

PS ANALYTICAL

PRODUCT SPECIFICATION

PSA 10.536 MERCURY VAPOUR GENERATOR – RS485

The Mercury Vapour Generator is a calibration device for mercury analysers. The system operates on the principle of diluting a saturated source of mercury at known temperature. A low flowrate is passed across the mercury reservoir ensuring that the gas becomes saturated with mercury. The gas saturated with mercury is then diluted into the concentration range of interest. The flowrates are controlled using two mass flowcontrollers. The unit also generates an Hg free zero span so that blank measurements can be performed.

Figure 1 10.536 Mercury Vapour Generator



Figure 2 Vapour Generation Schematic of Hg Generator

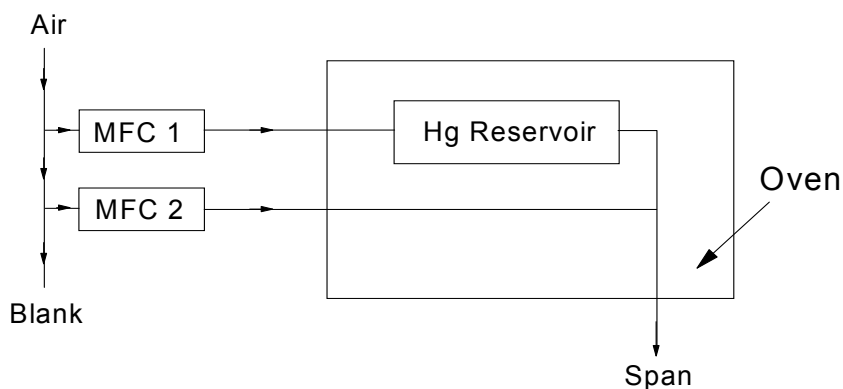


Table 1

	RANGE	CONTROL
MFC 1	0 - 20 ml/min	RS485/MODBUS
MFC 2	0 - 20 l/min	RS485/MODBUS
Oven	Ambient 40–60°C	RS485/MODBUS



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The Modbus control allows the user to easily specify the Hg concentration desired and the software calculates the required flows.

The system is capable of providing a wide range of Hg concentrations by varying the mass flowcontroller and oven set-points (e.g. 3 ng m⁻³ to 3000 µg m⁻³). The unit has been used for numerous applications such as online calibrations, sampling system bias checks, spiking sample streams and for bench studies where precise concentrations of mercury are required.

By calibrating the PSA 10.525 Sir Galahad using the absolute vapour injection technique and then collecting fixed volumes of gas generated from the calibration device we were able to establish that the measured concentration was within 4% of the theoretical value based on the saturated vapour pressure calculations

Figure 3 Theoretical Versus Measured Response from Calibration System

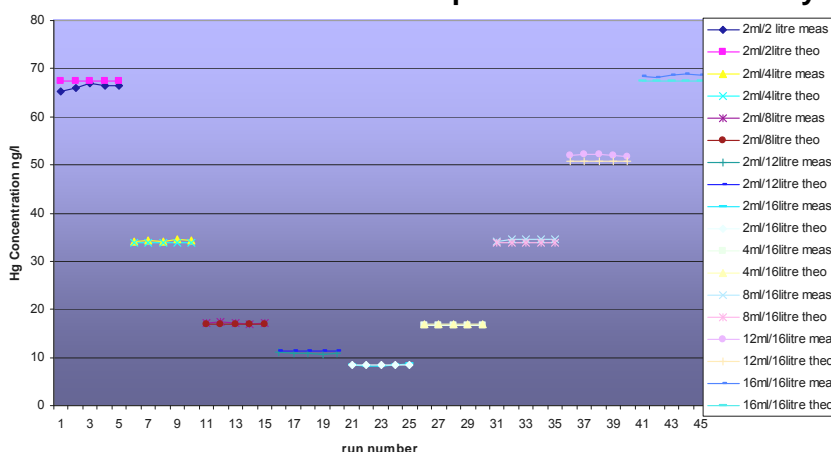


Figure 4 Typical results for Calibration System

Reservoir flow (ml min ⁻¹)	Diluent flow (l min ⁻¹)	Theoretical Concentration (ng m ⁻³)	Concentration obtained (ng m ⁻³)	Recovery (%)
1	10	6760	6464 ± 49	95.6
2	10	13510	13413 ± 103	99.3
3	10	20260	19905 ± 122	98.2
4	10	27010	26205 ± 206	97.0
4	15	18010	17409 ± 163	96.7
6	15	27010	27221 ± 685	100.0
6	15	27010	27435 ± 373	101.6

Additional Information

Alarm Outputs Pressure
Temperature

Dimensions H 30 x W 57 x D 42 cm

Weight 13 Kg



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