



## EP5000-XX IAQ probe User Manuel

Ver	Date	Change / Update
V1	10/10/2022	Initial

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## 1. Presentation

The EP5000-XX probe is intended for air quality control (ventilation). It can also provide temperature control but this being felt, it is not necessary to use light indicators. The EP5000-XX probe therefore ensures healthy air as desired via the threshold settings thanks to a dilution of the indoor air with outdoor air so-called “new air”. However, pollution may take a little time to be evacuated by ventilation or the ventilation may prove to be insufficient (or even non-existent or uncontrolled when the probe is used for supervision).

Since air quality is invisible and generally odorless, the EP5000-XX probe has a light interface to provide some visibility.

For more detailed visibility, the measurements are accessible via the smartphone application or via a supervision tool associated to digital data.

An NFC antenna on the front panel allows to set the air quality, heating and air conditioning setpoints using a smartphone Application.

This document presents the luminous indications related to the IAQ according to the settings and those related to peripherals and failures.

## 2. Indication of LEDs in normal operation

The LEDs show the overall synthesis of IAQ (thresholds or physiological impacts on health, cognition, respiratory tract irritation and quality of sleep which depend on the combined effects (cocktail effect) of CO<sub>2</sub>, VOCs, particles, noise and light)

The building health is also synthesized and takes into account: risk of condensation, deposit of particles on cold parts.

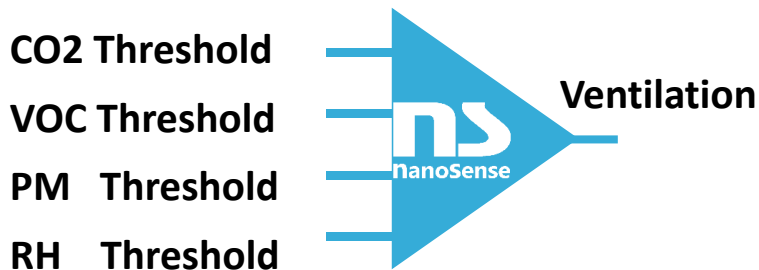
This synthesis is materialized by a continuous gradual rising and then descending gradation of breathing type.

The thresholds and the dimming are adjustable via an NFC smartphone and the Android App.



## 2.1. In Measurement thresholds mode

### NS classic system







#### OR Function





It does not take into account the combination of the effects

The control of the LEDs is based on the difference between the setpoint (threshold) and the measurement as well as the proportional band.


The proportional band is 10% of readings and 10% RH by default. The proportional band corresponds to a ventilation control of 100%. If for example the CO2 threshold is set at 1000ppm, the ventilation control will be 100% above 1100mm (threshold + 10%).


LEDs Status	Percent of proportional band	
 5s cycle	0%	25%
 2s cycle	25%	50%
 5s cycle	50%	75%
 2s cycle	75%	100%

This results in the following thresholds with the proportional band by default:

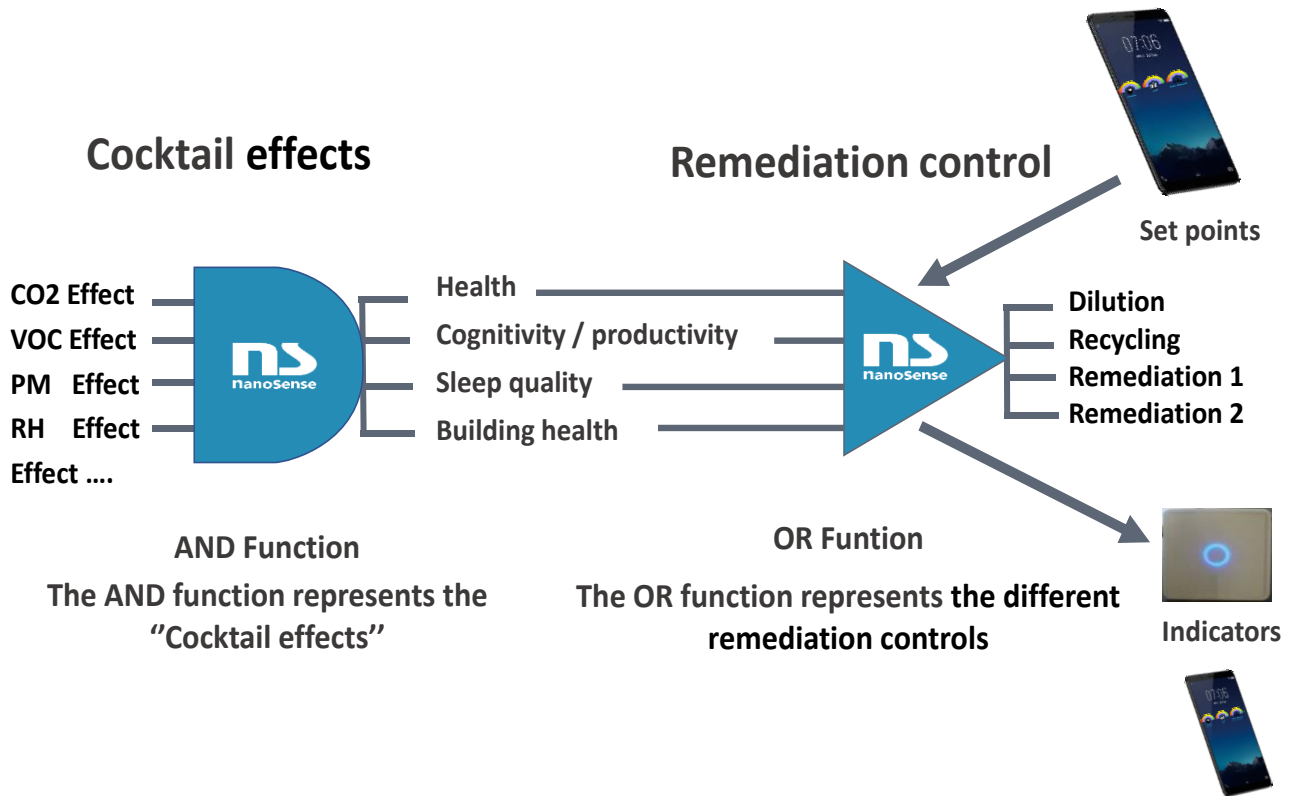
LEDs Status	Description
 <b>5s cycle</b>	The air quality is ideal. The probe is working perfectly. CO2 < setpoint + 2.5% of setpoint Or VOC < setpoint + 2.5% of setpoint Or PM2.5 < setpoint + 2.5% of setpoint Or RH < setpoint + 2.5% RH
 <b>2s cycle</b>	The air quality is acceptable. The probe is working perfectly. CO2 > setpoint + 2.5% of setpoint Or VOC > setpoint + 2.5% of setpoint Or PM2.5 > setpoint + 2.5% of setpoint Or RH > setpoint + 2.5% RH
 <b>5s cycle</b>	The air quality is poor. The probe is working perfectly. CO2 > setpoint + 5% of setpoint Or VOC > setpoint + 5% of setpoint Or PM2.5 > setpoint + 5% of setpoint Or RH > setpoint + 5% RH
 <b>2s cycle</b>	The air quality is bad. The probe is working perfectly. CO2 > setpoint + 7.5% of setpoint Or VOC > setpoint + 7.5% of setpoint Or PM2.5 > setpoint + 7.5% of setpoint Or RH > setpoint + 7.5% RH





**Examples:**

	Setpoint	Measures	LED
CO2	1000ppm	1020ppm	 <b>5s cycle</b>
COV	500µg/m3	300µg/m3	
PM	25µg/m3	26µg/m3	
HR	80%	75%	


	Setpoint	Measures	LED
CO2	1000ppm	1070ppm	 <b>5s cycle</b>
COV	500µg/m3	300µg/m3	
PM	25µg/m3	26µg/m3	
HR	80%	75%	


## 2.2. In Physiological Effects Mode



LEDs Status	Description
 <p><b>5s cycle</b></p>	<p>The air quality is ideal. The probe is working perfectly.            Health Index &gt; Setpoint - 5%            Or            Cognitivity Index &gt; Setpoint - 10%            Or            Sleep quality index &gt; Setpoint - 10%            Or            Respiratory tract irritation &gt; Setpoint - 10%            Or            Building health index &gt; Setpoint - 10%</p>
 <p><b>2s cycle</b></p>	<p>The air quality is ideal. The probe is working perfectly.            Health Index &lt; Setpoint - 6%            Or            Cognitivity Index &lt; Setpoint - 12%            Or            Sleep quality index &lt; Setpoint - 12%            Or            Respiratory tract irritation &lt; Setpoint - 12%            Or            Building health index &lt; Setpoint - 12%</p>
 <p><b>5s cycle</b></p>	<p>The air quality is ideal. The probe is working perfectly.            Health Index &lt; Setpoint - 7.5%            Or            Cognitivity Index &lt; Setpoint - 15%            Or            Sleep quality index &lt; Setpoint - 15%            Or            Respiratory tract irritation &lt; Setpoint - 15%            Or            Building health index &lt; Setpoint - 15%</p>
 <p><b>2s cycle</b></p>	<p>The air quality is ideal. The probe is working perfectly.            Health Index &lt; Setpoint - 10%            Or            Cognitivity Index &lt; Setpoint - 20%            Or            Sleep quality index &lt; Setpoint - 20%            Or            Respiratory tract irritation &lt; Setpoint - 20%            Or            Building health index &lt; Setpoint - 20%</p>

**Examples:**

	Setpoint	Index	LED
Cognitivity	82%	80%	 <p><b>5s cycle</b></p>
Health	90%	81%	
Respiratory tract irritation	80%	71%	
Sleep quality Building	0%	80%	
Building health	70%	65%	

	Setpoint	Index	LED
Cognitivity	82%	66%	 5s cycle
Health	90%	81%	
Respiratory tract irritation	80%	71%	
Sleep quality Building	0%	80%	
Building health	70%	65%	

### 2.3. Windows opening LEDs

There are 2 pictograms indicating the opportunity or the danger to open windows on street or backyard facade. Depending on how the probe is installed, each pictogram designates a façade.

There are 2 modes to manage those warnings:

- One is based on comparison between indoor and outdoor air quality physiological effects.
- The other one is based on outdoor air quality level that comply with Well Building Standard (settable with the App)



Those LEDs shall be activated via the App otherwise they will stay Off.

When the probe receives outdoor air quality regarding one or the two building’s facades and if the probe is set with the appropriate altitude (“IAQ probe floor” in general setting) and the outdoor probe allocated to the right of left LEDs, the window LED will provide the following information:



You can open windows on this facade. Outdoor air quality is better than indoor.



It is not recommended to open windows on this facade

### 2.4. Edge LEDs indications



Registration Required  
(POE version only)



Joined (LoRa WAN version)  
Pairing (EnOcean)  
ZigBee registration



### 3. Indication of LEDs in case of failure

LEDs indicate failures as follows:



LED code on the front panel	Identification #	Defective FRU
No LED active	NA	Power supply failure suspected or probe power supply board.
<b>Red LED on for 5 seconds</b>		
<b>Followed by a yellow flash</b>	1	Front panel board.
<b>Followed by 2 yellow flashes</b>	2	Single band CO2 sensor module.
<b>Followed by 3 yellow flashes</b>	3	Dual band CO2 sensor module
<b>Followed by 4 yellow flashes</b>	4	VOC sensor module
<b>Followed by 5 yellow flashes</b>	5	Motherboard
<b>Followed by 6 yellow flashes</b>	6	Interconnection board
<b>Followed by 7 yellow flashes</b>	7	Particles sensor board
<b>Followed by 8 yellow flashes</b>	8	Power supply board
<b>Red LED blinking</b>	9	Multiple failures
<b>Alternation Red Blue</b>	10	Perishable sensor reaching the end of life.
<b>All LEDs blinking</b>	11	No communication between front panel and probe. (after 30 seconds)

### 4. Indication in case of LED failure

In case one of the LEDs is detected defective at start up, other LED will stay On all the time. This allow checking visually the defective LED.

The probe will measure and communicate normally. This failure will therefore be transmitted in the Built In Test.

This test is not performed during running, only at start up so if a LED becomes defectives on the way, it will not be detected.

## 5. Default set points

As set points have a great influence on LED display, it is important to know the default values.

Default values can be seen as a reference as they will be lost after a setting and there is no magic button to comeback to default.

### In Measurement thresholds mode (default):

Setpoint	Comfort (default)	Eco	Night
T°	18.5°C	17°C	17°C
CO2	1000ppm	1500ppm	1300ppm
VOct	300 µg/m <sup>3</sup>	800 µg/m <sup>3</sup>	1300 µg/m <sup>3</sup>
NOx	300 µg/m <sup>3</sup>	800 µg/m <sup>3</sup>	1300 µg/m <sup>3</sup>
O3	300 µg/m <sup>3</sup>	800 µg/m <sup>3</sup>	1300 µg/m <sup>3</sup>
PM2.5	20 µg/m <sup>3</sup>	40 µg/m <sup>3</sup>	40 µg/m <sup>3</sup>
Humidity High	75%	95%	95%
Humidity Low	40%	30%	25%

Note that the night mode is not by default controlled by the probe's embedded light sensor.

### In Physiological Effects Mode

Setpoint	Comfort	Eco	Night
Cognitivity	80%	60%	50%
Health	80%	60%	50%
Respiratory tract irritation	90%	70%	60%
Quality of sleep	80%	60%	50%
Odor	80%	50%	40%

Building health	80%
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Default values can be changed anytime by manufacturer without warning.