



FlexStream™ Humidification Module

FlexStream™ HG Module

The FlexStream™ HG Module is used with the FlexStream™ Base Module (or other modules) to add a variable range of percent relative humidity (%RH) to the trace concentration gas calibration mixture. Adding %RH to a calibration gas is critical to simulate “real time” ambient sampling conditions. The addition technique should maintain the integrity of the mixture without loss of chemical vapor. If a component gas is bubbled through water, or even contacts the liquid surface, its concentration may be changed by loss of the component to the water. A special mixing and monitoring technique must be used to prevent loss of chemical vapor and to control parameters that will maintain the %RH levels needed for calibration.

The FlexStream™ HG Module is an automated module controlled by the FlexStream™ Base Module that adds relative humidity based on flow and concentration requirements of the calibration. The microprocessor in the FlexStream™ Base Module automatically calculates and adjusts flows (or pressure) to maintain %RH needed for the desired concentrations for calibration (not all concentrations or flows are possible). Water vapor mixes with dry gas vapor to form the output mixture. The trace concentration gas mixture does not contact liquid water at any time, maintaining the integrity of the Span Gas stream.

Features

- Humidity range ~20% - >90% (max. without secondary dilution) depending on application
- External sensor for “real time” control
- Fully automated with local interface via touchscreen of controlling FlexStream™ Base Module, or FlexLink™ software
- Compensates for added moisture
- Standard Flow Range: 0.25 – 5.0 slpm
- No mixture contact with liquid water
- Saturation membrane separates water from gas – no danger of accidental flooding
- Water reservoir and pump system prevents frequent refills
- Elevated saturation temperature
- Full control over the useful 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 ~30 lbs

Operation

The FlexStream™ HG Module is controlled through the FlexStream™ Base Module touch screen (or the user installed FlexLink™ software) and has different operational modes; Offline (Off), Standby, Zero, Span and Purge. The Offline Mode means the unit is powered off and upstream dry flow enters and exits the system to the analyzer. In Standby Mode the module is ready to be operated after an initial warm up phase with a small flow circulating to the vent. Zero Mode adds humidity to the clean dilution gas before the addition of the calibration gas.

(operation continued on next page)

Operation (continued)

The Zero Mode is essential in establishing a true zero baseline and for standards addition calibrations. The Span Mode is the main calibration gas mode that combines a ratio of dry calibration gas with wet (humidified) gas to form a humidified mixture that can be varied up to 90% RH (in some cases). The Span Mode is used for dynamically creating humidified trace concentration gas standards that mimic ambient conditions with a range from ~20% to 90% RH (depending on operating factors). Lastly, the Purge Mode is used for cleansing the system between calibrations or when application requirements change.

Relative humidity percentages are determined both by an accurate internal temperature/%RH sensor and an accurate external temperature/%RH sensor. The internal sensor provides diagnostic information of the gas stream as it mixes dry gas with wet gas before exiting the instrument. The external sensor is designed for inline measurement of calibration gas delivery to the analyzer or device under test (DUT) just before analysis. The external sensor provides feedback control to the microprocessor for automating flow control of the wet to dry gas ratio at delivery conditions. The external sensor is an important factor in maintaining desired %RH and gas stream concentration. Combined with the FlexLink™ Software, data logging and remote control of instrument functions is possible.

The FlexStream™ HG makes a great addition to the FlexStream™ system of modules and provides an excellent and accurate calibration tool for many Ambient Air Monitoring, Continuous Emissions Monitoring (CEMs), Breath or Odor applications.

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