Handling and Assembly Guide for SCD30

CO_2, humidity, and temperature sensor

Preface

This document provides recommendation on handling and assembly process of SCD30.
To measure CO_2 concentration, humidity and temperature, SCD30 requires interacting with the environment. Hence, special care has to be taken during handling and assembly in order to achieve best performance.
If the physical characteristics of the sensor change due to mechanical or thermal stress, the calibration might not be valid anymore. In extreme cases, the sensor might be destroyed.

Package

This document provides guidance for handling and assembly of Sensirion SCD30 CO_2, humidity and temperature sensor. The CO_2 concentration is measured in an optical cavity mounted into a PCB cutout. The RH/T sensor is soldered to the same PCB with thermal isolation.

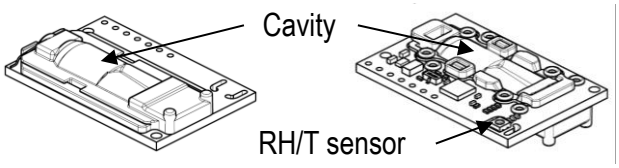
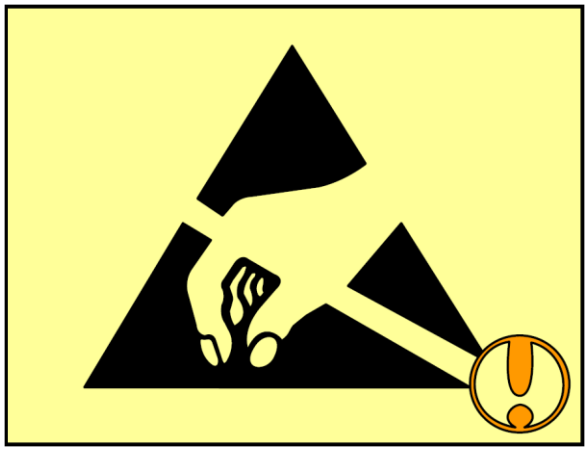


Figure 1: Package overview

ESD Protection

It is mandatory to protect the sensor from ESD (Electrostatic Discharge). Only handle in ESD protected areas under protected and controlled conditions (ground all personnel with wrist-straps, ground all non-insulating and conductive objects, exclude insulating materials from the EPA, operate only in grounded conductive floor, etc.). Protect sensor outside the EPA using ESD protective packaging.



Storage

Storage must be at a temperature between - 40°C and 70°C.

Moisture Sensitivity Level

SCD30 is not meant to be reflow soldered, hence, the sensor does not have an MSL rating. However, for storage and handling the sensor can be considered to be compatible with MSL1.

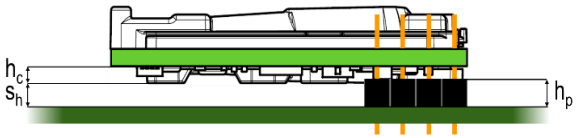
Mechanical stress

No mechanical stress shall be applied to any part of the sensor during assembly or usage. Especially, no force shall be applied directly on the optical cavity. Nevertheless, it is recommended to perform a recalibration after mounting the SCD30 sensor module to compensate minor mechanical stresses.

Assembly of SCD30 sensor

It is recommended to solder SCD30 by hand. A pin stripe with pitch 0.1 inch / 2.54 mm should be used to connect SCD30 to external electronics. Only contact pins should be used to mount the sensor. SCD30 should not touch any part of the host PCB.

To prevent contact of SCD30 with host PCB, below recommended standoff height, s_h should be maintained.



Symbol	Value
h_c	1.55 mm
h_p	Various
s_h	$s_h \geq 1$ mm
	$s_h + h_c > h_p + 0.5$ mm

Table 1: Recommended stand of height.

A planar assembly jig (e.g. a cuboid) with a thickness of s_h can be used for optimal positioning of SCD30 above the host PCB. When using the assembly jig assembly process is as follows:

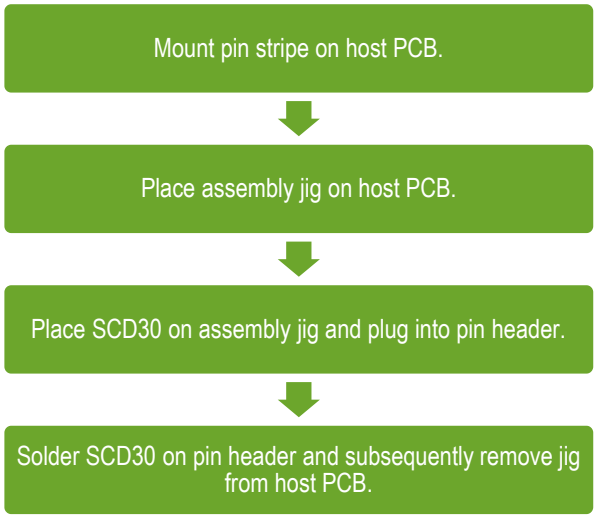


Figure 2 Assembly process of SCD30

Mounting Orientation

SCD30 can be mounted facing upwards or downwards.

Revision History

Date	Version	Page(s)	Changes
April 2018	0.1	all	Initial version
February 2019	0.2	2	Mechanical stress paragraph extended

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