

ResMed

Astral™ series



Breathe easier

Your Astral care handbook

Atlanta	678-627-0077
Tallahassee	850-894-4480
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We Take Care of People®

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Introduction to your ventilator

When life brings unexpected changes, the ResMed Astral™ ventilator is designed to give you greater freedom, mobility and peace of mind. You and your caregiver can feel well-prepared to leave home with an advanced life support ventilator by your side. With innovative technologies, Astral helps provide simplified and personalized ventilation.



You may be feeling overwhelmed by your condition, treatment plan, and all of the complex medical information provided to you. Fortunately, your ventilator is designed for ease of use. This handbook provides you with easy-to-access information to help familiarize yourself with the features and functionality of Astral. For more information, please refer to the Astral User Guide.

Just as Astral adjusts to your changing conditions and breathing needs, this handbook can be a resource throughout your care journey.

Your ventilator helps you breathe better

The function of your lungs is to inhale and distribute the oxygen your cells need to survive, and exhale the carbon dioxide that your body needs to eliminate. When you aren't able to effectively breathe on your own due to an illness or injury, mechanical ventilation via an Astral may be prescribed to help make it easier for you to inhale and exhale.

For more information about your Astral ventilator, refer to the Astral User Guide or contact your home medical equipment provider.

INTRODUCTION

The Astral device provides mechanical ventilation to both ventilation-dependent and non-dependent patients. It delivers pressure and volume ventilation through either a valve or leak circuit, and is compatible with a range of accessories to support specific use cases.

The information in this guide applies to both the Astral 100 and the Astral 150 devices. Where information applies to only one of these devices, that device will be specified.

INDICATIONS FOR USE

The Astral 100/150 provides continuous or intermittent ventilatory support for patients weighing more than 11 lbs (5 kg) who require mechanical ventilation. The Astral device is intended to be used in home, institution/hospital and portable applications for both invasive and non-invasive ventilation.

INDICATIONS FOR USE (USA ONLY)

The Astral 100/150 provides continuous or intermittent ventilatory support for patients weighing more than 11 lbs (5 kg) who require mechanical ventilation.

The iVAPS mode with optional AutoEPAP is intended for patients weighing more than 66 lbs (30 kg).

The Astral device is intended to be used in home, institution/hospital and portable applications for both invasive and non-invasive ventilation.

Caution

The Astral device is not intended for use as an emergency transport ventilator.

Contraindications

The Astral device is contraindicated in patients with the following pre-existing conditions:

- pneumothorax or pneumomediastinum
- pathologically low blood pressure, particularly if associated with intravascular volume depletion
- cerebrospinal fluid leak, recent cranial surgery or trauma

For additional information, refer to the Astral User Guide or contact your care provider.

Learn the basic components of your ventilator.

THE RESMED CONNECTIVITY MODULE

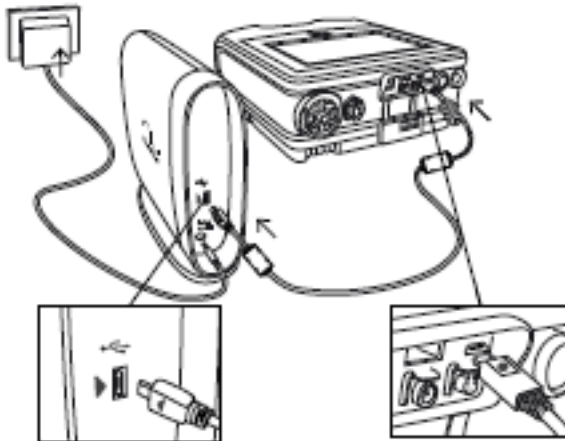
Did you receive a ResMed Connectivity Module (RCM)?

The RCM provides cellular connection between your ventilator and ResMed AirView™ for Ventilation, which your healthcare provider utilizes for remote monitoring. The RCM sends your therapy and device data from your ventilator to the secure cloud-based AirView system, and it's all done automatically. To assist with remote troubleshooting, your healthcare provider can send on-demand requests when needed.

Intended use

The RCM is intended to be used in the home environment, for the collection and transmission of respiratory data to AirView. RCM is not intended for use on an aircraft.

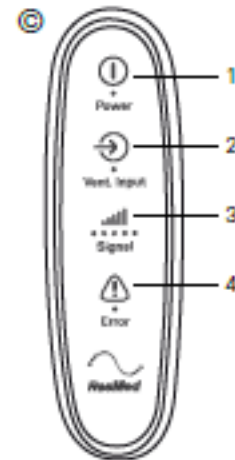
Connecting the RCM to a compatible ResMed ventilation device



The RCM can only be connected to one compatible ResMed ventilation device at a time.

Connect the RCM to the power using the **power supply unit (PSU)**. Ensure that the **Power indicator** illuminates.

1. Position the RCM where the **Signal indicator** shows that you have network reception and ensure that the RCM is:
 - More than 2 cm away from the patient's body during operation
 - In an area that will not be affected by moisture
 - Ideally 30 cm away from the ventilation device or other electrical equipment and 1 m (3'3") from mobile communication devices
2. Ensure that the RCM is secured with the stand or wall mount.
3. Connect one end of the USB cable to the micro USB port of the RCM, and the other end to the mini USB port at the rear of the powered-on ventilation device (see illustration). Ensure that the **Vent. Input indicator** illuminates.



THE ASTRAL DEVICE



1. Adapter port
2. Handle
3. Inspiratory port (to patient)
4. Mini USB connector for ResMed Connectivity Module (RCM)
5. DC power inlet
6. Device on/off push button
7. SpO₂ Sensor connector
8. Low flow oxygen input
9. Air inlet (complete with hypoallergenic filter)

Enhanced capabilities, easy operation.

THE ASTRAL DEVICE INTERFACE



1. Touchscreen
2. Power source indicators
 - AC (main power supply)
 - DC (external battery, car accessory adapter or ResMed Power Station II)
 - Internal battery
3. Therapy on/off indicator
 - **Device ready**
Constant green display when not ventilating.
 - **Device ventilating**
Flashes blue when the device is ventilating and the Ventilation LED setting is 'ON'. Otherwise is 'OFF'.
4. Alarm mute/reset button – illuminates when an alarm is triggered and flashes when the sound is muted.
5. Alarm bar
 - Flashing red High priority alarm
 - Flashing yellow Medium priority alarm
 - Constant yellow Low priority alarm

TOUCHSCREEN




1. Manual breath button
 - only shown if enabled
2. Information bar
3. Internal battery indicator
4. Lock touchscreen button
5. Menu bar
6. Bottom bar
7. Start/Stop ventilation button
8. Main screen
9. Sub-menus
10. Pressure bar

Note: Do not access Clinical mode unless directed by a clinician

POWERING ON/OFF ASTRAL



To power on the device, simply press the green power on/off switch  at the back of the device. The device will perform a system check as shown on the main screen.

On completion of the system check, the Home screen and active program is displayed.

Helpful hint! If more than one program displays on the home screen, the active program will be highlighted orange.

Note: Settings configured in the active program will be used when ventilation is started.

POWERING OFF THE DEVICE

The Astral device can only be powered off when ventilation has stopped. Removing AC power does not power off the device. The device remains powered on internal battery.

Turning off the device must be done manually and must be performed before leaving the device disconnected from AC power for any extended period of time. Failure to do so may result in battery depletion and activation of alarms.

To power off the device, press the green on/off button at the back of the device and follow the on-screen prompts. To ensure the device is fully powered down, touch the screen.

Note: While the device remains connected to external main power, the internal battery continues to charge.

Warnings

If you notice any unusual or harsh sounds, or if the device or power supply has been dropped, please contact your healthcare provider. The internal battery is not intended to serve as a primary power source. Please connect the ventilator to main power whenever possible or have an external power source, such as the Astral External Battery, available.

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Enhanced access features

Astral includes enhanced access features to help make using your ventilation therapy easy and convenient.


BIG BUTTONS MODE




The Astral device offers a **Big buttons** mode for easier usability and accessibility, which can be used to start and stop ventilation, as well as to mute alarms.

If your ventilator's **Big buttons** mode hasn't already been configured, here's how to enable it:

1. From the Main menu, press Setup . The Setup menu is displayed.
2. Select the Patient Access tab from the device configuration menu.
3. Move the **Big buttons** slider to On.
4. Your enhanced access feature is now enabled.

With this feature enabled, it is possible to switch between **Big buttons** mode and standard mode. Simply select the Home button  from the lower left corner of the bottom bar.


Your screen will return to a standard button size and the Home icon  will be replaced by the **Big buttons** icon. To return to **Big buttons** mode, simply select the **Big buttons** icon from the bottom bar.

Note: With the enhanced access feature enabled, your screen will return to Big buttons mode once the screen locks (after two minutes of inactivity).

STARTING AND STOPPING VENTILATION

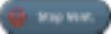
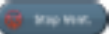
Your clinician has set up one or more ventilation programs for your therapy. If more than one program has been set up, follow the directions given by your clinician for when and how each program should be used.

To start ventilation:

1. Press the green on/off button at the back of the device (if power is not already on).
2. Press  to start ventilation.
3. Add oxygen if required.


To stop ventilation if required:

Ventilation can be stopped at any time from any screen.

1. If oxygen is connected, turn off oxygen.
2. Press and hold .
3. Release  when prompted.
4. Press Confirm to stop ventilation.

LOCKING AND UNLOCKING THE TOUCHSCREEN

The touchscreen can be unlocked at any time.

To manually lock the touchscreen, from the Information bar press . When the touchscreen is locked, the button is highlighted orange.

To unlock the touchscreen, touch the screen anywhere and follow the on-screen prompts.

Note: You may want to use the convenient lock/unlock feature on your Astral device if there are children in the home.



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Alarms




Astral is designed to help monitor your ventilation therapy and notify you or your caregiver when something needs attention.



AUDIBLE AND VISUAL ALERTS

If you have a ResMed Connectivity Module (RCM), your homecare clinician will have remote access to your alarm logs to assist you with troubleshooting in the event of an alarm.

When an alarm is activated, the Astral device provides both audible and visual alerts, and displays an alarm message in the Alarm display on the information bar.



Alarm priority	Alarm bar	Audible alert
High	 Red flashing light	10 beeps every 5 seconds
Medium	 Yellow flashing light	3 beeps every 15 seconds
Low	 Yellow steady	2 beeps every 25 seconds

Indicator	Description		
1. Alarm display	<p>Displays either the alarm message for the highest priority active alarm or the last alarm not yet reset.</p> <p>Press the Alarm display for further alarm information.</p> <p>Certain conditions may result in multiple alarms.  indicates that there are multiple active alarms. Press  when displayed to view all alarms and respond appropriately. Alarms are displayed in order of priority.</p>		
2. Active Alarms screen	Displays the full set of active alarms. Will automatically display upon activation of an alarm in Patient mode.		
3. Information menu	Some alarms clear automatically. To view a history of alarms, view the alarm log through the Information menu.		
4. Alarm mute/reset button	<table border="0"> <tr> <td style="vertical-align: top;"> <p>State:</p> <ul style="list-style-type: none"> • No light – no active alarms • Steady light – active alarm/s • Flashing light – alarm mute on </td> <td style="vertical-align: top; padding-left: 20px;"> <p>This button also allows you to:</p> <ul style="list-style-type: none"> • Mute the audible alert • Reset the currently displayed alarm (if permitted) </td> </tr> </table>	<p>State:</p> <ul style="list-style-type: none"> • No light – no active alarms • Steady light – active alarm/s • Flashing light – alarm mute on 	<p>This button also allows you to:</p> <ul style="list-style-type: none"> • Mute the audible alert • Reset the currently displayed alarm (if permitted)
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5. Alarm bar	Indicates the priority of the alarm in the Alarm display.		

Trained caregivers or family caregivers should be capable of taking any necessary corrective action in the event of a ventilator alarm or malfunction. For ventilator-dependent patients, always have alternative ventilation equipment available, such as a back-up ventilator, manual resuscitator or similar device.

Note: Refer to the user guide for alarm troubleshooting.



The cleaning and maintenance described in this section should be carried out regularly.

CARING FOR YOUR DEVICE

Refer to the user guides for the patient interface, humidifier and other accessories for detailed care and maintenance instructions.

⚠ Warnings

- A patient treated by mechanical ventilation is highly vulnerable to the risks of infection. Dirty or contaminated equipment is a potential source of infection. Clean the Astral device and its accessories regularly.
- Always turn off and unplug the device before cleaning and be sure it is dry before plugging back in.
- Do not immerse the device, pulse oximeter or power cord in water.

⚠ Caution

- Clean only exterior surfaces of the Astral device.
- When required, wipe the exterior of the device with a damp cloth using an approved mild cleaning solution.
- For all circuit components, follow the manufacturer's recommendations for cleaning and maintenance.

MONTHLY INSPECTION

Inspect the condition of the air filter and check whether it is blocked by dirt or dust. With normal use, the air filter needs to be replaced every six months (or more often in a dusty environment).

Serviceing

Your Astral device requires routine serviceing in order to ensure effective therapy is delivered. Your homecare provider will alert you when those services are due and assist you through that process. Astral device repairs and serviceing should only be completed through ResMed authorized service centers.

⚠ Warning

Under no circumstances should you attempt to service or repair the device yourself. Failure to do so could void your Astral device warranty, damage the Astral device or result in possible injury or death.

Note: Dusty or smoky environments may affect device performance.

REPLACING THE AIR FILTER



Inspect the condition of the air filter and check whether it is blocked by dirt or dust. With normal use, the air filter needs to be replaced every six months (or more often in a dusty environment).

Before replacing the air filter, turn off the device and remove main power and/or external battery.

1. Unlock the air filter cover by turning in a counter-clockwise direction.
2. Pull the air filter cover from the device.
3. Pull the air filter from the cover and discard.
4. Insert a new filter into the cover.
5. Insert the air filter and cover back into the device.
6. Turn in a clockwise direction to secure in place.

Caution

Do not wash the air filter. The air filter is not washable or reusable.



Astral allows you to take your ventilation therapy with you when you travel. Follow these guidelines.

SAFEGUARDING YOUR EQUIPMENT

The Mobility Bag is a practical accessory that helps protect your ventilator, external battery and power supply when you leave home. The transparent panel on the cover provides full access to the ventilator display so you can easily check therapy, observe alarms and switch programs. The bag's broad, comfortable straps allow for easy carrying and mounting.

Warnings

The Astral device should not be operated while in the Carry Bag it was packaged in. To ventilate while traveling, use the Mobility Bag or SlimFit Mobility bag.

When traveling with the Astral device:

- The Astral device should always be packed in its Carry Bag when not in use to prevent damage to the device.
- The Carry Bag is for carry-on luggage only. The Carry Bag will not protect the Astral device if it is put through checked baggage.
- For your convenience at security stations, it may be helpful to keep a printed copy of the user guide in the Astral Carry Bag to help security personnel understand the device. Refer them to the following statement:

ResMed confirms that the Astral device meets the Federal Aviation Administration (FAA) requirements (RTCA/DO-160, section 21, category M) for all phases of air travel.

TRAVEL TIPS

Talk to your doctor.

It's important to maintain your prescribed ventilation throughout your trip. Start by discussing your plans with your doctor and home medical equipment provider. Make sure you ask them how to prepare/pack your ventilation equipment prior to traveling and how to properly use it both while traveling and while at your destination.



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Plan ahead. Here's a pre-travel checklist to help prepare when traveling with your ventilation equipment.

Complete setup.

Ensure the settings and circuits on your Astral device have been set up by your home medical equipment provider prior to travel.

Get approvals in advance.

Gather and complete all necessary airline forms and obtain all airline-required documentation from your doctor and/or device manufacturer. Keep important paperwork with you while traveling.

Pack your prescription.

Keep a copy with you while traveling at all times. In case of a malfunction or emergency, you'll have the exact settings for troubleshooting or a replacement if needed.

Pack supplies and product manuals.

Make sure you have all ventilator essentials and accessories with you for your trip, as well as your user manual in case you need to troubleshoot any issues on the road. If you have questions about what supplies and manuals to pack, contact your home medical equipment provider for details.

Pack backup supplies.

Include extra batteries and a spare circuit (air tubing connections) in case you have technical difficulties while traveling.

Power up.

Check that you have all battery components packed up and include any power converters you may need. Don't forget to fully charge all batteries before departure.

Know who to turn to.

Research home medical equipment providers online to see if there is one near your travel destination, and talk with your homecare provider to coordinate backup care during your travel. You can also check with your insurance provider to see who is in-network in case your equipment needs servicing while traveling. Write down the name and contact information and keep it with you in case you need it.

Practice the buddy system.

Make sure your travel companion or designated caregiver understands how to operate your ventilator and is prepared to make any necessary adjustments.



The Astral External Battery is designed to help make traveling with your ventilator easier.

POWER MANAGEMENT

How to connect the Astral External Battery

When connected and fully charged, the Astral External Battery is intended to provide your ventilator with eight hours of power during typical use. A second fully charged external battery can be connected to provide your ventilator an additional eight hours of power during typical use. A maximum of two fully charged external batteries can be connected to your ventilator. Once the external battery is connected to your ventilator, the DC mains indicator on the user interface will illuminate. Please refer to the External Battery User Guide for more information.



⚠ Warnings

- Do not attempt to connect more than two external batteries. Battery-specific messages and alarms on the Astral device will not operate for any additional units.
- In the unlikely event of an issue occurring with the external battery, Astral will sound an alarm and notify the user indicating that the device is operating on internal battery power. Ventilation will continue, however, users should connect to an alternative external power source (e.g. AC power or another external battery) as soon as possible.

Alarms and messages relating to the external battery may occur from time to time. All message information will be displayed on the Astral user interface, and will be accompanied by an audible signal. Refer to the User Guide for more information on alarms.



Plan ahead for travel with your Astral ventilator.

RESPIRATORY THERAPY AND MODES OF TRANSPORTATION

By car: Ventilation preparation varies based on mobility and type of vehicle. Ensure all essential equipment has been thoroughly tested so you know that it's functioning properly prior to departure. All equipment should be secured safely in the vehicle and be kept out of direct sunlight during your entire trip.

By airplane: Follow these steps to help ensure an easy flight with your ventilator.

1. Contact the airline in advance. Call the airline directly or go to their website to educate yourself about relevant procedures and policies on traveling with a medical device. Find out if there are specific forms you need to fill out and/or documents you need to bring for each airline carrier. Request assistance from the airline with boarding the airplane if needed.
2. Contact the Transportation Security Administration (TSA) in advance. If you need additional assistance during the security screening process, or have questions about the screening policies and procedures at security checkpoints, contact the TSA Cares helpline at least 72 hours prior to travel. Inform them of your flight, your medical equipment and its purpose.

TSA Cares Phone: (855) 787-2227

Email: TSA-ContactCenter@tsa.dhs.gov

Website: TSA.gov

3. Complete all forms and secure any documentation in advance (if required). Some airlines may require a written explanation as to why you're traveling with a ventilator. They may have specific medical forms that your physician will need to complete prior to travel that you'll need to bring with you. They will state the need for your equipment and your medical clearance for travel. You may also need to bring documentation that your ventilator is approved for travel. Download a travel compliance letter for all ResMed devices that are FAA-compliant at: https://www.resmed.com/us/dam/documents/articles/travel-compliance-letter_amer_eng.pdf

For more information, contact your home medical equipment provider.

