

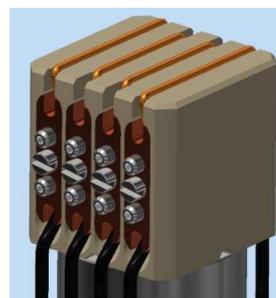
ProboStat™ + PEM sample holder + gas mixer & humidifier

The newly designed PEM sample holder is a small, compact unit for 4-electrode conductivity measurements of self-standing polymer film slabs (e.g. PEM). The sample holder is designed for and will fit any ProboStat™ unit. Temperature range from room temperature to >200°C. A heated ProboStat™ base unit allows high steam contents if desired. In combination with the HumiStat tailor-made gas mixer and humidifier, this forms a high throughput measurement system for PEM conductivity at high temperatures and controlled partial pressures of water vapour.

HumiStat is a small-footprint laboratory gas mixer with an integrated humidification stage. The mixer is suitable where large dynamic dilution range, accuracy, and automated step-programs are important. Accompanying software is simple and guides the user step-by-step through the definition of mixtures and describes the mixture in all typical units. The unit is delivered with a PID-regulated 1.2 m heated gas line rated up to 150°C.

Together, the HumiStat and the heated ProboStat™ base unit with sample holder for small PEM slabs, offers a simple and price-economic alternative to larger PEM characterization systems on the market.

Furnace/heating mantle and measurements instrumentation are not included, but can be provided upon request. A standard potentiostat with impedance spectrometer (frequency response analyzer, FRA) will be suitable for most samples and measurements.



PEM sample holder unit



ProboStat™



HumiStat

Highlights and specifications:

PEM sample holder:

- Core material: PEEK
- Electrodes: 4 electrodes in the shape of 4 integrated wires.
- Electrode wires: Au (default), Pt or Ag (all replaceable)
- Contact from ProboStat™ base unit: Standard Pt or any other metal (e.g. Cu) wires
- Mounting: Any length standard ProboStat™ 20 mm support tube.
- Sample fixation: Standard ProboStat™ spring load system
- Temperature range: RT - 200-300°C
- Heating: Heating mantle or tubular furnace (not included).
- Atmosphere (ProboStat™): Oxidizing, inert, reducing, corrosive, wet or dry.

HumiStat gas mixer and humidifier:

- Dynamic mixing of two input gases and one evaporating fluid.
- Fully continuous, truly dynamic range, allowing accurate dilutions from $2 \cdot 10^{-5}$ (20 ppm) to 100%.
- Gives continuous range of water vapour levels from bottle dry gas to pure steam.
- Operating cycle is perpetual; gas mixing and delivery run while more fluid is added.
- Flows of the gases typically $< 100 \text{ ml}_n/\text{min}$, but range can be adjusted per request.
- High performance mass flow controllers, calibrated accuracy 0.3% full scale, 0.5% measured value.
- Each mass flow controller can hold up to 10 gas calibrations.
- Available standard gas calibrations: Air, Ar, C_3H_8 , CH_4 , CO_2 , D_2 , H_2 , He, Kr, N_2 , O_2 . Others on request.
- High performance input fluid pump, accuracy 0.4% pumped volume. Pump resolution 0.26 nL.
- Control through customer PC; software & USB cable are included.