KIN-TEK
The Calibration Specialists

491Flex™

Permeation Tube System



Description

The **491Flex™** is a manually operated, expandable, full capability permeation tube system for generating precision calibration gas mixtures. Mixtures are produced by diluting the miniscule flow from TraceSource™ permeation (or diffusion) tubes with a much larger flow of matrix gas, typically nitrogen or zero air. The **491Flex™** is ideally suited for generating trace concentration – ppm, ppb, and pptr – mixtures. Mixtures contact only inert materials.

The **491Flex™** Base Permeation Unit (shown) is built on the same platform as the fully automated FlexStream™ system. It is small, easily transportable, and easily combined with other **491Flex™** modules to form complex gas mixtures.

Operation

The **491Flex™** holds the **Trace Source™** permeation tube(s) at constant temperature and introduces a small constant flow of dilution gas over the tube. Pure component compound vapor emitted from the permeation tube(s) mixes with this small flow to form a 'base' concentration gas mixture. This base mixture then joins a larger main dilution flow to form the final calibration mixture. The mixture concentration is set by adjusting that main dilution flow. Concentrations from sub ppb to over 1000 ppm are possible by selecting the appropriate permeation tubes. Concentration from each tube can be varied over a 20:1 range by adjusting dilution flow.

Three output modes are possible: **Standby**, where the permeation tube is held at operating conditions with the base mixture flowing to vent, **Zero**, where only the dilution flow is emitted to verify zero response, and **Span**, where the permeation tube output is added to the zero flow to create a known concentration Span Calibration mixture.

Features

- Operating Modes: standby, zero, span
- Designed for expandability
- Flow path designed for maximum flexibility with minimum error
- Flow path suitable for reactive mixtures – mixture contacts only glass, Teflon®, stainless steel or coated stainless steel
- Accepts disposable permeation tubes, wafer tubes, diffusion tubes, refillable liquid filled tubes, or prefilled gas fed tubes
- Accepts up to 8 disposable tubes with maximum 6 inch length overall, 5/16 inch diameter (Trace Source™ SRT, HRT, and EL tubes)
- Accepts 1 Trace Source™ refillable LFH or 57 Series tube

Features (continued)

- High mass oven with electronic PID temperature control
- Temperature Control Range: 5˚C above ambient to 150˚C
- Temperature Set Point Resolution: 0.1˚C
- Temperature Display Resolution: 0.1˚C
- Standard Flow Range: 0.25 – 5.0 liters per minute
- Optional Flow Ranges: 0.1 – 0.5, 0.5-10.0 liters per minute
- Flow Control over the Calibrated Range: ≤ ±1.5% of reading
- Sample Output Pressure: up to 40 psig
- Output Concentration Range: sub ppb – 1000 ppm depending on emission rate and dilution flow rate
- Power Requirements: standard 115VAC, 2A
- Power Requirements: optional (specify at purchase) 230VAC, 1A
- Dimensions: 6 inch W. x 13.5 inch H. x 20 inches depth (add 3.5 inch to depth for clearance)
- Weight approximately 30 lbs.

Benefits

Technical

- Creates trace concentrations of reactive compounds
- Applicable to a wide range of compounds (over 500)
- 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
- Expandable 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

Represented by:

KIN-TEK

The Calibration Specialists

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Rev 491Flex Base 050417
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