contherm specified calibration conditions.

Check Spatial Variation @ 20°C

(Refer manual for specification, 8 points as per diagram)

[6R]	[4C]	[3R]	TOP
[8C]	[1C]	[]	CEN
[2F]	[7C]	[6F]	BOT

(Where F=Front, C=Center, R=rear)

Spatial performance is tested by placing suitable (calibrated) test probes (usually thermocouples) in the eight specified positions and recording the readings for up to 1 hour **AFTER** the cabinet has **FULLY STABILISED**.

The cabinet has fully stabilised when the average temperature is no longer increasing or decreasing over time.

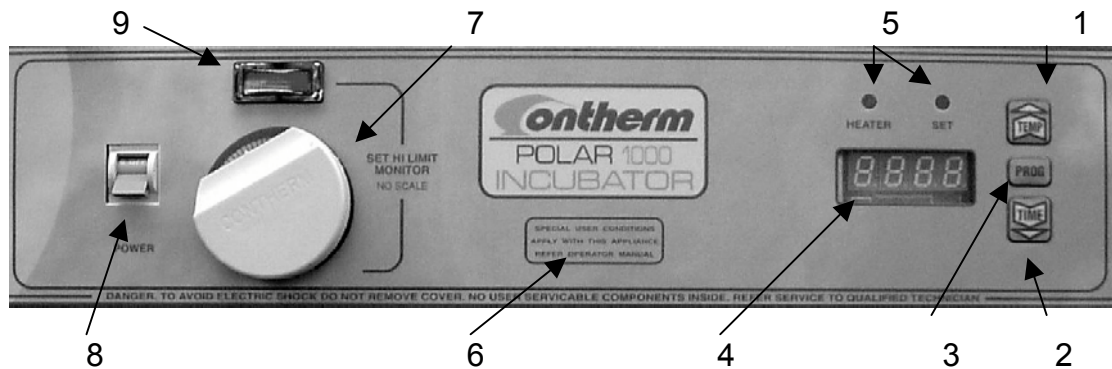
The sensors must be no closer than 30mm to any wall or roof and must be above the lowest shelf position by at least 30mm.

The result should be within the quoted specification.

This result is a function of the cabinet design and air distribution.

The spatial test must be performed with all doors, vents etc **CLOSED** and the measuring sensors must be very closely matched at the specified temperature.

CONTROL LAYOUT



- 1 Temperature adjustment button.
(Also used to adjust set points)
- 2 Time adjustment button.
(Also used to adjust set points)
- 3 Program Button.
- 4 LED Display - Gives readout of temperature in degrees centigrade OR elapsed time in hours and minutes.
- 5 LED Indicators - Left LED indicates when the element is ON. Right LED indicates when controller is in SET mode.
- 6 Refer "Caution" Instructions.
- 7 Mechanical Hi-limit set Adjustment Knob (No Scale).
- 8 Mains Mains Switch and Circuit Breaker (6A) combined
- 9 Hi-Limit Monitor Neon- will come on if power is being applied to heater element while mechanical Hi-Limit is tripped.

SECTION 4 THEORY OF OPERATION

This CONTHERM General Purpose Incubator uses a new single chip microprocessor electronic PID controller with a 1000 Ω Resistance RTD probe as the temperature sensing element. The LED display gives a direct readout of SET POINT or Cabinet temperature in degrees centigrade.

The air inside the incubator is circulated by a small stirring MOTOR which draws air in at the top of the chamber and discharges it down behind a false back over the fins of the PELTIER cooling device and down to the bottom, resulting in a vertical air flow.

The sheathed HEATING ELEMENT is located adjacent to the air rotor such that the discharged air passes over the active portion of the element.

Setting and Calibration of the chamber temperature is performed via the adjustment buttons and is stored in non volatile memory. Settings will typically be retained for up to 100 years even in the absence of power.

The type of cabinet (INCUBATOR, OVEN, C or MCP) is selected at the factory by special button sequences during the power on period and stored in the non volatile memory.

An internal glass door allows the contents to be viewed without disturbing the internal temperature.

TROPICOOOL units provide cooling via a semiconductor 'PELTIER' device. The PELTIER unit has its Switching Power Supply at 12V. The PELTIER unit runs continuously.

SECTION 5 TROUBLESHOOTING AND MAINTENANCE

MAINTENANCE

The epoxy powder coated mild steel exterior is resistant to corrosion and spillage's and should be wiped with a damp cloth occasionally to maintain its appearance.

The fan motor bearings do not require lubrication under normal conditions.

The stainless steel interior and shelves should be kept clean with a damp cloth. Take care that the temperature probe is not damaged during cleaning of the interior base.

Any spillage or breakage within the cabinet should be cleaned up immediately with the cabinet switched off and unplugged at the mains.

ROUTINE MAINTENANCE

Suggested to be checked Annually:

- Check glass door gaskets for damage (cuts and splits), replace if necessary.
- Check glass door(s) seal correctly onto gaskets, if split glass doors check door alignment on centre seal, adjust door hinge if required.
- Wipe out floor of cabinet to remove any water stains.
- Check controller overlay for damage, replace if necessary.
- Check basic cabinet control functions and that user hi-limit control is set appropriately.

ELECTRICAL SAFETY

This appliance should be tested for insulation and earthing continuity at regular intervals according to **AS/NZS 3760**.

The basic safety checks and tests on electrical appliances required by **AS/NZS 3760** are:

1. A visual check to ensure that there is no mechanical damage to the supply cord, that controls etc. are in good working order and that no parts are missing.
2. An earth continuity test.
3. An insulation resistance test.

In order to provide evidence of compliance, a label (signed and dated by the person testing the equipment) may be placed on the tested appliance.

TROUBLESHOOTING:

- A) **CABINET COMPLETELY DEAD. NO MAINS NEON :**
- NO POWER TO CABINET, CHECK WALL SOCKET AND WALL SOCKET FUSES
- B) **CABINET DEAD, BUT MAINS LIGHT ON :**
- CHECK CABINET FUSE.
- C) **LARGE TEMPERATURE VARIATION IN CABINET, CONTROLLER 'HEATER' LED PULSING :**
- INTERNAL FAN NOT GOING (CHECK FOR AIR MOVEMENT INSIDE CABINET)
- CABINET OVERLOADED WITH SAMPLES, REMOVE SOME SAMPLES TO ALLOW BETTER AIR FLOW.
- LOOK FOR HI-LIMIT MONITOR NEON COMING ON, INDICATES MECHANICAL HI-LIMIT SET TOO LOW
- D) **CABINET NOT FUNCTIONING NORMALLY AND CALIBRATION SHIFTED FROM NORMAL, or CANNOT SET CORRECT TEMPERATURE RANGE:**
- CONFIRM CONTROLLER SET TYPE BY TURNING CABINET OFF AT CABINET MAIN SWITCH. TURN BACK ON WHILE HOLDING DOWN **BOTH** 'UP' & 'DOWN' BUTTONS **TOGETHER** UNTIL 8888'S APPEAR ON LED DISPLAY, THEN RELEASE BUTTONS AND HOLD DOWN THE '**TEMP**' & '**TIME**' BUTTONS TOGETHER - AN ANSWERING 'BEEP' 'BEEP' SHOULD BE HEARD.
- E) **INSUFFICIENT COOLING :**
- PERFORMANCE IS DEPENDANT ON THE AMBIENT TEMPERATURE, TYPICAL PERFORMANCE IS 6°C BELOW AMBIENT.

REMOVAL AND REPLACEMENT OF ZP21 CONTROLLER PCB

The following should only be carried out by suitably qualified electrical personnel.

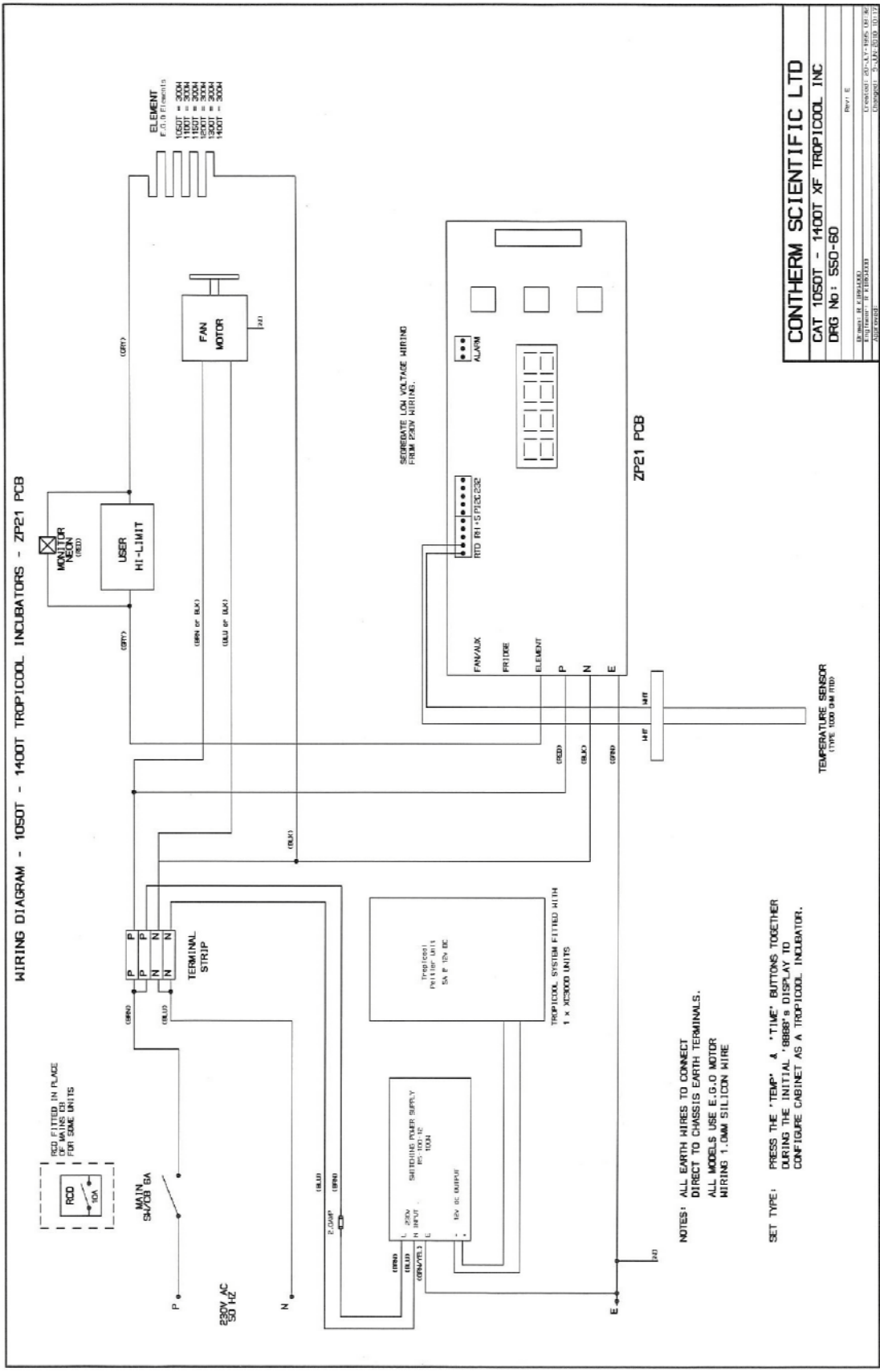
NB: ENSURE that power cord has been **REMOVED** from the wall socket **BEFORE** attempting to remove the PCB.

- a) Loosen the two black plastic fasteners holding the cabinet lid down by turning anticlockwise so that the pop up. Lift the lid up at the front and remove from cabinet.
- b) Remove the two self tapping screws at either end of the control panel and rotate the panel up so that it rests on the cabinet top.
- c) **ENSURE POWER CORD is REMOVED** from wall socket then Unplug socket from Controller PC Board. NOTE connections from side 10way socket to sensor probe etc so that they can be correctly reinstalled, then disconnect probe etc from socket.
- d) Using suitable socket undo four 4mm securing nuts. Carefully NOTE position and size of SPACERS
- e) Remove PC Board.
List FULLY all fault details, carefully pack, return to Agent for repair. ALWAYS supply contact details and FULL physical return address.
The refitting of the controller should be done in the reverse order as above, taking care when reconnecting the sensor etc that they are connected to the correct socket holes.
- f) Carry out Insulation (use 500V insulation tester) and earth continuity check BEFORE applying power to cabinet. (As per **AS/NZS 3760** – In-service safety inspection and testing of electrical equipment).
The basic safety checks and tests on electrical appliances required by **AS/NZS 3760** are:
 1. A visual check to ensure that there is no mechanical damage to the supply cord, that controls etc. are in good working order and that no parts are missing.
 2. An earth continuity test.
 3. An insulation resistance test.

In order to provide evidence of compliance, a label (signed and dated by the person testing the equipment) may be placed on the tested appliance.

N.B: Check for loose wires that may have been missed, particularly the earth wires.

ELECTRICAL GP LAYOUT ZP21 550-60



CONATHERM SCIENTIFIC LTD
CAT 1050T - 1400T XF TROPICOOL INC
DRG No: 550-60

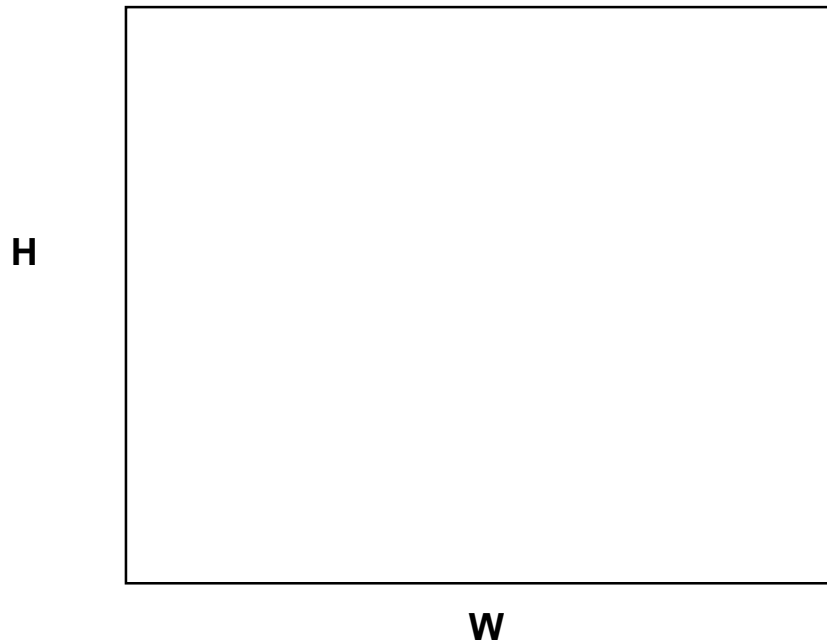
Rev: E
 Equipment: FIBREGEL
 Licence: 20-01-1995 10:32
 Drawing: 3002-010-01

SECTION 6 PARTS LISTS AND SPARES

Shelves	Cat 1050T	GP1308
	Cat 1100T	GP1309
	Cat 1150T	GP1310
	Cat 1200/1300/1400T	GP1311
Shelf Support Brackets (MUST be in pairs) (State Model when ordering)		GP1305
Hinges:Glass Door		GP1006
Fan Motors		GP1010
Elements	All Models	ELEMEGO 300
Temperature Sensor: 1000 Ω RTD		GP1307
Hi-Limit Thermostat: Incubator		GP1021
Mains Switch (Illuminated)		GP1033
Control Knob		GP1324
Control Circuit Board: ZP21		GP1306
Fuse (Switching Power Supply) 2 Amp		
Switching Power Supply (for Tropicool unit)		RS-100-12
Monitor Neon		GP1073
Tropicool Unit XC3000		

GLASS DOOR SIZES

(If purchasing independently)



5.0mm Toughened Clear Floated - All edges arased.

Cat.1050T	374mm H x 432mm W	
Cat.1100T	495mm H x 507mm W	
Cat.1150T	571mm H x 587mm W	
Cat.1200T	636mm H x 700mm W	
Cat.1300T	462mm H x 700mm W	2off
Cat.1400T	614mm H x 700mm W	2off

CONTHERM SCIENTIFIC LTD
CERTIFICATE OF CONFORMANCE



This certifies that the CONTHERM equipment specified below has passed quality and performance tests according to our standard methods and procedures and has been approved for despatch to our customers. Contherm calibration equipment is traceable to a YSI Model 60 gallium melting point temperature standard.

CAT. No:

APPLIANCE No:

DATE:.....

<u>FACTORS</u>	<u>TEST RESULTS</u>	<u>CALIBRATION</u>
Test Temperature:	Temperature []
Probe Position:	
Date of Test:	
Actual Recorded Temperature	
Temporal Variation	Passed []

ELECTRICAL TESTS

Earthing: [] Ω Insulation: [] $M\Omega$
Flash: [] **mA** Leakage: [] **mA**

The electrical tests are satisfactory: []

Signature of Test Personnel

CONTHERM SCIENTIFIC LIMITED
NEW ZEALAND

PACKING INSTRUCTIONS
 Installation Quality Check List (IQ)
 (Leave with Cabinet)



CONTHERM CAT.No
 (Tropicool Incubator)

App No:

Date:/...../.....

<u>Accessories Supplied</u>	<u>Qty</u>	<u>(IQ)Checked</u>
Operating Manual	[]	[]
Shelf Runners (pairs)	[]	[]
Shelves	[]	[]
IEC Mains Lead	[]	[]
Other.....	[]	[]

Cabinet Undamaged when Packed [] When Received []
(No dents, scratches or obvious damage)

Certificate of Conformance Completed [] []
(Factory test sheet attached)

Ensure cabinet has been fully tested
 and approved for packing . [] []

Ensure data plates are fitted. [] []

Interior and exterior clean. [] []

Cabinet Installed as per installation Instructions: []
(See SECTION 3 of the operating manual)

Installation Verification (IQ) Satisfactory: [Y][N]

PACKED BY

(IQ)CHECKED BY

Date:/...../.....

Date:/...../.....

OPERATION VERIFICATION INSTRUCTIONS

Operational Quality Check List (OQ)
(Leave with Cabinet)



CONTHERM CAT.No
(Tropicool Incubator)

App No:

Date:/...../.....

Operation.....

(OQChecked)

Comments

LED Display working <i>(Manual SECTION 3 – 8888's during powerup)</i>	[]	
Able to adjust SET POINTS <i>(Manual SECTION 3 – set for 20.0°C)</i>	[]	
Temperature stable @ 20°C [] <i>(Allow cabinet to stabilise at temperature for 1 hour)</i>		
Check Alarm Operation <i>(Open door for 30mins after cabinet stabilised)</i>	[]	
Check Alarm Cancellation <i>(Manual SECTION 3 – Press 'temp' button until 'set' led on)</i>	[]	
Check HI-LIMIT Control <i>(Manual SECTION 3 – turn anticlockwise when stabilised)</i>	[]	
Calibrate at temperature at 20°C [] <i>(Manual SECTION 3 – Calibration @ 20 or temperature of interest)</i>		

Operational Performance (OQ) Satisfactory: [Y][N]

(OQ)CHECKED BY

Date:/...../.....

PERFORMANCE VERIFICATION INSTRUCTIONS

Performance Quality Check List (PQ)
(Leave with Cabinet)



CONTHERM CAT.No
(Tropicool Incubator)

App No:

Date:/...../.....

Operation.....

(PQChecked)

Comments

Check Temporal Variation @ 20°C

[]

(Refer manual for specification, cabinet empty, center only, see verifying cabinet performance in the manual)

Performance Verification (PQ) Satisfactory: [Y][N]

(PQ)CHECKED BY

Date:/...../.....

