

# 491M Modular Gas Standards Generator



## DESCRIPTION

A unique feature of this unit is its capability of generating concentration ranges from subppb levels to over fifty percent, from pure compounds, using single step dilution. The Model 491M can generate gas mixtures from permeation tubes, diffusion tubes, and compressed gas cylinders. It can also humidify the gas standard or house special analyzer interface controls. The interchangeable modular features of the instrument allow the user to customize it to fit specific applications.

For low concentration mixtures, permeation tubes are used to generate a very small, precisely known flow of the component compound. This permeate flow is then mixed with a much larger flow of a matrix (or diluent) gas to form the trace concentration mixture. Using this method, concentrations from low ppb to over 1000 ppm can be prepared directly from pure compounds.

Each 491 M cabinet can house up to 3 modules in one standard 19" cabinet. One module is a "Base" module with a permeation oven, mass flowmeter for dilution flow measurement, and dilution flow controls. The other modules to select from are: 1) a module for blending high concentration mixtures (% levels) directly from a compressed gas cylinder; 2) a gas standard humidification module; 3) a module for analyzer interface controls; 4) a gas control module for converting the standard permeation oven to one which can use gas filled permeation tubes; 5) additional liquid filled permeation tube oven modules.

By adding an expansion cabinet, up to 6 modules can be combined for multicomponent, multi-parameter mixture control. Each module is equipped with output signals to allow interfacing for computer readout of mixture composition.

The 491M can be used to dilute higher concentration EPA Protocol or NIST reference standards to trace working levels. It can also use NIST Permeation Tubes. These capabilities are becoming increasingly important in meeting governmental requirements.

## ECONOMIC ADVANTAGES

- Saves storage space
- One unit for many applications
- Saves time changing cylinders
- Saves money on calibration gases
- Reduces number of cylinders required
- Reduces record keeping/demurrage on cylinders

## OPERATIONAL ADVANTAGES

- Easily customized
- Uses all blending methods
- Generates humidified mixtures
- Simulates complex process samples
- Supply high PPM mixtures of solvents
- Single unit does multiple jobs simultaneously
- User cannot outgrow it add modules as needed
- Delivers PPM and PPB mixtures in a variety of background gases

## SAFETY ADVANTAGES

- Reduces number of changeovers
- Limits use of high pressure cylinders Instrument can be set up at the point of use
- Reduces quantity of each compound on hand
- When permeation tubes are used, the compound is safely sealed from accidental release