CONTHERM SCIENTIFIC LTD

TECHNICAL MEMORANDUM **PRODUCT : SERIES FIVE**
No : 0059

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FROM: Contherm Scientific Ltd **DATE:** 4/9/95
TO: ALL AGENTS **REVISED:** 18/4/02

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SUBJECT : Replacing ZP19 PCB with ZP20 PCB

There will be times when it will become necessary to replace the ZP19 PCB with the new ZP20 PCB. The following procedure outlines the salient procedures to be carried out. **NB:** The PHYSICAL size and mounting for BOTH PCB's is the same, the original OVERLAY may also be retained.

CAUTION!: The MAIN connector for the ZP20 PCB is **TOTALLY** different from that of the ZP19. NOTE ESPECIALLY that the MAINS connections are DIFFERENT, ensure that any PHASE, NEUTRAL and EARTH connections are made correctly. All EARTHs from the MOTOR, FRIDGE Compressor etc MUST be taken DIRECTLY to the chassis earth points and NOT to PCB connectors.

PARTS REQUIRED: **ZP20 UPGRADE KIT CONSISTING OF:**

- ZP20 PCB complete & tested
- ZP20 MAIN CONNECTOR
- TERMINAL STRIP WITH WIRES
- 2 x SPACER 11 (6mm ALUMINIUM)
- 2 x SPACER 12 (4mm ALUMINIUM)
- TERMINAL 10 (For earth wire).
- 2 x SCREW 35
- 2 x NUT 06
- 1 x LEXAN SHEET

NB: If upgrading an oven with an element wattage greater than 1250W (ie 250M,260M and similar) - additional parts as follows will be required:

- OPTO'22' Solid State Relay (240A10)
- OPTO Lexan Cover (to cover OPTO terminals).
- Additional screws and nuts: 2 x Screw 35, 2 x PK 03, 2 x Nut 06
- 0.8m length Red 1mm^2 ∅ Silicone Insulated Wire
- 0.8m length Black 1mm^2 ∅ Silicone Insulated Wire
- 0.8m length Orange 1mm^2 ∅ Silicone Insulated Wire
- Heatsink thermal paste

METHOD:

A) **REMOVE ALL POWER** from the cabinet (ie by disconnecting from the wall socket).

B) I) Remove control panel and ZP19 PCB from the control panel.

ii) Obtain lexan overlay and peel the brown paper backing off the overlay, ensuring that the punched centre of the overlay does not become detached from the rest of the overlay

iii) Fit the lexan overlay over the two pems located on the righthand side of the T/Stat and stick to the control panel surface. Lexan overlay should sit between the control panel surface and ZP20 PCB. Remove the clear plastic film off the face of the lexan cover.

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SUBJECT : Replacing ZP19 PCB with ZP20 PCB (CONTINUED)

C) Remove spacers from T/STAT (Hi-Limit) end of PCB and REPLACE with 2x 6mm spacers provided (use shorter 4mm spacers if panel has a raised plate on the control panel). Retain existing spacers for re-use at button end of PCB.
D) Place ZP20 PCB in control panel and secure with original nuts and washers.
E) REMOVE PHASE wire from ZP19 connector and connect to PHASE side of terminal strip. (Shares terminal on PHASE LOOPED side of terminal strip).
F) REMOVE NEUTRAL wire from ZP19 connector and connect to NEUTRAL side of terminal strip. (Shares terminal on NEUTRAL LOOPED side of terminal strip).
G) REMOVE EARTH from ZP19 connector and connect to EARTH on ZP20 connector.
H) REMOVE YELLOW element wire from ZP19 connector and connect to No3 on terminal strip (PHASE side). (Shares with supplied RED wire going to ZP20 PHASE).
I) Connect BLACK wire going from terminal strip No6 to NEUTRAL of ZP20 PCB. (See section 0059b if 250M or 260M oven).
J) REMOVE ORANGE element wire from ZP19 connector and connect to 'ELEMENT' on ZP20 connector. (See section 0059b if 250M or 260M oven).
K) REMOVE MOTOR PHASE wire from ZP19 connector and connect to No1 on terminal strip (PHASE side).
L) REMOVE MOTOR NEUTRAL from ZP19 connector and connect to No4 on terminal strip (NEUTRAL side).
M) REMOVE MOTOR earth (if connected to ZP19 connector) and after terminating with crimp lug provided, connect to EARTH stud on cabinet CHASSIS.
N) Connect Thermocouple sensor to ZP20 (**NB:** Sensor polarity is REVERSED from original ZP19 polarity).
O) Drill 2 holes and secure terminal strip to chassis of cabinet (on vertical metal divider at rear of PCB area), with screws and nuts provided.

NB: If a **REFRIGERATION SYSTEM IS FITTED** :Use the extra positions on the terminal strip (No2 & No5 to connect the FRIDGE COMPRESSOR to PHASE & NEUTRAL as required. If the cabinet is fitted with an internal **FRIDGE CUTOUT THERMOSTAT** connect the fridge compressor PHASE wire to the output of this thermostat so that the fridge turns OFF if the temperature inside the cabinet rises above 42oC.
Connect the PHASE wire going to the fridge DEFROST SOLENOID to TERMINAL No2 (PHASE). Connect the NEUTRAL wire going to the defrost solenoid to the FRIDGE terminal on the ZP20 PCB. The Defrost solenoid is only energised when a defrost is required.
Ensure that the EARTH wires from the COMPRESSOR & SOLENOID are connected to a cabinet chassis earth terminal.

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SUBJECT : Replacing ZP19 PCB with ZP20 PCB (CONTINUED)

FOR LARGER OVENS (250M ,260M) OR LARGER ELEMENTS

For ovens with element wattages **greater** than **1250W**, the element is operated through a separate OPTO '22' Solid state relay.

Using the kit read these steps in place of the steps for the smaller ovens.

I) Black wire will already be connected from terminal strip to ZP20 PCB.
J) Remove orange element wire from ZP19 and connect to Terminal No.1 on Opto Relay.
K) Connect Terminal No.2 on Opto 22 to No.5 on terminal strip (Neutral side)
L) Connect orange wire from Terminal No.3 on Opto 22 to ZP20 “Element”
M) Connect Red wire from Opto 22 Terminal No.4 to “PHASE” on terminal strip position no.2
N) REMOVE MOTOR PHASE wire from ZP19 connector and connect to No1 on terminal strip (PHASE side).
O) REMOVE MOTOR NEUTRAL from ZP19 connector and connect to No4 on terminal strip (NEUTRAL side).
P) REMOVE MOTOR earth (if connected to ZP19 connector) and after terminating with crimp lug provided, connect to EARTH stud on cabinet CHASSIS.
Q) Connect Thermocouple sensor to ZP20 (**NB:** Sensor polarity is REVERSED from original ZP19 polarity).
R) Drill 2 holes and secure terminal strip to chassis of cabinet (on vertical metal divider at rear of PCB area), with screws and nuts provided.
S) Drill two hole and secure optocoupler to chassis of cabinet. (on vertical face of metal divider at rear of PCB area), with screws and nuts provided. (Smear Thermal paste on underside of Optocoupler to aid in heat transfer to cabinet chassis). It is essential that the WHOLE of the underside of the optical relay makes good contact with the metal chassis of the cabinet, as it is this contact that provides the essential cooling for the optical relay. If the contact is poor, there is a danger that the relay may overheat and catch fire.
T) Fit lexan opto terminal cover onto the Opto isolator to provide protection against accidental contact with the opto terminals.

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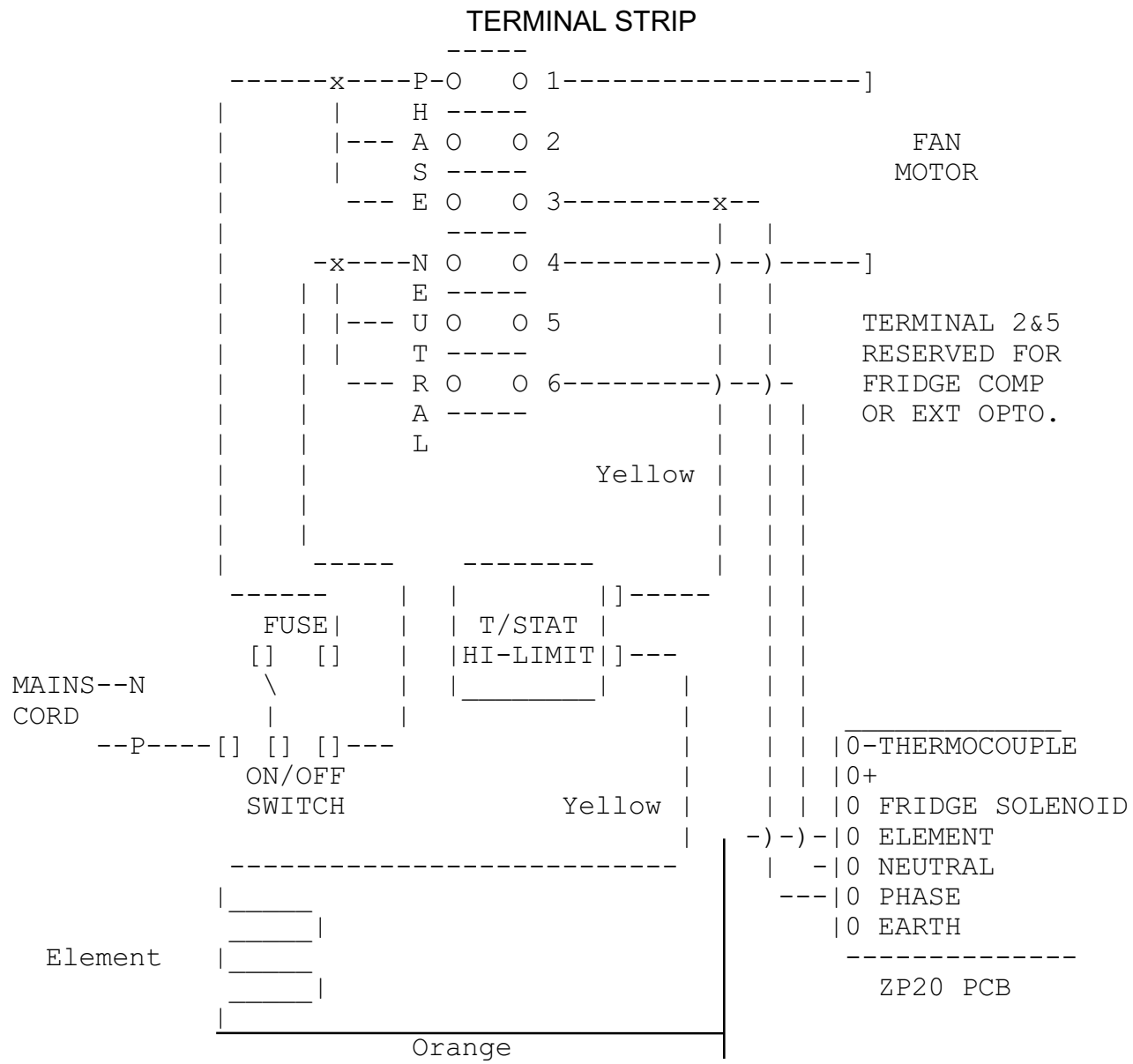
SUBJECT : Replacing ZP19 PCB with ZP20 PCB (CONTINUED)

CIRCUIT LAYOUT



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TECHNICAL MEMORANDUM **PRODUCT : SERIES FIVE**
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FROM : Contherm Scientific Ltd **DATE** : 4/9/95
TO : ALL AGENTS **REVISED**: 11/3/02

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SUBJECT : Replacing ZP19 PCB with ZP20 PCB (CONTINUED)

CIRCUIT LAYOUT 250M,260M