



# TRIATHALON TRITIUM STACK/EFFLUENT MONITOR Model Triathalon-H3 氚烟囱道/污染排放物监测器 型号 Triathalon-H3

The Triathalon series are highly-sensitive yet rugged stack/effluent monitors built for continuous duty. The Triathalon-H3 is a single-range ionization chamber monitor housed in a NEMA 4x enclosure, designed for measuring the tritium concentration in air. A quick and easy change in pneumatics allows the user to measure for either total tritium (HT + HTO) or tritium oxide (HTO) only. The subtractive balanced chamber electrometer circuit and Radon Rejection decreases background effects to negligible levels. This smart instrument is complete with an onboard computer, color LCD touch display, and custom software for logging and analyzing data. Other available Triathalon versions include:

Model TRIATHALON-C14 for measuring Carbon-14 levels in air (see separate page).

Triathalon 系列高灵敏坚固型烟囱道/排放物监视器，连续工作设计。Triathalon-H3 为单量程电离室监测器，装在一个 NEMA 4x 密封箱内，用于测量空气中氚浓度。用户可根据气动系统中一个快速的、简单的变化来测量总氚或氚氧化物，补偿型平衡室静电计电路和氡抑制将本底影响减少到可以忽略的水平。这款智能仪器配有机载计算机，彩色 LCD 触摸屏，用于记录和分析数据的定制软件，其它 Triathalon 型号包括：TRIATHALON-C14 用于测量空气中碳-14 水平。（见单页）

## FEATURES OF TRIATHALON-H3

### TRIATHALON-H3 特点

- Cost-effective tritium stack/effluent air monitor
- User-friendly interface with custom data-logging and analysis software
- NEMA-4X enclosure ensures proper protection and continuous operation, and includes a hinged door with a polycarbonate window for servicing components
- Internal pump for transport through ionization chamber
- Optional activity totalizing, with midnight or manual mode reset
- Compact and lightweight, with easy wall-mount configuration
- Color LCD Touch Screen Display
- 经济型氚烟囱道/污染排放物空气监测器
- 带数据录入和分析软件，界面友好
- NEMA-4X 密封箱对仪器提供适当保护并确保仪器持续工作。配有折页门，带 pc 窗，用于组件服务。
- 用于通过电离室运输的内置泵
- 彩色 LCD 触摸屏
- 选择性活动累计计数功能，带有夜间模式或手动模式设定
- 仪器紧致轻便，易于墙上安装



## SENSITIVITY

### 灵敏度

The standard Triathalon-H3 is useful for measurements as low as 1  $\mu\text{Ci}/\text{m}^3$ . The Overhoff electrometer, which measures to below  $10^{-16}$  amperes, combines low noise and high zero stability. Lower sensitivity can be achieved at special request. 标准的 Triathalon-H3 测量水平低至 1  $\mu\text{Ci}/\text{m}^3$ ，Overhoff 静电器，测量低至  $10^{-16}$  安培，且低噪音、高零稳定性。可满足特殊的低敏感度要求。

## RADON REJECTION, NOISE FREE RESPONSE

### 氡扣除，无噪音响应

For an unambiguous measurement of very low tritium a monitor must be able to ignore ambient radon. The special Overhoff circuitry identifies and rejects ionization currents that are produced by decaying radon or other airborne alpha emitting radioisotopes.

要得到一个低水平氚准确测量结果，探测器必须能够忽略周围的氡。特殊 Overhoff 电路识别并排斥由衰变的氡或其它气溶胶  $\alpha$  放射同位素产生的电离电流。



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## INTEGRATED COMPUTER, DISPLAY, AND SOFTWARE: 集成电脑、显示及软件

Equipped with a fully-integrated computer, this smart instrument logs all data points on an insertable USB flash drive. Data communication to external programs is available via TCP/IP. Standard data output is USB and RJ-45 with an optional 4-20 mA. Alarm relay connections are included on the back panel. Custom software allows the user to adjust several of the measurement parameters, such as: units of measurement, alarm limits, flow rate for totalizing, among others.

装有完全集成电脑，这个智能仪器可在一个可插入的闪存 USB 中记录所有数据点。与外部程序的数据通信可通过 TCP/IP 实现。标准数据输出由 USB 和 RJ-45 接口组成，可选 4-20 mA 输出信号。背板上含有报警继电器连接。定制软件允许用户调整几个测量参数，如：测量单元，报警极限，累计计数流量等等。



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| <b>High Sensitivity</b><br>高灵敏度         | to 1 $\mu\text{Ci}/\text{m}^3$ for Tritium<br>测氚至 1 $\mu\text{Ci}/\text{m}^3$                                 |
| <b>Smart Electronics</b><br>智能电子器件      | Onboard computer,<br>机载电脑<br>Custom software,<br>定制软件<br>Internal data-logging<br>内置数据录入                      |
| <b>Gamma Compensated</b><br>$\gamma$ 补偿 | virtually no offset in 10 mR/h fields<br>在 10 mR/h 辐射场中几乎无偏移  |
| <b>Response To Radon</b><br>对氡反应        | suppression circuit ensures noise free operation<br>抑制电路确保无噪音运行   |
| <b>No Zero Drift</b><br>无零漂移            | long term zero stability to better than 1 $\mu\text{Ci}/\text{m}^3$<br>长期零点稳定性，低于 1 $\mu\text{Ci}/\text{m}^3$ |
| <b>Warm Up</b><br>预热                    | less than 5 minutes<br>少于 5 分钟  |

The Overhoff Model Triathlon-H3 utilizes cutting-edge technology to provide a smart instrument with unequalled performance in sensitivity, stability, gamma compensation, and data acquisition/analysis. Overhoff 型号 Triathlon-H3 系统应用前沿科技，打造智能仪器，在灵敏性、稳定性、 $\gamma$  补偿及数据获取与分析上的表现无与伦比。

## TECHNICAL SPECIFICATIONS: 技术参数

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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 1 $\mu\text{Ci}/\text{m}^3$<br>1 – 19,999 $\mu\text{Ci}/\text{m}^3$ 基本灵敏度 1 $\mu\text{Ci}/\text{m}^3$  |
| DISPLAY: 显示                            | LCD Color Touch Screen; units of display user settable (pCi/cc, pCi/ml, nCi/m <sup>3</sup> , $\mu\text{Ci}/\text{m}^3$ , mCi/m <sup>3</sup> , Ci/m <sup>3</sup> , MBq/m <sup>3</sup> , kBq/L, Bq/cc, Bq/ml, MPCa)<br>LCD 彩色触摸屏，可设定显示单元 (pCi/cc, pCi/ml, nCi/m <sup>3</sup> , $\mu\text{Ci}/\text{m}^3$ , mCi/m <sup>3</sup> , Ci/m <sup>3</sup> , MBq/m <sup>3</sup> , kBq/L, Bq/cc, Bq/ml, MPCa) |
| ACCURACY, SPAN: 精度                     | $\pm 10\%$ of reading, $\pm$ L.S.D, whichever is greater<br>读数 $\pm 10\%$ ， $\pm$ L.S.D, 参考较大数值   |
| NOISE LEVEL: 噪音水平                      | $\pm 1 \mu\text{Ci}/\text{m}^3$ , 1 sigma with alpha suppression in use<br>$\pm 1 \mu\text{Ci}/\text{m}^3$ ，使用时 1 sigma 带 $\alpha$ 抑制   |
| ZERO STABILITY: 零点稳定性                  | $\pm 1 \mu\text{Ci}/\text{m}^3$ long term (thirty days), ambient temperature conditions<br>$\pm 1 \mu\text{Ci}/\text{m}^3$ 长期 (30 天)，周围温度条件   |
| GAMMA COMPENSATION: $\gamma$ 补偿        | A second ionization chamber of equal volume, mounted on the same axis, serves to cancel effects of external gamma fields<br>第二同容量电离室，安装在同一轴线上，用于抵消外部 $\gamma$ 场的影响  |
| OFFSET COMPENSATION: 偏移补偿              | Values keyed-in from LCD set-up to offset effects of gamma radiation and/or tritium build-up<br>键入值从 LCD 设定到 $\gamma$ 辐射/氚积累偏移的影响   |
| ALPHA PULSE SUPPRESSION: $\alpha$ 脉冲抑制 | A circuit provides recognition and cancellation of undesirable noise spikes attributed to airborne radon<br>电路帮助识别并消除由空气中的氡引起的、不必要的噪声啸叫   |

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| RESPONSE RATE: 响应速度                     | Two linear electronic time constants<br>两个 线性电子时间常数<br>1. Approximately 20 seconds for signals up to ~80 $\mu\text{Ci}/\text{m}^3$<br>大约 20 秒信号达~80 $\mu\text{Ci}/\text{m}^3$<br>2. Approximately 3 seconds for signals above 80 $\mu\text{Ci}/\text{m}^3$<br>大约 3 秒信号超过 80 $\mu\text{Ci}/\text{m}^3$   |
| LEVEL ALARMS: 水平报警                      | There are two Tritium Level Alarms, the indicator on the LCD is normally green and the message displayed is "Tritium Level OK"<br>有两个氚水平报警器, LCD 上的指示正常为绿色, 信息显示: "氚值 OK"<br><br>1. Tritium Alert Level Alarm user-settable from 1 - 1,000 $\mu\text{Ci}/\text{m}^3$ . Upon a Tritium Level Alarm the indicator on the LCD will turn yellow and display "High Tritium Level"<br>氚报警水平用户设定, 1 - 1,000 $\mu\text{Ci}/\text{m}^3$ , 一直到 LCD 上的指示变为黄色, 并显示: "High Tritium Level" (高氚水平)<br><br>2. Tritium High Level Alarm user-settable from 10 - 10,000 $\mu\text{Ci}/\text{m}^3$ . Upon a Tritium High Level Alarm, the indicator on the screen will turn red and display "HIGH TRITIUM LEVEL"<br>氚高水平报警器, 用户设定, 10 - 10,000 $\mu\text{Ci}/\text{m}^3$ , 在氚高水平报警器上显示屏指示则变为红色, 并显示"HIGH TRITIUM LEVEL" (高氚水平) |
| MALFUNCTION ALARMS: 失常报警                | 1. Power Supply Fault: 电源故障<br>Upon any failure of the low voltage power supplies, the indicator on the LCD will turn red and display "POWER SUPPLY FAULT LV"<br>Upon any failure of the high voltage bias supplies, the indicator on the LCD will turn red and display "POWER SUPPLY FAULT HV"<br>任何高压偏置电源故障, LCD 上的指示将变为红色, 并显示"POWER SUPPLY FAULT HV"<br>任何低压电源故障, LCD 上的指示将变为红色, 并显示"POWER SUPPLY FAULT LV"<br><br>2. Sample Flow: 样品流<br>Upon a low flow condition, the indicator on the LCD will turn red and display "LOW FLOW"<br>低流条件下, LCD 指示将变红, 并显示"LOW FLOW"   |
| EXTERNAL CONNECTIONS: 外部条件              | RJ-45, USB, and relay closures included, 4-20 mA optional<br>RJ-45, USB 和继电器外箱, 可选择 4-20 mA 输出信号  |
| IONIZATION CHAMBER VOLUME: 电离 电离室容量     | Measuring: 1,600 $\text{cm}^3$ 测量 1,600 $\text{cm}^3$<br>Total wetted: 2,000 $\text{cm}^3$ 总湿容量: 2,000 $\text{cm}^3$  |
| ELECTRODES: 电极                          | Solid Wall on both sides<br>双侧固壁式电离室  |
| DUST/ELECTROSTATIC PRE-FILTER: 尘土/静电预滤器 | High efficiency 99.99% at 0.1 microns cartridge type<br>高效率 99.99%, 0.1 微米过滤器   |
| PUMP:                                   | Long-life, continuous duty, linear motor driven diaphragm type<br>寿命长, 持续工作, 线性隔膜式驱动  |
| FLOW METER: 流量表                         | 0-10 LPM adjustable rotameter<br>0-10 LPM 可调整旋转流量计  |
| ENVIRONMENTAL TEMPERATURE: 环境温度         | Storage: -30° C - +50° C; Operating: 5° C - 50° C<br>存储: -30° C - +50° C 操作: 5° C - 50° C   |
| POWER: 电源                               | 115 VAC, 50/60 Hz, 5A, single phase<br>115 VAC, 50/60 Hz, 5A 单相   |
| WEIGHT: 重量                              | 53 lbs [24.1 kg]<br>53 磅 (24.1 公斤)  |
| DIMENSIONS: 体积                          | 16.2" Wide x 20.3" High x 9.19" deep [41.2cm x 51.5cm x 23.4cm]<br>宽 16.2" x 高 20.3" x 深 9.19" (41.2cm x 51.5cm x 23.4cm)   |
| ENCLOSURE: 外箱                           | Molded fiberglass with polycarbonate window on a hinged door; NEMA-4X, IP66<br>压膜玻璃纤维, 折页门上带 PC 材质窗   |