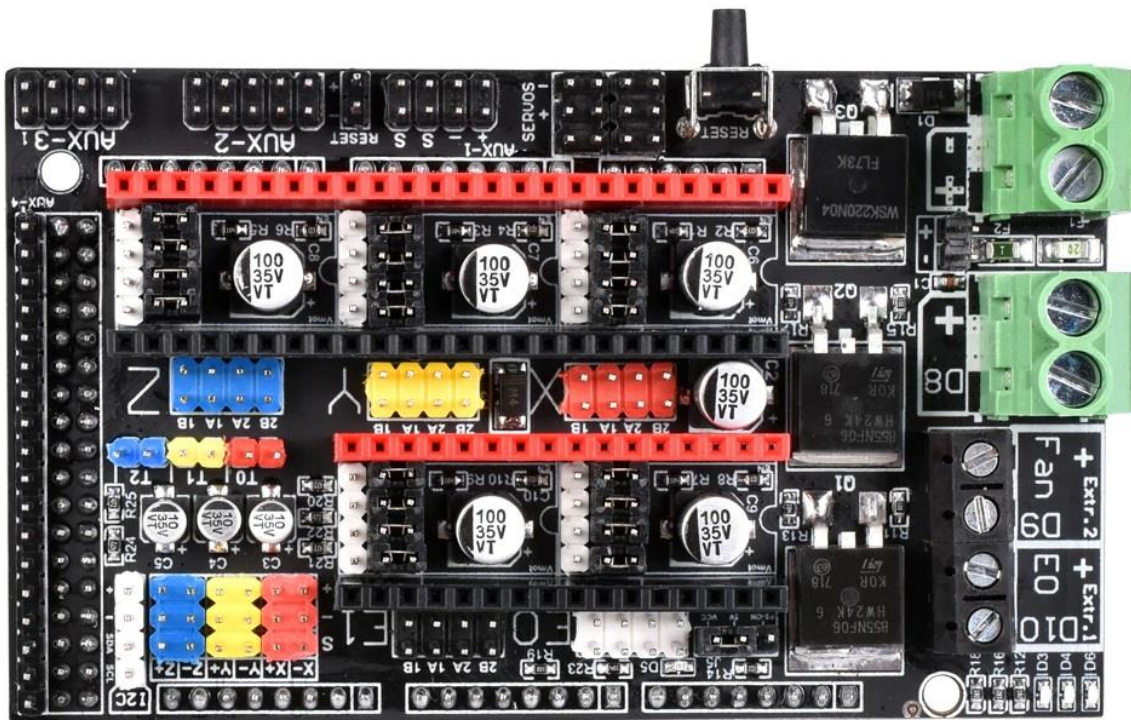


RAMPS 1.6 Plus Datasheet



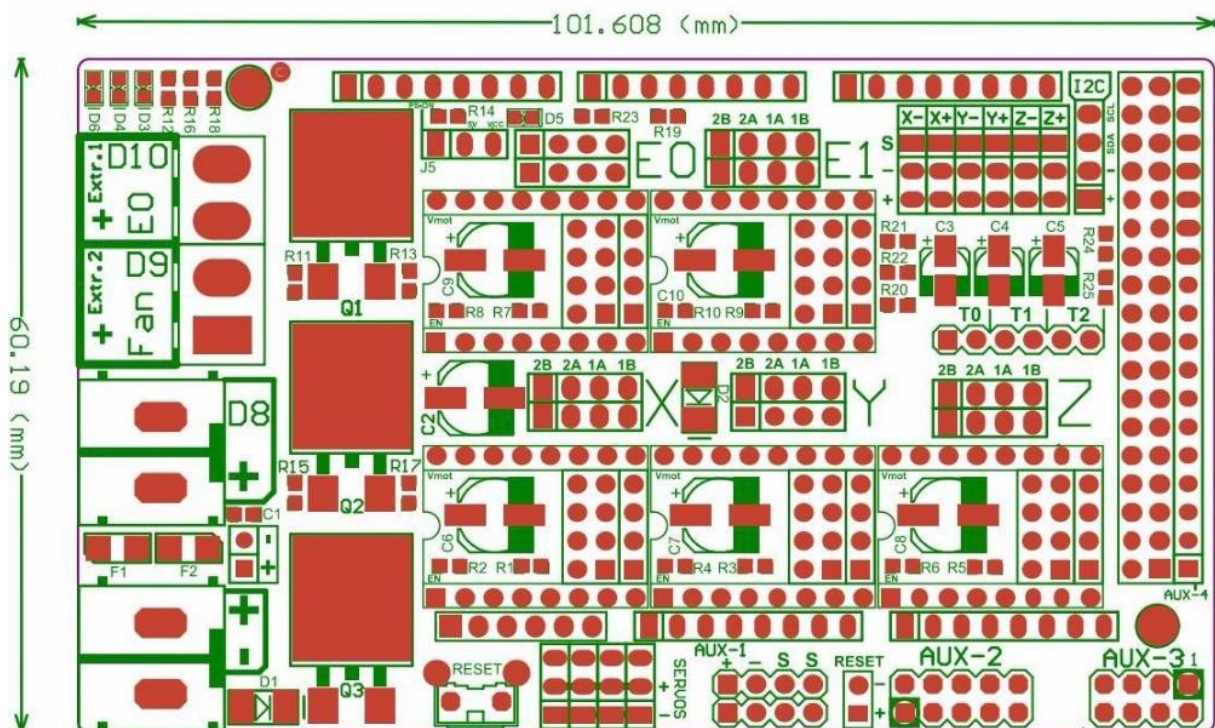
Introduction :

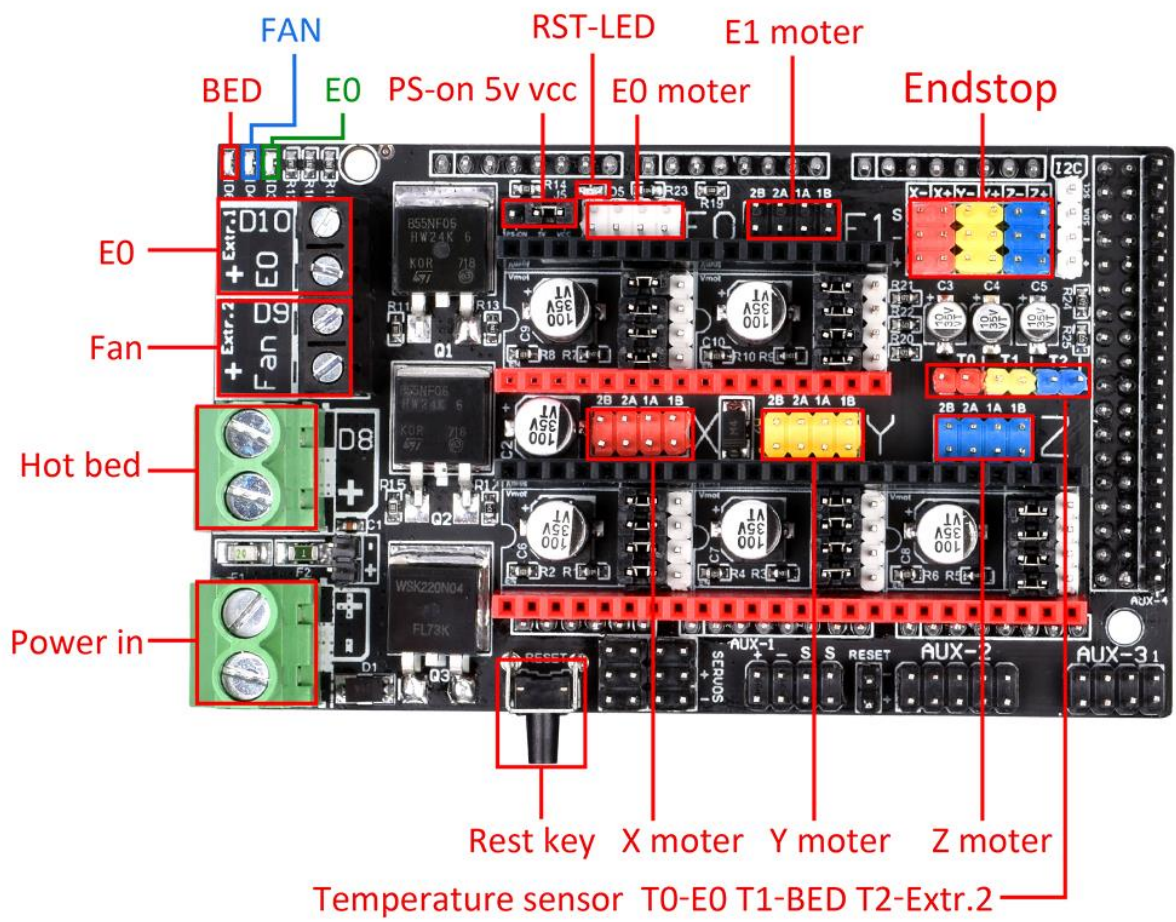
1. BIGTREETECH Ramps 1.6 plus is mainly a new adapter ramps board for the upgrade of the old Ramps 1.6 driver using the SPI working mode wiring complex problem.
2. The BIGTREETECH Ramps 1.6 plus uses the SPI mode of operation, which can be achieved simply by plugging and unplugging the jumper cap. It not only saves the complicated wiring process, but also saves the cost of external wiring, which is economical and practical.
3. The new ramps 1.6 plus effectively avoids the problem of the motor not working by inserting the wrong line; It also avoids the problem that the drive does not work due to poor contact of the external line during the printing process.

Features:

1. The PCB has a built-in selection terminal for driving the SPI working mode, and is compatible with STEP/DIR and SPI modes.
2. The parts of power and heat bed using the 30A high current terminal ,which can largely avoid the burning terminal situations.
3. It is more clear to connect the wire after update a new top overlay and bottom overlay .
4. Adding the reset expansion interface, It is convenient for users to extend the reset button.
5. X, Y, Z, E0, E1 all use parallel dual motor interface, so that the board can use for more type machine .
6. Using a combination of color pin and row connector , effectively distinguishing each function interface, beautiful and practical.

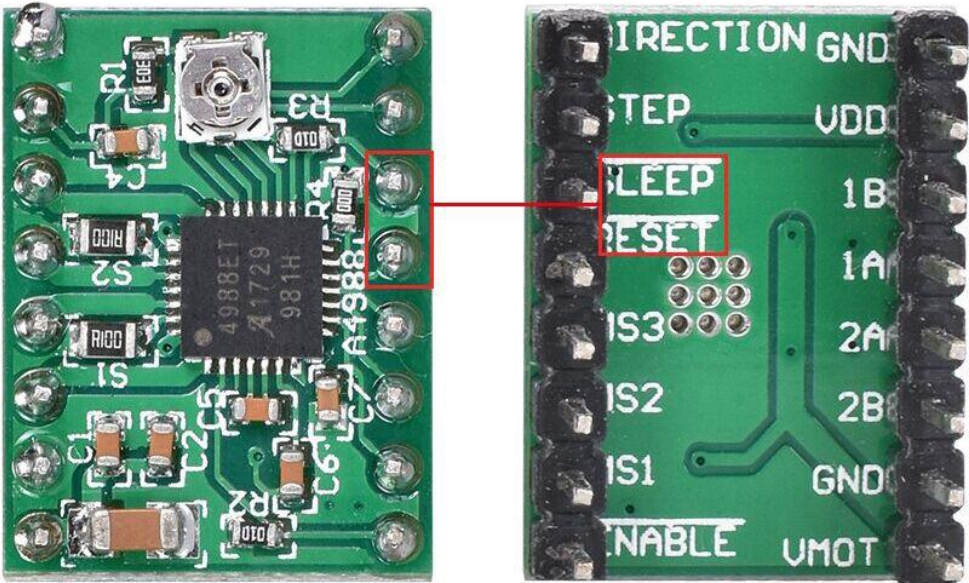
RAMPS 1.6+



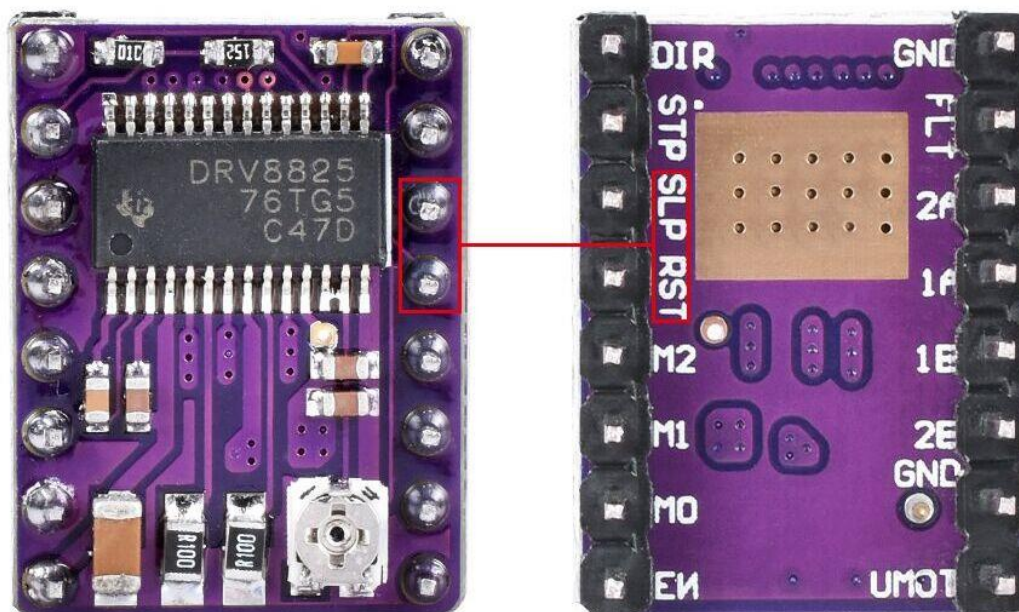


[A4988](#) and [DRV8825](#) are special, so you need to solder it as shown in our picture, what's more, according to form of the subdivision, the jumper of the black part should change to plug on the white part.

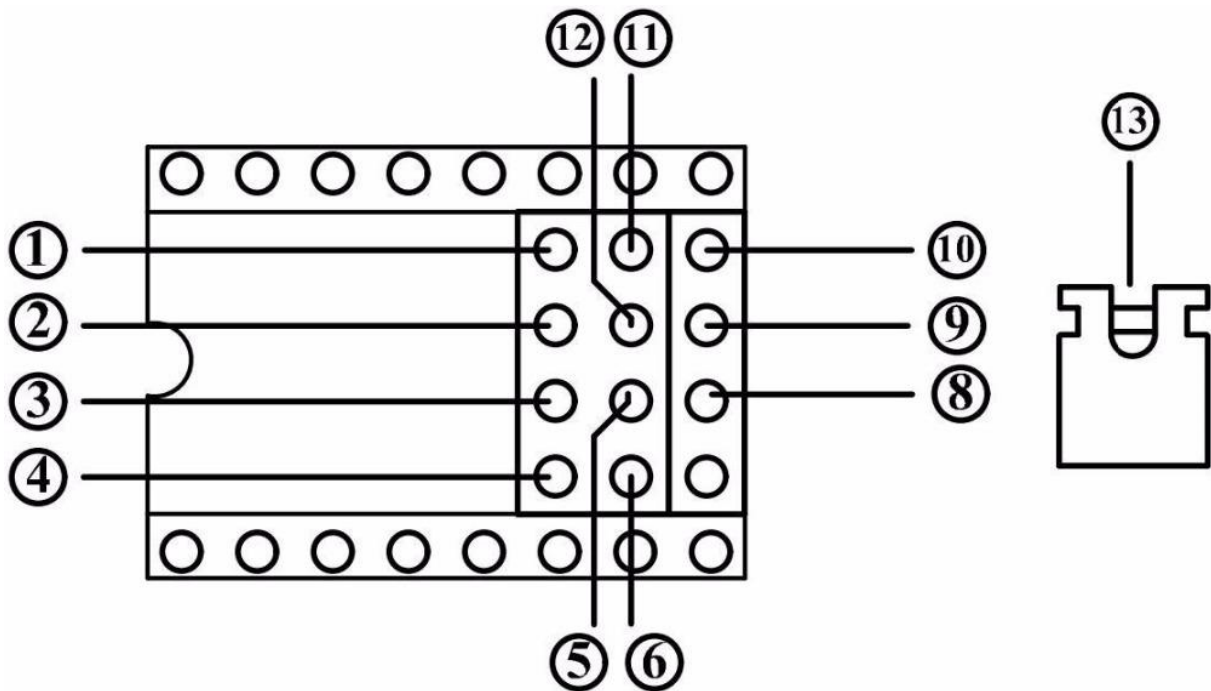
When you use our ramps 1.6 plus with A4988 or DRV8825 , you need to solder 'SLEEP' and 'RESET'



When you use our ramps 1.6 plus with A4988 or DRV8825 , you need to solder 'SLP' and 'RST'



Selection of driving SPI and STEP/DIR working mode:



SPI working model :

When using driver SPI model : connect 1 and 11,2 and 12, 3 and 5 ,4and 6 respectively, using four pcs 13 (short circuit caps)

SPI is the serial bus mode of operation, where 1 connection 11 is MOSI, 2 connection 12 is SCK, 3 connection 5 is CSN, and 4 connection 6 is MISO; (Corresponding picture indication)

STEP/DIR (stepper/ directional drive mode):

Figure 11, 12 and 5 respectively represent MS1, MS2 and MS3 of STEP/DIR mode (subdivided selection end),8, 9 and 10 are all VCC (high level);Take the LV8729 driver as an example. Connect 5 (MS3) and 8 (high level) by using a 13 (short-circuit cap),The driver works in STEP/DIR mode and it is 16 subdivisions.

Note:The interpolation of MS1, MS2, MS3 and 8, 9, 10 in STEP/DIR mode is selected according to different subdivisions of different drivers.

Note: The interpolation of MS1, MS2, MS3 and 8, 9, 10 in STEP/DIR mode is selected according to different subdivisions of different drivers.

Drivers installation skills:

Driver's GND/DIRECTION corresponds to Board's GND/DIR

Attention:

1.The driver working mode selection determines the firmware to be programmed. When the SPI mode is selected, the motherboard must be programmed with the SPI working mode firmware(For a tutorial on changing the SPI firmware, please refer to the BIGTREETECH TMC2130 V1.1 Instruction Manual.);When selecting the STEP/DIR mode, the firmware must be replaced with the firmware of the STEP/DIR working mode, and the consistency of the subdivision must be observed.(Firmware is 16 subdivisions, Ramps1.6 plus must also choose 16 subdivisions)

2.When using the heatbed with power over 140W,please be sure to install MOS radiator to prevent overheating and burning; When using the heatbed with power over 180W, please be sure to select heatbed MOS module for transfer to avoid the board burning due to long-time overheating;

3.When you plug and unplug the drive into Ramps1.6 plus, please pay attention to the direction of the drive. It should not be inserted in reverse to prevent the drive from burning, and the operation of the plug and unplug drive must be conducted under the premise of power failure.

4.Description of each driver SPI mode CS pin: (For details, please refer to the data RAMPS1.6 plus PIN)

XCS : D63 YCS : D40 ZCS : D42 E0CS : D65 E1CS : D66