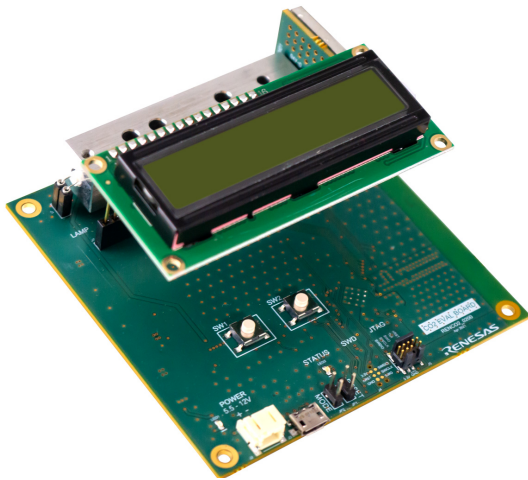


## RTD120D-EVK

Thermopile CO<sub>2</sub> Detector Evaluation Kit

The Thermopile CO<sub>2</sub> Detector Evaluation Kit (EVK) provides an easy way to evaluate the RTD120D dual-channel thermopile in a CO<sub>2</sub> gas detector application.

It operates stand-alone or with a PC running CO<sub>2</sub> Detector Evaluation Software, making the CO<sub>2</sub> concentration and intermediate data available for plotting, logging, processing, exporting and analysis using software available. The software and user manual for the kit can be downloaded from: [www.renesas.com/rtd120d-evk](http://www.renesas.com/rtd120d-evk).



### Kit Contents

- CO<sub>2</sub> Detector EVK Board
- Detachable LCD Module
- USB to Micro-USB Cable
- Shorting jumpers (2)
- Quickstart Guide (this document)

### Introduction

The Thermopile CO<sub>2</sub> Detector Evaluation Kit is designed for evaluation of the Renesas' RTD120D dual thermopile in a CO<sub>2</sub> gas sensing application, such as to detect the ambient CO<sub>2</sub> concentration. It has a NDIR (Non-Dispersive Infrared) thermopile-based gas sensing circuit and the concentration of CO<sub>2</sub> gas is measured based on the intensity of the NDIR radiation.

It can be used as an application example to illustrate how the thermopile, in combination with other Renesas components, can be used to implement a

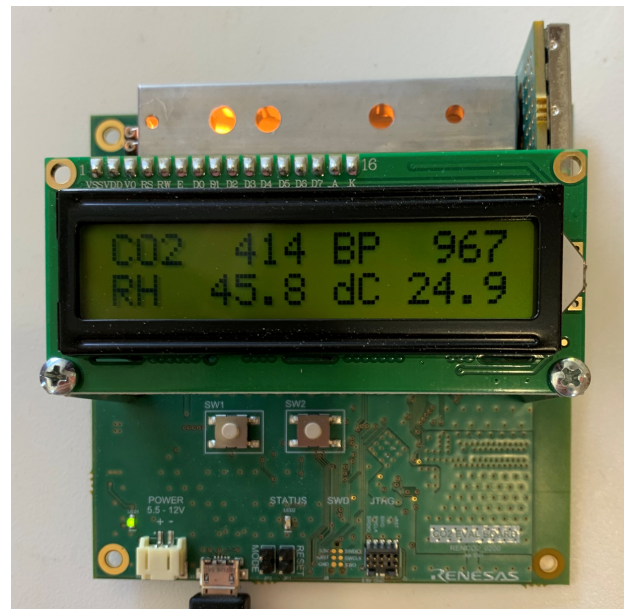
CO<sub>2</sub> detection and concentration measurement system.

### Getting Started

Right out of the box, the EVK can begin measuring CO<sub>2</sub> levels right away:

1. Attach the LCD module to the main EVK board
2. Remove the two shorting jumpers from the MODE and RESET headers on the main board. Save these for use when flashing new versions of firmware to the kit.
3. Connect the provided USB cable to the board and to a power source, such as a phone charger or a PC USB port.

Two splash screens will be displayed in sequence, identifying the EVK, its software version and serial number. Then after a 30 seconds warm-up period ("CO<sub>2</sub> WARM"), the CO<sub>2</sub> concentration will be displayed on the LCD, and updated every 5 seconds. The LCD will also display Barometric Pressure (BP), Relative Humidity (RH) and ambient temperature in degrees C (dC).



Two pushbuttons are used for viewing additional information and calibrating the board. **Sw1** cycles through displaying available modes and **Sw2** selects the currently displayed mode for further operations.

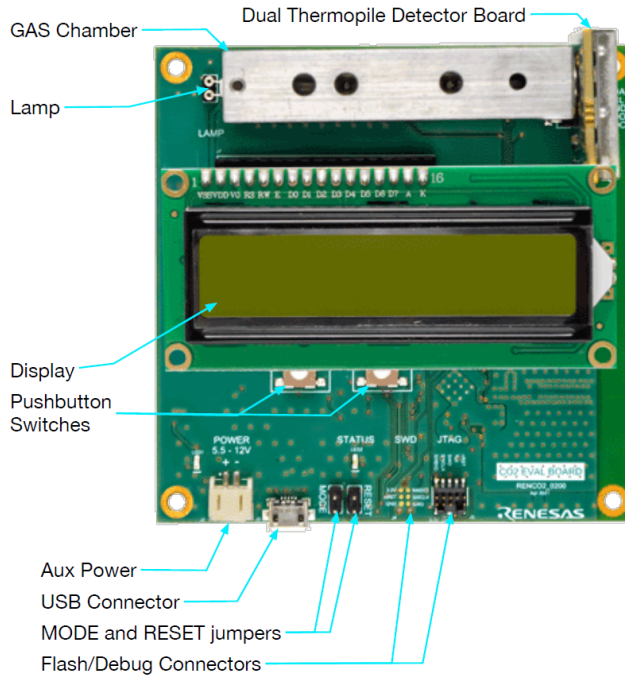
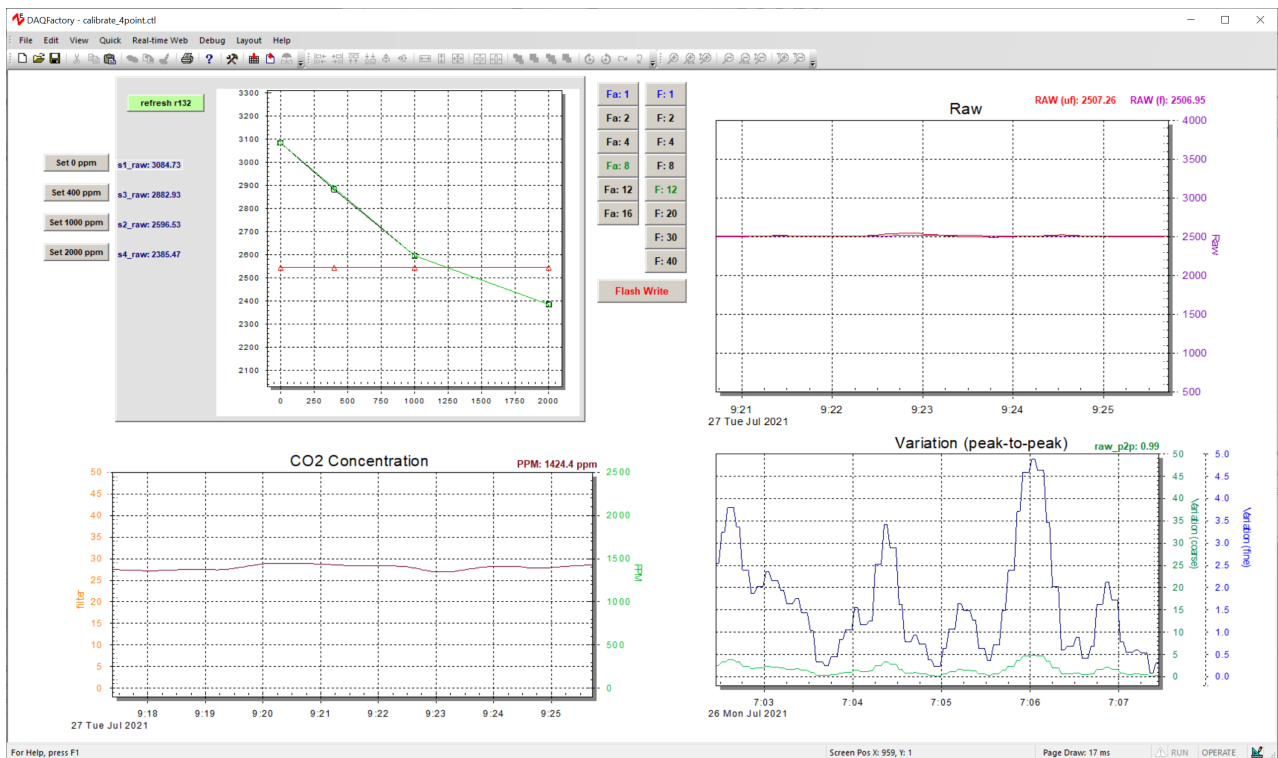


Figure 1. EVK Components

The EVK can be also be used with a Graphical User Interface that runs on a connected PC.



The EVK comes pre-calibrated, but it can be re-calibrated by the user if desired. CO<sub>2</sub> calibration can be performed in either of two ways:

- In a stand-alone fashion, using the LCD and pushbutton user interface on the EVK itself, or
- With a graphical user interface (GUI), using a connected PC for a more interactive and visual experience.

See the *RTD120D-EVK Thermopile CO<sub>2</sub> Detector Evaluation Kit User Manual* for further details.

## Revision History

Revision	Date	Description
1.0	Jul 28, 2021	Initial release.

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