MODEL 357BWC
CART MOUNTED SEMI-PORTABLE TRITIUM MONITOR

The Model 357BWC is a single range, ionization chamber monitor for the measurement of tritium. It is contained on a mobile stainless steel cart and is suitable for moving to multiple sampling points and for continuous duty. The display /control unit is enclosed in a NEMA 12 enclosure on top the cart. It is suited for the monitoring of rooms, glove boxes, fume hoods, exhaust stacks and systems, as well as process piping. The NEMA enclosure has a hinged door with a tempered glass window and is double hinged so that it can be opened for servicing the various components inside.

Major distinguishing features include the following:

- 1-10,000 μCi/m³
- Quad 2L Ionization Chambers (gamma compensation)
- Contamination/Plate-out Proof Design (wire grids)
- Alpha Pulse Suppression (radon compensation)
- Dual Desiccant Dryer Cartridges (noble gas compensation)
- Heavy duty pump, HEPA filter and Flow Meter
### MODEL 357BWC CART MOUNTED TRITIUM MONITOR

#### PERFORMANCE SPECIFICATIONS

**MEASUREMENT**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Range</td>
<td>single, 1 – 19,999 μCi/m³</td>
</tr>
<tr>
<td>Display</td>
<td>4½ digit panel meter</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±5 % of reading, ±1 μCi/m³ whichever is greater</td>
</tr>
<tr>
<td>Stability and Drift</td>
<td>±1 μCi/m³ long term (thirty days), ambient temperature conditions</td>
</tr>
<tr>
<td>Noise</td>
<td>±1 μCi/m³, 1 sigma, with alpha suppression in use</td>
</tr>
<tr>
<td>Response Rate</td>
<td>two linear electronic time constants approximately 20 seconds for signals up to about 80 μCi/m³; approximately 3 seconds for signals above 80 μCi/m³</td>
</tr>
<tr>
<td>Offset Compensation</td>
<td>Manual compensation control provided to offset the effects of gamma radiation and/or tritium build-up</td>
</tr>
<tr>
<td>Warm Up Time</td>
<td>less than five minutes</td>
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</tbody>
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**ALARM SYSTEMS**

<table>
<thead>
<tr>
<th>Alarm System</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>High Level Alarm</td>
<td>A single set point alarm system is adjustable with digital thumb switches over a 1 to 10,000 μCi/m³ range</td>
</tr>
<tr>
<td>Indicator</td>
<td>Audible and Visual flashing red LED</td>
</tr>
<tr>
<td>Mode Switch</td>
<td>A toggle switch is used to select the operating mode, Latching or Non Latching with a momentary Reset position</td>
</tr>
<tr>
<td>Malfunction Alarm</td>
<td>Audible and Visual steady amber LED indicates when either one of two conditions occur, A failure of any one of the internal D.C. power supplies or malfunction of the electrometer</td>
</tr>
<tr>
<td>Low Flow Alarm</td>
<td>Audible and Visual steady amber LED indicates when the sample flow rate has dropped to below 1 LPM</td>
</tr>
<tr>
<td>Acknowledge Push Button</td>
<td>Silences the audible indicator for all of the above alarms</td>
</tr>
</tbody>
</table>
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CART MOUNTED TRITIUM MONITOR, continued

IONIZATION CHAMBER

Measuring volume  1800 cm$^3$
Total wetted volume  4,000 cm$^3$
Electrodes    Wire Grid, contamination resistant
Gaskets    Silicone rubber
Pressure    0.1 to 2 atmospheres
Ports    1/4” Stainless Steel Gyrolok
Material of Construction  Stainless Steel
Electrometer Housing  Aluminum

SAMPLE FLOW SYSTEM

Pump     115Vac, 50/60 Hz, diaphragm type
Thomas 107CAB11
Flow Rate  6 LPM Maximum, 5 LPM recommended
Flow Meter    1-10 LPM, Dwyer RMA-21-SSV
Dust Filter    HEPA respirator type Scott 803562-01
Maximum Pressure  103kPa (1 atmosphere)
Connections  1/4” stainless steel gyrolok tube fittings
Tubing  316L Stainless Steel, 1/4” OD
Low Flow Sensor  Differential pressure switch, Dwyer Model 1823-2
adjusted to trip <1 LPM.
Pump Control  ON/OFF circuit breaker power to pump
Sampling Modes  Sample Mode; the sample stream passes through the
both the upstream and downstream ionization chambers and exits through the sample outlet hose.
By-Pass Mode  Manually operated valves change the flow path to
exclude the ionization chambers and the desiccant column.
Inlet Temperature  Thermometer -20°C to +120°C Range
Moisture Trap  Parker Type S1P with visible coalescing element
MODEL 357BWC
CART MOUNTED TRITIUM MONITOR, continued

ENVIRONMENTAL

Temperature  5°C to +50°C Operating
Humidity  0 – 95 % RH
Air Conditioning  Ventilation or air conditioning is not required.

PHYSICAL, MAIN CABINET

Mounting  The system is mounted on a heavy-duty cart of stainless steel construction with low friction casters (two swivel types at one end and two straight types at the other). The swivel casters have locking mechanisms.

Size  24” [610mm] Wide x 41.02” [1042mm] Long x 36” [914mm] Height to top shelf of cart with a 53” [1346mm] Overall Height

Enclosure  NEMA 12 Rating

Weight  288 lbs [131kg]

Inlet/Outlet Hoses  Sample inlet and outlet hoses are braided stainless steel construction with quick connect couplers at each end. Length is 42” [1.07 meters]