

### Micro SD Card Reader

CS	PC9
MOSI3	PC12
SCK3	PC10
MISO3	PC11
DET	PC4

### USB Flash Drv U20 Type-A

USB-A_D+	PB15
USB-A_D-	PB14

## UART (TX=RX)

DRIVER0:	PE6
DRIVER1:	PE3
DRIVER2:	PB7
DRIVER3:	PB3
DRIVER4:	PD4
DRIVER5:	PD0
DRIVER6:	PD15
DRIVER7:	PD11

Only one (1) Jumper is needed for this mode. Jumper located in column **MS3** and row 1 & 2.

## SPI

DRIVER0-CS	PE6
DRIVER1-CS	PE3
DRIVER2-CS	PB7
DRIVER3-CS	PB3
DRIVER4-CS	PD4
DRIVER5-CS	PD0
DRIVER6-CS	PD15
DRIVER7-CS	PD11

Four (4) Jumpers are needed for this mode. Jumpers located in: columns **MISO, CS, SCK, MOSI** and rows 1 & 2.

# Makerbase MKS Monster8 V1.0

Redesigned PIN MAP BY GadgetAngel

**WARNING!!** ONLY PLACE ONE JUMPER VERTICALLY ACROSS THE FAN VOLTAGE SELECTION HEADERS, ANY MORE THAN ONE CAN CONNECT TWO/THREE POWER SUPPLIES TOGETHER, AND THIS WILL DAMAGE THIS BOARD. THE SAME RESULT CAN HAPPEN IF A JUMPER IS PLACED HORIZONTALLY.

**“DRV IC-PWR” means: Select the Logic Level Voltage the Stepper Driver IC will use.**

Driver IC Logic Level = 3.3 VDC

Driver IC Logic Level = 5 VDC

EndStop Voltage Select: 5V DC, V<sub>n</sub> VDC, 5V VDC

EndStop Voltage = 5V DC

EndStop Voltage = V<sub>n</sub> (24) V DC

### Source for MCU's 5V Rail (USB-PWR)

MCU is the Source = 5V

USB-C Port is the Source\* = 5V

\* Assumes PWR\_IN is NOT connected & USB-C cable is attached

### FAN Voltage Selection Block

24VDC = Selected

12VDC = Selected

5VDC = Selected

### “DRV IC-PWR” means: Select the Logic Level Voltage the Stepper Driver IC will use.

3.3 VDC

5V

### EndStop Voltage Select

5V DC

V<sub>n</sub> VDC

5V VDC

DRIVER0 (X)	EN	STEP	DIR	CS	PC15	PC14	PC13	PE6	DRIVER1 (Y)	EN	STEP	DIR	CS	PC15	PE5	PE4	PE3	DRIVER2 (Z)	EN	STEP	DIR	CS	PE2	PE1	PE0	PB7	DRIVER3 (E0)	EN	STEP	DIR	CS	PB6	PB5	PB4	PB3
DRIVER4 (E1)	EN	STEP	DIR	CS	PD7	PD6	PD5	PD4	DRIVER5 (E2)	EN	STEP	DIR	CS	PD3	PD2	PD1	PD0	DRIVER6 (E3)	EN	STEP	DIR	CS	PC8	PC7	PC6	PD15	DRIVER7 (E4)	EN	STEP	DIR	CS	PD14	PD13	PD12	PD11

### Connect the Raspberry Pi via UART

In order to use the only hardware serial port of the Raspberry Pi, you need to disable the console function and map the hardware serial port to GPIO14 and GPIO15.

You can refer here:

```

sudo raspi-config
=> Interfacing Option
=> Serial
=> NO
=> YES
sudo nano /boot/config.txt
=> add this line:
dtoverlay=pi3-disable-bt
=> then
sudo reboot
sudo nano /boot/cmdline.txt
=> remove the word phrase
"console=serial0,115200" or
"console=ttyAMA0,115200"
sudo reboot

```

### USB Port U20 Type-C

USB-C_D+	PA12
USB-C_D-	PA11

### Note!

If you are unsure about any of the information provided on this PIN Diagram, please ask for help from the 3D printer community, check the Processor's data sheet and the board's schematic diagram.

### \*1 Thermistor Jumper Pads:

MKS Monster 8 boards have additional Jumper Pads which are located on the back side of the board. These Jumper Pads can be soldered together or cut so that you can change if a pull-up resistor is used or not used. Please see the MKS Monster 8 schematic diagram and look for the following labels: "JP1", "JP2", "JP3", and "JP4".

### Marlin 2.0.x Firmware Changes:

In Platformio.ini file change: `default_envs = mks_monster8_usb_flash_drive`

In Configuration.h file change:

```

#define SERIAL_PORT -1
#define SERIAL_PORT_2 1
#define MOTHERBOARD BOARD_MKS_MONSTER8

```

Note: Serial Port definitions in Marlin 2.0.x for this Board: -1: USB Port; 1: UART Port;

### NOTE: Power the Raspberry Pi with a separate 5V PSU.

“UART” Header on the Monster 8

\* Important! Connect the DC 0V (typically labelled V-) on all of your DC power supplies together to ensure they all have the same voltage reference. If this is not done then it may be difficult to diagnose issues (devices may not turn on or may be damaged due to exceeding voltage limits).

### STALLGUARD (Sensor-less Homing)

DRIVERS	DIAG PIN	ENDSTOP
DRIVER5	DRV5-DIAG	PB12 Z+
DRIVER4	DRV4-DIAG	PC5 Y+
DRIVER3	DRV3-DIAG	PA13 X+
DRIVER2	DRV2-DIAG	PB13 Z-
DRIVER1	DRV1-DIAG	PA15 Y-
DRIVER0	DRV0-DIAG	PA14 X-

DIAG pin to/from Driver

“Diag Jumper” Block

Note1 Concerning the TMC2209/TMC2236 in UART Mode ONLY: If using limit switches/endstops, ensure the DIAG pin is NOT connected to the MCU Endstop (i.e., ensure the “Diag Jumper” is removed).

Note2 For TMC2209/TMC2236 in UART Mode ONLY: if you are using it for your extruder motor and you want to use a filament runout sensor, ensure the DIAG/DIAG1/DIAG0 PIN is NOT connected to the MCU Endstop to allow the filament runout sensor to work properly (i.e., ensure the “Diag Jumper” is removed for the corresponding extruder motor).

Endstops to/from MCU

### How To Compile the Klipper Firmware for MKS Monster 8 V1.0:

- Connect to your printer via SSH
- Run `cd ~/klipper` to change into the klipper directory
- Run `make menuconfig` to enter the klipper firmware settings. See the picture below for the proper firmware settings:

### How to Transfer the Klipper Firmware to MKS Monster 8 V1.0:

OR

- Exit and save with 'q'
- Run 'make' to compile the firmware.
- Copy file 'out/klipper.bin' to the SD card and rename to 'firmware.bin'.
  - If you are running Mainsail or Fluidd you can run the following command to copy the firmware file to the 'config' directory allowing you to download it from the web interface: `cp out/klipper.bin ~/klipper_config/firmware.bin'`
- Use a tool such as cyberduck or winscp to copy the klipper.bin file off your pi, onto your computer.
  - Ensure that your sda is formatted FAT32 (NOT EXFAT)
  - copy firmware.bin onto the microSD card (if this card has previously been used for this process, remove all old firmware.bin and old bin files)
  - power down the MKS Monster 8
  - insert the microSD card
  - power on the MKS Monster 8
  - after a few seconds, the Monster 8 should be flashed
  - you can confirm that the flash was successful, by running ls /dev/serial/by-id. If the flash was successful, this should now show a klipper device, similar to:

(note: this test is not applicable if the firmware was compiled for UART, rather than USB)