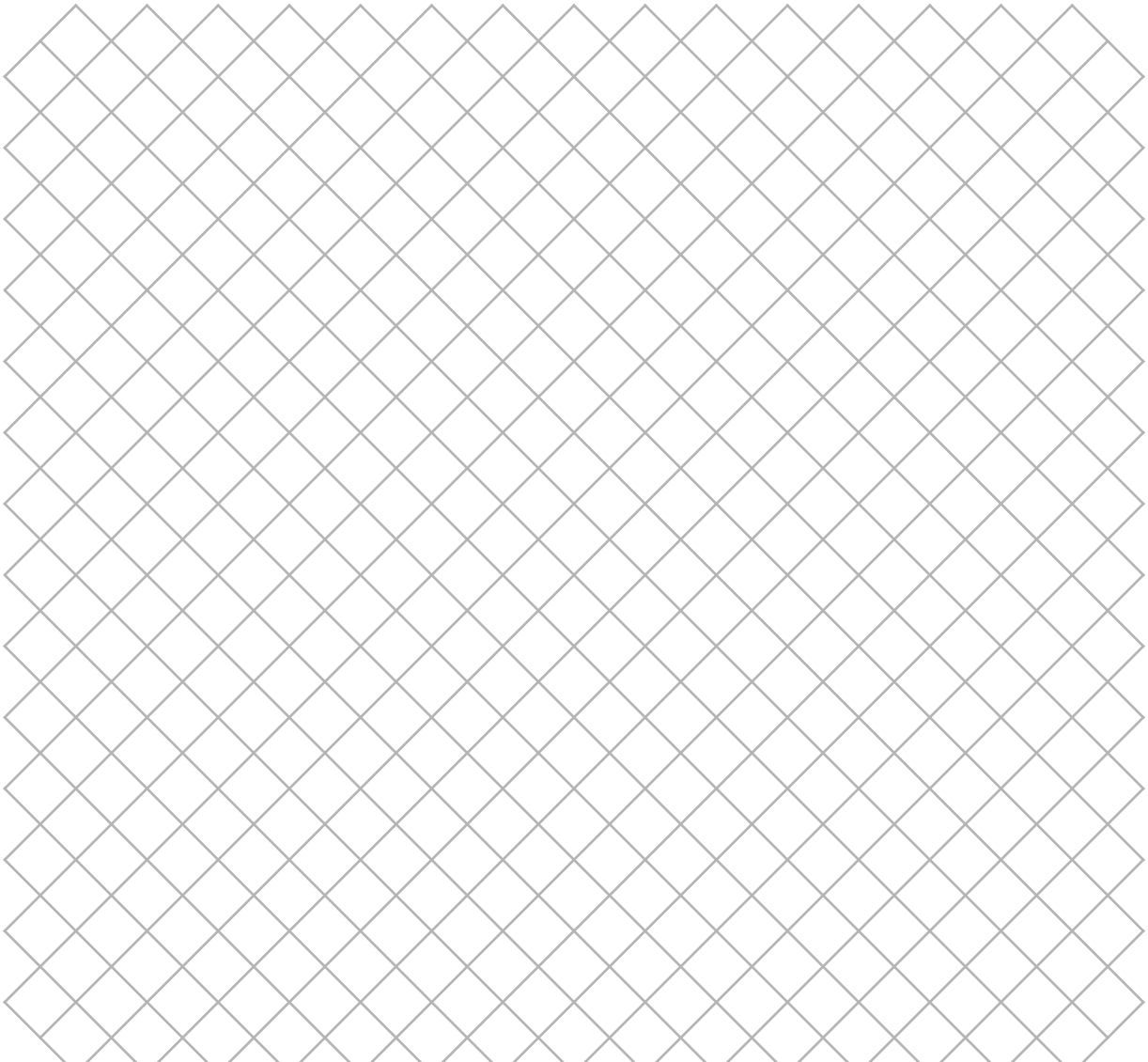
Ultimaker S5 Air Manager

Installation and user manual



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Disclaimer

Please read and understand the contents of this installation and user manual carefully. Failure to read the manual may lead to personal injury, inferior results or damage to the Air Manager, the Ultimaker S5 or its peripherals. Always make sure that anyone who uses this 3D printer knows and understands the contents of the manual to make the most out of the Ultimaker S5 Air Manager.

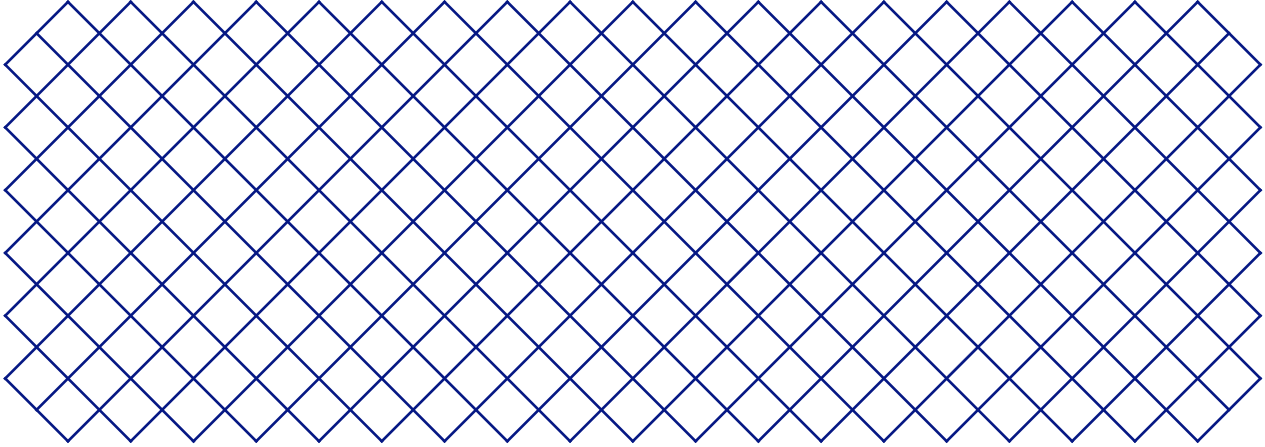
The Ultimaker S5 Air Manager, together with the Ultimaker S5 Material Station and the Ultimaker S5 form the Ultimaker S5 Pro Bundle. This user manual specifically describes the intended workflow and operation for the Ultimaker S5 Air Manager. First time Ultimaker S5 users are advised to consult the Ultimaker S5 Pro Bundle manual.

The conditions or methods used for assembling, handling, storage, use or disposal of the device are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, injuries, damage, or expense arising out of or in any way connected with the assembly, handling, storage, use or disposal of the product.

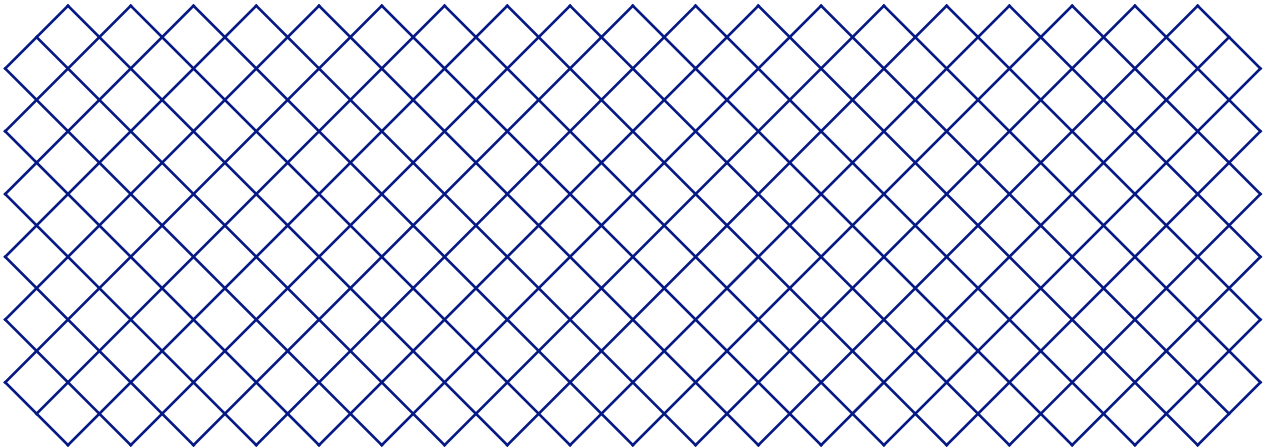
The information in this document was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness.

Intended use

The Ultimaker S5 Air Manager is designed and built for use in combination with the Ultimaker S5. The Ultimaker S5 Air Manager fully encloses the build chamber of the Ultimaker S5 and creates an inside-out airflow through the filter that removes up to 95% of all ultrafine particles (UFPs). This results in a safer work environment when printing with an extended range of materials - both Ultimaker and third-party materials. The exact number of ultrafine particles filtered can vary per material. The user remains responsible for taking (additional) safety measures if necessary based on the information provided by the filament supplier.



1. Safety and compliance



1.1 Safety messages

This guide contains warnings and safety notices.

The information provided below is applicable to the combination of the Ultimaker S5 and the Air Manager ("Ultimaker products").

ⓘ Provides additional information that is helpful to do a task or to avoid problems.

⚠ Warns of a situation that may cause material damage or injuries if the safety instructions are not followed.

1.2 General safety information

The Air Manager is designed for use with the Ultimaker S5.

- Ultimaker 3D printers generate high temperatures and have hot moving parts that can cause injury. Never reach inside Ultimaker 3D printer while they are in operation. Always control the printer with the touchscreen at the front or the power switch at the back. Allow the Ultimaker 3D printers to cool down for 5 minutes before reaching inside
- Do not change or adjust any parts of the products unless the change or adjustment is authorized by the manufacturer
- Do not store items inside Ultimaker products, except for compatible filament spools in the Ultimaker S5 Material Station
- Ultimaker products are not intended for use by persons with reduced physical and/or mental capabilities, or lack of experience and knowledge, unless they are supervised or have been given instructions concerning the use of the appliance by a person responsible for their safety
- Children should be under constant supervision when using Ultimaker products
- Do not touch the fan of the Ultimaker S5 Air Manager when changing the filter

1.3 Hazards

Electromagnetic compatibility (EMC)

These devices may not cause harmful interference, and these devices must accept any interference received, including interference that may cause undesired operation.

An electrostatic discharge in some metallic parts of the devices may cause the interruption of the NFC communications, affecting the initial detection of the material spool. In these cases, a device restart should solve the problem.

Electrical safety

⚠ Ultimaker products have been tested according to the IEC 60950-1 and/or IEC 62368-1. All relevant products have undergone and passed hi-pot testing before shipment. This test guarantees the right level of insulation against electrical shock. An earthed mains socket must be used. Be sure that the building installation has dedicated means for over-current and short-circuiting. For more information, please visit our website for the CB-certificate. The Ultimaker 3D printers are powered by mains voltage, which is hazardous when touched. Only trained staff should remove the bottom cover.

⚠ Always unplug Ultimaker products before performing maintenance or modifications.

Mechanical safety

⚠ Ultimaker products are compliant with the Machine Directive 2006/42/EU. The EC declaration of conformity can be found on our website. The Ultimaker 3D printers contain moving parts. No damage to the user will be expected from the drive belts. The force of the build plate may cause minor injury, so stay out of the reach of the build plate during operation.

⚠ Always unplug the product before performing maintenance or modifications.

Risk of burns

⚠ There is a potential risk of burns: the print heads of the Ultimaker 3D printers can reach temperatures above 200 °C, while the heated bed can reach temperatures above 100 °C. Do not touch either of these parts with your bare hands.

⚠ Always allow the product to cool down for 30 minutes before performing maintenance or modifications.

1.4 Health and safety

⚠ 3D printing thermoplastics may result in the release of ultrafine particles (UFPs) and volatile organic compounds (VOCs) depending on the thermoplastic used and settings of the 3D printer.

Ultimaker products are designed for use with Ultimaker materials and are open for use with materials from third-party suppliers.

Ultimaker materials

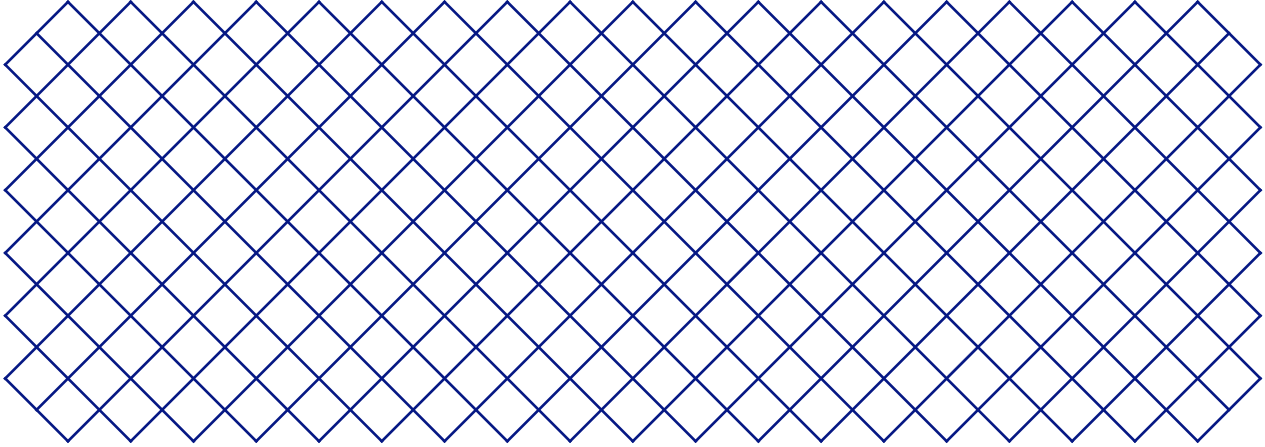
Ultimaker materials can be printed safely without any filtering using the recommended temperatures and settings in a well-ventilated area (minimum refresh rate of 1.8 for a room size of 30.6 m^3). When multiple Ultimaker 3D printers are operated in a contained environment, emissions of UFPs and/or VOCs may vary. Please consider other safety measures, such as a filter, cabinet and/or dedicated ventilation system depending on your specific situation.

Third-party materials

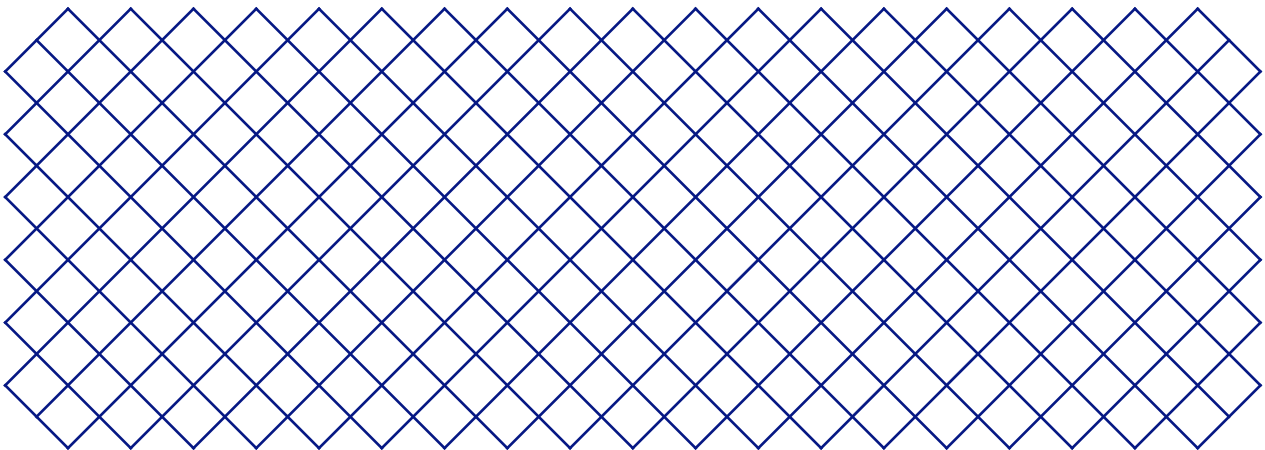
Third-party material manufacturers can supply print profiles that contribute to reliable results with Ultimaker hardware (“The Ultimaker Material Alliance Program”).

The use of print profiles and materials from Ultimaker’s Material Alliances and/or other suppliers may require additional safety measures such as a filter for the safe usage of such materials. Please take the relevant information provided by the supplier of such filament/material into account at all times for safe operation. Please check the safety data sheet of each specific material for information.

Ultimaker cannot be held responsible for any adverse effects from the use and/or performance of these materials.

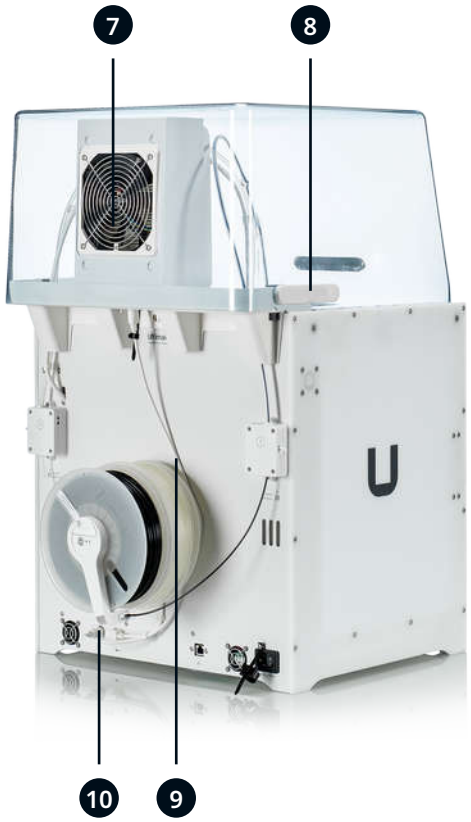


2. Introduction



2.1 Main components





1. Cover
2. Filter housing
3. Filter
4. Handle
5. Stress relief
6. Mounting bracket
7. Fan
8. Hinge
9. Air Manager cable
10. UMB out port

2.2 Specifications

Ultimaker S5 Air Manager specifications

Properties	Filter technology	EPA filter
	Fan technology	Air extraction by low-noise brushless fan
	Air refresh rate	1 - 50 m^3/h (35 m^3/h nominal rate for most materials at 23°C)
	Filter efficiency	Up to 95%
	Filter replacement	Recommended every 1,500 print hours (approx. 1 year)
	Operating sound	<51 dBA (including Ultimaker S5)
	Connection (data and power)	UMB connection, 24 VDC (included)
	Compatible 3D printers	Ultimaker S5
	Compatible materials	Optimized for Ultimaker PLA, Tough PLA, ABS, Nylon, CPE, CPE+, PC, PP, TPU 95A, PVA, Breakaway (Also supports third-party materials)
Physical dimensions	Dimensions	490 x 503 x 350 mm (19.3 x 19.8 x 13.8 in)
	Dimensions (including Ultimaker S5)	490 x 503 x 967 mm (19.3 x 19.8 x 38 in)
	Net weight	3.6 kg (7.9 lbs)
Software	Supplied software	Ultimaker Cura, our free print preparation software Ultimaker Connect, our free printer management solution Ultimaker Cloud, enables remote printing
Warranty	Warranty period	12 months

3. Unboxing

3.1 Unboxing

The Air Manager comes in reusable, durable packaging, specially designed to protect the device. Follow the steps below properly to unpack your Air Manager.

ⓘ Please retain all packaging for warranty purposes.

1. Remove the plastic locking clips from the lower section of the box
2. Holding the handles, lift the upper section of the box
3. Remove the quick start guide and the safety and warranty information booklet
4. Remove the six foam pieces

The rest of the boxes will be removed during the installation of the Air Manager.

3.2 What’s in the box

The Air Manager is shipped in several parts, which can be installed in a few easy steps. The packaging also includes several accessories.

1. Cover
2. Filter housing
3. Filter
4. Mounting bracket
5. Removal tools
6. Bag with screws + key
7. Cable + clips

3.3 Hardware installation

⚠ Turn off your Ultimaker S5 before installing the Air Manager.

⚠ The Ultimaker S5 and Air Manager must be positioned out of direct sunlight when in use. Ensure there is at least 10 cm of free space at the back of the Air Manager for unrestricted airflow.

1. Align the mounting bracket with the back of the Ultimaker S5
2. Guide the Bowden tubes and print head cable into both mounting bracket slots. On the left side, as seen from the back, the Bowden tube should be placed at the front.

ⓘ The cable clip should be on the inside of the mounting bracket

⚠ If the Bowden tubes accidentally get pinched between the Ultimaker S5 and the mounting bracket, immediately uninstall the mounting bracket. Use the removal tools and follow the instructions in section 4.2 Uninstalling the Air Manager.

3. Gently push down on the mounting bracket until it clicks firmly into place
4. Align the bottom of the filter housing with the slots in the mounting bracket and push it into place
5. Gently push the filter completely into the filter housing
6. From the front of the printer, place the cover over the filter housing
7. Align the hinges with the mounting bracket and drop the cover into place. Ensure the hinges are flush in the mounting bracket.
8. Close the cover of the Air Manager.
9. Connect the Air Manager cable to the port at the back of the Air Manager
10. Place the stress relief clip attached to the mounting bracket around the Air Manager cable and close it
11. Slide the stress relief clip upwards until it cannot go further to secure the cable in place
12. Guide the Air Manager cable on the right side around the spool holder and plug it into the **UMB OUT** port at the back of the Ultimaker S5.

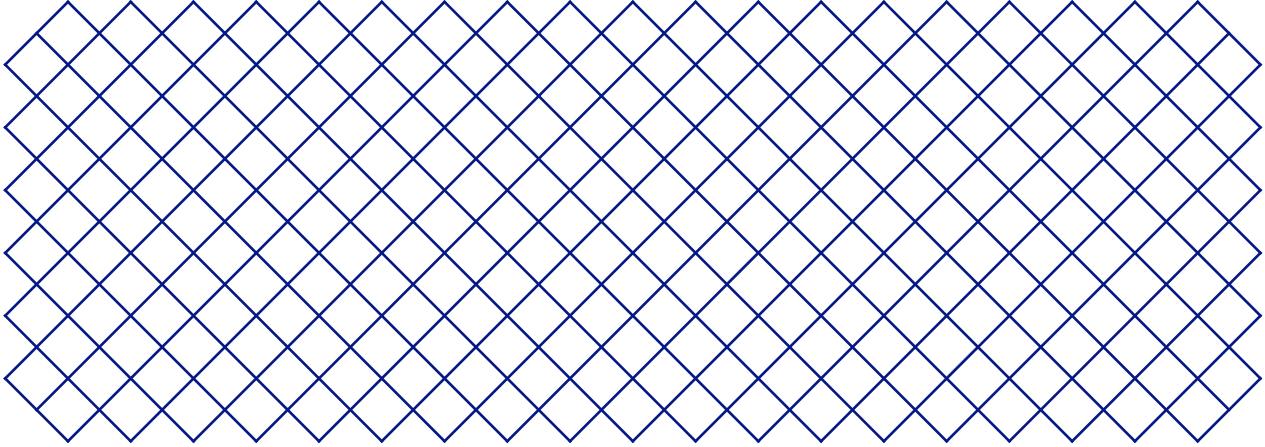
ⓘ Note: If you also own a Material Station, connect the Air Manager cable into the **UMB OUT** port at the back of the Material Station instead. Place the Air Manager cable behind the clips in the back panel of the Ultimaker S5.

13. Use the cable clips to connect the Air Manager cable to the NFC cable of the Ultimaker S5

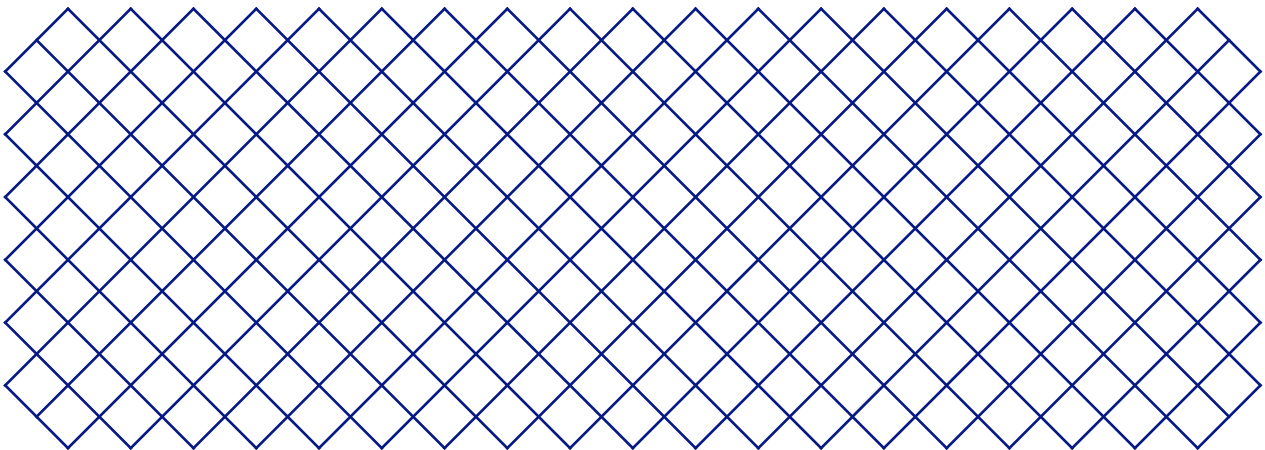
3.4 Firmware installation

⚠ The Air Manager will only function correctly when your Ultimaker S5 is running firmware that supports it. Using an unsupported version may cause damage to your printer.

1. Turn on your Ultimaker S5
2. Install the latest firmware to support the Air Manager through the Ultimaker S5 menu, or visit ultimaker.com/firmware for instructions



4. Operation



4.1 Operation recommendations

Ensure the Ultimaker S5 and Air Manager are placed in a suitable environment. These products perform best in an ambient operating temperature between 15 – 32 °C (59 – 90 °F). The Ultimaker S5 and Air Manager must be positioned out of direct sunlight when in use. Ensure there is at least 10 cm of free space at the back of the Air Manager for unrestricted airflow.

The Ultimaker S5 Air Manager functions as a physical barrier to prevent touching moving parts. Do not open the cover of the Air Manager or the glass doors of the Ultimaker S5 while the machine is in operation. Always make sure the cover is fully closed before starting a print.

When a print has finished, wait until the printer has completely cooled down before opening the glass doors. This will allow sufficient time to filter all particles from the printing process.

4.2 Printing with the Air Manager

Three parameters influence how the Air Manager works:

- Build volume temperature
- Build plate temperature
- Ambient temperature

When printing with Ultimaker materials, the build volume temperature is preset by the material profile.

Build volume temperature

The Air Manager maintains the internal temperature of the printer at the desired build volume temperature. The build volume temperature is a setting within Ultimaker Cura.

Quickly find the build volume temperature setting with the search function. For best results, use the latest version of Ultimaker Cura.

The Air Manager adjusts the fan speed to maintain the specified chamber temperature. The fan speed is calculated dependent on the build plate temperature as well as from the ambient temperature, measured by the Air Manager's own temperature sensor.

ⓘ When slicing using an older version of Ultimaker Cura, or any other slicer which does not have a value for the build volume temperature, the Air Manager will default to 100% fan speed.

⚠ The build volume temperature has a maximum value of 50 °C to prevent damage to the printer.

Air Manager operation

Any time a print core or the heated bed exceeds a temperature of 50°C, the fan of the Air Manager will turn on. At these temperatures, residual material on the build plate or in the print cores can emit UFPs, which should be filtered. Therefore, it is normal for the fan to spin during other operations that require heating, and not only during printing.

After finishing a print, the Air Manager will continue working until everything has cooled down to below 50 °C. This ensures that the filter captures all residual UFPs in the chamber.

The filter

The Air Manager uses an E10 filter. The lifespan of this filter is 1,500 hours and the Ultimaker S5 tracks the usage time of this filter. There are three filter states:

Filter state	Shown when
Peak performance	Filter usage < 90% lifespan
Replacement near	Filter usage between 90% and 100% lifespan
Replacement advised	Filter usage > 100% lifespan

Furthermore, the Ultimaker S5 Pro Bundle can detect whether a filter is present or not.

4.3 Uninstalling the Air Manager

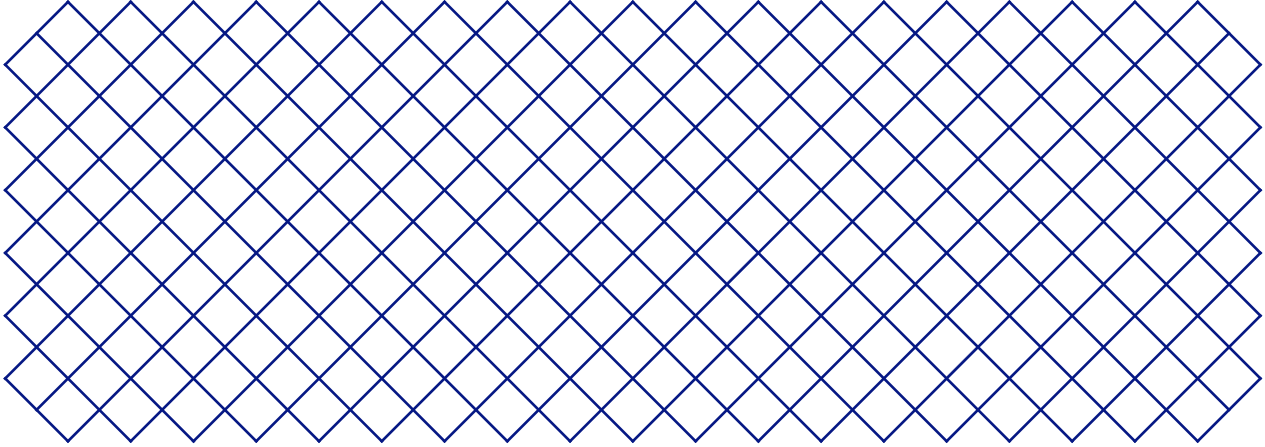
In some cases, it may be necessary to uninstall the Air Manager, for example for transportation or maintenance reasons. Special tools are included in the box to remove the Air Manager from the Ultimaker S5.

ⓘ It is recommended to uninstall the entire Air Manager, without removing individual modules.

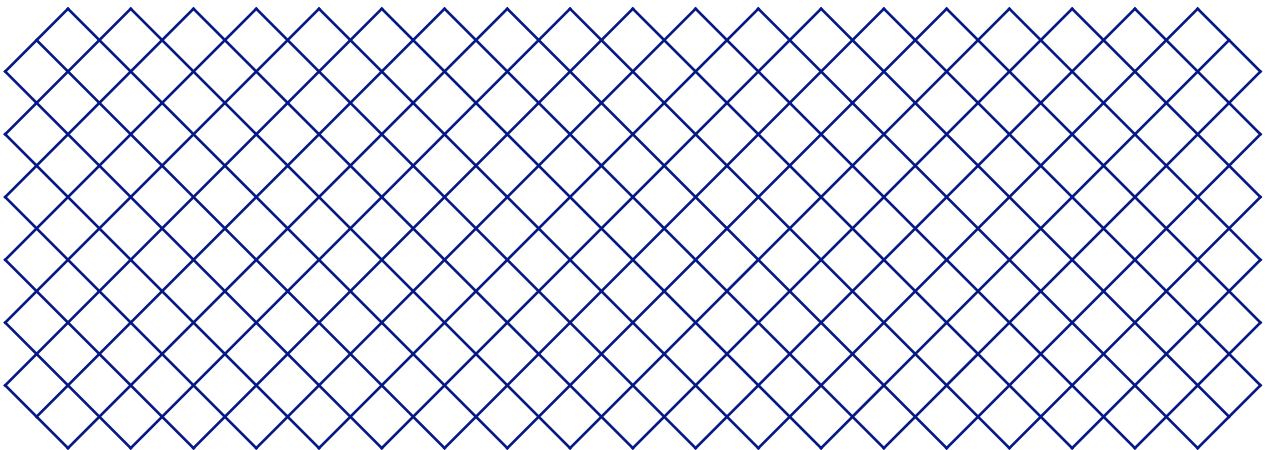
1. Turn off the Ultimaker S5 using the power switch at the back
2. Disconnect the Air Manager cable from the **UMB OUT** port on the back of the Ultimaker S5 or the Material Station
3. Take the two removal tools and align them with the leaf springs in the mounting bracket
4. Insert the removal tools behind the leaf springs
5. Push upwards until you hear a click
6. Gently lift the entire Air Manager off the Ultimaker S5

ⓘ Upon rebooting the Ultimaker S5, a popup will appear on the touchscreen informing that the Air Manager has been disconnected. Select *Yes* to confirm the removal of the Air Manager.

⚠ Do not disconnect the Air Manager cable from the **UMB OUT** port without removing the Air Manager from the Ultimaker S5. Printing while the Air Manager is installed but not connected can damage the printer.



5. Maintenance



5.1 Clean the Air Manager

The Air Manager should be cleaned regularly to keep it in optimal condition.

Clean the surfaces

It is recommended to clean the Air Manager regularly to remove dust or fingerprints. All the surfaces - except the filter - can be cleaned by using a damp microfiber cloth.

⚠ Only use water and mild detergent to clean the Air Manager.

Clean the fan

The fan in the Air Manager should be inspected once every year for dust and dirt. If the fan shows dust, this can be removed with a soft brush. Remove any dirt with a damp microfiber cloth.

⚠ Ensure the Ultimaker S5 is turned off when cleaning the fan.

5.2 Replace the filter

The filter in the Air Manager is a consumable. It should be replaced every 1,500 printing hours to maintain proper filtering. The printer keeps track of the filter usage time and will alert you when replacement is due.

To replace the filter in the Air Manager, navigate to *Preferences* → *Maintenance* → *Air Manager filter* → *Replace* and follow the steps on the touchscreen.

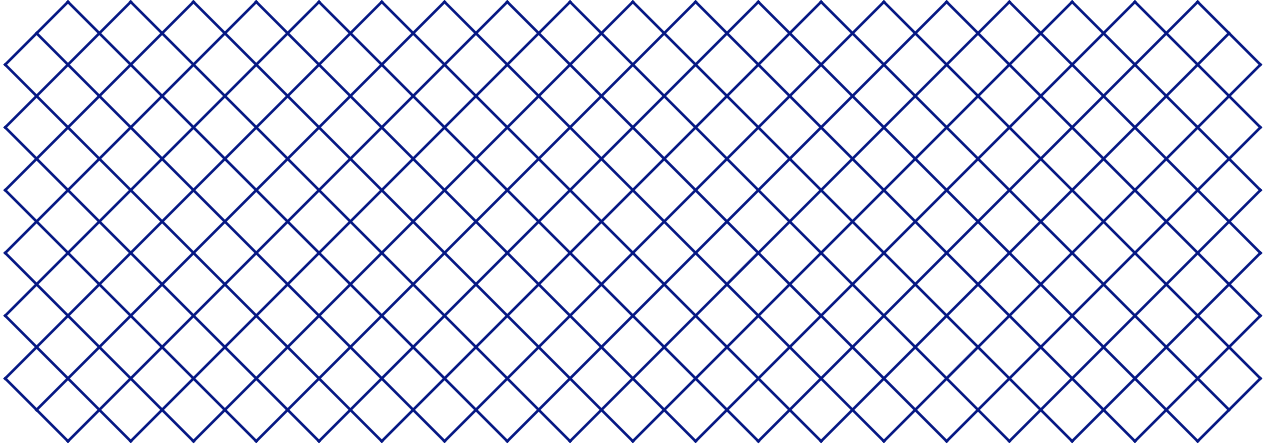
⚠ The function of the Air Manager's filter is to reduce the emission of ultrafine particles. These particles will remain in the filter. The used filter should be handled with care during the replacement procedure. If the used filter is not properly handled, there is a risk of the ultrafine particles being released

1. Open the Air Manager and wait for the printer to prepare the filter replacement procedure
2. Take out the used filter by pulling the tab on the filter towards you and removing it from the filter housing
3. Directly place the used filter in a (resealable) bag and close it
4. Insert the replacement filter into the filter housing and gently push it
5. Select *Confirm* when the filter is completely flush
6. Close the Air Manager to finish the placement and select *Finish* when done

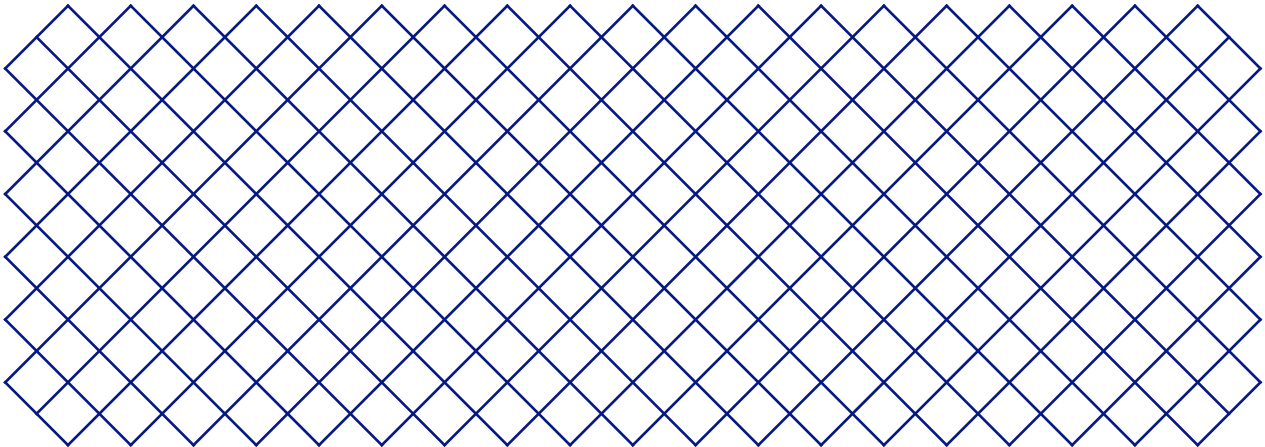
If the filter is not replaced according to the above procedure, the filter usage counter will not be reset.

⚠ Never replace the filter while the Ultimaker S5 is in operation or if the Air Manager fan is spinning.

ⓘ The filter in the sealed bag can be disposed of with your regular household waste.



6. Troubleshooting



6.1 Error codes

When the Ultimaker S5 detects that something is wrong, or when it reads values outside of the allowed range, an error will occur. The display will give a short description of the detected issue along with its unique error code. For example:

- Air Manager fan is unable to rotate at the desired speed. Go to ultimaker.com/ER86.

Go to the specified page to learn more and for troubleshooting tips.

6.2 Air Manager not recognized

If the Air Manager is not recognized by the Ultimaker S5, first check if you have installed the latest firmware.

⚠ The Air Manager will only function correctly when your Ultimaker S5 is running firmware that supports it. Using an unsupported version may cause damage to your printer.

Another possibility is that it may not be connected properly. Follow the steps below to check the Air Manager cable.

1. Power off the Ultimaker S5.
2. Ensure one end of the Air Manager cable is securely inserted into the filter housing.
3. Ensure the other end of the cable is securely inserted into the **UMB OUT** port at the back of the Ultimaker S5, or, if you also have a Material Station, in the **UMB OUT** port at the back of the Material Station.

⚠ The Air Manager cable should not be connected to the NFC port.

Turn the Ultimaker S5 on again. If the Air Manager is still not recognized, contact your local service provider for support.

7. Warranty

7.1 General

Ultimaker grants a standard warranty on the Ultimaker Air Manager product (“Product”) in the country where the product was purchased.

From the date the product is sold and delivered to an end-customer for the first time, as evidenced by the original customer’s purchase invoice, Ultimaker warrants the product is free from defects in material, design and workmanship for a period of twelve (12) months. Only the original purchaser is entitled to claim warranty and the warranty period is limited to his/her lifetime.

For a warranty claim to be valid (i) notification must be made before the end of the warranty period, (ii) conform to any additional stipulations of the warranty, as defined below, (iii) must be substantiated with the original customer’s purchase invoice, (iv) the serial number sticker must still be on the product(s) and (v) the product must be returned in the original packaging. Since customers will only be entitled to make a warranty claim on submission of the original invoice and packaging, we advise that both the invoice and official packaging are kept in a safe place. If the original packaging is not available anymore, the customer can purchase replacement packaging from a recognized Ultimaker reseller.

The customer – provided that they are a natural person who is not acting in the course of their profession or business – may claim the rights to which they are entitled under the warranty without prejudice to their rights or claims in accordance with the law**.**

7.2 Conditions

The Ultimaker warranty is granted under the explicit condition that:

- The product was sold, delivered and assembled by a recognized Ultimaker reseller (see ultimaker.com for addresses of the recognized Ultimaker resellers)
- The product was newly manufactured on the date of purchase and not sold as used, refurbished or manufacturing seconds
- Ultimaker’s latest software was installed and used in and with the product
- The Ultimaker’s installation and maintenance instructions as described in the manual for the product have been observed. Unless the manual contains ‘do-it-yourself’ assembly instructions for the product or part thereof and these have been followed up meticulously, the warranty will become invalidated if the product was at any time disassembled or reassembled by any other person than a recognized Ultimaker reseller

Customers are welcome and we encourage them to use third-party materials, accessories, etc. That in itself, does not void the warranty. If, however, the use of third-party elements, causes damage to the product, the part(s) affected by this damage is excluded from warranty.

If a part of the product is repaired or replaced during the warranty period, the warranty period still remaining for the entire product will apply to this part. However, repair and/or replacement will not extend the warranty period.

7.3 Notification

The Ultimaker resellers deal with this warranty on behalf of Ultimaker. Therefore, any notification on the basis of this warranty must be made to the Ultimaker reseller from whom the product was originally purchased, even if this is not in the customer's present country of residence.

Any warranty claim must first be recognized as justified, either by Ultimaker's reseller or by Ultimaker. If so, the reseller is obliged to rectify the defects free of charge according to this warranty. If the defect cannot be repaired, the reseller will, within the warranty period, replace the product free of charge by an identical product, or, if the product is no longer manufactured, by a similar replacement of the same value or offer an appropriate refund

Depending on the country, the warranty may not automatically include costs incurred for shipping defective products for scrutiny and/or repair, nor for shipping costs of replacement or repaired product(s) back to claimant.

7.4 Exclusions

The warranty does not apply to and therefore does not cover:

- Consumables, such as the filter
- Any defect or damage caused by innapropriate, incorrect or improper use, installation, maintenance, operation and cleaning or normal wear and tear. For correct use, reference is made to the appropriate sections of this user manual.
- Any other event, act, default or omission outside Ultimaker's control
- Failure of the product caused by an accident

In any event, Ultimaker is not liable for indirect or consequential damages, including but not limited to loss of use, loss of profit or revenue. Furthermore, Ultimaker's liability is limited to the purchase value of the product.

7.5 Applicable law and competent court

This warranty is exclusively governed by Dutch law. Any dispute arising out of or in connection with this warranty will be exclusively submitted to the jurisdiction of the court (Rechtbank) of Midden-Nederland, location Utrecht.