

QYO BT+ RESPIRATOR

USER MANUAL



The World's First Modular Breathing Training and Measurement Device

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Introduction

Congratulations on purchasing AYO BT+, the world's first modular measurement respirator for breathing training - a major innovation in breathing training for asthmatics, sports and general health.

AYO BT+ is an upgrade from AYO BT with added breathing measurement capability, which gives you the following additional benefits:

- An effective inhaler-free asthma preventer.
- A great tool for exercise-induced asthma management.
- Great assistance in practicing Buteyko Reduced Breathing.
- Alleviate Sleep Apnea, insomnia, and anxiety disorders.
- Breathing health and well-being measurement.
- Complement heart rate with key breathing data for a more complete vital sign of your health.
- Measure key breathing data during physical exercises.
- Measure breathing effort, improve breathing efficiency and sports performance.
- Export breathing data to share with instructors or clinicians remotely.
- Add breathing data in Apple Health App for tracking your overall health.

Warning!

The AYO BT+ is manufactured in a safe and clean environment. However, it is not provided with a bio-safe guarantee, especially during its transportation from the factory to you. We recommend that you clean the AYO BT+ following the cleaning instruction provided in this document before use.

To avoid adverse health effects, users must not use AYO BT+ respirators in the following situations:

- Do NOT use AYO BT+ if you are not in good general health
- Do NOT use AYO BT+ when you are not fully alert, or not feeling well.
- Do NOT use AYO BT+ when you have known illnesses, in particular, heart disease, high blood pressure, diabetes, kidney disease, blood clots, and acute gastrointestinal disease.
- Do NOT use AYO BT+ when you are pregnant.
- Do NOT use AYO BT+ if you have a recent open cut or bleeding.
- Do NOT use AYO BT+ if you have transplanted organs.
- Do NOT use AYO BT+ without consulting your doctor if you are taking any prescription drugs
- Do NOT use AYO BT+ without the prior consent of your doctor, if you have severe asthma or COPD,
- Do NOT use AYO BT+ for a long period with severe air hunger.
- Do NOT use AYO BT+ for exercises or in weather conditions that cause unbearable breath and heart rate.
- Do NOT use AYO BT+ for more than an hour without consulting with your doctor.

Important!

Before use, the wearer must read and understand all the warnings and instructions.
Keep this User Instruction for reference. Use only as directed.

PART 1 AYO BT

■ Introduction of AYO BT

AYO BT – the world’s first modular diaphragmatic breathing training respirator. Designed with patented innovation and built with state-of-the-art technology, it is an essential tool to train and optimize diaphragmatic breathing through the nose. When used correctly, the AYO BT will benefit you in many ways, including:

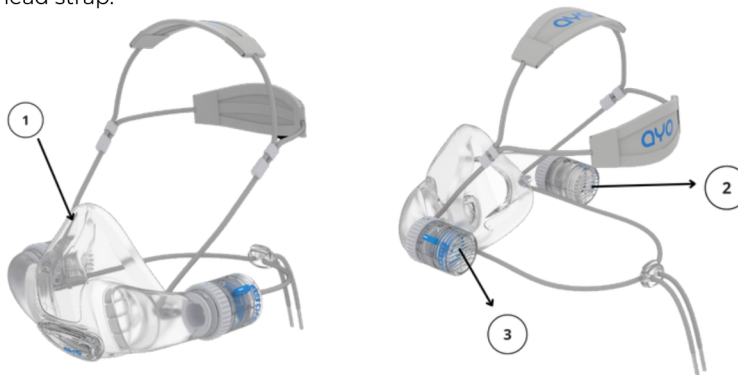
- Train diaphragmatic breathing through the nose – Activate your diaphragm naturally.
- Prevent exercise-induced Asthma – Condition air intake and breath.
- Limit hyperventilation – Normalize breathing.
- Easier adaptation to higher CO₂ and lower O₂ – Reduce breathlessness.
- Improve breathing efficiency and Boost VO₂Max.
- Condition, strengthen and optimize Breathing.

■ Know Your AYO BT

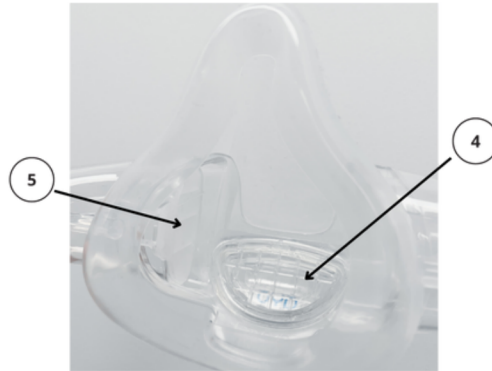
The AYO BT is designed to perform breathing training by reducing air intake whilst being worn.

Detachable breathing training inlet module (BTi) (3) and breathing training outlet module (BTo) (2) are fitted to an AYO MA mask assembly (1) which is attached to the face with an adjustable head strap.

AYO BT Components



The AYO MA Mask Assembly is comprised of a silicone mask, a bridge assembly, and a removable head strap. The bridge assembly consists of a speech diaphragm (4) to facilitate speech and an inlet non-return valve (5) to direct airflow during use.



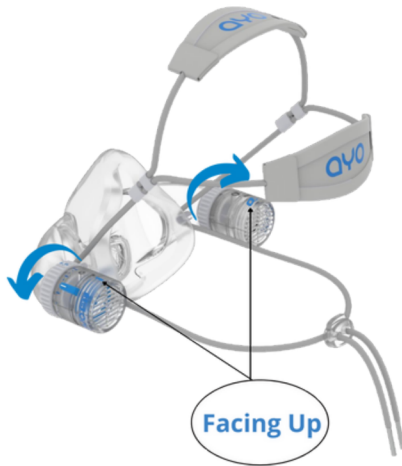
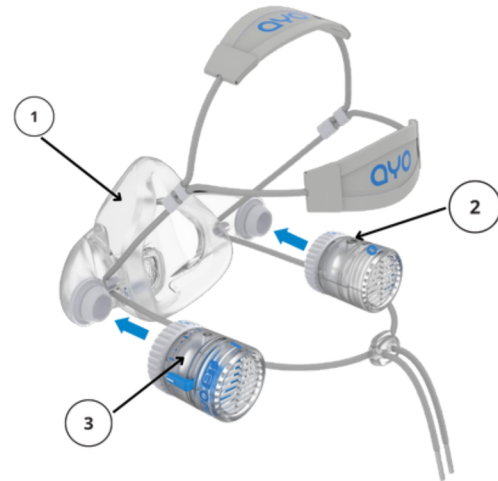
Adjustment of the head strap tension combined with a proper silicone mask selection (Small, Medium and Large cushion size) will ensure good comfort and air seal.

How To Use

1. Connection

For the default configuration, connect the BTi (3) to the left side of the AYO MA (1), and the BTo (2) to the right side of the AYO MA (1) by pushing the Push-Fit Plugs on the mask to the socket of BTi/BTo until a 'Click' sound is heard and the AYO MA is reliably connected with the modules.

(For more optional configurations, please refer to 'possible AYO BT configurations')



2. Adjustments before using

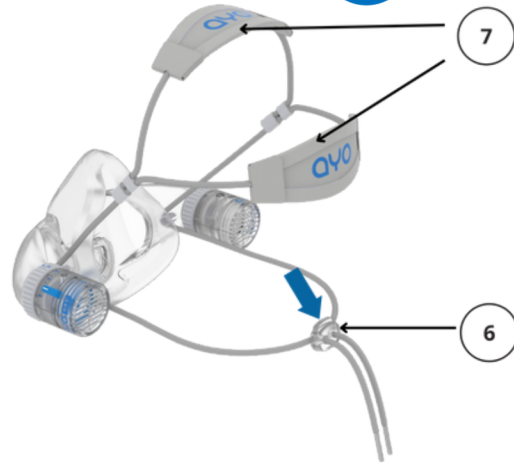
Adjust or rotate each module to the desired orientation relative to the AYO MA: adjust the BT modules with the 'i' and 'O' symbols facing up.



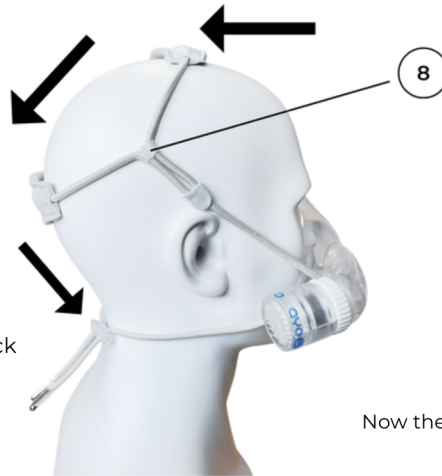
Adjust the air inlet handle on BTi to suit the intensity of exercise & your fitness level.

3. Donning

- Press the strap lock button (6) to adjust strap length/tension and establish a roughly suitable strap length.
- Place the strap on the back of the neck and place the mask on the face.
- Slide two head pads (7) to the top and the back of the head in the position shown.
- Adjust strap tension for comfort and seal using the strap lock button (6).
- Adjust the position of the head pads by sliding the adjusting sleeve (8) so that the head pads are in the stable positions on the head as shown in the figure below.



Step 2 – Slide two pads and place them onto the top and the back of the head



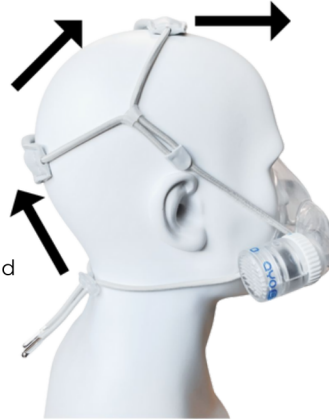
Step 1 – Locate the strap on the back of the neck

Now the AYO BT is ready to use!

4. Doffing

- Pull the two pads off the head and take the back strap off from the neck. (Note: You may keep the strap lock button position unchanged for the next use to avoid adjustment every time.)
- Remove the mask from the head.

Step 1 - Remove the head pads in the direction shown

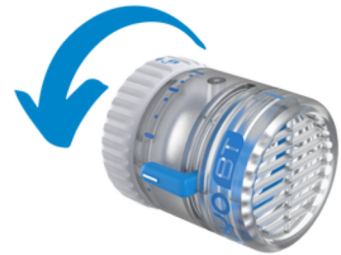


Step 2 - Remove the strap from the head

5. Disconnection

To disconnect the BTi/BTo from the mask, simply turn the grip on the BTi/BTo while holding the module case to release the BTi/BTo module.

Step 3 - Turn the grip while holding the module case to release the module.



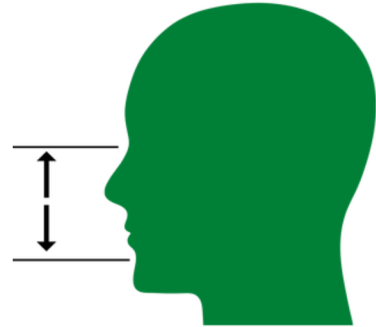
How To Select the Mask Size

In most cases, mask size can be selected based on the length from the top of the nose bridge to the dent between the lower lip and the chin – the Z dimension:

- Small Size: from 68 mm to 80 mm
- Medium Size: from 80 mm to 100 mm
- Large Size: from 100 mm to 113 mm

To ensure a good fit, double-check with the actual mask to see:

- If it fits your face snugly.
- If the mask cushion sits on top of your nose bridge and around the midpoint between the bottom lip and the chin.







Side view



Front view

Recommended mask fitting

Possible AYO BT configurations

	CONFIGURATION	TRAINING TARGET
INSPIRATORY TRAINING		<ul style="list-style-type: none"> • Train diaphragmatic breathing • Limit hyperventilation • Train inspiratory muscle (Independent control)
EXPIRATORY TRAINING		<ul style="list-style-type: none"> • Train diaphragmatic breathing • Limit hyperventilation • Train expiratory muscle (Independent control)
INSPIRATORY + EXPIRATORY TRAINING		<ul style="list-style-type: none"> • Train diaphragmatic breathing • Limit hyperventilation • Train inspiratory muscle (Non-independent control) • Train expiratory muscle (Non-independent control)
INSPIRATORY* + EXPIRATORY TRAINING		<ul style="list-style-type: none"> • Train diaphragmatic breathing • Limit hyperventilation • Train inspiratory muscle (Semi-independent control) • Train expiratory muscle (Independent control)

■ BTi settings and Their Comparison to a Typical Size of Adult Nostril

The AYO BT allows users to reduce air intake by adjusting the BTi air inlet handle. The table below shows these settings in comparison with the size of a typical adult nostril.

Eg: When the BTi air inlet handle is adjusted to Setting 4, the opening area of BTi is similar to that of a single nostril.

Setting	0	1	2	3	4	5	6	7	8	9	10	11
Equivalent Nostrils	1/6	1/3	1/2	2/3	1	1+1/3	1+1/2	2	2+1/2	3	3+1/2	4

■ Maintenance

Daily cleaning:

- a) After each use, apply tap water plus a few drops of suitable detergent such as mild dishwashing liquid or laundry liquid to firstly handwash inside the mask, including the silicone mask, hard bridge insert and inlet membrane, and the cushion section that comes in contact with your face.
- b) Flush wash the whole AYO BT inside and outside.

Thorough cleaning

For daily use of AYO BT, it is advised to conduct a thorough cleaning each month.

- a) Detach the BTi and BTo from the AYO MA, then take off the head strap from the mask by pressing the strap lock button and pulling the head strap out of the lock button. After that, partially peel off the silicone mask gently from the bridge assembly while keeping the front cover fixed.
- b) Soak all parts in soapy water or suitable detergents such as mild dishwashing liquid or laundry liquid for 10 minutes.
- c) Thoroughly clean the inside of the mask, especially the area that you cannot get access to during daily cleaning and flush wash the whole AYO BT inside and outside.
- d) Drain and swing off water from each part of the AYO BT. Air dry or use a clean and dry cloth to rub dry each part of the AYO BT.
- e) Leave the AYO BT in an open space to dry further.
- f) Carefully fit the Bridge Assembly back to each receiving end of the mask, and make sure each end of the Bridge Assembly fits properly within the corresponding locating rims inside the mask.

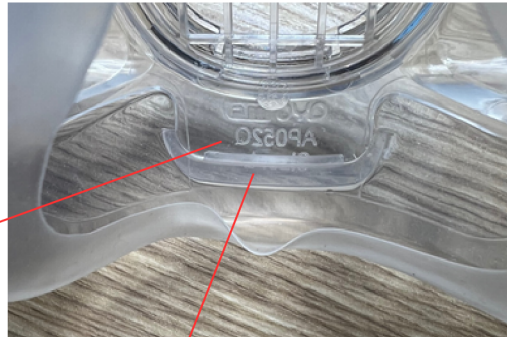


Make sure the edge of Bridge Assembly aligns with the locating rims inside the mask.



g) Finally, make sure the edge of the bottom tab of the Bridge Assembly is fitted in the latching groove at the bottom of the mask.

Bottom tab of the Bridge Assembly



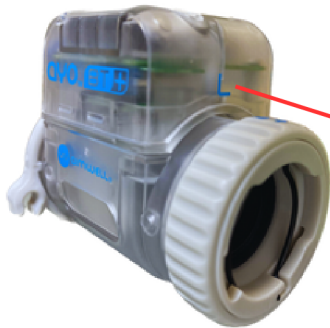
Latching groove at the bottom of the mask

PART 2 BT+ MODULES AND APP

■ Know Your AYO BT+ modules

AYO BT+ is the product series including three models: Boost, Essential and Lite.

AYO BT+ is composed of an AYO BT fitted with one or two BT+ measurement modules:



The BT+ L module



The BT+ E module

BT+L and BT+E are identical in appearance but BT+E has a unique function which is to allow you to measure your Power of Breath (PoB) and Work of Breath (WoB) so that you can evaluate your breath effort or breath efficiency.




Boost is an AYO BT fitted with BT+L and BT+ E.

Essential is an AYO BT fitted with BT+ E.

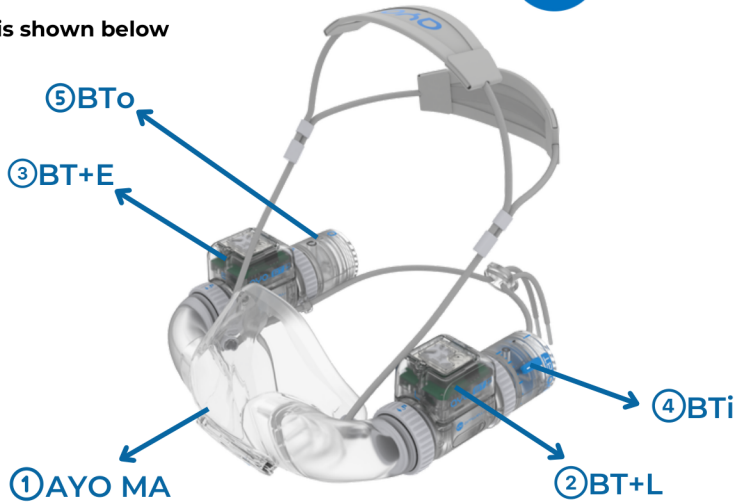
Lite is an AYO BT fitted with BT+L.

User configurations

BT+ modules are detachable from the mask via the Aimwell patented Push-fit & Twist-release coupling (For more information of the modules' connection, please refer to 'How to connect and adjust the AYO BT+ boost system'). AYO BT+ has several common configurations shown in the following table.

Model	Configuration	Features
BOOST		<ul style="list-style-type: none"> • Full measurement data in both inspiratory and expiratory direction • Breath-hold test • Spirometry test • Inspiratory resistance breathing training
ESSENTIAL OR LITE		<ul style="list-style-type: none"> • Measurement data in inspiratory direction only (Power of Breath and Work of Breath are only available in AYO BT+ Essential) • Inspiratory resistance breathing training
		<ul style="list-style-type: none"> • Measurement data in both inspiratory and expiratory direction (Power of Breath and Work of Breath are only available in AYO BT+ Essential) • Breath-hold test • Spirometry test

The default configuration (AYO BT+ boost) is shown below



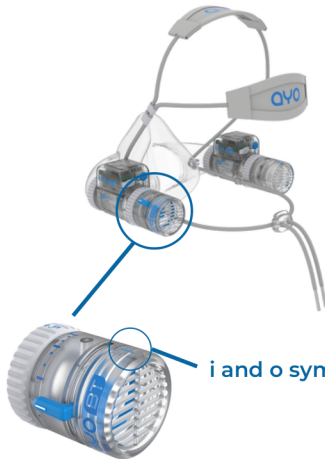
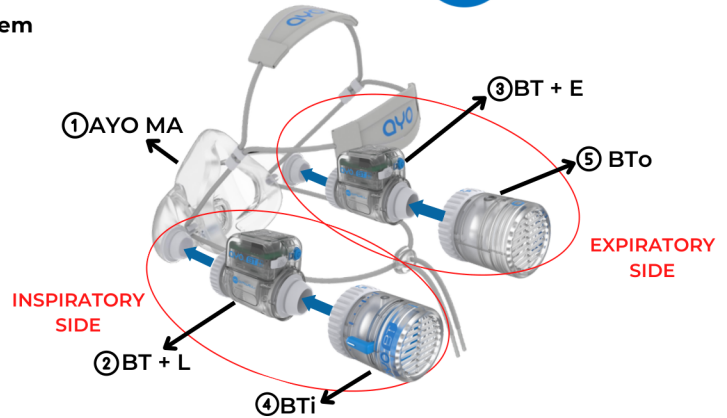
1	AYO MA (Mask Assembly)	Part No. AP050Q (Medium) Part No. AP051Q (Small) Part No. AP052Q (Large)
2	Breathing Measurement module BT+L	Part No. AP070
3	Breathing Measurement module BT+E	Part No. AP071
4	Breathing Training Inlet module BTi	Part No. AP053i
5	Breathing Training Outlet module BTo	Part No. AP053o

How to connect and adjust the AYO BT+ Boost system

Connect the AYO BT+ Boost system as shown.

All connections of AYO BT+ boost system can be done by simply pushing the Push-Fit Plugs to the connection socket until a 'Click' sound is heard and the modules are reliably connected.

- Connect BT+ modules to the mask:
Connect the BT+L ② to the LEFT side of the AYO MA ①, and BT+E ③ to the RIGHT side of the AYO MA ①.
- Connect the BT modules to the BT+ modules: Connect the BTi ④ to the BT+L ② and BTo ⑤ to the BT+E ③



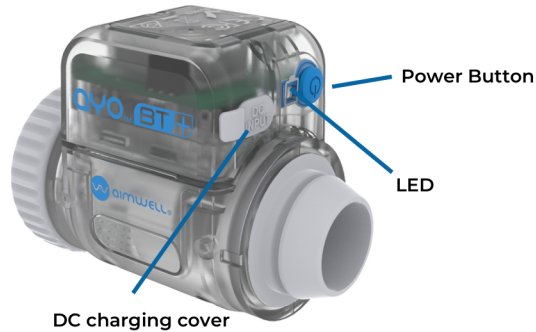
- Adjust or rotate BTi and BTo modules to the desired orientation relative to the AYO MA: adjust the BT modules with the 'i' and 'O' symbols facing up.

- Push the Head strap string into the Hook Ring on the BT+L and BT+E at each side.



User Interface on the BT+ Modules

Power Button and LED Indication



When a BT+ module is not paired or used, it will be turned to SLEEP MODE automatically to save battery power with the LED being turned off:

- When paired and users not breathing, it will turn off in 10 minutes.
- When not paired, it will turn off in 3 minutes.

You can also turn a BT+ module to SLEEP MODE manually when it is not on charging by:

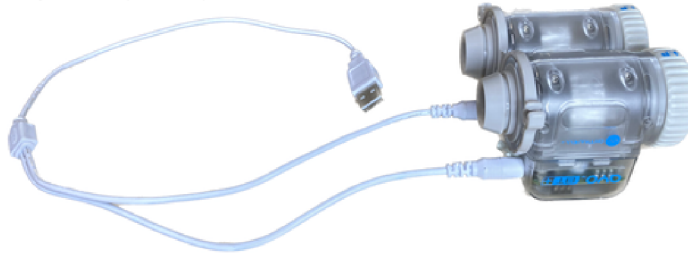
- Press the Power button and hold for 5 seconds until the LED is blinking, then release the button.

Pressing the Power Button briefly will wake up a BT+ module from SLEEP MODE. The LED next to the button will indicate the Battery Level. The table below explains the battery level and colour relation.

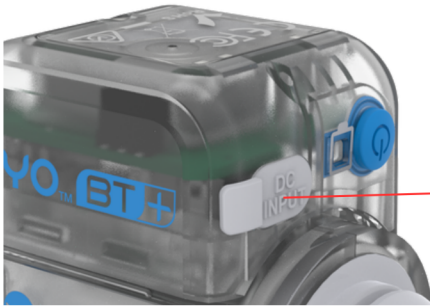
Battery Level (%)	LED Colour
>80	Green
20-80	Yellow
0-20	Red

Charging the BT+ Modules

Each BT+ module is equipped with a charging port for charging its battery. To charge the two modules simultaneously, a USB charging cable with two DC jack outputs is provided.



Lift the charging cover and insert the charging plug to charge the BT+ battery.



Lift the rubber door to insert the charging plug.

Charging is done with a USB Type-A output port, either from your mobile phone charging adaptor or from a PC USB port.

It is recommended to charge the modules until the LED is green before use.

When charging, the LED is blinking. Once fully charged, the LED will be green without blinking.

■ Breathing Measurement in Applications

App Overview

The BT+ modules and App is designed to provide breathing data while you wear your BT+ and do a list of activities, such as: Breathing training, in particular, Buteyko Reduced Breathing Training. Spirometry testing, an effective asthma monitoring function. Physical activities, such as workouts, running, walking, cycling.

To accommodate a variety of needs, the App is structured in 4 sections as follows:

Real-Time: This is a 'free' form of measurement that can be used in many activities you may do, and you may use it as your breathing 'Dashboard'.

Featured: This is a section consisting of a list of specially designed functions for breathing training and measurements.

History: It provides your recorded breathing data in a calendar format for analyzing or sharing.

Account: It contains your App set-up info, device diagnostics, FAQs, etc.

Breathing data are measured by the BT+ modules and sent to the AYO BT+ mobile application via Bluetooth link. For iOS users, after allowing AYO BT+ mobile APP to access the Apple App 'Health', breathing data including Forced Expiratory volume (1 second), Forced Vital Capacity, Peak Expiratory Flow Rate and Respiratory Rate are available in Apple 'Health'.

In BT+ mobile application, measurement functions listed in the table are available depending on your model and configuration.

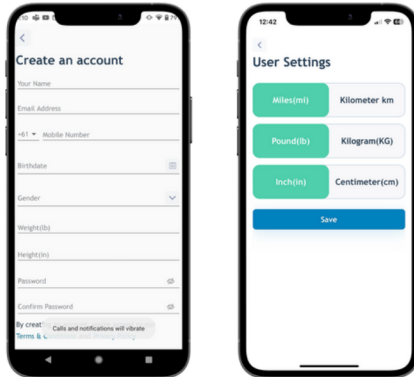
Breathing Measurements versus Models and Configurations

	Boost	Essential	Lite	
Realtime Breathing Measurement Dashboard	✓ Full data	✓ BT+ module fitted on Left side to measure inspiratory data only;	✓ BT+ module fitted on Left side to measure inspiratory data only;	
Breathing in Meditation		BT+ module fitted on Right side to measure both inspiratory and expiratory data	BT+ module fitted on Right side to measure both inspiratory and expiratory data. (No Power of Breath and Work of Breath.)	
GPS Enabled Exercises				
Spirometry Testing				
Breath Hold Duration				
Guided Reduced Breathing			✓ BT+ module fitted on Right side	✓ BT+ module fitted on Right side
Control Pause				

How To Use

Download the App and Get Registered

- For iOS users, download the App 'AYO BT+' from Apple App Store
- for Android users, download the App from Google Play Store



- Create your account by entering your name, email, mobile number, date of birth, gender, weight, height, password etc. The information of body measurement is collected to calculate the health range of your spirometry data in spirometry tests and is protected under the privacy policy. (After registration, you can set your preferable units of weight and height in the User Settings)

- For iPhone users, enable 'Health kit' and enable the parameters to be linked to Apple 'Health'.

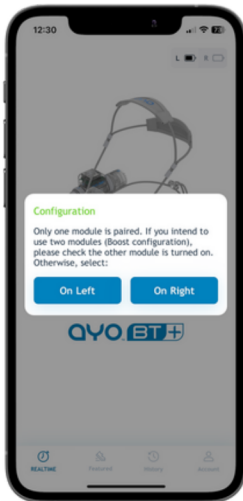
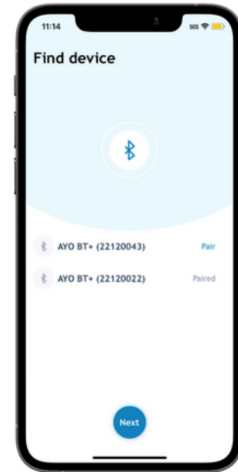


BEFORE USE:

- Ensure the BT+L module or BT+E module or both is (are) properly charged.
- Configure the AYO BT+ to your desired configuration and setting. (For instructions about the AYO BT+ connection, please refer to 'How to connect and adjust the AYO BT+ boost system' in Part 2 Working with BT+ modules.)
- Wake up the BT+ module (s).
- Run the AYO BT+ mobile application.
- Pair the module (s) with your mobile phone.

Note:

By selecting the “AYO BT+ (Serial Number)” on the Pairing Screen, you can pair your AYO BT+ module(s) with your Mobile Device. With any mobile device, manual pairing is only required at the first time of pairing. After that, the connection is established automatically.

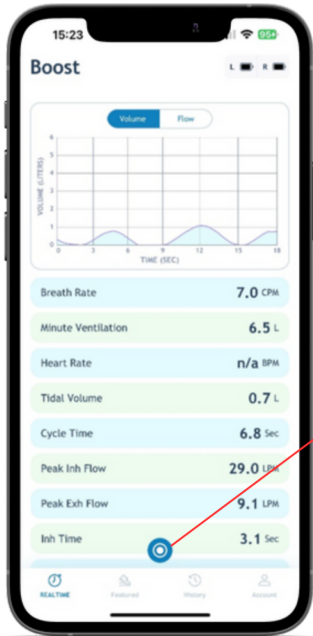


- When one BT+ module is connected to the mask only, the device will ask you whether the module is fitted to the left side or the right side of the mask. Please select according to your configuration.
- If the other BT+ module is turned on after this image popped out, please select either 'on the left' or 'on the right', then go to 'Account – My Device' and connect that module and get the BT+ boost.
- You may rename the BT+ module (s) to your preference at any time in the 'Account – My Device'.
- Check if the firmware needs an update.
- Don the AYO BT+ to your head. (For instructions about donning, please refer to 'Donning' in PART 1 - AYO BT - How to Use.)

DURING USE	AFTER USE
<ul style="list-style-type: none"> Select either 'REAL-TIME' measurement or 'Featured' exercises or tests according to your needs. 	<ul style="list-style-type: none"> Do off the AYO BT+. (For instructions about doffing, please refer to 'Doffing' in PART 1 - AYO BT - How to Use.)
<ul style="list-style-type: none"> Place your mobile phone in an accessible position near you and perform your measurement or exercise. 	<ul style="list-style-type: none"> Turn off the AYO BT+ modules (s) by pressing the Power button for 5 seconds until the LED flashes, then release the button.
<ul style="list-style-type: none"> After finishing your measurement or exercise, read your breathing data and save the data to 'History'. 	<ul style="list-style-type: none"> Disconnect the BT modules, the BT+ modules and the mask from each other. (For instructions about disconnection, please refer to 'Disconnection' in PART 1 - AYO BT - How to Use.)
	<ul style="list-style-type: none"> Clean or dry AYO BT+ as instructed in 'Maintenance'.
	<ul style="list-style-type: none"> Store AYO BT+ as instructed in 'Maintenance'.

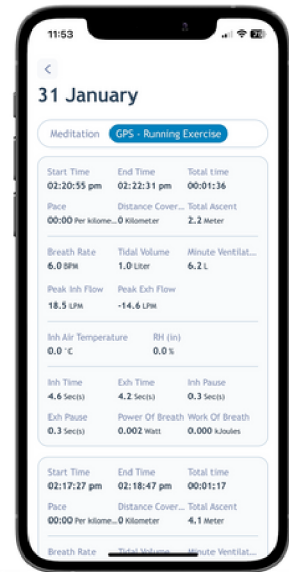
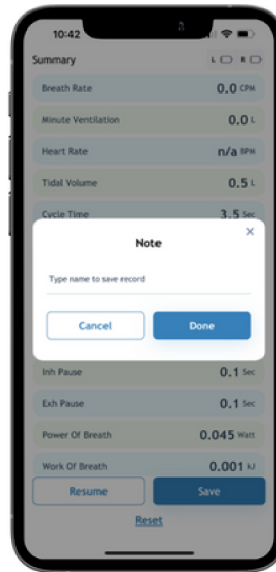
Realtime Breathing Measurement Dashboard

In Realtime breathing measurement dashboard, Live breathing data is computed while the waveform of your breath is graphed.



Record button

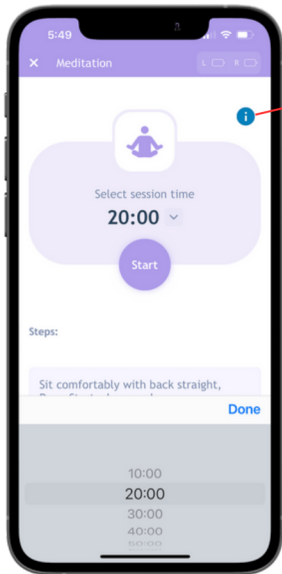
In the real-time breathing measurement, you can record your breathing data by clicking the Record Button at the bottom of the screen to start recording and clicking again to finish the recording. Real-time breathing data can be saved to 'History' where users can review these data later.



Breathing in Meditation

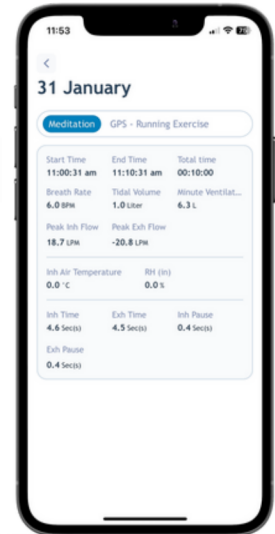
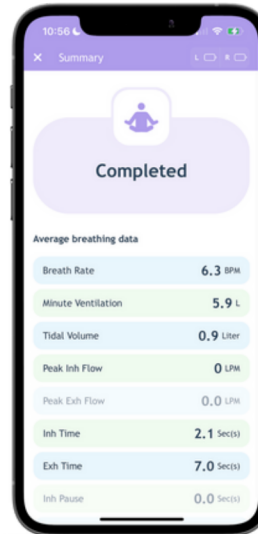
Practice Reduced Breathing with breathing data shown during Meditation - an innovative way of breathing training and gaining mindfulness, promising a better quality of meditation, relaxation, and stress reduction, in addition to enjoyable and engaging breathing training.

It provides real-time breathing waveforms and data with calming music for a default 20-minute slow breathing session. The exercise time can be changed to your preferred one.



Information button:
detailed information
about breathing
during meditation.

Upon stopping or finishing at the end of the session, a Summary Report with the averaged breathing data of the session is generated, which can be saved to 'History'. Users can review these data in 'History' later.

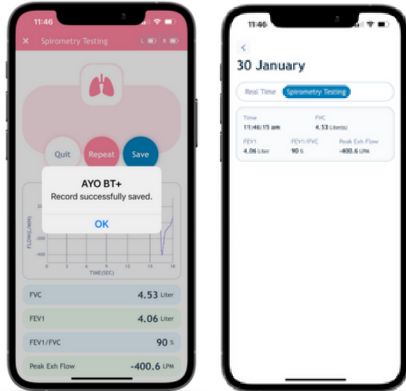


Spirometry Testing

Provides spirometry data including FVC, FEV1, FEV1/FVC and PEF during the spirometry tests

(To find out more information about these spirometry data, please refer to Part 2 - Working with BT+ modules – ‘Breathing Data and Their Measurements’).

Spirometry Test data can be saved to ‘History’ where users can review these data later.



To obtain more accurate lung capacity data, it is recommended to remove any module connected to the expiratory side's (right side) BT+ module to minimize the expiratory resistance during the spirometry test. Also, it is recommended to use hands to hold the mask onto the face to avoid air leaks when doing the lung capacity test.

Information button: detailed information about Spirometry Testing.



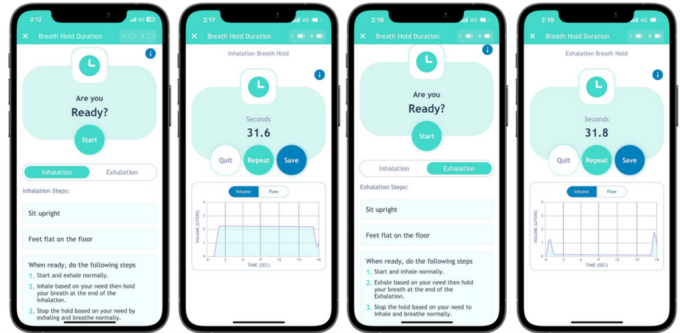
display in
Volume

display in Flow



Breath-hold time (Second)

Measure the amount of time a user holds the breath either on Inhalation or Exhalation, which is selectable before each measurement. Breath-hold time can be saved to 'History', where the user can review it later.



GPS enabled exercise

Provides real-time breathing waveforms and data while doing track movement. Movement data such as distance, time, pace and total ascent are also collected.

Upon exiting, a Summary Report with the movement data and the averaged breathing data is generated, which can be saved to 'History'. Users can review their exercise results in 'History' later.



Control Pause Measurement Procedure

Control Pause is a key component of Buteyko Breathing Technique. It is a special breath-holding time, which is an indication of your breathing status as well as your overall health.

I. Relaxed Breathing

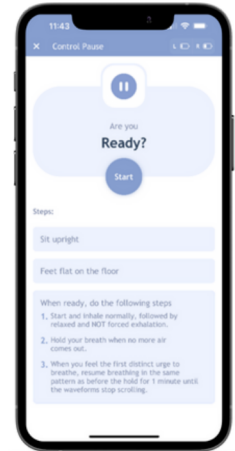
To get a good control pause measurement, the user will have to do Relaxed Breathing for five minutes, which means breathing slowly, with gentle pauses after exhaling and controlled exhalations after inhaling.

- After 1 minute of relaxed breathing, the user can press the SKIP button to go straight to the pause measurement screen if the user wants to.
- Live breathing data is computed while the waveform of your relaxed breath is graphed.



II. Control Pause test

After the relaxed breathing, the user's breath is conditioned to perform the Control Pause test.



After finishing a Control Pause test, a Test Result and Analysis will be generated, which indicates the user's breathing status (including Tidal volume and Minute ventilation) before and after the Control Pause. The breathing volume after the Pause should equal to or lower than the volume before the Pause.

Volume-Guided Reduced Breathing

Based on a common Buteyko Reduced Breathing session and enhanced with real-time breathing volume guidance and breathing data feedback, the BT+ App automates the required steps while providing real-time breathing data and a summary report at the end, which greatly simplifies each practice session and helps make each practice more effective and accurate.

The system calculates the Target Tidal Volume cycle by cycle based on the defined Target Minute Ventilation and the previous Cycle Time. Users can then compare the Target Tidal Volume with their actual Tidal Volume for each cycle and adjust their breathing for the next cycle accordingly. Two CP tests are done, one before and one after the reduced breathing session. If the CP2 test is longer than CP1 test by a duration of 5 seconds or more, it indicates a positive outcome from the reduced breathing session.

For beginners, start gradually with a light air hunger for an easy start.

Steps:

I. Cycle setting

Select the number of reduced breathing cycles and duration of each cycle.



II. Conditioning Breathing (Relaxed breathing)

Clicking the 'Conditioning Breathing' button prompts the user to engage in slow, controlled breathing with brief pauses after exhaling and deliberate exhalations after inhaling. This establishes the user's Minute Ventilation (MV) baseline. Subsequently, a Target Value (MV target) for the Reduced Breathing Cycle is computed using the MV as a reference, serving as the user's goal.



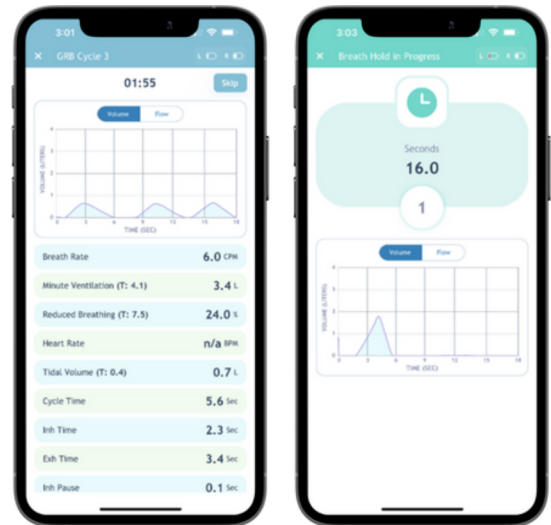
III. Control Pause 1 (CPI)

After the user chooses their level of air hunger (Light, Moderate, or Strong), they will be prompted to perform a Control Pause (CPI) test. Once the CPI test is completed, a summary will be generated, displaying the user's Average MV, Target MV, and CPI results.



IV. GRB + Breath-hold Session

In the GRB cycle, the user will be given a target value(s) indicated as (T:X.X) in the below image. These cycles of reduced breathing and a breath hold will last for the number of cycles selected in the 1st screen. The user needs to control the tidal volume close to or less than the calculated Tidal Volume, or adjust the cycle time in order to achieve the target MV.



V. Conditioning Breathing (Relaxed breathing)

After GRB training, do a Conditioning Breathing session for 5 minutes.



VI. Control Pause 2 (CP2)

After Conditioning Breathing, another Control Pause (CP2) is taken so that the user can compare it with CP1 and see the progress.



A summary of the GRB exercise program is provided after CP2 test is finished.

Data from the above measurements, exercises or tests can be saved in 'History' on the corresponding date. Go to 'History' and click the date to check previously saved data on that day.



■ Breathing Data and Their Measurements

Breath Rate/Breath Per Minute (BPM):	Number of breaths in one minute, updated at the end of each minute of use.
Minute Ventilation (Liter):	The total volume of air breathed in one minute, updated at the end of each minute of use.
Tidal Volume (Liter):	The volume of air breathed in each complete breathing cycle (including inhalation and exhalation), updated at the end of each cycle.
Peak Inhalation Flow:	Maximum inhalation flow in the current inhalation cycle, updated at the end of the current inhalation cycle.
Peak Exhalation Flow:	Maximum exhalation flow in the current exhalation cycle, updated at the end of the current exhalation cycle.
Inhalation time (Second):	Time duration of each inhalation cycle, updated during each cycle.
Exhalation time (Second):	Time duration of each exhalation cycle, updated during each cycle.
Inhalation pause time (Second):	Time duration of zero breathing flow after each inhalation cycle, updated at the start of each new exhalation cycle.
Exhalation pause time (Second):	Time duration of zero breathing flow after each exhalation cycle, updated at the start of each new inhalation cycle.
Power of Breath (Watt):	The power consumed by overcoming the resistance imposed by the respirator, updated at the start of a new cycle.
Work of Breath (Kilo Joules):	The accumulated energy consumed by overcoming the resistance imposed by the respirator, updated at the start of a new cycle.
Inhalation Air Temperature:	The temperature of ambient inhalation air.
Inhalation air relative humidity (RH):	The relative humidity of ambient inhalation air.
Forced Vital Capacity (FVC):	The total amount of air you exhale during a forced expiratory volume test, which is an indication of the lung capacity in volume.
Forced Expiratory volume, 1 second (FEV1):	Forced Expiratory Volume during the first-second expiration, which is an indication if the airways are obstructive or not.
FEV1/ FVC:	The ratio between FEV1 and FVC is used in the diagnosis of restrictive or obstructive lung disease. For healthy people, it is above 70%. The value is reduced for asthmatics and COPD patients.
Peak Expiratory Flow Rate (in spirometry test):	The maximum expiratory flow is an indication of the degree of obstruction in the airways. The value is reduced for asthmatics and COPD patients.
Breath Hold Time:	The amount of time between breaths that an individual can comfortably hold breath. It is an important metric for your breathing health. Longer breath-hold is associated with more efficient breathing, where the oxygen level in your tissues and cells is higher. Control Pause is a special case of Breath Hold defined in Buteyko Breathing technique, where the physiological norm is 40 seconds for adults.

Maintenance

Cleaning

Daily cleaning

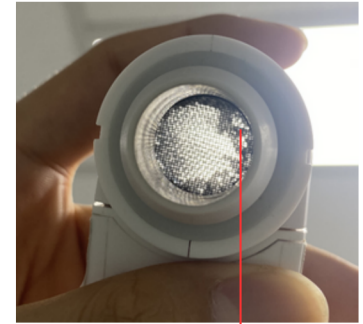
- Refer to PART 1 for AYO MA, BTi and BTo cleaning procedures.
- For BT+ module cleaning, firstly power off the two BT+ modules making sure the LED is off.
- Shake off the condensation in the BT+ module (mainly for the module fitted to the exhalation side of the mask) and leave it in an open area with good air ventilation to get dry completely.

Thorough cleaning

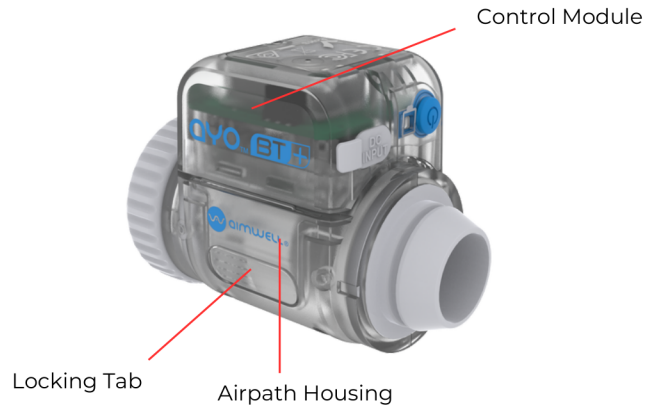
For daily use of BT+ module on the right side of the mask (expiratory side), it is advised to conduct a thorough cleaning each month.

- Refer to PART 1 AYO BT – Maintenance – ‘thorough cleaning’ for AYO MA, BTi and BTo thorough cleaning procedures.
- For BT+ modules, the AIRPATH HOUSING needs to be detached from the CONTROL MODULE before doing the thorough cleaning.

Each BT+ module is composed of a washable AIRPATH HOUSING (non-electronics module) and a clip-on CONTROL MODULE (electronics module).



Condensation



Airpath Housing



Control Module

Remove the control module from the AIRPATH HOUSING by pressing the clip-on LOCKING TAB.

c) For BT+ modules, after removing the AIRPATH HOUSING from the CONTROL UNIT, flush the AIRPATH HOUSING with clean water for 10 seconds from each end of the housing.



d) Shake off the water in the AIRPATH HOUSING

e) To dry the residue water on the BT+ module completely, you can use a hair drier to blow air in the **LOW-TEMPERATURE setting or COLD AIR setting** through the AIRPATH HOUSING from each side. Keep a distance between the hair drier and the AIRPATH HOUSING to ensure your hands holding the BT+ module can stand the temperature of the air, which means the hair drier will not blow too hot air into the BT+ module. Keep turning around the BT+ module while blowing to make sure each side is not too hot. **(Warning: it will take 5-10 minutes to dry the damp BT+ module completely, but blowing hot air may damage the components in the BT+ module.)**

f) To check that the AIRPATH HOUSING is completely dry, look through the AIRPATH HOUSING against the light and that no sign of droplets or condensation inside the BT+ module is seen or blocks the light.

g) After drying the AIRPATH HOUSING, attach the AIRPATH HOUSING to the CONTROL MODULE, and the BT+ module is ready to use.



Make sure electrical contacts are dry before use.

Storage



- Daily Storage: store the AYO BT+ components in the casing provided or in a suitable clean environment.
- When not in use for an extended time, ensure the casing is properly covered and protected from direct sunlight, dust, extreme temperature, excessive moisture, and harsh chemicals. (Please refer to '**Technical Specifications**' for storage conditions)

Changing of battery

In case the battery reaches its end of life, change the battery as instructed below.

1. Purchase a new battery online at the below link
2. To change the battery, first, remove the battery cover by unscrewing the crosshead screw on the battery cover. Then replace the old battery with the new battery and reinstall the battery cover.



Replacement / Consumable Items

The table on the right shows replacement/consumable parts when needed.

The replacement/consumable parts are available online:

<https://aimwellbreathing.com/shop-breathing-trainers/>

Item name	Item Code
AYO MA (Mask Assembly)	Part No. AP050Q (Medium)
	Part No. AP051Q (Small)
	Part No. AP052Q (Large)
Breathing Measurement module BT+L	Part No. AP070
Breathing Measurement module BT+E	Part No. AP071
Breathing Training Inlet module BTi	Part No. AP053i
Breathing Training Outlet module BTo	Part No. AP053o
BT+ Battery 1 Pack	AP065
BT+ Battery 2 Packs	AP077
Head Strap Assembly	AP055
BT+ Strap Hook	AP078
BT+ EVA Case Foam Insert	AP069
EVA Case	AP062

■ Technical Specifications

Operating conditions	
Operating Temperature Range	Measurement module at the Right side (viewing from the rear of the mask) of the AYO MA:
	15°C to 45°C
	Note:
	Use time is limited by the amount of condensation in the airpath housing from the breath.
	A lower temperature is allowed for a short use down to 0°C provided no excessive condensation present in the airpath housing.
	Measurement module at the Left side (inlet valve side) of the AYO MA:
	0°C to 45°C
Operating Relative Humidity Range	Up to 90% RH non-condensing
IP Rating	Use in Dry environment only
Battery	
Chemistry	Li-ion rechargeable 3.7V Nominal, 150mAh
Charger	USB charger / 5V (not provided)
Charging Cable	USB to DC Jack dual outputs
Charging Temperature Range	0 - 45°C
Charging time	Up to 2 hours
Battery Operating Time (capacity)	10 hours after a full charge

Key Measurement and Accuracy	
Test conditions:	25°C
	Relative Humidity: (50±5) %
	Continuous sinusoidal waveform (Except lung capacity test)
	With BTi setting at the maximum opening
Breath Flow Rate	Measurement range: ±500 L/min;
	Measurement error: ±5% for 0-300 L/min
Breath Per Minute	Measurement error: ±0.5
Minute Ventilation	Measurement error: ±0.5 L or 3% of reading, whichever is greater (when peak flow less than 200 L/Min)
Tidal Volume	Measurement error: ±0.1 L or 3% of reading, whichever is greater (when peak flow is less than 200 L/Min)
Power of Breath	Repetitive error < 3%
Work of Breath	Repetitive error < 3%
Forced Vital Capacity (FVC)	Measurement range: 0-10L
FEV1 (Forced Expiratory volume, 1 second)	Measurement error: 5% of reading from 2L to 8L (with ISO 26782:2009 standard spirometry pattern)
Peak Expiratory Flow Rate (in Spirometry test)	Measurement range: up to 500 L/min;
	Measurement error: ±5%
Wireless Connectivity	
Bluetooth Low Energy (BLE)	Version 4.0 and up

Mobile phone App	
iOS	Latest available at App Store
Android	Latest available at Google Play Store
Storage Conditions	
Storage Temperature Range	Within a week: -20°C to 60°C; long term: 0°C to 35°C
Storage Relative Humidity Range	Long-term: 30-50%
Dimension and Weight (BT+ modules)	
Dimensions	73mm(L) x 50mm (W) x 57mm(H)
Weight	65 g per BT+ module
Standards Compliance	
Australia	RCM
	EMC: IEC 61326-1
	EMR: ARPANSA RPS S-1
USA	FCC
	EMC: FCC Part 15B
	EMR: KDB 444498
EU	CE
	EMC: EN 301 449-1, -17, CISPR 32, IEC 61326-1
	Radio: EN 300 328
	EMR: EN 62311

■ Troubleshooting

Problem	Cause and remedy
The App appears not pairable with the measurement module	Check if Bluetooth is enabled on the mobile phone.
	Check if the mobile phone is within a few meters from the BT+ modules.
	Check if the LED on the measurement module is turned on. If it is on, try turning off the App, then run it again.
Firmware update takes a long time to progress and appears stuck	The server may be temporarily busy. Do not press the power button on the Module. Close the App and wait for 15 minutes and restart the app.
The breathing waveforms slower than normal	Your mobile phone may be running slow. Try to power off the mobile phone and restart it again or charge your phone if it is on low battery.
My Android-based mobile phone crashes out after running for a while	Try to power off the mobile phone and restart it again. If the problem persists, an Android-based mobile phone with a higher performance may be needed.
My Tidal volume, Minute Ventilation or Vital Lung Capacity appear much greater than the normal values.	Look through the BT+ module against light, especially the module on the right side of the mask and see if there is any condensation. Swing off any excessive condensation and dry it completely before use. If using AYO BT+ in the cold environment, it is recommended to put the BT+ module on the left side of the mask only to minimize the condensation on the BT+ module during breath.
My Inlet Air Temperature and Relative Humidity appear much higher than those of the actual ambient air.	After you use the BT+ module on the right side of the mask (expiratory side) for a period of time, the air with moisture you exhale through the BT+ module will increase the value of Temperature and Relative Humidity sensed by our sensors. In this case, if you use that damp module on the left side, it takes a while for Inlet Air Temperature and Relative Humidity to return to normal value of ambient air.

■ Other Information

Key Materials

Mask: Medical-grade silicone rubber

Casing: polycarbonate

Head strap: nylon, neoprene, and synthetic leather

Further Resource

More information related to AYO BT+ can be found via the website: <https://aimwellbreathing.com>

■ Disclaimer

Although each device is rigorously calibrated using industry-leading measurement instruments, the measurement from the App and its connected hardware are intended as an indication only. It is not a medical product and has not obtained any medical licenses. Please seek a doctor's advice in addition to using this app and before making any medical decisions.

You acknowledge and agree that at all times you will use AYO BT in accordance with any user documentation, instruction manuals, guides, and/or requirements we provide to you.

Aimwell makes no representations or warranties and shall not be responsible for the competency of any person who uses the AYO BT. If you do not feel well using the AYO BT or have difficulty in breathing, please stop using the AYO BT.

■ Limited Liability

To the extent permitted by law, you will not hold Aimwell liable for any personal injury, loss of use, loss of profit, interruption of business, or any indirect, special, incidental, punitive, or consequential damages of any kind (including lost profits), regardless of the form of action, whether in contract, tort (including negligence), strict product liability, or otherwise, even if Aimwell has been advised or should have been aware of the possibility of such damages. To the extent permitted by law, Aimwell's liability to you for any claim, whether in contract, tort, or any other theory of liability, does not exceed the purchase price of the system paid by you.

It is further understood that Aimwell shall also have no liability whatsoever concerning damages arising out of or relating to unauthorized access, use, and/or alteration or destruction, by any third party, including any users, of the system or any data contained thereon or created by the system or your computer system.

■ Warranty

The warranty is valid for 12 months from the date of purchase, during which we offer repair or replacement of faulty products free of charge.

■ Contact

info@aimwellbreathing.com

(02) 7251 8689