Contents

1.0 GENERAL

1.1 Scope

This manual contains information for the installation, operation, of the Models 807 Microprocessor-based Digital Temperature Controllers manufactured by Eurotherm Ltd. The manual (for circuit diagrams and circuit description) Part No. HA021430.

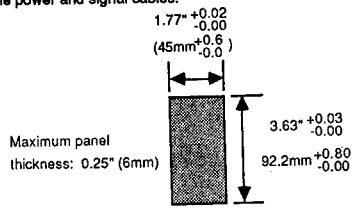
1.2 Options

The IP-54 gasket kit for 1/8-DIN size instruments can be ordered separately:
Order : **LA022339**

2.0 MECHANICAL INSTALLATION

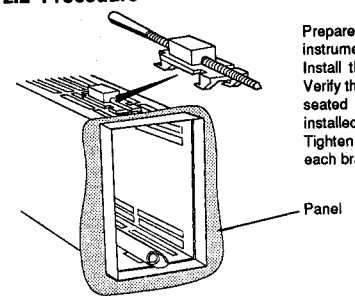
2.1 Panel-mounting Installation

The instrument sleeve mounts into a 45x92.2mm cutout, and is secured from the rear with the 2 enclosed mounting brackets. Behind the panel provide for sufficient wiring space in order to separate properly the power and signal cables.



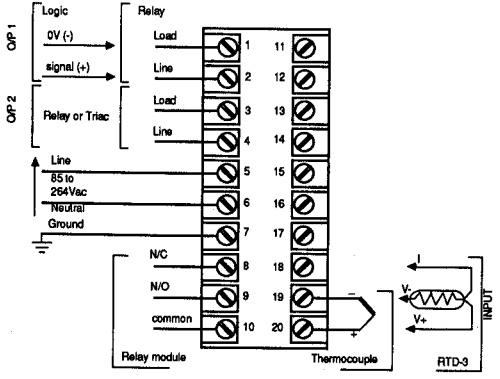
Panel Cutout

2.2 Procedure



Prepare the panel cutout as above. Slide the instrument sleeve into the cutout from the front Install the mounting brackets from the rear. Verify that the 4 tines of the brackets are firmly seated in the slots on the sleeve; correctly installed brackets will not fall out.
Tighten the screws firmly. A torque limiter in each bracket prevents over-tightening.

3.0 ELECTRICAL INSTALLATION



Models 807 external connections

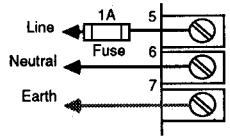
3.1 General Information and Precautions

CAUTION! **It is your responsibility to calculate the maximum possible current in each cable. Do not exceed the rated current for any particular cable size permitted by the local wiring regulations. Overheated cables and damaged insulation may result from overloading.**

CAUTION! **Damage to the instrument can result if output channels fitted with a logic module is wired as if it were fitted with triac or relay modules.**

Make input and output terminations to instrument with power OFF.
Refer to figure above and to the rest of this paragraph for rear terminal designations and for wiring the power, outputs, and signal inputs.
The rear screw terminals do not require the use of lugs for proper wire retention. If spade lugs are used they should have a self-retaining feature.
Unused terminals should <u>not</u> be used as tie points as they may be internally connected.

Verify in the *Specifications* that the ratings of the controller output devices and the inputs are not exceeded.



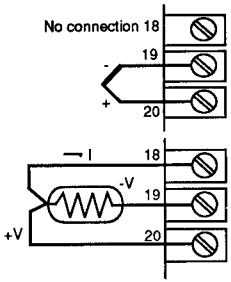
3.2 Supply and Earth (terminals 5, 6, and 7)

The instrument may be powered from an AC voltage between 85 and 264Vac, 50 or 60 Hz.
Connect the neutral to terminal 6. Connect the line to terminal 5; place a 1-Amp fuse in the line side of the AC supply. The power wiring should be run separately from the signal wiring.
The wire size should not be smaller than 0.5mm²; local wiring specification may require, however, a larger cable size. The type of installation must be in accordance with the local wiring codes.
The instrument ground (terminal 7) should be directly connected to earth. Do not pass by the earth terminal of other instruments ("daisy-chain" connection).

CAUTION! Observe proper wiring practices to eliminate the possibility of earth loops.

3.3 Inputs

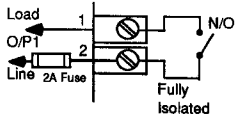
The instrument accepts thermocouple and RTD inputs. For the types and ranges of the input devices, see the Specifications.



Thermocouple Input
Connect to terminals 19(-) and 20(+) as shown.
Use appropriate compensating cable (thermocouple extension wire) having the same thermal emf as the thermocouple to which it is connected; verify that correct polarity is respected at both the thermocouple-end and instrument-end of the cable.

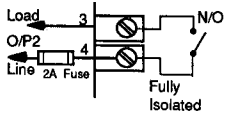
RTD Input
Only the 3-wire connection should be used. Connect the measurement leads to terminal 19 (-) and 20 (+). The excitation current is available at terminal 18.
Use the same gauge and length copper wire on all 3 terminals.

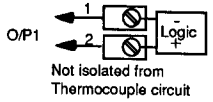
3.4 Outputs



Relay

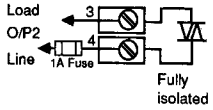
Relay outputs are connected to terminals 1 and 2 for output 1 and 3 and 4 for output 2. The relay contacts are shown in the de-energised state. The relay will energise when the measured value is below setpoint for O/P1 and above setpoint for O/P2. in the auto mode. The relay contact are rated at 2A/85-264V ac r.m.s. 50/60Hz. It is recommended that a 2 amp fuse is used to protect the relay contacts.





Logic

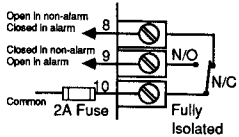
Logic outputs are connected to terminals 1 and 2 for output 1. This output is not isolated from the sensor circuit. The output is 18 volt at 10mA.



Triac

Triac outputs are connected to terminals 3 and 4 for output 2. The triac is rated at 1A/85V-264V ac r.m.s. 50/60Hz. It is recommended that a 1 amp fuse is used to protect the triac.
Output 2 is configured as the Cool channel.

3.5 Alarm



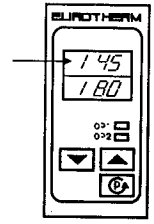
The alarm output is relay only as shown below.

Relay

The relay output is wired to terminals 8, 9 and 10. The contacts are rated at 2A/85-264V ac r.m.s. 50/60Hz. It is recommended that a 2 amp fuse is fitted to protect the relay contacts.

4.0 DISPLAYS

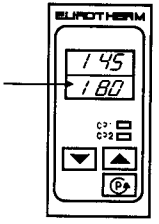
4.1 Upper Display Function



a) MEASURED VALUE
b) PARAMETER MNEMONIC when operating the (P) button.

Note:- The measured value flashes if the alarm becomes active

4.2 Lower Display Function

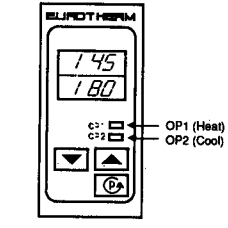


a) The temperature setpoint
b) Parameter values when operating the (P) button.

Note:- If the measured value enters the alarm condition, the appropriate mnemonic (HiAL, LoAL or dAL) alternates with the setpoint.

5.0 Output Indication

5.1 OP1 and OP2

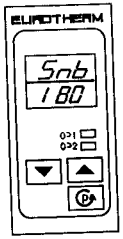


Each yellow L.E.D. is illuminated when the corresponding output channel is 'ON'.

Warning! For critical alarm applications a parallel redundant system should always be installed; use a separate alarm unit, e.g. Eurotherm Model 106 or equivalent and a separate input sensor.

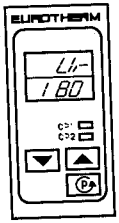
6.0 Sensor Fault
6.1 Overrange condition

A broken thermocouple or open circuit input is indicated by the mnemonic Sn b (sensor break).
The measured value rises rapidly before the sensor break indication occurs.
The open circuit input is detected by an overrange input signal exceeding the maximum of the linearization table.
The controller then enters the open-loop mode and outputs zero power.



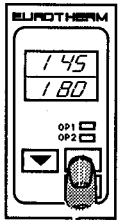
6.2 Underrange condition

A condition in which the input falls below the minimum of the linearization table will cause the display (underrange) to appear.
Examples of such situations,include: incorrect thermocouple, reversed connection, etc.
The controller then enters the open-loop mode and outputs zero power.



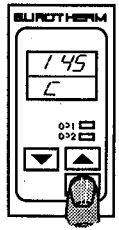
7.0 OPERATING INSTRUCTIONS
7.1 To change the Setpoint

Press the '△' or '▽' button and the lower display (setpoint) will start scrolling. The scrolling rate will increase the longer the button is depressed. When the indication is close to the final value, release the button and make the final trim by short depressions of the button. The controller is now operating on the new setpoint.

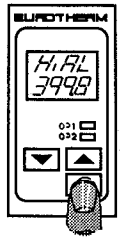


7.2 Modifying the Commissioning Values

Press the Ⓟ button once. The bottom display will indicate the display units used on the instrument C = °C and F = °F.



A second press of the Ⓟ button will,in the top display, reveal a mnemonic indicating a commissioning parameter whilst the lower display gives the numerical value of that parameter.
The numerical value can be changed using the '△' and '▽' buttons. A further press off the Ⓟ button will reveal the mnemonic for the next parameter with its numeric value which can be changed in the same way.
If the Ⓟ or '△' or '▽' button is not pressed for six seconds the display will revert to setpoint and measured value.
To retain a parameter display for more than six seconds keep the Ⓟ button depressed.



The commissioning mnemonics and their meaning is given below:-

Alternatives	HiAL	High Alarm Setpoint in display units
	LoAL	Low Alarm Setpoint in display units
	dAL	Deviation Alarm Setpoint in display units
	ProP	Proportional band in %
	Int.t	Integral time in seconds
	dEr.t	Derivative time in seconds
	H c.t	Heat cycle time in seconds
	C c.t	Cool cycle time in seconds
	H cb	High cut back in display units
	L cb	Low cut back in display units

8.0 TYPICAL WIRING SCHEMATIC

807 driving a heat/cool load and fitted with an audible alarm.
807/L1/TI/RI/// (AJJC215) //