



MODEL 200SB-HTO PORTABLE TRITIUM IN AIR MONITOR FOR HTO ONLY

The **Model 200SB-HTO** is a low-cost, lightweight, portable tritium in air survey meter for measuring tritium oxide (HTO) only, even in the presence of other radioactive gases such as noble gases, as well as background gamma. Rapid warm-up of less than 30 seconds, a high-volume pump, and fast electronics combine to give this instrument a very quick overall response. Meter readings will reach 90% of the final value within just 5 seconds to a step response of aspirated tritium.

The 200SB-HTO uses two coaxial 200cc ionization chambers, one for measurement and one for gamma compensation. A desiccant column is interposed between the measurement and compensation chambers to provide a differential measurement proportional to HTO only. The front panel features only three controls, an ON - OFF - SAMPLE switch, the switch for setting the alarm level, calibration and offset potentiometers, as well as alarm indicators for low battery, low flow, and alarm level.

Economy model with medium sensitivity, a wide range, and fast response. Particularly useful as an emergency monitor. Zero adjustment is unnecessary, the electrometer is temperature stable and shows zero drift over 0 - 50 °C.



HTO ONLY MEASUREMENT

The Model 200SB-HTO includes 6 hose connections which can be adjusted for two operating modes to measure either:

- 1) Total Tritium (HT, HTO, including any other radioactive gases), or
- 2) Tritium Oxide (HTO) only, ignoring all other airborne radionuclides and gamma fields

For HTO measurement, an external desiccant column is interposed between the measurement and compensation chambers which absorbs and removes the HTO to provide a differential measurement that is proportional to HTO only.

$$[\text{HTO} + \text{other radionuclide} - (\text{other radionuclide}) = \text{HTO}]$$

SENSITIVITY, RANGE, SPEED OF RESPONSE

The 200SB is useful for where measurement sensitivities on the order of $10 \mu\text{Ci}/\text{m}^3$ (1 MPCa or $0.4 \text{ MBq}/\text{m}^3$) are sufficient, and where wide range and fast response are needed. A special high-volume pump sampling at 2-3 LPM combined with a 3 second electronic time constant yields an overall response time of under 5 seconds. Includes radon recognition and elimination circuitry to provide accurate, fast, and drift-free measurement.

SIMPLE TO USE, FAST WARM-UP TIME

The Model 200SB is ready for use by merely selecting the desired alarm level and activating the instrument power. After applying power, the "warm up" time is less than 30 seconds before it is ready for accurate readings.

Medium Sensitivity	to $10 \mu\text{Ci}/\text{m}^3$ (1 MPCa or $0.4 \text{ MBq}/\text{m}^3$)
Wide Range	to $199,999 \mu\text{Ci}/\text{m}^3$ (19,999 MPCa)
Very Fast Response	5 seconds to reach 90%
Gamma Compensated	Coaxial Compensation 200cc volume
No Zero Drift	long term zero stability to better than $10 \mu\text{Ci}/\text{m}^3$
Rapid Warm Up	less than 30 seconds
HTO discrimination even in the presence of other radioactive gases.	

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TECHNICAL SPECIFICATIONS

MEASUREMENT RANGE	10 – 199,999 $\mu\text{Ci}/\text{m}^3$ Other available measurement ranges: 0.1 to 1,999.9 MBq/m^3 1 to 19,999 DAC or MPCa
SENSITIVITY	10 $\mu\text{Ci}/\text{m}^3$ (0.4 MBq/m^3 or 1 MPCa)
DISPLAY	LCD panel meter
ACCURACY, SPAN	$\pm 10\%$ of reading, $\pm 10 \mu\text{Ci}/\text{m}^3$, whichever is greater
NOISE LEVEL	$\pm 10 \mu\text{Ci}/\text{m}^3$, 1 S.D. (3 second electronic time constant)
ZERO STABILITY	after 1 minute (or less) warm up, zero drift less than $\pm 10 \mu\text{Ci}/\text{m}^3$
GAMMA COMPENSATION	chambers in a side by side pattern reduce errors due to external gamma radiation.
RESPONSE RATE	5 seconds to reach 90% of final reading
ALARM (ACOUSTIC)	1. Nine position stepped attenuator set point for signal alarm 20 - 10,000 $\mu\text{Ci}/\text{m}^3$, steady tone. 2. Low flow produces a steady tone
ALARM (VISUAL)	signal level: red LED low flow: yellow LED low battery: red LED
EXTERNAL CONNECTIONS	not available
IONIZATION CHAMBER VOLUME	effective volume: 200 cm^3 port to port volume: 220 cm^3
DUST FILTER	external in-line disposable cartridge type P/N 12082
SAMPLING SYSTEM	6 hose barb ports are located on the front panel for measuring either Total Tritium or HTO only
PUMP	special high volume internal rotary vane pump
FLOW RATE	nominally 2-3 LPM
ENVIRONMENTAL	0° C to +50° C, 0 - 95 % relative humidity non-condensing
BATTERIES	two "D" size batteries, alkaline
SIZE	7.6" L, 5.2" W, 4.4" H excluding handle
WEIGHT	5 lbs (2.3 kg)

Accessories included:

- 2 "D" Size Alkaline Batteries
- Sniffer hose
- Dust filter
- Two desiccant cartridges (filled with desiccant) for HTO only measurement
- AC Power converter (*optional*)
- Carrying case (*optional*)

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