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The Calibration Specialists

491Flex™ Permeation Module

491Flex™ PM

The 491Flex™ PM is an independently controlled permeation tube oven that works in a series with the 491Flex™ Base Module to extend the number of ovens used in an expanded permeation system. Each 491Flex™ 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 491Flex™ 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.

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 491Flex™ modules to extend the number of ovens in a series
- Requires the 491Flex™ Base Module for operation

Operation

The 491Flex™ 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 491Flex™ Base) to form a Span Gas Mixture for gas analyzer calibration. Individually and selectively toggling 491Flex™ ovens in a series allows very complex and precise Span Gas mixtures to be formed dynamically.

The 491Flex™ Base Module provides system Span, Zero or Standby modes across all modules in the series, or each 491Flex™ PM can be toggled individually using a manual switch on the front panel. Clean carrier gas (typically N_2) split from the controlling 491Flex™ 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 491Flex™ PM is one of several auxiliary modules designed to work in a series with the 491Flex™ Base Module. Up to 8 additional modules can be added to the 491Flex™ Base Module to form a complete gas standard generating system. Adding a 491Flex™ PM Module to a modular series extends system capabilities and provides the flexibility of creating complex gas mixtures for calibration.

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Specifications

- Temperature Control Range: 5 °C above ambient to 150 °C (heat only)
- Temperature Setpoint Resolution: 0.01°C across control range
- Temperature Display Resolution: 0.01 °C
- Output Concentration Range: sub ppb – 1000 ppm depending on emission rate and dilution flow rate
- Power Requirements: Standard: 115VAC, 2A; Optional: 230 VAC, 1A
- Dimensions: 7" (18 cm) Width x 13.5" (34 cm) Height x 20" (51 cm) Depth with portable carrying case. All dimensions are approximate.
- Weight Approximately 25lbs

Benefits

TECHNICAL

- Creates trace concentrations of reactive compounds
- Applicable to a wide range of compounds (over 550)
- PPM and PPB mixtures with single step dilution
- Calibration even for some reactive mixtures
- Dynamic blending + immediate use eliminates storage degradation
- Allow complex mixture preparation
- Concentrations traceable to NIST (through physical variables)

OPERATIONAL

- Simple operation
- Easily transportable
- Expands 491Flex™ Base System for complex mixtures

ECONOMIC

- Save space – one unit replaces many gas cylinders
- Reduce cost of multi-point calibration

SAFETY

- Replaces high-pressure cylinders
- User deals with very small quantities of analyte compounds
- Analyte sealed in a rugged structure

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The KIN-TEK Analytical, Inc. Quality Management System is registered by Intertek as conforming to the requirements of ISO 9001:2015.

For more information: https://kin-tek.com/kin-tek-quality