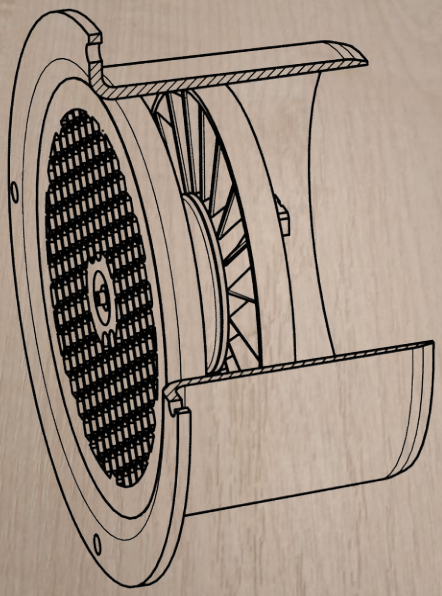

Tauria
Simplifying life with embedded control systems engineering
Measurement
Systems
CONSULTANCY
Firmware
Electronics

Fresh Air Anemometer

FAM-VF100



The Fresh Air Anemometer is an air-flow measurement device installed stationary into the building management system. It measures the airflow continuously over time. The measurement results are provided periodically with a period of 1–2 seconds. The following data is provided:

- Average airflow [L/s] of last second (period).
- Average airflow [L/s] of last running minute. The value is renewed once in a second.
- Average airflow [L/s] of the last running hour. The value is renewed once in a minute.
- Average airflow [L/s] profile in the last 24 running hours. The profile is renewed once in a minute.

ATTRIBUTE	VALUE
For duct diameter:	100 mm
Calibrated range:	5–15 L/s
Calibrated reading precision:	15% from reading
Calibrated temperature range:	-25–60 oC
Calibrated air pressure range:	900–1100 hPa
Sampling interval:	1–2 s
Measurable range:	2–40 L/s
Power supply:	DC 8–24V
Current consumption @ 24V:	5–6 mA
Resistance* @ 5...15 L/s:	2.6±0.4 L s^{-1} $Pa^{-0.5}$

*) Resistance is measured together with air intake.

The anemometer communicates with the building management system using the industrial standard Modbus RTU communication protocol. The RS485 interface survives up to 48V potential difference relative to a ground signal. The anemometer is capable of automatically adjust to swapped data D1 and D0 signals.

The Fresh Air Anemometer is a crucial part of the system that:

- Makes sure that the room is ventilated according to the required standards.
- Monitors for the need for duct cleaning.
- Together with VAV valves, it balances the ventilation system automatically.
- Compensates for the weather wind effects for the balance of the ventilation system.
- Minimizes energy losses through ventilation by avoiding over-ventilation.
- Distributes heating expenses based on the ventilation.

Contact Us:

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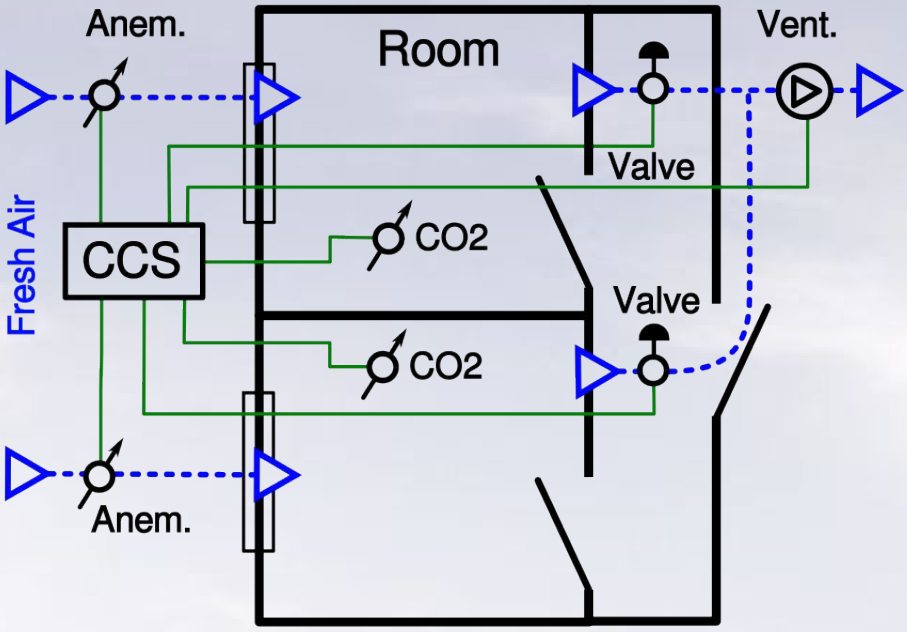
Partially Forced Ventilation Application

Fresh Air Anemometer



The Issue of Ventilation Balance:

Passive houses are built with minimal energy losses through walls windows and doors. Together with the very effective insulation, also parasitic ventilation is removed and the air moves only through predefined ducts. House with central ventilation system does have poor control over ventilation of every single room. The ventilation of the room is dependent on the opening of the doors and windows. The wind speed around the house will affect how different rooms are ventilated. It may happen that one room is over-ventilated as other room is under-ventilated.

The Solution for Ventilation Balance:

When ventilation of every room is regulated with the Central Control System (CCS), then all the factors that may cause the room to be under or over-ventilated are compensated by closing or opening the Valves of the different rooms. In order to close or open the valve, reference measurements are needed. For this purpose the anemometer is suitable device.

The Issue of Filter Cleaning Schedule:

Ventilation ducts tend to fill up with the dust. To reduce the expenses of duct cleaning and to improve room air quality, the dust filters are used in the system. When dust filters are filled, then not enough of air does move through the ventilation. The balance of ventilation may change if some rooms produce more dust than others.

The Solution for Filter Cleaning Schedule:

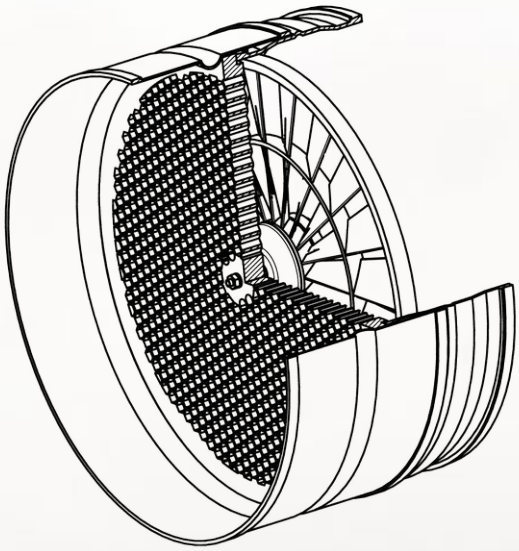
Anemometer gives direct information about the fresh air movement into the rooms. When filters are filling up with the dust the fresh air movement into the rooms will reduce. Thus knowing the information, the CCS can open the valves and increase the Ventilator's speed to compensate the effect. When despite of the countermeasures some rooms are not well ventilated, the CCS can inform about the need of full system clean-up or partial system clean-up.

Detection of Open Window:

When fresh air movement speed into the room through the anemometer drops sharply, then it most likely means that a alternative path of air movement has been created. Either door or window has been opened. This will affect balance of ventilation system. The CCS will then adjust the Valves to keep other rooms ventilated.

InFlow Anemometer

BAM-100,125,160,200,250



The InFlow Anemometer is an air-flow measurement device installed stationary into the building management system. It measures the airflow continuously over time. The measurement results are provided periodically with a period of 1–2 seconds. The following data is provided:

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ATTRIBUTE	VALUE
For duct diameters [mm]:	100, 125, 160, 200, 250
Calibrated range [L/s]:	TBD
Calibrated reading precision:	15% from reading
Calibrated temp. range [^{o}C]:	-25–60 oC
Calibrated air pressure range [hPa]:	900–1100
Sampling interval [s]:	1–2
Measurable range [L/s]:	TBD
Power supply [V]:	DC 8–24
Current consumption @ 24V [mA]:	5–6
K* @ 5...15 L/s [L s^{-1} $Pa^{-0.5}$]:	TBD

*) Resistance is measured together with air intake.

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- Minimizes energy losses through ventilation by avoiding over-ventilation.
- Distributes heating expenses based on the ventilation.

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Fully Forced Ventilation Application

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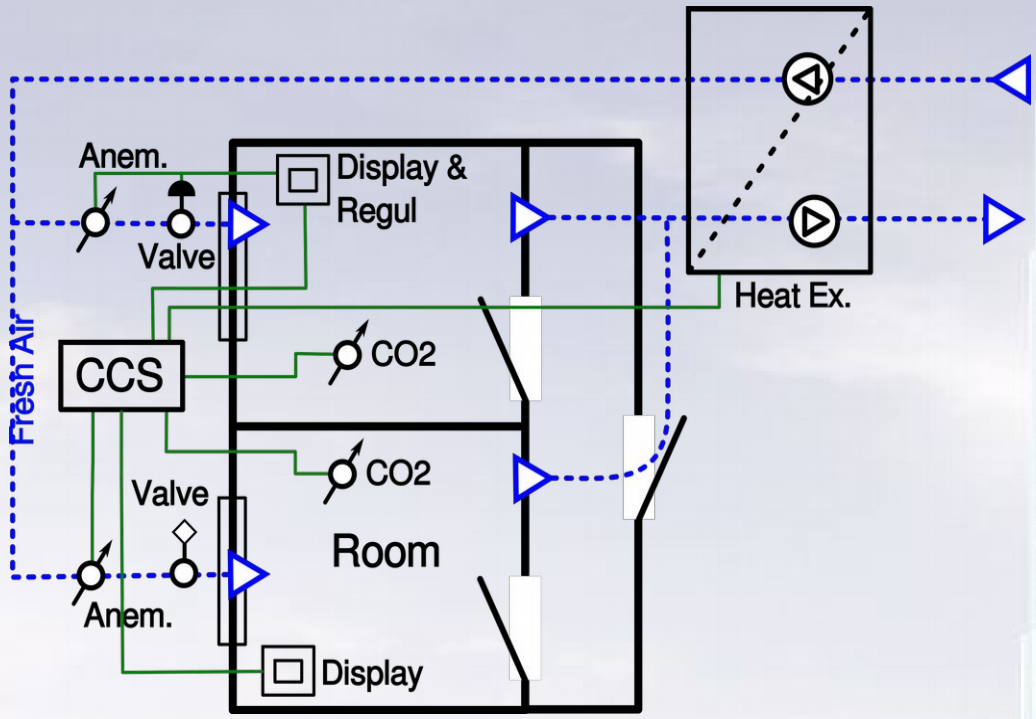

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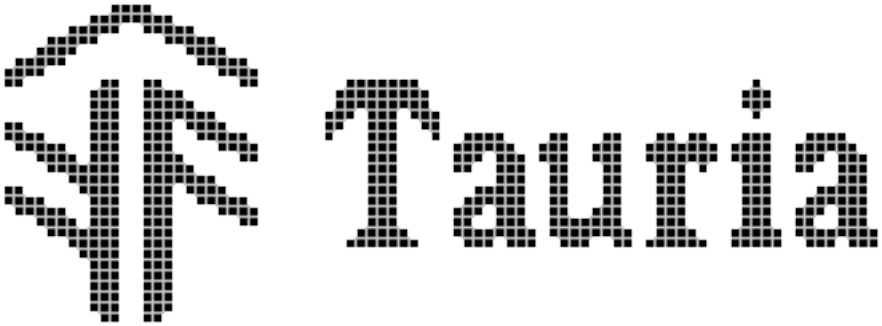

About Tauria

Our Mission:

"Simplifying life with embedded control systems engineering"

Our Services:

We can help you from idea to production with:

- Requirement research, analysis and documentation.
- Proof of concept evaluation.
- Firmware and software development for various micro-controllers 8 & 32 bit and for Linux and servers. (ASM, C, C++, PHP, Python, Javascript, Cypress PSoC UDB components, Verlilog)
- Electronic & PCB design. (Eagle, KiCad)
- Mechanical & 3D design. (Varicad)
- Product management.
- We understand also physics. For firmware development it is good to know how the nature works. We have partners in Estonia who do assembly of the devices in small and large series.

It is possible to help you in many ways:

- Consultancy – intellectual property of developed product will belong to our customer.
- Sales contract – we provide required amount of devices or license to customer with agreed price.

Our Contacts:

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