

PSA 10.525 Sir Galahad System

Product Specification



General

An atomic fluorescence spectrometer with an integrated gold trap for the determination of mercury in gases at ultra-trace levels. The system utilises a low-pressure Hg lamp excitation source with detection by photomultiplier. The PSA Sir Galahad is suitable for both routine and research applications using atomic fluorescence and a gold-coated Amasil™ adsorption/desorption system, mercury can be determined at levels below to 0.2 picogram. The Sir Galahad can be used as an online monitor in the “continuous” mode, or can analyse remotely collected samples using the “static” mode. Applications include ambient air monitoring, stack emission testing, natural gas monitoring, industrial gases and the measurement of mercury in breath. The system is fully portable and can be operated with a laptop computer.

Table 1 Typical Ranges of the Sir Galahad (Assuming 1L Sample Collection)

Gain	Calibration Range (ng)	Estimated Detection Limit (pg)	Calibration Range ($\mu\text{g m}^{-3}$)	Estimated Detection Limit ($\mu\text{g m}^{-3}$)
1	DL- 300	100	DL- 300	0.1
10	DL- 30	10	DL- 30	0.01
100	DL- 3.0	1.0	DL- 3.0	0.001
1000	DL- 0.3	0.1	DL- 0.15	0.0001

General

Analyte	TGM (Total Gaseous Hg)
Principle	Gold preconcentration, atomic fluorescence detection
Sample Cycle	0.1 min – 999999 min
Sample Flow Rate	0-1 l min ⁻¹
Carrier Gas	Argon – an inlet pressure of 2.8-3.5 bar is required (flow rate 0.6 l min ⁻¹)
Cooling Gas	Air – an inlet pressure of 3.1-4.1 bar is required
Detection Limit	<0.1 ng m ⁻³
Range	0.1 ng m ⁻³ 3,000,000ng m ⁻³ (0.1 L sample volume)
Sample Cycle Time	Fully user programmable (2-999999 minutes)
Rise Time 95%	Within one cycle
Fall Time 95%	Within one cycle

www.psanalytical.com

PSA

P S Analytical

UK: Tel. +44 (0) 1689 891 211

USA: Tel: +1 954 429 1577

SEA: Tel: +61 (0) 428 226 674

E-mail: psa@psanalytical.com

E-mail: usa@psanalytical.com

E-mail: sea@psanalytical.com

Warm up time for device	15 min
Absolute detection limit	0.2 pg
Environmental	15-35°C for temperature, 10-80% for humidity
Data Connection	USB (0-1 V, 4-20 mA, MODBUS-RTU, PROFIBUS and others available through OnLine software)

The System is also Compliant with the Following Standards

Safety	Built to IEC 1010-1 (EN61010-1) Safety requirements for electrical equipment for measurement, control and laboratory use
EMC	EN50081-1 Generic emission, residential, commercial light industrial environment EN50082-1 Generic immunity, residential, commercial light industrial environment

System Specification

Weight	Net:	15 kg
	Gross:	20 kg including manuals
Dimensions	Actual:	185 H x 450 W x 320 D (mm)
	Packed:	300 H x 560 W x 420 D (mm)

Optional Accessories

10.515	Mercury Preconcentration Unit
10.534/10.536	Cavkit – Mercury Vapour Generator
10.547	Pressure Letdown System
10.541/2/3/4	Stream Sampling Systems
10.555	Calibration System
50.125	Inertial Probe
50.036	Dry Based Speciation Module
50.044	Dry Based Speciation Module (dual channel)
10.535	Pump/MFC Module
S665S200	Valve Switching Box
C210S007	Process Control Online Software

PSA Sir Galahad Software (Lab) (part no. G525S018)

The PSA Sir Galahad Lab Software provides instrument control and data acquisition running under MS Windows™

Optional Software (Online) (part no. C210S007)

The PSA OnLine Process Control software enables the Sir Galahad to be used as a process control instrument. The software allows continuous operation of the Sir Galahad with Alarm and Data outputs.

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