Alarm operation

The over temperature alarm is incorporated as a safety feature. In the event of controller failure, it will operate at set temperature plus alarm value.
For example, if the set temperature is 37º and alarm setting is 2.0º, the alarm will operate at 39º.
The alarm will sound and the LED will flash if the water temperature exceeds the alarm set point, and power to the element will be disconnected.

NOTE: When the set temperature is reset below the current bath temperature, the alarm will be disabled until the temperature in the bath cools to the set temperature.
The alarm will then operate as normal.

To set the alarm value

⇒ Push and hold the SELECT and INCREASE keys simultaneously until the second beep is heard.
⇒ Adjust alarm value using the INCREASE or DECREASE keys.
⇒ Once set, push SELECT to return to normal control mode.

SAFETY FLOAT SWITCH

The TH5 is designed to operate continuously for long periods of time when required.

If the water level falls below the minimum requirement the float switch will remove power to the element and the alarm will sound.
When the water level is restored, the controller will operate normally and the alarm will stop.

Environmental conditions in use.

Although purpose built, as with all electrical equipment certain precautions should be observed.

The TH5 has a built in ventilation system which is designed to draw clean air into the rear of the case. This air passes over the motor and electronics to provide cooling, and is expelled through the bottom of the case.

To ensure a long and trouble free service life, care must be taken during use to prevent the ingress of vapours or heavily contaminated air which could cause damage and eventual failure of the controller.

It is recommended, especially for higher temperature use, that the thermoregulator is isolated from steam or other vapours by the use of a bridging plate to support the thermoregulator and also act as a lid over the working bath.
Heavy condensation on the instrument case indicates that some form of protection should be provided, without cutting off the essential air flow to the unit.

Recommended fluids for different temperature ranges to keep evaporation to a minimum are as follows:

- Plain tap water 5° to 90°C
- Ethylene Glycol 30% / Water 70% 0° to 95°C *
- Ethylene Glycol 50% / Water 50% -20° to 100°C *
- Low viscosity silicone oil (20cs) 0° to 100°C

* Automotive antifreeze is unsuitable, use Laboratory grade Ethylene Glycol.

Corrosion prevention

Immersed components used on Ratek Thermoregulators are made of materials that when used as intended have excellent corrosion resistance. Stainless steels used are either 316 or 304 grade.

The custom made heating elements are electropolished Incoloy which is a high nickel, high chromium content stainless steel alloy, developed specifically for its resistance to corrosion in hazardous, high temperature applications.

All stainless steel and nickel alloys however have limitations, and are very sensitive to chlorine and solutions containing chlorine.
Concentrations of chlorine as low as 20ppm have been known to cause catastrophic failures in nickel alloys which are under stress.
An immersion element can be considered to be under stress as the inside of the tube can be at several hundred ºC, whilst the outside is rarely above 120ºC.
Many cleaning solutions contain chlorine or chlorine compounds that can severely damage an element, and their use should be avoided.
Acids will also attack the element surface and cause premature failure.

Following are guidelines which if followed, will extend the life of immersion elements:-

1. Change water regularly to prevent build up of contaminants.

2. Avoid scratching, denting or marking of the element surface.

3. Regularly clean the element with mild soap and water.

4 Ensure that the element coils are always under the water surface when In operation

5. Clean and dry thoroughly before long term storage.

OPERATING INSTRUCTIONS

Clamp the TH5 to the side of the container of water to be heated.
Fill the container with water making sure that it is clear of debris that could become entangled in the pump, and ensure that the pump outlet is free of any obstruction.
If necessary, the pump outlet may be re-directed by connecting a piece of silicone or rubber tubing.
Where the unit is to be used to control above 40ºC it is recommended that the top of the tank or container be covered as much as possible. This will prevent unnecessary heat loss and ensure the most accurate temperature control.
Steam must also be prevented from entering the control unit which could cause damage to the electronics.

⇒ Connect the power cord to a properly grounded 3 pin socket.
⇒ Press the power switch to on (situated on the rear panel).
⇒ The display will show the software version number, then indicate current water temperature.

To check temperature settings
⇒ Push SELECT once to show set temperature (digit flashing).
⇒ Push SELECT again to revert back to current bath temperature.

To set or change temperature
⇒ To set temperature push and hold down SELECT wait for second beep, (approx 2 seconds).
⇒ The flashing digit may be changed as required with the INCREASE/ DECREASE keys.
⇒ Push SELECT once moves flashing digit to the next left.
⇒ Push SELECT again to revert back to current temperature

Note: Holding down the INCREASE/ DECREASE keys will allow the display to scroll.