The Model 400SBDγC is Overhoff’s standard, low-cost portable tritium in air monitor and is the basis of the 400 series. All models in the 400 series include 400 cm³ of total ionization measurement volume with 400 cm³ of gamma compensation volume. Featuring an upgraded electrometer, the 400 series offers excellent sensitivity and high stability. Thermally induced zero shifts of the electrometer have been eliminated.

SENSITIVITY

The 400SBDγC is useful for measurements as low as 2 μCi/m³ (0.1 MBq/m³). 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/m³.

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.

FAST RESPONSE

Its exceptionally rapid response is primarily due to its ability 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 400SBDγC but includes RS-232 data output.

MODEL RS400-HTO: HTO DISCRIMINATION (Noble Gas Compensation)

By addition of a desiccant column, this survey instrument will specifically measure only tritium oxide (HTO), even in the presence of other radioactive gases (i.e., noble gases) as well as background gamma. The desiccant can be regenerated repeatedly for reuse.
MODEL 400SBDγC
PORTABLE TRITIUM IN AIR MONITOR

TECHNICAL SPECIFICATIONS

MEASUREMENT RANGE
1 – 19,999 μCi/m³, basic sensitivity of the order of 2 μCi/m³
Other available measurement ranges:
0.1 to 1,999.9 MBq/m³ or DAC
1 to 19,999 μSv/h

DISPLAY
0 – 19,999 digits, LCD panel meter

ACCURACY, SPAN
±10 % of reading, ±2 μCi /m³, whichever is greater

NOISE LEVEL
± 1μCi/m³, 1 S.D. (10 second electronic time constant)

ZERO STABILITY
after 30 seconds (or less) warm up, zero drift less than ± 1μCi/m³

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/m³, 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

EXTERNAL CONNECTIONS
Not Included. Data output (RS-232) only available on the following models: RS400, 400AC.

IONIZATION
IONIZATION VOLUME
effective volume: 400 cm³
port to port volume: 440 cm³

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

SIZE AND WEIGHT
7.6" [193mm] L x 5.2" [132mm] W x 6.9" [175mm] H excluding handle, 6.5 lbs (3 kg)

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.

Overhoff Technology Corporation
Phone: 513-248-2400
Fax: 513-248-2402
Email: sales@overhoff.com
Website: www.overhoff.com

Released 10/26/20