

# User Manual

# MT3X

v1.2

## Table of Contents

- [List of goods](#)
- [Assembly](#)
- [Connection](#)
- [First run](#)
- [Test print](#)
- [Calibration](#)
- [Slice model](#)
- [Advanced use](#)
- [Update firmware](#)
- [Firmware source code](#)
- [Contact us](#)

## List of goods

Main Item Name	Quantity	Others	Quantity
MT3X Printer Base	1	SD card	1
Z Axis - Left	1	USB cable	1
Z Axis - Right	1	Screwdriver	1
X Axis	1	Ruler	1
Electrical box	1	Glue stick	1
Extruder - Left	1	Aluminum profile cover	6
Extruder - Right	1	Some screws	
Filament Support	1	Some nuts	
Glass platform	1		
Heating plate	1		
Magnetic panel(Top)	1		
Magnetic panel(Bottom)	1		

## Assembly

*Copy all the files from the SD card to your computer. Empty the SD card.*

Please see the assembly video. All assembly videos are in the `Assembly videos` directory.  
[ **Assembly.mp4** ]

(From June 2021, some parts of the X-axis will be replaced with metal.)

*For the following content, you can copy the 'MT3X User Manual.html' file to watch on your phone. Use your mobile browser to open it.*

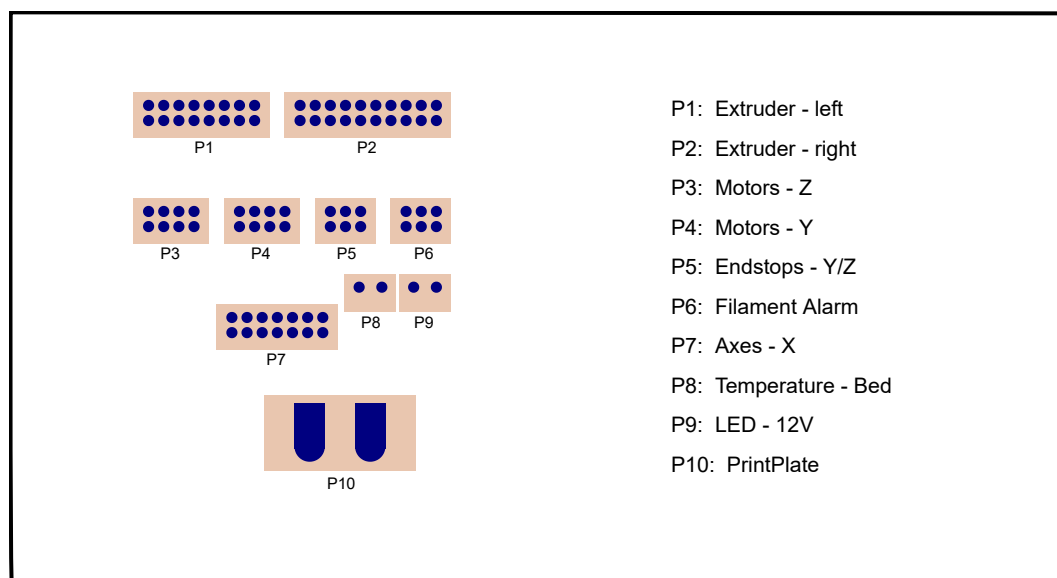
## Connection

This connection represents the connection between the electrical box and the printer.

Open the picture **Printer Map.jpg**.

The relationship between the label on the picture and the label on the the line is below.

```
X - Motor - L - 4
X, Represents the axis.
Motor, Represents the motor.
L, Represents the left side.
4, It means that a plug has 4 small wires.
-----
X - Sensor - L - 3
X, Represents the axis.
Sensor, Represents the limit switch.
L, Represents the left side.
3, It means that a plug has 3 small wires.
```



Electrical box	Location of printer	Cable
The map above	Printer Map.jpg	Label on wire
P7: Axes - X	X-Motor-L-4	X1
P7: Axes - X	X-Sensor-L-3	X1
P7: Axes - X	X-Motor-R-4	X0
P7: Axes - X	X-Sensor-R-3	X0
P4: Motors - Y	Y-Motor-L-4	Y0
P4: Motors - Y	Y-Motor-R-4	Y1
P5: Endstops - Y/Z	Y-Sensor-3	Y
P3: Motors - Z	Z-Motor-L-4	Z1
P3: Motors - Z	Z-Motor-R-4	Z0
P5: Endstops - Y/Z	Z-Sensor-3	Z
P6: Filament Alarm	Filament-Sensor-L-3	F1
P6: Filament Alarm	Filament-Sensor-R-3	F0
P9: LED - 12V	LED	
P8: Temperature - Bed	Direct connection to the heating plate	
P10: PrintPlate	Direct connection to the heating plate	

Finally, connect the electrical box and the screen (*only one cable is suitable*).

## First run

Mainly to test the various functions of the printer.

Copy all the files in the `Test gcodes` folder to the SD card. And insert the SD card into the screen.

1. Turn on the printer.

- The screen will light up.
- After a few seconds, the screen is successfully connected to the motherboard.

2. `Info` -> `Print` -> `TFT SD` -> `test movement.gcode`

If you encounter an unexpected situation, press the button on the screen to stop the printer.

For example, an impact has occurred, an error has appeared on the screen, the motor is running in reverse, and so on.

- The temperature of the two extruders began to rise.
- The temperature of the heating plate starts to rise.
- The side fan starts to work.
- The axis will perform a series of movements.

**There is no accident until the operation stops, then you can print the gcode file directly.**

## Test print

The printer's extruder is installed with a 0.6mm nozzle by default.

So, use `test print s06.gcode`.

Install two rolls of material(different colors) on the material rack. Insert the left extruder and right extruder respectively. (Manual insertion is fine, no automatic. Because automatic is not the best choice.)

Select the file to start printing.

`Info` -> `Print` -> `TFT SD` -> `test print s06.gcode`

When the printer starts to print the first layer, you will find that the height of the nozzle from the platform is very high.

Don't worry, use babystep to adjust the height of the Z axis.

`Info` -> `basystep` -> `Down` / `Up`

When you adjust successfully, it will be saved automatically. No adjustment is needed next time you print.

Of course, if you want to continue to adjust, it is allowed. It can be adjusted at any time.

Tip,  
Babystep recommends using it when printing the first layer. It can be saved after use.

`Info` -> `basystep` -> `Save`

If you use it on the second or more layers, please do not save it.

After successfully printing on the platform, we can continue to read below. (Do not stop printing.)

You can also wait for the printer to print for a while and then read the following.

## Calibration

Before the beginning of this chapter, we need to know the three parameters we will use.

Info -> More -> Machine -> MULT00 -> Offset 2nd Nozzle -> X

Info -> More -> Machine -> MULT00 -> Offset 2nd Nozzle -> Y

Info -> More -> Machine -> MULT00 -> Offset 2nd Nozzle -> Z

**These three parameters are used for calibration.**

The range of these three parameters is -10 ~ +10.

The minimum value is -10.

The maximum value is 10.

The value of X increases, and the left extruder moves to the right. The value of X decreases and the left extruder moves to the left.

The value of Y increases, and the left extruder moves forward. The value of Y decreases and the left extruder moves backward.

The value of Z increases, and the left extruder moves downward. The value of Z decreases and the left extruder moves upward.

Now, we begin the calibration operation.

Info -> More -> Machine -> MULT00 -> Auto interval nozzle , open it.

You don't need to do anything. The extruder on the left side of the printer started to heat up. Just need to wait.

The waiting time is related to the following two parameters.

Info -> More -> Machine -> MULT00 -> Right E-layers

Info -> More -> Machine -> MULT00 -> Left E-layers

They represent the number of layers that need to be printed before the extruder is turned over. You can change their value. The minimum value is 3, and the maximum value does not exceed 10,000.

For the next job, what you need is to adjust that three parameters to make the left extruder and the right extruder print the same.

*When you have successfully adjusted, you can stop printing.*

### Tips,

If the following situations occur and you have not performed calibration, it is recommended that you perform calibration first.

- One extruder prints the support, and one extruder prints the solids.
- Both extruders print solids.
- When using parallel mode. Because two extruders need to work at the same time. The main point is the value of `Offset 2nd Nozzle -> Z`.

### The following situations need attention,

- If you replace the old nozzle with a new nozzle. May affect the value of `Offset 2nd Nozzle -> Z` ( *This situation may not happen. If this happens, you need to calibrate or recalibrate* `Offset 2nd Nozzle -> Z`.)
- If you reinstall the heat sink of the extruder. May affect the value of `Offset 2nd Nozzle -> Z` ( *This situation may not happen. If this happens, you need to calibrate or recalibrate* `Offset 2nd Nozzle -> Z`.)
- If you only use one of the extruders, the calibration requirements are not very strict. For example, if you always use the right extruder, then you may not be able to use the calibrated value. If you have been using the right extruder, and suddenly you use the left extruder one day, you need to consider whether the printing height of the first layer of the left extruder might be inappropriate. You need to adjust the babystep. But when you switch from the left extruder to the right extruder to print again the next day, you need to adjust the babystep again. Therefore, it is recommended that if you use a single extruder to print, use the right extruder by default, or perform calibration.

## Slice model

Commonly used software is Cura and Simplify3d. Cura is recommended.

### Cura

In Cura, add `MT3X` printer.

Then you can slice the model directly.

The configuration file has already set some templates. You can use it directly. You can also modify them.

Note,  
In the configuration file, the default Z-axis height is 500. Adjust it according to your needs.

## Simplify3D

You need to import the configuration file.  
Then you can use it directly.

You can also adjust the configured parameters according to your own experience.

Note,  
In the configuration file, the default Z-axis height is 500. Adjust it according to your needs.

If you have never used a 3D printer, it means you have never used slicing software. You can read the document `CURA settings and functions.pdf` . Maybe it will help you.

PS: This document is of no value to users who are proficient in using 3D printers.

## Advanced use

### Duplicate mode

Regardless of Cura or Simplify3D, there is a Duplication mode in the configuration file.

Cura is to add `MT3X (Parallel Mode)` printer.

Simplify3D is to import `MT3X (Parallel Mode)` configuration files.

You will find that the range of the X axis is reduced by half. Yes, because two extruders work at the same time, each extruder occupies half of the space on the platform.

After exporting the gcode file, it can be used directly.

If you want to mirror printing in parallel mode. Then you need to manually turn on a switch.

Info -> More -> Machine -> MULT00 -> Duplication Mirror (To do this before printing)

**We need to explain a few things.** Take Cura as an example.

In Cura, you have added two printers,  
'MT3X' , 'MT3X (Parallel Mode)'

Their gcode already has a print mode attribute.

The gcode of 'MT3X' will not print in parallel. Even if you open 'Duplication Mirror', parallel printing will not be performed.  
 Similarly, the gcode of 'MT3X (Parallel Mode)' can only be printed in parallel.  
 Simplify3D is the same as Cura.

In parallel mode, you will encounter only one extruder working when printing the first layer. This is because of the influence of the parameter 'Info -> Menu -> MULT00 -> Offset 2nd Nozzle -> Z'.  
 It is to prevent one extruder from touching the platform while the other extruder is working.

If you want two extruders to print the first layer at the same time under any circumstances, you need to make the following adjustments.  
 `Info` -> `Menu` -> `MULT00` -> `Dup... Smart Start`, close it.

## M2000

This is the control command of Mdx. Customized by us.

If you need to know, please read [M2000.pdf](#) or [M2000.html](#).

## Update firmware

The latest firmware can be downloaded on Github.

### Motherboard firmware

Click [Motherboard firmware](#) to enter Github to download the release version.

Folder `version2061_10`,

This means that the major version number is 2.0.6.1. The minor version number is 1.0. The higher the number, the higher the version.

Note,

There is only one `firmware.bin` file for updating the firmware.

### **TF card needs to use FAT32 format.**

Update steps,

**Step1.** Turn off the printer.

**Step2.** Take out the TF card from the left side of the electrical box.

**Step3.** Copy `firmware.bin` to TF card. (It is not allowed to change the file name and format.)

**Step4.** If the `FIRMWARE.CUR` file exist in the TF card, please delete it.

**Step5.** Reinsert the TF card into the motherboard in the electrical box.

**Step6.** Turn on the printer.



Wait about 30 seconds, the screen will show that the connection is successful. This means that the update has been completed.

If after updating and waiting for about one minute, the screen is not successfully connected to the electrical box. Then please turn off the power and unplug the TF card from the electrical box. Reapply power to the printer.

-----

After you finish the update, it is recommended that you unplug the TF card. If you update the screen firmware, the connection between the screen and the motherboard will fail. Just unplug the TF card on the motherboard to avoid this phenomenon. (This situation may not happen.)

## Screen firmware

Click [Screen firmware](#) to enter Github to download the release version.

Folder `version2026_10`,

This means that the major version number is 2.0.26. The minor version number is 1.0. The higher the number, the higher the version.

Update steps,

**Step1.** Turn off the printer.

**Step2.** Take out the SD card from screen.

**Step3.** Copy all the files in the folder `version****_**` to the SD card. (It is not allowed to change the file name and format.)

**Step4.** If the following three files exist in the SD card, please delete them.

`TFT35.CUR` , `BIQU_TFT35_APP1_V2.x.xx.x.CUR` , `config.ini.CUR`

**Step5.** Reinsert the SD card into the screen.

**Step6.** Turn on the printer.

Wait for it to finish updating.

## Firmware source code

The latest firmware can be downloaded on Github.

### Motherboard firmware

The firmware is Marlin. We have made an adaptation and design suitable for MT3X. Version is 2.0.6.1

If you want to compile them, you need to use the `PlatformIO IDE` plugin. The platform recommends using VScode.

Click [source](#) to go to Github to download.

In the source code,

You can search for keywords such as `mdxc` , `MDXC` , `multoo` , etc. to find the relevant code.

```
\Marlin\src\module\mdxc.h
\Marlin\src\module\mdxc.cpp
```

If you have already configured VScode, you can compile directly after importing the source code.

## Screen firmware

The main board is SKR PRO V1\_1.

The firmware is their firmware. We have made an adaptation and design suitable for MT3X.

If you want to compile them, you need to use the `PlatformIO IDE` plugin. The platform recommends using VScode.

Click [source](#) to go to Github to download.

In the source code,

You can search for keywords `multoo` to find the relevant code.

```
\TFT\src\User\Menu\MachineSettings.h
\TFT\src\User\Menu\MachineSettings.c
```

If you have already configured VScode, you can compile directly after importing the source code.

## Contact us

Skype: `multoo@multoo.com` , Mainly the technicians are replying.

Technical Support: `tech@multoo.com` , Mainly the technicians are replying.

Pre-sales and after-sales service: `karen@multoo.com`

The latest version of the manual can also be downloaded on Github. Please follow our Github homepage.

Homepage:[ <https://github.com/MULTOO-3DPrinter> ]

All document types will be opened to users one after another on Github.

