

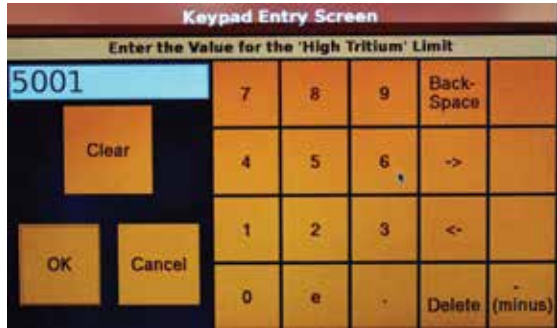


TOTAL 6 - Stack Monitor

Gas, Particulate, Tritium, Carbon-14
Gross Beta-Gamma, Iodine

- Model: TOTAL- 6-TCI-H³ Tritium and Inorganic C-14 (CO₂)
- Model: TOTAL- 6-TCO-H³ Tritium and Organic C-14
- Model: TOTAL- 6-TC- H³ Tritium and Total C-14
- Model: CAM-33 Series Multi-Nuclide System

**PWR and BWR Produce Tritium
10 Curie/Giga-Watts per Year**



Features

- Four, Five, or Six Channel Simultaneous Measurement
- Sensitive To:
 - » H³ 10⁻⁷ µCi/cc
 - » CO₂ 10⁻⁸ µCi/cc
 - » Organic C-14 10⁻⁷ µCi/cc
- Reads Directly in µCi/cc or Bq/l
- Real Time Flow Measurement
- Dynamic Background Compensation


- Alarm and CAN Actuate Remote Controls
- CAN Operate in Presence of Other Radioactive Gases (See Chart)
- Micro Processor Operation
- Digital Accuracy
- Includes Data, Analysis, Data Archive and Data Retrieval
- USB and Ethernet Ports
- Rugged Cabinet
- **Optional:** Caster or Skid Mounted Cabinet
- **IP33**



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TOTAL-6 - Stack Monitor

Gas, Particulate - Tritium - Carbon-14, Gross Beta-Gamma - Iodine

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Applications

All six models, the TOTAL-6 Stack Monitors and the CAM-33 are good for Nuclear Power Plants, Stacks, Room Air, etc. They are sensitive, rugged stack or effluent monitors.

- The **TOTAL-6** series stresses Tritium and C-14 detection.
- The **CAM-33** series stresses particulates, Iodine, and Noble Gas.
- The **CAM-33-6** monitor has the most channels for 6 simultaneous measurements of Gross Beta/Gamma Particulates, Alpha Particulates, Noble Gas, Iodine, Tritium, and C-14.

NOTE: See the TOTAL-6 Series Stack Monitor Chart and the flow diagrams included here for details to help you select the detector suite that best serves your need.

See Spec Sheet details for the CAM-33 Series.

Commercial versions are available for research labs, room air, glove boxes and other applicable uses.

Tritium and ¹⁴CO₂ Measurement Description

- The subtractive balanced chamber electrometer circuit and optional Radon Rejection decreases background effects to negligible levels.
- The deionized and filtered intake reduces to negligible levels spuriousity based on smokes, dusts, and existing ionization in the air.
- Inlet and outlet hoses provide return of monitored air to source: interiors of fume hoods and exhaust stacks, etc.
- All instruments are calibrated at the factory. Calibration check may be performed in the field with a license exempt μ Curie level Beta source

Measurement Ranges of Optional Detectors	From	4 Decade Model	6 Decade Model
Tritium	10 ⁻⁷	10 ⁻³	10 ⁻¹ uCi/cc
Inorganic C-14	10 ⁻⁸	10 ⁻⁴	10 ⁻² uCi/cc
Organic C-14	10 ⁻⁹	10 ⁻⁵	10 ⁻³ uCi/cc
Alpha particulate	5 x 10 ⁻⁸	10 ⁻⁴	uCi/cc




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DETECTOR TYPE	1 MINUTE	1 HOUR	10 HOURS	1 DAY	1 WEEK	TOP OF RANGE
ALPHA	6 x 10 ⁻¹⁰ μCi/ml	1 x 10 ⁻¹¹ μCi/ml 3.7 x 10 ⁻⁷ Bq/ml	1 x 10 ⁻¹² μCi/ml 3.7 x 10 ⁻⁸ Bq/ml	6 x 10 ⁻¹³ μCi/ml 2.4 x 10 ⁻⁸ Bq/ml	1 x 10 ⁻¹³ μBq/ml 4 x 10 ⁻⁹ Bq/ml	1.0 Bq/ml
PARTICULATE BETA-GAMMA	6 x 10 ⁻¹⁰ μCi/ml	1 x 10 ⁻¹¹ μCi/ml 3.7 x 10 ⁻⁷ Bq/ml	1 x 10 ⁻¹² μCi/ml 3.7 x 10 ⁻⁸ Bq/ml	6 x 10 ⁻¹³ μCi/ml 2.4 x 10 ⁻⁸ Bq/ml	1 x 10 ⁻¹³ μBq/ml 4 x 10 ⁻⁹ Bq/ml	1.0 Bq/ml
IODINE	3 x 10 ⁻⁹ μCi/ml	1 x 10 ⁻¹¹ μCi/ml 3.7 x 10 ⁻⁷ Bq/ml	1 x 10 ⁻¹² μCi/ml 3.7 x 10 ⁻⁸ Bq/ml	6 x 10 ⁻¹³ μCi/ml 2.4 x 10 ⁻² Bq/ml	1 x 10 ⁻¹³ μBq/ml 4 x 10 ⁻⁹ Bq/ml	0.1 Bq/ml
GAS-STANDARD RANGE	6 x 10 ⁻⁷ μCi/ml	1 x 10 ⁻⁷ μCi/ml 3.7 x 10 ⁻³ Bq/ml	2.7 x 10 ⁻⁸ μCi/ml 1 x 10 ⁻³ Bq/ml	1 x 10 ⁻⁸ μCi/ml 3.7 x 10 ⁻⁴ Bq/ml	2.7 x 10 ⁻⁹ μBq/ml 1 x 10 ⁻⁴ Bq/ml	10 ¹⁵ Bq/ml POST-ACCIDENT 4 X 10 ²¹ Bq/ml




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Airborne Activity	Model	TOTAL-6-TCI-H ³	TOTAL-6-TCO-H ³	TOTAL-6-TC-H ³	CAM-33-3-1P	CAM-33-3	CAM-33-4	CAM-33-6	CAM-33XG
	Chemical								
Tritium H3	T ₂ , HTO T ₂ O	YES	YES	YES	OP	NO	OP	YES	OP
Carbon C-14: Inorganic Organic	CO ₂	YES		YES	OP			OP	OP OP
Particulate	Alpha				YES	OP	OP	OP	OP
Particulate	Beta				YES	YES	YES	YES	OP
Iodine				OP	YES	YES	YES	YES	OP
NOBLE GAS – GROSS - ALL				YES	YES	YES	YES	YES	YES
NOBLE GAS – Curie MeV									YES
ARGON				OP				OP	YES
XENON				OP				OP	YES
KRYPTON				OP				OP	YES
RADON		RX	RX	RX				OP - RX	

Legend: YES = Measures Each Separately

RX = Rejects

OP = Optional

NOTE: TOTAL-6-TCO = Tritium plus Organic Carbon-14

TOTAL-6-TCI = Tritium plus Inorganic Carbon-14

Models TOTAL-6-TCO and TOTAL-6-TCI work best if no other nuclides are present

See Data Sheet for Details on the CAM-33 Series and the CAM-33XG Series



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Electronics:

Circuit: Electrometer circuit amplifies net difference between a 2 liter Tritium internal chamber and a background chamber of similar size and configuration.

Calibration: Can be calibrated internally with Tritium (or HTO) and ¹⁴CO₂ gas,
OR on a Gamma calibration course;
OR can be checked at a single point with an external (not provided) Beta source.
Organic Carbon Channel can be calibrated with C-14 disk source.

Alarm: High Level: Red flashing light plus warbling sound

System Fault Alarm: White steady light

Remote Alarm: 3 Relays provided for operators use

Output: USB Port and ethernet port
Optional: 0-5 volt or 4-20 mA.

On-Board Computer: Data Archive and Data Retrieval

Background: Essentially eliminated by subtractive balanced chambers.
Optional: - Radon Rejection

Smoke, Dust and Ion Elimination: Filter and deionizer reduce effects to negligible levels.

Weight and Dimensions:

Dimensions: 23" W x 66" H x 36" D

Shipping Weight: 635 lbs.

User Manual shipped with instrument.

OPTIONAL:	
Interconnection to / from port of other gas or particulate monitors	Remote Alarm (audio and visual) (Model RDX-8) includes 25" of cable. Can be used to 500 feet.
Serial Printer	Casters or Skid Mounted
Higher Tritium Count Rate using Both Proportional Detectors for Tritium Measurement	Additional Lead Shielding for Greater Gamma Rejection
	4-20 mA for computer.



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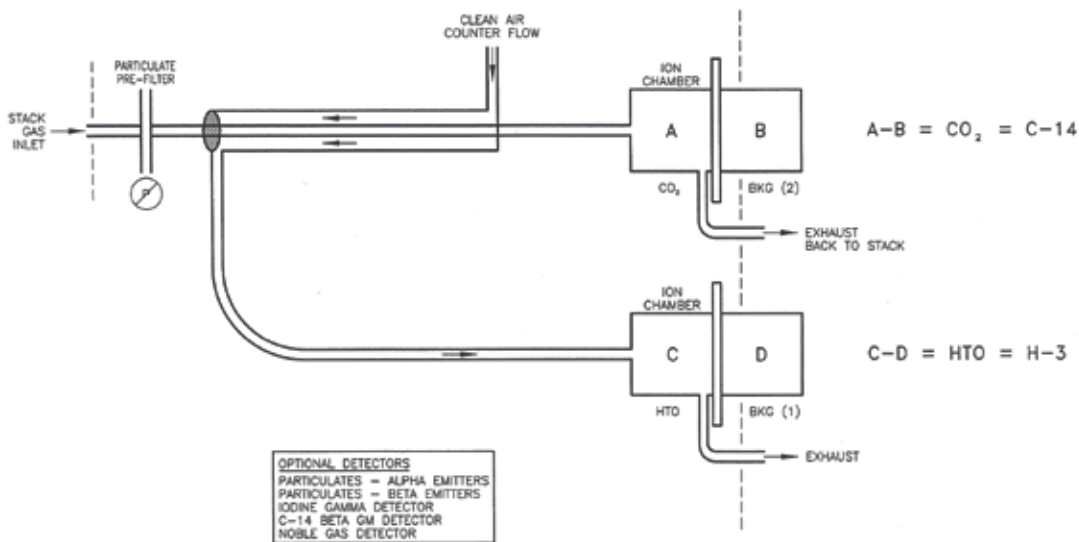
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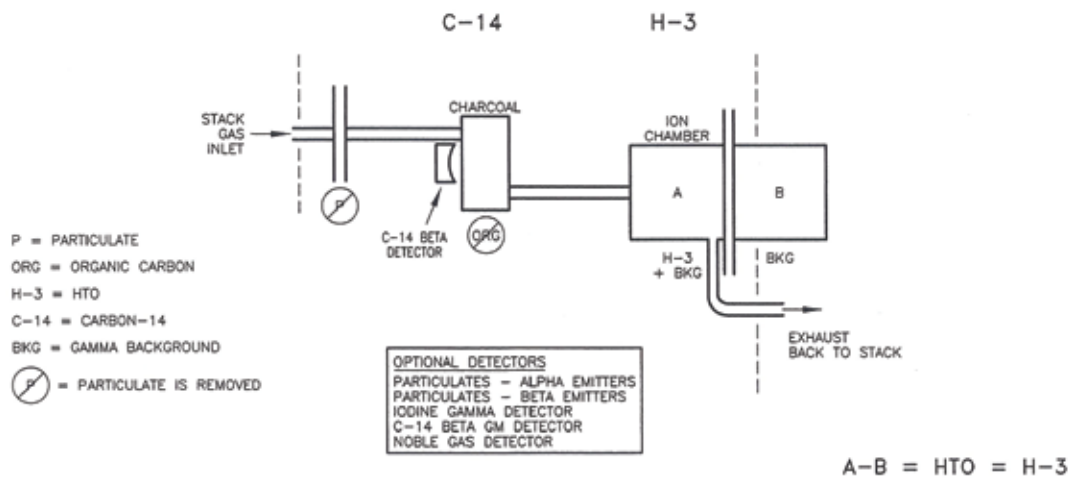
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TOTAL-6-TCI-H³



TOTAL-6-TCO-H³




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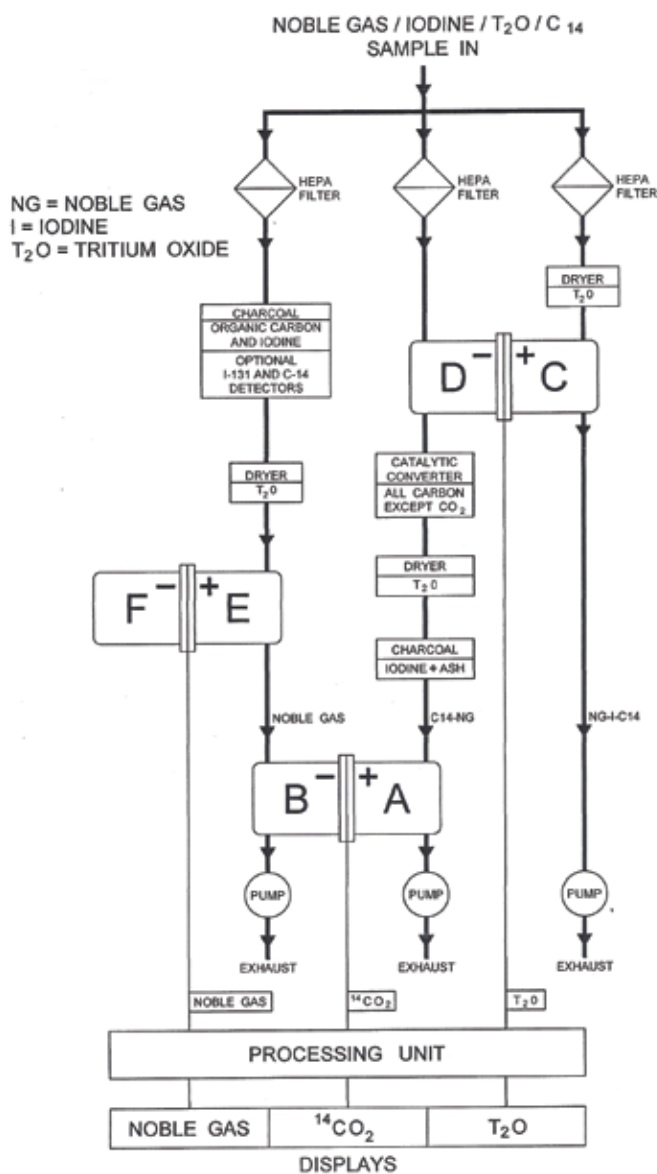
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TOTAL-6-TC-H³



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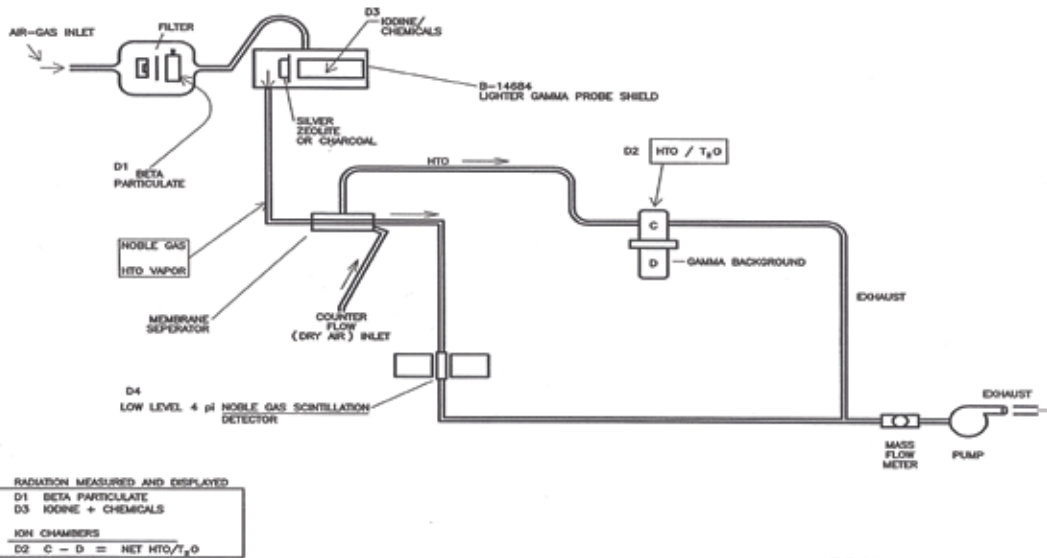
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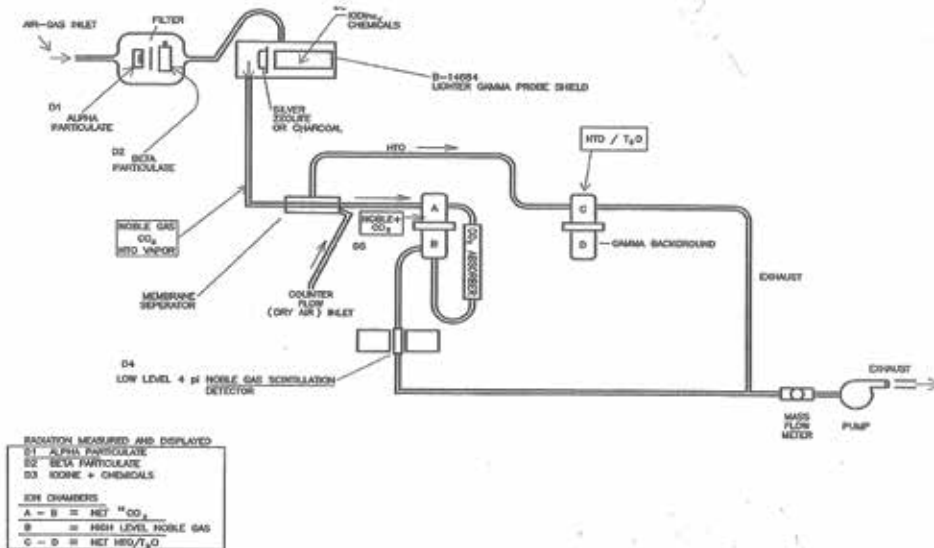
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CAM-33-4



CAM-33-6




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