MD Series Gas Dryers

Protect Moisture-Sensitive Equipment by Selectively Drying Sample or Carrier Gas

Perma Pure MD Series gas dryers use exclusive Nafion™ selectively permeable membrane tubing to continuously remove only water vapor from gas streams. These dryers operate over a wide range of temperatures, pressures and flow rates while drying to very low dew points.

Key Features

- Dries continuously
- Removes only water vapor
- Achieves low dew points
- Requires no electricity
- Maintenance-free operation
- No moving parts
- Excellent corrosion resistance
- Short residence time

Principle of Operation

MD Series gas dryers transfer moisture from one gas stream to a counter-flowing purge gas, much like a shell-and-tube heat exchanger transfers heat. Water molecules permeate through the Nafion™ tube wall, evaporating into the purge gas stream. The water concentration differential between the two gas streams drives the reaction, quickly drying the air or gas.

Purge gas should be instrument air or other dry gas. If no dry gas is available, a portion of the gas dried by the MD Series dryer can act as the purge gas in a split-stream or reflux method.

<table>
<thead>
<tr>
<th>Model</th>
<th>MD-050</th>
<th>MD-070</th>
<th>MD-110</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nafion™ Tube O.D.</td>
<td>0.053”</td>
<td>0.072”</td>
<td>0.108”</td>
</tr>
<tr>
<td>Nafion™ Tube I.D.</td>
<td>0.042”</td>
<td>0.060”</td>
<td>0.086”</td>
</tr>
<tr>
<td>Available Lengths¹</td>
<td>12, 24, 48, 72, 96, or 144 inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing Materials</td>
<td>Stainless Steel or Fluorocarbon or Polypropylene</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Flow Rate</td>
<td>200 cc/min.</td>
<td>2 liters/min.²</td>
<td>4 liters/min.²</td>
</tr>
</tbody>
</table>

¹ MD-050 Series dryers are not offered in 96 and 144-inch lengths.
² MD-070 and MD-110 offer approximately the same drying performance. Specify MD-110 when pressure drop is a concern, MD-070 to minimize dead volume. For higher flow rates, please see our PD Series dryers.
Pressure Drop Calculations:

\[ \Delta P \text{ for MD-050 (inches of water)} = \text{Sample flow rate (lpm)} \times \text{length of dryer (inches)} \]

\[ \Delta P \text{ for MD-070 (inches of water)} = \text{Sample flow rate (lpm)} \times 0.14 \times \text{length of dryer (inches)} \]

\[ \Delta P \text{ for MD-110 (inches of water)} = \text{Sample flow rate (lpm)} \times 0.07 \times \text{length of dryer (inches)} \]