【 UNOnext indoor air quality monitor 】

User manual ver 1.4.2
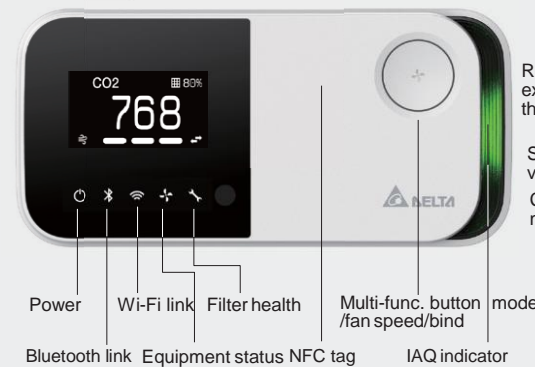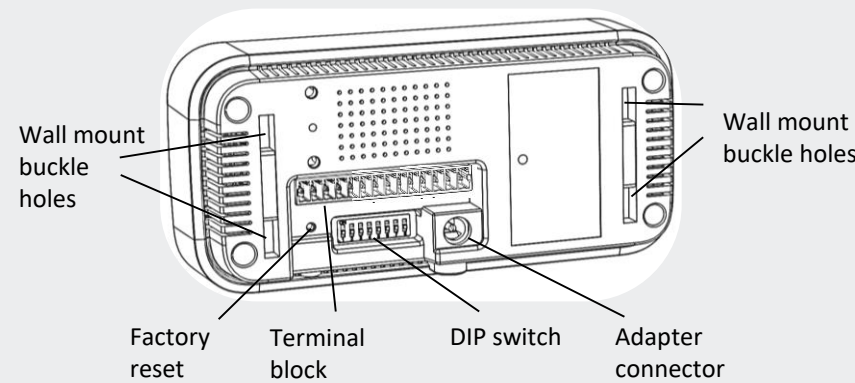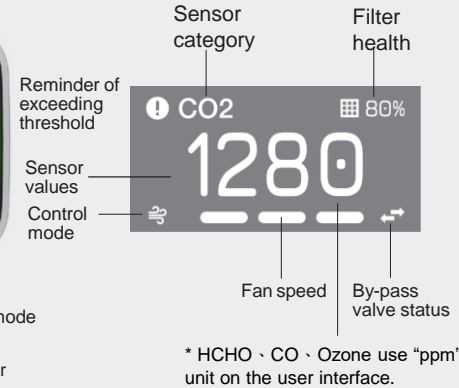
【 Overview 】

UNOnext is an all-in-one air quality monitor that can detect temperature, humidity, carbon dioxide, PM2.5, PM10, total volatile organic compounds (VOCs), formaldehyde, carbon monoxide, and ozone, which can all be monitored visually through sensors. It can be directly connected to a fresh air system to improve air quality, which not only saves energy, but also lets users breathe fresh air with peace of mind. It is suitable for many different types of environments, including residential buildings, commercial buildings, medical institutions, and places sensitive to air quality, such as nursing homes and day care centers. This product detects various types of air pollution that may have an adverse effect on the human body.

【 Display and button functions 】

Appearance

Display layout

- Sensor category
- Filter health
- Reminder of exceeding threshold
- Sensor values
- Control mode
- Fan speed
- By-pass valve status

* HCHO、CO、Ozone use "ppm" unit on the user interface.

- Power
- Wi-Fi link
- Filter health
- Multi-func. button /fan speed/bind
- mode
- Bluetooth link
- Equipment status
- NFC tag
- IAQ indicator

- Wall mount buckle holes
- Wall mount buckle holes
- Factory reset
- Terminal block
- DIP switch
- Adapter connector

Indoor air quality indicator description*

Indoor air quality indicator color (status)	PM2.5 (ug/m³)	PM10 (ug/m³)	CO₂ (ppm)
Green (Good)	0-28	0-60	400-800
Yellow (Moderate)	29-35	61-75	801-1000
Red (Bad)	36-140	76-300	1001-4000
Purple (Polluted)	>140	>300	>4000

*To avoid confusing customers, this indicator only reflects the excess of particle and co2 sensors

Function definition

Function	Screen layout	Button function
IAQ sensing **default**	Sensor values iteration	Screen and indicator on/off switch
Smart control*	Sensor values, control status and mode, filter health	Switch control mode and fan speed

*To use the smart control function, a compatible equipment must be connected

Smart control

IAQ sensing
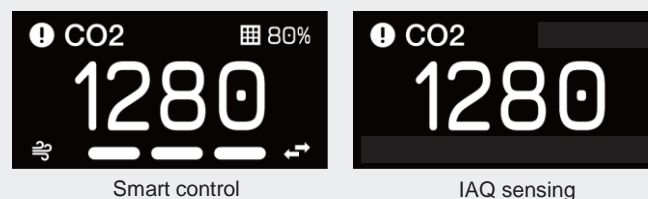
【 Detailed description 】

- The power indicator lights up after power is connected. If the power indicator does not light up, please make sure that the power cord is firmly installed.
- The air quality indicator turns blue after the device is turned on, which means that it is booting up. After booting is complete, it changes color according to the air quality status, in which green is good, yellow is moderate, red is bad, and purple is polluted.
- The product has built-in multiple sensors, and the values are displayed in rotation. If the value of a sensor exceeds the threshold, the warning icon is been displayed in the upper left of the screen.
- In "smart control". double-press the button (within 5 seconds) to change the fan speed and control mode. The default is "IAQ sensing" and may be switched into the following modes. If the interval between key presses is more than five seconds, the equipment is turned on and off. It will enter "smart control" when it is turned on again. In "IAQ sensing", the button can turn on/off night mode (the screen and indicators on/off).

OFF → SMART MODE (Auto) → LOW SPEED (Manual) → MEDIUM SPEED (Manual) → HIGH SPEED (Manual) → OFF
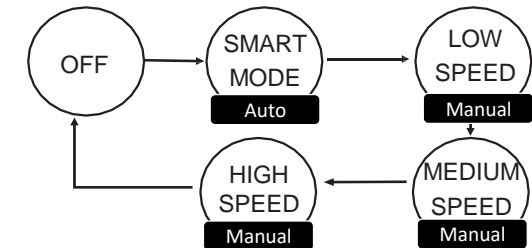
"Smart mode" will turn ventilation equipment on and off depending on whether the air quality exceeds the threshold or not. There are two control modes: Turbo and UNOECO. Users can set a threshold on the APP to determine activation conditions.

Icon	Smart mode plan	Description
	Turbo	If it exceeds the threshold, the equipment will operate at full speed and exchange air until the air quality improves.
	UNOECO	It's smart and balanced control strategy by using self-learning from historical IAQ trend, it will turn the equipment on earlier and try to keep IAQ index under the threshold.

【 Note 】 The equipment activation conditions will be based on all air quality sensing values, among which the three major indicators are preset equipment activation standards, CO2 is 1,000 ppm, PM2.5 is 28 ug/m3, PM10 is 60 ug/m3, which can be selected in the APP. The color of the indicator breathing light is pre-defined by it.

- Use the APP for Wi-Fi configuration. The APP provides instructions on operating procedures. Please verify that the controller you purchased is the Wi-Fi version. The Wi-Fi connection indicator turns on after connecting to Wi-Fi.
- The product was calibrated in the factory, and no additional calibration is required. If a sensor value is affected by the environment at your site, please contact the distributor for manual calibration.
- This controller has built-in multiple sets of precision sensors. Collision and vibration during transportation may affect its readings. It is recommended that you turn it on and install it, and then wait for about one hour until the chamber reaches balance.

【 Note 】 The temperature module built into this product has been calibrated in the factory, but the accuracy may be impacted by the installation environment, such as nearness to a heat source or high air flow. To get more accuracy, calibrate the product after installation. Wait for one hour after installation for calibration. User can use APP's engineer mode to calibrate it.

- After you turn on the device, these sensors needs to warm-up for 5 minute or less for PM2.5, PM10, and carbon dioxide, and 5 minutes for formaldehyde, carbon monoxide, ozone, and TVOC. Sensor data is updated every 10 seconds.
- The CO₂ sensor uses an Automatic Baseline Calibration (ABC) algorithm to maintain accuracy. If the component encounters vibration when it is reinstalled in a different place, values may drift. Please keep operation for weeks to find the baseline in this case.

【 Note 】 Follow the instructions below to facilitate the automatic calibration of CO₂ components.
· This product needs a continuous power supply, please install it in a fixed position
· The indoor environment reaches the level of the outdoor environment for four consecutive hours each week

【 Hardware Interface 】

Terminal block pin function definition

Pin	Name	Definition		
1	GND	Ground		
2	AI1	Analog input-1 External temperature sensor		
3	AI2	Analog input 2		
4	NO4	Digital output - HF		
5	NO3	Digital output - MF		
6	NO2	Digital output - LF		
7	NO1	Digital output – ON/OFF		
8	B2	Modbus slave B		
9	A2	Modbus slave A		
10	B1	Modbus master B		
11	A1	Modbus master A		
12	GND	Ground	V-	
13	Vin	9-24V DC input	V+	
14	Vout	9-24V DC output		

DIP switch function definition

Number	Switch Definition	ON	OFF*
1	Modbus terminal resistor		■
2	Modbus slave position [3]		■
3	Modbus slave position [2]		■
4	Modbus slave position [1]		■
5	Modbus slave position [0]		■
6	Maximum fan speed [1]		■
7	Maximum fan speed [0]		■
8	Control mode selection		■

* The above are the default states of the DIP switches

## 【 Step for Equipment Control 】

Power on verification

· After the product has been installed, the power indicator lights up after the power is connected, and the air quality indicator turns blue, which means the device is turning on at this time. If green or yellow appears, it means that the device has completed booting and the current air quality status is displayed. If the power indicator does not light up, please verify that the power cord is properly connected and that there is a supply of power.

Enable smart control function

· Turn all the DIP switches up, press the multi-func. button then power on, release the button after the filter health LED blinks, and confirm that the screen has changed successfully after restarting, and then RESTORE THE DIP SWITCHES AS PREVIOUSLY STATED.

DIP switches
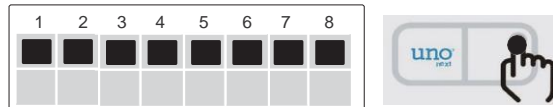
· In RS485 control mode, if the equipment is successfully connected, the equipment status indicator is static on/off or it will keep blinking.

· The installer can verify ventilation volume by switching to manual mode with fixed fan speed.

· After a period, the health of the filter will return to zero. At this time, it is recommended to replace the filter. After the replacement, you can press and hold the factory reset button on the back of the product to reset.
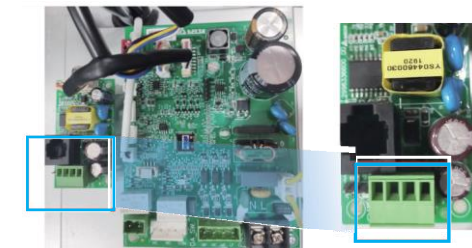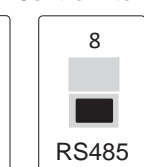
Wiring diagram – RS485

Connect A1 and B1 with the equipment's A and B, the recommended wire to use is 22AWG Shielded Foil Twisted-Pair (SFTP)

Wiring diagram   Fan speed levels   Control interface

Unlimited 3 levels 2 levels 1 level   RS485

Dip switches
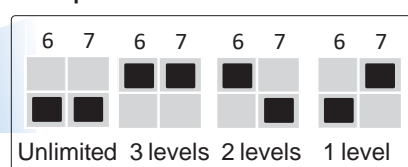
Example: Delta ERV 2021 "VEB250AT3"

12V GND B A

Connect multiple equipment

· The product can connect to the 4 same equipment via RS485 in series through daisy chain - linear topology. At this time, each device will follow the same control mode and fan speed level.
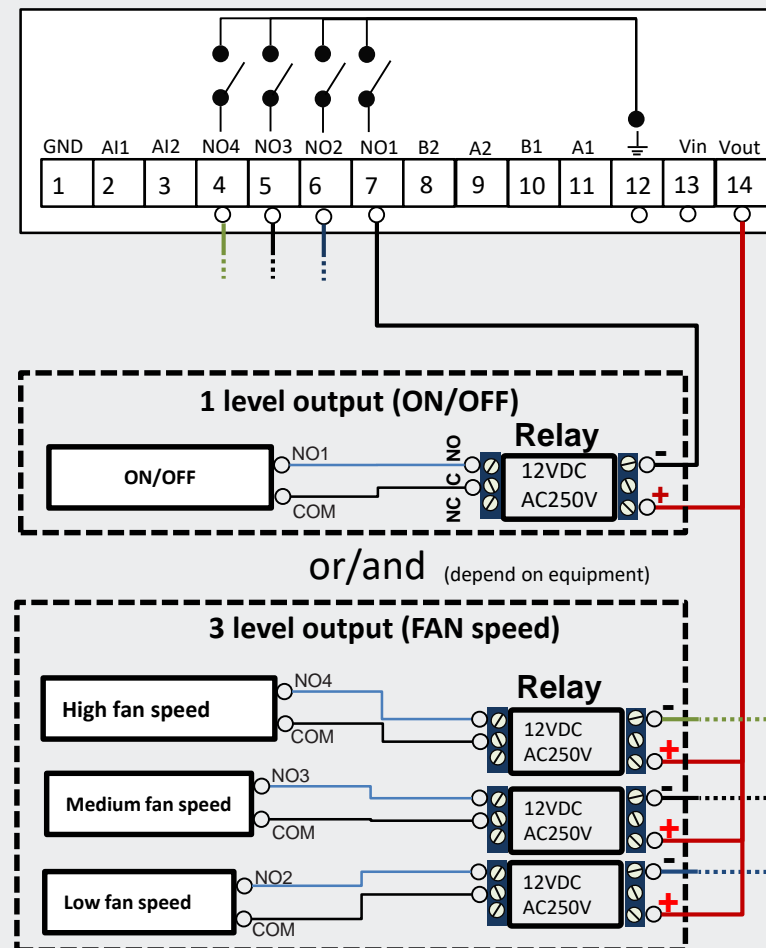
> 【 Note 】
> To connect multiple equipment, you must set different Modbus slave address. Please reference the user manual of **that equipment** to config slave address.

Wiring diagram - DO(digital output)

> 【 Note 】
> • DIP switches pin8 should be turned ON
> • External relay requirement : AC250V resistive, and 12VDC SPDT, 15A

GND	AI1	AI2	NO4	NO3	NO2	NO1	B2	A2	B1	A1		Vin	Vout
1	2	3	4	5	6	7	8	9	10	11		12	13	14

1 level output (ON/OFF)

ON/OFF — NO1 / COM — NC C NO — **Relay** 12VDC AC250V

or/and (depend on equipment)

3 level output (FAN speed)

High fan speed — NO4 / COM — **Relay** 12VDC AC250V — 4

Medium fan speed — NO3 / COM — 12VDC AC250V — 5

Low fan speed — NO2 / COM — 12VDC AC250V — 6

> 【 Note 】 The product supports control of energy recovery ventilation and inline fan. Regarding the compatibility of equipment brands and models, please contact your dealer and local sales for technical evaluation before purchasing. No matter RS485 or digital output, control logic is fixed for smart ventilation control, **PLEASE DON'T TO USE FOR OTHER APPLICATIONS**

Factory reset

· Click this button 3 times within 2 seconds will trigger factory reset. The values below will be restored to default. "MQTT broker setting", "Sensor calibration settings (Temperature/HCHO)", "Software Setting", not include "Modbus baud rate setting"

> 【 Note 】 Not following instructions may result in damage to the product or other items.

Using right connectors and ports

· Do not force the connector into the port. Check the port for foreign objects. If the connectors and ports do not fit easily, it may be because they do not match each other. Make sure that the connector matches the port, and that the connector is aligned to the correct location corresponding to the port.

· Insert the wrong pin may result in damage to the product, it will not be responsible for the product warranty.

Prohibit live line operation

When the installer configures DIP switches and terminal connector, be sure to power off before execution and then power on after.

Cleaning the exterior of UNOnext

To clean the product, unplug the power cord and all wiring.
Wipe with a soft, cotton-free cloth. Avoid moisture at any openings on the device body. Please do not spray liquids directly onto it.

Do not inject contaminants

Do not directly inject contaminants containing gases or particulate matter. Exposure to excessive contaminants can permanently damage the sensor.

> 【 Note 】 Do not insert objects through the vents, which may be dangerous and damaging.

Do not repair this product yourself

The product does not have components that users can repair themselves. Do not attempt to open it. Once the warranty sticker breaks, the warranty is void.

【 APP and website links 】

The product is equipped with wireless technology and can use an APP and website to monitor the air quality status, which can be obtained using the following QR codes. (For the wireless model only). For the technical support , please go to the doc. & resource center to learn about how to use the product that includes how to integrate BACnet、Modbus、MQTT and more detailed information.

iOS APP   Android APP   UNOweb   Doc. & Resources

【 Specification 】

Operating range	$0^{\circ}C$ to $50^{\circ}C$, 10-90 %RH, IP20
Storage temp.	$-20^{\circ}C$ to $70^{\circ}C$
Power requirements	Input 1 : 9-24VDC +/-10% or Input 2 : Power adapter 12V/1A
Power consumption	Max 500mA@12VDC
Ventilation control	RS485 or DO(low active)
Dimensions	14.2 cm(L) x 6.8 cm(W) x 4.2 cm(D)
Weight	208 g
Display	1.3" OLED
Accessories	Wall mount
Language	Chinese, English
Connectivity	RS485, Wi-Fi 2.4G, 802.11 b/g/n, BLE 5.1

【 Sensor specification 】

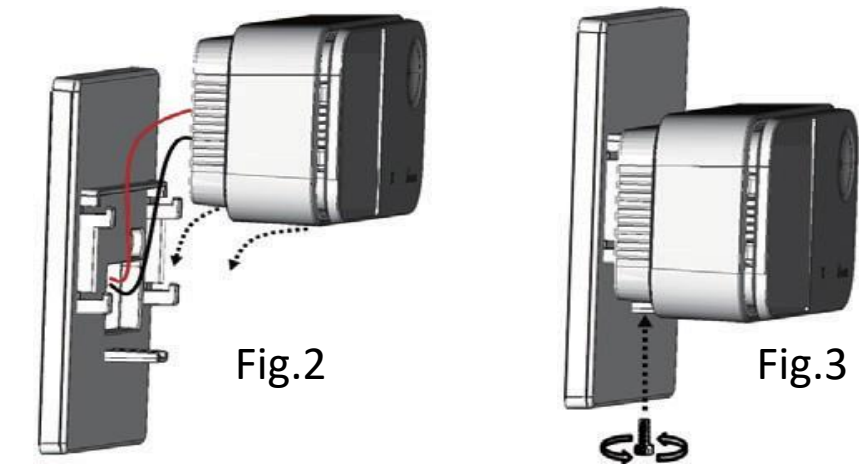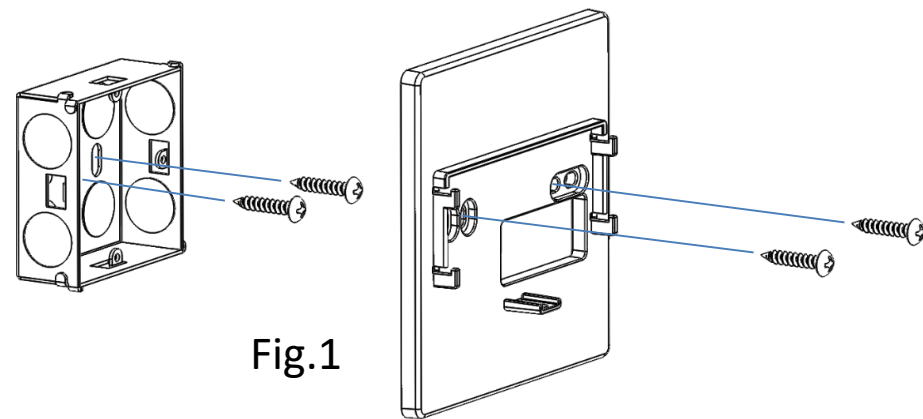| Items	Measurement Range	Accuracy
Temperature	0 - 50 $^{\circ}C$	$\pm 1^{\circ}C$
Humidity	0 - 100 %RH	$\pm 5\%$
CO_2	400 - 10000 ppm	$\pm (30$ ppm $\pm 3\%)$
PM2.5	0 - 1000 ug/m^3	$\pm(5$ μg/m³ +20%) 於 0-100 μg/m³ $\pm10\%$ at 100-1000 μg/m3
PM10	0 - 1000 ug/m^3	$\pm(5$ μg/m³ +20%) 於 0-100 μg/m³ $\pm25\%$ at 100-1000 μg/m3
Luminance	0 - 10000 lux	For background ambient light reference
HCHO	0 - 5000 ppb	$\pm 15\%$
CO	0 - 500 ppm	± 20 ppm or $\pm 5\%$
O_3	0.5 - 10 ppm	0.01 ppm
TVOC	0 - 30000 ppb	$\pm 15\%$ in lab test (Ethanol)

【 Installation steps 】

1. Use the wall mount included in the box to install it on the wall, or install in a power box. The wall mount has screw hole spacing (60mm and 84mm)

2. suitable for power boxes in multiple countries, but the power box must be installed horizontally as shown in Fig.1.

3. Verify that the power supply and data lines are laid out according to specifications before installation.

> 【 Note 】 Power source notice
> This product uses a **9-24V DC power supply**. AC power must be converted to the required power source or use the specified power adapter .

4. As shown in Fig.2, installation the wall mount and verify that all four buckles are installed and fixed.

5. As shown in Fig.3, use a screw driver to fasten the M4 hex socket screws to complete the installation. hexagonal

【 Layout Considerations 】

Indoor use only	Keep away from light heat source	Keep away from fire	Keep away from cooking area	Do not use a direct cleaning agent

> For any Delta's indoor air quality monitors, we recommend an area coverage of **160 m²** with the area of enclosed space calculated individually.
>
> For example:
> · One open space of **160 m²** requires one monitor.
> · Three conference rooms of **80 m²** each requires three monitors, one in each room.
> Space over 160 m² should consider installing multiple monitors throughout the room to achieve optimal coverage. It is also recommended to align the sensor deployment area with the HVAC thermal zoning plan.
>
> Located at least ~5 meters (16 feet) away from operable windows, doors and diffusers.

【 Adapter Requirement 】

11 ± 0.5

$\emptyset 5.50 * \emptyset 2.1$

Fig.1

Fig.2

Fig.3

5m (16 feet)

5m (16 feet) away from diffusers

5m (16 feet) away from operable windows

5m (16 feet) away from doors

0.8-1.5m (~2.6-5 feet) height