



› Explanation on static IAQ, breath VOC and CO2 equi...

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✓ Explanation on static IAQ, breath VOC and CO2 equivalent

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biboc

Member

04-23-2019 05:52 PM

Hi,

On BSEC documentation, I can find this:

Static IAQ: Unscaled indoor-air-quality estimate

Breath VOC: Breath VOC concentration estimate [ppm]

CO2 equivalent: CO2 equivalent estimate [ppm]

Could you detail these data please?

I don't understand what data static IAQ can reveal?

Breath VOC will be superior to 0 only when there are people close to the sensor?

Thanks,

Solved! [Go to Solution.](#)

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3 REPLIES



handytech

Community Moderator

04-30-2019 11:58 AM

Re: Explanation on static IAQ, breath VOC and CO2 equivalent

Below are some more details about the different outputs you listed, hopefully that will help you pick the best solution for your application:

Static IAQ:

The main difference between IAQ and static IAQ (sIAQ) relies in the scaling factor calculated based on the recent sensor history. The sIAQ output has been optimized for stationary applications (e.g. fixed indoor devices) whereas the IAQ output is ideal for mobile application (e.g. carry-on devices).

bVOC_{eq} estimate:

The breath VOC equivalent output (bVOC_{eq}) estimates the total VOC concentration [ppm] in the environment. It is calculated based on the sIAQ output and derived from lab tests.

CO₂_{eq} estimate:

Estimates a CO₂-equivalent (CO₂_{eq}) concentration [ppm] in the environment. It is also calculated based on the sIAQ output and derived from VOC measurements and correlation from field studies.

Since bVOC_{eq} and CO₂_{eq} are based on the sIAQ output, they are expected to perform optimally in stationnary applications where the main source of VOCs in the environment comes from human activity (e.g. in a bedroom).



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biboc

Member

05-02-2019 11:40 AM

Re: Explanation on static IAQ, breath VOC and CO2 equivalent

Thanks for the answer.

@handytech wrote:

Below are some more details about the different outputs you listed, hopefully that will help you pick the best solution for your application:

Static IAQ:

The main difference between IAQ and static IAQ (sIAQ) relies in the scaling factor calculated based on the recent sensor history. The sIAQ output has been optimized for stationary applications (e.g. fixed indoor devices) whereas the IAQ output is ideal for mobile application (e.g. carry-on devices).

Ok, it applies to our application.

bVOCeq estimate:

The breath VOC equivalent output (bVOCeq) estimates the total VOC concentration [ppm] in the environment. It is calculated based on the sIAQ output and derived from lab tests.

In the datasheet (BST-BME680-DS001-00 Revision_1.0_072017, p8/50, 1.2 Gas sensor specification), it is written :

Besides ethanol (EtOH) as a target test gas, the sensors are also tested with breath-VOC (b-VOC). The b-VOC mixture, as listed in Table 5, represents the most important compounds in an exhaled breath of healthy humans. The values are derived from several publications on breath analysis studies. The composition does not contain species which would chemically react to ensure that the mixture is stable for at least 6 months. Furthermore, the composition is also limited to species which can be manufactured in one mixture.

So BVOC is only a mixture of gaz emitted by human. So BVOC value will only be more than one if the mixture of sensors is detected, meaning a human breathing?

CO2eq estimate:

Estimates a CO2-equivalent (CO2eq) concentration [ppm] in the environment. It is also calculated based on the sIAQ output and derived from VOC measurements and correlation from field studies.

Since bVOCeq and CO2eq are based on the sIAQ output, they are expected to perform optimally in stationnary applications where the main source of VOCs in the environment comes from human activity (e.g. in a bedroom).

Since fire emits CO2, CO2eq would be very high in case of fire?

Thanks,



0 LIKES

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**handytech**

Community Moderator

05-02-2019 02:09 PM

✓ Re: Explanation on static IAQ, breath VOC and CO2 equivalent

*@biboc wrote:**So BVOC is only a mixture of gaz emitted by human. So BVOC value will only be more than one if the mixture of sensors is detected, meaning a human breathing?*

The bVOC-equivalent output is not binary (0/1) if the mixture is detected, but an estimated VOC concentration output (in ppm) based on the static IAQ output and lab tests (including with the b-VOC mixture).

*@biboc wrote:**Since fire emits CO2, CO2eq would be very high in case of fire?*

The BME680 is a TVOC sensor, not a CO2 sensor. Therefore any BSEC output will always be proportional to the total VOC concentration detected by the BME680 in its environment, not to CO2.

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