Model 411
Tritium in Air Monitor, Wide Range, Single Chamber

MODULAR TRITIUM IN AIR MONITOR WITH WIDE RANGE AND SINGLE IONIZATION CHAMBER (NON-GAMMA COMPENSATED)

The Model 411 features an extended measurement range of up to 6.5 decades and a single ionization chamber. Useful for applications that don’t require gamma compensation or for measuring higher concentrations of tritium, such as in process or glovebox applications.

Unique gold-plated, wire-grid ionization chambers are offered that are plate-out proof, reducing tritium/gamma contamination up to 1,000x, which is essential when measuring high levels of tritium.

SELECT IONIZATION CHAMBER SIZE AND RANGE

The Model 411 typically supports a single 50mL or 2L chamber depending on your desired measurement range and sensitivity:

Typical Measurement Ranges:

1. Single 2L: 1 µCi/m³ to 199.99 mCi/m³, or 0.01 to 1,999.9 MBq/m³
2. Single 50mL: 0.01 to 1,999.9 Ci/m³ or 0.001 to 199.99 TBq/m³
   0.001 to 199.99 Ci/m³ or 0.1 to 19,999 GBq/m³

SELECT DISPLAY TYPE

The Model 411 is available in two different display types:

- SDD, Standard Digital Display (1-19,999 range)
- PDD, Programmable Digital Display (1-99,999 range)

Alarm system includes: two adjustable tritium level alarms, audible and visual indicators, acknowledge (mute), latching or non-latching modes, and up to three alarm relays (two level relays and one malfunction relay)

Optional alarm indicators: low flow alarm and malfunction alarm (low voltage failure, high voltage failure, or electrometer failure).

Applications:

- Room air
- Stacks, Hoods, or other effluents
- Process piping
- Glove boxes
- Wide Measurement Range
- Remotely Mounted Detector
- Modular customization of detectors, range, alarms, outputs, pump system

AVAILABLE OPTIONS:

- Pump, Filter, and Flowmeter Assembly
- Remote Alarm and Display Units
- RS232, USB, Ethernet Output
- Gold Plated / Wire Grid Electrodes
- Logarithmic/4-20mA Output
- Helium Leak Test
- Tritium Gas Calibrator and Calibration Resistor
- Detachable Electrometer
- Alpha Pulse Suppression

Unless otherwise requested, the ionization chamber is remotely mounted (25 ft cable standard) from the 411 electronics. An external pump system can be added that consists of a pump, filter, and flowmeter assembly.

Overhoff Technology Corporation
1160 U.S. Highway 50, Milford, Ohio, 45150-9705 USA
Telephone: 513 248 2400    Fax: 513 248 2402
Email: sales@overhoff.com    www.overhoff.com
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TECHNICAL SPECIFICATIONS

RANGES

Available in the following typical ranges:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Ci</th>
<th>Bq</th>
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</thead>
<tbody>
<tr>
<td>2 Liter:</td>
<td>1 µCi/m³ to 199.99 mCi/m³</td>
<td>0.01 to 1,999.9 MBq/m³</td>
</tr>
<tr>
<td>50mL:</td>
<td>0.01 to 1,999.9 Ci/m³</td>
<td>0.001 to 199.99 TBq/m³</td>
</tr>
<tr>
<td></td>
<td>0.001 to 199.99 Ci/m³</td>
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</tr>
</tbody>
</table>

Note: Additional or wider ranges and configurations may be available.

DISPLAY

4 ½ digit panel meter (standard digital display)

ACCURACY

±10 % of reading

ALARM SYSTEM

-two independent level alarms, with adjustable set point via 3-digit thumb-switch
mode: three position toggle switch selector for latching or non-latching modes and reset
indicators: alarm condition activates a visual red LED flashing indicator, acoustic
indicator, and failsafe relay closure
mute: acknowledge push button to silence acoustic indicator after alarm is tripped
includes up to 3 alarm relays: two level alarm relays and one malfunction alarm relay

OPTIONAL alarms include: low flow alarm and system failure alarm (high and low
voltage failure, electrometer failure)

OFFSET COMPENSATION

compensation control provided to offset the effects of gamma and/or tritium buildup

ENVIRONMENTAL

storage: -40° C to +60° C
operating: 0° C to +50° C
0 to 95 % R.H. non-condensing

ENCLOSURE

5.25” H x 17” W x 13” D, 15 lbs.
115/220VAC, 50/60 Hz

OPTIONS:

Pump, Filter, and Flowmeter Assembly (ordering code: PFA)
Externally mounted pump, filter, and flowmeter assembly.

USB, Ethernet, or RS-232 Data Output

4-20mA Output and Log Converter Board (ordering code: 4-20mA)

Remote Display Unit with digital display and audible alarm (ordering code: RDU)

Alpha Pulse Suppression (ordering code: APS)
Eliminates instrument response to unwanted radon.

Low Flow Alarm (ordering code: LFA)

System Failure Alarm Monitor (ordering code: SFM)
Detects and signals failure of low/high voltage power supplies and electrometer failure.

Gold Plated Chamber (ordering code: GP)
Reduces effects from tritium plate out contamination

Wire-Grid Electrode (ordering code: WG)
Special wire-grid chamber reduces tritium plate out contamination by up to 1000x

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Overhoff Technology Corporation

Phone: 513-248-2400
Fax: 513-248-2402
Email: sales@overhoff.com
Website: www.overhoff.com