



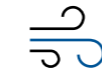
EBV IoT - Infineon PAS CO2 Evaluation Shield



EBV Smart Sensing & Connectivity



EBV IoT – Infineon PAS CO2 Evaluation Shield



Air Quality Awareness



Higher Comfort Levels



Increased Productivity



Lower Energy Consumption



Energy Cost Savings



Healthier Life



Air quality in buildings on agenda of European legislators (GEN - 1227.00)
European Parliament acts on long-standing industry petition to regulate Indoor Air Quality



Energy performance of buildings directive - EPBD: This directive will help reach the building and renovation goals set out in the European Green Deal

Ambient Air Quality

The EU clean air policy has two main directives relating to the regulation of ambient air quality:

The Regulation of the Indoor Air Quality (IAQ) has been implemented to assure healthy levels of indoor air quality. This is where IAQ sensing can also bring additional value, such as temperature and humidity monitoring.

Within the office environment, CO₂ levels produced by people breathing, have the most impact on poor levels of IAQ.

Secondly, the European Directive on Energy Performance of Buildings proposes improved efficiency of buildings which are contributing to more than 40% of energy consumption and more than 36% of the greenhouse gas emissions. It is very much related to the European Green Deal.

Making Our Homes and Buildings Fit for a Greener Future

Together with the proposals presented on 14 July 2021, the revised Energy Performance of Buildings Directive supports the development of renewable and less polluting energy systems for our homes and public buildings.

They will:

- decrease emissions
- save energy
- tackle energy poverty
- facilitate renovation
- improve quality of life
- generate jobs and growth

CO₂ Monitoring Matters...

...for our comfort & well-being

- **250-400 ppm** Normal outdoor air level
- **400-1000 ppm** Well ventilated, occupied indoor space
- **1000-2000 ppm** Complaints of drowsiness and poor air quality
- **2000-5000 ppm** Headaches, sleepiness & stuffy air. Poor concentration
- **>5000 ppm** Toxicity or oxygen deprivation can occur. Daily workplace exposure limit
- **>40000 ppm** Immediately harmful due to oxygen deprivation

...for health – reducing the risk of virus transmission

Attention: CO₂-level too high!
Risk of COVID-19 infection!

...for controlled ventilation & energy (cost) savings

- Hospitals
- Schools
- Supermarkets

Infineon XENSIV™ PAS CO2

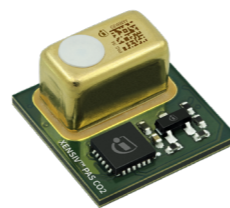
The newly released Infineon PAS CO₂ sensor utilises photo-acoustic spectroscopy (PAS) techniques which provides a streamlined and energy efficient way for accurately determining CO₂ gas levels in air quality.

Infrared (IR) light released from an emitter is then filtered so that a light with specific wavelength can be utilised (aligned with the airborne gas compounds intended to be monitored). Excitation generated by short flashes of IR light results in a sudden expansion of the gas molecules the light is incident upon.

The sound that this expansion causes can then be picked up by a high-performance MEMS microphone.

Key benefits:

- Real CO₂ sensor ensuring high data quality
- Small form factor in SMD package for easier assembly
- Plug & Play for fast customer design-to-market
- Infineon's quality guarantee

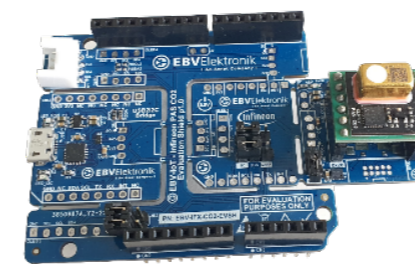


EBV-IoT – PAS CO2 Evaluation Shield

The EBV-IoT – Infineon PAS CO₂ Evaluation Shield is a quick evaluation tool based on the Infineon PAS CO₂ and DPS310 barometric sensors in the Arduino header. It enables a quick exploration of the most recent CO₂ sensor which uses photoacoustic effect and is part of Infineon's XENSIV™ environmental sensors portfolio. The tool can be either operated directly by using a USB port - no external adapters needed - or by using your favourite MCU platform board in an Arduino form factor. It can be self-powered through USB, or using an Arduino header. And most importantly, the tool enables faster time-to-market, since your proof of concept can start from right out-of-the-box.

Key Benefits

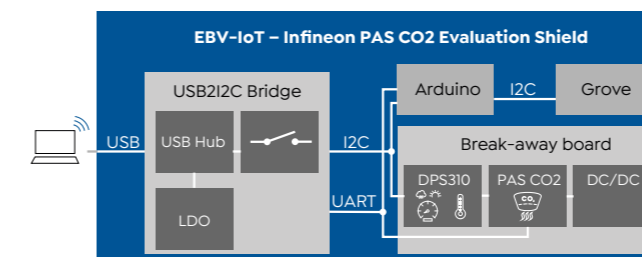
- Easy-to-use and out-of-the-box ready CO₂/ environmental sensing evaluation tool
- USB powered (no external battery or supply needed)
- Arduino Uno header compatibility
- Access through integrated USB2I2C/UART bridge or through Arduino header
- Easy configuration for various serial interfaces communication
- Various MCU vendor Arduino compatible evaluation boards examples available
- Multiple break-away board options available: mikroBUS™ compatible, sensors only (I2C bus only)
- Grove system ready: I2C Grove connectors
- Comes with OLED access pins for simple displaying values using OLED display



The shield



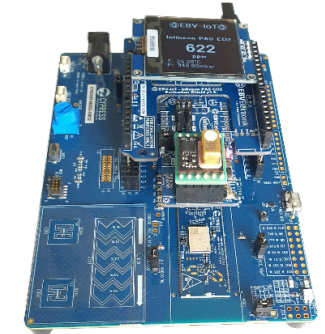
Small sensor break-away board



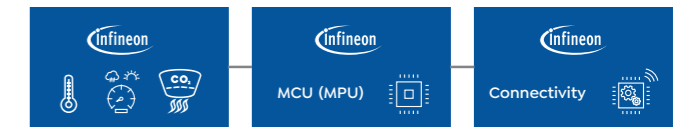
EBV-IoT – PAS CO2 Demo Embedded platform & cloud connectivity

Key Benefits

- C source available (PSoC6 supported and extending)
- On board OLED display option
- Displays CO₂ level, temperature & pressure
- Cloud connectivity using WiFi modem
- Cloud communication: TCP/IP, MQTT, ...



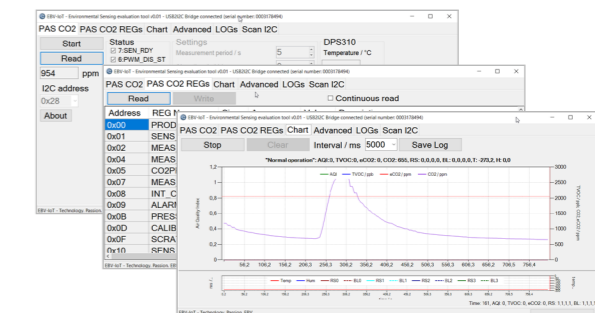
The shield on embedded evaluation platform with cloud connectivity



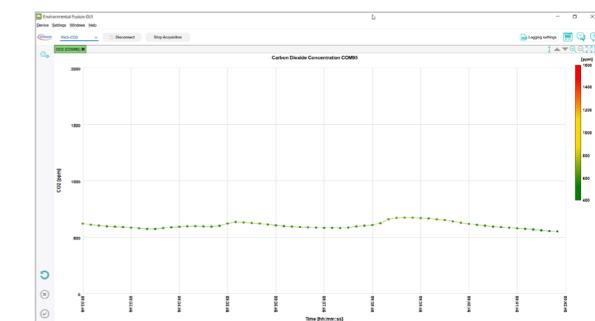
/IOTCONNECT™

PC application (GUI)

- Basic setup and readout
- Registers readout
- Chart with save to file



- The shield is compatible with Infineon XENSIV™ GUI application.



Sources for the intro:
https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/energy-performance-buildings-directive_en
https://ec.europa.eu/commission/presscorner/detail/en/fs_21_6691
https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/energy-performance-buildings-directive_en

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