# ChiTu M20 Manual

**CBD-Tech** 

**Y**<sup>\*</sup> 



# **Specification List**

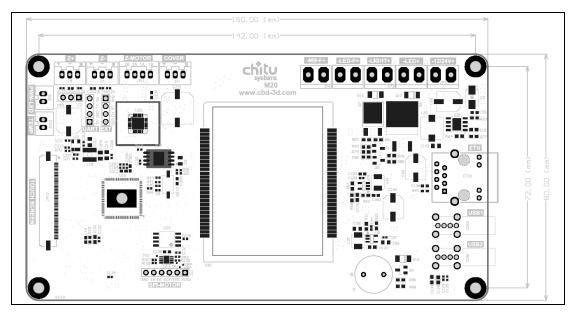
InformationTime to market2022Size(mm)150 * 80 * 20Weight(g)/Touch screen size(inch)5.0 (Capacitor)6.6*4K / 9.1*4KSupported panel(inch)6.6*4K / 9.1*4K9.25*6K / 10.3*8KProcessor chipCBD Smart SeriesFPGA chip-Motor driver chipTrinamic TMC2209eMMC4GInput voltage (V)12-24Input voltage (V)12-24Input current (A)5-10Power supply1 port, KF2EDG-2PResin panel1 port, MIPITouch screen1 portUSB2 ports, USB 2.0 Type-ARJ45 (network port)1 portUV LED1 port, KF2EDG-2PMotor driver1 port, xh 2.54-4PInformationEndstopPortsPWM1 port, xh 2.54-4PTemperature measurement1 port, xh 2.54-2PChier motor2 ports, Z-axis external, SPI motorOther motor2 ports, Light shield, serial portChirtUBOX Pro 1.0.0 and aboveCHITUBOX Pro 1.0.0 and aboveChirtuBOX Pro 1.0.0 and aboveCHITUBOX Pro 1.0.0 and above	Desia	Model	ChiTu M20
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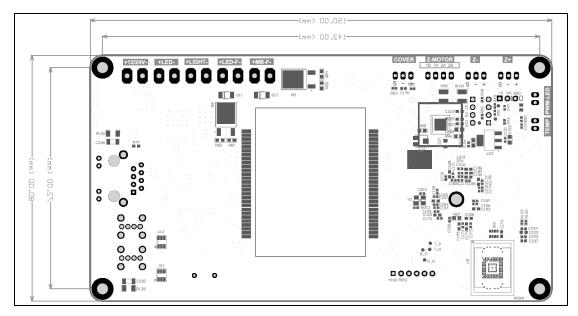
# 产品说明

## 1.1 Main Board Size

Main view:

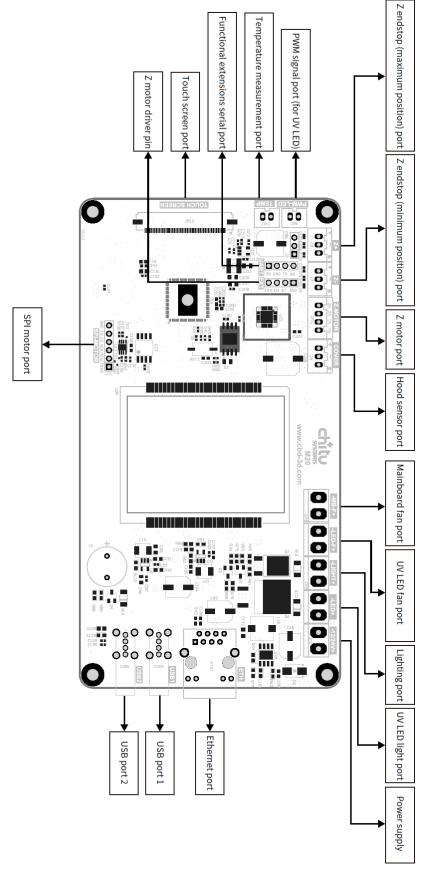


Back view:





# 1.2 Main Board Structure





### **1.3 Component Description**

#### 1.3.1 Power supply

This port is for power supply for the entire controller board.



Notification: The power supply voltage **should be** 12V~24V. The board may not work when voltage under 12V, and there will be a risk in burned when voltage over 24V.

#### 1.3.2 UV LED

This port is for control and signals the LED light device connected.



#### 1.3.3 UV LED fan

This port is for control and signals the LED light fan device connected.



Notification: This port output is the same as the board input voltage. The maximum current must **NOT** exceed 1.5A.

#### 1.3.4 Mainboard fan

This port is for control and signals the mainboard fan connected.



Notification:

This port output is the same as the board input voltage. The maximum current must **NOT** exceed 1.5A.

#### 1.3.5 Z stepper motor

This port is for control and signals the Z-axis stepper motor connected.

	Pin Name/Pin Tag	Number	Definition	Description
Z_MOTOR		1	1B	Coil 1 end B
2B 2A 1A 1B	Z Motor ( <b>Z Motor</b> )	2	1A	Coil 1 end A
		3	2A	Coil 2 end A
		4	2B	Coil 2 end B



#### 1.3.6 Z- end stop

This port is for control and signals the Z-axis minimum end stop connected.

s Z- +	Pin Name/Pin Tag	Number	Definition	Description
and a second second		1	+ (VCC)	Power Output
8 8 9	Z- Endstop (Minimum position) (Z+)	2	- (GND)	GND
		3	S	Signal pin

#### 1.3.7 LCD resin panel (MIPI port)

This port is for control and signals the LCD panel connected.



#### 1.3.8 TFT Resistive touch screen

This port is for control and signals the resistive touch screen port connected.



#### 1.3.9 USB 2.0

This port is for read the USB 2.0 connected.



#### 1.3.10 Buzzer

This component will emit a "beep" sound to remind you of the completion of an operation or an abnormal error.



The timbre of buzzer maybe not the same because of the different batch.

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# **1.4 Electrical Description**

(LED_F)     light fan device connected       Mainboard Fan     This port is for control and (MB_F)       This port is for control and (MB_F)     Z Motor       Z Motor     This port is for control and stepper motor connected.	(LED_F) Mainboard Fan (MB_F)	(LED_F)	UV LED Fan	UV LED This port is for control (LED) light device connected	Power Supply This port is for p (12V/24V) controller board	Pin_Icon Pin_Name/Pin_Tag F	Main Board M20	
This port is for control and signals the LED light fan device connected. This port is for control and signals the mainboard fan connected. This port is for control and signals the Z-axis stepper motor connected.	r control and signals the LED ce connected. x control and signals the an connected.	r control and signals the LED ce connected.		This port is for control and signals the LED light device connected.	This port is for power supply for the entire controller board.	Pin_Function		
12-24 Rated output/V 12-24 12-24 12-24	12-24 <i>Rated output/V</i> 12-24	12-24	Rated output/V	Rated output/V 12-24	Rated input/V 12-24	Volt	Table	
<b>最大納出火</b> 24		Maximum output/V 24	Maximum output/V 24	<b>Maximum output/V</b> 24	<b>Maximum input;V</b> 24	Voltage	Electrical	
	Drive default output/A 0.85	Rated output/A	Rated output/A	Rated output/A 4	Rated Input/A 5-10	Current	Electrical parameters specifications	
Maximum output/A	Drive maximum output/A 1.2	Maximum output/A	Maximum output/A	<b>Maximum output/A</b> 8	<b>Maximum input/A</b> 10	ent	ifications	
Rated output//W	Drive default output/W 12-24	Ŵ	Rated output//W 12-24	<b>Rated output//W</b> 96	Rated Input/W 60-240	Ρον	Date	
Maximum output/W	Drive maximum output/W	Maximum output/W 24	Maximum output/W 24	Maximum output/W	Maximum input/W 240	Power		
	The default output is about 0.85A current, which can be adjusted by R39 resistor, and the maximum output current is 1.2A.		Maximum output/W Please use extension module for large size 24 screen, or high power light source.			Note	2022.02.14	

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# **1.5 Function List**

All functions currently supported by the firmware and overview, can be adjusted according to customer requirements.

Туре	Function Name	Description
	U-disk storage	Can detect the insertion and work of the U disk, and dynamically adjust the status bar and related information according to the current state of the U disk.
	Local storage	Can support 4G and above capacity on-board storage.
Device	Cloud storage	With networking on the main board, you can remotely access the computer/server side of the file and download the file to the main board.
Support	Camera support	Up to 1080P camera can be supported.
	USB-WiFi module support	Has supported a variety of WiFi modules, and can support specific WiFi modules according to customer needs.
	USB-Hub module support	Multiple USB devices can be accessed.
	Motion control	Control of four movements of Z-axis: upward, downward, reset/zero, and stop, including movement speed, acceleration, direction, etc.
	Point-and-Shoot (Coarse adjustment)	Directly operate the Z-axis platform to move to the specified height by sliding bar.
Leveling	Step control (Fine adjustment)	The distance of the Z-axis movement triggered by each user click. Can support travel distance of any value between [0.01, machine height].
Control	Endstop setting	The endstop setting of different positions can be realized according to the structure of customer's model, and currently supports three modes(upper/lower/double).
	Zero-point setting	Customize the logical zero point of Z-axis (or Z-axis zero point offset).
	One button to the top	One-touch operation to move the platform to the highest point of the machine.
	File/folder list management	Files/folders can be filtered, sorted and displayed in a list based on file name, modification time, file type and other information.
File System Management	File/folder search	Retrieve all files/folders with target keywords in their file names within all storage devices.
	File move/copy/delete	Move, copy and delete files within storage media in both directions.
	Batch operation	Batch operations on multiple files, such as batch delete, batch copy, batch move, etc.
	File printing	Can identify, and print only for relevant/target type files, and reject for non-relevant files (or error files).
	File information	Can read information about the slice file, including model thumbnail, target model, resolution, resin model, slice parameters, etc.



		(File check) Check the data of the slice file before printing to determine whether the file has broken, lost or confused data, etc.
	Print check	(Life check) Cross comparison with the slice file to determine if the remaining life of the equipment (light source, screen, FEP film, etc.) can complete the current printing needs.
		(Environment check) Based on the feedback from the temperature sensor, determine whether the current environment is suitable for printing.
	Printing parameter information display	Real-time display of current slice image, print height, number of layers, print progress, and remaining print time, etc.
	Print parameter setting (built-in to this machine)	Manufacturers/users can set up a set, or more than one set of printing parameters inside the main board as needed, and before printing, select the corresponding parameters for printing.
Print Management	Print parameter setting (dynamic adjustment)	During the printing process, the user can always adjust the single/multiple parameters according to the print status/model condition.
	Print control	General control of the printing process such as start/pause/stop.
	Print lift settings	The lifting distance of the forming platform can be set according to the height of the model and the printing situation (finish/stop/pause).
	Print exception alert	Abnormality alerting by light and sound through external indicator, or self-contained buzzer.
	Print parameter collection	Statistics and collection of the information generated during the printing process, including the number of prints, print success rate, print efficiency, material usage, etc.
	Device life statistics	Record the service life and times of the core equipment, mainly recording FEP film, light source and printing screen.
	Wireless network connection	Multiple models of USB-WiFi modules can be supported.
	Wired network connection	Conventional wired network port (LAN) connection and data transmission.
	Network management	Support network switching, disconnection and reconnection, signal detection, connection status detection, and other conventional functions.
Network	Manual setup	Suitable for multiple/batch device application scenarios, static IP address can be set for each printer individually.
Settings	Remote update (OTA)	According to the machine model, directed to drop the firmware version, the user can visualize the firmware update instructions on the display and download the update.
	File sharing	Computers and main board are able to access each other's stored files and bi-directional transmission.
	Remote control	Support for other devices (cell phones, computers, etc.) through the network to remotely connect to the printer, view, operate the printer and so on.
	Account management	One printer can be bound to multiple users.
Information Management	Machine information	Record the name, model number, serial number, factory time, usage time, etc. of the machine.
	Device information	Record the basic information and usage information of the core equipment, such as the number of times the print screen, light source, FEP film has been used, etc.
	Print history	Record the printing of each model/document, including the name of the document, printing status (successful/abnormal), printing time, etc.
	Operation records	Record the core operation steps of users in the process of use.
	Function guide (dynamic picture)	Can be used for guideline explanation of new or complex functions through text, pictures, motion pictures and animations.
	Information export	Export target information to U disk or other storage devices with one click according to customer needs.



Specialized	LDCS (Light distribution correction system)	Through external devices to collect the distribution of screen light intensity, and generate the corresponding mask, embedded in the motherboard, with sliced images together for printing.
	Power-on animation	Static pictures, as well as animations with dynamic effects, can be displayed each time the power is turned on.
	Equipment test	For each device such as fan, light source, endstop, motor, etc., individual switching and usage tests can be performed to judge the working condition of the device.
	Status indication	Through the status bar, the current working condition of the device is displayed, including U disk, network, temperature, camera, remote connection, password, etc.
Other Functions	Power on guide	Operation guidance instructions for users when they first turn on the machine, including language settings, machine name settings, etc.
	Standby settings	For a certain period of time, without user operation, the machine will enter standby mode, displaying a specific screen or turning off the screen.
	Advanced mode (password management)	Hide part of the functions/parameters and allow them to be displayed only after a specific operation, or after entering a password.
	Local name setting	Set the name of the current machine.



### **1.6 Function Description**

Related notes on each core function point and page.

#### 1.6.1、 First screen (standby page)

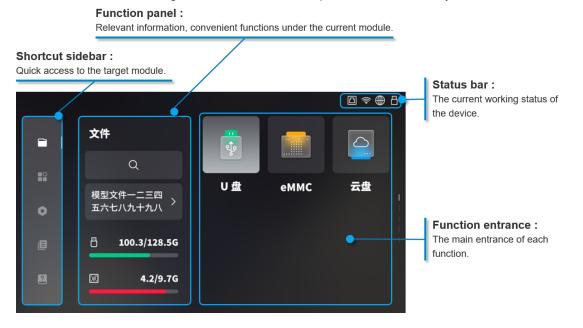
Intuitive display of current model and corporate information.



#### 1.6.2、 Main page

The top is the resident status bar.

The core areas, from left to right, are: menu bar, function panel, and function entry area.





#### 1.6.3、 File module

It can support various storage devices, such as U disk, local storage (eMMC) and cloud disk.

The local storage (eMMC) can support 4G and above capacity.

#### File Search : Retrieve all files/folders within all storage media that contain the target keyword in the file name. 0 @ 🕀 8 文件 $\bigcirc$ Q U盘 eMMC 云盘 模型文件一二三四 五六七八九十九八 0 100.3/128.5G 0 4.2/9.7G

**Storage device support :** Multiple storage devices can be supported. Native storage (eMMC) can support storage capacity of 4G and above.

Storage space display : Remaining space/total space of U disk/native storage.

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#### 1.6.4、 File List

You can view, edit, and print the relevant files in the storage device.

File path : nables to clearly know the current position even under multi-level folders.



File type : Enables quick retrieval and determination of target files.

#### File name :

With a length capacity of about 200 characters, the complete file name can be visualized at once.



#### 1.6.5、 File Preview Panel

View file details, and related operations.



#### 1.6.6、 Print Check

Before starting printing, check data, device life, ambient temperature, etc. for sliced files.



#### Print check :

Cross-reference with sliced files to determine if the remaining life of the device can meet current printing needs.



#### 1.6.7、 **Printing process**

The page when the model file is printed, you can view the exposure picture of the current layer and

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60%

C 01:39:26

### dynamically adjust the printing parameters. Image display : Can display the current layer exposure image, and model preview image, by manually switching. 特殊手办模型 - 已加球形支撑 -A 客户定制 - 韧 性树脂(RS34)- 不需要改参数 -V2 版本 -20220223.ctb []<u>↑</u> 123.00mm **64.52mm** ₿ 2500 😸 1528 () 02:12:45

#### Printing process parameters : Left: total print height Left: the total number of printed layers

right: current print height right: the current number of printed layers

Printing parameters setting : The user can adjust single/multiple parameters at any time according to the printing status.

Click on the exposure / preview image area to switch between the two types of images. Image display :

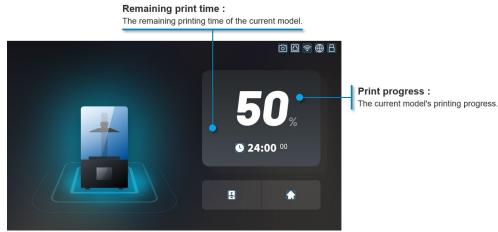
Can display the current layer exposure image, and model preview image, by manually switching.





#### 1.6.8. The Printing Process (standby state)

When no one operates the screen for a long time, it will enter the standby state of the printing process.



#### 1.6.9、 Print History

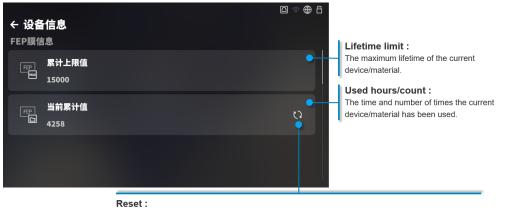
The main board will record the status of each print, including the file name, path, results, etc. History file & Repeat print:

The number of history records that need to be saved can be defined according to customer requirements. Also, repeat printing can be done directly when the history file path is normal.



#### 1.6.10、 Device Information

Printing information about the use of supplies/devices will also be recorded together.



When the user replaces the equipment/material, the accumulated value needs to be reset manually.



#### 1.6.11、 **Exposure Test**

Users can customize the exposure image and time to test the screen, light source.

#### Exposure images :

Select the exposure image, the machine has 3 built-in exposure images.



Custom exposure time : Can be exposed all the time, for screen aging and other tests.

Add / replace exposure image : Users can replace their own exposure images according to their own testing or printing needs.

#### 1.6.12、 Z-axis Control

Operation and testing of the Z-axis, such as motion control, zero point settings, etc.

Control objects : The target object of current control, usually the platform, can be switched here if there are squeegees or other devices. 0 🖘 🌐 8 ← 手动控制 0.01 300 2 ?

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Point-and-Shoot : The Z-axis stage can be moved to the specified height directly by sliding the bar.

Zero-point setting : Customize the logical zero point of Zaxis (or Z-axis zero offset).

Current height value : You can visualize the height position where the forming platform is currently located.

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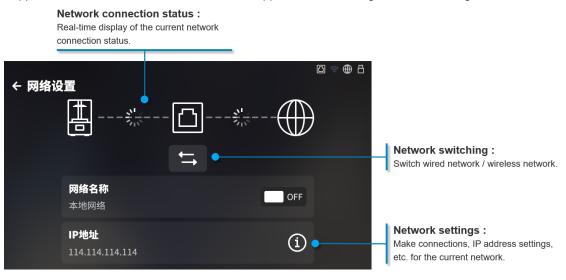
0.01

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#### 1.6.13、 Network Setting

Support both wired and wireless network, and support static IP setting for cluster management.



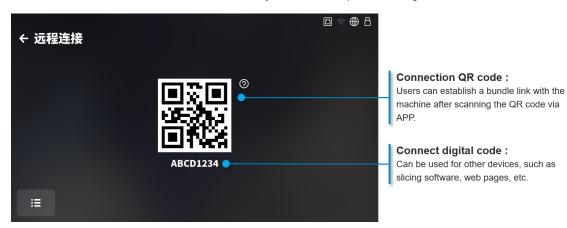


#### Network mode :

For multiple / batch device application scenarios, static IP address settings can be set for each printer individually.

#### 1.6.14、 Remote Connection

APP or other devices can be connected remotely to control the printer through the connection code.





#### 1.6.15、 Sharing Settings

Through sharing settings, computers (or servers, etc.) can access and read files in the printer directly by IP address/machine name.



#### 1.6.16、 OTA Firmware Update

Targeted drop firmware version, users can see the firmware update instructions on the screen and

download the update remotely.



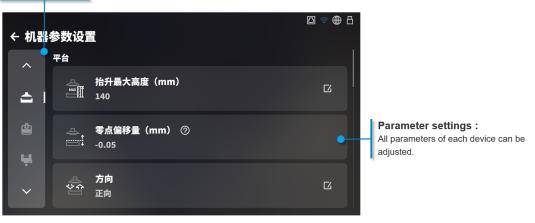
**Download progress :** The progress of the download of the new firmware.



#### 1.6.17、 Machine Parameters

All core parameters of the machine, can be edited visually.

Shortcut Sidebar : Contains all devices.



**Project mode & Password management :** Hide part of the functions/parameters and only allow them to be shown after a specific operation, or after entering a password.

#### 1.6.18、 Device Testing

For each external device can be individually tested for switching and use, to help users and after-sales

personnel quickly understand the state of the machine.

