STōN-WoLF wiring and pinout

BTT Manta E3EZ V1.0 + Raspberry Pi CM5 + STōN-PROBE. Board shown as mounted: power input on the bottom edge

Rev 1

80 mm box fan

MFAN. 24V, always on

24V
GND

Extruder motor, E1_Motor

NEMA 14 round, 13 mm

B2
B1
A1
A2

3 Z motors on one driver, E0_Motor

Y harness, 3 branches. Same colors on each.

B2
B1
A1
A2

40 mm CM5 fan

MFAN. 24V, always on

GND 24V

Y motor, Y_Motor

Shorter, 34 mm

A2
A1
B1
B2

X motor, X_Motor

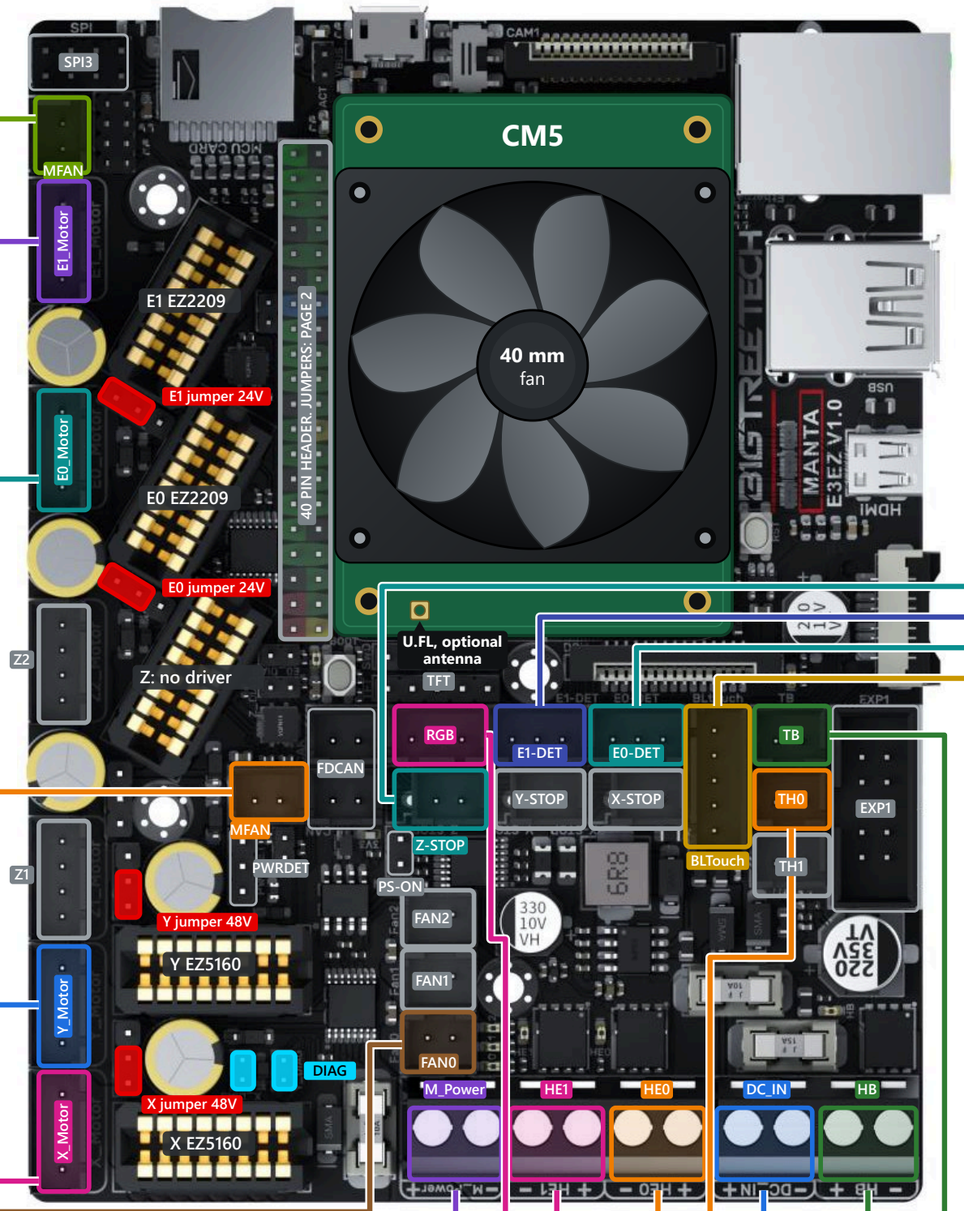
Longer, 48 mm

A2
A1
B1
B2

Heatbreak fan, FAN0

24V, max 1A

24V PA8



On the other pages

2 Jumpers, 40 pin header, important notes
3 All pins
4 Connector table
5 Mains side
6 Probe, limits, common questions
7 Everything else on the board: USB, HDMI, free ports

Power off before any connection, except USB and LAN.

Filament sensor SFS V2

NO 5V GND PC6
Z-STOP
Encoder

5V GND PC5
E0-DET
Runout, 5V
1 sensor, 2 connectors

Emergency stop button

5V GND PB1

E1-DET, 3 pins
16 mm, deep blue ring
Pressed: PB1 joins GND

STōN-PROBE on the BLTouch connector. Not a BLTouch

PA6
GND
PA7
5V
GND
diode

QT Py SAMD21

STEMMA QT

NAU7802
amplifier

50 mm cable

Load cell under the bed

QT Py drawing: Adafruit, CC BY-SA

48V, M_Power

RED + 48V
BLACK GND

48V

GST120A48-P1M
Lead 160 mm

7040 part cooling fan

5V PC7 GND
BLACK -
RED + 24V

HE1: power on, off. RGB, grey wire: speed

Hotend

BLACK -
BLACK +

Heater: HE0, black
Either way round

PA4 GND

Thermistor: TH0
Black, red stripe

24V, DC_IN

RED + 24V
BLACK GND

24V

GST120A24-P1M
Lead 145 mm

SSR + mains bed. Page 5

RED + 24V
BLACK -

HB turns
the SSR on

Thermistor: TB

PA3 GND

OMRON
G3NB-220B-1

MAINS. Unplug first.

MAINS

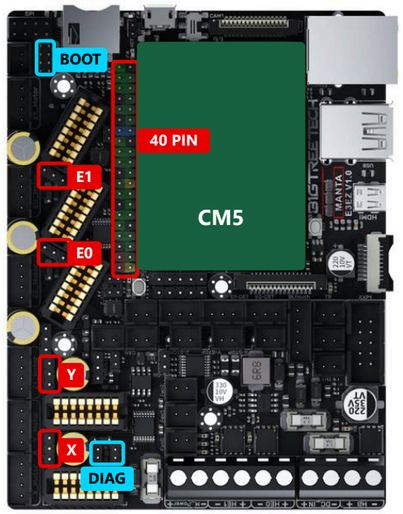
Bed heater

One color = one device: box on the connector, line, card. Wire color = real wire. Grey = not wired. BIG jumper SMALL jumper

Board image: BIGTREETECH. CM5 and fan drawn by STōN.

POWER OFF to insert or remove any jumper. No exceptions. A slip can short power to GND and destroy the board.

Where they are

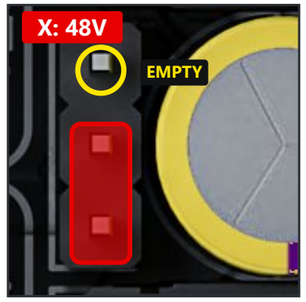


BIG, 2.54 mm
40 pin header. Voltage jumpers X, Y, E0, E1.

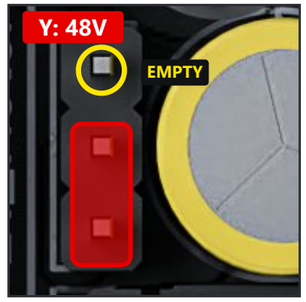
SMALL, 2.0 mm
All DIAG, VBUS, RPIBOOT, USBOTG, CAN 120R. Much shorter, hard to grip.

Jumper	Position	Why
X_DIAG, Y_DIAG	IN	Sensorless homing, X and Y only. Sends the driver stall signal to PC4 and PB0.
Z_DIAG	OUT	Would tie the Z slot to PC6, the filament motion sensor
E0_DIAG	OUT	Would tie the Z driver to PC5, the filament runout sensor
E1_DIAG	OUT	Would tie the extruder driver to PB1, the emergency stop
VBUS	OUT	Only for powering the board from USB alone.
CAN 120R	Not used	Only for CAN.
RPIBOOT, USBOTG	OUT	Only to rescue a board: page 6.

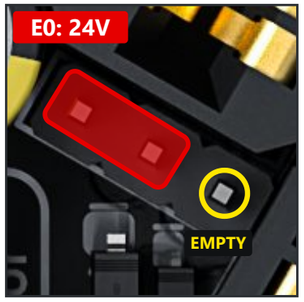
Voltage jumpers: 3 pins in a row. BIG jumper on the center pin + one end pin



Center + BOTTOM pin
Top pin stays empty



Center + BOTTOM pin
Top pin stays empty



Center + UPPER LEFT pin
Lower right pin stays empty



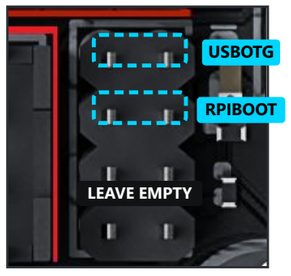
Center + UPPER LEFT pin
Lower right pin stays empty

48V on an EZ2209 (E0, E1) destroys it. Check all 4 before power on. X and Y run the EZ5160 on M_Power, E0 and E1 the EZ2209 on DC_IN.

Small jumpers



2 SMALL jumpers, fitted.
Sensorless homing, X and Y.
Other DIAG jumpers stay out.

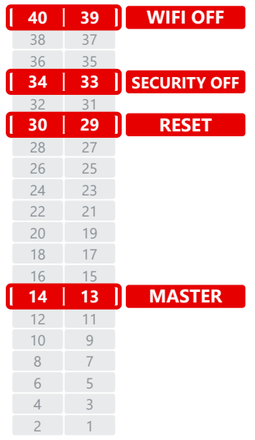


RPIBOOT, USBOTG: OUT.
Dashed = leave out.
Only to rescue a board, steps on page 6.



Micro USB: only for a rescue.
Slide switch: leave it down, power input on the bottom edge.

Our 4 jumpers on the 40 pin header. POWER OFF, NO EXCEPTIONS



WIFI OFF
Top row of header. Pins 39 and 40.
Turns the wifi radio off. Read at boot.
POWER MUST BE OFF to insert or remove.

SECURITY OFF
4th row from the top. Pins 33 and 34.
Passwords off, like a stock printer. In full: at right.
POWER MUST BE OFF to insert or remove.

FACTORY RESET
6th row from the top. Pins 29 and 30.
30 s countdown at power on.
POWER MUST BE OFF to insert or remove.

I AM THE MASTER
14th row from the top. Pins 13 and 14.
Only for making images. Read at power on.
POWER MUST BE OFF to insert or remove.

A jumper joins left pin to right pin, same row.
Each jumper is separate. Never link them.
A slip can short power to GND and destroy the board.

What they do

SECURITY OFF
Passwords off at power on, like a stock printer. SSH pi / raspberry. Web has no password. Moonraker and the VNC screen open to the network. Wifi password = wifi name. Power off, jumper out, power on: the printer's own password back.

I AM THE MASTER
Only for making images: a board still named wolf-mstr skips first boot. Never on a customer printer.

FACTORY RESET
Steps on page 6.

All 40 pins, what is open and what is used.

Pin 40 is top left, row 1 is the top row. Read from a running printer.

Row	Left, right pins	What	Status
1	**40, 39**	**GPIO 21, GND**	**OURS: wifi off**
2	38, 37	GPIO 20, GPIO 26	Free
3	36, 35	GPIO 16, GPIO 19	Free
4	**34, 33**	**GND, GPIO 13**	**OURS: security off**
5	32, 31	GPIO 12, GPIO 6	Free
6	**30, 29**	**GND, GPIO 5**	**OURS: factory reset**
7	28, 27	ID_SCL, ID_SDA	Leave alone
8	**26, 25**	**GPIO 7 (SPI CE1), GND**	**USED. NEVER jumper: SPI drives it high**
9	24, 23	GPIO 8 (SPI CE0), GPIO 11 (SPI SCLK)	USED, SPI
10	22, 21	GPIO 25, GPIO 9 (SPI MISO)	25 free, 9 used
11	20, 19	GND, GPIO 10 (SPI MOSI)	USED, SPI
12	18, 17	GPIO 24, 3.3V	24 free. 3.3V: careful
13	16, 15	GPIO 23, GPIO 22	Free
14	**14, 13**	**GND, GPIO 27**	**OURS: master, only for making images**
15	12, 11	GPIO 18, GPIO 17	Free
16	10, 9	GPIO 15 (serial RX), GND	USED, serial
17	8, 7	GPIO 14 (serial TX), GPIO 4	14 used, 4 free
18	6, 5	GND, GPIO 3 (I2C SCL)	USED, I2C
19	**4, 3**	**5V, GPIO 2 (I2C SDA)**	**DANGER: 5V. Never jumper**
20	**2, 1**	**5V, 3.3V**	**DANGER: never jumper**

SPI, I2C and serial are switched on in the boot settings. Free means nothing is using the pin today. Fit only our 4 jumpers on this header, and only with the power off.

Important

- The bed runs on mains through the SSR. Unplug first. Mains side: see page 5.
- All jumpers and connections: power OFF. Only exceptions: USB, LAN. HDMI: power off too.
- X-STOP, Y-STOP: used by sensorless homing. Blank cover only, no wires.
- E0_DIAG, E1_DIAG: no jumper. It would fight the runout sensor and the emergency stop.
- 48V on an EZ2209 destroys it. Check the power select jumpers before power on.
- BLTouch connector is our probe. Do not plug in a real BLTouch.
- Emergency stop is software, through Klipper. It does not cut mains. A loose wire disables it with no warning: test it.

All pins

Every board connector. Grey = free. 40 pin header: page 2

Connector	Pin	Function	Wire
X_Motor	A2	X motor	Blue
	A1	X motor	Red
	B1	X motor	Green
	B2	X motor	Black
Y_Motor	A2	Y motor	Blue
	A1	Y motor	Red
	B1	Y motor	Green
	B2	Y motor	Black
Z1_Motor	A2	Free	
	A1	Free	
	B1	Free	
	B2	Free	
Z2_Motor	B2	Free	
	B1	Free	
	A1	Free	
	A2	Free	
E0_Motor	B2	3 Z motors	Blue
	B1	3 Z motors	Red
	A1	3 Z motors	Green
	A2	3 Z motors	Black
E1_Motor	B2	Extruder	Blue
	B1	Extruder	Red
	A1	Extruder	Green
	A2	Extruder	Black
MFAN, box fan	24V	80 mm box fan +	Red
	GND	80 mm box fan -	Black
MFAN, CM5 fan	GND	40 mm CM5 fan -	Black
	24V	40 mm CM5 fan +	Red

Connector	Pin	Function	Wire
FAN0	24V	Heatbreak fan +	Red
	PA8	Heatbreak fan -, switched	Black
FAN1	24V	Free	
	PB15	Free	
FAN2	24V	Free	
	PB14	Free	
RGB	5V	Free	
	PC7	Part cooling fan PWM speed	Grey
	GND	Free	
Z-STOP	5V	No pin, only a hole	
	GND	Filament sensor GND	Black
	PC6	Filament sensor encoder	Green
Y-STOP	5V	No pin, only a hole	
	GND	Leave empty	
	PB0	Used by Y sensorless homing	
X-STOP	5V	No pin, only a hole	
	GND	Leave empty	
	PC4	Used by X sensorless homing	
E1-DET	5V	Emergency stop ring	Red
	GND	Emergency stop	Black
	PB1	Emergency stop switch	Green
E0-DET	5V	Filament sensor power	Red
	GND	Free	
	PC5	Filament sensor runout	Blue
BLTouch	PA6	Probe touch, QT Py A6	Blue
	GND	Free	
	PA7	Probe tare, QT Py A7	Yellow
	5V	Probe power	Red
	GND	Probe GND	Green
TB	PA3	Bed thermistor	White
	GND	Bed thermistor	White
TH0	PA4	Hotend thermistor	Black, red stripe
	GND	Hotend thermistor	Black, red stripe
TH1	PA5	Free	
	GND	Free	

Connector	Pin	Function	Wire
M_Power	+ 48V	M_Power brick +. X, Y drivers	Red
	GND	M_Power brick -	Black
HE1	PB10	Part cooling fan on/off -, switched	Black
	+ 24V	Part cooling fan +	Red
HE0	PB11	Hotend heater, switched	Black
	+ 24V	Hotend heater	Black
DC_IN	+ 24V	DC_IN brick +	Red
	GND	DC_IN brick -	Black
HB	+ 24V	SSR control +	Red
	PB2	SSR control -, switched	Black
EXP1	GND	Free	
	PA2	Free	
	PC0	Free	
	PC3	Free	
	PC1	Free	
	5V	Free	
	PA1	Free	
	PA0	Free	
	RST	Board reset. Do not use	
	PC2	Free	
SPI3	5V	Free	
	GND	Free	
	PC15	Free	
	PC10	In use: X, Y driver SPI. Do not use	
	PC12	In use: X, Y driver SPI. Do not use	
	PC11	In use: X, Y driver SPI. Do not use	
	3V3	Free	
	GND	Free	
TFT	5V	Free	
	GND	Free	
	PD8	Free	
	PD9	Free	
	RST	Board reset. Do not use	
FDCAN, 2 ports	CAN_H	Free	
	CAN_L	Free	
PS-ON	GND	Free	
	PA9	Free	
PWRDET	5V	Free	
	GND	Free	
	PB9	Free	

Stepper drivers

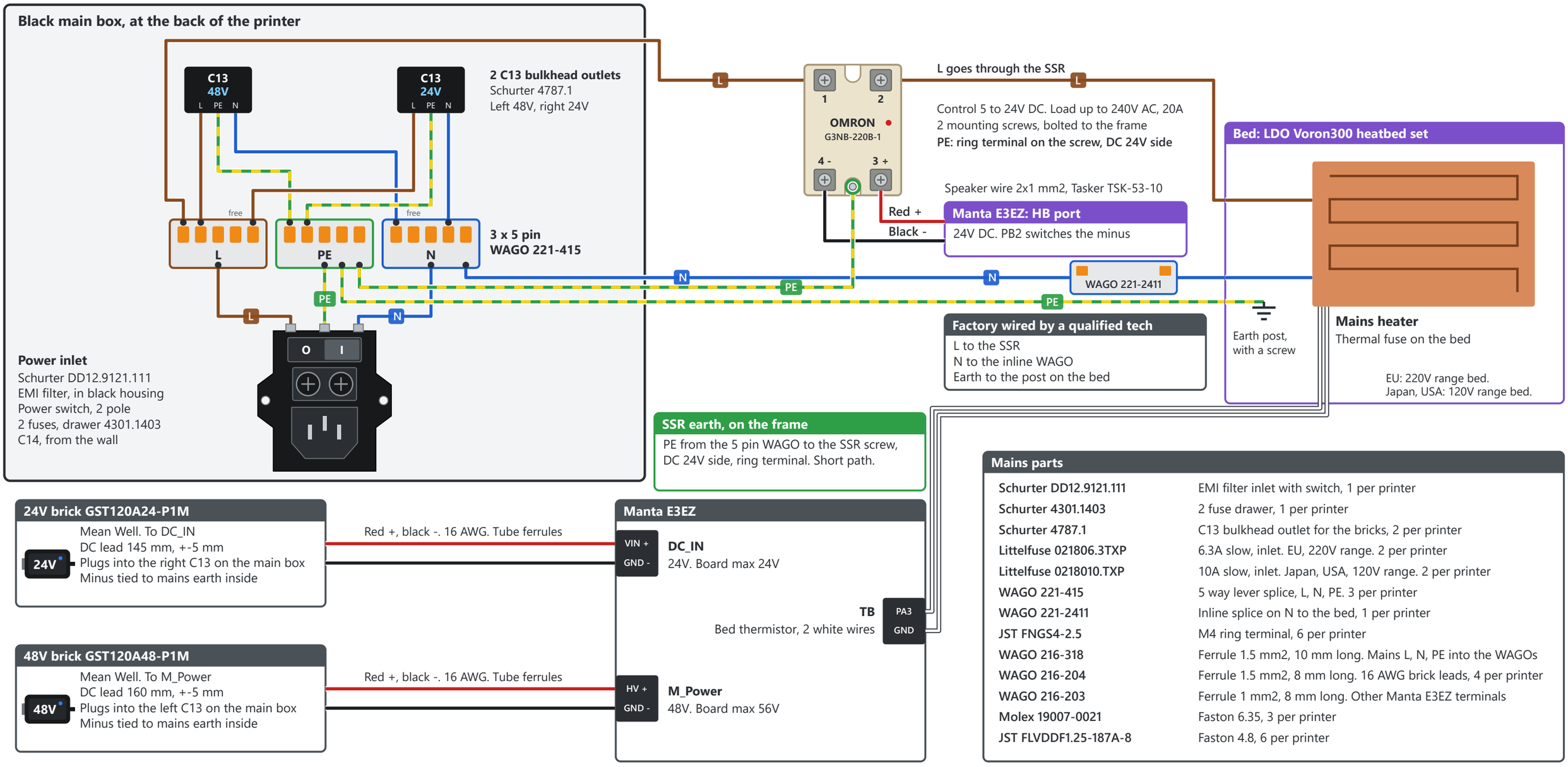
	X_Motor	Y_Motor	Z1, Z2_Motor	E0_Motor	E1_Motor
STEP	PA14	PC8	PD2	PD5	PB7
DIR	PA10	PA15	PD4	PD6	PB6
EN	PA13	PC14	PD3	PB3	PB4
CS / UART	PB8	PC9	PD0	PD1	PB5
Driver	EZ5160	EZ5160	No driver	EZ2209	EZ2209
Power	48V, M_Power	48V, M_Power	Free	24V, DC_IN	24V, DC_IN
Runs	X motor	Y motor	Free	3 Z motors	Extruder

Connector table

What is plugged in. Power OFF before any connection, except USB and LAN

Connector	What is plugged in	Voltage	Wire colors
Motors. X and Y drivers EZ5160, Z and extruder drivers EZ2209			
X_Motor	X motor, longer, 48 mm. Wantai 42BYGHW811-X1. Sensorless homing	48V, M_Power. Jumper: page 2	Top to bottom: blue A2, red A1, green B1, black B2
Y_Motor	Y motor, shorter, 34 mm. Wantai 42BYGHW215-X. Sensorless homing	48V, M_Power. Jumper: page 2	Top to bottom: blue A2, red A1, green B1, black B2
Z1_Motor, Z2_Motor	Nothing plugged in. Not used by the config. No driver in this slot	none	none
E0_Motor	3 Z motors on one driver. LDO 42STH30-1004CL433E(STN). Y harness, same colors on each branch	24V, DC_IN. Jumper: page 2	Top to bottom: blue B2, red B1, green A1, black A2
E1_Motor	Extruder motor. NEMA 14 round, like the LDO Orbiter motor, 13 mm thick	24V, DC_IN. Jumper: page 2	Top to bottom: blue B2, red B1, green A1, black A2
Heaters and temperature			
HE0	Hotend heater. ESPE KABX-4PMS-L800 extension, Molex 3.0	DC_IN, 24V. Max 5A	Black, black
HE1	Wonsmart WS7040-24-V200 CPAP driver, power on and off	DC_IN, 24V. Max 5A	Red +, black -
HB	Omron G3NB-220B-1, control side. HB turns the SSR on, it does not power the bed	24V control. SSR takes 5 to 24V DC	Red +, black -. Speaker wire 2x1 mm2, Tasker TSK-53-10
SSR load side	Omron G3NB-220B-1. LDO Voron300 heatbed set, mains heater. L through the SSR, N through the inline WAGO, earth to a post on the bed. Thermal fuse on the bed. PE also on the SSR mounting screw, DC 24V side, to the frame. Drawn on page 5	Mains. EU: 220V range, 6.3A inlet fuses. Japan, USA: 120V range, 10A inlet fuses. SSR max 240V AC, 20A	Brown L, blue N, green and yellow stripe PE. 1.5 mm2
TH0	Hotend thermistor, HT Micro-Swiss. Same ESPE extension	3.3V sense	Black with red stripe, both
TB	Bed thermistor, ATC Semitec 104NT	3.3V sense	White, white
TH1	Free	none	none
Fans			
FAN0	Heatbreak fan	DC_IN, 24V. Max 1A	Red 24V, black PA8
FAN1, FAN2	Nothing plugged in. Free: 24V fans or accessories. printer.cfg has a ready example for FAN2, a temperature fan, commented out	DC_IN, 24V. Max 1A	none
MFAN, CM5 fan	40 mm fan on top of the CM5	DC_IN, 24V	Red 24V, black GND
MFAN, box fan	80 mm electronics box fan. Delta AFB0824LB	DC_IN, 24V	Red 24V, black GND
RGB	Wonsmart WS7040-24-V200 CPAP driver, PWM speed. PC7 only. Not LEDs. Part cooling	5V signal	Grey, 1 wire
Probe and switches			
BLTouch connector	STōN-PROBE, our own. Not a BLTouch	5V power, 3.3V signals	Top to bottom: blue PA6, empty GND, yellow PA7, red 5V, green GND
E1-DET	Emergency stop button. 16 mm black, deep blue ring. Pressed: switch joins PB1 to GND	Ring 5V. Signal 3.3V	Red 5V, black GND, green PB1
E0-DET	Filament sensor SFS V2, runout signal and 5V	5V power, 3.3V signal	Red 5V, GND empty, blue PC5
Z-STOP	Filament sensor SFS V2, encoder signal and GND	3.3V signal	Green PC6, black GND. No 5V pin
X-STOP, Y-STOP	Used by X and Y sensorless homing, through the DIAG jumpers. Blank cover only	No 5V pin	none
Power			
M_Power	Mean Well GST120A48-P1M, 48V, 120W, 2.5A. Matte black brick, small blue LED. Plugs into a C13 bulkhead on the printer. DC lead 160 mm +-5 mm, tube ferrules. Minus tied to mains earth inside	48V. Board max 56V	Red +, black -. 16 AWG
DC_IN	Mean Well GST120A24-P1M, 24V, 120W, 5A. Matte black brick, small blue LED. Plugs into a C13 bulkhead on the printer. DC lead 145 mm +-5 mm, tube ferrules. Minus tied to mains earth inside	24V. Board max 24V	Red +, black -. 16 AWG
Other			
Screen, camera, USB	Not included. Wireless KlipperScreen. Wired screens and cameras are up to owners. The USB accelerometer, BTT LIS2DW, is for tuning. USB and LAN may be plugged in with power on. HDMI: power off. Page 7	none	none
Other free ports	FDCAN, EXP1, TFT, SPI3, PS-ON, PWRDET. What they do: page 7. Pins: page 3	none	none
Blank connectors	No wires, only covers. On X-STOP, Y-STOP, FAN1, FAN2, TH1, Z1, Z2	none	none

WARNING: MAINS VOLTAGE. HAZARDOUS WHEN TOUCHED. UNPLUG BEFORE TOUCHING ANYTHING HERE.



Mains parts

Schurter DD12.9121.111	EMI filter inlet with switch, 1 per printer
Schurter 4301.1403	2 fuse drawer, 1 per printer
Schurter 4787.1	C13 bulkhead outlet for the bricks, 2 per printer
Littelfuse 021806.3TXP	6.3A slow, inlet. EU, 220V range. 2 per printer
Littelfuse 0218010.TXP	10A slow, inlet. Japan, USA, 120V range. 2 per printer
WAGO 221-415	5 way lever splice, L, N, PE. 3 per printer
WAGO 221-2411	Inline splice on N to the bed, 1 per printer
JST FNGS4-2.5	M4 ring terminal, 6 per printer
WAGO 216-318	Ferrule 1.5 mm2, 10 mm long. Mains L, N, PE into the WAGOs
WAGO 216-204	Ferrule 1.5 mm2, 8 mm long. 16 AWG brick leads, 4 per printer
WAGO 216-203	Ferrule 1 mm2, 8 mm long. Other Manta E3EZ terminals
Molex 19007-0021	Faston 6.35, 3 per printer
JST FLVDDF1.25-187A-8	Faston 4.8, 6 per printer

L N PE Brown L, blue N, green and yellow stripe PE. All 1.5 mm2. Real wire colors

Real wire colors

L, N and PE meet in the 3 WAGOs. Filter, both C13 outlets, the SSR, the inline WAGO and the bed earth post all tie in there.

WARNING: mains safety

- **Always unplug before maintenance or changes.**
- **Use an earthed outlet that meets local rules.**
- **Do not repair a damaged cable. Replace it.**
- **In an emergency, switch off and unplug.**

Probe, limits and common questions

All jumpers and connections: power OFF. Only exceptions: USB, LAN

Probe wires, BLTouch connector to QT Py

Pin	Board	QT Py	Job	Wire color
1	GND	GND	Power	Green
2	5V	5V pad, through a Schottky diode. Silver stripe to the pad	Power. Diode stops USB power feeding back to the board	Red
3	PA7	A7, marked RX on the QT Py	Tare. Printer talks to probe. Idles high	Yellow
4	GND	Nothing	Second GND, empty	none
5	PA6	A6, marked TX on the QT Py	Touch signal. Probe talks to printer. Low = touched	Blue

Inside the probe

Link	Wires	Note
QT Py to NAU7802	STEMMA QT cable, 50 mm long	Plug-in cable. Fits one way
NAU7802 to load cell	Top to bottom: green A+, white A-, black E-, red E+	4 wires. Some boards also have B+, B-: leave them empty

Current limits

Port	Max continuous
HB	10A
HE0, HE1	5A each
Each fan port	1A
Heaters HE0 + HE1, drivers, fans together	10A

Common questions

Where do I find 5V
RGB, PWRDET, EXP1 and TFT have free 5V pins. They share one 2A fuse with the probe, emergency stop and filament sensor, so keep it small.

Where do I find a free pin
Grey rows on page 3: FAN1, FAN2, TH1, EXP1, TFT, PC15 on SPI3, PS-ON, PWRDET. Signals are 3.3V. Never feed them 5V.

What goes on FAN1, FAN2
A 24V fan or accessory, max 1A each. PB15 and PB14 switch the minus. printer.cfg has a ready temperature fan example for FAN2, commented out.

What goes on TH1
A second thermistor only. 2 wires, PA5 and GND, no polarity.

No 5V pin on Z-STOP, Y-STOP, X-STOP
Right. BTT fitted 2 pin connectors there and left the 5V pin out, so you only see a hole. E1-DET and E0-DET have all 3 pins.

Can I use X-STOP, Y-STOP
No. The DIAG jumpers use those pins for sensorless homing. Wires there fight them.

The slide switch
Leave it down, power input on the bottom edge. For normal use and for flashing an image. No reason to slide it up.

Is there spare 24V
The 24V brick gives 5A in total, shared by the hotend, fans, part cooling fan, Z and extruder motors. Check first.

Which fuses are on the board
15A for HB, 10A for 24V DC_IN, 10A for M_Power, 2A for connector 5V. Inlet fuses: page 5.

Why 2 connectors for the filament sensor
It has 2 signals, runout and encoder. Its cable splits into 2 connectors.

The blank connectors
Only covers for unused pins, no wires. Power off before pulling one. Leave X-STOP and Y-STOP on.

External wifi antenna
Optional. Power off, plug it into the U.FL on the CM5, marked on page 1. Power on, push WIFI_ANTENNA_EXTERNAL. The printer restarts by itself. WIFI_ANTENNA_DEFAULT goes back to the built-in antenna.

A wire came off
Power off first. Emergency stop green wire off: the button does nothing and nothing warns you. Probe blue wire off: the probe cannot report a touch, so do not home Z until it is fixed.

Rescue a board that will not start
Power off. Fit 2 SMALL jumpers on USBOTG and RPIBOOT: the top 2 rows of the boot header, dashed on page 2. Leave the other 2 rows empty. Slide switch stays down. Plug a micro USB cable from the computer into the top of the board. 24V power on. On the computer, run rpiboot for the CM5 and let it set up. Open Raspberry Pi Imager and flash the image. This replaces everything on the board, calibration too. Power off. Remove both jumpers and the micro USB. Plug in a FAT32 or exFAT flash drive. Power on. First boot runs by itself and saves the new report, with the new password and QR codes, on the drive. Without a drive it stops and waits. When it is done: power off, power on. Ready on its hotspot.

Factory reset
Power off, fit the jumper, power on. 30 s countdown. To cancel: power off, remove the jumper. When done: power off, remove the jumper, power on. Goes: print history, config changes, saved wifi, a waiting resume. Stays: gcode files. Comes back: as shipped, with this machine's calibration and the password on its printed report.

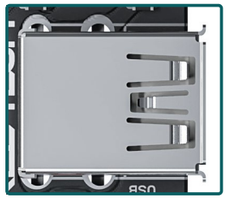
Other documents in this folder

02	BTT Manta E3EZ V1.0 schematic
07	Raspberry Pi CM5 datasheet
08, 09	Adafruit QT Py SAMD21 pinout. Adafruit NAU7802 pinout and schematic
10	STōN-PROBE firmware source, version STNr06

Everything else on the board

Not wired on the printer as shipped. Power off before any connection, except USB and LAN

USB, 2 ports



Accelerometer for tuning, BTT LIS2DW.

USB camera. USB display.

You may plug this in with power on.

Camera, display: not included, not tested by us.

HDMI



HDMI display.

Power off first.

Not included. Not tested by us.

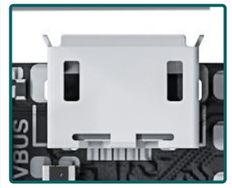
LAN



Wired network cable.

You may plug this in with power on.

Micro USB



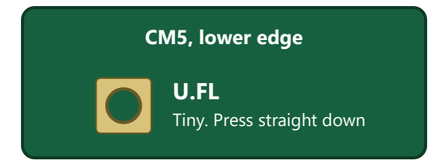
Only to rescue a board: steps on page 6.

Not for normal use.

Power off first.

U.FL on the CM5

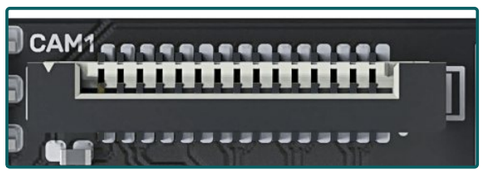
Optional



External wifi antenna. Power off, plug it in, power on, push WIFI_ANTENNA_EXTERNAL. The printer restarts by itself.

WIFI_ANTENNA_DEFAULT goes back to the built-in antenna.

CAM1 ribbon

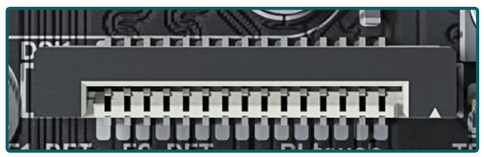


Ribbon camera.

Power off first.

Not included. Not tested by us on the CM5.

DSI1 ribbon



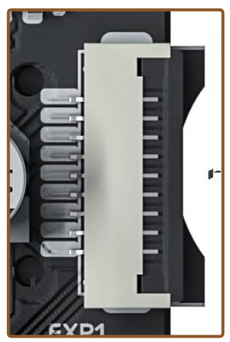
Ribbon display.

Power off first.

Not included. Not tested by us on the CM5.

SOC card slot, white

Leave empty



MicroSD slot for a CM with no storage of its own.

We do not use it.

Power off first.

Z1, Z2 and the empty driver slot

Free



1 extra driver. Runs Z1 and Z2 together.

Needs a driver and config changes.

Own 3 pin power select. Set it first.

48V on an EZ2209 destroys it.

FAN1, FAN2

Free



24V fan or accessory, max 1A each.

PB pin switches the minus.

printer.cfg has a ready example for FAN2, commented out.

TH1

Free



Second 100K thermistor. 2 wires, no polarity.

Needs config changes.

FDCAN, 2 ports

Free



CAN bus. Not used on this printer.

120R jumper: only when this board ends a CAN bus. SMALL jumper, power off. Shown in the PWRDET block.

PWRDET, 120R

Free



PWRDET: power loss detect input.

Not used on this printer.

PS-ON

Free

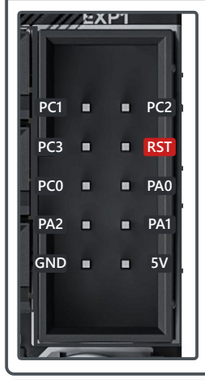


Auto power off output.

Not used on this printer.

EXP1

Free



LCD screen port.

Not used on this printer.

RST resets the board chip. Do not use.

TFT

Free



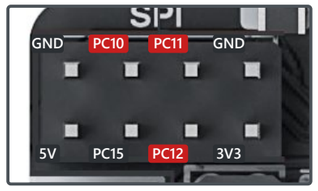
Serial screen port. Not used on this printer.

RST resets the board chip. Do not use.

5V here shares the 2A fuse with the probe, emergency stop and filament sensor. Keep it small.

SPI3

Partly in use

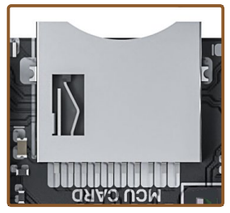


Red pins run the X and Y drivers. Do not use.

Free: PC15, 3V3, 5V, GND.

MCU card slot

Leave empty



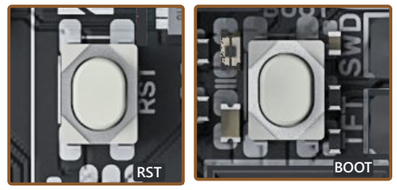
Card for the board chip's firmware. A card with firmware.bin loads at power on.

Not spring loaded. Do not force a card.

Not the CM5's storage.

RST, BOOT buttons

Do not press



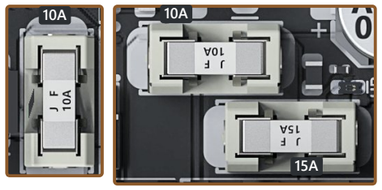
RST restarts the board chip, not the CM5. A print stops.

BOOT is for loading firmware. It shares a chip pin with X STEP.

Do not press while printing. Software cannot read them.

Fuses

Replaceable



15A: HB. 10A: DC_IN, M_Power. Also 2A for connector 5V.

Power off and unplug first. Same value only.

Inlet fuses: page 5.