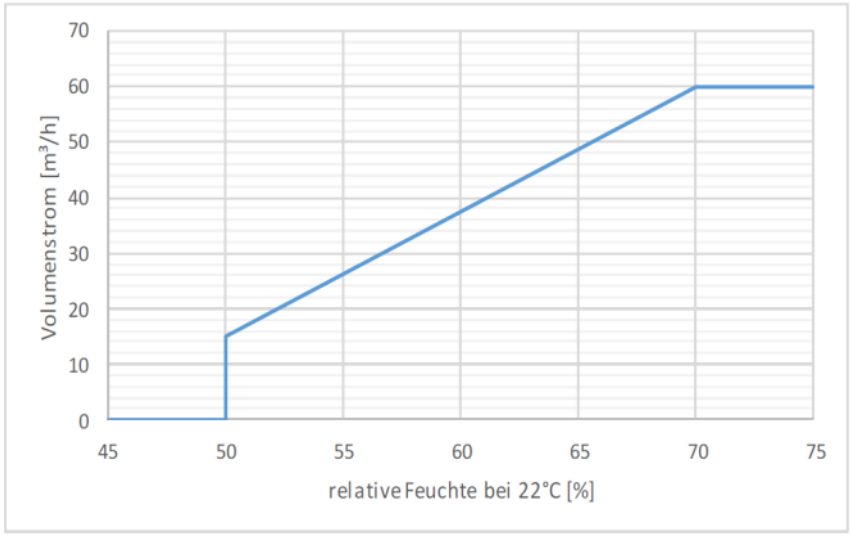
Silvento ec with Comfort Board 5/EC-FK

The Silvento ec is the result of the consistent further development of the single-pipe fan. By changing from an AC motor to an ec motor, the power consumption could be almost halved and the achievable total pressure difference and variability could be significantly increased. Even in the basic version of the Silvento ec, the volume flows of the basic ventilation and demand ventilation between 0 m³/h and 60 m³/h can be freely configured and controlled permanently, via switch and/or interval operation. Supplemented by a configurable switch-on delay and follow-up time, the basic version has all the functions required for optimum ventilation in accordance with applicable ventilation standards.

In contrast to the Basic Board, the Comfort Board also has a humidity/temperature sensor. This enables intelligent automatic operation, which is optimally oriented to the ventilation requirement according to the moisture loads that occur.

The sensor used measures the relative humidity of the air sucked in with an accuracy of ± 2 % and the temperature with an accuracy of ± 0.2°C. The sensor is used to measure the relative humidity of the air sucked in with an accuracy of ± 2 %.

Intelligent humidity control
The intelligent humidity control activated in the standard system calculates back to the relative humidity at 22° C (standard condition) on the basis of the measured values of relative humidity and temperature, practically a control according to absolute humidity. The determined value is then used to control the volume flow between 50 % and 70 % relative humidity at 22°C, as shown in the following diagram:

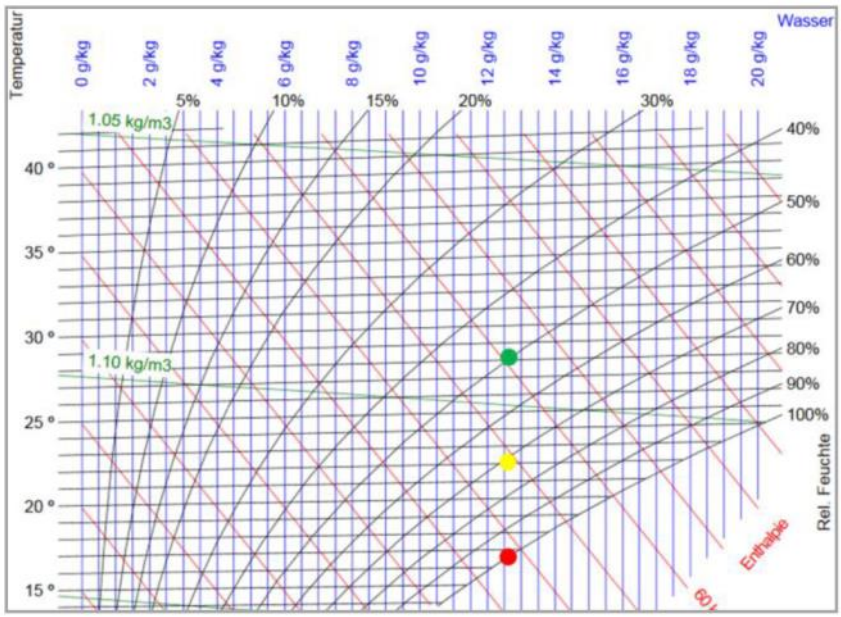


The switched stages depend on the setting of the DIP switches 1,2 (basic ventilation) and 6,7 (demand ventilation). At 50 % RH (22°C), the fan automatically switches to the basic ventilation level. The volume flow rate is increased linearly to the course of the r.h. until it reaches the demand ventilation level at 70 % r.h.(22°C).

The Silvento ec with Comfort Board 5/EC-FK continuously calculates a moving mean value of the relative humidity at 22°C so that the fan does not run continuously through a high ventilation level during the summer months, during which time the outdoor air humidity is regularly to permanently 60 %-70 %, and thereby draws moisture into the home. This mean value represents the basic level of air humidity (background humidity) below which the fan cannot fall even with increased ventilation capacity.

The intelligent humidity control described above is only activated when the humidity rises by 6 % above the background humidity. This is deactivated again if the value background humidity + 2 % is reached or the humidity cannot be reduced over a period of two hours.

Why calculate back to 22°C?
For physical reasons, warm air can absorb more water than cold air. As a result, the measured relative humidity at e.g. 28°C is significantly lower than at 22°C, even if both conditions have the same absolute humidity, i.e. the same amount of water in the air. This circumstance can still be clarified with the following h,x-diagram:



The diagram shows three air states that can occur at the same time in an apartment. The water content in the air is always approx. 12.5 g/kg, as the air flows through the entire usage unit.

A bathroom that has been properly heated and in which the fan incl. sensor is suspended could be marked green. At a temperature of 28°C, a relative humidity of just under 50% is measured. The fan remains off or is at most at the basic ventilation level. The cooler bedroom (yellow, 22°C) already has a relative humidity of just over 70 %, i.e. a value that already has the highest ventilation requirement.

The situation then looks quite bad in the unheated cellar (red, <17°C). Here already the dew point is reached and first drops form on the wall.

The implemented intelligence reliably detects increased ventilation requirements in the entire usage unit, regardless of temperature, and can consistently ensure a healthy climate for users and building fabric.