TRITIUM (HT-HTO)BUBBLER

GAS SAMPLING SYSTEM: GSS 1

- LOW COST, EFFECTIVE MONITORING OF HT AND HTO EMISSIONS AS REQUIRED BY CURRENT REGULATIONS.
- COLLECTION EFFICIENCIES OF NEAR 100%
- SUITABLE FOR CARBON/ CARBON DIOXIDE/TRITIUM AND SULPHUR (USING DIFFERENT COLLECTING MEDIA AS APPROPRIATE)
- DUAL VACUUM PUMP ARRANGEMENT
- POSSIBILITY OF ADVANCED NETWORK CONFIGURATIONS
- EASY CALIBRATION

The monitoring of radioactive isotopes of Tritium has become increasingly prevalent in the nuclear industry with the regulators scrutinising the effective and accurate monitoring of all stack emissions.

The Lab Impex Gas Sampling System (GSS) is specifically designed for stack and ventilation duct applications. The GSS takes a continuous sample from the stack or duct and passes this through a series of Bubbler bottles which allow the collection of any radioactive gas passing through. The level of activity in the liquid (of specific volume) is then measured at regular intervals using a liquid scintillation counter. The results from such a measurement is used to calculate total activity released from the stack or duct over a time period.

The system features user adjustable sample flow control with high and low flow away outputs. The sample flow totaliser offers both resettable and non resettable cumulative flow totals. A stack flow totaliser is also provided which can be connected to an exchange stack flow signal and it offers resettable and cumulative flow totalisers.

The Bubbler is housed in a 1600 x 800 x 600mm glass fronted cabinet and the unit runs on a 230Vac mains (110Vac available on request). All sample pipes are 10mm stainless steel, supplemented by PVC where necessary. The stack sample pipes are connected into the enclosure via 10mm to -10mm bulkhead fittings.

Two sets of five borosilicate glass bottles are used within the system. In each stage, three are used for sample collection and two to ensure that the collection medium is not carried upstream or downstream through the system. The bottles are designed to minimise surface evaporation and maximise sample exposure to the collection medium.

Sample flow is adjustable by the operator and flow alarm outputs are provided. Collection bottles have capacity of up to 500ml.

A furnace is used prior to the second stage of bottles to oxidize gaseous forms of Tritium. The furnace has a temperature capability of up to 1000°C. The set point temperature is adjustable by the operator and maintained by the PID controller. The furnace controller has high and low temperature alarm outputs which are adjustable by the operator. A second controller provides an over temperature cut out.

TRITIUM (HT-HTO) BUBBLER: GAS SAMPLING SYSTEM: GSS 1

PERFORMANCE SPECIFICATION

Furnace Catalyst	• A full range of furnace temperatures is available: 300-1000°C. The furnace control includes temperature display and alarm set points
Sample Flow Rate **Totalised Flow**	• Sample air flow is adjustable 300-800cc/min • Flow meters are used to set up the required flowrate and produce a 4-20 mA signal proportional to flow which is displayed as both rate of flow and totalised flow • The totalised flow signal is displayed in two formats (i.e. resettable and non re-settable). A counter is incorporated to indicate the time period between sample changes
Stack Flow	• The totalised flow signal is displayed in two formats (i.e. resettable and non resettable). A counter is incorporated to indicate the time period between sample changes
Sample Flow Meter Accuracy	• + /- 2.5%
Collection Efficiency	• 99%
Enclosure Characteristics	• 2 Vacuum pumps (1 run and 1 standby) • Electrical control box with main electrical isolation pump selection switch and power supply for flow meter
Electrical	• 230Vac 50Hz • 110V (available on request)

Power Consumption	• 1150W max • 380W average
Voltage Frequency	• 50/60Hz
Outputs	• Alarms for high/low flow rate and over/ under temperature with automatic cut out for over temperature • Door open alarm
Simultaneous Display	• The system simultaneously displays the following to the operator. • Furnace temperature • Door open warning • Instantaneous air flow and volume accrued i.e. i) Sample flow rate ii) Stack flow rate iii) Accumulated sample volume flow iv) Accumulated stack volume flow
Other Information	Consumables:- • Bottles - Part No. 915/4/10462/000 • Filter Cards - Part No. 0465/040 • Furware Tube Assembly - Part No. 0471/035 Note: Furnace tube assembly is pre-packed with copper oxide and palladium catalyst
Product No.	• 0471/001

Ultra ELECTRONICS

making a difference

Ultra Electronics
NUCLEAR CONTROL SYSTEMS
Innovation House, Lancaster Road
Ferndown Industrial Estate
Wimborne, Dorset BH21 7SQ, England
Tel: +44 1202 850450
Fax: +44 1202 850451
Email: information@ultra-ncs.com
www.ultra-ncs.com
www.ultra-electronics.com

Ultra Electronics reserves the right to vary these specifications without notice.
© Ultra Electronics Limited 2016.
Produced in England
UENCS-L201E