KIN-TEK

The Calibration Specialists

491M Gas Standards Generator Modular System

This modular system is for multipoint, multicomponent calibration of most types of gas analyzers such as GC's, GC-MS, FTIR & Ion Mobility Spectrometers. The 491M has a concentration range of sub-ppb to 50%, depending on the compound and modules selected. This broad concentration range, plus the pressurized sample delivery system, humidification module, secondary dilution module, analyzer interface module and extra permeation tube oven modules allow the user to custom configure the instrument to the application. This instrument uses all types of permeation tubes. The humidification module humidifies the standard up to 80% relative humidity.

TYPICAL APPLICATIONS:

• ppb & pptr Standards • Humidified Standards • VOC's in Air

• Reactive Compounds • Complex Mixtures • Simultaneous Standards

491MB Gas Standards Generator

This gas standards generator is the single oven base unit of the 491M Modular System, housed in a single unit cabinet. It is used for applications requiring less complex mixtures and not requiring simultaneous standards. It has a pressurized sample delivery system and uses **Trace Source™ Disposable Permeation Tubes** or a liquid filled **Refillable Permeation Tube** to generate ppb to 1,000 ppm, depending on the compound.

TYPICAL APPLICATIONS:

• Toxic Air Pollutants • VOC Standards

• Complex Mixtures • Reactive Compounds

• Sulfurs, Solvents, Amines

TO-14 Calibration Bench

This bench is for calibration of gas analysis systems requiring complex gas mixtures such as VOC analysis systems. It uses **Trace Source™ Permeation Tubes** to generate a calibration mixture of up to 240 compounds. The mixture is fed directly to the analysis system or captured in passivated, low pressure canisters. The concentration of each compound is traceable to NIST. The TO-14 Bench contains up to 30 individually controlled permeation tube ovens. A standards humidification module is also available.

TYPICAL APPLICATIONS:

• VOC's • Toxic Air Pollutants

• Fill Passivated, Low Pressure Canisters

• Generate Humidified Standards

KIN-TEK **Gas Standards Generators** use **Trace Source™ Permeation Tubes**

to generate accurate, on-line calibration standards. Gain the convenience of on-line validation, plus the assurance of N.I.S.T. traceability. There are permeation tubes for over 350 chemical compounds, including Toxic Air Pollutants, VOC's, Acid Gases, Amines, Sulfurs and Hydrides.

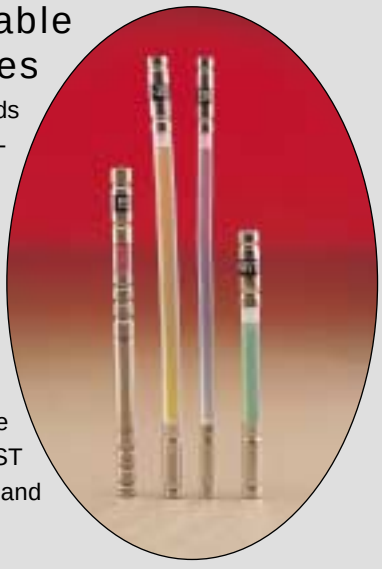
BENEFITS

- **Eliminate the risk of non-compliance**
- **Replace hazardous gas cylinders**
- **NIST Traceability**

Trace Source™ Refillable Permeation Tubes

These refillable tubes are used in KIN-TEK's Gas Standards Generators to form sub ppb to 1,000 ppm gas standards, depending on the compound. Refillable Permeation Tubes are small (6" x 1.75") stainless steel cylinders with an internal permeation membrane, designed to be refilled without disturbing the membrane. Refillable Permeation Tubes can be filled with the liquid phase or gas phase of the component compound, depending on the physical properties of the compound. The flow rate of the compound from a Refillable Permeation Tube can be varied by changing the temperature of the tube, and in a gas filled tube by also adjusting the pressure of the component gas. Each tube is laboratory certified at the temperature specified by the customer.

Trace Source™ Disposable Permeation Tubes



These disposable tubes are used in KIN-TEK's Gas Standards Generators to form sub ppb to 20 ppm gas standards, depending on the compound. Disposable Permeation Tubes are short lengths (2.5 to 6 inches) of Teflon tubing with the liquid phase of the compound sealed inside. When held at a constant temperature, the vapor of the liquid passes through the walls of the permeation tube by molecular permeation, dispensing an extremely small, stable flow of pure component compound which is measured in nanograms per minute. The flow rate of the compound can be varied by changing the temperature of the tube. The flow rate of each tube is laboratory certified by NIST traceable methods. All certified tubes are serial numbered and their flow rate data kept on file.

Span Pac H_2O

This unit is for calibration of sensitive moisture analyzers. It generates 100 ppb to 10 ppm moisture standards from **Trace Source™ Permeation Tubes**. The Span Pac H_2O has a purgeable cabinet, electropolished, passivated, stainless steel tubing, and VCR input/output fittings to prevent atmospheric contamination and ensure the integrity of the system. It can be operated by remote station and is available in a 2 oven unit in a process or laboratory cabinet.

TYPICAL APPLICATIONS:

- **Calibrate Sensitive (100 ppb) Moisture Monitors**
- **Verify Moisture Sensors and Probes**
- **Calibrate On-line Product Quality Control Monitors**

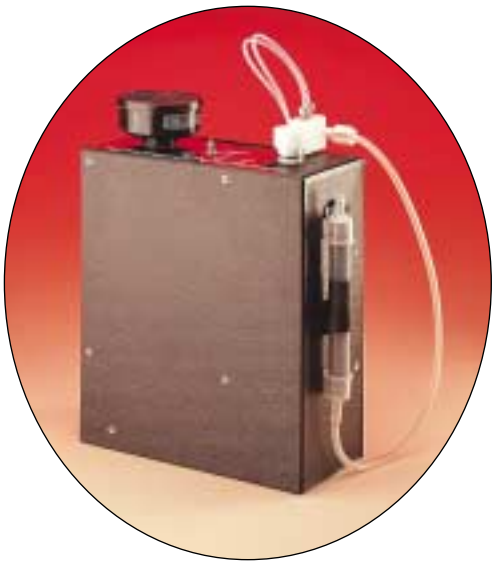
Span Pac I Gas Standards Generator

This generator is used for multipoint, multicomponent calibration of process gas analyzers and continuous emissions monitors. The Span Pac I uses **Trace Source™ Permeation Tubes** to form ppb to 1,000 ppm standards, depending on the compound. It is specifically designed for field mounting and can be operated from a remote station. Multiple permeation tube ovens can be housed in a single NEMA 4 cabinet. Also available with Z purge.

TYPICAL APPLICATIONS:

- **Process Quality Control**
- **On-line Validation of CEMs**
- **Sulfurs, Solvents, Acids Standards**
- **Standards in Reactive Matrixes**

Span Chek



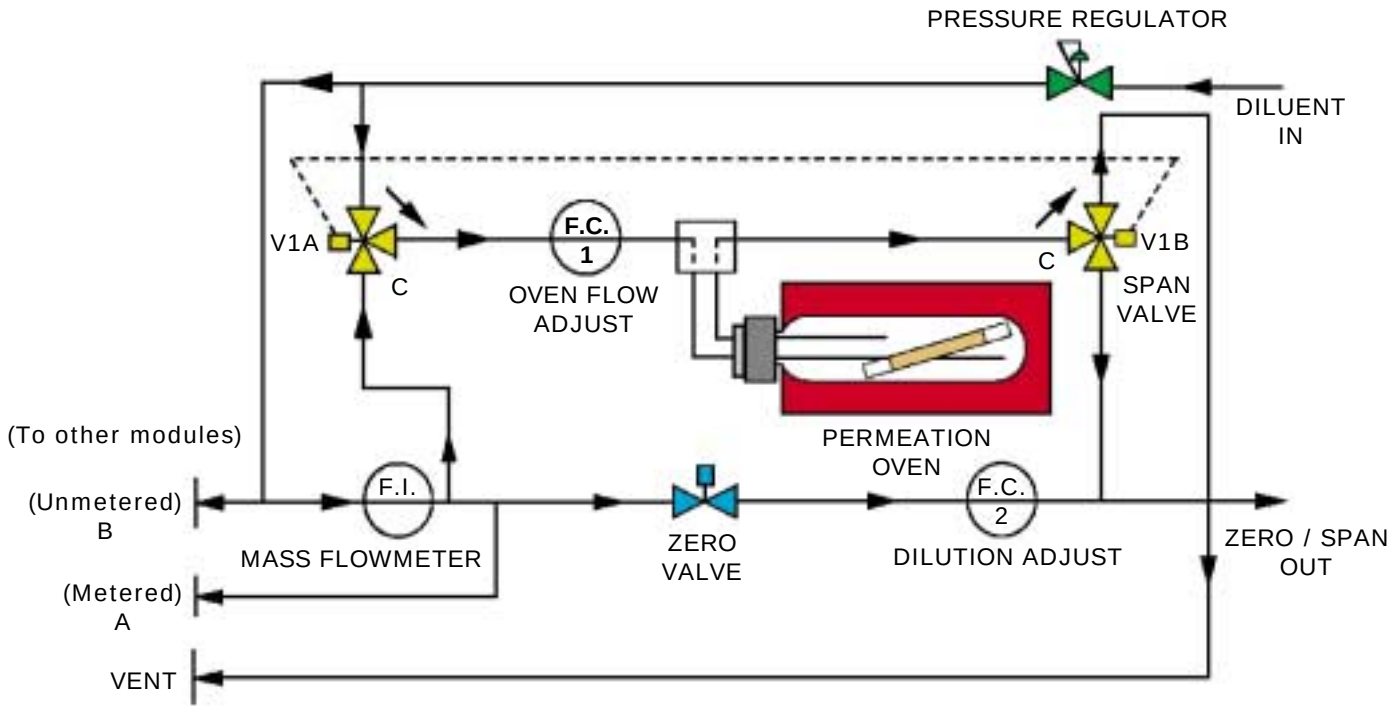
This field portable calibrator is used for checking the span of toxic gas monitors and passive sensors. It uses **Trace Source™ Disposable Permeation Tubes** to generate 10 ppb to 100 ppm gas standards, depending on the compound. It contains an internal dilution air pump, a 12V DC rechargeable battery, and has a shoulder strap for easy handling.

TYPICAL APPLICATIONS:

- **Toxic Gases such as NO_2, SO_2, HF, Cl_2, HCN, NH_3, & H_2S**

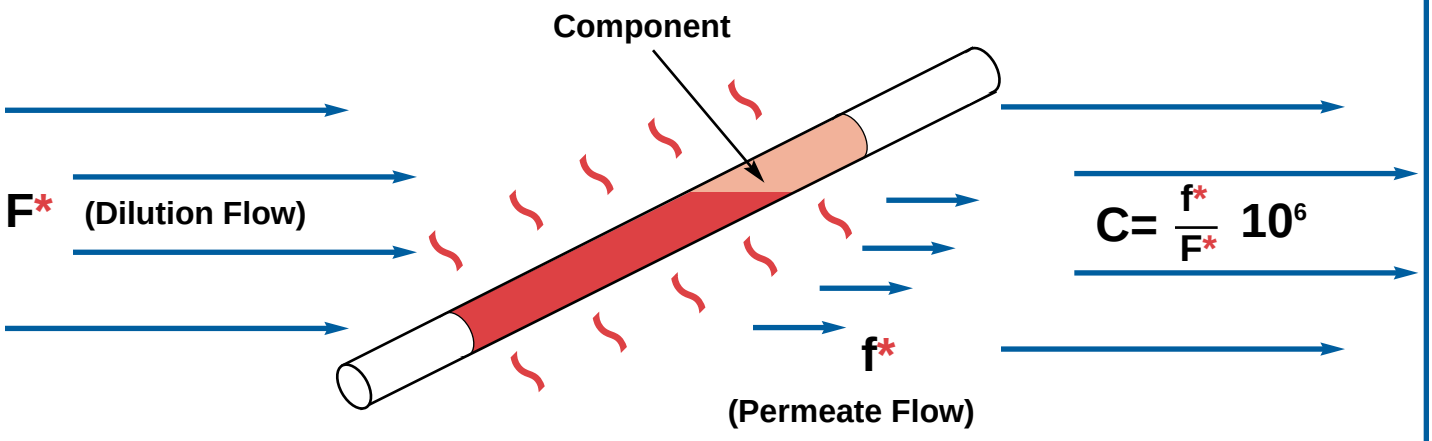
Individual data sheets are available on each product. Contact the KIN-TEK office or the representative in your area.

Typical Flow Diagram



The Perm Tube Method

Traceable Gas Standards



*Value Traceable to NIST

f=Component emission at temp T F=Dilution gas flow C=Concentration

KIN-TEK has designed and built calibration gas systems for more than a quarter of a century. Because we believe that the quality of an analysis depends on the quality of the calibration standard, KIN-TEK is committed to providing calibration standards that meet the high quality expectation of our customers. Our commitment to your satisfaction extends through delivery, to on-site installation, training, and application work.

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