

TRITIUM GAS ACTIVITY MONITOR CMS H35L



Stringent legislation and the principle of ALARA necessitate the use of accurate, fast response radiation detection instrumentation in the nuclear workplace. By using proven, established electronics and firmware, the CMS H35L Tritium in Air Monitor provides accurate measurement of Tritium Gas levels.

The CMS H35L Gas Activity Monitor is designed to provide health physics personnel with accurate measurement of - and fast alarm response to -air-borne Tritium and other nuclides.

The CMS H35L has been designed to be non-saturating i.e. when subjected to high radiation levels the reading goes full scale and shows no fall back.

The detector system consists of two matched, two litre ion chambers constructed of stainless steel. The sample chamber has an airtight mylar window. This allows a small, license exempt check source to be used to verify the operability and performance of the monitor. The second chamber is sealed and measures gamma background counts.

The current generated by background in this background chamber is subtracted directly from the current generated in the second chamber by the gamma background plus Tritium or other radioactive gases, thus facilitating full background compensation.

An external rotary vane vacuum pump samples air through a replaceable filter, through a deioniser into the gas chamber and then out of the pump exhaust port. If required the monitor can be modified to allow connection to a distributed vacuum main

If it is desired to sample air from a specific location (e.g. a glove box or stack) and return air to that location, 3/8" or bigger tubing can be attached to the inlet and outlet ports.

- **Direct Monitoring of Tritium gas**
- **Six Decade Range of Measurement**
- **Fast Response to High Activity**
- **Stand Alone or Network**
- **Simple to Operate**
- **Built in Self Test Routines**

Information and specification within this publication may change without notice



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Specifications

Detectors

- .Chamber assembly consists of two each nominal two litre ion chambers.
- .One chamber is closed and detects background and the other receives air through the pre-filter and de-ioniser.

Measurement Range

- .CMS-H35L measures airborne Tritium concentration (in HT and HTO form)
- . 33kBq/m³ to over 0.1 TBq/m³ (1 µCi/cc - 27 µCi/cc)

Accuracy

- .+/- 10% of the decade

Response

- .Two user definable time constant settings, automatically switching on the statistical increase / decrease of count-rate, provide low MDC's with fast alarm response

Parameters

- .All working parameters protected by three levels of passcodes (user, supervisor and calibrator)

- .8 independent measurement protocols allow user to switch between parameter settings, depending on application

Alarms

- .Alarm indication for:
 - .High Activity
 - .Alert Activity
 - .Detector Fail
 - .Detector Overrange
 - .Flow Alarms (High, Low and Critical)

Status Indicators

- 3 X 20 mm (1") multi element LED lamps
- Large, clear 20 x 142 mm (5.5") digital display
- Four dual colour function key indicators
- High intensity alarm strobe module
- 80 dB Alarm sounder

Power

- .AC single mains connection
- .voltage 85-240 VaC
- .Frequency: 47-440HZ

Dimensions

- Width - 305mm (12")
- Height - 610mm (24")
- Depth - 305mm (12")
- (excluding filter holder and mounting tabs)

Weight

- Approx.25kg

Outputs

- .RS-485 / RS-232
- .Analogue (4-20mA)
- .4 way relay contacts

Pump System

- .The CMS H35L is operable with the Lab Impex PMP-6 vacuum pump or a distributed vacuum main as appropriate

Environmental Requirements

- .Operating Temperature Range:
 - 10°C - +45°C (14°F - 113°F)
- .Relative Humidity: 0 - 95%
- .CMS H35L designed to IP65 (Nema type 13 equivalent) and includes hinged lid

CE Marking

- .CMS H35L is CE marked, declarations of conformity with:-
 - .EMC directive 89/336/EEC, 92/31/EEC
 - .Low voltage directive 93/23/EEC, 93/68/EEC
- Conforms to EMC standards BSEN50081-1 1995 and BSEN50082-2 1993

Drift

- Less than 1% of the instrument range in 24 hours.

Circuit

- Electrometer circuit amplifies a net difference between a Tritium chamber and sealed background chamber of similar configuration. Shell voltages are supplied by ultraquiet regulated power supply.



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