NORECS AS
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HumiStat – gas mixer and humidifier

HumiStat mixer is small-footprint laboratory gas mixer with large dynamic mixing range and dynamic humidification of gas or gas mixture.

This mixer is suitable for low-flow laboratory use such as materials science and button fuel cell research, 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.

Highlights:

- HumiStat has fully continuous, truly dynamic range, allowing accurate dilutions all the way from $2 \cdot 10^{-5}$ (20 ppm) to 100%.

- Continuous range of water vapour levels from bottle dry gas to pure steam.

- The mixer is not limited only to H_2O as the evaporating fluid.

- The operating cycle is perpetual; gas mixture production can run while more water (or other fluid) is being added.

- Flow of the gases are typically < 100 ml_n/min, but can be adjusted per request.

- Control pH_2O independent of pO_2.

Specifications:

* Dynamic mixing of two input gases and one input fluid.
* Each mass flow controller can hold up to 10 gas calibrations.
* Fluid refill during continuous operation.
* Suitable for 0-100% absolute humidity of gas 100 ml_n/min, atmospheric pressure.
* Partial pressures are calculated from input amounts.
* High performance input gas controllers, accuracy 0.3% full scale & 0.5% Measured value, real gas calibrated.
* High performance input fluid pump, accuracy 0.4% pumped volume. Pump resolution 0.26 nL.
* Control through customer PC; software & USB cable are included.
* PID-regulated gas line heating for 1.2 m gas line, up to 150°C Standard model is for near atmospheric pressures, but it can be customized to operate up to 8 bars on request.

* Including power supply.

* Available gas calibrations: Air, Ar, C_3H_8, CH_4, CO_2, D_2, H_2, He, Kr, N_2, O_2. With reservations: C_2H_2, C_2H_4, C_2H_6, C_3H_6, C_4H_{10}, $CHClF_2$, CF_4, CO, N_2O, Ne, SF_6, Xe, i-C_4H_{10}

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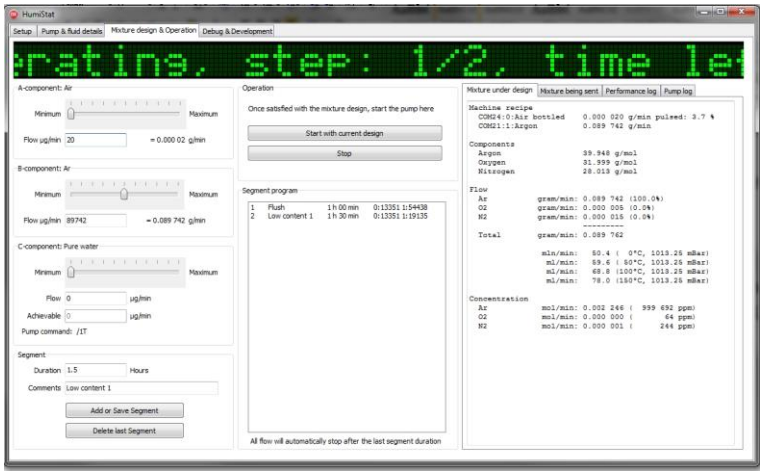

Software mixture design

User sets desired amount of components A, B and C, and duration for single segment. Mixture composition as mass, partial pressure and normalized volume are also shown.

Front side

- A – To be diluted gas
- B – Diluting gas
- C – Fluid

PID controller to set heated gas line temperature. Current temperature (23°C) in green, setpoint (0°C) in orange.

Back side

- OUT – Connection for heated gas line
- TCK – Thermocouple from heated gas line
- HEAT – Power outlet for heated gas line, 24 VDC.
- USB – Connection from computer or master mixer
- DCIN – Main power in, 24 VDC.

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