



## FlexStream™ Permeation Module

### FlexStream™ PM

The FlexStream™ Permeation Module is an independently controlled permeation tube oven that works in a series with the FlexStream™ Base Module to extend the number of ovens used in an expanded permeation system.

Each FlexStream™ PM oven can hold up to eight Trace Source™ disposable permeation tubes or one Trace Source™ Refillable tube. Combinations of ovens can be kept in the Standby mode to maintain permeation tube equilibrium and not add permeate gas to the Span Gas Out stream or can be toggled to Span Mode for creating complex mixtures.

Utilizing additional FlexStream™ PMs in a series allow the generation of a multi-component gas stream in which:

- Tubes can be maintained/operated at different temperatures.
- Different permeation tube types (disposable vs. refillable tubes) can be used in a series.
- More components can be used than what a single oven will hold.
- Various components can be easily toggled in and out of the final gas stream.

### Operation

The FlexStream™ PM has two operating modes: Standby and Span. In the Standby mode, the permeation tubes are maintained at temperature equilibrium and the permeate gas from the oven is swept to the vent so it is not added to the Span Gas Out stream. Individual ovens in a series can be selectively placed in the Standby mode. In the Span mode, the permeate gas is mixed into the Span Gas flow from upstream modules (such as the FlexStream™ Base) to form a Span Gas Mixture for gas analyzer calibration. Individually and selectively toggling FlexStream™ ovens in a series allows very complex and precise Span Gas mixtures to be formed dynamically.

### Features

- Flow path suitable for reactive gases – mixture contacts only glass and Teflon® (other materials available – i.e. Stainless Steel)
- Accepts up to 8 Trace Source™ disposable tubes (HRT, SRT, SRT-2, Els) or 1 Trace Source™ Refillable tube (LFH, 57SA-Prefilled Gas tube)
- High mass oven with electronic PID control
- Temperature Control Range: 5 °C above ambient to 150 °C (heat only)
- Temperature Setpoint Resolution: 0.01 °C across control range
- Standard Power: 115 VAC, 50/60 Hz, 2 A
- Optional Power (specify at time of purchase): 230 VAC, 50/60 Hz, 1 A
- Dimensions: 7" (18 cm) Width x 13.5" (34 cm) Height x 20" (51 cm) Depth
- Weight ~25 lbs
- Can be combined with other FlexStream™ modules to extend the number of ovens in a series
- Requires the FlexStream™ Base Module for operation and control

## Operation (continued)

*(operation continued on next page)*

The FlexStream™ Base Module provides system Span, Zero or Standby modes across all modules in the series, or each FlexStream™ PM can be toggled individually through the Base module touch screen. The operation of the FlexStream™ PM is completely controlled by the microprocessor subsystem of the FlexStream™ Base Module. Clean carrier gas (typically N<sub>2</sub>) split from the controlling FlexStream™ Base Module supplies the sweep gas to each subsequent module via a back panel flow jumper. Each oven in a series starts with a fixed flow of clean gas that either takes the gas created by the permeation tubes out to the Vent or to the Span Gas Out port where it then mixes with the Span Gas Out stream.

The FlexStream™ PM is one of several auxiliary modules designed to work in a series with the FlexStream™ Base Module. Up to 5 additional modules can be added to the FlexStream™ Base Module to form a complete gas standard generating system.

Adding a FlexStream™ PM Module to a FlexStream™ series extends system capabilities and provides the flexibility of creating complex gas mixtures for calibration.

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