Product Data Sheet

ELECTROCHEMICAL ETO-500 SENSOR (4 SERIES) (P/N:055-0200-000)

• **Description**  
  The sensor is designed for the measurement of ETO concentration in gas phase. It can be used as the pin to pin replacement of the standard 4 series electrochemical ETO sensor.

• **Performance Characteristics**  
  Nominal Range: 0~500 ppm  
  Maximum Overload: 1000 ppm  
  Sensitivity (20 °C): 0.058 ± 0.033 μA/ppm  
  Response Time (T90): ≤ 120 s  
  Zero Signal (20 °C): -0.2~2.5 μA  
  Baseline Shift (-20 °C ~ 50 °C): <25 ppm  
  Resolution: 10 ppm  
  Linearity: Linear up to 500 ppm  
  Bias Voltage: +300 mV

• **Environmental**  
  Temperature Range: -20 °C ~ 50 °C  
  Pressure Range: 1 atm ± 10 %  
  Humidity Range: 15 % ~ 95 %RH non-condensing

• **Life Time**  
  Long Time Output Drift: < 2 % signal/month  
  Recommended Storage Temp: 10 °C ~ 30 °C  
  Expected Operating Life: 2 years in clean air  
  Storage Life: 6 months in original packaging  
  Warranty: 12 months

• **Intrinsic Safety Data**  
  Maximum Current at 1000 ppm ETO: < 0.2 mA  
  Maximum O/C Voltage: 1.3 V  
  Maximum S/C Current: <1.0 A

• **Physical Characteristics**  
  Housing Material: ABS  
  Weight (Nominal): 5 g  
  Orientation: None

• **Installation**  
  Output signals from the sensor pins are different. Inappropriate use of the pins in product design will affect the sensor functionality. Exposure to high concentrations of solvent vapors should be avoided under any condition. Mechanical overstress may cause deformation or cracks of the plastic enclosure of the sensor. If the sensor is used in extreme environmental conditions, please contact SemeaTech for more details.

Note  
The performance data in this document is conducted by using SemeaTech recommended test circuitry and test environment at 20 °C, 50 %RH and 1 atm. Sensor performance varies under different environmental conditions, please contact SemeaTech for more details.
**Cross-Sensitivity Data**

<table>
<thead>
<tr>
<th>Gas</th>
<th>Concentration (ppm)</th>
<th>Correction Factor to ETO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene Oxide</td>
<td>100</td>
<td>1.0</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>1000</td>
<td>2.5</td>
</tr>
<tr>
<td>Ethanol</td>
<td>1000</td>
<td>2.5</td>
</tr>
<tr>
<td>Methanol</td>
<td>200</td>
<td>0.5</td>
</tr>
<tr>
<td>Isobutylene</td>
<td>1000</td>
<td>2.5</td>
</tr>
<tr>
<td>Ethylene</td>
<td>500</td>
<td>0.8</td>
</tr>
<tr>
<td>Propene</td>
<td>500</td>
<td>1.7</td>
</tr>
<tr>
<td>Vinyl Chlorine</td>
<td>500</td>
<td>1.3</td>
</tr>
<tr>
<td>Vinyl Acetate</td>
<td>1000</td>
<td>2.5</td>
</tr>
<tr>
<td>Formic Acid</td>
<td>2000</td>
<td>5.0</td>
</tr>
</tbody>
</table>

*Correction Factor of ETO = Sensitivity of ETO/Sensitivity of test gas.*

Note: The cross sensitivity are including but not limited to the above gases. It may also respond to other gases. The data in the table above may vary from different batches of sensors and the changes of test environment. Calibration with cross sensitivity gas is not recommended.

**Temperature Data**

![Temperature Performance of SemeaTech 4R ETO-500 Sensor](chart.png)

**Safety Note**

The sensor is designed to be used in certain instruments for life critical applications. To ensure the sensor functioning per its specifications inside the instrument, it is required to read the instrument user's guide carefully and comply with the calibration procedures by using certified target calibration gas before each use. Failure to do so may cause serious injury and fatality. Please do not open the housing because the electrolyte stored inside is harmful.

It is highly recommended for customers to validate the sensor performance using this document as a reference for their product designs or applications.

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This product data sheet is used for reference only. SemeaTech is committed to provide its customers the most accurate data based on its best knowledge. SemeaTech does not provide product warranty for failure to use its product in accordance with product specifications described in the data sheet, or other misuse, abuse, negligence to the product.