MH755
Heater/Stirrer for water baths

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User Guide
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1 OPERATION

1.1 Important

Do not turn on the heater unit unless there is sufficient water in the bath. i.e. at least 30 mm of cover to the heater and stirrer.

1.2 Set Point Temperature

To set the required temperature push the centre “up” button, or right “down”, button as required.
After the temperature has been set the display will return to indicate the temperature of the water in the bath.
Leave the bath for twenty minutes until the display has stabilised.
If the water temperature is not as the set point, adjust the offset using the left button.
See section 4 for detailed instructions of the controller’s operation.

1.3 Calibration

It is recommended that a reference thermometer be used in conjunction with the bath to enhance the accuracy of the calibration procedure.

2 DETAILED OPERATION OF THE CONTROLLER

2.1 Set Point Temperature

Pushing the centre “up” button, or right “down”, button as required sets the required temperature.
After the temperature has been set the display will return to indicate the temperature of the water in the bath.
As the thermal mass of the water bath is large, it is preferable to minimise any over shoot in temperature as the time taken to return to the set point is dependent on the temperature of the bath and the ambient temperature.
To avoid temperature over shoot the unit is initially configured as a proportional only controller with a proportional band of 10 Deg C.
In the steady state (i.e. the water temperature has become stable) the indicated temperature may be lower than the required set point. In this case the offset function will need to be set to reduce the difference.

2.2 Offset Function

Press the left-hand button once and the display will indicate “ofst”, adjustment of the up/down buttons will adjust the off set value.
Offset is measured in % with range 0-100% of the 10 Deg C proportional band.
Therefore 1% will correct for a difference of 0.1°C. Small 0.5% changes will avoid any overshoot.
An alternative configuration to the above is proportional plus Integral action, this will avoid the need to keep manually correcting for any set point difference and will shorten the time taken to reach set point.
However there will be an over shoot in temperature.

2.3 Integral Function

Press the left-hand button twice and the display will indicate “ti 1”, adjustment of the up/down buttons will adjust the Integral value.
Integral time is measured in seconds with range 0 – 1000 Seconds.
Zero seconds means that the integral is off.
Note: setting the integral will inhibit the offset function.

The shorter the integral time the faster the set point is achieved, but the larger the over shoot.
At 70 Deg C a fifty-second integral time will give reasonable response time with a short settling time.
All settings are retained when the unit is turned off so once set, further adjustment should not be required.