RF CO_2 switch (surface-mounted)

Description

The Vasco ventilation unit is expandable with a wireless CO_2 (RF) switch, except for the D150 Compact and Energy Plus models, with which it is not compatible.

This switch offers the possibility to choose between fixed air flow rate or demand-controlled operation based on measured CO_2 concentration, ensuring optimal indoor climate and energy efficient ventilation. The ventilation unit only responds to correctly paired RF switches.

General features

- Lower right control zone for:
  - Manual selection of ventilation modes: speed 1, speed 2 and speed 3
  - Automatic CO_2-controlled operation: Eco and Comfort
- LED indicators:
  - **Status LED**: Lights up green or red depending on operation, connection status or error messages
  - **Mode LEDs**: Shows the active operating mode (manual speeds 1–2–3 or automatic Eco/Comfort mode)

Pairing options

- Support for pairing up to 3 ventilation units at one or more controls
- Ability to pair up to 20 RF switches (CO_2 RH or 3-position) to one ventilation unit

Communication

- Wireless RF communication with the ventilation unit
- Radio frequency signal: 868.3 MHz

Power and consumption

- External power supply: 230 VAC
- Maximum consumption: 4 VA

Measurement and operating data

- Operating temperature: 0 - 40°C
- Measuring range CO_2: 400 - 2000 ppm (parts per million)
- Measuring tolerance: ±40 ppm + 2% of measured value at 20°C

Physical properties

- Dimensions (l x w x h): 92 x 23 x 92 mm
- Housing: plastic
- Protection class: IP30
- Mounting: surface-mounted wall mounting (screw fixing)

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ECO mode

In ECO mode, a CO_2 setpoint of 950 ppm is used. When the measured CO_2 value rises above this level, the ventilation unit automatically increases its ventilation level. If the CO_2 value drops again, the ventilation gradually decreases according to the PI control. This mode focuses on energy-efficient ventilation with a slightly higher indoor air quality level.

COMFORT mode

In COMFORT mode, a CO_2 setpoint of 800 ppm is used. As soon as the CO_2 value rises above this level, the ventilation unit switches more quickly to a higher ventilation level in order to maintain optimum indoor air quality.

CO_2 control

The RF CO_2 switch continuously measures the CO_2 level and automatically transmits the value to the ventilation unit: every 10 minutes or immediately if there is a change of at least 100 ppm. In automatic mode, the internal PI controller determines the ventilation level based on the set CO_2 setpoint (ECO or COMFORT) and the current CO_2 value, with proportional control between 0% and 100%.

Auto Fallback Time

The RF CO_2 switch has a built-in Auto Fallback Time of 12 hours. If there is no user interaction during this period, the switch automatically reverts to the last set automatic mode (ECO or COMFORT). This prevents temporary manual settings from remaining active indefinitely.

Fault detection and emergency ventilation

In the event of a fault in the internal CO_2 sensor, the switch automatically switches to a fixed ventilation level of 40% of the maximum air flow rate (Qmax), and the fault is indicated by the red status LED. This ensures minimum ventilation in the event of sensor malfunctions.

LED behaviour during inactivity

After 30 seconds, the LED indicators switch off automatically. When the control zone is pressed again, the switch displays the last setting again, regardless of which connected switch set it.

Behaviour when controlling multiple ventilation units

When a single RF CO_2 or RF RH switch is connected to multiple ventilation units, the same ventilation demand (Eco, Comfort or manual mode) is sent to all units simultaneously. Deviations such as error codes only affect the unit concerned and may cause a red status LED to light up.

The mode LED shows the last locally selected mode; when touched, it is updated to the most recently sent automatic or manual ventilation demand.

Behaviour with multiple RF CO_2 and/or RF RH switches

When multiple RF CO_2 and/or RF RH switches are connected to the same ventilation unit, all switches synchronise transitions between manual and automatic operation. Each switch retains its own automatic mode setting (ECO or COMFORT) and, when returning from manual operation, reverts to its individually stored automatic mode.

The ventilation unit processes all incoming sensor signals and the unit operates at the ventilation level corresponding to the maximum demand generated by any of the connected CO_2 or RH switches.

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Symbol	Function	Description
	Speed 1	Ventilate at 25% of the maximum set air flow rate
	Speed 2	Ventilate at 50% of the maximum set air flow rate
	Speed 3	Ventilate at 100% of the maximum set air flow rate
A	Eco	In ECO mode, the switch keeps the CO_2 concentration below the ECO setpoint (default 950 ppm) by automatically controlling the ventilation unit. The ventilation increases proportionally as the CO_2 level rises, ensuring an energy-efficient and healthy indoor climate.
A	Comfort	In COMFORT mode, the ventilation unit responds more quickly to rising CO_2 levels and adjusts its output to keep the concentration below the lower target value of 800 ppm. This results in a faster supply of fresh air from outside, keeping the air quality noticeably fresher than in ECO mode.
 (3 sec.)	Connecting	Briefly disconnect both the ventilation unit and the switch from the power supply (for at least 20 seconds), then press the control zone for at least 3 seconds within 10 minutes until all LEDs flash. Green (2 seconds) means successful, red (2 seconds) means unsuccessful. A maximum of three ventilation units can be connected per switch. Please refer to the ventilation unit manual for further information.
 (10 sec.)	Disconnect	Briefly disconnect the switch from the power supply (for at least 20 seconds) and then press the control zone for at least 10 seconds within 10 minutes until all LEDs light up continuously for 3 seconds, then release. The status LED will then flash red 4 times, indicating that the switch is no longer connected. Please refer tot the ventilation unit manual for further information.

Error codes + LED feedback

LED feedback	Description
Green	The requested communication has been correctly communicated
Red	Communication issue
2x red	Issue with the ventilation unit
3x red	Issue with CO_2 measurement
4x red	Switch not connected to a ventilation unit

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Installation

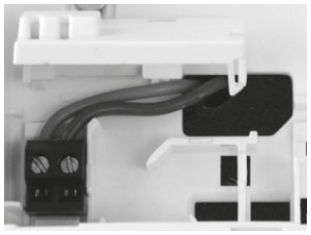
Always install the RF CO_2 switch (surface-mounted) in an easily accessible location in the room where you wish to monitor the CO_2 concentration. Always provide a 230 VAC power supply to the switch.

Step 1: Disassemble the switch.

Step 2: Screw the base plate onto the wall.

Step 3: Open the cover of the base plate to access the electrical connections.

Step 4: Connect the 230VAC power supply voltage to the connectors.



Step 5: Put the cover back on the switch.