



MODEL TRIATHALON-C14 SMART C-14 AIR/STACK MONITOR

The **Model Triathlon-C14** is a single-range ionization chamber monitor housed in a NEMA 4x wall-mount enclosure, designed for measuring C-14 in the form of CO₂ in air. 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. The Triathlon series are highly sensitive yet rugged air monitors built for continuous duty; an optional 'totalizer' feature makes this an ideal stack/effluent monitor, allowing you to multiply stack flow rate by C14 concentration for total release.

FEATURES OF TRIATHALON-C14

- Color LCD Touch Screen Display
- 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 Totalizer feature for stack and effluent monitoring
- Compact and lightweight, with easy wall-mount configuration

SENSITIVITY

The Model Triathlon-C14 is useful for measurements as low as 0.1 $\mu\text{Ci}/\text{m}^3$ (0.01 MBq/m³). The Overhoff electrometer, which measures to below 10⁻¹⁶ amperes, combines low noise and high zero stability.

RADON REJECTION, NOISE FREE RESPONSE

For an unambiguous measurement of C14, 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.

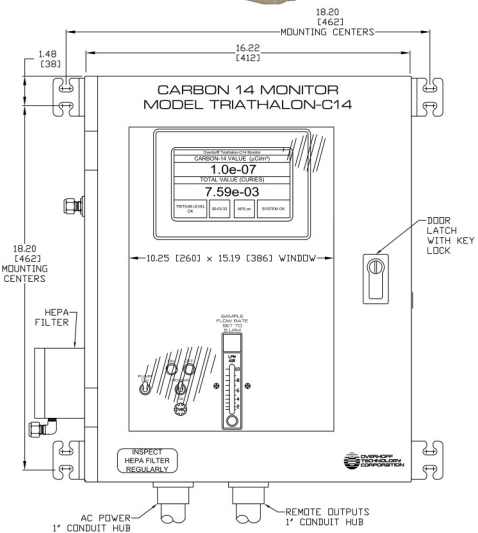
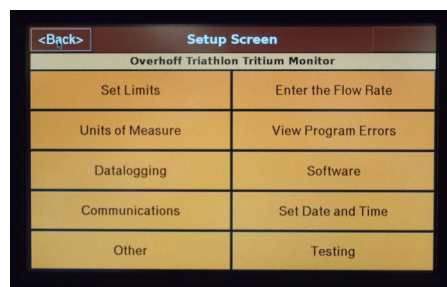
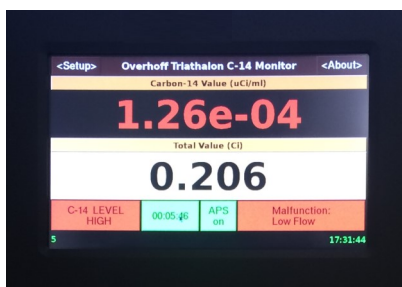
INTEGRATED COMPUTER, DISPLAY, AND SOFTWARE

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.

OPTIONAL TOTALIZER FOR STACK AND EFFLUENT MONITORING

The optional totalizer feature in the software allows the user to multiply the stack flow rate by the measured C-14 concentration to compute total C14 release. The flow rate can be dynamic (analog signal from stack flow sensor), or static (manual entry of flow rate).



High Sensitivity	to 0.1 $\mu\text{Ci}/\text{m}^3$ (0.01 MBq/m ³)
Smart Electronics	Onboard computer, Custom software, Internal data-logging
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 0.1 $\mu\text{Ci}/\text{m}^3$
Warm Up	less than 5 minutes

The Overhoff Model **Triathlon-C14** utilizes cutting-edge technology to provide a smart instrument with unequalled performance in sensitivity, stability, gamma compensation, and data acquisition/analysis.

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TECHNICAL SPECIFICATIONS

MEASUREMENT RANGE	0.1 – 1,999.9 $\mu\text{Ci}/\text{m}^3$ 0.01 – 199.99 MBq/m^3
DISPLAY	LCD Color Touch Screen; units of display user settable (pCi/cc , pCi/ml , nCi/m^3 , $\mu\text{Ci}/\text{m}^3$, mCi/m^3 , Ci/m^3 , MBq/m^3 , kBq/L , Bq/cc , Bq/ml , MPCa)
ACCURACY, SPAN	$\pm 10\%$ of reading, \pm L.S.D, whichever is greater
NOISE LEVEL	$\pm 0.2 \mu\text{Ci}/\text{m}^3$, 1 sigma with alpha suppression in use
ZERO STABILITY	$\pm 0.2 \mu\text{Ci}/\text{m}^3$ 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 C-14 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 C-14 Level Alarms, the indicator on the LCD is normally green and the message displayed is "C-14 Level OK" 1. C-14 Alert Level Alarm user-settable from 0.1 - $100 \mu\text{Ci}/\text{m}^3$. Upon a C-14 Level Alarm the indicator on the LCD will turn yellow and display "High C-14 Level" 2. C-14 High Level Alarm user-settable from 1 - $1,000 \mu\text{Ci}/\text{m}^3$. Upon a C-14 High Level Alarm, the indicator on the screen will turn red and display "HIGH C-14 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 high 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: $1,600 \text{ cm}^3$ Total wetted: $2,000 \text{ cm}^3$
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 - $+50^\circ \text{C}$; 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