

# TRITIUM AIR / STACK MONITOR

For Public Release Level and Below

Model Series ~ H3-PRL

Model ~ H3-PRL-5 - 5 Decade Concentration

Model ~ H3-PRL-7- 7 Decade Concentration

## FEATURES:

- ULTRA SENSITIVITY TO LOW LEVEL TRITIUM
- $3 \times 10^{-10}$   $\mu\text{Ci/cc}$  ( $10 \text{ Bq/m}^3$  in 24 hrs)
- $5 \times 10^{-9}$   $\mu\text{Ci/cc}$  ( $185 \text{ Bq/m}^3$  1 hr)
- $1 \times 10^{-8}$   $\mu\text{Ci/cc}$  ( $370 \text{ Bq/m}^3$  in 20 min)
- $1 \times 10^{-7}$   $\mu\text{Ci/cc}$  ( $3.7\text{K Bq/m}^3$  in 3 sec)
- STABLE - SELF CONTAINED
- RS-232, USB & ETHERNET
- GIVES CONCENTRATION
- GIVES TOTAL DAILY RELEASE
- REAL-TIME ALARM
- DYNAMIC BACKGROUND COMPENSATION
- CAN ACTUATE REMOTE CONTROL
- PARTICULATE + ION INLET FILTERS
- WALL MOUNTABLE
- **OPTIONAL:** MEASURES TRITIUM AS HTO IN PRESENCE OF OTHER RADIOACTIVE GASSES (STG-5ATL)



## APPLICATION:

Nuclear Power, Fusion Power, Bio-Tech Industry, Environmental Monitoring, Indoor Air Quality

- On Board Memory
- Micro Processor to Establish Units And Parameters
- USB & Ethernet Data Port
- Digital Accuracy Sensitive to  $10^{-7}$   $\mu\text{Ci/Cc}$
- Measures Dose-Rate & Dose

- Alarm – Visual & Audio
- Dynamic Background Gamma Compensation
- Can Actuate Computer Or Remote Control
- Measures Tritium as HTO In Presence Of Other Radioactive Gases (**STG-5ATL**)

## DESCRIPTION:

- H3-PRL Series Tritium monitors are sensitive, rugged stack or effluent monitors for detection and measurement of airborne Tritium.
- The subtractive balanced chamber electrometer circuit decreases background effects to negligible levels
- De-ionized and filtered intake reduces to negligible levels spuriousity based on smokes, dusts, and existing ionization in the air.
- Inlet and outlet hoses allow the return of monitored air to source: interiors of fume hoods, exhaust stacks, etc.



**TECHNICAL ASSOCIATES**  
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## SPECIFICATIONS:

MODEL	ALL MODELS	H3-PRL-5	H3-PRL-7
	<b>BOTTOM OF RANGE</b>	<b>TOP OF RANGE</b>	<b>TOP OF EXTENDED RANGE</b>
<b>RATE</b>	1 x 10 <sup>-7</sup> µCi/cc	1 x 10 <sup>-3</sup> µCi/cc	1.0 µCi/cc
	0.1 picoCi/cc	999.9 picoCi/cc	0.999 µCi/cc
	3.7K Bq/m <sup>3</sup>	37M Bq/m <sup>3</sup>	37G Bq/m <sup>3</sup>

MODEL	H3-PRL		
	BOTTOM OF RANGE	TOP OF RANGE	INTEGRATION TIME
<b>Integrate for Determining Concentration</b>	3 x 10 <sup>-10</sup> (10 Bq/m <sup>3</sup> )	1 x 10 <sup>-6</sup> µCi/cc (370 Bq/m <sup>3</sup> )	24 hours
	5 x 10 <sup>-9</sup> (185 Bq/m <sup>3</sup> )	1 x 10 <sup>-5</sup> µCi/cc (3.7K Bq/m <sup>3</sup> )	1 hour
	1 x 10 <sup>-8</sup> (370 Bq/m <sup>3</sup> )	1 x 10 <sup>-4</sup> µCi/cc (37K Bq/m <sup>3</sup> )	20 minutes

## Integrate to Determine

### Total Daily RELEASE:

Model Series H3-PRL SERIES automatically multiplies real-time concentration by your average daily stack output and reports total daily release from 0 µCi/day to 10<sup>99</sup> µCi/day.

### Background:

Essentially eliminated by subtractive balanced chambers.

### Smoke, Dust, Ion Elimination:

Filter and de-ionizer reduce effects to negligible levels.

### Circuit:

Electrometer circuit amplifies net difference between a 25 liter tritium internal chamber and internal background chamber of identical size and configuration.

### Detector:

Air stream is passed through sample chamber to measure all Tritium gas content. **OPTION:** Xenon, Krypton, <sup>14</sup>CO<sub>2</sub>, etc.

### Calibration:

Can be calibrated internally with Tritium (or HTO) gas, or on a Gamma calibration course; or can be checked at a single point with an external (not provided) Beta source.

### Factory Calibration:

Performed prior to shipment with accompanying Calibration Certificate.

### Field Calibration:

Calibration check may be performed in the field with optional license exempt microCurie level Beta source.



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## DATA OUTPUTS:

<b>Digital:</b>	RS-232 serial port. One count per second per $1 \times 10^{-7}$ $\mu\text{Ci/cc}$ .
<b>Analog:</b>	<b>OPTIONAL:</b> 0-5 V or 4-20mA
<b>Alarms:</b>	<b>High Level:</b> Red flashing light with audio <b>System Fault:</b> White steady light
<b>Remote Alarm:</b>	TTL closure for system failure TTL closure for High Level alarm
<b>Data Retrieval:</b>	RS-232 serial port
<b>Dimensions:</b>	36" wide x 30" high x 17.5" deep.
<b>Weight:</b>	40 lbs. (18.4 kg)
<b>Optional Features/Accessories:</b>	<ul style="list-style-type: none"> <li>▪ Remote alarm (audible &amp; visual)</li> <li>▪ Model RAL-8 – Remote Alarm and Meter (including 25 ft of cable).</li> <li>▪ Can be used to 500'.</li> <li>▪ 4-20 mA for computer.</li> <li>▪ Other manual range switching or auto-range features.</li> <li>▪ Relay contacts for high or low alarm, or both.</li> <li>▪ Interconnection to/from port of other gas or particulate monitor.</li> <li>▪ Readout as radioactive gas other than Tritium.</li> </ul>

TRITIUM SERIES COMPARISON ~ (PUBLIC RELEASE LEVEL OR LOWER)

	MODEL	MODEL	MODEL	MODEL
	STG-4S/D	STG-5ATL	H3-PLR -5	H3-PLR -7
<b>FEATURES</b>	6 DECADES	4 DECADES	5 DECADES	7 DECADES
	H3 & NOBLE GASES	DETECTS HTO & H3	ALL TRITIUM	ALL TRITIUM
	$10^7 \times 10^{-1} \mu\text{Ci/cc}$	H3 - $10^7 \times 10^{-3} \mu\text{Ci/cc}$ HTO - $1 \times 10^{-7} \mu\text{Ci/cc}$	$1 \times 10^{-7} \mu\text{Ci/cc} - 1 \times 10^{-3} \mu\text{Ci/cc}$	$1 \times 10^{-7} \mu\text{Ci/cc} - 1.0 \mu\text{Ci/cc}$
	SINGLE CHAMBER	DUAL CHAMBER	DUAL CHAMBER	DUAL CHAMBER
	SEES ALL RADIATION ON (1) SINGLE CHANNEL	SEPARATELY ON (2) TWO CHANNELS	USES (1) SINGLE CHANNEL WITH RANGE SWITCHING	USES (1) SINGLE CHANNEL WITH RANGE SWITCHING
	DOSE & DOSE RATE	DOSE & DOSE RATE	READS: 3 SEC, 20 MIN, 1 HR, 24 HR, TOTAL DAILY RELEASE	READS: 3 SEC, 20 MIN, 1 HR, 24 HR, TOTAL DAILY RELEASE



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