



# TRIATHALON TRITIUM STACK/EFFLUENT MONITOR Model Triathalon-H<sub>3</sub>

The Triathalon series are highly-sensitive yet rugged stack/effluent monitors built for continuous duty. The Triathalon-H<sub>3</sub> 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-C<sub>14</sub> for measuring Carbon-14 levels in air (see separate page).

### FEATURES OF TRIATHALON-H<sub>3</sub>

- 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
- Color LCD Touch Screen Display
- Optional activity totalizing, with midnight or manual mode reset
- Compact and lightweight, with easy wall-mount configuration

### SENSITIVITY

The standard Triathalon-H<sub>3</sub> 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.

### RADON REJECTION, NOISE FREE RESPONSE

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.

### INTEGRATED COMPUTER, DISPLAY, AND SOFTWARE

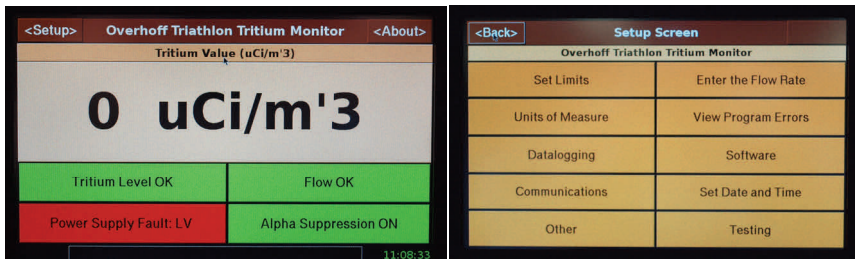
Equipped with a fully-integrated computer, this smart instrument logs all data points on an insertable USB flash drive. Data communication to external programs is available via TCP/IP. Standard data output is USB and RJ-45 with an optional 4-20 mA. Alarm relay connections are included on the back panel.

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.



<b>High Sensitivity</b>	to 1 $\mu\text{Ci}/\text{m}^3$ for Tritium
<b>Smart Electronics</b>	Onboard computer, Custom software, Internal data-logging
<b>Gamma Compensated</b>	virtually no offset in 10 mR/h fields
<b>Response To Radon</b>	suppression circuit ensures noise free operation
<b>No Zero Drift</b>	long term zero stability to better than $1\mu\text{Ci}/\text{m}^3$
<b>Warm Up</b>	less than 5 minutes

The Overhoff Model **Triathalon-H<sub>3</sub>** utilizes cutting-edge technology to provide a smart instrument with unequalled performance in sensitivity, stability, gamma compensation, and data acquisition/analysis.



P.O. Box 182, 1160 U.S. Route 50, Milford, Ohio, 45150-9705 USA  
 Telephone 513 248 2400 : Facsimile 513 248 2402  
 sales@overhoff.com : www.overhoff.com



# TRIATHALON TRITIUM STACK/EFFLUENT MONITOR Model Triathalon-H<sub>3</sub>

MEASUREMENT RANGE	1 – 19,999 $\mu\text{Ci}/\text{m}^3$ , basic sensitivity of the order of 1 $\mu\text{Ci}/\text{m}^3$
DISPLAY	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)
ACCURACY, SPAN	$\pm 10$ % of reading, $\pm$ L.S.D, whichever is greater
NOISE LEVEL	$\pm 1$ $\mu\text{Ci}/\text{m}^3$ , 1 sigma with alpha suppression in use
ZERO STABILITY	$\pm 1$ $\mu\text{Ci}/\text{m}^3$ long term (thirty days), ambient temperature conditions
GAMMA COMPENSATION	A second ionization chamber of equal volume, mounted on the same axis, serves to cancel effects of external gamma fields
OFFSET COMPENSATION	Values keyed-in from LCD set-up to offset effects of gamma radiation and/or tritium build-up
ALPHA PULSE SUPPRESSION	A circuit provides recognition and cancellation of undesirable noise spikes attributed to airborne radon
RESPONSE RATE	Two linear electronic time constants 1. Approximately 20 seconds for signals up to $\sim 80$ $\mu\text{Ci}/\text{m}^3$ 2. Approximately 3 seconds for signals above 80 $\mu\text{Ci}/\text{m}^3$
LEVEL ALARMS	There are two Tritium Level Alarms, the indicator on the LCD is normally green and the message displayed is "Tritium Level OK" 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" 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"
MALFUNCTION ALARMS	1. Power Supply Fault: Upon any failure of the low voltage power supplies, the indicator on the LCD will turn red and display "POWER SUPPLY FAULT LV" Upon any failure of the <i>high</i> voltage bias supplies, the indicator on the LCD will turn red and display "POWER SUPPLY FAULT HV" 2. Sample Flow: Upon a low flow condition, the indicator on the LCD will turn red and display "LOW FLOW"
EXTERNAL CONNECTIONS	RJ-45, USB, and relay closures included, 4-20 mA optional
IONIZATION CHAMBER VOLUME	Measuring: 1,600 cm <sup>3</sup> Total wetted: 2,000 cm <sup>3</sup>
ELECTRODES	Solid Wall on both sides
DUST/ELECTROSTATIC PRE-FILTER	High efficiency 99.99% at 0.1 microns cartridge type
PUMP	Long-life, continuous duty linear motor driven diaphragm type
FLOW METER	0-10 LPM adjustable rotameter
ENVIRONMENTAL TEMPERATURE	Storage: -30° C - +50° C; Operating: 5° C - 50° C
POWER	115 VAC, 50/60 Hz, 5A, single phase
WEIGHT	53 lbs [24.1 kg]
DIMENSIONS	16.2" Wide x 20.3" High x 9.19" deep [41.2cm x 51.5cm x 23.4cm]
ENCLOSURE	Molded fiberglass with polycarbonate window on a hinged door; NEMA-4X, IP66

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