INDOOR AIR QUALITY

The most comprehensive solution on the market
Adaptable to all projects
High performance products, easy to install

Fresh air in all buildings: comfort and energy savings

Whatever system is used to provide comfort (temperature and air quality) inside the building for occupant health, a fresh air supply network is required.

Whatever the size of the building, an air renewal network is required since a hygienic fresh airflow depends on the indoor pollution generated by occupants and materials (paints, floor coverings, furniture, computer hardware, etc.).

Fresh air is essential for the health of occupants and that of the building. The improved air tightness of construction methods has reduced the amount of air infiltrating the building and air quality has been deteriorated

Renewal with fresh air is therefore an essential component of the comfort, well-being and even productivity of occupants

A system that produces the right air quality in the right place at the right time will improve user satisfaction and corresponding energy savings.

Intermittent occupation and variable airflow needs of buildings

Classrooms, offices and conference rooms are never used 100% of the time and to 100% of their capacity.

When occupants are in the conference room, they are not at their desks and some are also outside.

The need for clean air and airflow therefore varies throughout the day and according to the season. All-air systems which use the air vector to ventilate, heat, and cool feature high airflow rates (between 3 and 6 times more than the minimum fresh airflow).

It must be able to regulate the airflow and therefore power to only deliver the actual need inside the building for heating or cooling.

Building design takes into account this intermittent nature and multiples needs / airflows but it must then be able to deliver the fresh airflow rates and heat requirements at times when these are needed. Ventilation must be adapted to actual needs.

Regulatory environment

What laws and regulations are applicable to ensure good indoor air quality?

The conditions of effective air renewal are defined by the National Labour codes, health regulations and European standards..

These laws and regulations set minimum airflow rates applicable according to the areas of the building and its type.

Furthermore, some regulations define a regulatory maximum level of CO_2 for instance 1300 ppm.

Example:

Building types	Area types	European standard	Health regulation
Offices	Individual and open space offices, rest room, entrance hall	from 4 to 10 l/s /p	18 m^3/h /pers.
Conference rooms	Conference rooms, canteens	From 4 to 10 l/s / p	22 m^3/h /pers.
Education	Classrooms, libraries, function rooms	From 4 to 10 l/s /p	18 m^3/h /pers.

What alternatives are there to improve indoor air quality?

Several drivers exist to improve and monitor air quality in buildings:

- certifications which incorporate all IAQ* issues: NF HQE, BREEAM, LEED
- comfort of use labels which are a guarantee of health and comfort for occupants: WELL, OSMOZ
- IAQ* indicators which define the daily level of confinement of a room or general user comfort: ICONE, TAIL

Concerning CO_2 sensors, the recommendation is to use at least 1 sensor per 500 m², but to use one sensor for each area depending on the use cases. To ensure good IAQ* in a school, it is recommended to place a sensor in each classroom.

Example:

The ICONE index recommends a maximum CO_2 level of 1000 ppm in normal conditions of occupation, with a tolerance up to 1300 ppm.

*Indoor Air Quality

PACK ACCESS

OPEN/CLOSE function with balancing damper

Indoor Air Quality Control with presence detector

IAQ ★
Limited airflows modulation

Comfort ★
Limited comfort

Installation ★★★★
Quick implementation

Costs €
cost effective solution

Application

Rooms with a low human presence (technical, computer rooms, maintenance) where air renewal isn't necessary continuously.

Principle

Supply and/or exhaust of single zone air depending on the presence of occupants in the room.

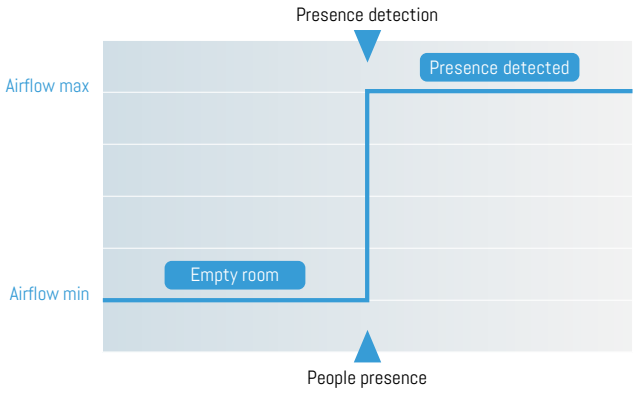
Motorized volume control damper associated with a presence detector installed in the room.

Without presence, the damper remains closed.

When a presence is detected the actuator opens the damper to one position.

The opening time is adjustable up to 20 minutes.

Operating and wiring diagram



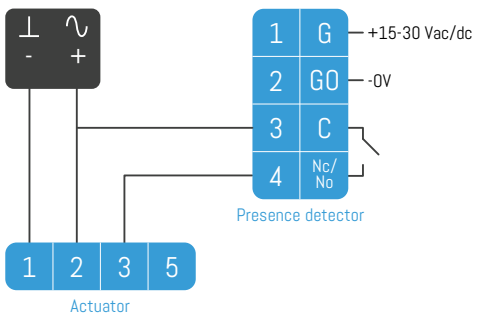
Products list

RCO circular volume control damper motorized with UM24 actuator

24V presence detector

Option: Open/Close with RCS airtight damper (class 3C)

Accessory: constant air volume damper RCKK



PACK MODULANT

Air flow modulation depending on occupancy with control damper

Regulation of indoor air quality with CO_2 sensor

IAQ ★★
airflows modulation according with occupation

Comfort ★★
Limited comfort

Installation ★★★★
Quick implementation

Costs €
cost effective solution

Application

Rooms with a low human presence where air renewal is necessary continuously (transit zone, reception area, hall, ...).

Principle

Supply and/or exhaust of single zone air depending on the presence of occupants in the room.

Motorized volume control damper associated with a CO_2 sensor installed in the room.

The CO_2 level is measured continuously and the airflow rate is adjusted according to the measurement. The higher the CO_2 level, the higher the airflow rates are.

The air renewal is adapted to the real needs for the comfort of the occupants.

Products list

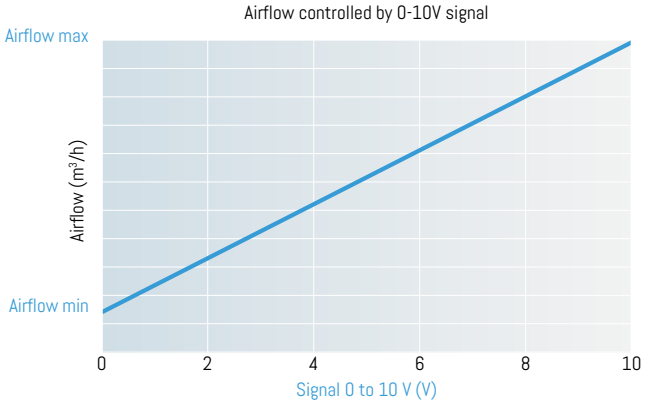
RCO circular volume control damper motorized with UM24SR

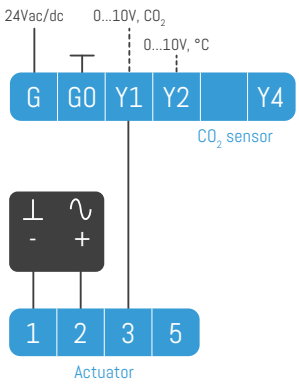
24V CO_2 sensor

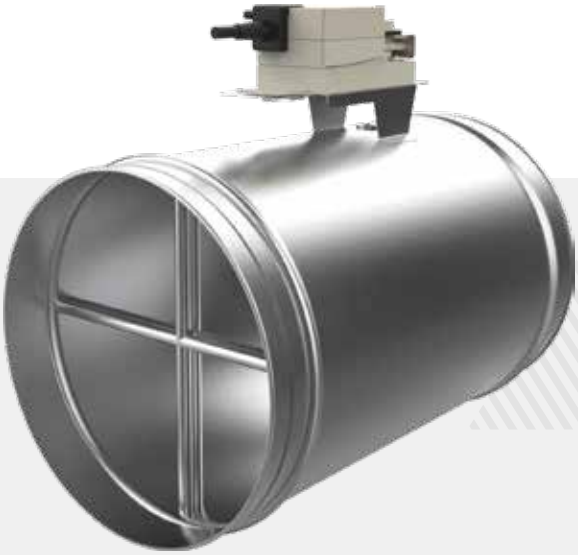
Option: Open/Close with RCS airtight damper (class 3C)

Accessory: constant air volume damper RCKK

Operating and wiring diagram







PACK STANDARD

Air flow modulation depending on occupancy with Variable Air Volume damper

Indoor air quality control with CO_2 sensor or presence detector

IAQ ★★★★
Compliant with regulations and labels

Comfort ★★★
Acoustic comfort

Installation ★★
Large products range

Costs € €
standard solution

Application

Rooms with high occupancy level (open space offices, classrooms, university amphitheatre, ...) where air renewal is required continuously with airflow control and complex operation (airflows summation, BMS, dedicated exhaust ductwork, ...)

Principle

Supply and/or exhaust air for single or multi-zone depending the occupation of the room.

Variable Air Volume motorized damper 3C with ambiant CO_2 sensor.

When the room is empty, the damper is nearly closed at the minimum airflow. When the activity is increased, the CO_2 level will raise and the motor receives a proportional 0-10V signal. The airflow is adjust linearly to fit the needs.

PIR presence detector in option

Multiple functions available, such as adding the airflow and MODBUS communication.

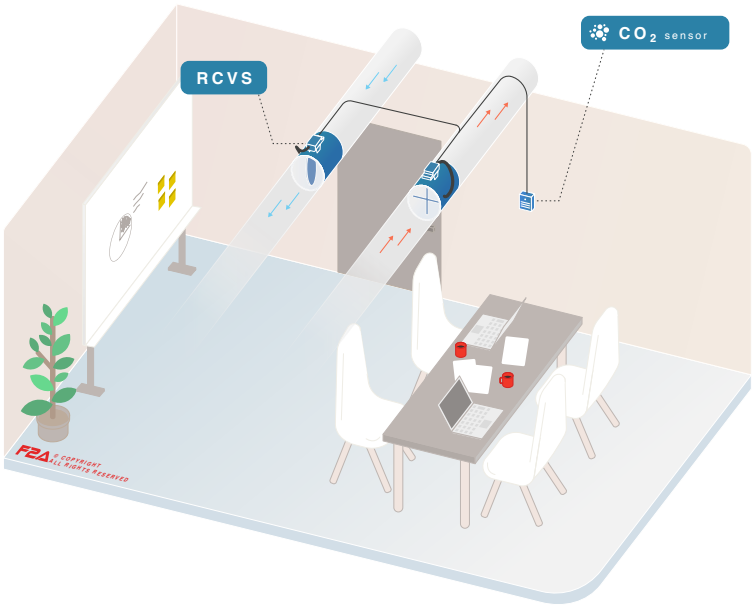
Products list

Variable Airflow Volume damper RCVS/RRVS

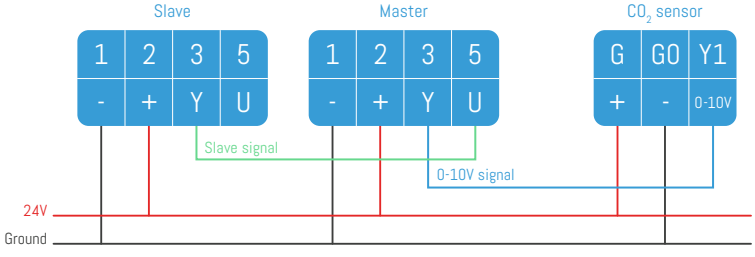
CO_2 sensors or PIR presence detector

Option: MOBUS communication

Operating and wiring diagram



Wiring Diagram for an analogic master/slave system



PACK AUTONOME

Air volume modulation depending on the occupancy with a self-sufficient VAV damper

Indoor air quality control with CO_2 sensor

IAQ ★★★★
Compliant with regulations and labels

Comfort ★★★★
Acoustic comfort

Implementation ★★★★
Quick implementation

Costs € €
saving on wiring

Application

Premises with an important human presence (offices, meeting rooms, schools) where air renewal is necessary in a permanent way to ensure the good health of the occupants by controlling the airflow rates

Principle

Single zone air supply and exhaust according to the real activity of the occupants in the rooms.

Energy self-sufficient variable airflow damper with with integrated CO_2 sensor in the return and variable airflow damper slave on the supply side.

The damper with CO_2 sensor at the return regulates the exhaust airflow according to the concentration of pollutants and transmits the the signal to the supply air damper through a master-slave cable to balance the ductwork.

It is a plug&play solution that requires no electrical connection

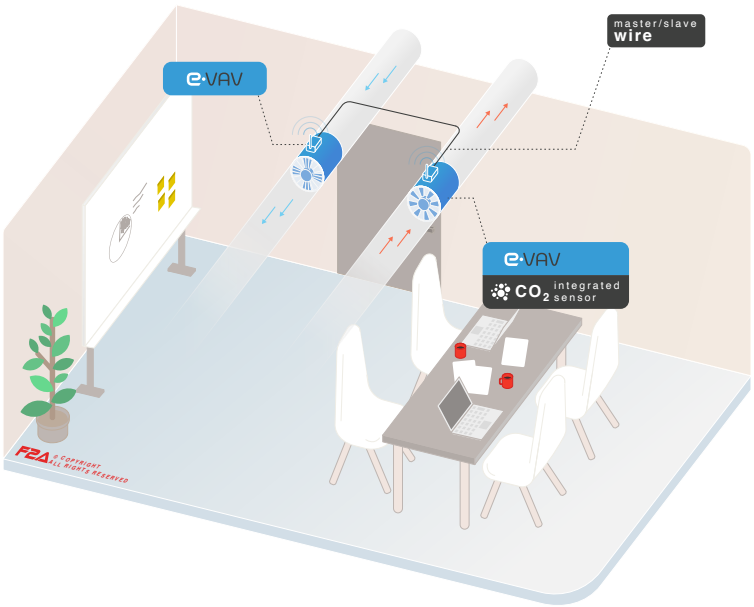
Products list

e·VAV QAI with integrated CO_2 sensor for the exhaust and a slave e·VAV for the supply.

Master/slave wire

Accessory: room sensor 24V or room CO_2 sensor 24 V

Operating and wiring diagram



CONTACT :

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A PROJECT, A QUESTION ?

F2A sites are based in France, our projects all over the world.
Our switchboard is open from Monday to Friday from 8 am to 5:30 pm.

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