

# MODEL 400AC

## PORTABLE TRITIUM IN AIR MONITOR

### 便携式氚监测器，型号 400AC

The Model 400AC 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 RA 232 serial data output and user recalibration features.

型号 400AC 便携式氚监测器以我们受欢迎的型号 400 系列为基础，是一款小巧、高灵敏度、手持电池（可充电）驱动的完全伽马补偿测量仪。具有 RA232 系列数据输出和用户重新校准功能。

#### ADDITIONAL FEATURES OF THE MODEL 400AC (NOT AVAILABLE ON THE MODEL 400SBDYC)

##### 型号 400AC 附加功能（型号 400SBDYC 无此功能）

- Disable Gamma Compensation  
关闭伽玛补偿
- Rechargeable Batteries and Rechargeable Battery Capacity Monitor Power Supply and High Bias **Voltage** Failure Monitors.  
可充电电池和可充电电池容量显示。电源和高偏置电压故障监测
- Manual and Automatic Calibration  
手动和自动校准
  - a) Calibration with Tritium Gas: 氚气校正
  - b) Calibration with a Gamma Source : 伽玛源校正  
(Using Gamma-Tritium Equivalence Ratio)
- Improved Gamma Compensation and Noise Immunity  
改进了的伽玛补偿及抗扰度
- Constant Air Flow Control  
气流持续控制
- 50% Fewer High Bias Voltage Batteries  
减半高偏置电压电池



#### SENSITIVITY

##### 敏感度

The 400AC is useful for measurements as low as 2  $\mu\text{Ci}/\text{m}^3$ . The Overhoff electrometer, which measures to below  $10^{-16}$  amperes, combines low noise and high zero stability.

400AC 辐射测量低至 2  $\mu\text{Ci}/\text{m}^3$ 。Overhoff 的静电计测量低至  $10^{-16}$  安培且低噪音和高零点稳定性。

#### RADON INTERFERENCE, NOISE RESPONSE

##### 氡干扰，噪音响应

For an unambiguous measurement of very low tritium a monitor must be able to ignore response to ambient radon, The 400AC incorporates this capability and therefore produces accurate, fast and drift free measurements to nearly  $\pm 1 \mu\text{Ci}/\text{m}^3$ . 要准确测量极低氚，监测器必须能够忽略对周围氡的响应。400AC 具有这种功能，因此测量结果准确、快速且无漂移，接近  $\pm 1 \mu\text{Ci}/\text{m}^3$ 。

#### TOTAL GAMMA COMPENSATION

##### 总伽马补偿

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

十字形电离室提供了完美的伽马补偿而忽略了光子能量、通量梯度和热流方向。

400AC 伽马补偿是典型的三个数量级，优于使用使用嵌套或并排电离室仪器。

Gamma compensation can be disabled in cases when not required.

不需要时，伽马补偿可关闭



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## FAST RESPONSE

### 快速响应

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.

其出色的快速响应主要归于其忽略氡的功能，电子时间常数仅 10 秒，气动时间常数大约 12 秒，整体时间常数仅为 15 秒，30 秒内米表读数将达到终值的 90%，进入吸氡响应阶段。

## FAST WARM UP, NO ZERO DRIFT

### 快速预热，无零点漂移

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.

供电后，初始瞬间预热漂移影响不到一分钟，长期漂移已被淘汰，手动零点调整也不再需要。

## AUTOMATIC CALIBRATION

### 自动校准

The 400AC 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 2minutes each, for a total of 6 minutes. During the calibration the compensation ionization chambers are disabled automatically. Upon completion a printed calibration report is generated automatically.

400AC 通过使用提供的校正软件，能够完全执行自动伽马校准。不需要干预，只要一点鼠标，刻度开始。刻度过程由三个阶段组成，每个阶段需 2 分钟，总计 6 分钟。校正期间，补偿电离室自动关闭。结束后，自动生成打印校正报告。

<b>High Sensitivity</b> 高灵敏度	to 2 $\mu\text{Ci}/\text{m}^3$ 到 2 $\mu\text{Ci}/\text{m}^3$
<b>Fast Response</b> 快速响应	15 second time constant 15 秒时间常数
<b>Gamma Compensated</b> 伽马补偿	virtually no offset in 10mR/h fields 在 10mR/h 场中几乎没有漂移
<b>Response To Radon</b> 氡响应	suppression circuit ensures noise free operation 抑制电路确保零噪音操作
<b>No Zero Drift</b> 无零点漂移	long term zero stability to better than 1 $\mu\text{Ci}/\text{m}^3$ 长期零点稳定小于 1 $\mu\text{Ci}/\text{m}^3$
<b>Rapid Warm Up</b> 快速预热	less than 30 seconds 少于 30 秒

The Overhoff Technology Model 400AC portable tritium monitor is an instrument with unequalled performance in sensitivity, Stability, speed of response and gamma compensation. Overhoff Technology 生产的型号 400AC 便携式氚监测器在灵敏度、稳定性、反应速度和伽马补偿方面表现无与伦比。



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MEASUREMENT RANGE 测量范围	1 – 19,999 $\mu\text{Ci}/\text{m}^3$ , basic sensitivity of the order of 2 $\mu\text{Ci}/\text{m}^3$ 1 – 19,999 $\mu\text{Ci}/\text{m}^3$ , 基本灵敏度 2 $\mu\text{Ci}/\text{m}^3$
DISPLAY 显示	0 – 19,999 digits, LCD panel meter 0 – 19,999 数字显示, LCD 前板仪表
ACCURACY, SPAN 精度读数	$\pm 10\%$ of reading, $\pm 2 \mu\text{Ci}/\text{m}^3$ , whichever is greater $\pm 10\%$ , $\pm 2 \mu\text{Ci}/\text{m}^3$ , 取数值较大者
NOISE LEVEL 噪音值	$\pm 1 \mu\text{Ci}/\text{m}^3$ , 1 S.D. (10 second electronic time constant) $\pm 1 \mu\text{Ci}/\text{m}^3$ , 1 S.D. (10 秒电子时间常数)
ZERO STABILITY 零点漂移预	After 30 seconds (or less) warm up, zero drift less than $\pm 1 \mu\text{Ci}/\text{m}^3$ 热 30 秒后 (或更短), 零点漂移小于 $\pm 1 \mu\text{Ci}/\text{m}^3$
GAMMA COMPENSATION 伽马补偿	chambers in a side by side pattern reduce errors due to external gamma radiation. 并排电离室减少应外部伽马辐射产生的错误
ALPHA PULSE SUPPRESSION $\alpha$ 脉冲抑制	a circuit provides recognition and cancellation of undesirable noise spikes attributed to airborne radon 电路识别和抑制由于气溶胶氡产生的不希望的噪音尖峰
RESPONSE RATE 响应率	30 seconds to reach 90% of final reading 30 秒达到终值 90%
ALARM (ACOUSTIC) 报警 (声音)	1. Ten position stepped attenuator set point for signal alarm 2 - 1,000 $\mu\text{Ci}/\text{m}^3$ , steady tone. OFF position is included. 10 位步进式衰减器设定点用于信号报警 2 - 1,000 $\mu\text{Ci}/\text{m}^3$ , 稳定音, 包括 OFF 位置 2. Low flow produces an intermittent tone 低流产生间歇音 3. Mute switch silences audible tone 静音开关关闭声音报警
ALARM (VISUAL) 报警 (视觉)	signal level: red LED 信号水平: 红 LED low flow: yellow LED, flashing 低流黄色 LED, 闪灯 low battery: red LED 低电红色 LED
EXTERNAL CONNECTIONS 外部连接	RS232 serial data output for tritium measurement, level alarm status and calibration RS232 串口数据输出用于氚测量, 报警状态和校准
IONIZATION CHAMBER VOLUME 电离室容量有效容量:	effective volume: 400 $\text{cm}^3$ port to port volume: 440 $\text{cm}^3$ 有效容积 400 $\text{cm}^3$ , 口对口容量 440 $\text{cm}^3$
DUST FILTER 滤尘器	external in-line disposable cartridge type 外置在线一次性滤芯
PUMP 泵	internal rotary vane pump 内置旋片泵



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FLOW RATE  
流量

nominally 1.5 - 2 LPM  
正常 1.5 - 2 LPM

ENVIRONMENTAL  
环境

0° C to +40° C, 0-95% relative humidity non-condensing  
0° C to +40° C, 0-95% 相对湿度无冷凝

BATTERIES  
电池

two "D" size NiMH batteries  
2节 "D" 型 NiMH 电池  
external jack for supplementary power input and charging  
外部插孔用于输入补充电源及充电

POWER CONVERTER  
电源转换器

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

100-240 VAC, 50/60 Hz, .25 A to 3.3 Vdc @ 1.2 A  
5.5 mm 外径 x 2.1 mm 内径插孔, 中间线为正极,

SIZE AND WEIGHT  
尺寸和重量

7.6" [193mm] L x 5.2" [132mm] W x 6.9" [175mm] H excluding handle, 6.5 lbs (3 kg)  
长 7.6" [193mm] x 宽 5.2" [132mm] x 高 6.9" [175mm], 不包含把手, 6.5 lbs (3 kg)

CALIBRATION  
校准

Automatic Calibration using pc-based software (included)  
Manual Calibration by adjusting a calibration potentiometer  
校准使用 PC 软件 (包含) 自动校准  
通过调整校准电位计手动校准

