KIN-TEK

The Calibration Specialists

FlexStream™

Automated

Permeation Tube System

The new FlexStream™ automated Permeation Tube System offers total flexibility for creating precision gas mixtures. Mixtures are produced by diluting the miniscule flow emitted from permeation (or diffusion) tubes with a much larger flow of inert diluent gas, typically nitrogen or zero air. The FlexStream™ is ideally suited for creating trace concentration – ppm, ppb, and pptr – mixtures. The FlexStream™ is easily transportable and can be integrated with other KIN-TEK™ gas mixing systems (contact factory).

Operation

The FlexStream™ is built around a microprocessor-controlled, stand-alone Permeation Tube unit. This unit provides a temperature controlled permeation tube oven, dilution flow controls and front panel touch-screen interface. The FlexStream™ can use all Trace Source™ permeation and diffusion tubes, as well as tubes from most other manufacturers. Mixtures containing up to 8 components are possible using disposable permeation tubes in the stand-alone FlexStream™ unit. Concentrations from below 1 ppb to over 1000 ppm are possible.

Applications

- Trace concentration calibrations – ppm, ppb, ppt
- Standards for reactive gases – HF, Cl2, etc.
- Reactive mixtures – H2S + SO2, etc.
- Toxicity studies
- Gas filter capacity studies
- Analytical method validation

Multiple output modes are available: Standby, where the permeation tube is held at operating conditions, but there is no gas flow from the output; Zero, where dilution gas flow is emitted to verify zero response; and Span, where the permeation tube emission is added to the zero flow to create a known concentration Span mixture.

An internal microprocessor with touch screen interface is used to control the operating mode and adjust dilution flow to achieve desired concentrations. The FlexStream™ can also be controlled remotely by a PC or process computer using Modbus® connectivity.

Features

- Complete, integrated, ready-to-use turnkey system
- Automated operation with direct readout of concentration
- Modes of Operation: standby, zero, span and purge
- Touch-screen interface for local setup and manual control
- Modbus connectivity for integration with existing systems
- Designed for expandability
- Flow path designed for maximum flexibility with minimum error
- Flow path suitable for reactive gases - mixture contacts only glass, Teflon® and stainless steel (other materials available)
- Accepts disposable permeation tubes, diffusion tubes, ultra-high rate liquid filled tubes, wafer tubes, and prefilled gas fed permeation tubes
- Accepts up to 8 disposable tubes with maximum 6 inch length x 1/4 inch diameter (KIN-TEK HRT, SRT and EL tubes and tubes from other manufacturers)
- Accepts one of KIN-TEK refillable LFH, ULED and 57 Series tubes
- High mass oven with electronic PID control
- Temperature Control Range: 5 ºC above ambient from 20 to 150 ºC (heat only)
- Temperature Setpoint Resolution: 0.01 ºC across control range
- Temperature Display Resolution: 0.01 ºC on front panel touch screen
- Standard Flow Range: 0.25-5.0 liter per minute
- Optional Flow Ranges: 0.1-0.5, 0.1-1.0, 0.5-10.0 liter per minute
- Flow Control over Calibrated Range: ≤ ±1.5 % of reading
- Flow Change - 0 to Full Scale: < 10 sec (2 time constants)
- Mode Change - Zero at 1 lpm to Span at 1 lpm: < 5 sec (2 time constants)
- Output Concentration Range: below 1 ppb to over 1000 ppm depending on emission rate and dilution flow rate
- Local Interface: color touch screen display with virtual keypad
- Remote Interfaces: RS-232 and Ethernet
- Communication Protocol: Modbus RTU
- Power Requirements: Standard: 115 VAC, < 2 A
- Power Requirements: Optional (specified at time of purchase): 230 VAC, < 1 A
- Dimensions: 7.5 inch Width x 13.5 inch Height x 20 inch Depth (add 3.5 inch to Depth for front panel inlet filter clearance)
- Weight: 30 lb

Benefits

TECHNICAL

- Trace concentration mixtures for 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
- Simplifies complex mixture preparation
- Concentrations traceable to NIST (through physical variables)

OPERATIONAL

- Simple operation
- Automated calibrations

ECONOMIC

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

SAFETY

- Replaces high pressure gas mixture
- User deals with only very small quantities of analyte compounds

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