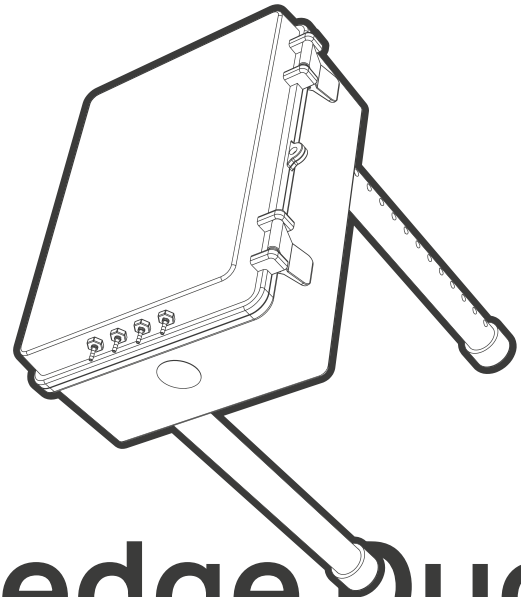
kaiterra



Sensedge Duct

with Filter Efficiency (Wireless)

1. Important Safeguards

Please read the safety warnings before use and take the necessary precautions to reduce the risk of fire, electric shock, or injury. The Kaiterra limited warranty applies only if the unit is used according to these instructions. Kaiterra will not be liable for any damages, injuries, or losses resulting from use of the product that does not comply with these instructions or the safety warnings provided.

Warning ⚠

- To reduce safety risks, always use service personnel from the manufacturer or service provider, or other qualified personnel for installation and maintenance.
- Make sure the power is OFF during installation or maintenance.
- ONLY use 3.6V ER14505 Li-SOCl2 batteries.
- DO NOT tamper with or use non-official spare parts for repair or maintenance.
- DO NOT use the device in environments with high humidity or possible direct exposure to water.
- DO NOT use the device near heat sources such as radiators, furnaces, ovens, or stoves.

What's Included

Parts and Tools You Will Need for Installation

Parts (Included in the Packaging)

In-duct kit

Sensedge Go

Sensedge Go sensor module x 1 (in the device)

In-duct kit drill template

Velocity Pitot drill template

Differential pressure Pitot drill template

Large seal plug x 3

Cable grommet

DP tube rubber seal x 2

Large washer x 4

Small washer x 4

Steel washer x 4

Mounting brackets x 4

Velocity sensor pitot tube

Differential pressure sensor pitot tube

Tube clip x 4

Velocity pitot tube flange x 1

4*8mm plastic tubing

Tapping screws (M4 x 10mm) X 4

Tapping screws (M4 x 20mm) X 8

Tapping screws
(M8 x 40mm) x 4

Tools (Not included in the Packaging)

Phillips-head

Power drill

17mm (11/16")
Carbide-tipped hole saw

35 mm (1-3/8")
Carbide-tipped hole saw

3.2mm (1/8") Drill bit

7mm (9/32") Drill bit

10mm (13/32") Drill bit

Gateway

This product requires a Kaiterra Gateway for operation, which is not included.
Please ensure you have one available prior to initiating the installation process.

2. Pre-installation Review

Before You Begin

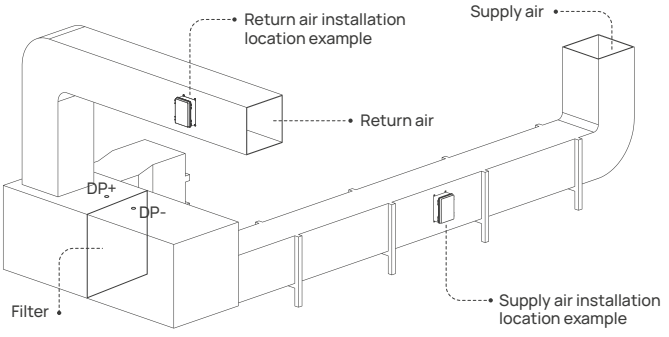
Ensure you have the following before starting the device installation:

- **Kaiterra Data Platform Account:** If you don't have an account or need help, please contact your Customer Success Manager at Kaiterra, or email us at support@kaiterra.com.
- **Kaiterra Configuration App:** A smartphone with the latest version of the app installed. Search for **"Kaiterra"** in the Apple App Store or Google Play Store to download.
- Review all proposed device locations with your **Customer Success Manager** to confirm that all installation locations are project-suitable.
- Devices are to be installed directly onto a **supply** or **return air duct**.

Optimal Device Installation Location

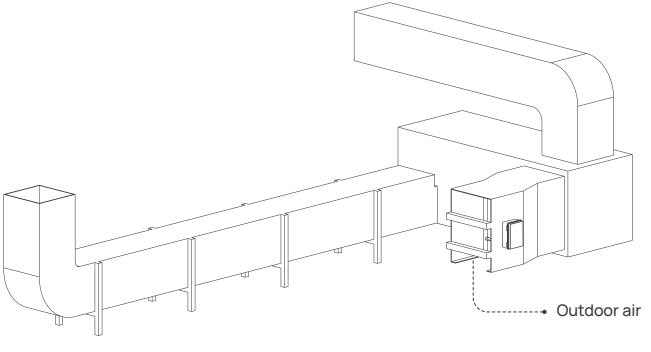
For measuring air quality in the supply or return duct:

- For supply air measurement, install the **Sensedge Duct in the supply duct** downstream of filtration and mixing.
- For return air measurement, when a dedicated return duct is available, install the **Sensedge Duct in the return duct**. When the system uses an unducted return, install an indoor air quality monitor such as a **Sensedge Go** on a wall within the return air zone. A Sensedge Duct is not required.



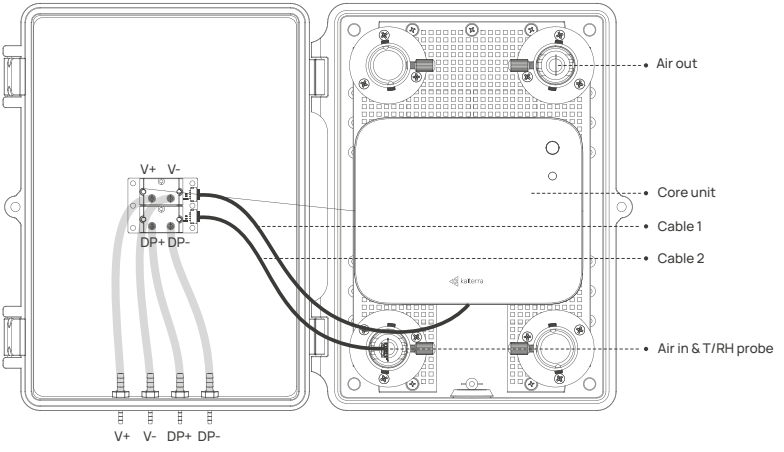
For measuring air quality in the outdoor air intake:

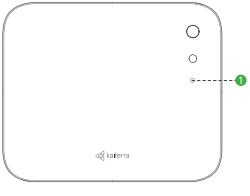
- For outdoor air intake measurement, install a **Sensedge Duct in the outdoor air intake duct** where only outdoor air is present, typically between the weather louver and the mixing box, downstream of the louver and upstream of any mixing with return air.

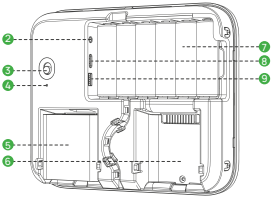


3. Know Your Device

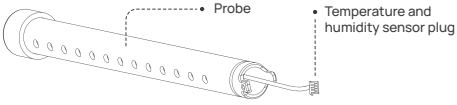
The core unit draws air in from the lower side and releases it from the upper side. It is essential to keep both sides unobstructed, as any disruption to the airflow can impact the device's readings and accuracy.





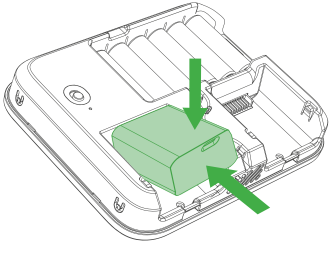


1. LED
2. External antenna port
3. ON/OFF switch
4. RESET button
5. Module bays
6. Module bays
7. Batteries
8. USB-C 5V/0.5A
9. External sensor connection point

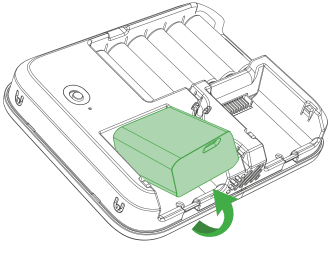


4. Sensor Modules

Sensors may be inserted in either sensor bay, and in any order. They may be swapped both when the core unit is powered on and operational, and when the device is turned off. To insert a sensor module, align it head-first with the bay, press it in, and ensure it clicks into place securely. To remove a sensor module, lift the module from the bottom up.



Insert



Remove

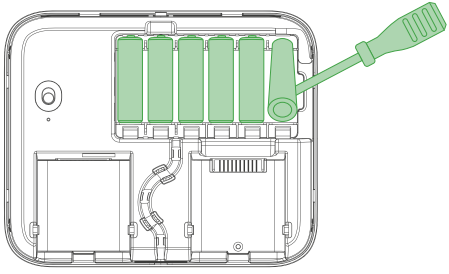
5. Power Options

The Sensedge Duct provides 2 power options:

3.6 V AA Li-SOCl2 batteries

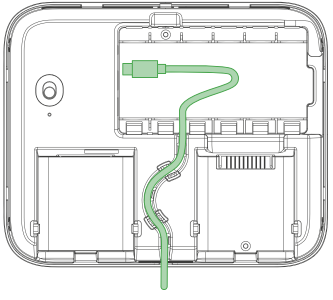
The Sensedge Duct is designed to operate with 1 to 6 batteries, allowing flexibility in power configurations. Always use 3.6V ER14505 Li-SOCl2 batteries for optimal performance. Do not use rechargeable batteries, as they may damage the device.

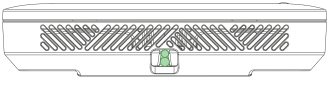
To remove the batteries, use a flat-head screwdriver to gently push the far-right battery out of its compartment. When installing new batteries, ensure proper placement: insert each battery with the positive terminal (+) aligned with the top contact and the negative terminal (-) aligned with the bottom contact, following the orientation guide inside the compartment.



USB-C (USB-C power cable not included)

The Sensedge Duct can be powered via a 5V/0.5A USB-C connection, with the port located on the left side of the core unit's battery bay. This offers a convenient alternative to battery operation. For optimal performance, ensure the power source meets the specified 5V/0.5A output.





The bottom exit

6. Control and Status

Core Unit Status Light Indicators

Core Unit State	LED Behaviour
Booting up	Solid blue for 4 seconds
Waiting for configuration	Pulse orange every 1 second
Searching for / connecting to gateway	Pulse orange every 3 seconds
Connected to gateway	Solid blue for 4 seconds
Factory-reset countdown	Blink blue for the final 10 seconds of the countdown
Factory-reset confirmed	Fast blink blue

Powering On

Move the ON/OFF switch up to turn on the core unit. After several seconds, the STATUS light will illuminate blue to confirm the core unit has powered on.

How to Factory Reset the Core Unit

To clear all settings and return the core unit to its factory state:

1. Turn on the core unit and wait for it to fully boot up (the blue LED will turn off).
2. Locate the RESET pinhole on the back of the core unit, below the power switch.
3. Insert a pin or paperclip into the pinhole and press and hold the RESET button for approximately 10 seconds.
4. Release when the LED begins blinking rapidly in blue. This confirms the core unit has been successfully reset to factory settings.

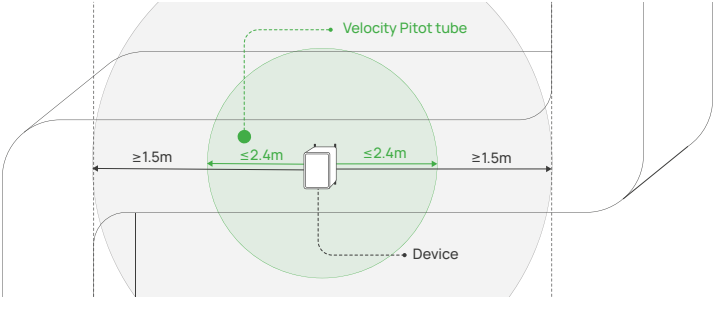
7. Installation Steps

❶ Set up a gateway

a. Attach the gateway antenna.
b. Connect gateway to Ethernet, unless this installation will be using the included SIM card (fees apply).
c. Connect gateway to power.
d. Wait for at least 4 mins. Removing power before the gateway is fully booted up can lead to errors or failure.

❷ Select the installation point

a. Choose a straight, vertical section of the duct to mount the Sensedge Duct. Ensure at least 1.5 meters (5 feet) of straight, unobstructed ductwork upstream of the sensor for accurate airflow measurement.
b. Choose a location for the velocity Pitot tube within 2.4 meters (8 feet) of the main unit, ensuring it will not obstruct airflow to the device.



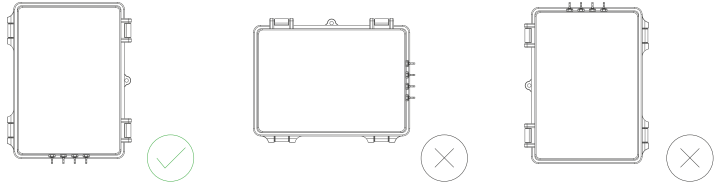
c. Identify the upstream (DP+) and downstream (DP-) sides of the AHU filter for the differential pressure Pitot tubes.

❸ Identify the airflow direction

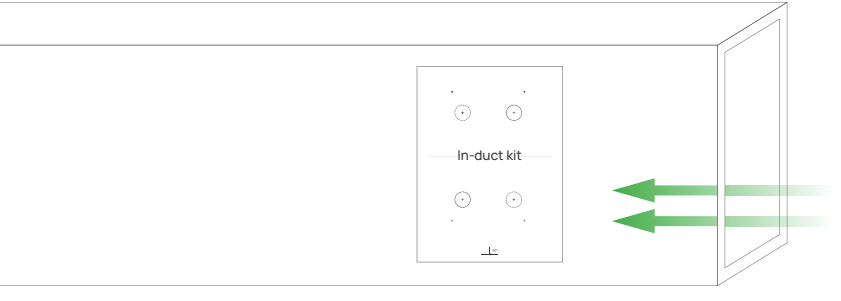
ⓘ Important! Air should only enter the kit through one of the lower ports and exit through the opposite upper port.

❹ Install the Sensedge Duct

a. The Sensedge Duct must be installed vertically.

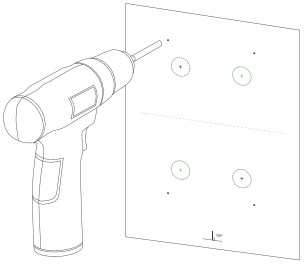


b. Choose the correct template sticker for your specific main unit model. Identify the correct holes to drill on the template sticker according to your installation setup. Select either Group A or Group B only.
c. Position the template sticker on the duct, making sure it is level and aligned perpendicular to the airflow direction.



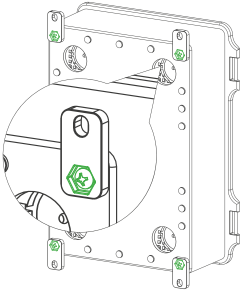
5 Drill holes

a. Use the drill bit sizes indicated on the template to create the required openings.
b. Drill only the holes identified earlier.



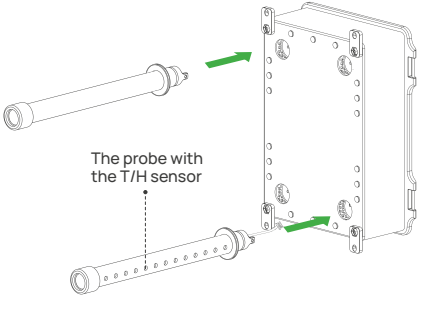
6 Assemble the duct kit

a. Secure the mounting brackets to the rear of the in-duct housing using the 10mm tapping screws.

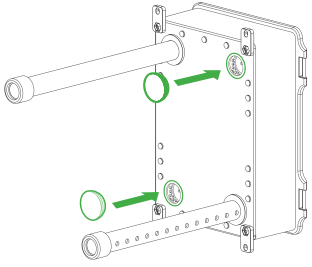


b. Install one or two O-rings on each probe as needed to ensure an airtight seal.

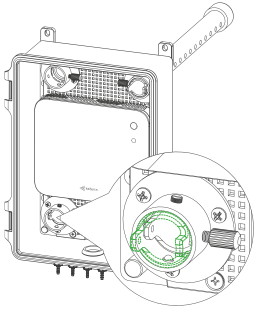
c. Insert the probe with the T/H sensor into the air-in port, and the other probe into the air-out port.



d. Cover the remaining two holes using the stoppers.



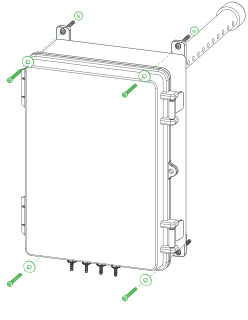
e. Push the probes from the back of the kit until you hear a click, confirming they are securely seated at the correct depth.



❼ Secure the assembled Sensedge Duct to the ductwork

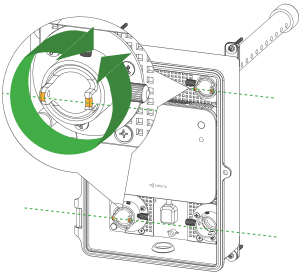
a. Mount the Sensedge Duct to the ductwork with tapping screws, placing a steel washer under the screw head and a small washer between the bracket and duct wall.

b. Make sure the small washer forms a complete seal, covering any gaps between the Sensedge Duct and the ductwork.

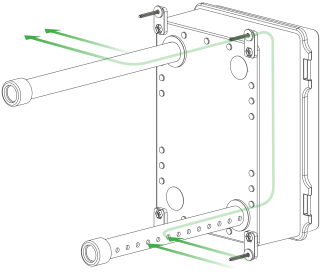


8 Securing the probes

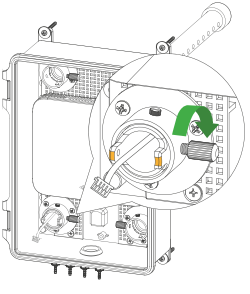
a. Adjust the angle of the probe by rotating it. Use the orange markings at the end of the probe to confirm correct alignment.
Note: The end of the finger grip with the small hole indicates where the sensing holes are located inside the duct.



b. Ensure the holes on the lower air-in probe are aligned parallel to and facing directly into the airflow. Position the holes on the air-out probe so they face away from the airflow and remain parallel to the airflow direction.



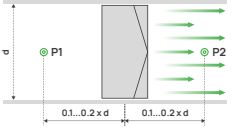
c. Tighten the knob on the side to lock the probes in position. Tighten just enough to prevent movement, but avoid over-tightening, as excessive force may deform the probes.



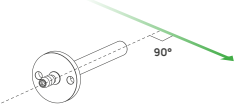
9 Install the Pitot tube

a. Apply the DP Pitot drill template to the upstream (DP+) and downstream (DP-) sides of the filter housing.

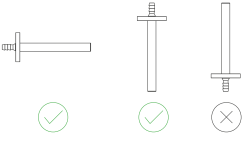
b. Spacing: Ensure symmetrical placement at a distance of 0.1d to 0.2d (where d = duct diameter) from the filter.



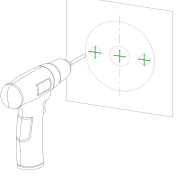
c. Align the air inlet arrow perpendicular (90°) to the airflow.



d. Point all pneumatic interfaces directly downward to prevent moisture buildup and sensor damage.



e. Drill the holes using the right sized drill bit as indicated on the template.



f. Place one DP tube rubber seal between each probe and the duct to ensure a tight seal.

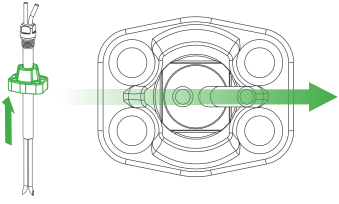
g. Mount the Pitot tubes using M4 tapping screws.

⑩ Velocity Pitot tube installation

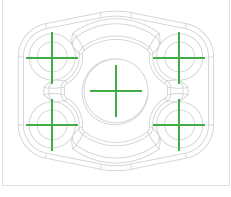
a. Identify a straight section of ducting. Ensure the site is at least ≥6d downstream from obstructions and ≥3d upstream from bends or outlets.

b. Do not install near elbows, valves, branch junctions, fans, filters, or tapered reducers.

c. Screw the Pitot tube into the flange. Align the tube with the flange as shown in the picture. It is ok if the Pitot tube is not tightly screwed down, just make sure it is tight enough so that no air is leaking out.



d. Apply the Velocity Pitot drill template to the chosen location for the velocity Pitot tube. Drill the holes using the right sized drill bit as indicated on the template. Clean the surface of all debris and metal burrs.

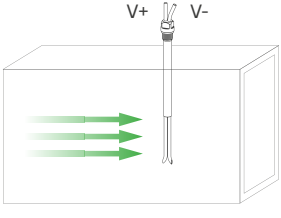


e. Mount the Pitot tube using M8 tapping screws.

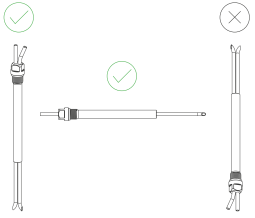
f. Note that the Inlet interface is the straight pipe and the Outlet interface is the curved pipe.

g. Insert the Pitot tube so its axis is perpendicular to the duct axis.

h. The inlet must face the incoming airflow directly, with an angular deviation of less than 10°.



i. Ensure the tubing connectors are oriented directly downward to prevent moisture accumulation.



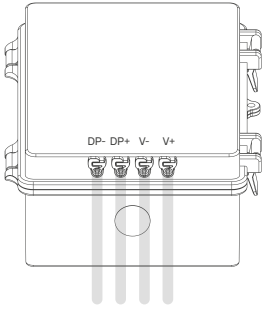
⓫ Attach pneumatic tubing

a. Identify the labels on the in-duct kit and Pitot tubes: DP-, DP+, V-, and V+.

b. Measure the respective routing paths for the pneumatic tubing between the main unit, the DP, and the velocity Pitot tube.

c. Cut the tubes to length.

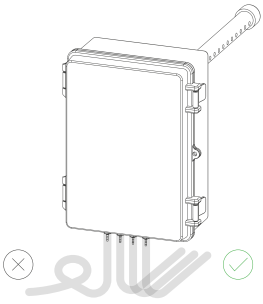
d. Ensure all cuts are straight and square (90°). Avoid cutting at an angle, as this can cause air leaks at the connection ports.



e. Leave a small amount of extra tubing at each end to prevent tension on the sensors.

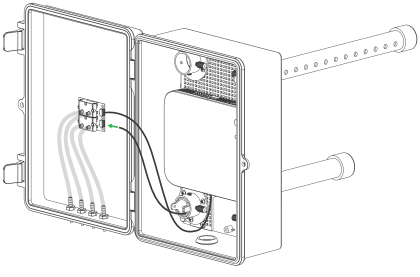
⑫ Tubing and Routing Requirements

a. Pneumatic hoses must be routed without loops or entanglement.
b. Avoid sharp angles or "kinks" that could restrict airflow.
c. Ensure hoses are not pinched, crushed, or subjected to external compression.

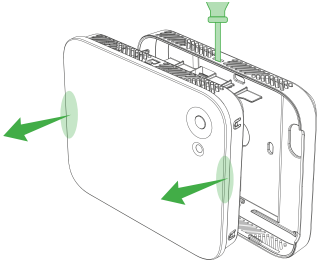


⑬ Connect the external T/H sensor

a. Plug the T/H sensor cable into the port.



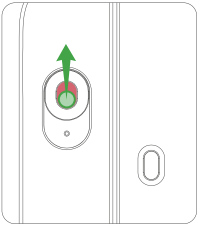
b. Remove the back cover, insert a flat-head screwdriver (5mm or 3/16 inch) or pin into the slit at the top of the device. Apply gentle pressure to release the device slightly, then pull it forward to detach it from the cover.



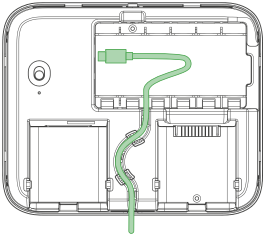
⓮ Power on device

Option A: Pre-installed batteries

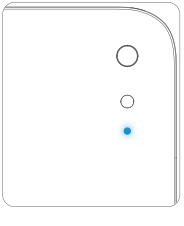
Turn on the core unit by sliding the ON/OFF switch on the back of the device upwards (batteries are pre-installed in the unit by default).

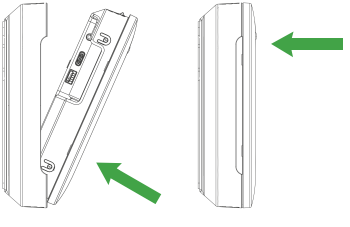


Option B: USB-C cable

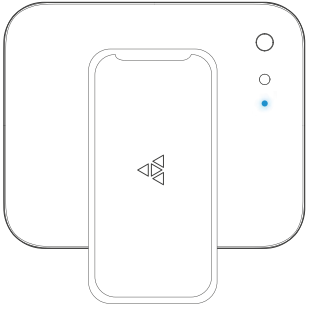


a. Route the USB-C cable through the port opening at the bottom of the box and connect it to the USB-C port. Ensure the cable is securely fitted into the designated cable slot to prevent strain or disconnection.
b. Turn on the device.
c. Check the front panel to confirm the power connection; the status LED will illuminate blue for a few seconds, followed by blinking orange.
d. Put the device back into the back cover. First place the bottom of the device into the cover. Then, press the top of the device into place until you hear a click, indicating it is securely fastened.





e. Log in to the Kaiterra app on a mobile device.
f. Follow the instructions in the mobile app to set up your device.
g. Log into the Kaiterra Data Platform to see your IAQ data!



⓯ Complete setup

Close the front cover and secure it using the two snap locks on the sides.

8. Troubleshooting

For installation, configuration, and technical troubleshooting inquiries, contact your Customer Success Manager or directly email our support channel at support@kaiterra.com.