MODEL 400SBDγC
PORTABLE TRITIUM IN AIR MONITOR

The **Model 400SBDγC** is a high performance, lightweight portable tritium in air monitor and the basis of the 400 series. All models in the 400 series include four 200cc ionization chambers arranged in a cruciform geometry which provides nearly perfect gamma compensation regardless of photon energy, flux gradient, or flux direction. Two ionization chambers are used for measurement (400cc total), and two for gamma compensation (400 cc total). The Model 400SBDyC has a fast response time of less than 30 seconds and can accurately detect tritium down to a sensitivity of 2 μCi/m^3 or 0.1 MBq/m^3.

Featuring an upgraded electrometer, the 400 series offers excellent sensitivity and high stability. Thermally induced zero shifts of the electrometer have been eliminated, showing zero drift from 0 – 50 °C.

SENSITIVITY

The **400SBDγC** is useful for measurements as low as 2 μCi/m^3 (0.1 MBq/m^3). The Overhoff electrometer, which measures to below 10^{-16} amperes, combines low noise and high zero stability.

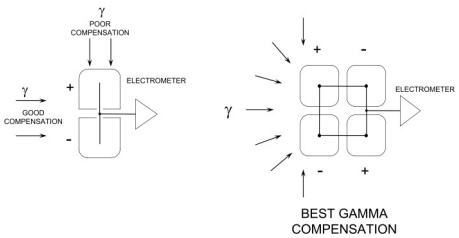
RADON INTERFERENCE, NOISE RESPONSE

For an unambiguous measurement of very low tritium a monitor must be able to ignore response to ambient radon. The 400SBDγC incorporates this capability and therefore produces accurate, fast and drift free measurements to nearly ±1 μCi/m^3.

TOTAL GAMMA COMPENSATION

Cruciform ionization chamber geometry provides nearly perfect gamma compensation regardless of photon energy, flux gradient or flux direction. Gamma compensation of the 400SBDγC is typically three orders of magnitude better than instruments using nested or side by side ionization chambers.

GAMMA COMPENSATION



FAST RESPONSE

Its exceptionally rapid response is primarily due to its abiltiy to ignore radon. The electronic time constant is only 10 seconds, the pneumatic time constant of about 12 seconds, for an overall time constant of only 15 seconds. Meter readings will reach 90% of final value within 30 seconds to a step response of aspirated tritium.

FAST WARM UP, NO ZERO DRIFT

After applying power, the initial transient “warm up” drift effects take less than a minute. Long term drifts have been eliminated and manual zero adjustments are no longer required.

MODEL RS400: INCLUDES RS-232 DATA OUTPUT

The Model RS400 is the same as the Model 400SBDyC but includes RS-232 data output.

High Sensitivity	to 2 μCi/m^3 (0.1 MBq/m^3)
Fast Response	15 second time constant
Gamma Compensated	virtually no offset in 10 mR/h fields
Response To Radon	suppression circuit ensures noise free operation
No Zero Drift	long term zero stability to better than 1μCi/m^3
Rapid Warm Up	less than 30 seconds

The Overhoff Technology Model **400SBDyC** portable tritium monitor is an instrument with unequaled performance in sensitivity, stability, speed of response and gamma compensation.

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TECHNICAL SPECIFICATIONS

MEASUREMENT RANGE	1 – 19,999 μCi/m^3 Other available measurement ranges: 0.1 to 1,999.9 MBq/m^3 or DAC 1 to 19,999 μSv/h
SENSITIVITY	2 μCi/m^3 (0.1 MBq/m^3)
DISPLAY	0 – 19,999 digits, LCD panel meter
ACCURACY, SPAN	±10 % of reading, ±2 μCi /m^3, whichever is greater
NOISE LEVEL	± 1μCi/m^3, 1 S.D. (10 second electronic time constant)
ZERO STABILITY	after 30 seconds (or less) warm up, zero drift less than ± 1μCi/m^3
GAMMA COMPENSATION	chambers in a side by side pattern reduce errors due to external gamma radiation.
ALPHA PULSE SUPPRESSION	a circuit provides recognition and cancellation of undesirable noise spikes attributed to airborne radon
RESPONSE RATE	30 seconds to reach 90% of final reading
ALARM (ACOUSTIC)	1. Ten position stepped attenuator set point for signal alarm 2 - 1,000 μCi/m^3, steady tone. OFF position is included. 2. Low flow produces an intermittent tone 3. Mute switch silences audible tone
ALARM (VISUAL)	signal level: red LED low flow: yellow LED, flashing low battery: red LED HVPS: red LED illuminates to indicate a malfunction with the high voltage power supply (HVPS) used to bias the ionization chambers
EXTERNAL CONNECTIONS	Not Included. Data output (RS-232) only available on the following models: RS400, 400AC.
IONIZATION CHAMBER VOLUME	effective volume: 400 cm^3 port to port volume: 440 cm^3
DUST FILTER	HEPA, external in-line disposable cartridge type
PUMP	internal rotary vane pump
FLOW RATE	nominally 1.5 - 2 LPM
ENVIRONMENTAL	0° C to +40° C, 10 - 95 % relative humidity non-condensing
BATTERIES	two “D” size NiMH or Alkaline batteries external jack for supplementary power input and charging
POWER CONVERTER	100-240 VAC, 50/60 Hz, .25 A to 3.3 Vdc @ 1.2 A 5.5 mm O.D. x 2.1 mm I.D. Plug, center pin is positive CE
SIZE AND WEIGHT	7.6" [193mm] L x 5.2" [132mm] W x 6.9" [175mm] H excluding handle, 6.5 lbs (3 kg)
ACCESSORIES INCLUDED	• 2 “D” Size NiMH or Alkaline Batteries • Sniffer Hose • Dust Filter • AC Power Converter • *Optional– Carrying Case*

Other models in the series:

Model RS400:	Same as Model 400SBDyC but includes RS-232 data output.
Model RS400-HTO:	Same as Model RS400 but includes external desiccant column and additional hose connections to measure solely HTO, ignoring all other airborne radioactive gases (noble gases) and gamma fields.

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