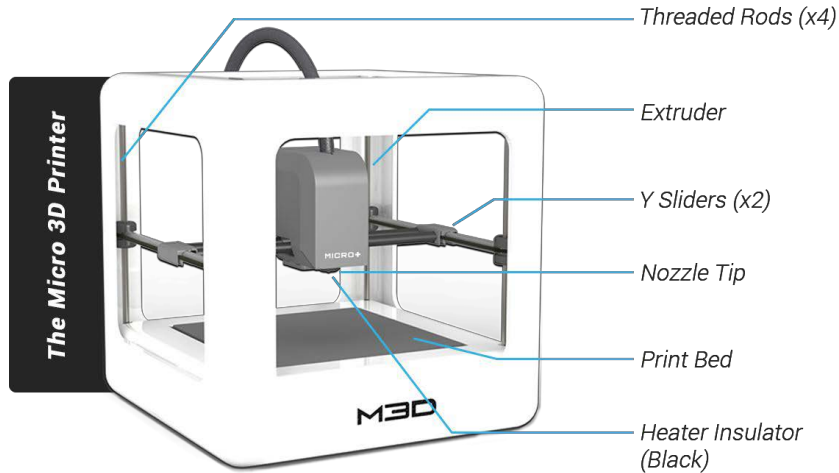




The Micro+ 3D Printer User Manual

Welcome to 3D Printing! Thank you for purchasing The Micro+ 3D Printer, the first truly consumer 3D printer. The Micro+ is ready right out of the box to make your custom creations come to life. Just plug in the printer, download the models, hit print, and watch as you bring an object into the world through 3D printing. Let's see what you print!



Specifications

Lower Build Volume: 110 mm x 107 mm x 73.5 mm
Upper Build Volume: 80 mm x 68 mm x 38 mm Layer
Resolution: 50 to 350 Microns
Filament Diameter: 1.75 mm
Nozzle Diameter: 0.35 mm
Layer Thickness: 0.05 mm
Speed: Up to 55 mm/s
Position Precision: XY - 15 microns; Z - 3 Microns
Software: M3D
Supported File Types: .STL and .OBJ System
Compatibility: Windows/Mac/Linux
Power Supply: 20W UL/CE listed power supply USB: 2.0 or above
Weight: 2.0 lbs

www.PrintM3D.com

Visit and explore our website for new content, features, and news related to The Micro+!

www.PrintM3D.com/Downloads

Find new software, 3D models, and in-depth documentation.

www.PrintM3D.com/Support

View our expansive customer support network, technical articles, and FAQ.

This Manual is subject to change. For updated specifications, languages, and information visit www.printM3D.com/support.

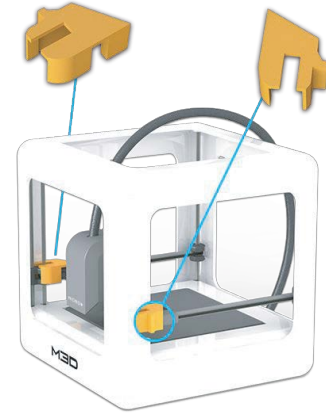
1.0 Unboxing The Micro+



M3D Power
Adapter



M3D USB
(A-B)



Be sure to remove the “Gantry Clips” located on the front left and front right corners of the printer.

1. Lift The Micro+ from its packaging box. Remove all bubble wrap, foam, and tape (may require scissors).
2. Inside The Micro+ is an accessories box with a USB A-B cable and your country specific power supply.



Safety Considerations

Caution: Hot! Keep your fingers away from the Nozzle Tip and Black Insulator when the printer is on as these areas reach temperatures over 200 degrees Celsius. Always be sure to keep your hands away from moving parts when The Micro+ is in operation.

2.0 Downloading M3D Software

1. Please visit <http://www.PrintM3D.com/downloads> to download your Operating System specific M3D Software. Download the M3D Micro+ Software to a known location, like your Desktop. Run the installer and continue through all windows and prompts.
2. Run the M3D Software after it has fully installed. Your computer is now ready to automatically detect any M3D printers that are connected.
3. Please allow your printer to update to the most recent firmware. DO NOT turn off your printer or computer during firmware and software updates.

****Turn Windows Automatic Updates to Inform Only*** When running a Windows PC, turn Automatic Updates to “Check for updates, but let me choose whether to download and install them” from the Control Panel; this will prevent Windows Automatic Updates from restarting your computer (resulting in a print failure) while The Micro+ is in operation.*

3.0 Connect and Power The Micro+

1. Insert the provided M3D USB cable into the USB port at the back of the printer.
2. Insert the other end of the USB cable into an available USB port on your computer . If you have issues with USB 3.0, go to our support page at www.PrintM3D.com/support and search “USB 3” for solutions.
3. Insert the provided genuine M3D power supply into the round hole on the back of the printer. DO NOT use another power supply!
4. Plug the country-specific external power supply into a wall socket, and the M3D logo on the front of The Micro+ should light up.
Power Off* To power off The Micro+, disconnect the USB first. Then, wait at least 10 seconds before detaching the power supply from the back of the printer.

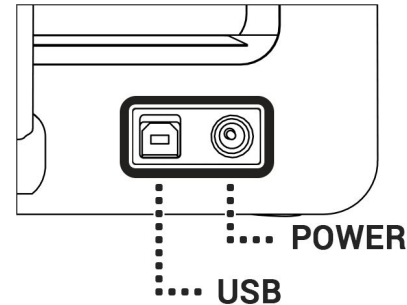


Figure. Rear view of The Micro+ showing the USB and Power ports.

4.0 Installing 3D Ink (Filament)

Filament Installation is accessed by selecting the **3D Ink** button in the top left corner of the M3D Software. You will be guided to install filament **Externally** or Internally from the spool storage bay under the print bed (For display use only, prints using this feed method have increased risk to skip or jam). **DO NOT** attempt to load both ports at the same time during printing.

External Filament Path

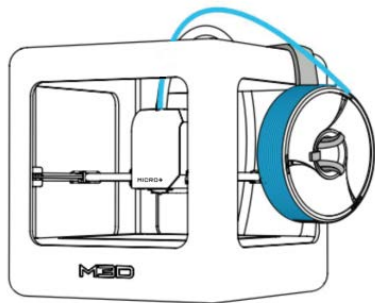
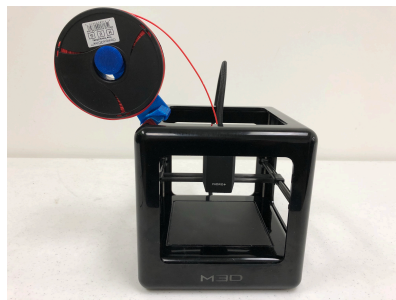


Figure. An example of an ideal external filament path. External filament is installed via the external feed port located at the top of the extruder head. Always keep a clear path between your filament spool and the print head.



Example of a printed spool holder available in the downloads section of our website:
Printm3d.com/downloads

****NOTE Factory Filament ****

There may be factory filament installed externally, let the printer extrude this first and then insert your filament of choice.

Notes for Loading Filament

In both scenarios, you need to feel the filament “catch” the extruder gear. When you are loading filament, apply constant force on the filament to push it forward into the extruder gear. A good way to test if the filament is “caught” is to lightly pull back and forth on the filament. If the filament does not pull out, then you have engaged with the gear.

3D Ink Cheat Code

Your 3D Ink™ Cheat Code is written on the front of your Micro+ Spool. If it is not, you can type in either ABS or PLA depending on which filament type you are using. Then adjust the recommended temp using the gear icon in the top right of the 3D ink window

5.0 The First Print!

1. Quick Calibrate

Often a successful first print layer leads to a successful print! To be sure your printer is ready for its first print, select the **Gear** Icon to open the printer settings. Then go to the

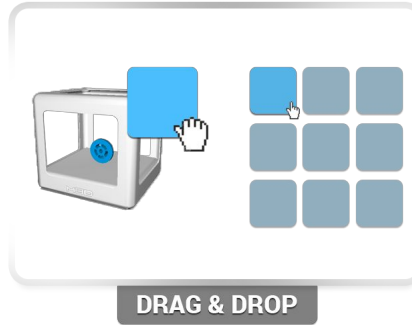
Calibration section where you can select **Advanced Calibration**. Now select the

Recalibrate Bed Location button. This will begin the Quick Calibration process, which should take no more than 5 minutes.

***DO NOT TOUCH** The Micro+ During Calibration*

Keep the printer on a level/stable surface during any calibration sequence. There is the option in the M3D Software to manually adjust the calibration height of your Micro. Please visit www.PrintM3D.com/ support for detailed videos and documents regarding calibrating The Micro+.

2. Load the First Model



To load a model Simply drag the model from the Recent Models library to the printer.

Select the Open Model button in the top left corner of the M3D Software to browse for other 3D Models on your computer. Or drag and drop them into the GUI from the desktop

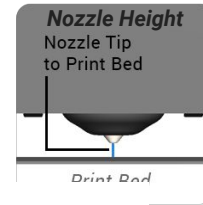
Other models can be downloaded from sites like Thingiverse.com and Yeggi.com. These files must be .STL or .OBJ file types.

3. Watch Your First MicroPrint!

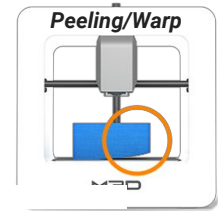
Click the **Green Button** to open the print settings menu and begin your first print. We recommend starting your first print using only the skirt option and print at the lowest quality until you become comfortable with the units operation. You should deselected verify bed level since you will have just calibrated and this feature will overwrite your saved settings

Look Out!

We encourage you to get into the habit of watching the first few layers of your print and paying attention to two things:



Only a piece of paper (.1mm) should fit between the print bed and nozzle tip. If not, Recalibrate!



You should typically stop your print and adjust the User Offset Values in that corner.

6.0 Troubleshooting

In the event of printer issues, visit the M3D support page online at <http://www.PrintM3D.com/support>. Search our technical articles, videos, and documentation for troubleshooting solutions or contact customer support.

For additional language support please visit <http://www.PrintM3D.com/support> to find documentation in your language.

7.0 Print Settings

What is Print Quality?

Print Quality refers to the height of a layer. With higher quality prints you will have smaller layer heights and longer print times.

What is Fill Density?

Fill Density of a print is the amount of filament printed inside the model (the part of the model you do not see). A hollow print will have nothing on the interior, it will weigh less but can be easier to break. A high density print will weigh more, require more filament, but is stronger.

Can I adjust my model size, position, and orientation?

Yes, you can! To adjust models click on The Micro+ Printer to enter adjustment mode. You will see a menu on your left where models can be scaled, rotated, or moved by adjusting the options on the left. Models can be scaled by all three dimensions simultaneously by using the right-mouse button, individually adjusted using the scale bar, or manually entered into the number box.

What is Support Material, and when should I have it turned on?

Support Material is needed when printing 3D models with overhangs. An extreme case is if a sphere is floating in mid air in the 3D model, you would turn support on in this situation to print the model properly.

I want faster prints; how do I do this?

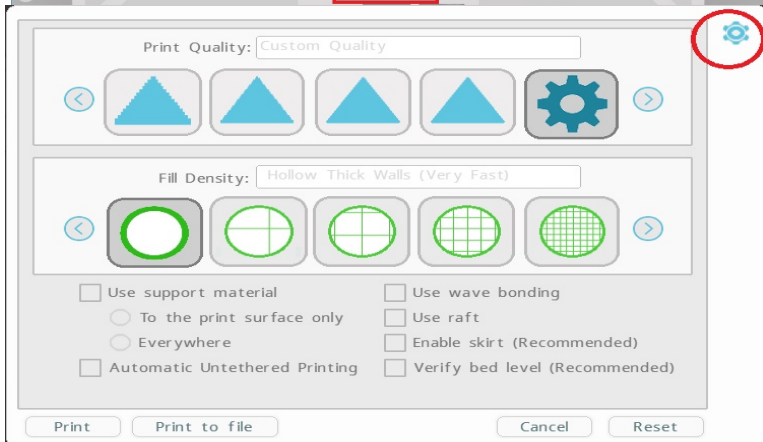
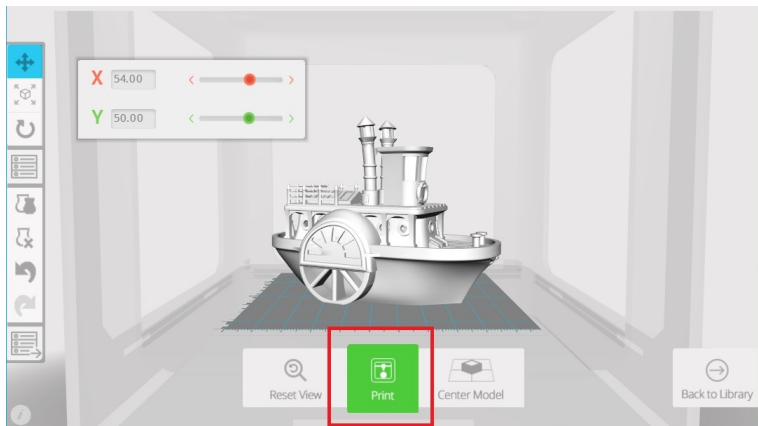
Select the “Ultra Low” print quality and use “Hollow, Thick Walls” for your Fill Density. Often these settings are great for printing models.

What is my Bed Location

The bed location is the position of the Nozzle Tip relative to the Print Bed. The printer needs to know where the print bed is when printing, otherwise you could be printing in mid air or digging into your bed. Use the Calibration Program to “Zero” the bed location. The “Zero” position is when the nozzle tip is hovering just above the print bed, only a piece of paper should slide between the nozzle tip and print bed. Good bed location usually means good prints! If your first layer is lifting, often this means the Bed Location is off.

8.0 Advanced Print Settings

The following section covers settings that can be accessed via the gear icon in the main print window, as seen in the image below



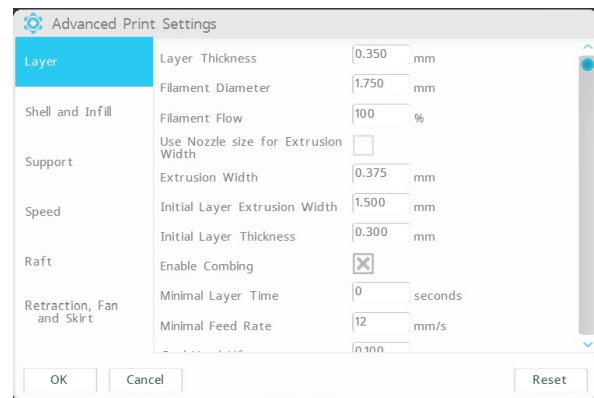
General Notes

Printer firmware may not respect these settings under all conditions.

Settings should only be adjusted by experienced users and improper settings may cause print failure or damage to the unit not covered by the warranty.

Settings can be saved to the STL being printed for easy reloading. Some settings will be overwritten if one of the preselected options is selected after making adjustments in the menu.

Submenus: The advanced setting are divided into category tabs



Layer

Layer Thickness:	Height of the printing layer. Note: This does not include the first layer height (see Initial Layer Thickness below).
Filament Diameter:	Diameter of filament on the spool
Filament Flow:	Percentage of calculated extrusion flow applied.
Extrusion Width:	Width of the extruded filament pattern
Initial Layer Extrusion Width:	Width of the first layer
Initial Layer Thickness:	Height of the first layer.
Enable Combing:	When enabled, the printer will attempt to make all travel moves within the boundaries of a printed solid rather than in shortest-distance straight lines; primarily applicable for concave solids.
Minimal Layer Time:	Desired minimum amount of time taken to print each single layer. If printing layer time is lower than parameter value, printer will initiate a delay to reach the expected minimum layer time. This is useful for ensuring adequate cooling before printing new material on a surface.
Minimal Feed Rate:	The minimal movement speed of the print head.
Cool Head Lift:	The amount of vertical lift by the extruder head between each layer, when the time it takes to print a given layer exceeds Minimal Layer Time.

Shell and Infill

Inset Count:	The number of perimeter shells.
Down Skin Count:	The count of bottom layers in a manifold solid.
Up Skin Count:	The count of top layers in a manifold solid.
Sparse Infill Line Distance:	The spacing between infill lines.
Infill Overlap:	Amount overlap between the infill layer and the innermost perimeter and/or shell. Defined as a percentage. Note: 100% overlap represents the infill layer completely overlapping the innermost shell.
Infill Pattern:	Selection of the infill geometric pattern.

Support

- Enable Support:** Enables or disables support.
- Support Type:** Selection of support geometric pattern.
- Use on Model Support:** Overhang angle threshold for adding model-on-model support (0 is vertical i.e. no overhang; 90 is horizontal). When 0, “model on model” support is disabled. If greater than 0, “model on model” support is enabled.
- Support Angle:** The overhang angle threshold to start placing support. When 0, “model to print surface” (i.e. build plate) support is disabled. If greater than 0, “model to print surface” support is enabled.
- Support Line Distance:** The spacing between adjacent support features.
- Support X/Y Distance:** The standoff distance between the support features and the outermost wall (exterior) of the print.
- Support Z Distance:** The gapped vertical spacing between support and the model’s solid outline. Increase to lower the adhesion of supports to the model, making them easier to remove.

Speed

- Initial Speedup Layers:** The number of layers used to transition the initial print speed to full print speed.
- Initial Layer Speed:** The print speed of the first layer.
- Print Speed:** Printing speed of secondary structures (e.g. support)
Notes: Does not include shells, infill, top layers, bottom layers and non-printing moves (see below).
- Inset 0 Speed:** The print speed of the outermost shell (exterior).
- Inset X Speed:** The print speed of the inner shells (all shells except the outermost shell).
- Move Speed:** Speed of the printhead when traveling between locations (not building the printed object itself).
- Infill Speed:** Printing speed of infill.
- Skin Speed:** Printing speed of the top and bottom layers.
Note: Does not include the initial or remaining speedup layers (above).

Raft

Enable Raft:	Raft is a printed base on which to start printing the model.
Raft Margin:	The extent by which to oversize raft dimensions in relation to the (first-layer) outline of the printed part.
Base Thickness:	The vertical thickness of the raft's first layer.
Base Line Width:	The width of the extruded filament within the raft's first layer
Base Line Spacing:	Spacing between the extruded filament lines within the raft's first layer
Interface Thickness: of the raft)	The vertical thickness of the raft's intermediate layers (all remaining layers between the top and bottom layers
Interface Line Width: and bottom layers of raft).	The width of the extruded filament within the raft's intermediate layers (all remaining layers between the top
Interface Line Spacing: top and bottom layers of the raft).	Spacing between the extruded filament lines of the raft's intermediate layers (all remaining layers between the
Surface Thickness:	The vertical thickness of the raft's top layer.
Surface Line Width:	The width of extruded filament within the raft's top layer.
Surface Line Spacing:	Spacing between the extruded filament lines, referring specifically to the top layer only.
Raft Surface Layers:	The number of top layers within a raft.
Raft Base Speed:	The print speed of the raft's first layer.
Surface Speed:	The print speed of the raft's top layers.
Raft Fan Speed:	Set fan speed when printing the raft.
Raft Air Gap:	Enables Raft Air Gap Layer 0
Raft Air Gap Layer 0:	The gapped vertical spacing between the surface of the raft and the first layer of the printed model. Increase to lower adhesion of the raft to the print.

Retraction, Fan, and Skirt

Retraction Amount:	Length of retraction performed by extruder.	Minimum Fan Speed:	Sets the lowest fan speed permissible during operation.
Retraction Speed:	Speed of retraction performed by extruder.	Maximum Fan Speed:	Sets highest fan speed permissible during operation.
Prime Amount:	Length of forward extrusion following a retraction, before resuming printing moves within the model.	Fan Layer Threshold:	The number of initial layers that will be printed using the Minimum Fan Speed setting.
Min. Travel Before Retraction:	The extent of a non-printing travel move, by the printhead, that determines whether retraction is implemented before travelling. For example, if set to 2 mm, features that are only 0.5 mm apart will not cause retraction/prime to be added.	Enable Skirt:	Skirt is an optional printed outline of the exterior contour of the printed that does not touch the print itself.
Min. Extrusion Before Retraction:	Minimal input material the extruder shall have deposited before implementing retraction for a particular travel move.	Skirt Margin:	Horizontal spacing distance between the skirt and the print.
Retraction Z Hop:	Provides an extruder head vertical lift to assist the effectiveness of extruder retraction and avoid extra time in contact with the printed model.	Skirt Line Count:	The number of outlines within a skirt.
Use Automatic Fan Settings:	Disregards user fan settings (Minimum Fan Speed, Maximum Fan Speed and Fan Layer Threshold below) and implements sensible fan settings tailored to the filament family, printing temperature and other conditions.	Min. Length of Skirt Extrusion:	The minimal linear distance to be printed before considering a skirt complete. Overrides skirt line count if the linear distance for the given number of skirt lines is less than this threshold.

Safety

SAFETY AND WARNINGS:CHOKING HAZARD - The Micro+3D Printer and its consumables may include small parts that may constitute a choking hazard; additionally, these products may be used to manufacture objects that may themselves constitute a choking hazard. The Micro+ 3D Printer is NOT A TOY; children under the age of 14 should use the product under adult supervision. **CAUTION!** The printhead, exposed nozzle, extruded plastic, and areas near the nozzle may be extremely hot. Keep fingers away from the printhead and extruded material unless it has been unplugged for at least 10 minutes. Use M3D's products only as intended, as described by the user manual and/or this agreement and/or described within the software. Use M3D's products in a well-ventilated area. Do not leave M3D's products running while unattended. **PRECAUTION** - None of components of The Micro+ 3D Printer or parts printed from it or using M3D filaments are certified for food safety nor should they be regarded as food-safe therefore should not come in contact with the mouth or foods/liquids that will be ingested by humans or animals. **PRECAUTION** - None of components of The Micro+ 3D Printer or parts printed from it should be used for medical applications, such as but not limited to implantation, drug delivery, or ingestion. **PRECAUTION** - If any allergy develops as a result of direct or indirect contact using M3D's products, or from the 3D printed objects, discontinue use immediately. **MAINTENANCE** - After extended or improper use, the nozzle and/or its cover may need to be replaced or cleaned; the print bed and/or the Buildtak sheets covering it may need to be replaced; the extruder may need to be purged or cleaned; and the filaments may need to be purged or replaced. **REPAIR/SERVICE:** Repair/Service terms were provided to the purchasing customer in the customer purchase agreement. This agreement may be found by logging into their user account at www.printm3d.com. All parts of the Repair/Service section apply to the purchasing customer / first end-user and are non-transferrable. **RETURNS:** Return terms were provided to the purchasing customer in the customer purchase agreement. This agreement may be found by logging into their user account at www.printm3d.com. All parts of the Repair/Service section apply to the purchasing customer / first end-user and are non-transferrable. All software sales or licenses are final, non-refundable, and/or non-transferrable.

PART REMOVAL: During part removal be mindful of your fingers when using sharp objects. M3D recommends removing the bed from the printer when possible before attempting to remove a 3D printed object. For tips on removing 3D printed objects see the support page at <http://www.printM3D.com/support>.

Legal Conditions

M3D END USER AGREEMENT: This agreement between M3D LLC (a company incorporated under the laws of the State of Maryland in the United States), and you, the END-USER, which describes important disclaimers, indemnity, safety instructions, software information, and limited warranty information about its products and govern the conditions of use. PLEASE READ THESE TERMS CAREFULLY as continuing this installation process and using M3D products and software indicates agreement with these terms. You acknowledge that you have read and understand this agreement in its entirety, and accept the terms of this end-user agreement.

INDEMNITY: You understand that 3D printers are an experimental technology and that they were intended for use under the guidelines provided in the user manual and this agreement. You understand and acknowledge that the user manual only describes the best practice for operating The Micro 3D Printer, and that even the best practice for operating the printer is not always presumed as safe. You agree to hold harmless and indemnify M3D from any personal injury that results from using its products. You are responsible for any damage or injury that may occur as a result of using M3D products. You understand and agree that M3D is not responsible for any injury, damage and/or loss of accessories, components, consumables, and information that may occur during the use of the product. You agree to hold harmless and indemnify M3D from any liabilities that result from any of the following conditions: 1) modification of The Micro 3D Printer, its consumables, and/or software; 2) use of third-party software; 3) use of any custom 3D models; 4) use of third-party power supplies or USB cables; 5) use of third-party consumables such as print beds, print bed surfaces sheets, print bed adhesives, and filaments; 6) use of The Micro 3D Printer and/or its components in any way other than intended, as described in the user's manual; 7) operation of The Micro 3D Printer or use of M3D filaments; and 8) Printing of custom objects which results in any physical hazard, legal suit, and/or intellectual property infringement. You agree that there is no circumstance where M3D will be held liable for any damages, including but not limited to loss of anticipated profits, business, opportunities, saving, or deals due to late delivery, performance characteristics, repair, business interruption, or any other disapproval of M3D's products or services. You agree to hold harmless and indemnify M3D from having any additional responsibilities to anyone other than you, the end-user.

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SOFTWARE: M3D software will be included with a limited, non-exclusive license as part of each purchase of a Micro 3D Printer. The M3D software is under development and is supported by M3D through downloadable updates. Specifications of the printer and software functionality may be expanded or modified by the software through updates. These include but are not limited to: operating system functionality; printer speed; print quality; build volume; and print resolution and accuracy. Software development updates are intended for ongoing product performance improvement and may require temporary reversion to older performance parameters as other features are tested, improved, or enabled. M3D reserves the right to contact our remote server in future versions of the software for the purpose of comparing software versions and downloading remote software updates. M3D software updates include firmware updates which may be pushed to The Micro 3D Printer. The M3D software includes terms and agreements that differ from the customer purchase agreement. The M3D software is proprietary and its design and contents are protected by law. Attempts to deconstruct / reverse engineer the software are considered illegal as provided by copyright law and fair use; trade secrets; patents pending; and additional local, state, and federal laws where applicable. All parts of this section apply to any end-user and are fully transferrable to any user.

www.printM3D.com

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