

# MKS TFT 28 Instruction



Professional 3D printer control solutions provider  
[www.makerbase.com.cn](http://www.makerbase.com.cn)

Makerbase

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## I Overview

MKS-TFT28, color touch screen, is researched and developed by Makerbase developers, which is suitable for open source 3D printers. It can work with MKS Base, MKS Gen, MKS Sbase and so on. Compared to TFT32, TFT28 supports DC 12V and works with Ramps1.4.

## II Feature

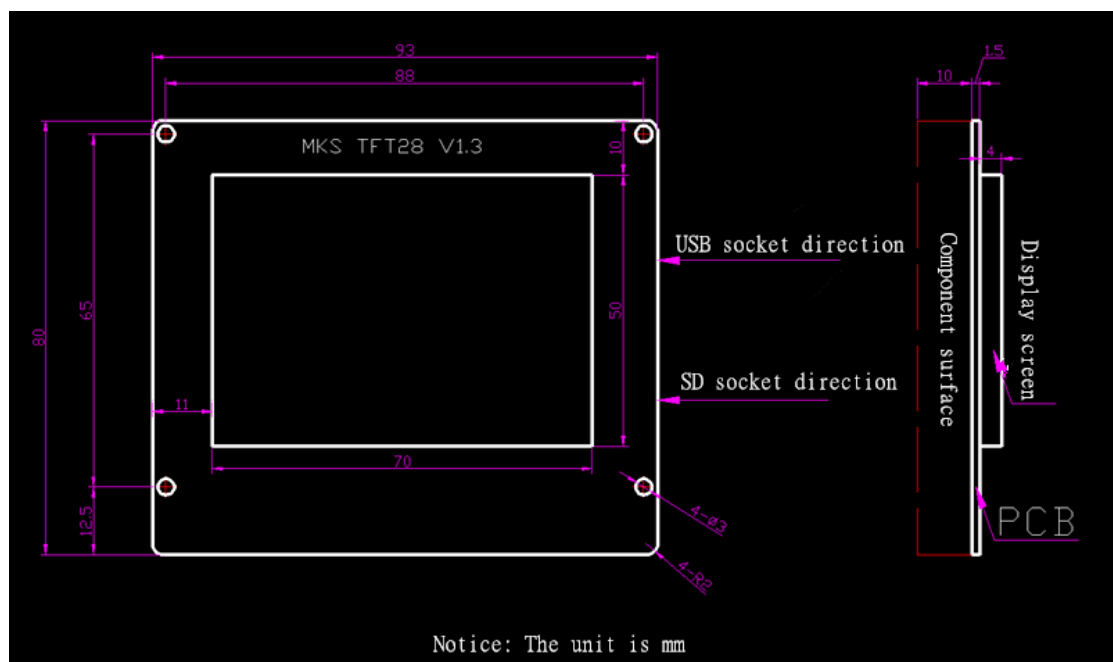
1. To support U disk and SD card, 2.8-inch color touch screen;
2. To reserve WIFI interface , support WIFI function with WIFI module;
3. To upgrade firmware through SD card, easily operate;
4. To support Marlin, Repetier and Smoothieware firmware, don't need to modify the master program;
5. To work with Ramps 1.4 and MKS series mainboards developed by Makerbase;
6. To support the functions: power outage to save, power outage to continue and materials outage to detect;
7. To turn off automatically after finishing printing when working with shutdown module;
8. To be allowed to self-design the interface of boot logo and all buttons;
9. To be allowed to add customized function buttons.

## III Connection and Dimensions

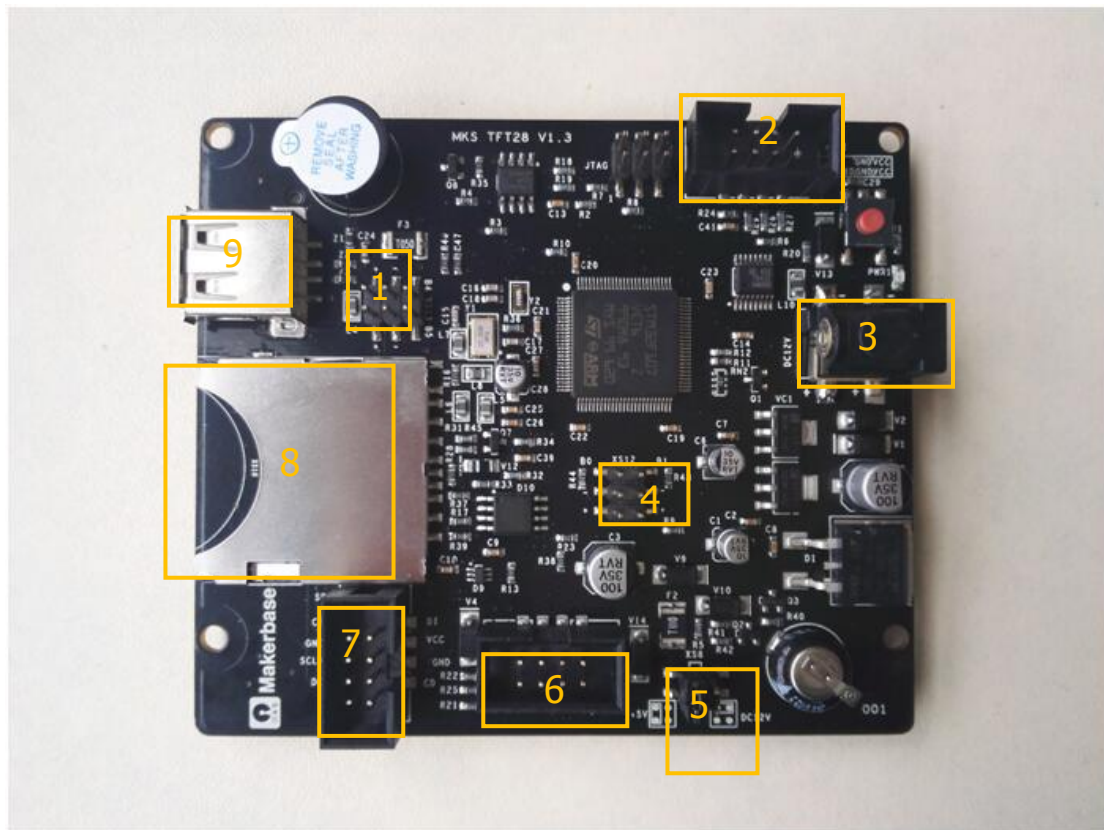
## 1.MKS TFT28 Positive Physical Map



## 2.MKS TFT28 Installation Dimensional Drawing



### 3.MKS TFT28 Interface Diagram

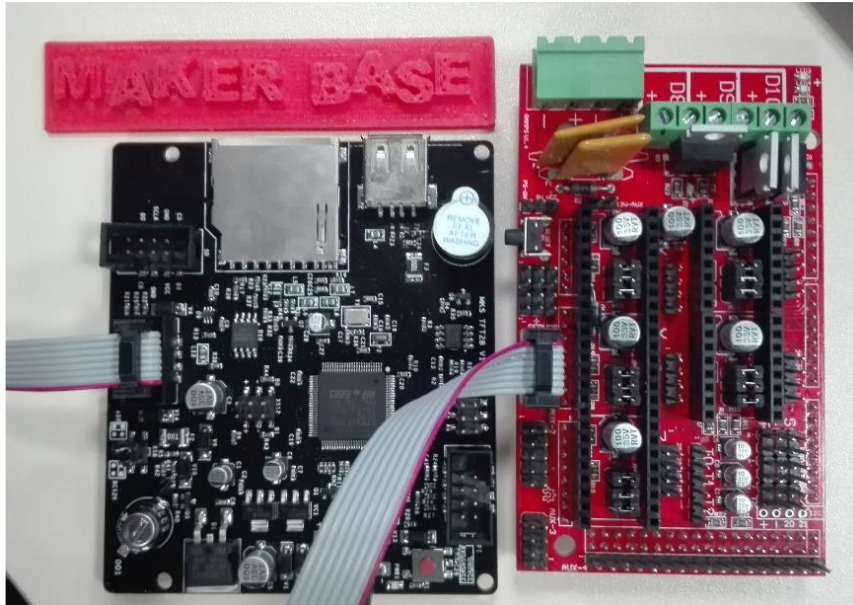


1	B4: Finish printing to turn off module interface	6	Mainboard interface
2	WIFI module interface	7	External SD card interface
3	Supply power interface	8	SD card
4	B0: Power outage module B1: Materials outage module	9	U disk
5	Power selection jumper		

### 4. Hardware Connection Instruction

#### 4.1 Connect Ramps 1.4

4.11 Touch screen socket connects the Aux-1 of Ramps 1.4;



4.12 Turn touch screen power jumper to 12V ;

4.13 Touch screen connects an external 12V power supply.

## 4.2 Connect MKS Gen

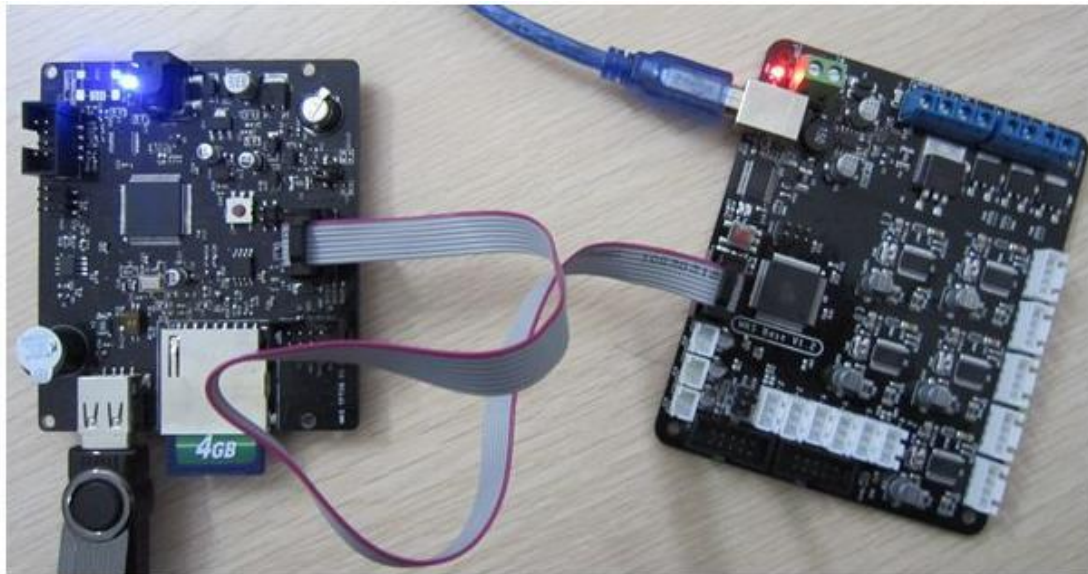
4.21 Touch screen socket connects the Aux-1 of MKS Gen. It is not necessary to connect external 12V power supply;





### 4.3 Connect MKS Base, MKS MINI, MKS Sbase

4.31 Touch screen socket connects the Aux-1 of MKS series mainboards. It is not necessary to connect external 12V power supply;



## IV Function Instructions

### 1.The Way to Get the Latest MKS TFT Firmware

1.1 To ask Alieibaba customer service or technical personnel to get firmware;

1.2 To login website to download :

<https://github.com/makerbase-mks?tab=repositories>

### 2. The Way to Update the MKS TFT Firmware

2.1 To copy the latest program into SD card, including: mkstft28.bin,


mks\_config.txt, and mks\_pic, as shown in figure,



***notice: don't modify the file name;***

2.2 To plug the SD card into SD card slot , power up again, when hearing *di di*~ a short sound, the touch screen would show the updating progress. After 30 seconds, the update is finished;

2.3 To view current firmware version through clicking "Set>About";

2.4 Suggest deleting the picture file  `mks_pic` to avoid re-updating the picture when booting again.

***Notice: when using Ramps 1.4, you must connect external 12V power supply before updating.***

### 3. Boot Settings ( must do )

3.1 To choose the baud rate written in your firmware when booting at the first time, and click "set>Connect", then it is able to use;

3.2 To choose the firmware type of mainboard (marlin, repetier, smoothiware) in the configuration file "cfg\_firmware\_type";

3.3 To change the number according to the 3D printer machine (ordinary model, delta model) in the configuration file "cfg\_machine\_type", then save.

***Notice: 1. The baud rate of the touch screen must be the same as the mainboard;***

***2. It is not allowed to connect the USB when connecting the touch screen;***

***3. It is not allowed to connect the touch screen when writing the firmware for the mainboard;***

***4. Click "set>File Sys>U disk" when using U disk, only on this way can the touch screen shows U disk file.***

### 4. Automatic Leveling and Manual Leveling

4.1 The 3D printers with the leveling device can be used to select the automatic leveling in the configuration file. You just click "set>Leveling", then it is finished;

***Notice: Change the sending instruction "G29" into "G32" if you use smoothiware firmware mainboard.***

4.2 Manual leveling can be used in the general model structure (MB, I3 and other machines), and other machines in the configuration file need to be adjusted in four points of the hot bed;

```
#bed leveling setting(auto leveler:1; manual leveling:0)
```

```
>cfg_leveling_mode:0
```



```
#the coordinates of 4 point on manual leveling

>cfg_point1:50,50

>cfg_point2:180,50

>cfg_point3:180,180

#the moving speed of leveling(mm/min)

>cfg_leveling_z_speed:1500

>cfg_leveling_xy_speed:3000
```

## 5.Filament Replace Function

Click the "Filament", the extruder will keep turning, and it needs some time to stop when pressing to stop. It is allowed to configure the extruder movement speed and the lowest temperature in the configuration.

```
#the speed of filament replacing(mm/min)

>cfg_filament_change_speed:1200

#the length of filament replacing(mm)

>cfg_filament_change_step:5

#the min temperature of filament replacing

>cfg_filament_limit_temperature:175
```

## 6. Power Outage to Save

The printer is allowed to directly turn off if enters the pause state while printing. The printing will be continued from the pause when restarting next time.

***Notice: Remember to delete the updated file from the SD card to avoid updating firmware again when booting next time, otherwise, it may result to lose the Power Outage to Save Function.***

## 7. Power Outage to Continue( only above MKS TFT28 V1.1 can support the function)

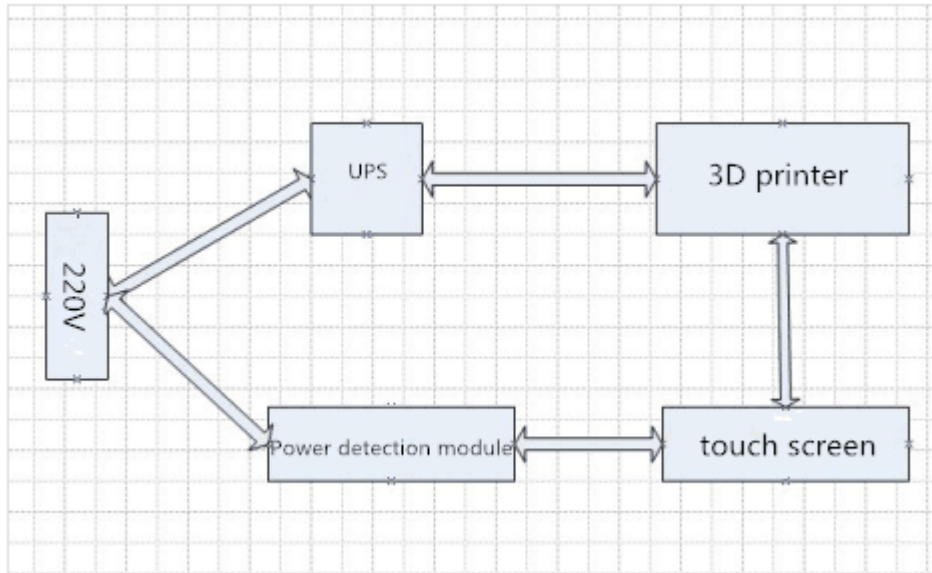
### 7.1 Don't connect UPS

The printer will continue printing from the pause when restarting, if it suddenly powers out.

## 7.2 Connect UPS

7.21 Power detection module signal line S connects PB0, negative and positive connects “-” and “+” two pin below PB0 ;

7.22 Power detection module will inform the touch screen to enter the printing pause state when the system powers out, then the UPS will provide the power for the printing head to leave the model.



## 8. Materials Outage to Detect( only above MKS TFT28 V1.1 can support the function)

It is allowed to choose high active or low active in the configuration. One end of the materials detection module switch connects PB1, another connects the negative or positive of PB1.if high active, it should be connected to “+”, if low active, it should be connected to “-”.

#the level signal of outage detection module PB1(low level:0; high level:1)

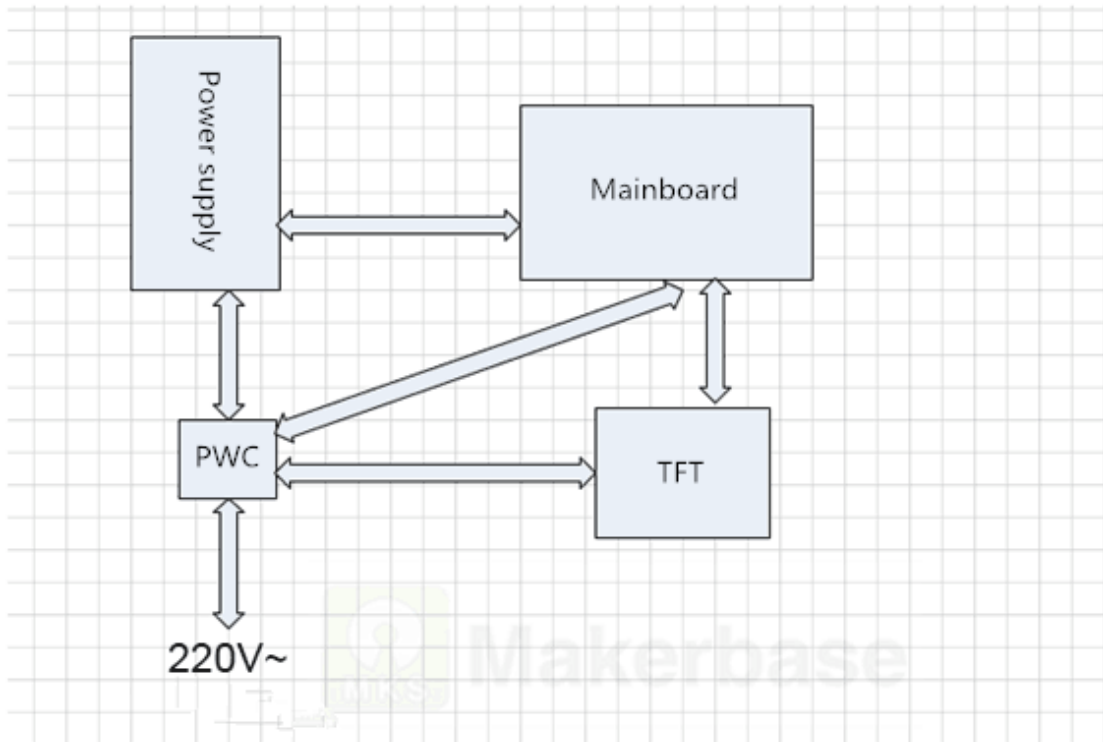
>cfg\_PB0\_PB1\_Level:1

## 9. Finish Printing to Turn off(only above MKS TFT28 V1.1 can support the function)

Start up the Finish to Turn off Function in the configuration and work with Finish to Turn off Module, then it is allowed to use this Function.

#whether set machine auto-off after print finishes(auto-off:1; NO:0)

>cfg\_print\_finish\_close\_Machine:0



## 10. MKS WIFE Module Connection

10.1 MKS TFT can support MKS WIFI Module, which can be modified in the configuration file.

#wifi mode(AP:1; STA:2)

>cfg\_wifi\_mode:1

#wifi name and password

>cfg\_wifi\_ap\_name:MKS\_wifi

>cfg\_wifi\_key\_code:makerbase

#Dynamic access IP

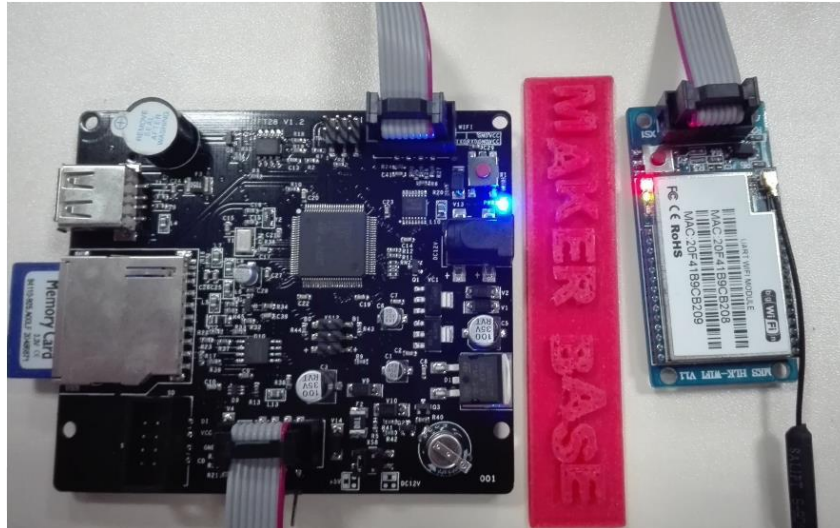
>cfg\_ip\_dhcp\_flag:1

#IP/mask/gateway

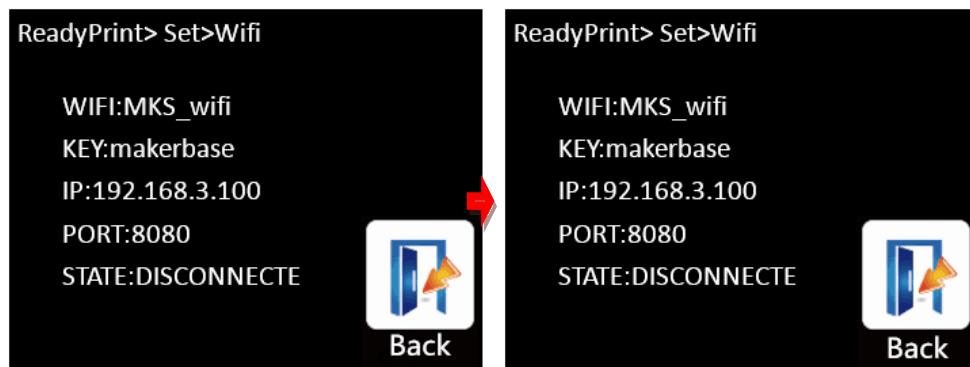
>cfg\_ip\_mask:255.255.255.0

```
>cfg_ip_gate:192.168.3.1  
>cfg_ip_address:192.168.3.100  
>cfg_ip_mask:255.255.255.0  
>cfg_ip_gate:192.168.3.1
```

## 10.2 WIFI module connection



10.3 To view the network settings, the waiting state changes to "connected".

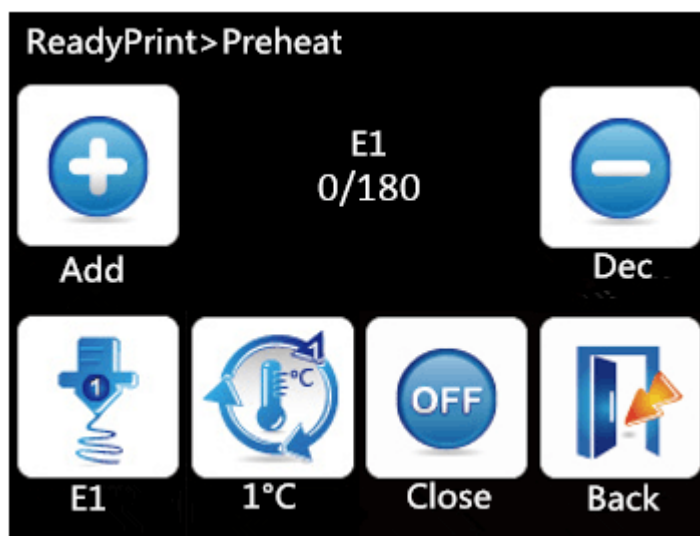


## V Interface Introduction

### 1. Main Menu Interface



## 2.Preheat Interface

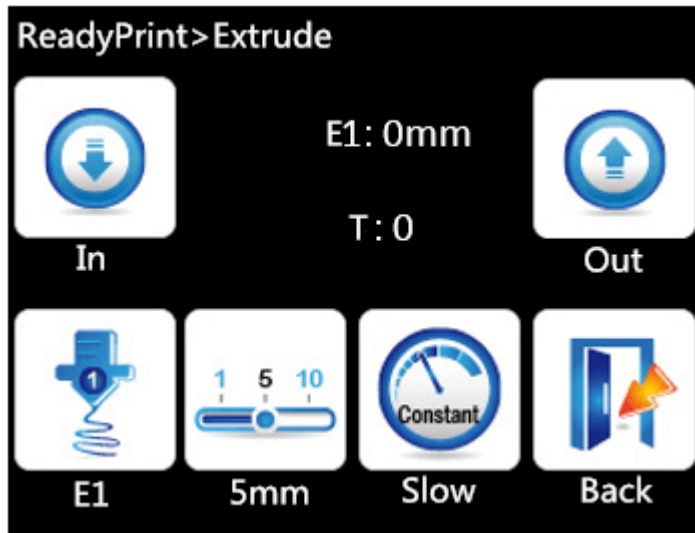


2.1 To choose extrude or hot bed to heat;

2.2 To be heated when extrude and hot bed are detected the temperature of the thermal sensor ;

2.3 If can't detect the temperature: Firstly, detect whether the mainboard has been connected to the thermal sensor; Secondly, detect whether the baud rate of the touch screen is not the same as the mainboard.

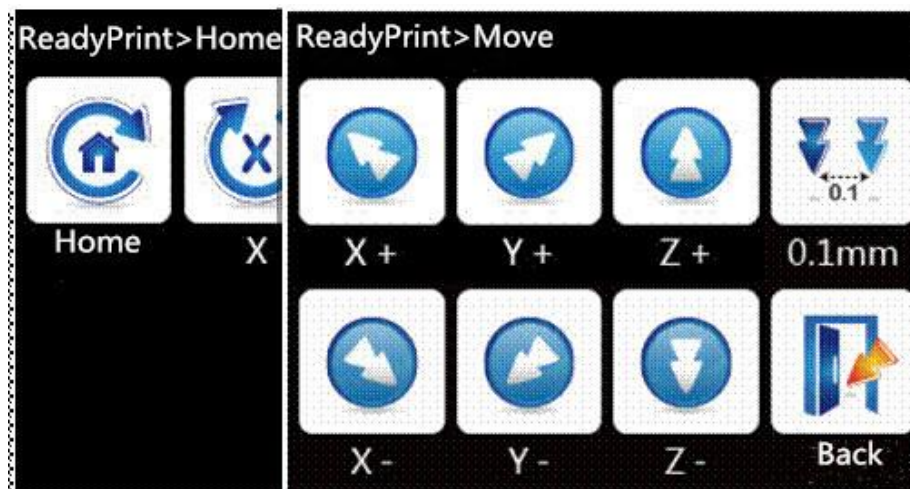
## 3.Extrude Interface



To add and discharge filament in this interface when the temperature reaches above 175°

#### 4. Move and Home Interface

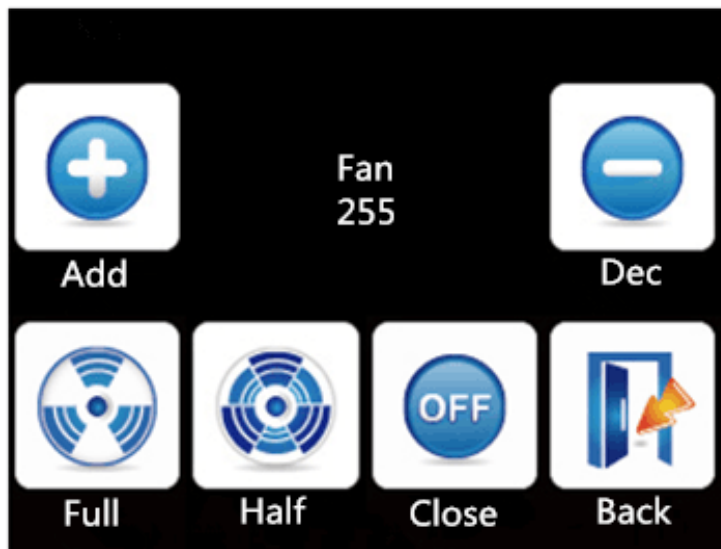
To control every axis to home and move, it must home firstly then move.



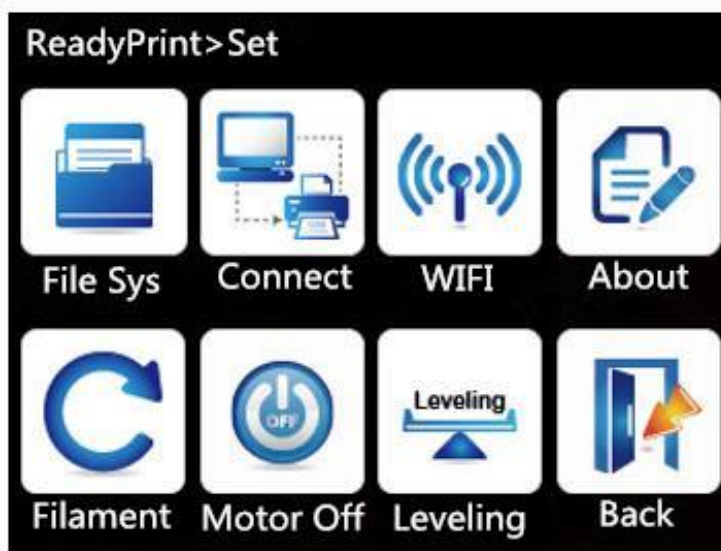
#### 5. Fan Interface

To start half speed or full speed or turn off the fan.



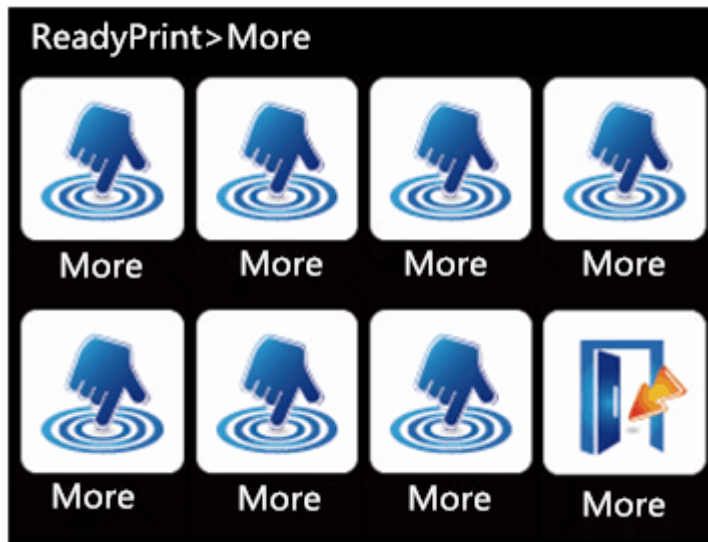


## 6. Set Interface



- 6.1 File Sys: SD card or U disk;
- 6.2 Connect: to choose mainboard firmware baud rate;
- 6.3 WIFI: to view the WIFI state information;
- 6.4 About: to view the current firmware version;
- 6.5 Filament: to change the filament;
- 6.6 Motor Off: to turn off the enable current of all motors;
- 6.7 Leveling: to automatically level or manually level

## 7. More Interface



To customize 7 functions that can be set in the configuration in the More Interface.

## VI mks\_config.txt Configuration File

```
#mainboard firmware setting(marlin:1; repetier:2; smoothie:3)
```

```
>cfg_firmware_type:1
```

```
#machine setting (Normal:1; Delta:2)
```

```
>cfg_machine_type:1
```

```
#language (Simplified Chinese:1; traditional Chinese:2; English:3)
```

```
>cfg_language_type:3
```

```
#whether set machine auto-off after print finishes(auto-off:1; NO:0)
```

```
>cfg_print_finish_close_Machine:0
```

```
#pause position (-1 is invalid; Z-axis is relative position)
```

```
>cfg_XPOS:-1
```

```
>cfg_YPOS:-1
```

```
>cfg_ZADD:10
```

#extruder number(one:1; dual:2)

>cfg\_sprayer\_counter:1

#whether has heated bed(YES:1; NO: 0)

>cfg\_custom\_bed\_flag:1

#the max target Temp of sprayer and heated bed

>cfg\_max\_sprayer\_temperature:270

>cfg\_max\_hotbed\_temperature:150

#the level signal of outage detection module PB1(low level:0; high level:1)

>cfg\_PB0\_PB1\_Level:1

#wifi mode(AP:1; STA:2)

>cfg\_wifi\_mode:1

#wifi name and password

>cfg\_wifi\_ap\_name:MKS\_wifi

>cfg\_wifi\_key\_code:makerbase

#Dynamic access IP

>cfg\_ip\_dhcp\_flag:1

#IP/mask/gateway

>cfg\_ip\_address:192.168.3.100

>cfg\_ip\_mask:255.255.255.0

>cfg\_ip\_gate:192.168.3.1

#the color of screen background

>cfg\_background\_color:0x000000

#the color of title text

>cfg\_title\_color:0xFFFFFFFF

#the color of temperature,fan,(etc) background

>cfg\_state\_background\_color:0x000000

#the color of temprature,fan,(etc) text

>cfg\_state\_text\_color:0xFFFFFFFF

#the color of file button

>cfg\_filename\_background\_color:0x000000

#the color of file text

>cfg\_filename\_color:0xFFFFFFFF

#the color of background in printing

>cfg\_printingstat\_word\_background\_color:0x000000

#the color of text in printing status

>cfg\_printingstat\_word\_color:0xFFFFFFFF

#3D effects setting (disable: 0; enable: 1)

>cfg\_BUTTON\_3D\_effects:0

#the speed of filament replacing(mm/min)

>cfg\_filament\_change\_speed:1200

#the length of filament replacing(mm)

>cfg\_filament\_change\_step:5

#the min temperature of filament replacing

>cfg\_filament\_limit\_temperature:175

#bed leveling setting(auto leveler:1; manual leveling:0)

>cfg\_leveling\_mode:0

#the coordinates of 4 point on manual leveling

```
>cfg_point1:50,50
```

```
>cfg_point2:180,50
```

```
>cfg_point3:180,180
```

```
>cfg_point4:50,180
```

```
#the moving speed of leveling(mm/min)
```

```
>cfg_leveling_z_speed:1500
```

```
>cfg_leveling_xy_speed:3000
```

```
#user-defined function1 and 2.(whether display this button . disable: 0; enable: 1)
```

```
>cfg_function_btn1_display:1
```

```
>cfg_function_btn2_display:1
```

```
#command of user-defined function
```

```
>function_btn1_cmd:M84;
```

```
>function_btn2_cmd:G28;G29;
```

```
#set number of "More" button
```

```
>moreitem_pic_cnt:0
```

```
#edit command for 1~7 "More" button,each command must be separated by semicolon ";"
```

```
>moreitem_button1_cmd:G28 X0;
```

```
>moreitem_button2_cmd:G28 X0;
```

```
>moreitem_button3_cmd:G28 Y0;
```

```
>moreitem_button4_cmd:G28 Y0;
```

```
>moreitem_button5_cmd:G28 Z0;
```

```
>moreitem_button6_cmd:G28 Z0;
```

>moreitem\_button7\_cmd:G28;

#how many "More" button show on screen interface

>morefunc\_cnt:0

#command setting on button1~6

>morefunc1\_cmd:G28;

>morefunc2\_cmd:G28;

>morefunc3\_cmd:G28;

>morefunc4\_cmd:G28;

>morefunc5\_cmd:G28;

## VII Technical Support and Assurance

1. Power test before delivery ;
2. Ensure the normal use before delivery ;
- 3.Any problems you can contact Miss Zhong:  
[kingzhong927@g.mail.com](mailto:kingzhong927@g.mail.com)