Storage, Handling, and Soldering Specification

1. Scope

This document embodies recommendations concerning the storage, handling, and manual soldering conditions for SPEC SENSORS' modules. It is only applicable for modules guaranteed by SPEC SENSORS stated in SPEC SENSORS' certificate of conformity (CoC) or Sensor Specification Sheet. Moreover, SPEC SENSORS' modules are NOT warranted for and should NOT be used in high temperature soldering or pre-tinning baths.

2. Sensor & Module Handling

Handle sensors with care. Take precautions, including but not limited to the following:

A. **DO NOT** apply excessive pressure to the top or bottom of the sensor module
B. Whenever possible, handle or make contact with the sensor module from the sides of the PCB or substrate.
C. Light vacuum pressure is possible during handling, **DO NOT** apply vacuum over gas sensor port
D. If the sealed sensor package is opened, **DO NOT** re-seal using vacuum or nitrogen gas. **DO NOT** reseal with desiccant.
E. **DO NOT** obstruct the gas sensor port by making direct contact with any tape, apparatus, weights, or other.
F. **DO NOT** use silicone or other conformal coatings around the sensor or gas port holes
G. Operators are requested to wear antistatic gloves.

3. Manufacturing Assembly Floor Environment

SPEC SENSORS recommends that the manufacturing assembly floor environment be maintained at controlled conditions:

A. Temperature: 15 to 30 °C
B. Relative Humidity: 40 to 60%
C. Pressure: 1 ± 0.2 atm

4. Sensor & Module Storage Conditions

The calculated shelf life for sealed, packaged components is 12 months from the pack seal date, when stored in the factory-sealed bag under the following conditions:

A. Temperature: 5 to 25 °C
B. Relative Humidity: 20 to 80%
C. Pressure: 1 ± 0.2 atm
D. Storage Time: 12 months

5. Module Attach Soldering Process

Hand solder only. Keep the soldering iron or solder process tool away from the sensor. Do not use pre-heat techniques. A heat sink cover over the sensor may be applicable to protect the sensor during processing.

A. **DO NOT** heat sensor above 70 °C
B. **DO NOT** place in reflow, wave, or IR reflow type processes
C. **DO NOT** wash the sensor
D. Use hand-solder or peripheral process type approach
E. Use solder wire alloy with the lowest possible eutectic temperature. Acceptable alloys include:
    a. 57Bi/42Sn/1Ag (eutectic temperature: 138 °C)
    b. 63Sn/37Pb (eutectic temperature: 183 °C)
    c. 96.5Sn/3.0Ag/0.5Cu (eutectic temperature: 217 °C)
F. Use lowest possible soldering iron temperature
G. Contact the host board with the soldering iron at a 45° angle on the solder pad
H. Apply soldering iron and solder for < 5 seconds
I. Keep the soldering iron away from the top and bottom of the sensor module