

MPRE8 Multi-tube Preheater

DESCRIPTION

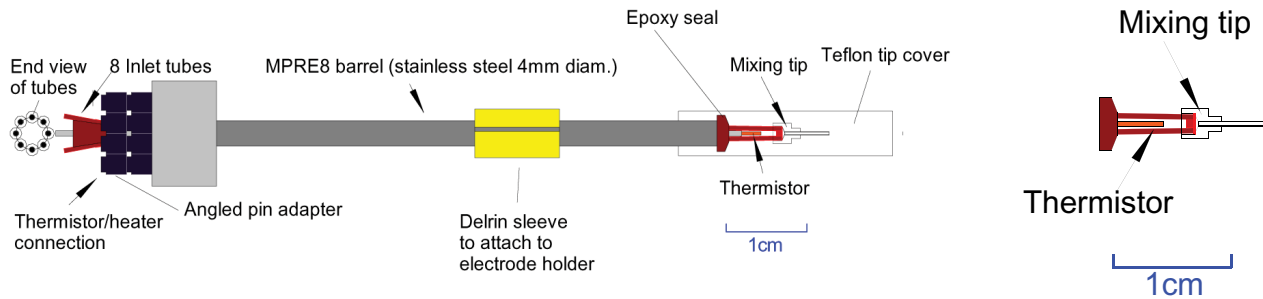
The **MPRE8** Multi-tube pre-heater is an 8 tube pre-heater for either superfusion or for the inflow of a tissue chamber. It has a very small mixing volume at the tip (1-2 μ L) which allows rapid switching between solutions (<<1sec). Switching can be achieved



using valves or using our **cFlow** 8Channel Flow Controller to operate pinch valves.

The unique construction of the **MPRE8** permits the use of a single thermistor sensor so that it is compatible with the **TC2BIP** and other controllers using a 10k Ω thermistor sensor. Solution can also flow in multiple tubes for mixing applications. Flow rates up to 1ml/min (higher flow rates with pressurised systems) can be used. The **MPRE8** tip is has a unbreakable polyimide outlet tube with a 360 μ m inside diameter. The outlet tube length can be varied for different applications. The mixing tip can be easily removed and replaced (**MPRE8-TD5** box of 5 tips). Custom tips can be used.

Where valuable compounds are used the small dead volume in the tubes of the **MPRE8** minimises the amount of drug wasted in the tubing. Also the **MPRE8** can be used to heat and perfuse a region of a chamber where it impractical to heat the whole chamber.



MPRE8 Specifications

Dims. 10 x 0.4cm (LxDiam); heater resistance \approx 11 Ω

Thermistor sensor: 10k Ω NTC

Plugs into **TC2BIP** or **mTCII**. Check with us for compatibility with other temperature controllers.

Dead space: Tubes-approx 5 μ L; Tip-approx. 1-2 μ L.

Outflow tube: 360 μ m inside diameter

Inflow tubes: Tube outside diam. 0.7mm. Connects to 0.06" OD, 0.02" ID Tygon tubing.

Rate of heating: At 0.5ml/min temp increases >1 $^{\circ}$ C/sec.

Outflow temp vs flow rate: [preliminary] Temperature changes <1 $^{\circ}$ C for flow rates from 0.85ml/min to 0.2ml/min.

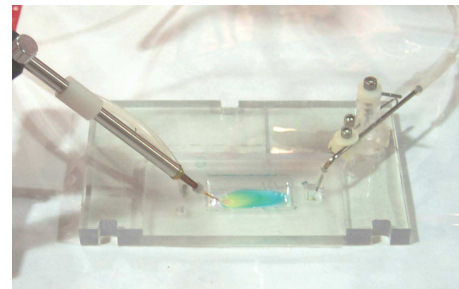


Fig.1. shows **MPRE8** 8Ch Pre-heater superfusing region of **BT-1** chamber demonstrating laminar flow pattern.

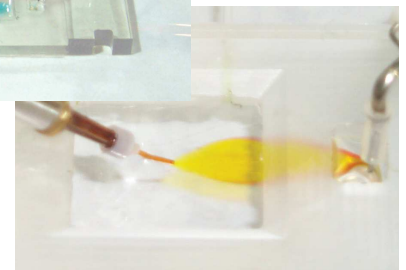
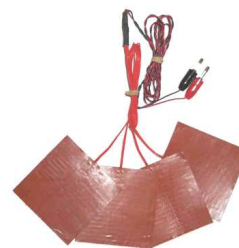
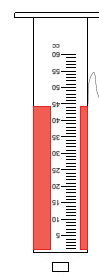


Fig 2. **MPRE8** superfusing solution in **BT-1-TB** tissue chamber

Syringe barrel heater kit (SYRHT8K)

For situations where solutions need to be pre-heated either to remove dissolved gasses or where solutions are bubbled (eg. solutins using bicarb buffers) you should use the Syringe barrel heater kit. This contains 8 silicon heaters (2 of **SYRHT4**) that wrap around a 60cc syringe barrel (leaving a gap to observe the solution level). The heater is sleeved with a clear heatshrink so that it makes good thermal contact. A rheostat (**RH50-50WF**) is used to control the current to the heaters. Thermostating is not normally necessary since the heat losses are largely independent of the heated volume. The heaters run from an inexpensive DC power supply (**PS12V3**).



SYRHT4 Syringe barrel heaters



RH50-50WF Rheostat