



User manual

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1. About the document

1.1. Purpose of the document

The document provides the information needed to perform the following tasks on the Airy device:

- Installation
- Setting up
- Use of the device
- Technical support
- Maintenance

Read this document carefully before use.

The information in this manual is subject to change over time. It's recommended to always have the latest version of the manual available at

https://docs.ithingszone.com/airy/Airy_user_manual_en.pdf

or scan the following QR code.



1.2. Language

The original version of the document is in the Italian language. All other versions are translations of the original document.

1.3. Revisions

VERSION	DATE	DESCRIPTION
1	December 2022	Initial document release

1.4. Used symbols

SYMBOLS	DESCRIPTION
	Dangerous voltage with risk of electrocution.
	General risk.
	Indicates an operation that can only be performed by qualified personnel.
	Indicates information on the completion of a procedure.

1.5. General indications

⚠ DANGER
Indicates a hazard with a high level of risk that, if not considered, will lead to death or serious injury.

⚠ WARNING
Indicates a hazard with a medium level of risk that, if not addressed, could result in death or serious injury.

⚠ ATTENTION
Indicates a hazard with a low level of risk that, if not considered, could lead to minor or moderate injury.

1.6. Abbreviations

ABBREVIATION	DEFINITION
APN	Access Point Name
BLE	Bluetooth Low Energy
DC	Direct Current
HF	High Frequencies
IAQ	Indoor Air Quality
IoT	Internet of Things
LF	Low Frequencies
SSID	Service Set Identifier
VOC	Volatile Organic Compounds



Not all symbols or signal words may be present in this document.

2. Description

2.1. Description of the product

Airy is an IoT multisensor device that allows continuous monitoring of up to twenty parameters¹ in three different categories: air quality, environmental comfort, and electromagnetic pollution.

- Indoor Air Quality (IAQ)
- Particulate Matter (PM1/PM2.5/PM10)
- Carbon monoxide and dioxide (CO/CO₂/CO₂e)
- Volatile Organic Compounds (TVOC/bVOC)
- Temperature
- Relative humidity
- Atmospheric pressure
- Sound level
- Ambient lighting
- WiFi level
- WiFi networks number
- Low frequencies (LF) electrosmog
- High frequencies (HF) electrosmog

The data is acquired at programmable time intervals and sent to a remote platform for data management, analysis, and visualization.

See section 3 for further details on its functionalities.



The Airy device is only intended for the monitoring of an indoor environment.

It is not a laboratory device, so its collected data cannot be used for compliance with current regulations on environmental pollutants.

It does not replace professional measurements or technical expertise.

2.2. Technical specifications

Installation	Indoor only (desktop or wall)
Size	Ø 119 mm, h 54 mm
Weight	350 g
Power supply	5 V DC, max 1 A
Battery	Li-Ion 3.7 V, 5000 mAh
Buttons	1x Mechanical, 1x Touch area
LED	Backlit multicolor logo
EU Declaration of Conformity	CE certification 2014/30/EU (EMC) 2014/35/EU (LVD) 2014/53/EU (RED) 2011/65/EU (RoHS)

¹ The actual sensors equipment depends on the chosen model. Refer to section 2.2.1 for the available device versions.

2.2.1. Connectivity

2.2.1.1. TCP/IP traffic

Airy uses the following protocols and related ports to work properly:

- MQTTS port 8883
- HTTPS ports 443 and 4443
- HTTP port 80
- NTP port 123

If there is a firewall on your Internet network, check that the indicated ports are not blocked. In this case, contact your network administrator to allow traffic on these ports.

Alternatively, create a dedicated network and reconfigure the device accordingly.

2.2.1.2. WiFi

Standard	IEEE 802.11 b/g/n
Frequency	2.4 GHz
Mode	AP and STA
Security	None, WEP, WPA version 1 and 2 (AES-CCMP or TKIP encryption / integrity)
Authentication mode	None, WPA-PSK, WPA-Enterprise
Captive-portal	Not supported
Number of configurable networks	Up to 3 (automatic selection based on RSSI)
IP settings	Dynamic (DHCP) or static (IP address, subnet mask, gateway, DNS)

2.2.1.3. Bluetooth

Standard	BLE 4.2
GATT	Custom service BLESS

2.2.1.4. Factory options

Wireless	NB-IoT, GPRS, LTE-M, LTE-Cat1, LoRaWAN
Wired	RS485, Ethernet 10/100 with PoE

2.2.1.5. Communications options

Protocols	HTTP(S), MQTT(S), WebSocket (Secure), CoAP, UDP, Modbus TCP, Modbus RTU
Security	TLS v1.2, X.509 certificates

2.2.2. Measurement range and resolution

MEASURE	RANGE	RESOLUTION
IAQ	0 ÷ 500	0.1

PM1/PM2.5/PM10	0 ÷ 1000 µg/m ³	1 µg/m ³
CO/CO ₂	0 ÷ 5000 ppm	1 ppm
CO ₂ e	400 ÷ 29206 ppm	1 ppm
TVOC	0 ÷ 32768 ppb	1 ppb
bVOC	0.5 ÷ 1000 ppm	0.01 ppm
Temperature	-40 ÷ 85 °C	0.1 °C
Relative humidity	0 ÷ 100 %	0.1 %
Atmospheric pressure	300 ÷ 1100 mBar	0.1 mBar
Sound level	30 ÷ 120 dBspl	0.1 dBspl
Ambient lighting	0 ÷ 120000 lux	0.1 lux
WiFi level	-100 ÷ -10 dBm	1 dBm
WiFi networks number	0 ÷ 100	1
LF electrosmog	0 ÷ 400 µT	25 nT
HF electrosmog	0 ÷ 10 V/m	0.1 V/m

2.2.3. Operating range

Room temperature	-5 to 45 °C
Humidity	0 to 95 %
Atmospheric pressure	300 to 1100 hPa

2.2.4. Storage conditions

Room temperature	-40 to 70 °C
Humidity	0 to 95 %

2.3. Device versions

MEASURE	Airy	Airy Top
IAQ	✓	✓
PM1/PM2.5/PM10	✓	✓
CO	-	✓
CO ₂	✓	✓
CO ₂ e	✓	✓
TVOC	✓	✓
bVOC	✓	✓

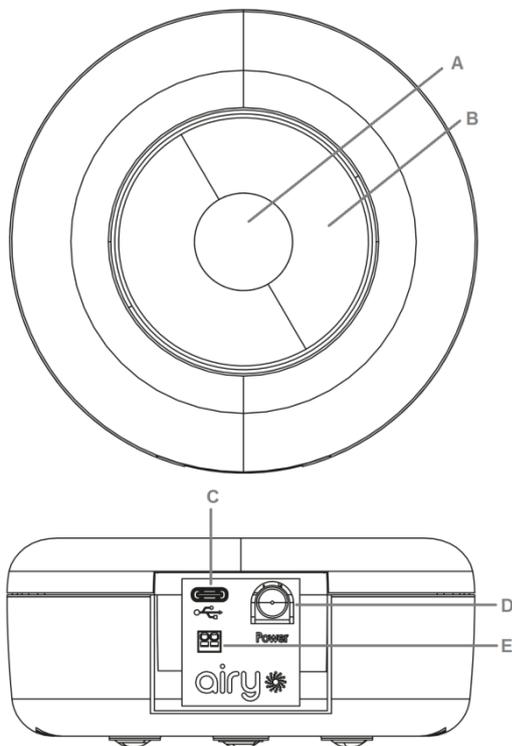
HCHO	-	✓
O ₃	-	✓
Temperature	✓	✓
Relative humidity	✓	✓
Atmospheric pressure	✓	✓
Sound level	✓	✓
Ambient lighting	✓	✓
WiFi level	✓	✓
WiFi networks number	✓	✓
LF electrosmog	-	✓
HF electrosmog	-	✓

Depending on the connectivity chosen, the model name may have an additional suffix that characterizes the device.

The available options are listed below:

- **NB**: models with NB-IoT connection
- **LW**: models with LoRaWAN connection

2.4. Appearance and components



- A. Backlit logo
- B. Touch area
- C. USB port
- D. Power button
- E. RS485 port (optional)

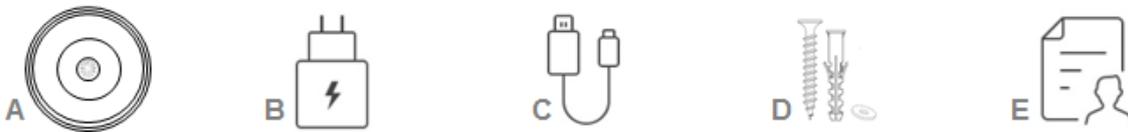
2.4.1. Label

The Airy identification label is located on the rear side of the enclosure. The printed information, illustrated in the sided example label, is listed below:

- Device model
- Serial number
- MAC address
- Manufacturer logo
- CE mark
- WEEE logo
- QR code with product identification data



2.4.2. Material supplied in the packaging



- A. Airy device
- B. Power adapter
- C. USB type-C cable
- D. Wall mount kit
- E. Quick guide

2.5. Power supply

Airy is powered by a built-in Li-Ion D torch battery.

It guarantees the operation of the device for up to 6 months, although the actual battery life depends on the sensors equipment, the acquisition interval, the number of measurements performed, and the quality of the WiFi network and the Internet connection to the application server.

The battery can be charged over USB type C using the provided AC adapter (5 V DC, max 1 A).



Leave the battery charging for at least 8 hours for a complete recharge.

2.6. Buttons

BUTTON	DURATION	EVENT
Power	3 seconds	Power on
	5 seconds	Power off
	8 seconds	Factory reset (see 3.5)
Touch area	-	Battery check
	3 seconds	Force measures (see 3.3.1)

2.7. Light notifications

COLOR	BLINK	DESCRIPTION
	Single	Battery check result: good, low, recharge
	Single	Data transmission or firmware update failure
	Double	Battery level is critical
	Triple	Recharge fault
	Double	Start forced measures
	Single + 1x 	Power on followed by the battery status
	Single	Power off
	Single (fading)	Measures in progress
	Periodic every 2 seconds	Configuration mode
	Periodic every 2 seconds	Firmware update in progress

2.8. Sounds

TYPE	EVENT
Double (200ms @1000Hz + 200ms @800Hz)	Power on
Single (400ms @450Hz)	Power off

3. Functionalities

3.1. Installation

Place Airy on a flat surface or mount it on a wall using the provided kit.

Be sure to follow the security tips in section 5 to install it in an appropriate place.

Once installed, follow the steps described in section 3.2 to configure and make it ready to use.

3.2. First configuration

Airy must be configured with a valid Internet connection to start working.

After the first power-on, the device enters configuration mode. The central logo will blink blue as indicated in section 2.7.



The device stays in configuration mode only for 3 minutes, after which it self-turns off. If it stops blinking blue during the configuration process, please restart it.

Before starting the procedure, make sure you have all the required information to set up the connection:

- **WiFi:** network information can be entered manually or by scanning on the device. It's also possible to set up a hidden network by entering the parameters manually.
- **Mobile:** the SIM is already supplied with the device, so during the configuration phase you will be asked to confirm or enter only the APN. Contact your sales representative for more details on this.

This procedure must be performed from a device with WiFi connectivity (smartphone, tablet, or computer).

Please follow the steps outlined below in order to complete this procedure.

1. Connect your device to the open network called *AIRY_xx_xx_xx*².
2. From any web browser, navigate to the address <http://192.168.223.1>
3. Login using username **airy** and as password the last 6 digits of the serial number shown on the label³.
4. Start the procedure by following the steps described in the configuration wizard.



Depending on the version of your device, some steps may not be present. In this case, ignore the related instruction and proceed to the next step.

² The x are the last MAC address characters printed on airy label.

³ E.g.: for a device with serial number 22/001-000006 the password is 000006.

- 4.1. Select the time interval at which to perform a new set of measurements (default is 5 minutes when powered via USB or 15 minutes in battery mode).

- 4.2. Configure a valid Internet connection, depending on the chosen connectivity.

- 4.3. Optionally, you can configure advanced settings (e.g. DHCP or static IP for WiFi connectivity).

- 4.4. Click 'Save' to confirm the settings. The device will exit configuration mode and stop blinking blue.

3.3. Measurements

Once configured, Airy periodically performs a new set of measurements according to the configured time interval.

Data is sent, appropriately coded, to a remote server through an SSL secure connection. The transmission can be done after each set of measurements, or after a configurable number of acquisitions that are temporarily stored.

In case of a lack of connectivity, data is locally stored until it is successfully transmitted.

3.3.1. On-demand

It is also possible to force the execution of a new set of measurements.

To do this, the touch area must be touched for at least 3 seconds. A double white blinking confirms the request, followed by the immediate transmission of acquired data.

3.4. Firmware update

Airy has an automatic firmware update procedure to keep the device updated to the latest version.

When a new firmware is available, Airy will automatically start the download and the installation of it. During this procedure, the corresponding light notification will be emitted as indicated in section 2.7.

At the end of the installation, Airy will restart itself and run the new firmware.

If the download or the installation of the new firmware is unsuccessful (e.g. network problems or invalid file), the current firmware will be kept running and the device will repeat the update attempt at the next measurement interval.

3.5. Factory reset

To delete the configured user parameters, it is necessary to perform a factory reset through the following procedure:

- Make sure the device is properly switched off
- Power on the device by pressing the power button for at least 3 seconds (or until the first acoustic power-on signal)
- Keep the power button pressed for a further 5 seconds (or until the second acoustic power-on signal).
- Airy will enter configuration mode, with the logo blinking blue, and it will be ready to be configured again.

4. Technical support

4.1. Troubleshooting

This section lists the most common problems you may encounter.

If you cannot find a solution to a problem, please contact your sales representative.

PROBLEM	POSSIBLE SOLUTION
Cannot set Airy in configuration mode	<ul style="list-style-type: none"> Restart the device and check if the logo blinks blue. If not, perform a factory reset (3.5).
Cannot complete the first configuration	<ul style="list-style-type: none"> The device stays in configuration mode only for 3 minutes, after which it self-turns off. If it stops blinking blue during the configuration process, please restart it.
Airy has never transmitted any data	<ul style="list-style-type: none"> Weak WiFi signal: move Airy closer to your access point. Invalid connection parameters. Please perform a factory reset (3.5) and configure again the device (2.8). Airy is connected to a WiFi network with a captive portal (not supported). A firewall blocks the communication (2.2.1.1).
Some measured values do not seem reliable	<ul style="list-style-type: none"> Some integrated sensors need 24 hours for stabilization. It is advisable to leave the device active in the same place for 24 hours. In case of persistent anomalous values, please contact support.

5. Security and maintenance

⚠ DANGER



Avoid exposing the product to direct sunlight, heat, flames, or water. The lack of this precaution could result in malfunction or fire.

⚠ DANGER



Airy must not be installed

- in outdoor environments
- near liquids or heat sources
- in very dusty environments
- on unstable work surfaces

⚠ DANGER



Only use the included AC adapter to charge the device. Carry out a full visual inspection of the USB power adapter, power cable, and plug. Damaged power adapters, cables, or plug connectors must be replaced immediately.

⚠ DANGER



Don't attempt to replace the internal battery yourself. Improper replacement or repair could damage the battery, cause overheating, or result in injury.

⚠ WARNING



Airy operates in indoor environments with temperatures between -5 and +45 °C, and a relative humidity level between 0% and 95%. The device must be positioned at least 1 meter away from electromagnetic sources, doors, windows, and air vents.

5.1. Cleaning

Unplug the power cable before starting cleaning.
Use only dry cloth to clean the product.

⚠ DANGER



Do not use solvents or strong detergents on the surface to avoid electric shock and damage.

5.2. Disposal

Follow local regulations about the disposal and recycling of electrical components, plastics, and packaging materials to limit environmental pollution.