

# voron 2.4 - 350 - Siboor Kit

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# Der Aufbau

# orangePi

## Update auf Kernel 5.x

Für die Nutzung mit canbus musste der orangePi von seinem Auslieferung OS mit 4.9er Kernel auf 5.16 upgedated werden.

Firmware Datei:

[https://drive.google.com/drive/folders/1JxFueRhtbZx-joOI689f\\_3X\\_PxoVJvA](https://drive.google.com/drive/folders/1JxFueRhtbZx-joOI689f_3X_PxoVJvA)

Upgrade Hoot:

<https://github.com/Lzhikai/siboor-voron/tree/main/accessories/flashing%20OrangePi3%20LTS>

## User klipper - sudo ohne Password

/etc/sudoers.d/010-klipper-nopasswd

```
klipper ALL=(ALL) NOPASSWD: ALL
```

## Externe USB Disk

Vorbereiten der USB Disk - ähnlich wie hier beschrieben

<https://www.tecmint.com/fdisk-commands-to-manage-linux-disk-partitions/>

Mountpoint anlegen:

```
sudo mkdir /mnt/usb500
```

UUID bestimmen:

```
lsblk /dev/sda1 -o 'UUID'
```

Mount konfigurieren, um die SSD beim Reboot automatisch zu mounten

/etc/fstab

```
# <file system> <mount point> <type> <options> <dump> <pass>
tmpfs /tmp tmpfs defaults,nosuid 0 0
UUID=<emmc> / ext4 defaults,noatime,commit=600,errors=remount-ro,x-gvfs-hide 0 1
UUID=<ext usb> /media/usb500 ext4 defaults 0 0
```

Mit "mount -a" einmalig verbinden

```
klipper@voron:~ $ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            923M     0  923M   0% /dev
tmpfs           199M  880K  198M   1% /run
/dev/mmcblk2p1  7,0G  4,9G  1,8G  74% /
tmpfs           993M     0  993M   0% /dev/shm
tmpfs           5,0M  4,0K  5,0M   1% /run/lock
tmpfs           993M  4,0K  993M   1% /tmp
/dev/zram1       49M   29M   17M  65% /var/log
tmpfs           199M     0  199M   0% /run/user/1000
/dev/sda1       469G   73M  445G   1% /media/usb500
klipper@voron:~ $
```

Der orangepi hatte immer Temperaturen über 75C - das finde ich inakzeptabel.

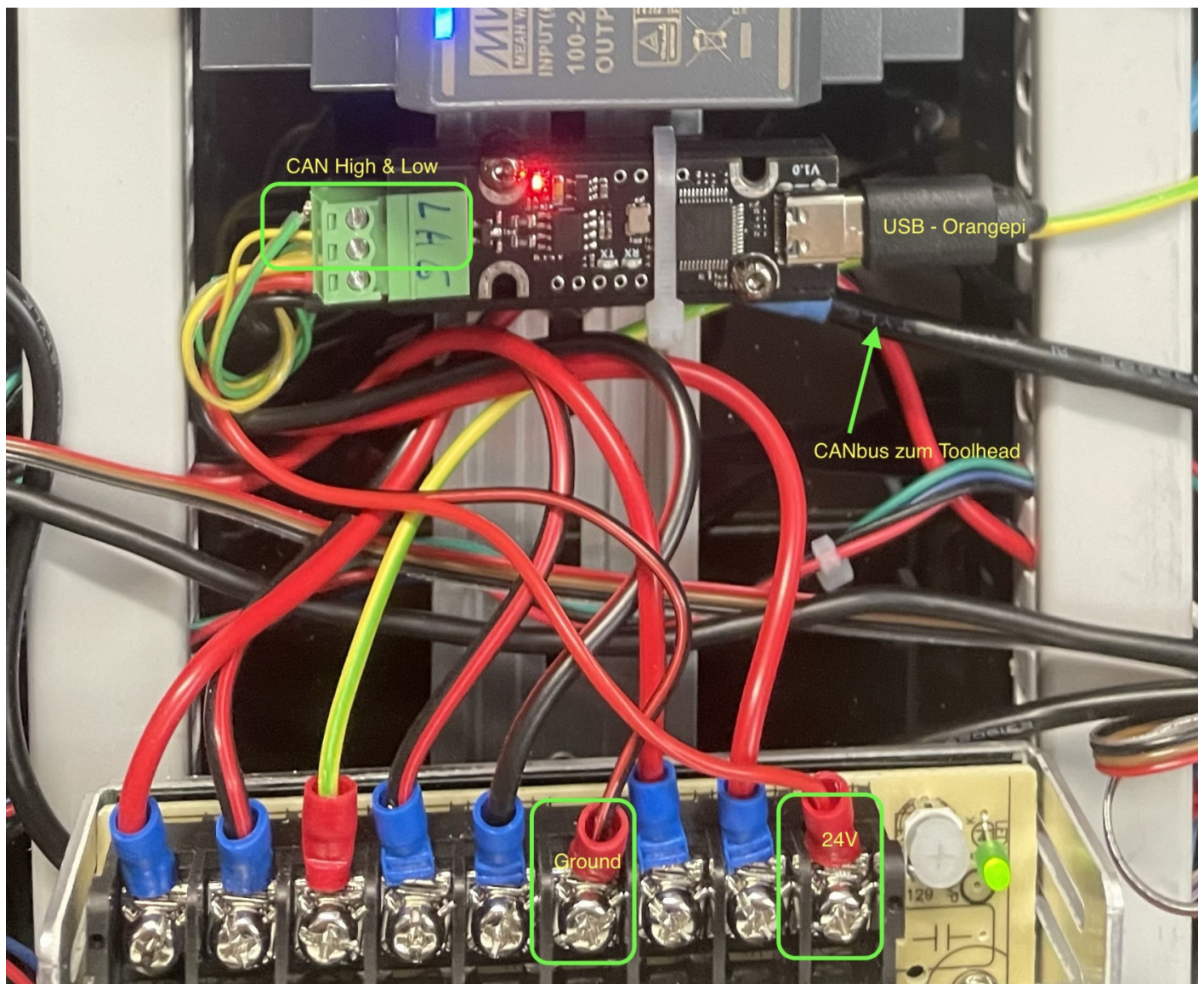
# CANbus

uups, da hab ich mir was angetan. So einfach Plug'n Play wie ich mir das dachte war/ist es nicht. Es fängt schon bei meinem Know How darüber an. Nämlich, keines vorhanden :-)

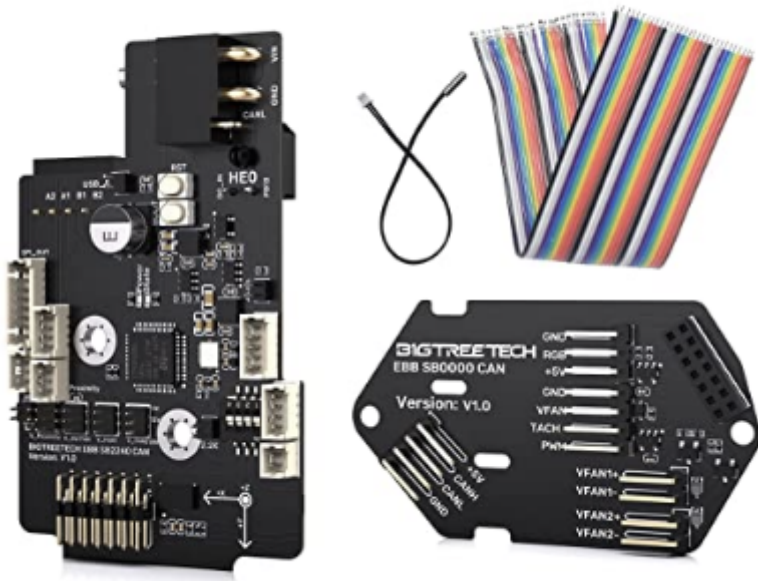
Aber nach all dem Leid läuft es nun sauber :-)

## Hardware:

FYSETC UCAN usb2can Adapter



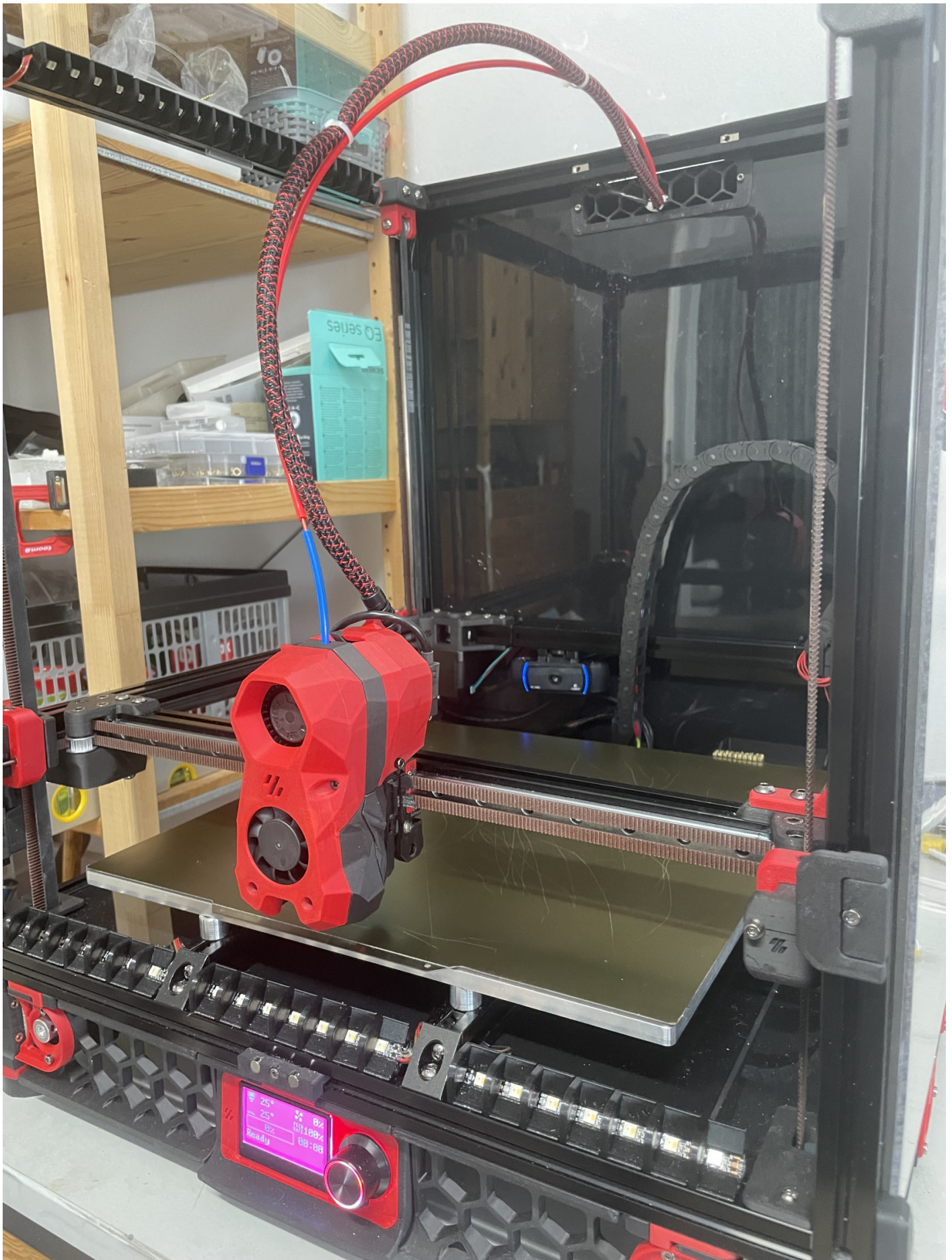
BIGTREETECH EBB SB2240 CAN



## Verkabelung

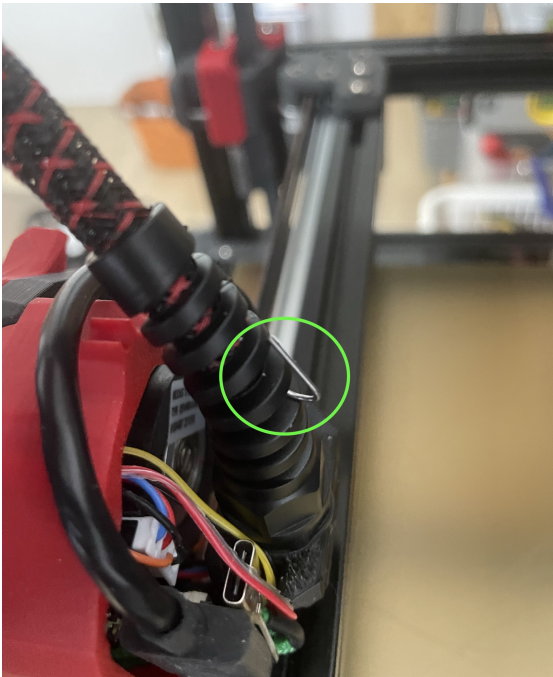
- Verbindung des usb2can via usb
- Das CANbus Kabel mit einem 0.8mm Federstahldraht unterstützt
- PG7 Kabelverschraubung an der Kabelführung
- [CW2-Unmbilical-PG7-bttsb2209-and-2240.stl](#) Kabelhalter
- 6mm selbstschließender Kabelschlauch in Schwarz Rotem Gewebe





Den Stahldraht habe ich mit einer gebogenen Öse im PG7 verankert. Oben an der Abluft ein kleines Loch gebohrt und durchgesteckt. Da kann sich der Draht jetzt bewegen ohne Spannung auf das





h etwas kürzen.



Ich habe das CANbus Kabel zuerst mit der "CW2 Cable Bridge" aus dem Bigtreetech Github geführt. Das bringt allerdings Unruhe in die Steckverbundung und ich hatte immer wieder EBB Can Errors und Verbindungsabbrüche. Mit dieser Lösung nun keine Fehler mehr.

## printer.cfg

```
# This file contains common pin mappings for the BIGTREETECH EBBCan
```



```
# Canbus board. To use this config, the firmware should be compiled for the
# STM32G0B1 with "8 MHz crystal" and "USB (on PA11/PA12)" or "CAN bus (on PB0/PB1)".
# The "EBB Can" micro-controller will be used to control the components on the nozzle.
```

```
# See docs/Config_Reference.md for a description of parameters.
```

```
[mcu EBBCan]
```

```
#serial: /dev/serial/by-id/usb-Klipper_Klipper_firmware_12345-if00
```

```
#canbus_uuid: 0e0d81e4210c
```

```
canbus_uuid=15197 ab9
```

```
[temperature_sensor EBB_NTC]
```

```
sensor_type: Generic 3950
```

```
sensor_pin: EBBCan: PA2
```

```
[adxl345]
```

```
cs_pin: EBBCan: PB12
```

```
spi_software_sclk_pin: EBBCan: PB10
```

```
spi_software_mosi_pin: EBBCan: PB11
```

```
spi_software_miso_pin: EBBCan: PB2
```

```
axes_map: z,-y,x
```

```
[resonance_tester]
```

```
probe_points: 170, 175, 20
```

```
accel_chip: adxl345
```

```
[input_shaper]
```

```
shaper_freq_x: 52.4
```

```
shaper_type_x: mzv
```

```
shaper_freq_y: 37.4
```

```
shaper_type_y: mzv
```

```
[printer]
```

```
max_accel: 2800
```

```
[extruder]
```

```
step_pin: EBBCan: PD0
```

```
dir_pin: EBBCan: PD1
```

```
enable_pin: !EBBCan: PD2
```

```
gear_ratio: 50:10
```

microsteps: 16  
rotation\_distance: 22.386  
full\_steps\_per\_rotation: 200  
nozzle\_diameter: 0.400  
filament\_diameter: 1.750  
heater\_pin: EBBCan:PB13  
sensor\_type: ATC Semitec 104GT-2  
sensor\_pin: EBBCan: PA3  
min\_temp: -100  
max\_temp: 270  
max\_extrude\_only\_distance: 120  
pressure\_advance: 0.045

[tmc2240 extruder]

cs\_pin: EBBCan: PA15  
spi\_software\_sclk\_pin: EBBCan: PB10  
spi\_software\_mosi\_pin: EBBCan: PB11  
spi\_software\_miso\_pin: EBBCan: PB2  
driver\_TPFD: 0  
run\_current: 0.550  
stealthchop\_threshold: 0

# webcam mit mjpg-streamer

## Hardware

Vbestlife 12 MP USB-Kameramodul, 4K HD 123 Grad Ansichten IMX258 (1/3,06 Zoll)

[https://www.amazon.de/dp/B0BDLSZ2N2?psc=1&ref=ppx\\_yo2ov\\_dt\\_b\\_product\\_details](https://www.amazon.de/dp/B0BDLSZ2N2?psc=1&ref=ppx_yo2ov_dt_b_product_details)

## deb packages

sudo apt install v4l-conf v4l-utils

## mjpg streamer:

<https://github.com/john-clark/mjpg-streamer-setup>

start.sh

```
#!/bin/sh
export LD_LIBRARY_PATH="$(pwd)"
./mjpg_streamer -i "input_uvc.so -n -f 30 -r 1280x720 -d /dev/video1" -o "output_http.so" &
```

```
### check the service configuration
klipper@voron:~/mjpg-streamer <master*>$ sudo vi /etc/systemd/system/webcamd.service
[Unit]
Description=Starts mjpg-streamer on startup
After=network.target

[Install]
WantedBy=multi-user.target

[Service]
Type=forking
User=klipper
```

```
WorkingDirectory=/home/klipper/mjpg-streamer
StandardOutput=append:/var/log/webcamd.log
StandardError=append:/var/log/webcamd.log
ExecStart=/home/klipper/mjpg-streamer/start.sh
Restart=always
```

### Reload the service configuration

```
klipper@voron:~/mjpg-streamer <master*>$ sudo systemctl daemon-reload
```

### enable autostart

```
klipper@voron:~/mjpg-streamer <master*>$ sudo systemctl enable webcamd.service
```

### restart or start the service

```
klipper@voron:~/mjpg-streamer <master*>$ sudo systemctl restart webcamd.service
```

### check the state and feel happy

```
klipper@voron:~/mjpg-streamer <master*>$ sudo systemctl status webcamd.service
```

● webcamd.service - Starts mjpg-streamer on startup

Loaded: loaded (/etc/systemd/system/webcamd.service; disabled; vendor preset: enabled)

Active: active (running) since Wed 2023-05-10 14:17:15 CEST; 7s ago

Process: 15063 ExecStart=/home/klipper/mjpg-streamer/start.sh (code=exited, status=0/SUCCESS)

Main PID: 15065 (mjpg\_streamer)

Tasks: 3 (limit: 2212)

Memory: 916.0K

CPU: 77ms

CGroup: /system.slice/webcamd.service

└─15065 ./mjpg\_streamer -i input\_uvc.so -n -f 30 -r 1280x720 -d /dev/video1 -o output\_http.so

```
Mai 10 14:17:15 voron mjpg_streamer[15065]: MJPG-streamer [15065]: Frames Per Second.: 30
```

```
Mai 10 14:17:15 voron mjpg_streamer[15065]: MJPG-streamer [15065]: Format.....: JPEG
```

```
Mai 10 14:17:15 voron mjpg_streamer[15065]: MJPG-streamer [15065]: TV-Norm.....: DEFAULT
```

```
Mai 10 14:17:15 voron mjpg_streamer[15065]: MJPG-streamer [15065]: www-folder-path.....: disabled
```

```
Mai 10 14:17:15 voron mjpg_streamer[15065]: MJPG-streamer [15065]: HTTP TCP port.....: 8080
```

```
Mai 10 14:17:15 voron mjpg_streamer[15065]: MJPG-streamer [15065]: HTTP Listen Address..: (null)
```

```
Mai 10 14:17:15 voron mjpg_streamer[15065]: MJPG-streamer [15065]: username:password....: disabled
```

```
Mai 10 14:17:15 voron mjpg_streamer[15065]: MJPG-streamer [15065]: commands.....: enabled
```

```
Mai 10 14:17:15 voron mjpg_streamer[15065]: MJPG-streamer [15065]: starting input plugin input_uvc.so
```

```
Mai 10 14:17:15 voron mjpg_streamer[15065]: MJPG-streamer [15065]: starting output plugin: output_http.so
(ID: 00)
```



# FYSETC Spyder 2.3

<https://3dwork.io/en/complete-guide-fysetc-spider/>

# 2 Kameras mit crowsnest

Die Konfiguration ist deutlich einfacher als mit dem mjpg-streamer

Installation: <https://crowsnest.mainsail.xyz/>

Meine Kameras:

1) Logitech C920 an der Gantry

2) Das AngryCam Mod <https://mods.vorondesign.com/detail/RYPQW53mtem8Nj1JKqiSQ>

```
[crowsnest]
log_path: /home/klipper/printer_data/logs/crowsnest.log
log_level: verbose          # Valid Options are quiet/verbose/debug
delete_log: false          # Deletes log on every restart, if set to true
no_proxy: false

[cam 1]
mode: mjpg                  # mjpg/rtsp
port: 8080                  # Port
device: /dev/v4l/by-id/usb-046d_HD_Pro_Webcam_C920_95163CEF-video-index0
resolution: 1280x720 [1111] # 1920x1080 # widthxheight format
max_fps: 15                 # If Hardware Supports this it will be forced, otherwise ignored/coerced.
v4l2ctl: focus_automatic_continuous=0,focus_absolute=30 # disable Autofocus

[cam 2]
mode: mjpg                  # mjpg/rtsp
port: 8081                  # Port
device: /dev/v4l/by-id/usb-BC-FAY-220507_Depstech_webcam_MIC_01.00.00-video-index0
resolution: 1280x720        # widthxheight format
max_fps: 15                 # If Hardware Supports this it will be forced, otherwise ignored/coerced.
```

Infos zu manuellen Kamera Settings über den v4lctl:

<https://www.kurokesu.com/main/2016/01/16/manual-usb-camera-settings-in-linux/>

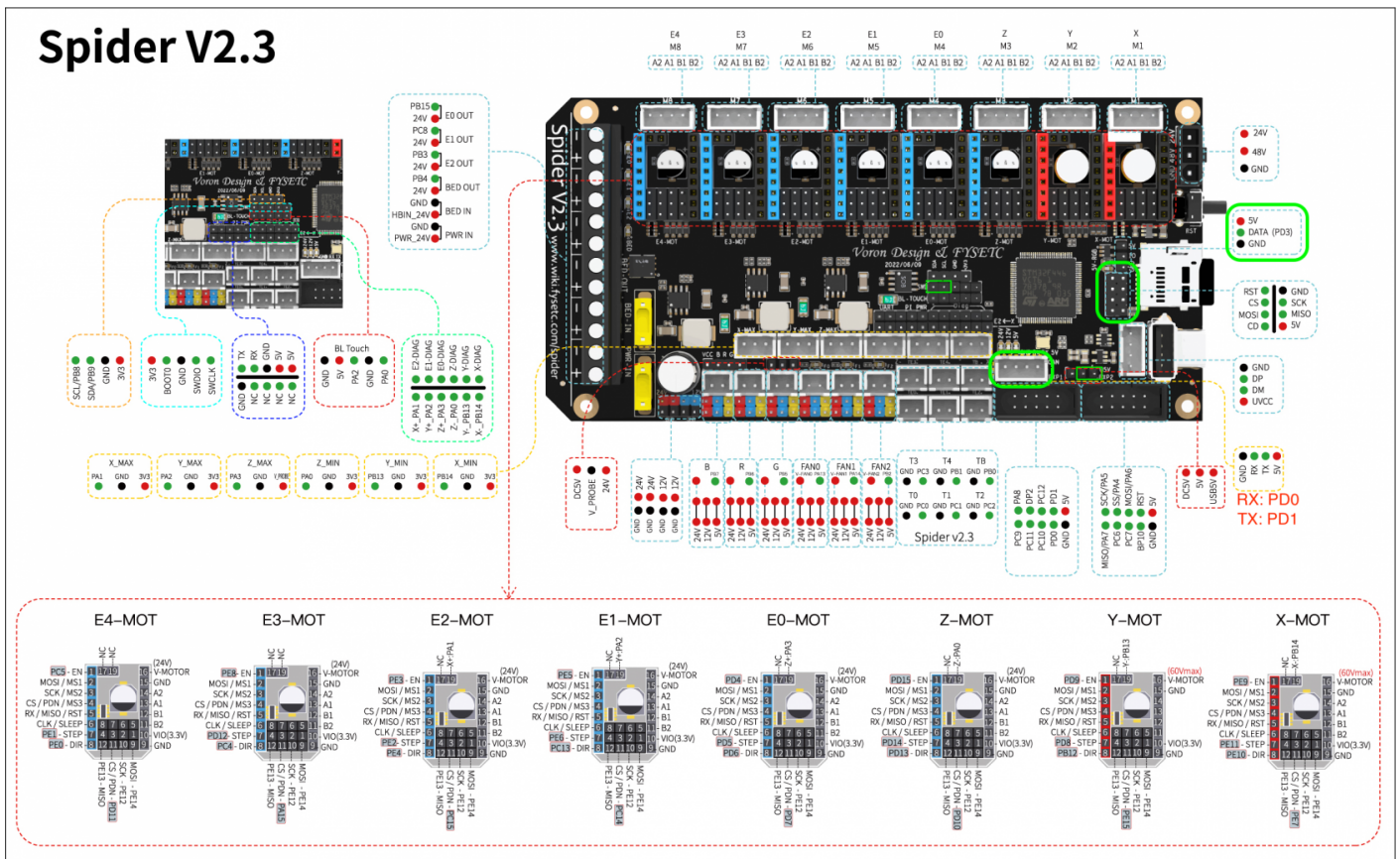


# Neopixel LED Stripes

Neopixel LEDs sind LED Streifen, die 3polig angeschlossen werden. 5V, Ground und Data.

Über die Datenleitung wird jede einzelne LED in Farbe und Helligkeit gesteuert.

Das Fysetc Spider 2.3 bietet einen RGB Port an. PD3



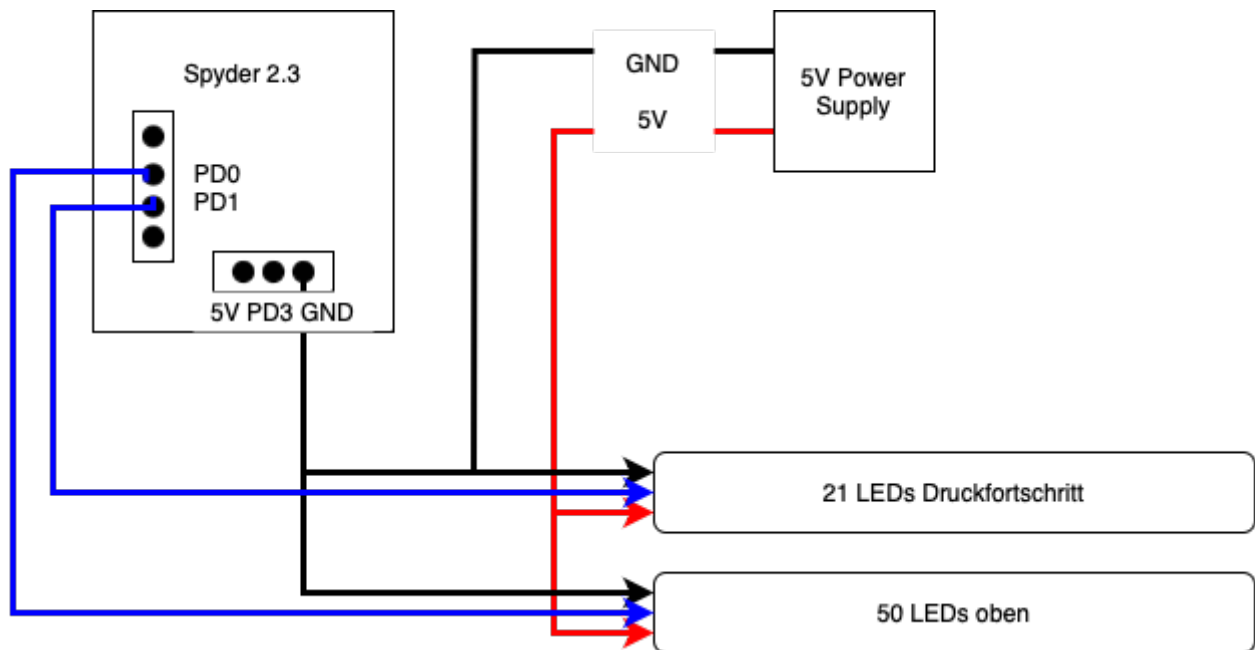
Ich muss mir irgendwie den PD3 zerstört haben. Im siboor Discord haben wir dann 2 weitere digitale Ausgänge gefunden, die für RGB Ansteuerung herangenommen werden können.

Der RX (PD0) und der TX (PD1) Port vom CANbus Anschluss.

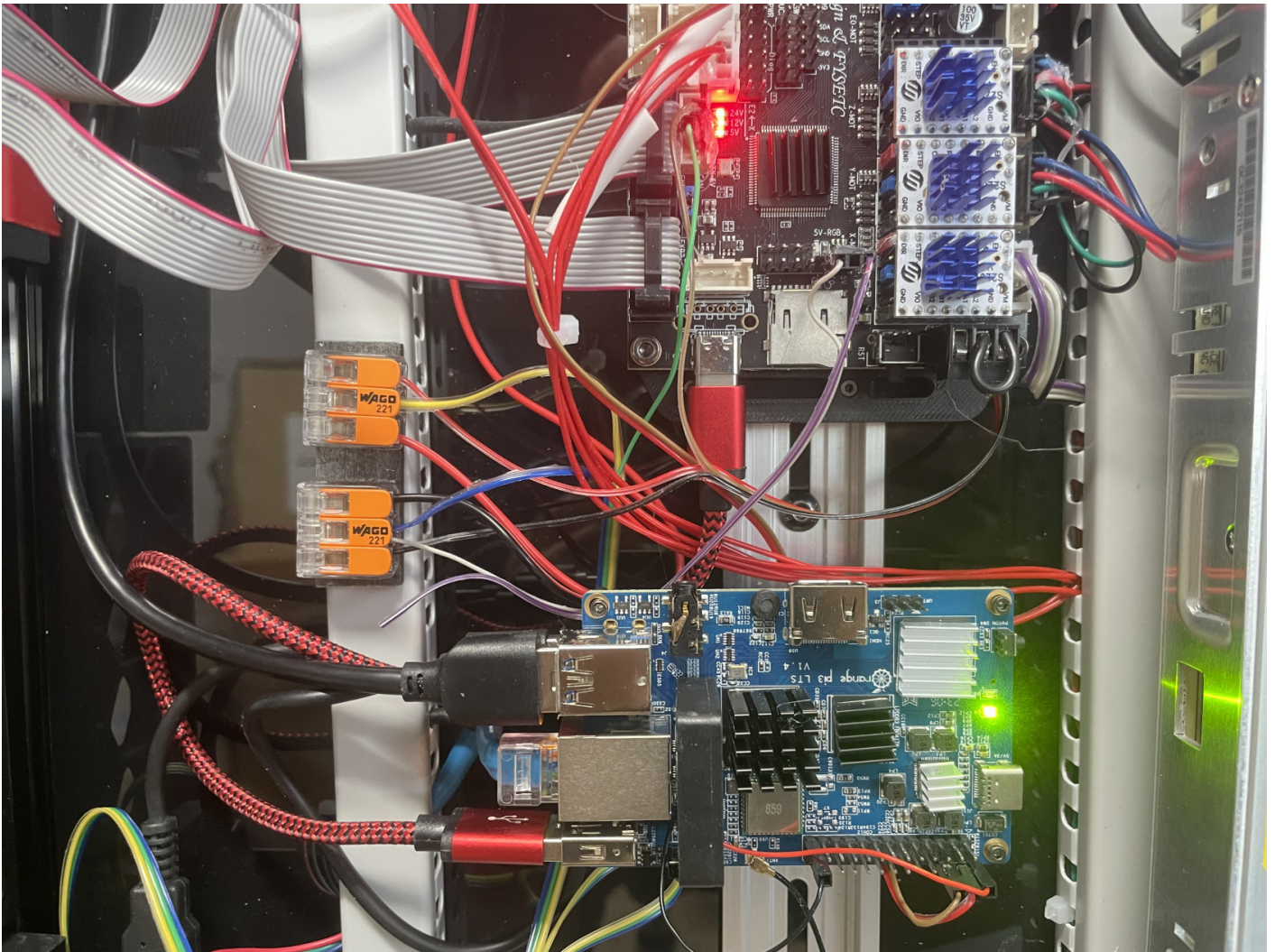
Der interne 5V Anschluss reicht nicht für 50 LEDs aus. Darum habe ich ein zusätzliches 5V Netzteil eingebaut.

Bei der Verwendung eines externen Netzteils muss unbedingt GND gleichgeschaltet werden.





## Verdrahtung



## 5V Netzteil





neopixel.cfg

```
[neopixel chamber_leds]
pin: PD0
chain_count: 50
color_order: GRBW
initial_RED: 0.2
initial_GREEN: 0.2
initial_BLUE: 0.2
initial_WHITE: 0.2
```

```
[neopixel progress_leds]
pin: PD1
chain_count: 21
color_order: GRBW
initial_RED: 0.2
initial_GREEN: 0.2
initial_BLUE: 0.2
initial_WHITE: 0.2
```

## LED Effects

Für die Ansteuerung der LEDs nutze ich die LED Effects von Julian Schill

[https://github.com/julianschill/klipper-led\\_effect](https://github.com/julianschill/klipper-led_effect)

Damit werden sowohl die Neopixels im Stealthburner und dann meine chambers\_leds und die progress\_leds gesteuert.

```
#####
# LED Effects Animations #
#####

#####
## logo effects ##
#####

[led_effect sb_logo_busy]
autostart:      false
frame_rate:     24
leds:
  neopixel:sb_leds (1)
```

layers:

breathing 3 1 top (1,0,0)

[led\_effect sb\_logo\_cleaning]

autostart: false

frame\_rate: 24

leds:

neopixel:sb\_leds (1)

layers:

breathing 3 1 top (0.0, 0.02, 0.5)

[led\_effect sb\_logo\_calibrating\_z]

autostart: false

frame\_rate: 24

leds:

neopixel:sb\_leds (1)

layers:

breathing 3 1 top (0.0, 0.0, 0.35)

[led\_effect sb\_logo\_heating]

leds:

neopixel:sb\_leds (1)

autostart: false

frame\_rate: 24

layers:

breathing 3 1 top (1, 0.18, 0)

[led\_effect sb\_logo\_cooling]

leds:

neopixel:sb\_leds (1)

autostart: false

frame\_rate: 24

layers:

breathing 3 1 top (0, 0, 1)

[led\_effect sb\_logo\_homing]

autostart: false

frame\_rate: 24

leds:

neopixel:sb\_leds (1)

layers:



breathing 3 1 top (0.0, 0.6, 0.2)

[led\_effect sb\_logo\_leveling]

autostart: false

frame\_rate: 24

leds:

neopixel:sb\_leds (1)

layers:

breathing 3 1 top (0.5, 0.1, 0.4)

[led\_effect sb\_logo\_meshing]

autostart: false

frame\_rate: 24

leds:

neopixel:sb\_leds (1)

layers:

breathing 3 1 top (0.2, 1.0, 0.0)

[led\_effect sb\_logo\_printing]

autostart: false

frame\_rate: 24

leds:

neopixel:sb\_leds (1)

layers:

gradient 0.3 1 add (0.3, 0.0, 0.0),(0.3, 0.3, 0.0),(0.3, 0.1, 0.0)

[led\_effect sb\_logo\_standby]

autostart: false

frame\_rate: 24

leds:

neopixel:sb\_leds (1)

layers:

breathing 3 1 top (0.01, 0.01, 0.01)

[led\_effect sb\_logo\_part\_ready]

autostart: false

frame\_rate: 24

leds:

neopixel:sb\_leds (1)

layers:

breathing 3 1 top (0.0, 1.0, 0.0)

```
#####  
## nozzle effects ##  
#####
```

```
[led_effect sb_nozzle_heating]  
autostart:      false  
frame_rate:     24  
leds:  
    neopixel:sb_leds (2,3)  
layers:  
    breathing 3 1 top (1.0, 0.18, 0.0, 0.0)
```

```
[led_effect sb_nozzle_cooling]  
autostart:      false  
frame_rate:     24  
leds:  
    neopixel:sb_leds (2,3)  
layers:  
    breathing 3 1 top (0.0, 0.0, 1.0, 0.1)
```

```
[led_effect sb_nozzle_standby]  
autostart:      false  
frame_rate:     24  
leds:  
    neopixel:sb_leds (2,3)  
layers:  
    breathing 3 1 top (0.6, 0.0, 0.0, 0.0)
```

```
[led_effect sb_nozzle_part_ready]  
autostart:      false  
frame_rate:     24  
leds:  
    neopixel:sb_leds (2,3)  
layers:  
    breathing 3 1 top (0.6, 1.0, 0.0, 0.1)
```

```
#####  
## all led effects ##  
#####
```

[led\_effect sb\_critical\_error]

leds:

neopixel:sb\_leds

neopixel:chamber\_leds

layers:

strobe 1 1.5 add (1.0, 1.0, 1.0)

breathing 2 0 difference (0.95, 0.0, 0.0)

static 1 0 top (1.0, 0.0, 0.0)

autostart: false

frame\_rate: 24

run\_on\_error: true

[led\_effect rainbow]

leds:

neopixel:sb\_leds

neopixel:chamber\_leds

autostart: false

frame\_rate: 24

layers:

gradient 1 1 top (1,0,0,0),(0,1,0,0),(0,0,1,0)

#####

# LED Effects Statics #

#####

[led\_effect set\_nozzle\_leds]

leds:

neopixel:sb\_leds (2,3)

#neopixel:caselight

autostart: false

frame\_rate: 24

layers:

static 0 0 top (0.0, 0.0, 0.0, 1.0)

[led\_effect set\_logo\_leds]

leds:

neopixel:sb\_leds (1)

autostart: false

frame\_rate: 24

layers:

```
static      0 0 top    (1.0, 1.0, 1.0)
```

```
[led_effect set_chamber_white]
```

```
leds:
```

```
    neopixel:chamber_leds
```

```
autostart:      false
```

```
frame_rate:     24
```

```
layers:
```

```
    static      0 0 top    (0.0, 0.0, 0.0, 1.0)
```

```
[led_effect set_chamber_white_left]
```

```
leds:
```

```
    neopixel:chamber_leds (1-20)
```

```
autostart:      false
```

```
frame_rate:     24
```

```
layers:
```

```
    static      0 0 top    (0.0, 0.0, 0.0, 1.0)
```

```
[led_effect set_chamber_white_right]
```

```
leds:
```

```
    neopixel:chamber_leds (31-50)
```

```
autostart:      false
```

```
frame_rate:     24
```

```
layers:
```

```
    static      0 0 top    (0.0, 0.0, 0.0, 1.0)
```

```
[led_effect set_chamber_white_front]
```

```
leds:
```

```
    neopixel:chamber_leds (21-30)
```

```
autostart:      false
```

```
frame_rate:     24
```

```
layers:
```

```
    static      0 0 top    (0.0, 0.0, 0.0, 1.0)
```

```
[led_effect set_progress]
```

```
leds:
```

```
    neopixel:progress_leds
```

```
autostart:      false
```

```
frame_rate:     24
```



layers:

```
progress -1 0 add      ( 0, 0, 1),( 0, 0.1, 0.6)
```

```
static    0 0 top      ( 0, 0, 0.1)
```

#####

# The Macros #

#####

[gcode\_macro set\_progress]

gcode:

```
SET_LED_EFFECT EFFECT=set_progress REPLACE=1
```

[gcode\_macro stop\_chamber\_effects]

gcode:

```
STOP_LED_EFFECTS LEDS="neopixel:chamber_leds"
```

[gcode\_macro set\_chamber\_white]

gcode:

```
STOP_CHAMBER_EFFECTS
```

```
SET_LED_EFFECT EFFECT=set_chamber_white REPLACE=1
```

[gcode\_macro set\_chamber\_white\_left]

gcode:

```
STOP_CHAMBER_EFFECTS
```

```
SET_LED_EFFECT EFFECT=set_chamber_white_left REPLACE=1
```

[gcode\_macro set\_chamber\_white\_right]

gcode:

```
STOP_CHAMBER_EFFECTS
```

```
SET_LED_EFFECT EFFECT=set_chamber_white_right REPLACE=1
```

[gcode\_macro set\_chamber\_white\_front]

gcode:

```
STOP_CHAMBER_EFFECTS
```

```
SET_LED_EFFECT EFFECT=set_chamber_white_front REPLACE=1
```

[gcode\_macro set\_logo\_leds\_off]

gcode:

```
SET_LED_EFFECT EFFECT=set_logo_leds STOP=1
```

[gcode\_macro set\_logo\_leds\_on]

gcode:

SET\_LED\_EFFECT EFFECT=set\_logo\_leds

[gcode\_macro set\_nozzle\_leds\_on]

gcode:

SET\_LED\_EFFECT EFFECT=set\_nozzle\_leds

[gcode\_macro set\_nozzle\_leds\_off]

gcode:

SET\_LED\_EFFECT EFFECT=set\_nozzle\_leds STOP=1

[gcode\_macro status\_off]

gcode:

STOP\_LED\_EFFECTS

SET\_CHAMBER\_WHITE\_FRONT

[gcode\_macro status\_ready]

gcode:

STOP\_LED\_EFFECTS

SET\_LED\_EFFECT EFFECT=rainbow

SET\_CHAMBER\_WHITE\_FRONT

[gcode\_macro status\_part\_ready]

gcode:

STOP\_LED\_EFFECTS

SET\_LED\_EFFECT EFFECT=sb\_nozzle\_part\_ready

SET\_LED\_EFFECT EFFECT=sb\_logo\_part\_ready

SET\_CHAMBER\_WHITE\_FRONT

[gcode\_macro status\_busy]

gcode:

STOP\_LED\_EFFECTS

SET\_LED\_EFFECT EFFECT=sb\_logo\_busy

SET\_CHAMBER\_WHITE\_FRONT

set\_nozzle\_leds\_on

[gcode\_macro status\_heating]

gcode:

STOP\_LED\_EFFECTS

SET\_LED\_EFFECT EFFECT=sb\_logo\_heating

SET\_LED\_EFFECT EFFECT=sb\_nozzle\_heating

SET\_CHAMBER\_WHITE\_FRONT

[gcode\_macro status\_cooling]

gcode:

STOP\_LED\_EFFECTS  
SET\_LED\_EFFECT EFFECT=sb\_logo\_cooling  
SET\_LED\_EFFECT EFFECT=sb\_nozzle\_cooling  
SET\_CHAMBER\_WHITE\_FRONT

[gcode\_macro status\_leveling]

gcode:

STOP\_LED\_EFFECTS  
SET\_LED\_EFFECT EFFECT=sb\_logo\_leveling  
SET\_CHAMBER\_WHITE\_FRONT  
set\_nozzle\_leds\_on

[gcode\_macro status\_homing]

gcode:

STOP\_LED\_EFFECTS  
SET\_LED\_EFFECT EFFECT=sb\_logo\_homing  
SET\_CHAMBER\_WHITE\_FRONT  
set\_nozzle\_leds\_on

[gcode\_macro status\_cleaning]

gcode:

STOP\_LED\_EFFECTS  
SET\_LED\_EFFECT EFFECT=sb\_logo\_cleaning  
SET\_CHAMBER\_WHITE\_FRONT  
set\_nozzle\_leds\_on

[gcode\_macro status\_meshing]

gcode:

STOP\_LED\_EFFECTS  
SET\_LED\_EFFECT EFFECT=sb\_logo\_meshing  
SET\_CHAMBER\_WHITE\_FRONT  
set\_nozzle\_leds\_on

[gcode\_macro status\_calibrating\_z]

gcode:

STOP\_LED\_EFFECTS

```
SET_LED_EFFECT EFFECT=sb_logo_calibrating_z
```

```
SET_CHAMBER_WHITE
```

```
set_nozzle_leds_on
```

```
[gcode_macro status_printing]
```

```
gcode:
```

```
STOP_LED_EFFECTS
```

```
SET_CHAMBER_WHITE
```

```
SET_LED_EFFECT EFFECT=sb_logo_printing
```

```
set_nozzle_leds_on
```

```
set_progress
```