SENSIRION

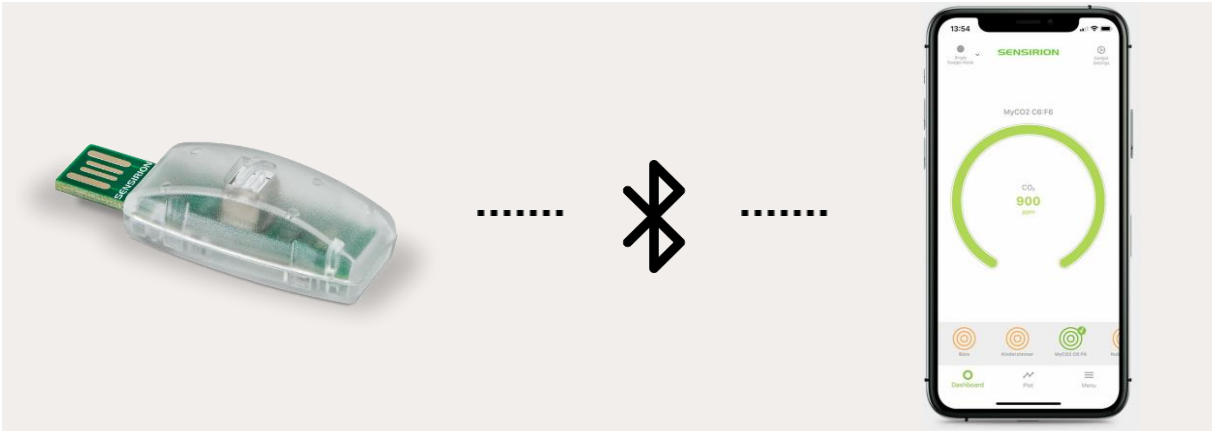# SCD4x CO$_2$ Gadget User Guide
Sensirion's Reference Design for SCD4x Sensors

- SCD41 CO$_2$ sensor
- Compact form factor (53mm x 19 mm x 13 mm)
- LED (RGB) to indicate indoor air quality with the traffic light color scheme
- Bluetooth Low Energy (BLE) connectivity to iOS and Android smartphones
- Free iOS and Android app available
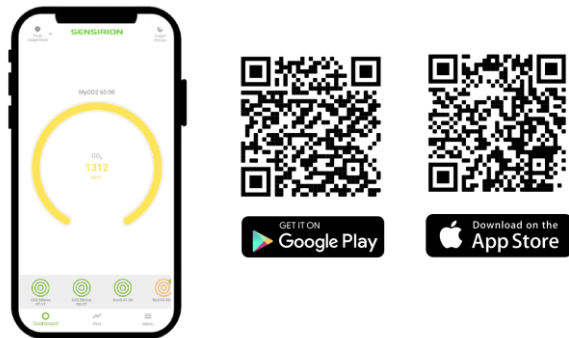- Data logging and export capabilities

Introduction

The SCD4x CO$_2$ Gadget is a simple reference design circuit board which demonstrates the outstanding performance and ease of use of Sensirion's SCD4x CO$_2$ sensor product line. It is equipped with a LED indicating the indoor air quality based on the measured CO$_2$ concentration. It also incorporates a Bluetooth Low Energy module allowing it to communicate with Bluetooth Low Energy (BLE) capable devices like smartphones. Power is supplied via standard USB interface.
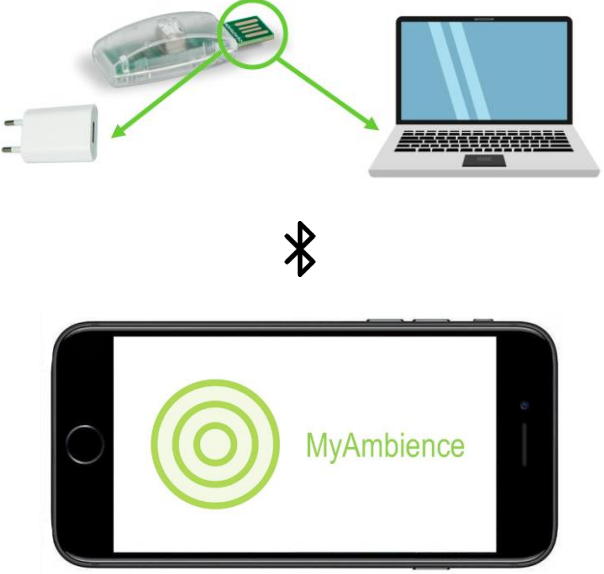
CO$_2$ Gadget Content

Download MyAmbience App for free

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1 Quick Start Guide

1. Getting Started
 	
▪ Plug SCD4x CO$_2$ Gadget into powered USB port. Please respect polarity order.
 	
2. Standalone Operation
 	
▪ CO$_2$ concentration is indicated by the LED with the traffic light color scheme
    ▪ Green: 400 – 1'000 ppm
    ▪ Yellow: 1'001 – 1'600 ppm
    ▪ Red: > 1'600 ppm
 	
3. Operation with MyAmbience App
 	
▪ Download iOS or Android version of the MyAmbience app on your smartphone
▪ Open the App to automatically see nearby Sensirion gadgets on your smartphone
▪ Once connection is established, the exact CO$_2$ concentration and the history can be read out via the app.	

2 Standard Operations

2.1 Power SCD4x CO$_2$ Gadget via standard USB port

The CO$_2$ Gadget is powered via a standard USB port. The USB port should support a peak current of 200 mA and have a nominal voltage of 5 V.

2.2 Operating in Standalone Mode

This is the default operating mode. The measured CO$_2$ concentration is indicated via the integrated LED.

< 1000ppm   1000 – 1600 ppm   > 1600ppm

2.3 Connecting to a Bluetooth Device

Bluetooth mode is enabled by default. To connect the CO$_2$ Gadget to a smartphone, the smartphone must have the MyAmbience app installed, and Bluetooth enabled. For Android devices, location permission needs to be granted to the app for it to work, although the user location will not be used at any time. The app will automatically connect to surrounding Sensirion Gadgets with Bluetooth enabled. To display values from a specific CO$_2$ Gadget, the corresponding Gadget must be selected in the list of connected gadgets. The MyAmbience app can be downloaded from the corresponding app stores:

https://play.google.com/store/apps/details?id=com.sensirion.myam

https://apps.apple.com/app/sensirion-myambience/id1529131572

2.4 System Requirement

In order for a mobile device to work with the CO$_2$ Gadget it needs to be Bluetooth 4.0 (also known as Bluetooth Low Energy or BLE) compatible. This is the case for most Android devices from 2013 and newer, Apple iPhones generation 4S and newer, and Apple iPad generation 3 and newer. The CO$_2$ Gadget apps run with Android 4.4 or later and iOS 9.0 or later, respectively.

2.5 Important Security Advice

- Keep out of reach of children and pets (contains swallowable parts)
- If any part is swallowed, contact a physician immediately
- CO$_2$ Gadget operating temperature range: -10 to 60 °C
- The CO$_2$ Gadget is intended for indoor use
- The CO$_2$ Gadget is sensitive to electrostatic discharge (ESD) – please take precautions

3 MyAmbience Application

3.1 Device selection

When Bluetooth is enabled, MyAmbience automatically scans for devices to connect with. When in the dashboard or plot panels, the devices which are connected to the application are displayed as concentric circles with the gadget's name underneath. Press on a device to select it. The selected device has a check mark on it and its information will be displayed in the dashboard or plot panel.
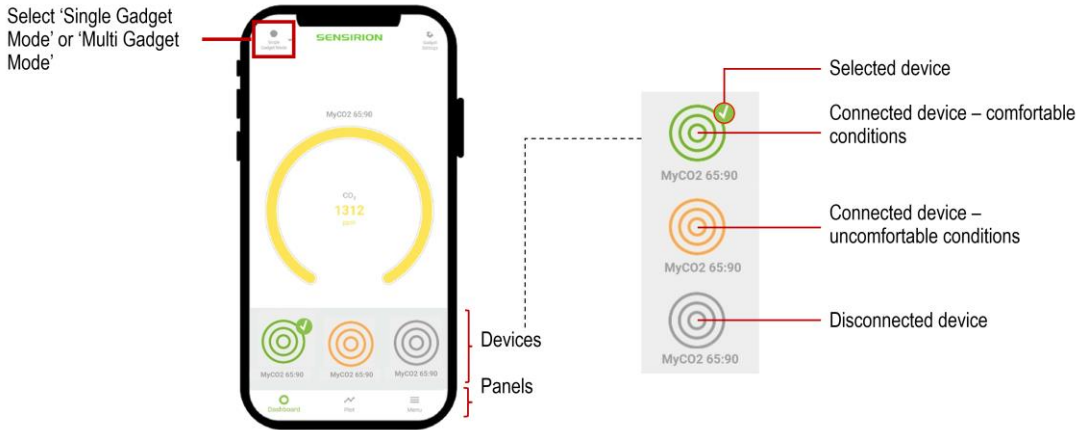
When the gadget logo (concentric circles) is green, it means that the environmental conditions measured by the gadget are deemed comfortable. If a device was connected during the runtime of the application but the connection is subsequently lost, the device logo will appear as grey in the list.
To select several Sensirion Gadgets simultaneously, the 'Multi Gadget Mode' must be selected on the upper right of the dashboard panel.

3.2 Dashboard Panel

The dashboard view displays the summary information of the Gadget's sensor readings. The color of the signal indicates the indoor air quality level. Good indoor air quality is indicated by a green color and represents CO_2 concentrations below 1000 ppm. Yellow color represented intermediate indoor air quality (1000 ppm – 1600 ppm). Finally, bad indoor air quality is represented by red color (> 1600 ppm).
The LED brightness and the logging interval of the CO_2 Gadget can be adjusted in the gadget settings. To display the sensor outputs from several Sensirion Gadgets simultaneously, the 'Multi Gadget Mode' must be selected.

3.3 Plot Panel

In the plot panel it is possible to plot the evolution of the environmental signals through time. On the top-right corner, the Fetch Data button allows to download environmental data stored in the gadget's memory. The CO_2 gadget stores the last 8192 CO_2 values. The downloaded data can then be displayed on a graph. Next to the Fetch Data button, the Export button enables to save and send the recorded data as an .edf file. Visit www.sensirion.com/co2-gadget for more information on how to process .edf files.
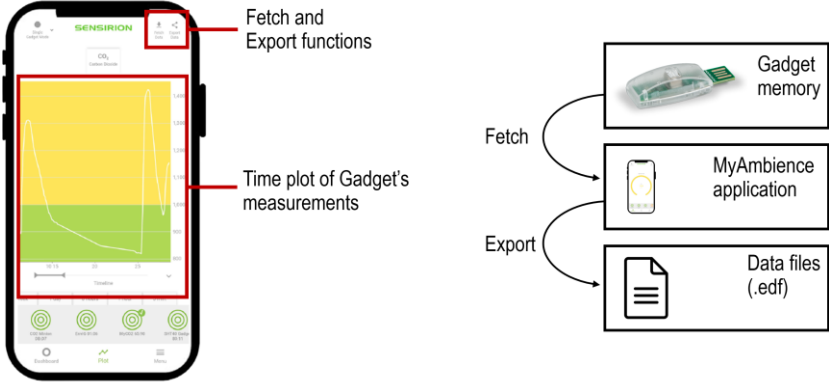
4 Version History

Date	Version	Changes
21. September 2021	0.9	Preliminary version