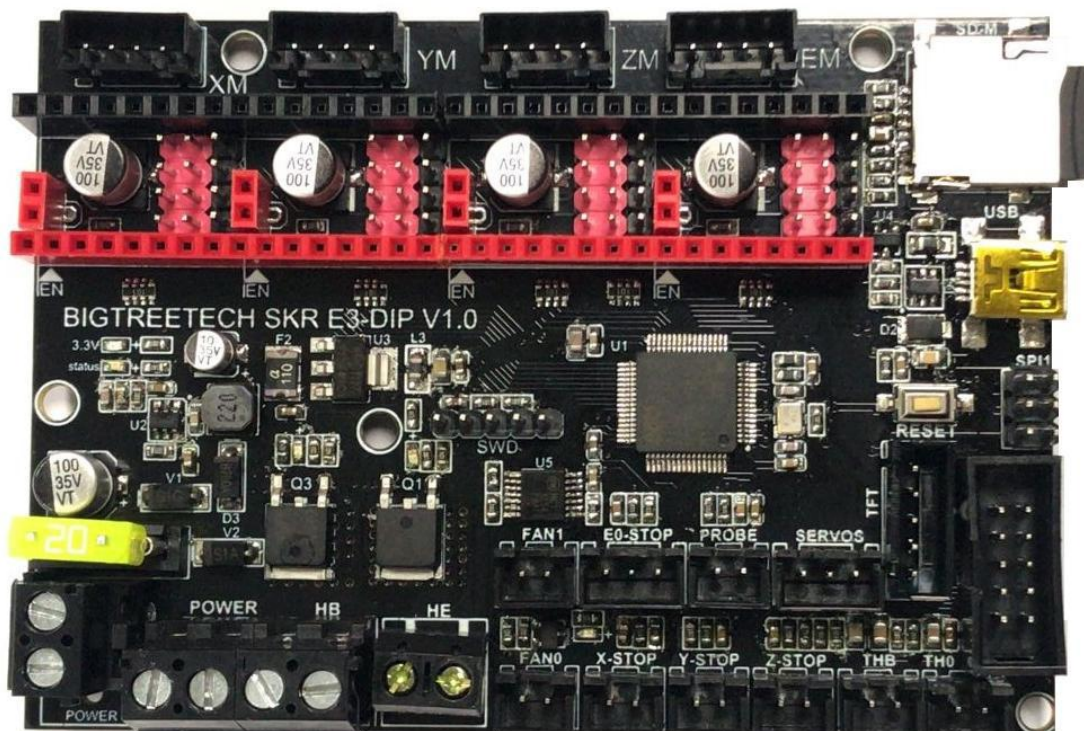


SKR E3 DIP V1.0

User Manual



SHENZHEN BIGTREE TECHNOLOGY CO., LTD.

BIGTREE-TECH.COM

VERSION 1.0

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Product Introduction

BigTree Technology Co., Ltd. developed this high performance and customizable 3D printer controller board to provide a direct replacement for the Ender 3 which has more options.

Main Features

- 1) The board is controlled by a STMicroelectronics ARM Cortex M3 32-bit STM32F103RCT6 MCU. This chip has a Maximum Clock Frequency of 72 MHZ.
- 2) Supports 2.8 inch, 3.5 inch color touch screen and original Ender3 printer LCD12864 screen.
- 3) Supports open source firmware Marlin2.0. This means it is convenient for users to customize their firmware and develop it. The firmware is upgraded with a SD card, which is very convenient and efficient!
- 4) Supported drivers are TMC 5160, TMC 2208, TMC 2209, LV8729, ST820, A4988, etc.
- 5) Dedicated ports for BL Touch, Stallguard, UART and SPI. Supports TMC2130 SPI, TMC5160 SPI, TMC2208 & TMC2209 UART.
- 6) High voltage input means heated bed current draw can be reduced to 1/4, without power loss.
- 7) Supports functions such as BL touch, Stallguard printing after power failure and power off after print finished.
- 8) The layout of the PCB is optimized for heat dissipation.

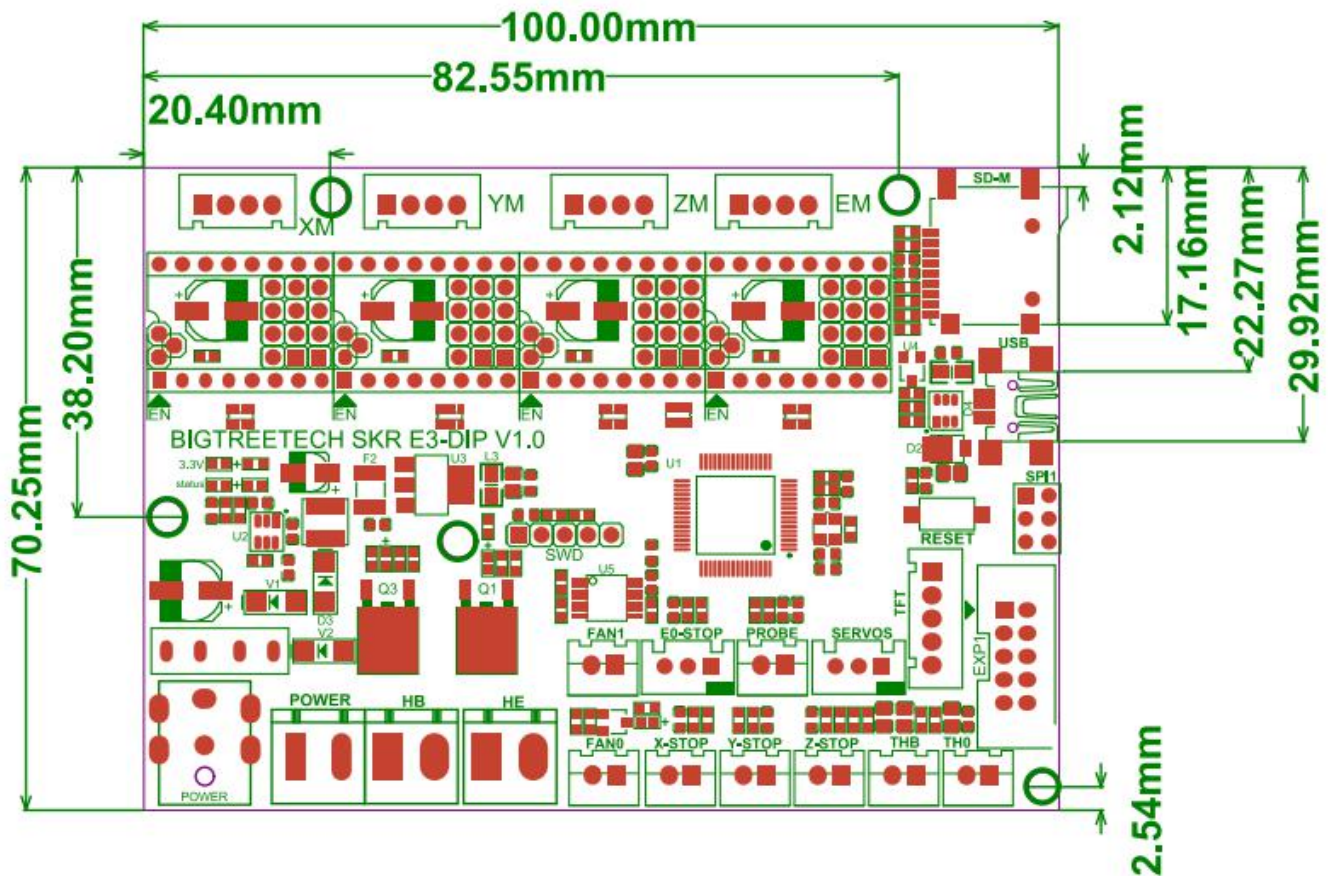
Board specifications

- 1) Size: 100x70.25mm
- 2) Input voltage: 12V-24V DC
- 3) Max. allowable total power usage: 180W@12V, 360W@24V

Dimensions

BIGTREETECH SKR-E3-DIP-V1.0-SIZE

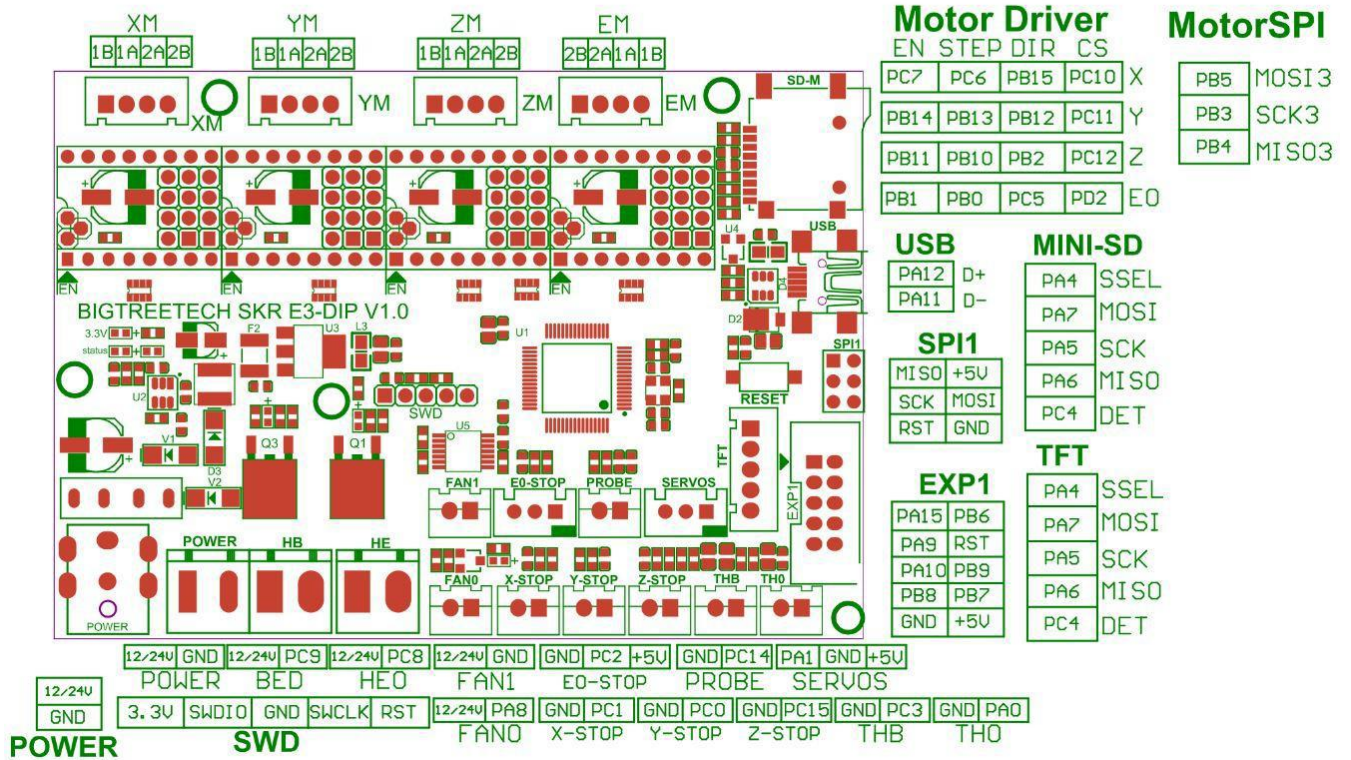
WWW.BIGTREE-TECH.COM



Pins

BIGTREETECH SKR-E3-DIP-V1.0-PIN

WWW.BIGTREE-TECH.COM



Onboard LED information

The 3.3V LED is the power indicator light. The LED is on when the board is powered.

The blue 'status' LED flashes when the firmware is updated, and stops flashing when the update is complete.

The green LED D8 is the heated bed status indicator light. It is on when the heated bed is powered and off when the heated bed is not powered.

The green LED D6 is the extruder status indicator light. It is on when the extruder is powered and off when the extruder is not powered.

The green LED D7 is the fan (Fan0) status indicator light. It is on when the fan is powered and off when the fan is not powered.

Communication between board and computer

After the board is connected to the computer through the USB cable, the computer will automatically install the needed driver. After the driver installation is completed, the board can be identified for data transmission. If the installation fails, you can download the needed driver from here:

<https://github.com/bigtreotech/BIGTREETECH-SKR-MINI-V1.1/tree/master/firmware/mapleDrv-USBdriver>

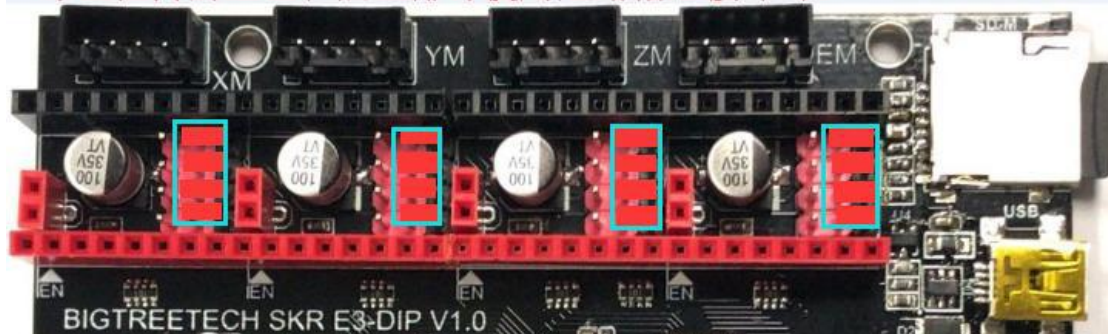
Download the file named mapleDrv for installation. After the driver installation is completed, open the "Device Manager" to see the port to which the board is connected. If you see the same as in the picture below, then the board is successfully connected.



Stepper driver and peripherals configuration

1) STEP/DIR mode

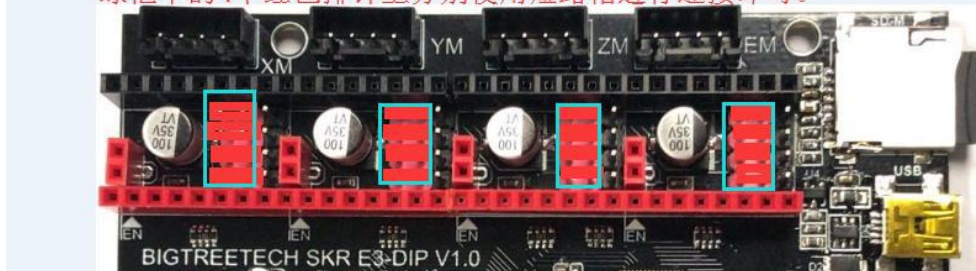
STEP/DIR模式（A4988的16细分为例）：
绿色框内的红色和黑色排针使用短路帽连接即可。



Set the jumpers according to your microstepping settings.

2) SPI Mode

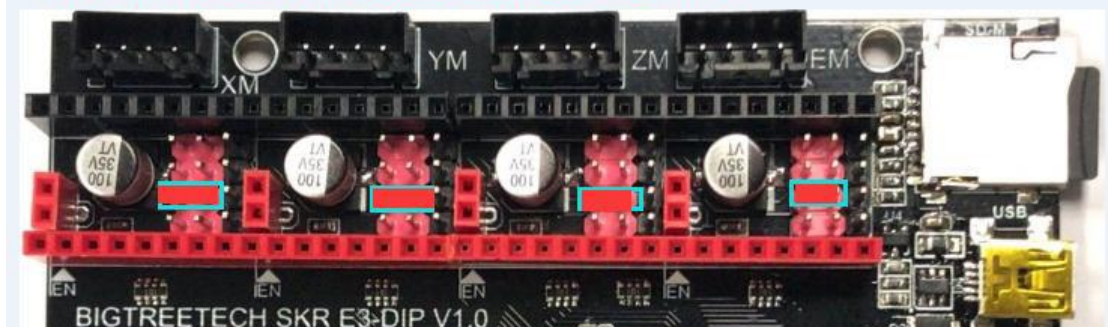
TMC2130&TMC5160的SPI模式：
绿框中的4个红色排针上分别使用短路帽进行连接即可。



Set the jumpers like in the picture above.

3) UART mode

TMC2208&TMC2209的UART模式：
绿框中的红色排针使用短路帽进行连接即可。



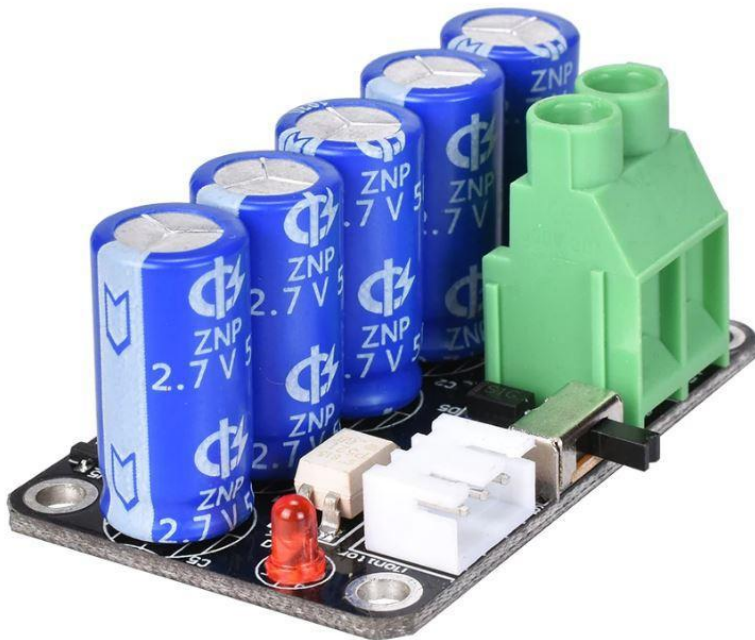
Set the jumpers like in the picture above.

4) BL Touch



For BL Touch use the 'PROBE' and 'SERVOS' pin to connect.

5) Power failure module



See the user manual for the power failure module for more information. You can find it here:

<http://github.com/bigtreotech>

6) Automatic shutdown after print



To make use of the automatic shutdown feature you need a BIGTREETECH Relay V1.0 module. See the user manual for the module for more information. You can find it here: <http://github.com/bigtreetech>

Firmware

By default there will be a firmware installed on the board, which is optimized for Ender 3. It is also possible to make changes to the firmware. You can find the needed firmware files on our Github page.

BigTreeTech firmware: <http://github.com/bigtreetech?tab=repositories>

Marlin2.0 firmware update method:

After downloading the files, use Visual Studio Code to open the project for compilation. Customize the firmware and compile it. Check for errors. If there are no errors, find the firmware.bin file. Copy it to the SD card and plug the SD card in the board. Reboot the board, wait for about 10 seconds before doing anything else with the board.

For detailed steps, please check this document:

<http://www.dropbox.com/s/ppjfflh3j5yzh2/MarlinV2.0%20SKRV1.1%20instruction.docx?dl=0>

Note: File name cannot be changed, firmware.bin must be lowercase!

Notes

- 1) Ensure that all wires, jumper and drivers are correctly plugged in before power-on.
- 2) To avoid damage, do not plug or unplug the stepper drivers when the board is powered.
- 3) Double check all your connections before powering up the board.
- 4) At the moment printing from a USB flash drive is not supported.
- 5) SKR E3 DIP V1.0 is a motherboard designed specifically for the Ender 3 printer. If you want to use another machine, please refer to the corresponding electrical parameters of Ender3 (such as heated bed power, extruder cartridge power, etc.). The electrical parameters of other machines should never exceed the electrical parameters of the Ender 3. Our company will not compensate for any losses caused.