# MODEL 400AC-WP
## PORTABLE TRITIUM IN AIR MONITOR

The **Model 400AC-WP** portable tritium monitor is based on our popular Model 400 platform and is a small, high sensitivity, hand held, battery (rechargeable) operated, fully gamma-compensated survey meter with RS232 serial data output and user recalibration features.

**–WP designates that the unit is waterproof.**


GAMMA COMPENSATION

### SPECIAL FEATURES OF THE MODEL 400AC-WP

Bright LED Display, readable in sunlight and low-light situations
Disable Gamma Compensation Toggle Switch for easy gamma calibration
Rechargeable Batteries and Rechargeable Battery Capacity Monitor
Power Supply and High Bias Voltage Failure Monitors
Manual and **Automatic Calibration**
- a) Calibration with Tritium Gas
- b) Calibration with a Gamma Source
  (Using Gamma-Tritium Equivalence Ratio)

Improved Gamma Compensation and Noise Immunity
**-WP, Waterproof** design, all front panel components are sealed and gasketed to prevent water entry

### SENSITIVITY

The 400AC-WP is useful for measurements as low as 2 $\mu Ci/m^3$. 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 400AC-WP incorporates this capability and therefore produces accurate, fast and drift free measurements to nearly $\pm 1\ \mu Ci/m^3$.

### 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 400AC-WP is typically three orders of magnitude better than instruments using nested or side by side ionization chambers.

Gamma compensation can be disabled in cases when not required.

### 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.

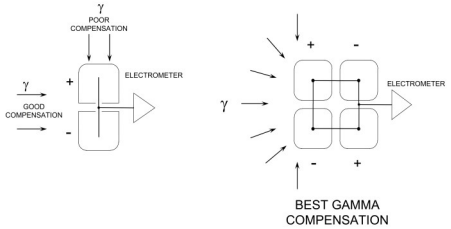
### FAST WARM UP, NO ZERO DRIFT

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.

### AUTOMATIC CALIBRATION

The 400AC-WP features the ability to perform a fully automatic gamma calibration by using the provided calibration software. Calibration is started with a single mouse click and requires no intervention. Calibration consists of 3 stages, taking 2 minutes each, for a total of 6 minutes.

Upon completion, a printed calibration report is generated automatically.




BEST GAMMA COMPENSATION

| | |
|---|---|
| Waterproof Design | Prevents entry of water |
| High Sensitivity | to 2 $\mu Ci/m^3$ |
| 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 $1\mu Ci/m^3$ |

The Overhoff Technology Model **400AC-WP** portable tritium monitor is an instrument with unequaled performance in sensitivity, stability, speed of response and gamma compensation, all housed in a waterproof case.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## PORTABLE TRITIUM IN AIR MONITOR

## TECHNICAL SPECIFICATIONS

| | |
|---|---|
| **MEASUREMENT RANGE** | 1 – 19,999 μCi/m$^3$, basic sensitivity of the order of 2 μCi/m$^3$<br>Other available measurement ranges:<br>0.1 to 1,999.9 MBq/m$^3$ or DAC<br>1 to 19,999 μSv/h |
| **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<br>2 - 1,000 μCi/m$^3$, steady tone. OFF position is included.<br>2. Low flow produces an intermittent tone<br>3. Mute switch silences audible tone |
| **ALARM (VISUAL)** | signal level: red LED<br>low flow: yellow LED, flashing<br>low battery: red LED<br>High voltage power supply: red LED illuminates to indicate a HVPS malfunction |
| **EXTERNAL CONNECTIONS** | RS232 serial data output for tritium measurement, level alarm status and calibration |
| **IONIZATION CHAMBER VOLUME** | effective volume: 400 cm$^3$<br>port to port volume: 440 cm$^3$ |
| **DUST FILTER** | external in-line disposable cartridge type |
| **PUMP** | internal rotary vane pump, nominal 1.5 - 2 LPM flow rate |
| **ENVIRONMENTAL** | 0° C to +50° C, 20 - 95 % relative humidity non-condensing, water/splash proof |
| **BATTERIES** | two “D” size NiMH batteries<br>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<br>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) |
| **CALIBRATION** | Automatic Calibration using pc-based software (included)<br>Manual Calibration by adjusting a calibration potentiometer |

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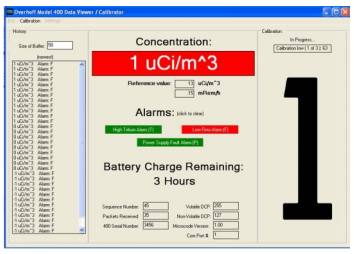


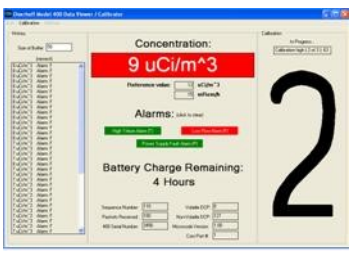


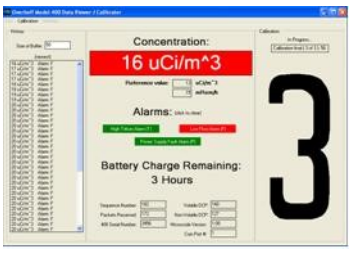


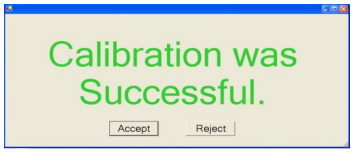


Released 10/26/20


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