

1 UNPACKING

On receipt check for signs of damage and report any immediately to CAL. The following items are included with the instrument:

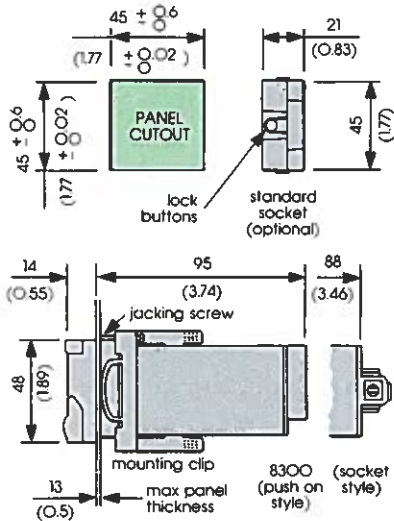
- Accessory kit – 1 link for changing input voltage, push on connectors (only with 8300 and models supplied with standard socket).
- 2 jacking screws
- Panel mounting clip

2 INSTALLATION

PANEL MOUNTING

The 8000 is mounted in the panel through a 45 x 45 mm (1 7/16 DIN) cut out. The mounting clip should be pushed against the panel until the ratchet holds the unit firmly in place. If necessary the mounting can be further tightened using the 2 jacking screws provided

dimensions in mm (inches)

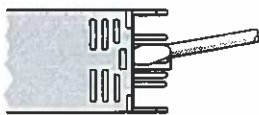


To remove the unit from the panel press the legs of the clips in opposite directions to release the ratchet

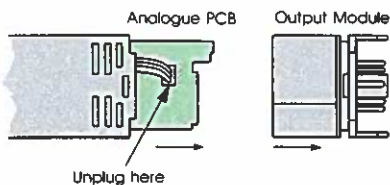
3 115/230V VOLTAGE CONVERSION

- 1 Separate the output module assembly from the main module by gently levering the retaining clips from both slots in the cover with a screwdriver

Module Cover



- 2 Remove the output module and then pull the PCB from the module cover as far as possible. Unplug the potentiometer wiring by releasing the lock. The PCB can now be completely removed. TAKE CARE NOT TO DAMAGE OR DISTURB ANY OF THE OTHER COMPONENTS



Supply: Either 230V ± 15% 50-60Hz or 115V ± 15% 50-60Hz

Check side label for supply voltage. This can be changed by plug in links on the main pcb. (A spare link is provided in the accessory kit)

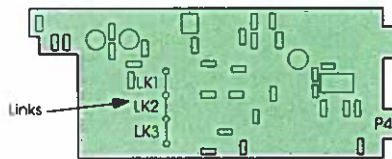
CAL 8000 TEMPERATURE CONTROLLER INSTALLATION AND OPERATING MANUAL



The 8000 uses the latest production and design techniques to provide a high quality analogue temperature controller. The advanced time proportional circuitry will give accurate and reliable control with minimum overshoot for the majority of applications

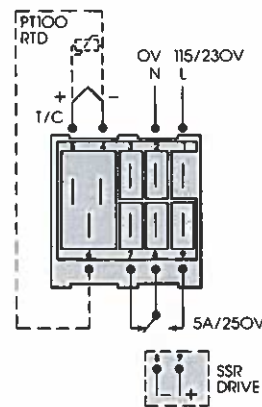
Use pliers to remove a link, and ensure that when fitting a new link it is fully pushed into place

For 230Vac mains supply – link 2 fitted
For 115Vac mains supply – links 1 and 3 fitted

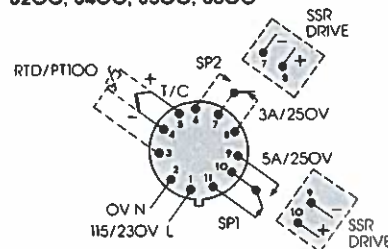


4 WIRING

8300

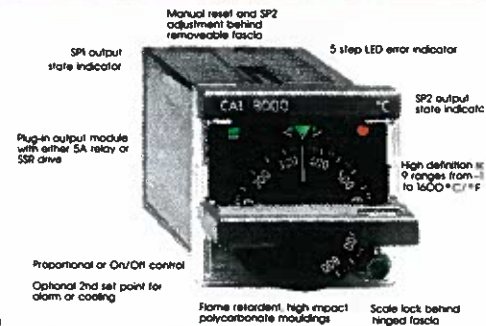
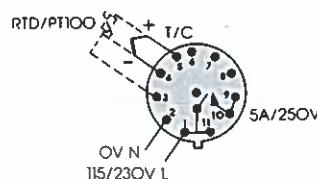


8200, 8400, 8500, 8600



8700

(equivalent connections to CAL 6200)



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5 PROCESS ERROR DISPLAY

Has a 5 step indication, each step operates for 2% of full scale. Example for a full scale of 0-300°, the LED's would be lit as shown:-

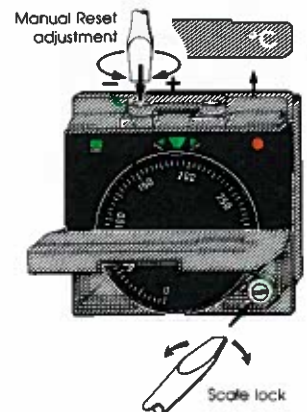
Error Display	Process Temperature
	9° OR MORE BELOW SET POINT
	9° TO 3° BELOW SET POINT
	-3° TO +3° SET POINT
	3° TO 9° ABOVE SET POINT
	9° OR MORE ABOVE SET POINT

6 MANUAL RESET (OFFSET) ADJUSTMENT

Time proportional control will normally provide good accuracy, but the actual process temperature may differ slightly from the set point. This difference is called offset

In most applications the offset is not important and no adjustment is necessary

To remove offset: Remove top fascia to enable access to the manual reset potentiometer.



For **over** powered loads ('actual' above 'set' temperature) adjust anti-clockwise (-)

For **under** powered loads ('actual' below 'set' temperature) adjust clockwise (+)

7 SCALE LOCK

To operate - raise the lower fascia. With a screwdriver, rotate the scale lock until the pip engages, as shown in section 6
Unlock - rotate to disengage the pip either clockwise or anti-clockwise

8 SP2 ADJUSTMENT (IF FITTED)

Check that you have the correct unit for the application:

8400 - Low limit alarm - relay energised below SP2 setting
8500 - Deviation alarm - relay energised within the SP2 band, set equally either side of SP1
8600 - High limit alarm - relay energised above SP2 setting

All 3 modes of operation are slaved to SP1. Maximum adjustment from SP1 is 10% of full scale

SP2 Setting

Remove top fascia to access the SP2 potentiometer (pot). A small flat bladed screwdriver is needed to adjust the pot

Note - examples given are for an 8600 High Limit alarm. SP1 set point of 200° and SP2 to operate at 210°



- 1 With the 8000 powered, allow the temperature to stabilise at SP1 set temperature (200°)



- 2 Adjust SP1 to 190° - Process temperature will remain at 200° for a period of time depending upon the thermal stability of the system

- 3 Quickly adjust SP2 until the LED operates



- 4 As the process temperature may have cooled down from 200° by the time that SP2 LED is lit, repeat steps 1 to 3 several times until you are confident that SP2 has the 10° differential required

An alternative method is to use appropriate instrumentation to provide the correct sensor input (compensated mV or Ω)

9 SPECIFICATIONS

ELECTRICAL

Supply Voltage Dual 115/230V ± 15% 50-60Hz
(Factory set-link change)

Consumption 3VA

MAIN OUTPUT: SP1

Relay-standard 5A/250Vac resistive, SPDT/Form C
(Derated 16A)

SSR drive (SSd) - optional 5V 25mA non-isolated

SECONDARY OUTPUT: SP2 (8400, 8500, 8600 only)

Relay-standard 3A/250Vac resistive, SPDT/Form C

SSR drive (SSd) - optional 5V 25mA non-isolated

ACCURACY

Setting accuracy ± 2% of full scale (within 5-95%)
Reference conditions 22°C ± 2°C 115/230V ± 5%
after 30m settling time

CONTROL MODES

SP1

Proportional band/Gain 3% of full scale (fixed)
Proportional cycle time 25 seconds
On/Off Hysteresis - optional 2% of full scale (e.g. H2)

SP2

On/Off Hysteresis 2% of full scale

INPUTS

Thermocouple Type J, K, T, R, S (specify when ordering)
Standards IPTS 68/DIN 43710
Resistance thermometer Standards PT100/RTD 2 or 3 wire connection as standard
Sensor break protection DIN 43760/100Ω 0°C/138.5Ω 100°C Pt
Common mode rejection Automatic protection upscale (output off)
Series mode rejection Negligible effect up to 264V rms 50/60Hz
Negligible effect up to full scale mV 50/60Hz

GENERAL

Ambient temperature 0-50°C (32-130°F)
Weight 250g (9oz)
Mouldings Flame retardant polycarbonate

WARRANTY
CAL Controls warrant this product free of defects in workmanship and materials for three (3) years from date of purchase

1. Should the unit malfunction, return it to the factory. If defective it will be repaired or replaced at no charge
2. There are no user-serviceable parts in this unit. This warranty is void if the unit shows evidence of being tampered with or subjected to excessive heat, moisture, corrosion or other misuse
3. Components which wear, or damage with misuse, are excluded e.g. Relays
4. To comply with this warranty the installation and use must be by suitably qualified personnel
5. Neither CAL Controls Ltd or CAL Controls Inc shall be responsible for any damage or loss to other equipment howsoever caused, which may be experienced as a result of the installation or use of this product
CAL Controls liability for any breach of this agreement shall not exceed the purchase price paid

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CAL Controls policy of continuous development may cause detail changes to the enclosed information.
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