



Ultimaker 2+ Connect

Installation and user manual

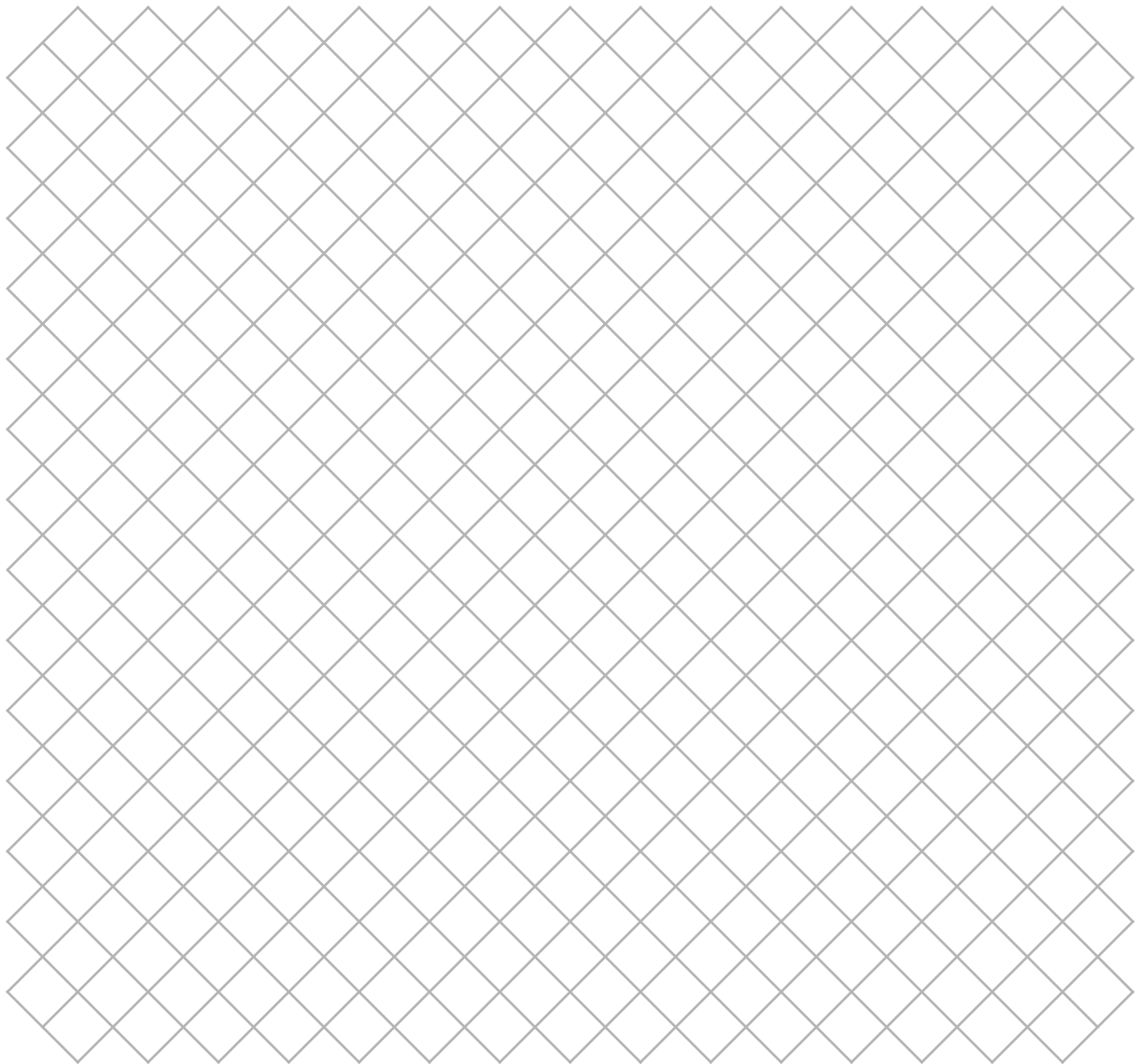




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Disclaimer

This manual sets out the instructions on how to install and operate the Ultimaker 2+ Connect. Please read and understand the contents of this installation and user manual carefully. Failure to read the manual may lead to personal injury, inferior print results or damage to the Ultimaker printer 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 printer.

Upon delivery of the product, installation shall be done in accordance with the instructions in this user manual. The handling, storage, use, or disposal of the device are beyond our control and are for your sole responsibility. 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 handling, storage, use, or disposal of the product.

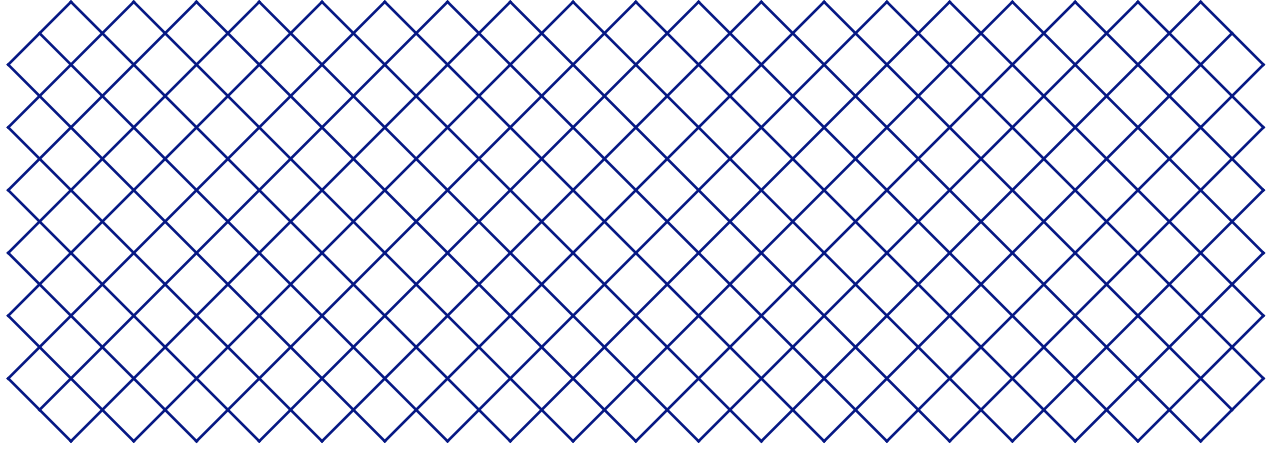
The information within this document has been collected and represented with great care and is considered accurate. In case inconsistencies or inaccuracies are observed those are unintentional and Ultimaker welcomes to be made aware of those. Submit your feedback to Ultimaker via 'Submit a request' at support.ultimaker.com.

Intended use

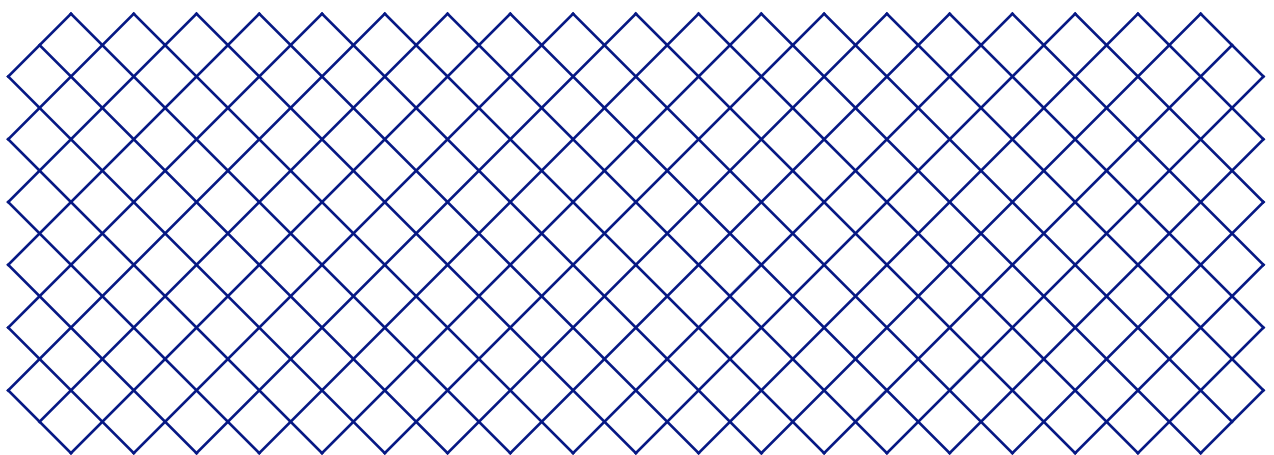
Ultimaker 3D printers are designed and built for fused filament fabrication with Ultimaker materials mainly within a commercial, professional, or educational environment. The mixture of precision and speed makes Ultimaker 3D printers very suitable for concept models, functional prototypes, and small series production.

The Ultimaker 2+ Connect, with its networking capabilities and new touchscreen, delivers single extrusion for simple applications.

Although we achieved a very high standard in the reproduction of 3D models with the usage of Ultimaker Cura, the user remains responsible to qualify and validate the application of the printed object for its intended use. This is especially critical for applications in strictly regulated areas like medical devices and aeronautics. While being an open material platform, the best results will be achieved with Ultimaker materials, as effort has been made to match material properties with machine settings.





1. Safety and compliance









1.1 Safety messages

The information provided below is applicable to the Ultimaker 2+ Connect and Ultimaker 2+ Connect Air Manager (“Ultimaker products”).

This guide contains warnings and safety notices.

-  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.

The following ISO warning symbols are also used:

-  Magnetic field (ISO 7010-W006)
-  Electricity hazard (ISO 7010-W012)
-  Hot surface (ISO 7010-W017). This symbol is also placed on the printhead and the glass build plate of the Ultimaker 2+ Connect
-  Crushing of hands (ISO 7010-W024). This symbol is also placed on the bottom panel of the Ultimaker 2+ Connect under the build plate
-  Pinching and entanglement hazard
-  Read the user manual (ISO 7010-M002). Before using this product, read the complete user manual to learn about all its features and safety related information. This symbol is placed on the front of the Ultimaker 2+ Connect



1.2 General safety information

- Ultimaker products shall only be used by persons that have carefully read and understood the user manual and the safety provisions in it
- Ultimaker 3D printers generate high temperatures and have hot moving parts that can cause injury. Never reach inside Ultimaker 3D printers while they are in operation. Always control the printers with the touchscreen at the front or the power switch at the back
- Allow the Ultimaker 3D printers to cool down sufficiently before reaching inside, typically 5 minutes, unless explicitly stated otherwise for certain (maintenance) processes
- Do not change or adjust any parts of the product unless the change or adjustment is authorized by Ultimaker
- Do not store items inside Ultimaker products
- Ultimaker products are not intended for use by persons with reduced physical and/or mental capabilities, or persons with 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
- This product is not intended for use by children. When using this product, children should be under constant supervision of an adult responsible for their safety. Maintenance actions shall only be performed by an adult
- Do not change the filter of the Air Manager while the fan is in operation. Turn off the printer to make sure the fan cannot start unexpectedly

1.3 Hazards




Electrical safety

The external power supply should not be tampered with. If due to a defect replacement is needed, it should only be replaced by the original type



-  A mains socket with protective earth/ground terminal must be used. Make sure that the building installation has dedicated means of over-current and short-circuit protection. Please use a circuit breaker with a current rating not exceeding 16A. For more information, please visit our website for the CB-certificate.
-  Always unplug the product before performing maintenance or modifications, unless explicitly stated otherwise for certain (maintenance) processes.

Mechanical safety


The Ultimaker 2+ Connect contains moving parts. Install the (optional) Ultimaker 2+ Connect Air Manager to ensure a protective barrier from moving parts during operation, especially if operated near children.

-  **Pinching and entanglement hazard.** Do not reach into the top area of the printer during operation due to a pinching hazard. Do not lean over the printer during operation due to risk of entanglement of hair, jewelry, and/or scarfs. This may cause minor pain, but no significant injury to the user is expected from pinching or entanglement by the drive belts.
-  **Crusing or pinching hazard.** The force of the build plate is limited but 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, unless explicitly stated otherwise for certain (maintenance) processes.


Risk of burns

-  **Hot surface hazard.** 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. This symbol is placed on the print head and on the glass build plate to warn the user about this risk.
-  Always allow the product to cool down sufficiently before performing maintenance or modifications, unless explicitly stated otherwise for certain (maintenance) processes.

Emission hazard

-  During 3D printing, , Ultrafine Particles (UFPs), Volatile Organic Compounds (VOCs), and other chemical substances may be emitted. Above certain concentrations (Threshold Limit Values, TLV), these emissions can pose a risk. Concentrations are influenced by the filament and adhesive used, print conditions (e.g. print temperature), room volume, Air Exchange Rate (AER), and number of printers in a room.

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

- 
- i** **Safe use information for 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 or AER of 1.8 for a room size of 30.6 m³). When multiple Ultimaker 3D printers are operated in a contained environment, concentrations of UFPs and/or VOCs will increase. Depending on the specific situation, please consider other safety measures, such as an Air Manager to control UFPs, or a separate filter, cabinet, and/or dedicated ventilation system.
 - i** **Safe use information for third-party materials.** Make sure to check with your material supplier whether additional risks and safety measures apply. Additional safety measures may include 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 third-party materials.
- ⚠** For classrooms and other locations where children may be present during printing, the use of Ultimaker PLA and the addition of the Ultimaker 2+ Connect Air Manager are recommended.

Magnetic field

Static magnetic field hazard. Due to the static magnetic field caused by the magnets in the printer and in the front enclosure of the Ultimaker 2+ Connect Air Manager, keep a distance of at least 4 cm between any implanted electronic medical devices and implants containing ferromagnetic materials.

Personal protective equipment

The following items are recommended for working safely with the Ultimaker 2+ Connect, especially for performing maintenance actions:

- **Tweezers.** These are required for safely removing material residue from the tip of the nozzle
- **Pliers.** When cleaning the inside of the nozzle with the hot and cold pull procedure, hold the filament with pliers to prevent damage to your hands in case the material breaks
- **Thermal gloves.** It is recommended to wear thermal gloves while cleaning or replacing the nozzle as the nozzle will be hot during these procedures

1.4 Regulatory information

Ultimaker products are compliant with the following directives:

- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Radio Equipment Directive (RED) 2014/53/EU
- Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU
- Directive 2002/96/EC on waste electrical and electronic equipment (WEEE)
- Regulation (EC) 2007/2006 (Registration Evaluation Authorization of Chemicals, REACH)

The risks of this product have been assessed in accordance with ISO 12100. The EC declaration of conformity can be found on our website. The standards that have been used for testing our products include but are not limited to IEC 62368-1.

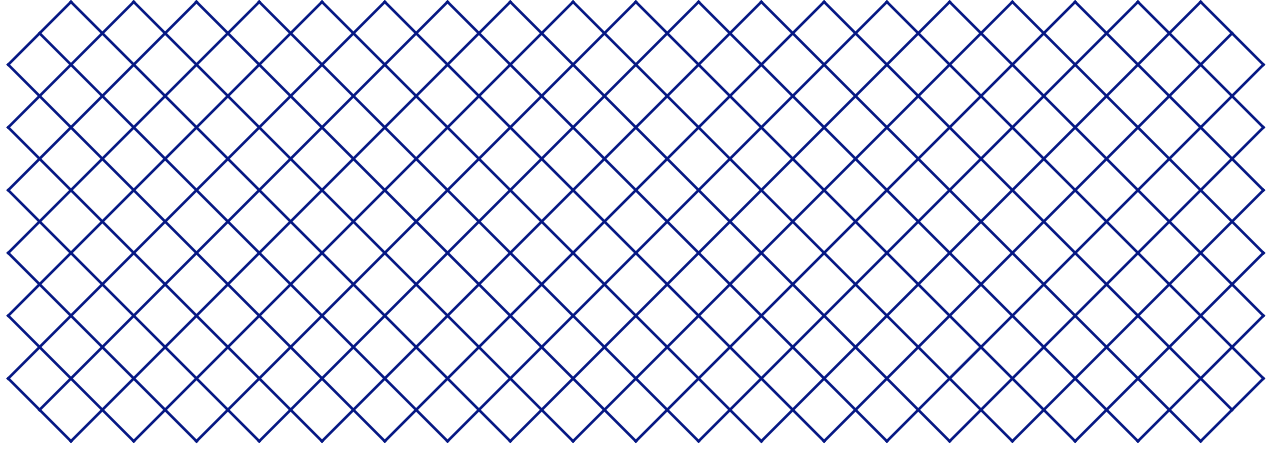
EMC

Warning: This is an EMC Class A device. Operation of this equipment in a residential environment could cause radio interference.

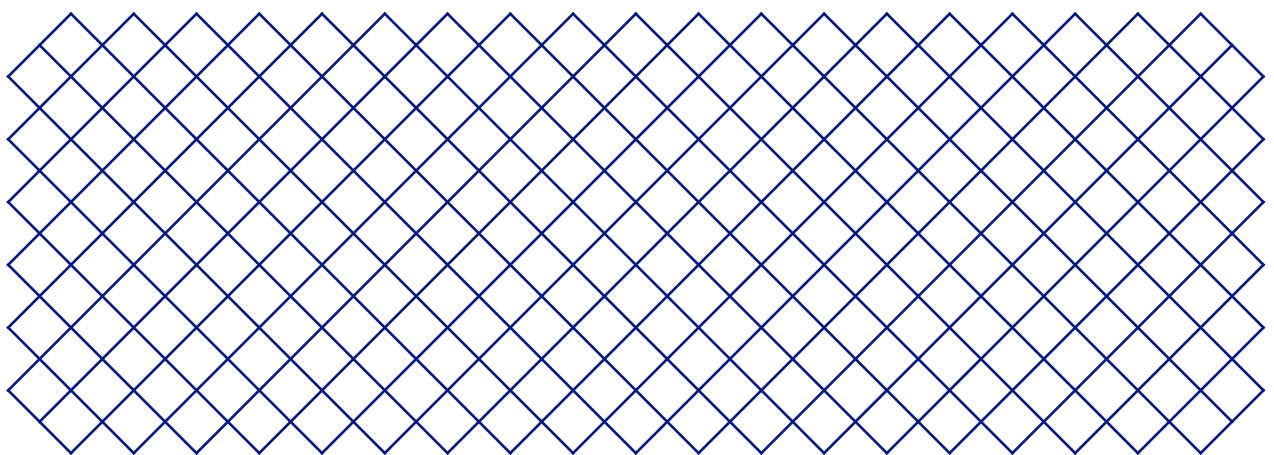


FCC / ISED regulatory notices

- **Modification statement.** Changes or modifications not expressly approved by Ultimaker could void the user's authority to operate the equipment
- **Wireless notice.** This device complies with FCC/ISED radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines and RSS-102 of the ISED radio frequency (RF) Exposure rules. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter
- **FCC Class A digital device notice.** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense

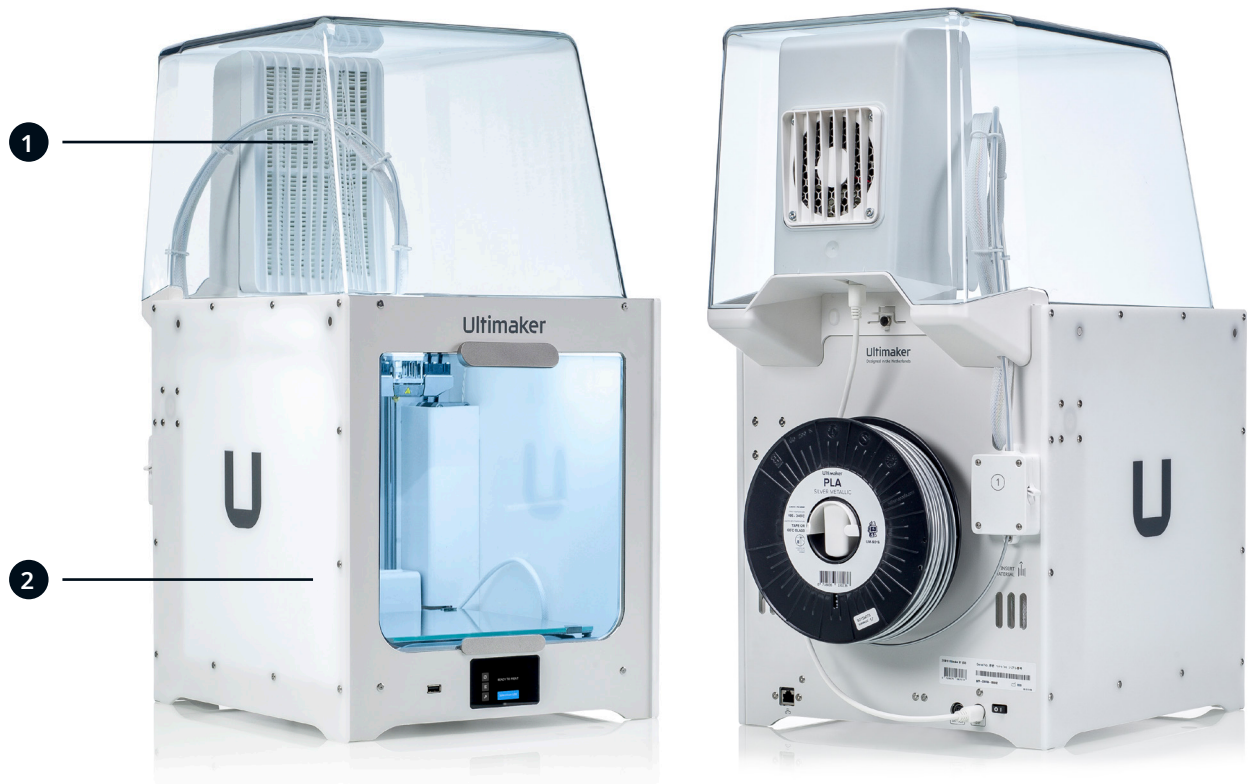


2. Introduction



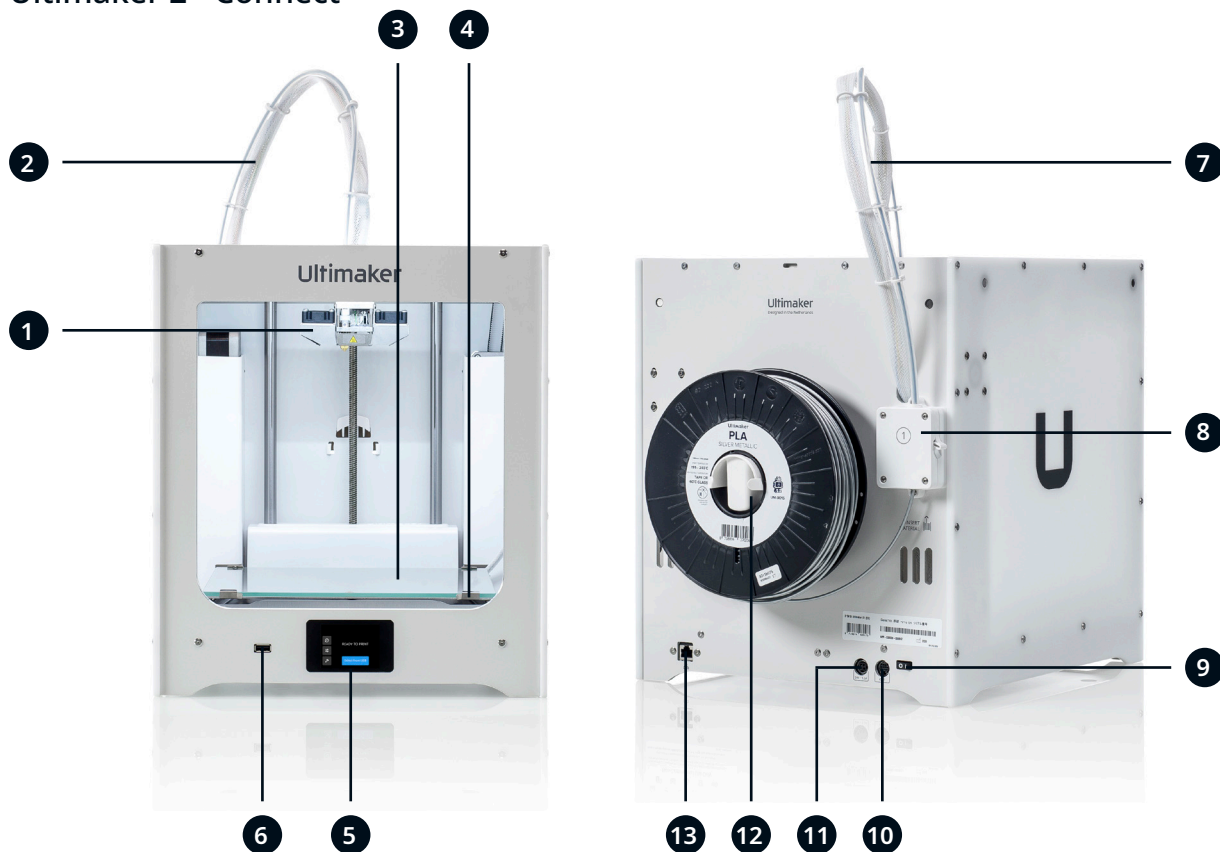
2.1 Main components

Ultimaker 2+ Connect with Air Manager



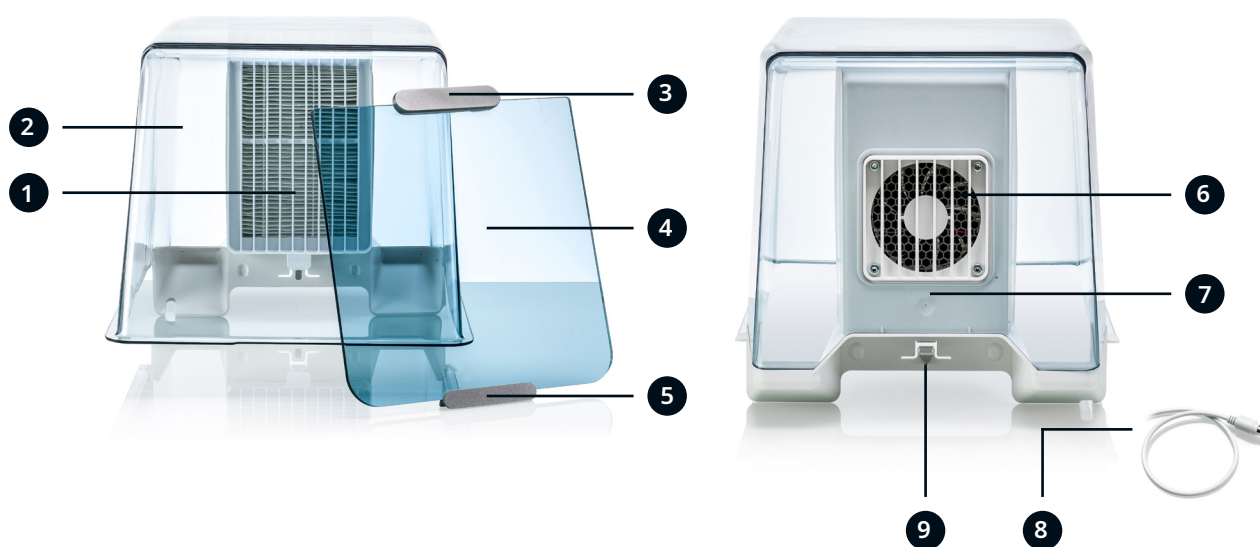
1. Air Manager
2. Ultimaker 2+ Connect

Ultimaker 2+ Connect



- | | | |
|-----------------------|------------------------|-------------------|
| 1. Print head | 5. Touchscreen display | 9. On/off button |
| 2. Print head cable | 6. USB port | 10. OUT port |
| 3. Build plate | 7. Bowden tube | 11. Power socket |
| 4. Build plate clamps | 8. Feeder | 12. Spool holder |
| | | 13. Ethernet port |

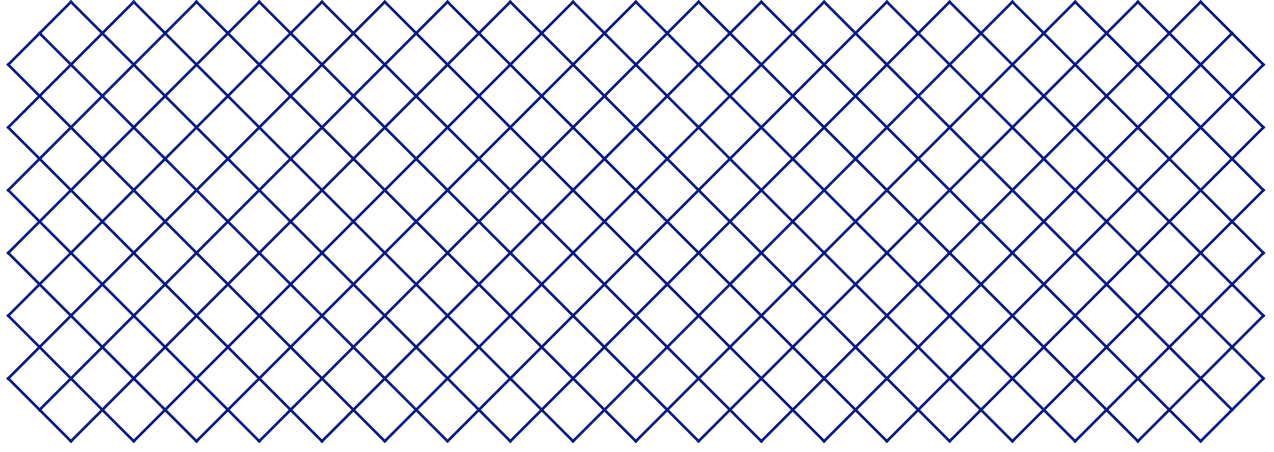
Air Manager



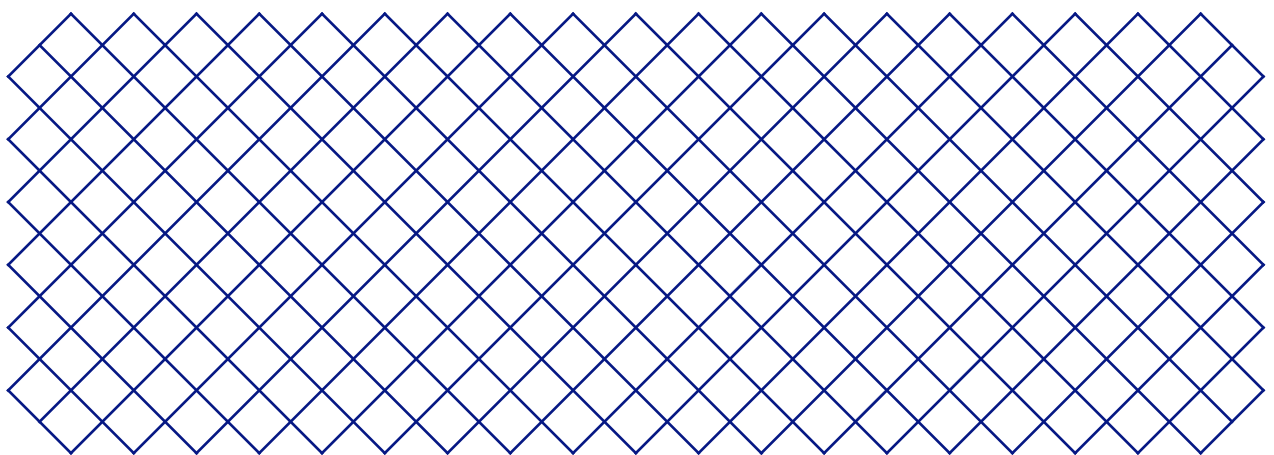
- | | | |
|----------------------|--------------------|-----------------------------|
| 1. Filter | 4. Front enclosure | 7. Filter housing |
| 2. Air Manager cover | 5. Hinge profile | 8. Air Manager cable |
| 3. Handle | 6. Fan | 9. Air Manager release clip |

2.2 Specifications

Properties	Technology	Fused filament fabrication (FFF)
	Print head	Single extrusion print head with swappable nozzles
	Build volume (XYZ)	223 x 220 x 205 mm (8.7 x 8.6 x 8 in)
	Nozzle diameter	0.4 mm (included)
		0.25 mm, 0.6 mm, 0.8 mm (sold separately)
	Layer resolution	0.25 mm nozzle: 150 - 60 micron
		0.4 mm nozzle: 200 - 20 micron
		0.6 mm nozzle: 300 - 20 micron
		0.8 mm nozzle: 600 - 20 micron
	XYZ resolution	12.5, 12.5, 2.5 micron
	Nozzle temperature	180 - 260 °C (350 - 500 °F)
	Build speed	< 24 mm ³ /s
	Build plate	Heated glass build plate
	Build plate temperature	20 - 110 °C (60 - 230 °F)
Operating sound	< 50 dBA	
Connectivity	Wi-Fi, Ethernet, USB port	
Physical dimensions	Dimensions (with Bowden tube and spool holder)	342 x 460 x 580 (13.5 x 18.1 x 22.8 in)
	Net weight	10.3 kg (22.7 lbs)
Ambient conditions	Operating ambient temperature	15 - 32 °C (32 - 90 °F)
	Non - operating (storage) temperature	0 - 32 °C (32 - 90 °F)
	Relative humidity	10 - 90% RH non-condensing
Air Manager	Filter technology	EPA filter
	Filter efficiency	Up to 95% of UFPs
	Filter replacement	Recommended every 1,500 print hours (approx. 1 year)
	Front enclosure	Separate front enclosure included with the Air Manager
Electrical requirements	Voltage	100 - 240 V AC
	Frequency	50 - 60 Hz
	Power	Max. 221 W
Software	Ultimaker Cura	Our free print preparation software
	Ultimaker Digital Factory	Our online printer and print job management solution
	Supported OS	Windows, MacOS, Linux
Warranty	Warranty period	12 months



3. Installation



3.1 Unboxing

Ultimaker 2+ Connect

The Ultimaker2+ Connect comes in reusable, durable packaging, specially designed to protect your 3D printer. Follow the steps below properly to unpack your Ultimaker printer.

- i** It is recommended to remove the packaging with the box placed on the floor for safety. Please retain all packaging for warranty purposes.
- ⚠** When placing the printer on a shelf or table, take proper measures to prevent the printer from falling.
 1. Remove the plastic locking clips from the lower section of the box
 2. Holding the handles, lift the upper section of the box, and place it aside
 3. Take the quick start guide, safety and warranty information booklet, accessory box, and spool of filament off the upper cardboard piece
 4. Remove the upper cardboard section and four foam pieces
 5. Carefully lift the Ultimaker 2+ Connect out of the bottom cardboard section and foam pieces
 6. Place the printer on a flat surface

Air Manager

- i** Please retain all packaging for warranty purposes.
 1. Open the box at the top and remove the foam piece
 2. Take out the box with the filter housing and Air Manager cable
 3. Lift the foam piece that holds the front enclosure and filter
 4. Lastly, take the Air Manager cover out of the box and remove the cardboard piece

3.2 What's in the box?

Ultimaker 2+ Connect

The Ultimaker 2+ Connect is supplied with several hardware accessories. Check if all these items are included before continuing:

Accessories

1. Glass plate
2. Spool holder
3. Power adapter and cable
4. Ethernet cable
5. USB stick
6. Calibration card
7. 0.4 mm nozzle

Consumables

8. PLA Silver Metallic 750 g
9. Glue stick
10. Oil
11. Grease

Air Manager

The Air Manager is shipped in several parts, which can be installed in a few easy steps. Check if all these items are included before continuing:

1. Filter housing
2. Filter
3. Cover
4. Front enclosure
5. Air Manager cable
6. Quick start guide

Tools

12. Hex screwdriver 2 mm
13. Hex key 2.5 mm
14. Nozzle wrench
15. Print head calibration aid

Documents

16. Quick start guide
17. Safety and warranty information

3.3 Hardware installation

Ultimaker 2+ Connect

1. Insert the spool holder into the back panel and push until it snaps into place
2. Open the front build plate clamps to insert the glass plate
3. Slide the glass plate into the rear build plate clamps, then close the front clamps

i The warning icon (hot surface) on the glass plate should face upwards.

4. Connect the power cable to the printer with the flat side facing down and the other end to a power outlet

⚠ A mains socket with protective earth/ground terminal must be used. Make sure that the building installation has dedicated means of over-current and short-circuit protection. Please use a circuit breaker with a current rating not exceeding 16A.

i If you also have an Air Manager, first install the Air Manager before connecting the power cable.



Install the spool holder



Place the glass build plate



Connect the power cable

Air Manager

⚠ Ensure the Ultimaker 2+ Connect is turned off before installing the Air Manager.

1. Align the filter housing with the back of the Ultimaker 2+ Connect
2. Guide the Bowden tube and print head cable into the slot
3. Push down on the filter housing until it clicks firmly into place
4. Gently push the filter completely into the filter housing, with the tab facing down
5. Place the cover over the filter housing and align it with the top panel; ensure there are no gaps between the cover and the printer
6. Connect the Air Manager cable to the port at the back of the Air Manager and secure with the clip
7. Guide the Air Manager cable around the left side of the spool holder
8. Plug the cable into the **OUT** port at the back of the Ultimaker 2+ Connect
9. Take the front enclosure and place the hinge profile on the front panel
10. Push the handle against the panel; the magnet will hold the front enclosure in place

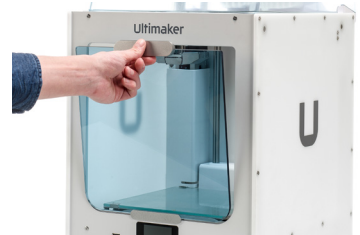
⚠ The Ultimaker 2+ Connect and Air Manager must be positioned out of direct sunlight when in use. Ensure there is at least 10 cm of free space at the back of the Air Manager for unrestricted airflow.



Align the filter housing



Place the Air Manager cover



Install the front enclosure

3.4 First setup

After installing the hardware accessories, set up the printer for first use. Turn on the printer with the power switch at the back. After booting up, you will see the home screen. This displays your printer status, and allows you to quickly navigate to the Materials, Settings or Maintenance menus.

- ⓘ It is possible that the Ultimaker 2+ Connect shows a firmware upgrade screen when it boots up for the first time. If this is the case, go to ultimaker.com/firmware, select the Ultimaker 2+ Connect, and download the firmware file. Save this file to the root directory of a USB stick. While the device is powered on, insert the USB stick to automatically start the firmware update.

Level the build plate

To get the correct distance between the build plate and the nozzle, you need to level the build plate. The Ultimaker 2+ Connect utilizes a three-point bed level procedure. This must be done before using the Ultimaker 2+ Connect for the first time and then periodically.

✂ Select the **Maintenance** menu and navigate to *Level build plate*. Follow the instructions on the display.

- ⓘ If you have installed the Air Manager, remove the front enclosure until this procedure is finished.

1. Wait for the Ultimaker 2+ Connect to move the print head and build plate to the start position
2. Place the calibration card between the nozzle and build plate. Adjust the thumb wheel under the build plate at the back until you feel some resistance when moving the card. Select *Done adjusting* to continue

⚠ The print head will move to the next position. Keep hands clear of the build volume until the print head and build plate have stopped moving. The printer will beep when it is safe to continue.

- ⓘ Do not apply force to the build plate while placing the calibration card, as this will lead to leveling inaccuracies.

3. Place the calibration card under the nozzle again and adjust the front-right thumb wheel until you feel some resistance on the card. Select *Done adjusting* to continue
4. Repeat this for the front-left thumb wheel
5. As a final step, the printhead will return to the first point. Fine-tune the leveling, and check if you still feel the same resistance on the calibration card at the back of the build plate, or adjust the thumb wheel until you do

The build plate is now leveled correctly for an optimal adhesion of the first layer.

Load material

Before you can start printing on the Ultimaker 2+ Connect, you need to load material into the printer. For the first use, it is recommended to use the spool of PLA that came with the Ultimaker 2+ Connect.

- ⓘ Select the **Materials** menu and navigate to *Load material*. Follow the instructions on the display.

1. Select the material type and wait for the nozzle to heat up
2. Unpack the material and cut off the end, ensuring a short, sharp tip
3. Place the spool on the spool holder with the material in counterclockwise direction

- ⓘ Straighten the end of the material so it can easily enter the feeder.

4. Open the feeder lever, insert the filament into the feeder, and push it through to the print head
5. Close the feeder lever
6. Confirm that the spool is loaded and wait for the material to extrude from the nozzle



Network connection

The Ultimaker 2+ Connect can connect to a local area network, using either Wi-Fi or Ethernet.

 Select the **Settings** menu and navigate to *Network configuration*. Follow the instructions on the display.


Set up Wi-Fi

To connect your Ultimaker 2+ Connect to a wireless network, you will need a computer or a smartphone. Select *Connect via Wi-Fi* to start the Wi-Fi setup and follow the steps on the touchscreen:

1. Wait until your printer has created a Wi-Fi hotspot. This may take a moment
 2. Use a computer or smartphone to connect to the printer. The name of the Wi-Fi network is shown on the display of the printer
 3. A pop-up will appear on the display of your computer or smartphone. Follow the steps to connect the printer to your local Wi-Fi network. The pop-up will disappear when you have completed these steps
-  If the pop-up does not appear, open a browser and enter the IP address shown on the display.
-  Within some network environments, the Ultimaker 2+ Connect may experience difficulties connecting wirelessly. When this happens, repeat the Wi-Fi setup from another computer or smartphone.
4. Go back to the Ultimaker printer and select *Continue* when you have completed the Wi-Fi setup


Connect via Ethernet

You can set up a wired network connection by performing the following steps:

1. Select *Connect via LAN* in the *Network connection* menu
 2. Connect one end of an Ethernet cable to the Ethernet port at the back of the printer
 3. Connect the other end of the cable to a network source (router, modem, or switch)
 4. Wait for the printer to confirm the connection
-  The Ultimaker 2+ Connect does not feature local network printing. Instead, use the Digital Factory to send print jobs via the cloud, and to monitor your printer remotely.

3.5 Firmware update

If connected to a network, the Ultimaker 2+ Connect will check if the latest firmware is installed. If a newer version is available, it will download the latest firmware and install it. This process may take several minutes to complete.

-  You will only be prompted to install the latest firmware if the printer is connected to a network and an older firmware version is detected. If the printer is not connected to the network, go to ultimaker.com/firmware to check if an update is available.

3.6 Install Ultimaker Cura

After successfully setting up your printer, install Ultimaker Cura – Ultimaker’s free print preparation software on your computer. You can download Ultimaker Cura at ultimaker.com/software.

- i** For more information about Ultimaker Cura and system requirements, please consult the Ultimaker Cura user manual at support.ultimaker.com.

After downloading, run the installer to complete the installation of Ultimaker Cura. When opening Ultimaker Cura for the first time, you will be asked to select your 3D printer. Select the Ultimaker 2+ Connect profile, and you are ready to go. You can now directly connect to the printer and start using Ultimaker Cura.

- i** For best printing results, always use the latest version of Ultimaker Cura.

Ultimaker Digital Factory

The Ultimaker 2+ Connect benefits from integration with Ultimaker Digital Factory. To make the most out of your Ultimaker printer, you must first associate the printer with your [Ultimaker Account](https://ultimaker.com).

Sign in or create your Ultimaker Account to utilize the Ultimaker 2+ Connect network functionality. This procedure runs in the web browser of your computer. After signing in, your browser shows the Ultimaker Digital Factory environment.

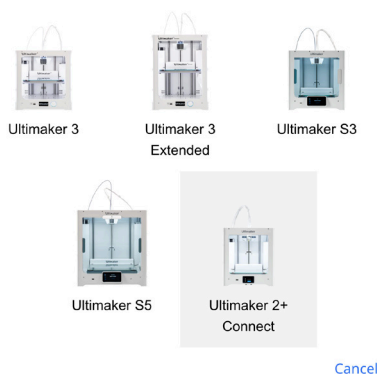
- i** For more information on the Ultimaker Digital Factory, visit digitalfactory.ultimaker.com.

Configure the Ultimaker 2+ Connect

Start Ultimaker Cura and follow the onboarding procedure. Select the Ultimaker 2+ Connect from the list of printers connected to your network. If the printer is not connected, select it from the list of non-networked printers.

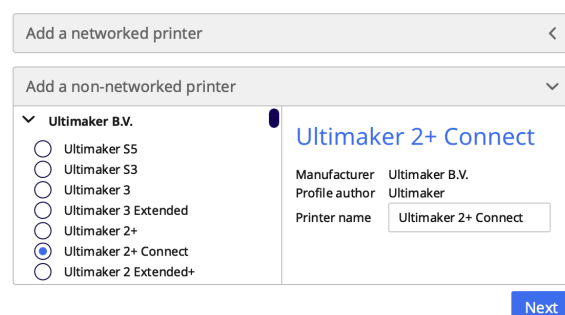
To add the Ultimaker 2+ Connect to an existing Ultimaker Cura set-up, select the *Printers* tab and choose *Add printer*.

Select your printer

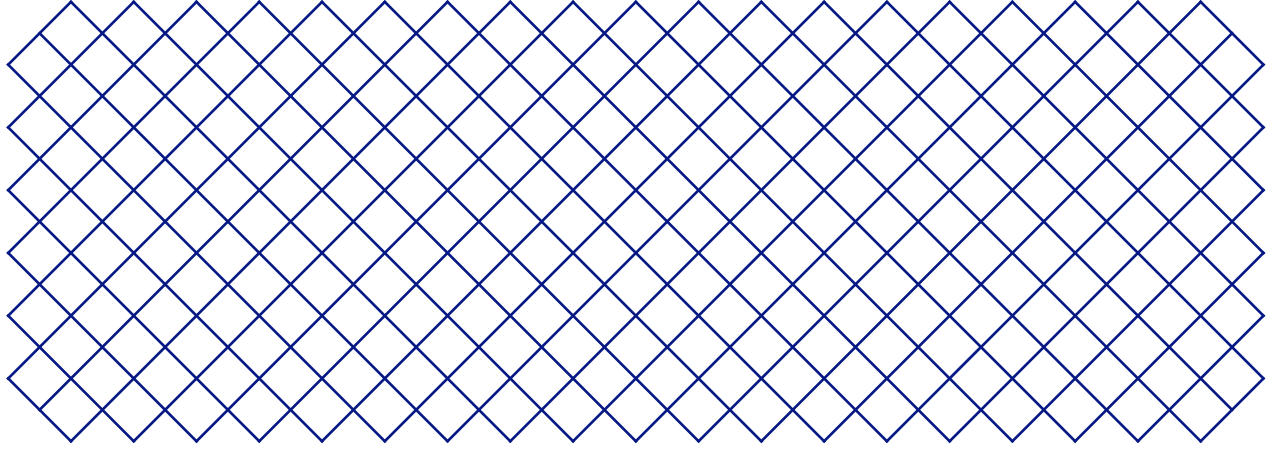


Select the Ultimaker 2+ Connect in the Digital Factory

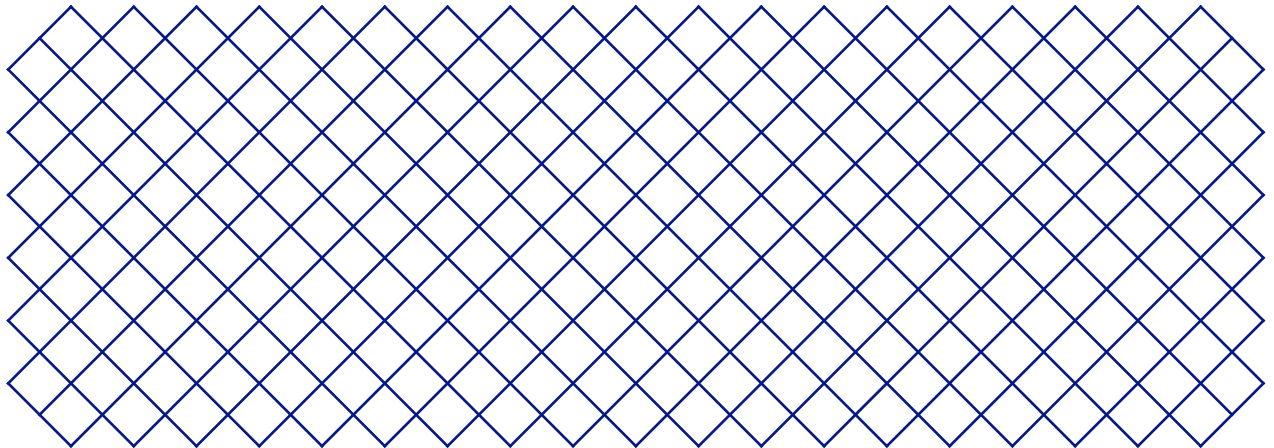
Add a printer



Add the Ultimaker 2+ Connect in Ultimaker Cura (non-networked)



4. Operation






4.1 Touchscreen

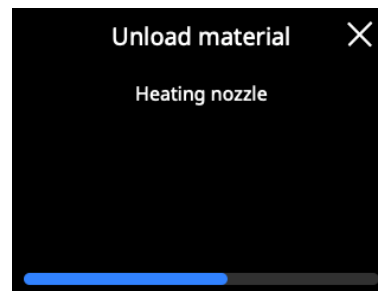
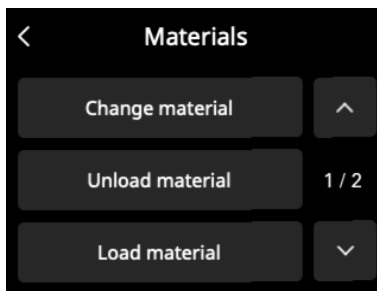
You can control the Ultimaker 2+ Connect by using the touchscreen at the front of the printer.

Interface

The main menu offers three options, represented by the following icons:

-  **Materials.** This menu shows which material is currently loaded. It also offers the options to change, load, or unload material, or select a different material type.
-  **Settings.** In this menu, you can update the firmware, connect to the Digital Factory, and change settings for the frame lighting.
-  **Maintenance.** In the maintenance menu, you can manually set the nozzle temperature and move the build plate, for example for troubleshooting purposes. Additionally, this menu offers the build plate leveling process and a diagnostics option.

Scroll through the sub-menus by using the up and down arrows on the right side. The number of pages is shown in the middle. Select the left arrow icon in the top-left corner to exit the menu and return to the main menu. Once you have started a process, such as *Unload material*, instructions will be provided on the display. If necessary, select the X icon in the top-right corner to abort the process.



4.2 Materials

Material compatibility



The Ultimaker 2+ Connect supports all Ultimaker build materials that are currently available, of which most can be printed with the 0.25, 0.4, 0.6, and 0.8 mm nozzle sizes.

All Ultimaker materials have been extensively tested and have optimized profiles in Ultimaker Cura to ensure the best print results. Therefore, it is advised to use one of the default profiles in Ultimaker Cura for the highest reliability.


Print recommendations

Each material requires different settings for optimal results. When using Ultimaker Cura to prepare your model, these settings are automatically set correctly if the correct nozzle size and material are selected.

It is recommended to apply a thin layer of glue (using the glue stick from the accessory box) or an adhesion sheet to the glass build plate before starting a print. This will ensure that your print adheres reliably to the build plate, and also prevents the glass build plate from chipping when removing prints.

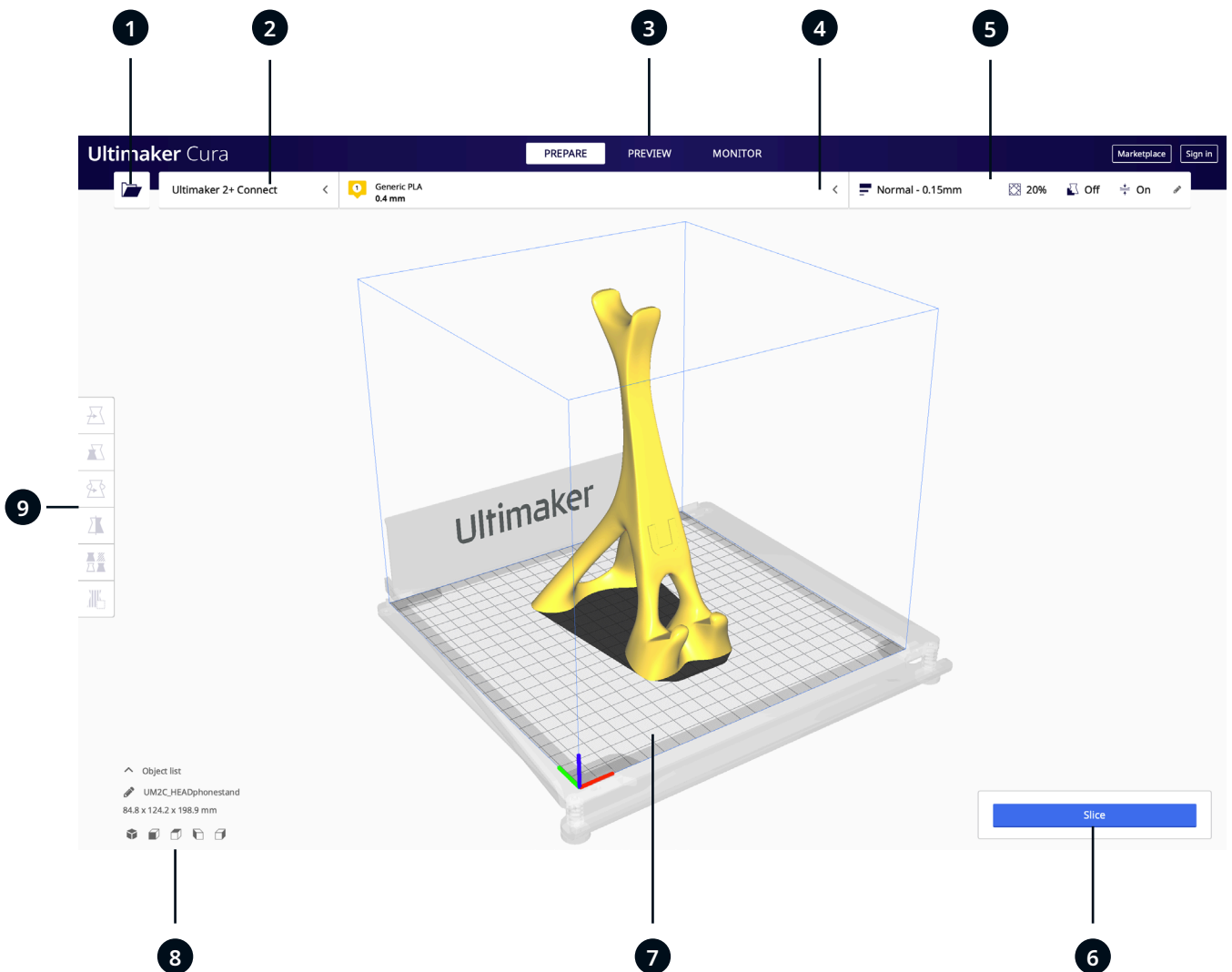
-  Chipped pieces of the glass plate stuck to the print after removing can cause cuts. Always use the recommended adhesion method.
-  The warning icon on the glass plate should face upwards. This side is best for printing and ensures optimal adhesion

For detailed instructions on which settings and adhesion method to use per material, take a look at the material manuals and adhesion recommendations on the Ultimaker website.

-  3D printing thermoplastics may result in the release of ultrafine particles (UFPs) and volatile organic compounds (VOCs) depending on the filaments used and settings of the 3D printer. In case UFP emissions are unknown or are likely to be significant, it is advised to use the Air Manager with the Ultimaker 2+ Connect or use the printer in a well-ventilated room. Ensure that the filaments are printed at the advised temperatures; too high printing temperatures will cause additional emissions. Other measures needed to further control emissions strongly depend on the specific conditions under which the printer(s) are used.

4.3 Preparing a print with Ultimaker Cura

Interface




After adding the Ultimaker 2+ Connect in Ultimaker Cura, the main interface will become visible. Here is an overview of the user interface (UI).

UI elements:

1. Open file
2. Printer selection panel
3. Stages
4. Configuration panel
5. Print settings panel
6. Action panel
7. 3D viewer
8. Camera position tool
9. Adjustment tools

The Ultimaker Cura workflow is arranged in three stages, seen at the top of the interface. These are the prepare, preview, and monitor stages.



Prepare stage

Load a model and prepare it for slicing in the prepare stage of Ultimaker Cura.

1. Load the model(s) by clicking the 'open file' folder icon
2. In the configuration panel, select the material type you wish to print with
3. Use the adjustment tools to position, scale, and rotate the model as desired

i The adjustment tools are visible when a model is loaded and selected on the 3D viewer.

4. Select your desired settings (profile, layer height, infill, support and build plate adhesion) in the print settings panel
5. When satisfied with your print settings and print strategy, press the Slice button on the action panel
6. When slicing is complete, the action panel will now direct you to the preview stage

For more information about the prepare stage and the available settings in the custom menu, see the Ultimaker Cura support pages.

Preview stage

The preview stage allows you to see exactly how your model will be printed. Use the different color schemes to get various information about your model. You can view the different line types, differentiate infill from skin, or use the X-ray view to detect gaps within your model.

When satisfied with your model print preview, the action panel guides you to print over the network if connected to a networked Ultimaker 2+ Connect.

i Alternatively, you can save the file to a USB for printing with offline printers.

For more information on the preview stage, see the Ultimaker Cura support pages found on the Ultimaker website.

Monitor stage

The monitor stage utilizes the Ultimaker Digital Factory functionality so you can easily monitor the status of your networked Ultimaker printer.

When printing on a networked Ultimaker printer, you can send your print jobs from Ultimaker Cura to the printer via the cloud. The status of the printer will change to *Printing*, and you can begin to track the print's progress. You can also queue multiple print jobs and view them in the print queue.

4.4 Printing with the Air Manager

The optional Ultimaker 2+ Connect Air Manager is designed to simply and effectively increase user safety. The Air Manager consists of the top cover, filter, and front enclosure. Proper use of the Air Manager minimizes the emission hazards related to UFPs caused by 3D printing materials.

- ① The Air Manager is highly recommended in classrooms, when printing with materials that emit significant amounts of UFPs, or in locations with multiple 3D printers.

With a connected Air Manager, the Ultimaker 2+ Connect is enhanced with the following features:

- **UFP filtering.** The Air Manager encloses the top and front of the Ultimaker 2+ Connect and ensures an inside-out airflow. The air passes through an E10 filter whereby ultrafine particles (UFPs) get trapped
- **Physical barrier.** The enclosed top and front prevent users from reaching into the machine during operation and ensures particles from the environment do not influence the print result

- ⚠ The Air Manager will only work properly if all components are installed correctly. Ensure there are no gaps between the filter housing, cover, and the printer. The front enclosure must be installed when the Air Manager fan is running. Ensure that the Air Manager cable is securely connected and the fan is spinning during a print.

When a print has finished, wait until the printer has completely cooled down. This will allow sufficient time to filter all particles from the printing process. Then remove the front enclosure so you can take the finished print from the build plate.

- ① When removing the front enclosure from the Ultimaker 2+ Connect, it can be placed on top of the Air Manager. The shape of the front of the Air Manager cover aligns with the hinge profile of the front enclosure.

4.5 Remove the print

Once your 3D print is finished it must be removed from the build plate. There are several methods to do this.

- ⚠ When using a brim, be aware of the danger of cutting yourself when removing the print from the build plate. Use a deburring tool to remove the brim once the print is taken from the build plate.
- ⚠ Always use the recommended adhesion method. Printing directly on the glass with certain materials can cause the build plate to chip. Chipped pieces of the glass plate stuck to the print after removing can cause cuts.

Wait for cooldown

If you printed directly onto the build plate, simply allow the build plate and the print to cool down after printing. The material will contract as it cools, allowing you to easily remove the print from the build plate.

- ⚠ The heated bed can reach temperatures of over 100 °C. Do not remove the print or the glass build plate from the printer until the printer has cooled down. The display of the Ultimaker 2+ Connect will indicate when it is safe to remove the print or build plate.

Use a spatula

If your print is still adhered to the build plate after cooling, you can use a spatula to remove the print.

- ⚠ Use a spatula with rounded corners to avoid cutting yourself on sharp edges.

Place the spatula under the print, parallel to the build plate, and apply a small amount of force to remove the print. A spatula can also be used to carefully remove remaining parts of the print from the build plate, such as the brim or support structures.

- ⚠ Take the build plate out of the printer to avoid damaging the build plate clamps.

Use water

Remove the build plate from the printer when the display indicates it is safe to do so. Run cool tap water over the bottom of the plate to cool it quickly. Due to the contraction of the material, the print will easily pop off the plate.

- i Alternatively, you can run lukewarm water over the print side of the plate to dissolve the glue.

Confirm removal

Once the print has been removed and the build plate is placed back in the printer, confirm the print removal on the display of the Ultimaker 2+ Connect. This will allow the next print job to start.

- ⚠ If the Ultimaker 2+ Connect is connected to the network and utilizing the Digital Factory, queued print jobs can start remotely. To prevent damage to the printer, do not confirm the print is removed until the build plate is clear and placed back in the printer.
- i If necessary, clean the glass build plate and apply a new layer of glue before starting the next print.

4.6 Change the printer configuration

Change material

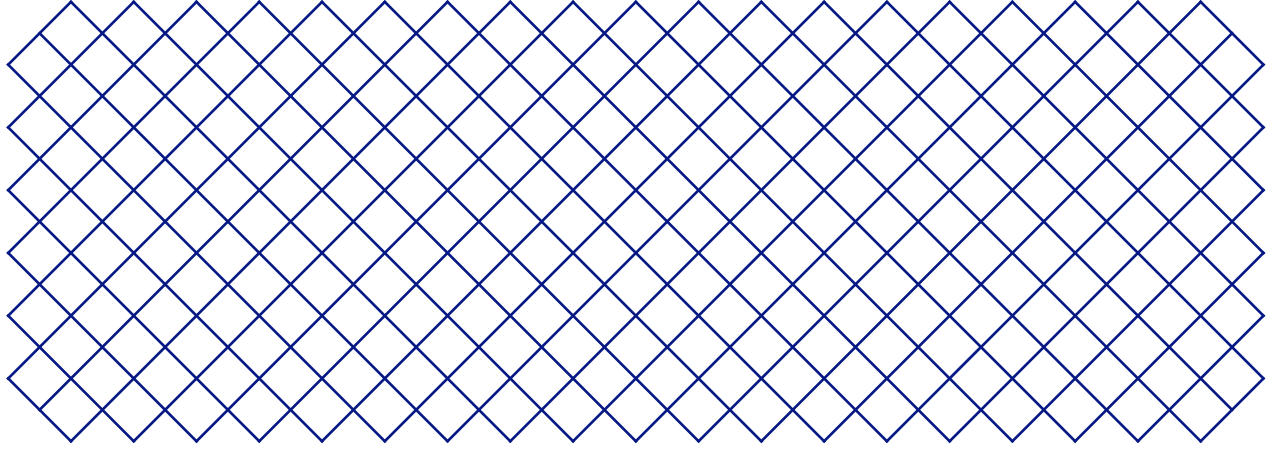
Materials can be changed easily on the Ultimaker 2+ Connect.

- ⦿ Select the **Materials** menu and navigate to *Change material*. Follow the instructions on the display.
 1. Select the new material type. If you want to load a new spool of the same material, select *Yes*. If you are changing to a different material, select *No* and choose the new material type on the next screen
 2. Wait for the nozzle to heat up
 3. Open the feeder lever, pull the material out through the Bowden tube, and remove the spool from the spool holder
 4. Place the new spool on the spool holder with the material in counterclockwise direction
- ⓘ Straighten the end of the material so it can easily enter the feeder.
 5. Insert the filament into the feeder and push it through to the print head
 6. Close the feeder lever
 7. Confirm that the spool is loaded and wait for the material to extrude from the nozzle
 8. Confirm and wait for the nozzle to cool down after this procedure

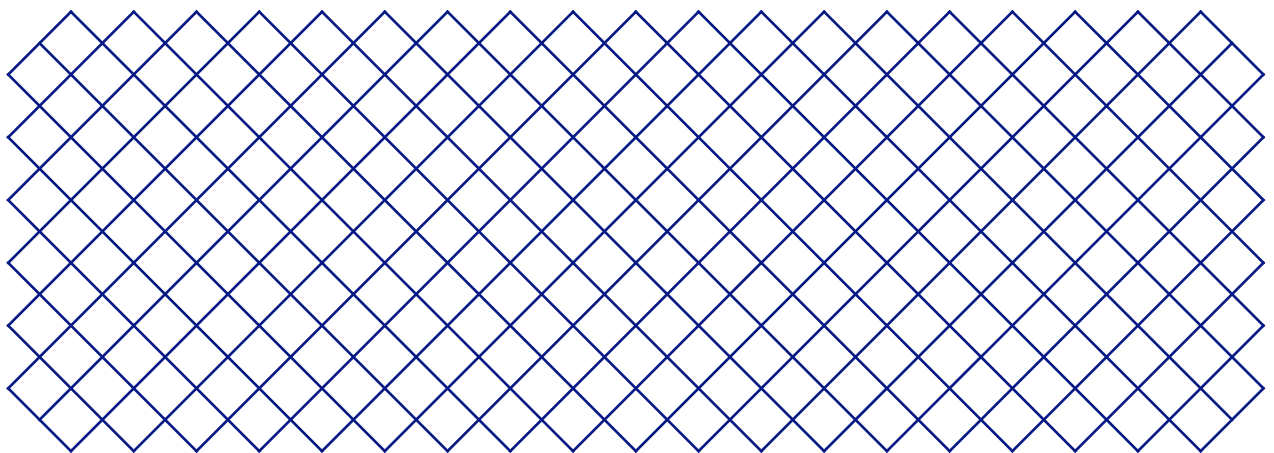
Change the nozzle

The Ultimaker 2+ Connect has a heater block with easily swappable nozzles. A 0.4 mm nozzle is already installed, and an extra 0.4 mm nozzle is included in the accessory box. Other compatible nozzle sizes include 0.25 mm, 0.6 mm, and 0.8 mm and can be purchased separately. To change the nozzle, use the 7 mm wrench that is included in the accessory box.

- ⓘ Before removing the nozzle, perform a cold pull to remove material residue from the inside of the nozzle.
 1. Remove the material from the print head
- ⓘ The filament only has to be partially unloaded, until it is visible above the print head. Use the *Change material* procedure or raise the nozzle temperature via the **Maintenance** menu and unload the filament manually.
 2. Place the print head in the middle of the gantry for easy access
 3. Set the nozzle temperature to 100 °C
 4. Use the 7 mm wrench to unscrew the nozzle from the heater block, in a clockwise direction
- ⚠ The nozzle is warm. Take proper measures to catch the nozzle when it is loosened from the heater block. Protective (thermal) gloves are advised.
 5. Select the desired nozzle and manually screw it into the heater block until it is hand-tight
- ⚠ Be careful, as the heater block is still warm. Protective (thermal) gloves are advised.
 6. Use the wrench to fully tighten the nozzle
- ⓘ If a different size nozzle was installed, ensure to select the corresponding nozzle size in Ultimaker Cura to prepare the next print job.



5. Maintenance




5.1 Update the firmware

Periodically, a new version of the Ultimaker 2+ Connect firmware is released. To ensure that your Ultimaker 2+ Connect is equipped with the latest features, it is recommended to keep the firmware updated to the latest version.

Update over the network

If the Ultimaker 2+ Connect is connected to a network, it automatically checks for available firmware updates. When a new firmware is available, the printer will prompt you to download and install it via the touchscreen interface. Alternatively, check for updates manually by navigating to *Settings* → *Update firmware*.

 Do not power off the printer during the firmware installation.

Update using a USB stick

If your Ultimaker 2+ Connect is not connected to a network, you can update to the latest firmware via USB. The firmware files are found on the Ultimaker website:

1. Navigate to ultimaker.com/firmware, and select your printer
2. Download the firmware image and store it in the root directory of your USB stick
3. Insert the USB stick into the USB port of the printer
4. Go to *Settings* → *Update firmware* and select the new firmware from the USB device

 Do not power off the printer during the firmware installation.

5.2 Material handling and storage

Opened material spools must be stored properly when not in use. If material is stored incorrectly, it may affect its quality and usability.

The optimal storage temperature for PLA, Tough PLA, Nylon, CPE, CPE+, PC, TPU 95A, and PP is between -20 and +30 °C. For ABS, the advised temperature is between 15 and 25 °C. Furthermore, a relative humidity of below 50% is recommended for TPU 95A and PP. If these materials are exposed to a higher humidity, the quality of the material can be affected.

To keep your materials in optimal condition, opened spools should be stored:

- Cool and dry
- Out of direct sunlight
- In a resealable bag

To minimize moisture absorption, store the material in a resealable bag including the supplied desiccant (silica gel) directly after printing.

5.3 Maintenance schedule

To keep your Ultimaker 2+ Connect in optimal condition, we recommend the following maintenance schedule, based on 1,500 printing hours per year.



- i** If the usage frequency is higher, we recommend performing more frequent maintenance on your printer to ensure optimal printing results.
- ⚠** Maintenance actions shall only be performed by an adult. Carefully follow the provided instructions. Where possible, ensure the printer is turned off before performing maintenance. Otherwise, if the printer is connected to the Digital Factory, ensure the Ultimaker 2+ Connect is unavailable to accept new print jobs from starting remotely through the Digital Factory.
- i** For most maintenance actions, it is required to remove the Air Manager cover and/or front enclosure in order to reach the parts of the printer.

Every month	Clean the printer	Keep the Ultimaker 2+ Connect clean for optimal printing results. This includes: <ul style="list-style-type: none">• Cleaning the glass build plate• Removing degraded material from the outside of the nozzle• Removing particles from the inside of the Bowden tube• Cleaning the inside of the printer• Clean the Air Manager components
	Lubricate the axles	Apply a small drop of oil to the X, Y, and Z axles. Move the print head and build plate to equally distribute the oil. ⚠ Only use the supplied oil, as other oils or grease may affect the coating of the axles.
Every three months	Check for play on the axles	The X and Y axles in the frame should only rotate, not move back and forth. Firmly attempt to move the axles individually. If there is play, follow the instructions on the Ultimaker website to correct it.
	Check the tension of the short belts	The short belts attached to the X and Y motors should be tight to correctly transfer the movement to the print head. If the belt tension is too low, follow the instructions on the Ultimaker website to correct it.
	Lubricate the lead screw of the Z motor	Apply a small amount of grease to the lead screw of the Z motor. Move the build plate up and down to equally distribute the grease.
	Retighten the hot end isolator	Insert the hex screwdriver into one of the holes of the hot end isolator and fully tighten it. This prevents material leaking between the hot end components.
Every year	Clean the feeder	Small filament particles can gather on the feeder's knurled wheel. Unload the material and open the feeder to clean the inside with a small brush. Follow the instructions on the Ultimaker website.
	Lubricate the feeder gear	Remove the feeder from the back panel to access the feeder gear. Clean it first, then apply a small amount of grease to the gear. Follow the instructions on the Ultimaker website.
	Replace the Bowden tube	Materials can slightly scratch the inside of the Bowden tube and the ends of the tube can get damaged by the tube coupling collets. It is advised to replace it after one year of printing.

For detailed instructions on how to perform each maintenance action, visit support.ultimaker.com.

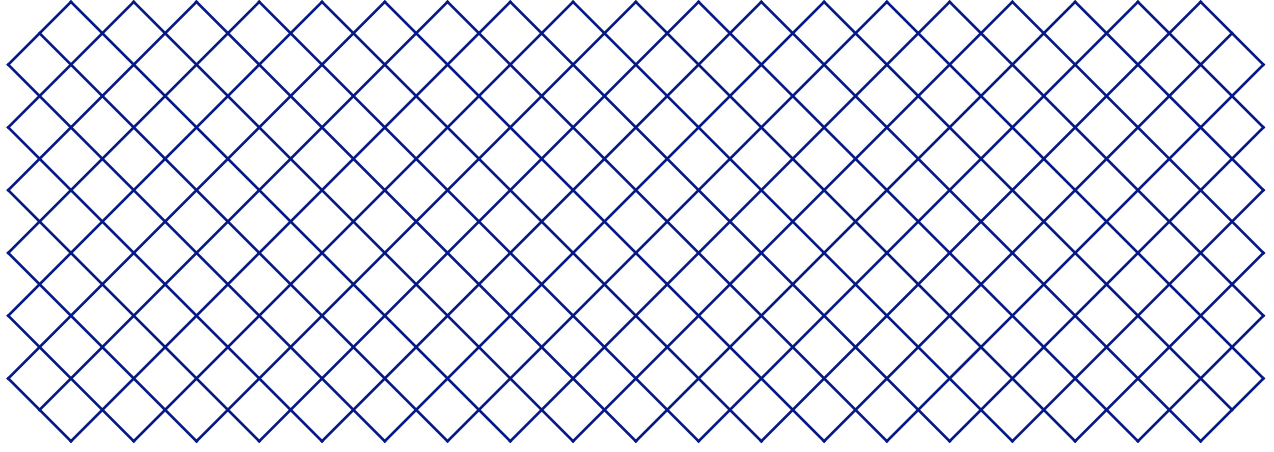
5.4 Replace the Air Manager filter

The filter in the Air Manager is a consumable. It should be replaced every 1,500 printing hours to maintain proper filtering.

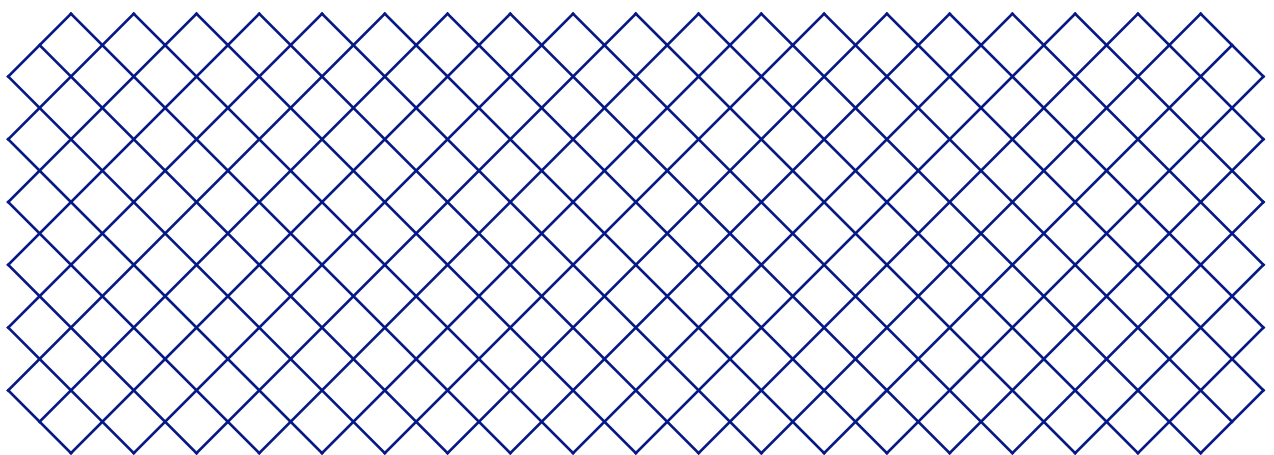
-  Do not change the filter of the Air Manager while the fan is in operation. Turn off the printer to make sure the fan cannot start unexpectedly.
-  The function of the Air Manager's filter is to reduce the emission of ultrafine particles. These particles will remain in the filter. The used filter should 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. Remove the Air Manager cover
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. Ensure the filter is completely flush
5. Place the Air Manager cover onto the printer and turn on the Ultimaker 2+ Connect

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



6. Troubleshooting



6.1 Error messages

When the printer 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:

- Detected nozzle temperature is invalid. Go to ultimaker.com/ER201

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




6.2 Extrusion problems

If the Ultimaker 2+ Connect is not extruding the correct amount of material, or not extruding any material at all, there can be multiple causes for this. Try the following troubleshooting tips.

Clean the inside of the nozzle

If material does not flow consistently, the nozzle could be clogged with degraded material. In this case, the nozzle should be cleaned by performing the hot and cold pull method. You can use cleaning filament or PLA for this.


Cleaning filament can be used to clean the nozzle of the Ultimaker 2+ Connect by applying hot and cold pulls. Hot pulls are used to get the biggest parts of degraded material out of the nozzle and are especially necessary when the nozzle is clogged. With a cold pull, the remaining small particles will be pulled out, ensuring the nozzle is completely clean.

-  A cold pull is also recommended when switching to a different material type or when changing the nozzle.
-  This procedure requires heating up the nozzle. Be careful and do not touch the nozzle. Protective (thermal) gloves are advised.
-  Ensure the Ultimaker 2+ Connect is disconnected from the Digital Factory or made unavailable for new print jobs.

Preparation

1. Start by removing the material. Navigate to *Materials* → *Unload material* and remove the spool
2. Place the print head in the front-right corner
3. Remove the clamp clip from the print head, press down on the tube coupling collet and pull the Bowden tube upwards out of the print head
4. On the display, navigate to *Maintenance* → *Set nozzle temperature*
5. Use the controls to set the target temperature to 260 °C for cleaning filament, or 235 °C for PLA
6. Wait for the nozzle to heat up

Hot pull

-  Use pliers to hold the material to prevent injury to your hands in case the material breaks.
1. Insert the cleaning filament (or a length of approximately 20 cm of PLA filament) into the print head until you feel some resistance
 2. Hold the filament with pliers and gently apply pressure to the material for ±1 second so that it extrudes from the nozzle or until it cannot be pushed any further, and directly pull the filament out with a quick, firm pull
 3. Cut off the tip of the filament that you have just pulled out
 4. Repeat this procedure until there is no more degraded material visible on the tip of the cleaning filament.
 5. Insert the filament into the print head again and flush some material through the nozzle

Cold pull

1. In the Set nozzle temperature menu, use the controls to lower the nozzle temperature to 135 °C for cleaning filament, or 90 °C for PLA
2. Continue to apply some pressure on the material in the print head with pliers
3. When the nozzle has reached the target temperature, use the pliers to pull out the filament with a quick, firm pull
4. Inspect the tip of the filament. If it has a clean, cone-shaped tip like the image below, the nozzle was successfully cleaned

i If the tip of the material is not clean, raise the temperature again and repeat the cold pull steps.

Finish the procedure

1. Lower the nozzle temperature to 0 °C and wait for the nozzle to cool down
2. Insert the Bowden tube into the print head by pressing down on the tube coupling collet in the print head and pushing the Bowden tube all the way in
3. Pull the Bowden tube and tube coupling collet approximately 2 mm upwards. Keep the tube coupling collet up and push the Bowden tube further in
4. Secure the tube with the clamp clip

Check the TFM coupler

The TFM coupler (the white part in the Ultimaker 2+ Connect hot end) can deform. The coupler is a consumable item that wears over time and slowly changes shape on the inside due to heat and pressure in the hot end. Eventually, this will cause friction to the material that has to pass through and causes under-extrusion.

Checking the condition of the TFM coupler requires disassembling the Ultimaker 2+ Connect print head. Instructions on how to do this and how to replace the TFM coupler when necessary are found on the Ultimaker website.

Check the feeder

Extrusion problems can also be related to the feeder. Clean the feeder and Bowden tube according to the maintenance instructions. Additionally, check if the feeder tension is set correctly. For all Ultimaker materials, the tension indicator should be set to the middle mark.

i Use the hex screwdriver to turn the bolt in the top of the feeder to adjust the position of the tension indicator. If you have an Air Manager, it must be uninstalled first in order to reach this bolt.


6.3 Adhesion issues

Adhesion problems can include the print not sticking to the build plate or warping of the material during printing.

When you experience problems with the adhesion of a print to the build plate, the following things can be done:

- Ensure that the correct adhesion method was used. See the Ultimaker website for the recommended adhesion methods per material
- Level the build plate to ensure the distance between the nozzle and build plate is correct. Navigate to *Maintenance* → *Level build plate* and follow the instructions on the display
- Check the Ultimaker Cura settings that were used and try printing with one of the default Ultimaker Cura profiles

i The use of the Air Manager is highly recommended. It ensures a closed environment and can improve the adhesion, especially with engineering materials.



6.4 Air Manager troubleshooting

Air Manager not recognized

You can check if the Air Manager is detected by the Ultimaker 2+ Connect in the Diagnostics menu. Navigate to *Maintenance* → *Diagnostics* to check the Air Manager status. If the Air Manager is installed, but listed as 'not present', it may not be connected properly. Follow the steps below to check the Air Manager cable:

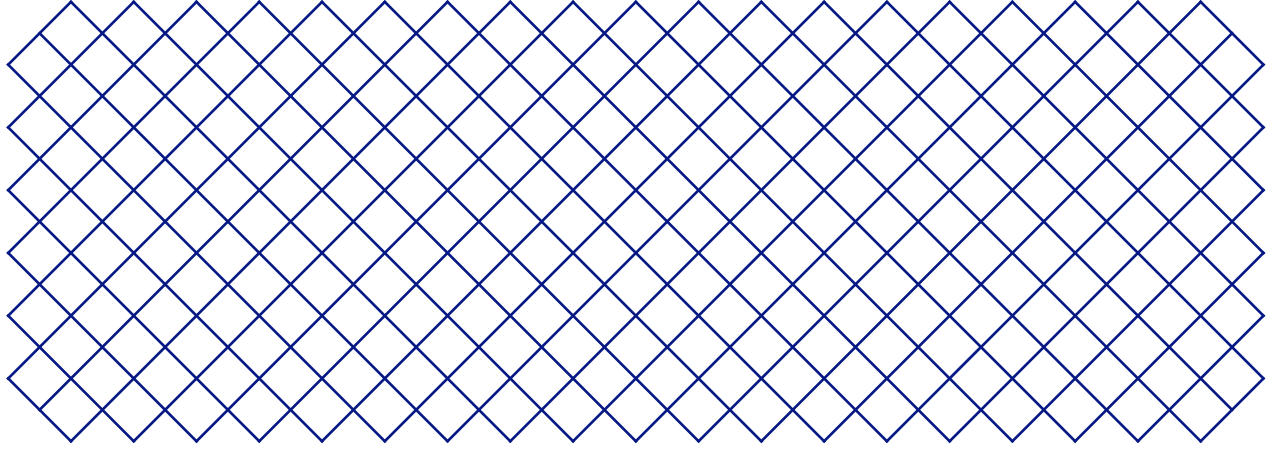
1. Power off the Ultimaker 2+ Connect
2. Ensure one end of the Air Manager cable is securely inserted into the filter housing. Reconnect if necessary
3. Ensure the other end of the cable is securely inserted into the **OUT** port at the back of the Ultimaker 2+ Connect. Reconnect if necessary
4. Turn the Ultimaker 2+ Connect on again. If the Air Manager is still not recognized, go to support.ultimaker.com and submit a support ticket

Fan is not spinning

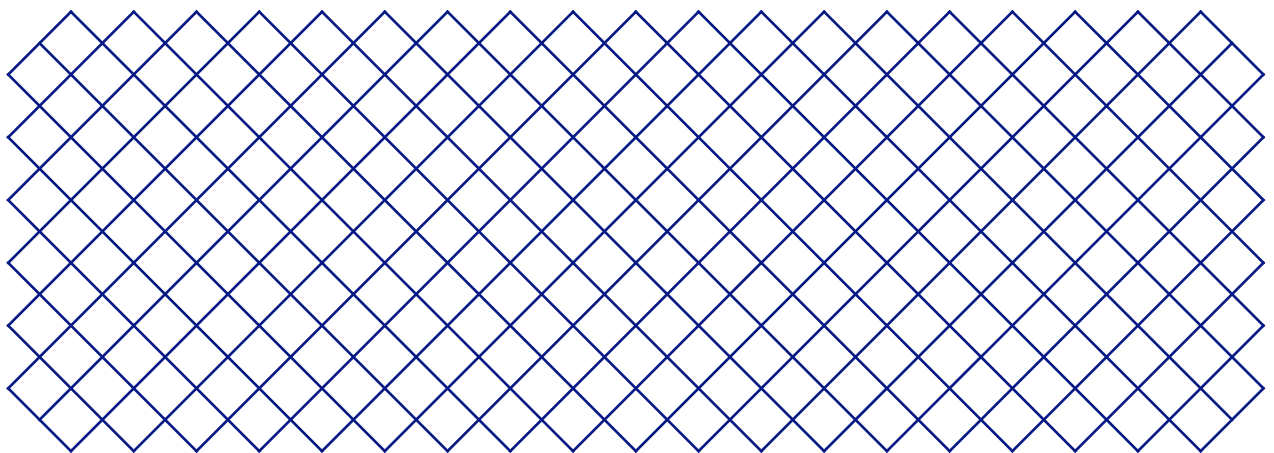
If the fan of the Air Manager is not spinning correctly, the Air Manager will not be able to properly filter all particles from the printing process. This may also lead to too high temperatures inside the printer. In case of problems with the fan, check for obstructions:

1. Check if the filter is installed correctly
2. Check at the back if anything is interfering with the fan
3. Ensure at least 10 cm of free space behind the Ultimaker 2+ Connect and Air Manager for unrestricted airflow

If this does not help to resolve the problem, go to support.ultimaker.com and submit a support ticket.



7. Warranty





7.1 General

Ultimaker grants a standard warranty on the Ultimaker 2+ Connect and Air Manager (“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
- 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

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

- Any defect or damage caused by inappropriate, incorrect or improper use, installation, maintenance, operation and cleaning or normal wear and tear. For correct use, reference is made to the manual of the product
- 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.

Ultimaker

Support

For more information on technical support, visit support.ultimaker.com or contact your local reseller

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