

NIST Traceable Portable Model 3410 Elemental Mercury Calibrator

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The Tekran® Model 3410 Elemental Mercury Calibrator provides NIST traceable calibration gas for system calibration. The 3410 is an added, programmable calibration gas source that complements the standard calibration gas source already installed inside the 3400 HgCEMS, necessary to comply with USEPA and other government regulations. It can be used as a stand-alone mercury source and calibration system for monitoring or control technology research. The 3410 can be set to automatically generate multi-point calibration gas. The 3410 delivers elemental mercury gas using a NIST traceable, temperature controlled, saturated mercury vapor source. Precision mass flow controllers dilute the mercury source output to the desired value. The mercury generator is capable of continuously producing large flow rates of calibration gas at virtually no ongoing cost.

Unlike other saturated sources, the Model 3410 contains a host of advanced features providing superior accuracy and unattended, remote operation. The 3410 Mercury Calibrator connects to any manufacturer's external mercury analyzer, via a supplied 3/8-inch (9.5mm) output port, with a SS compression fitting.

Product Highlights

- Hg output range¹: 0.5 to 300 µg/m³
- Calibration gas delivery rate¹: 4 to 20 SLPM
- Mercury source life: many years
- Allowable ambient temp: +5 to +45°C
- Hg source control range²: +4.00 to +30.00°C
- Independent linearization tables for each MFC

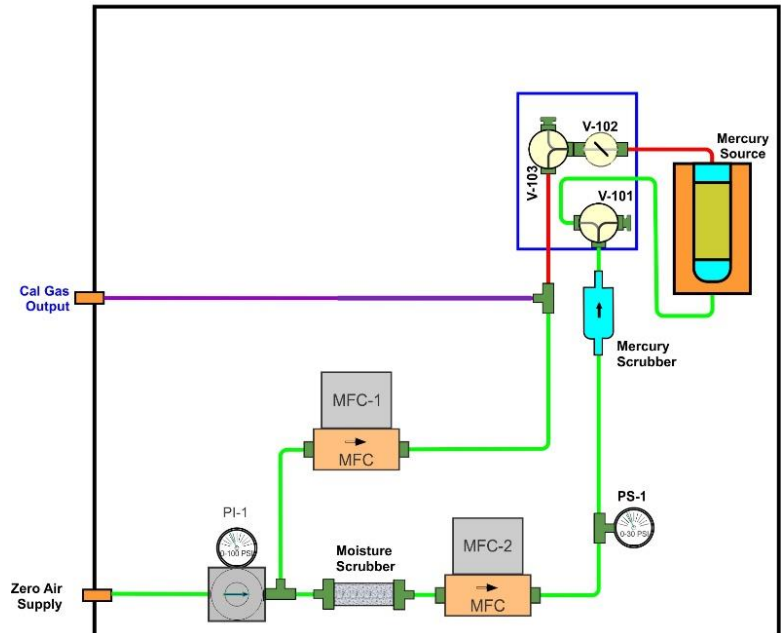
Applications

- Coal fired power plant emissions
- Waste incinerator emissions
- Third party CEMS auditing
- Metrology labs
- Cement manufacturing emissions
- Bench scale testing
- Mercury removal process monitoring
- Laboratory & field research

Principles of Operation

A Peltier heater/cooler maintains precise temperature control of the mercury reservoir. A mass flow controller, MFC-1, keeps precise and accurate carrier flow through the mercury chamber. The source exit flow is saturated with elemental mercury vapor and is then diluted by the flow from MFC-2. Solenoid valves isolate the source when mercury is not required. The valve manifold is heated to minimize any condensation of mercury vapor in the undiluted portion of the flow path. Additional safety interlocks ensure the source is activated only when all temperatures are stable.

3410 Calibrator



Product Features

- Calibration gas output port
- High output rate: up to 20 SLPM
- Heated/cooled saturated mercury source
- Ultra-precise source control
 - Repeatability: $\pm 0.02^{\circ}\text{C}$
 - Accuracy: $\pm 0.05^{\circ}\text{C}$
 - Range²: $+4.00$ to $+30.00^{\circ}\text{C}$
- Precision pressure sensor for constant output concentration despite back pressure variations
- MFCs individually calibrated to minimize errors at low flow settings
 - Multi-point calibration tables
 - Linear interpolation between calibration points
- Solenoid valves provide control functions
 - Isolation of Hg source until safe to activate
 - Selection between main and auxiliary outputs
- Hg scrubber on source inlet flow assures no bias on source output concentrations

Remote Control

For stand-alone applications, the HMI touchscreen is used to control the 3410 Elemental Mercury Calibrator.

- Readout and monitoring of all current temperatures, pressures and flows with alarms
- Setting of all temperatures and MFC set points
- Initiation of immediate or automatic calibration sequences
- Periodic temperature sensor and MFC recalibrations

Due to ongoing development, all listed specifications are subject to change.

¹ Standard Unit. Other working ranges are available. Not all output flow/concentration combinations are available simultaneously.

² Other temperature ranges available. Contact Tekran for details.