

```

1  ## Voron Design VORON2 250/300/350mm SKR 1.4 TMC2209 UART config
2
3  ## *** THINGS TO CHANGE/CHECK: ***
4  ## (X) MCU paths                [mcu] section
5  ## (X) Thermistor types          [extruder] and [heater_bed] sections - See 'sensor
   types' list at end of file
6  ## (X) Z Endstop Switch location  [safe_z_home] section
7  ## (X) Homing end position        [gcode_macro G32] section
8  ## (X) Z Endstop Switch offset for Z0 [stepper_z] section
9  ## (X) Probe points              [quad_gantry_level] section
10 ## (X) Min & Max gantry corner postions [quad_gantry_level] section
11 ## PID tune                      [extruder] and [heater_bed] sections
12 ## Fine tune E steps             [extruder] section
13
14 ##===== Pin Definitions =====
15 ##=====
16
17 [mcu]
18 ## MCU for X/Y/E steppers main MCU
19 ## [X in X] - B Motor
20 ## [Y in Y] - A Motor
21 ## [E in E0] - Extruder
22 ## Obtain definition by "ls -l /dev/serial/by-id/" then unplug to verify
23 ##-----
24 serial: /dev/serial/by-id/usb-Klipper_stm32f407xx_3D002E001450304738323420-if00
25 ##-----
26
27 [mcu z]
28 ## MCU for Z steppers
29 ## [Z in X] - Front Left
30 ## [Z1 in Y] - Rear Left
31 ## [Z2 in Z] - Rear Right
32 ## [Z3 in E0]- Front Right
33 ## Obtain definition by "ls -l /dev/serial/by-id/" then unplug to verify
34 ##-----
35 serial: /dev/serial/by-id/usb-Klipper_stm32f407xx_3B003D001450304738323420-if00
36 ##-----
37
38 ## Enable motor power on MCU
39 [output_pin motor_power]
40 pin: PC13
41 value: 1
42
43 ## Enable motor power on MCU:z
44 [output_pin motor_power1]
45 pin: z:PC13
46 value: 1
47
48 [printer]
49 kinematics: corexy
50 max_velocity: 300
51 max_accel: 3000          #Max 4000
52 max_z_velocity: 15       #Max 15 for 12V TMC Drivers, can increase for 24V
53 max_z_accel: 350
54 square_corner_velocity: 5.0
55
56 #####
57 #   X/Y Stepper Settings
58 #####

```

```
59
60 [stepper_x]
61 ## Connected to X on mcu_xye (B Motor)
62 step_pin: PE2
63 dir_pin: PE1
64 enable_pin: !PE3
65 rotation_distance: 40
66 microsteps: 32
67 full_steps_per_rotation:400 #set to 400 for 0.9 degree stepper
68 endstop_pin: ^PC3
69 position_min: 0
70 ##-----
71
72 ## Uncomment for 350mm build
73 position_endstop: 350
74 position_max: 350
75
76 ##-----
77 homing_speed: 25 #Max 100
78 homing_retract_dist: 5
79 homing_positive_dir: true
80
81 ## Make sure to update below for your relevant driver (2208 or 2209)
82 [tmc2209 stepper_x]
83 uart_pin: PE0
84 interpolate: False
85 run_current: 0.8
86 sense_resistor: 0.110
87 stealthchop_threshold: 0
88
89 [stepper_y]
90 ## Connected to Y on mcu_xye (A Motor)
91 step_pin: PD5
92 dir_pin: !PD4
93 enable_pin: !PD6
94 rotation_distance: 40
95 microsteps: 32
96 full_steps_per_rotation:400 #set to 400 for 0.9 degree stepper
97 endstop_pin: ^PC1
98 position_min: 0
99 ##-----
100
101 ## Uncomment for 350mm build
102 position_endstop: 350
103 position_max: 350
104
105 ##-----
106 homing_speed: 25 #Max 100
107 homing_retract_dist: 5
108 homing_positive_dir: true
109
110 ## Make sure to update below for your relevant driver (2208 or 2209)
111 [tmc2209 stepper_y]
112 uart_pin: PD3
113 interpolate: False
114 run_current: 0.8
115 sense_resistor: 0.110
116 stealthchop_threshold: 0
117
118 #####
```

```
119 # Z Stepper Settings
120 #####
121
122 ## Z MCU - In X Position
123 ## Z0 Stepper - Front Left
124 [stepper_z]
125 step_pin: z:PE2
126 dir_pin: !z:PE1
127 enable_pin: !z:PE3
128 rotation_distance: 40
129 gear_ratio: 80:16
130 microsteps: 32
131 endstop_pin: ^z:PC0
132 ## Z-position of nozzle (in mm) to z-endstop trigger point relative to print surface
   (Z0)
133 ## (+) value = endstop above Z0, (-) value = endstop below
134 ## Increasing position_endstop brings nozzle closer to the bed
135 ## After you run Z_ENDSTOP_CALIBRATE, position_endstop will be stored at the very
   end of your config
136 #position_endstop: -0.5
137 ##-----
138
139 ## Uncomment below for 250mm build
140 #position_max: 230
141
142 ## Uncomment below for 300mm build
143 #position_max: 280
144
145 ## Uncomment below for 350mm build
146 position_max: 330
147
148 ##-----
149 position_min: -10
150 homing_speed: 8
151 second_homing_speed: 3
152 homing_retract_dist: 3
153
154 ## Make sure to update below for your relevant driver (2208 or 2209)
155 [tmc2209 stepper_z]
156 uart_pin: z:PE0
157 interpolate: false
158 run_current: 0.8
159 hold_current: 0.8
160 sense_resistor: 0.110
161 stealthchop_threshold: 0
162
163 ## Z MCU - In Y Position
164 ## Z1 Stepper - Rear Left
165 [stepper_z1]
166 step_pin: z:PD5
167 dir_pin: z:PD4
168 enable_pin: !z:PD6
169 rotation_distance: 40
170 gear_ratio: 80:16
171 microsteps: 32
172
173 ## Make sure to update below for your relevant driver (2208 or 2209)
174 [tmc2209 stepper_z1]
175 uart_pin: z:PD3
176 interpolate: false
```

```
177 run_current: 0.8
178 hold_current: 0.8
179 sense_resistor: 0.110
180 stealthchop_threshold: 0
181
182 ## Z MCU - In Z Position
183 ## Z2 Stepper - Rear Right
184 [stepper_z2]
185 step_pin: z:PA15
186 dir_pin: !z:PA8
187 enable_pin: !z:PD1
188 rotation_distance: 40
189 gear_ratio: 80:16
190 microsteps: 32
191
192 ## Make sure to update below for your relevant driver (2208 or 2209)
193 [tmc2209 stepper_z2]
194 uart_pin: z:PD0
195 interpolate: false
196 run_current: 0.8
197 hold_current: 0.80
198 sense_resistor: 0.110
199 stealthchop_threshold: 0
200
201 ## Z MCU - In E0 Position
202 ## Z3 Stepper - Front Right
203 [stepper_z3]
204 step_pin: z:PD15
205 dir_pin: z:PD14
206 enable_pin: !z:PC7
207 rotation_distance: 40
208 gear_ratio: 80:16
209 microsteps: 32
210
211 ## Make sure to update below for your relevant driver (2208 or 2209)
212 [tmc2209 stepper_z3]
213 uart_pin: z:PC6
214 interpolate: false
215 run_current: 0.8
216 hold_current: 0.80
217 sense_resistor: 0.110
218 stealthchop_threshold: 0
219
220
221 #####
222 # Extruder
223 #####
224
225 # E0 on MCU X/Y
226 [extruder]
227 step_pin: PD15
228 dir_pin: PD14
229 enable_pin: !PC7
230 ## Update value below when you perform extruder calibration
231 ## If you ask for 100mm of filament, but in reality it is 98mm:
232 ## rotation_distance = <previous_rotation_distance> * <actual_extrude_distance> /
233 100
234 ## 22.6789511 is a good starting point
235 rotation_distance: 5.69395 #Bondtech 5mm Drive Gears
236 ## Update Gear Ratio depending on your Extruder Type
```

```
236 ## Use 50:17 for Afterburner/Clockwork (BMG Gear Ratio)
237 ## Use 80:20 for M4, M3.1      #BMG Gear Ratio
238 microsteps: 16
239 full_steps_per_rotation: 200  #200 for 1.8 degree, 400 for 0.9 degree
240 nozzle_diameter: 0.400
241 filament_diameter: 1.75
242 heater_pin: PB3
243 ## Validate the following thermistor type to make sure it is correct
244 sensor_type: ATC Semitec 104NT-4-R025H42G
245 sensor_pin: PA2
246 min_temp: 10
247 max_temp: 270
248 max_power: 1.0
249 min_extrude_temp: 170
250 #control = pid
251 #pid_kp = 26.213
252 #pid_ki = 1.304
253 #pid_kd = 131.721
254 ## Try to keep pressure_advance below 1.0
255 pressure_advance: 0.0635
256 ## Default is 0.040, leave stock
257 pressure_advance_smooth_time: 0.040
258
259 ## E0 on MCU X/Y
260 ## Make sure to update below for your relevant driver (2208 or 2209)
261 [tmc2209 extruder]
262 uart_pin: PC6
263 interpolate: false
264 run_current: 0.5
265 hold_current: 0.4
266 sense_resistor: 0.110
267 stealthchop_threshold: 0
268
269 #####
270 # Bed Heater
271 #####
272
273 [heater_bed]
274 ## SSR Pin - Z board, Fan Pin
275 heater_pin: z:PB7
276 sensor_type: Generic 3950
277 sensor_pin: z:PA1
278 ## Adjust Max Power so your heater doesn't warp your bed
279 max_power: 0.6
280 min_temp: 0
281 max_temp: 120
282 #control: pid
283 #pid_kp: 58.437
284 #pid_ki: 2.347
285 #pid_kd: 363.769
286
287 #####
288 # Probe
289 #####
290
291 [probe]
292 ## Inductive Probe
293 ## This probe is not used for Z height, only Quad Gantry Leveling
294 ## Z_MAX on mcu_z
295 ## If your probe is NO instead of NC, change pin to !^z:P0.10
```

```
296 pin: ^z:PE4
297 x_offset: 0
298 y_offset: 25.0
299 z_offset: 0
300 speed: 10.0
301 samples: 3
302 samples_result: median
303 sample_retract_dist: 3.0
304 samples_tolerance: 0.006
305 samples_tolerance_retries: 3
306
307 #####
308 # Fan Control
309 #####
310
311 [heater_fan hotend_fan]
312 ## Hotend Fan - XYE board, HE1 Connector
313 pin: PB4
314 max_power: 1.0
315 kick_start_time: 0.5
316 heater: extruder
317 heater_temp: 50.0
318 ## If you are experiencing back flow, you can reduce fan_speed
319 #fan_speed: 1.0
320
321 [fan]
322 ## Print Cooling Fan - XYE board, Fan Pin
323 pin: PB7
324 kick_start_time: 1
325 ## Depending on your fan, you may need to increase this value
326 ## if your fan will not start. Can change cycle_time (increase)
327 ## if your fan is not able to slow down effectively
328 off_below: 0.10
329
330 [heater_fan controller_fan]
331 ## Controller fan - Z board, HE1 Connector
332 pin: z:PB4
333 kick_start_time: 0.5
334 heater: heater_bed
335 heater_temp: 45.0
336
337 #[heater_fan exhaust_fan]
338 ## Exhaust fan - Z board, HE0 Connector
339 #pin: z:PB3
340 #max_power: 1.0
341 #shutdown_speed: 0.0
342 #kick_start_time: 5.0
343 #heater: heater_bed
344 #heater_temp: 60
345 #fan_speed: 1.0
346
347 #####
348 # LED Control
349 #####
350
351 #[output_pin caselight]
352 # Chamber Lighting - Bed Connector (Optional)
353 #pin: P2.5
354 #pwm:true
355 #shutdown_value: 0
```

```
356 #value:1
357 #cycle_time: 0.01
358
359 #####
360 # Homing and Gantry Adjustment Routines
361 #####
362
363 [idle_timeout]
364 timeout: 1800
365
366 [safe_z_home]
367 ## XY Location of the Z Endstop Switch
368 ## Update -10,-10 to the XY coordinates of your endstop pin
369 ## (such as 157,305) after going through Z Endstop Pin
370 ## Location Definition step.
371 home_xy_position:232,350
372 speed:100
373 z_hop:10
374
375 [quad_gantry_level]
376 ## Use QUAD_GANTRY_LEVEL to level a gantry.
377 ## Min & Max gantry corners - measure from nozzle at MIN (0,0) and
378 ## MAX (250, 250), (300,300), or (350,350) depending on your printer size
379 ## to respective belt positions
380
381 #------
382 ## Gantry Corners for 250mm Build
383 ## Uncomment for 250mm build
384 #gantry_corners:
385 # -60,-10
386 # 310, 320
387 ## Probe points
388 #points:
389 # 50,25
390 # 50,175
391 # 200,175
392 # 200,25
393
394 ## Gantry Corners for 300mm Build
395 ## Uncomment for 300mm build
396 #gantry_corners:
397 # -60,-10
398 # 360,370
399 ## Probe points
400 #points:
401 # 50,25
402 # 50,225
403 # 250,225
404 # 250,25
405
406 ## Gantry Corners for 350mm Build
407 ## Uncomment for 350mm build
408 gantry_corners:
409 -60,-10
410 410,420
411 ## Probe points
412 points:
413 50,25
414 50,275
415 300,275
```

```

416     300,25
417
418 #-----
419 speed: 100
420 horizontal_move_z: 10
421 retries: 5
422 retry_tolerance: 0.0075
423 max_adjust: 10
424
425 #####
426 #   Displays
427 #####
428
429 ## Uncomment the display that you have. Display connects to Z MCU
430 #-----
431
432 #[display]
433 ## RepRapDiscount 128x64 Full Graphic Smart Controller
434 #lcd_type: st7920
435 #cs_pin: z:P1.19
436 #sclk_pin: z:P1.20
437 #sid_pin: z:P1.18
438 #menu_timeout: 40
439 #encoder_pins: ^z:P3.26, ^z:P3.25
440 #click_pin: ^!z:P0.28
441
442 #[output_pin beeper]
443 #pin: z:P1.30
444
445 #-----
446
447 #[display]
448 ## mini12864 LCD Display
449 #lcd_type: uc1701
450 #cs_pin: z:P1.18
451 #a0_pin: z:P1.19
452 #encoder_pins: ^z:P3.25, ^z:P3.26
453 #click_pin: ^!z:P0.28
454 #contrast: 63
455
456 #[neopixel fysetc_mini12864]
457 ## To control Neopixel RGB in mini12864 display
458 #pin: z:P1.21
459 #chain_count: 3
460 #initial_RED: 0.1
461 #initial_GREEN: 0.5
462 #initial_BLUE: 0.0
463 #color_order: RGB
464
465 ## Set RGB values on boot up for each Neopixel.
466 ## Index 1 = display, Index 2 and 3 = Knob
467 #[delayed_gcode setdisplayneopixel]
468 #initial_duration: 1
469 #gcode:
470 #     SET_LED LED=fysetc_mini12864 RED=1 GREEN=1 BLUE=1 INDEX=1 TRANSMIT=0
471 #     SET_LED LED=fysetc_mini12864 RED=1 GREEN=0 BLUE=0 INDEX=2 TRANSMIT=0
472 #     SET_LED LED=fysetc_mini12864 RED=1 GREEN=0 BLUE=0 INDEX=3
473
474 #-----
475

```



```

476
477 [pause_resume]
478
479 [display_status]
480
481 [virtual_sdcard]
482 path: ~/gcode_files
483
484 #####
485 #   Macros
486 #####
487
488 [gcode_macro G32]
489 gcode:
490     BED_MESH_CLEAR
491     G28
492     QUAD_GANTRY_LEVEL
493     G28
494     ## Uncomment for for your size printer:
495     #-----
496     ## Uncomment for 250mm build
497     #G0 X125 Y125 Z30 F3600
498
499     ## Uncomment for 300 build
500     #G0 X150 Y150 Z30 F3600
501
502     ## Uncomment for 350mm build
503     G0 X175 Y175 Z30 F3600
504     #-----
505
506 [gcode_macro PRINT_START]
507 # Use PRINT_START for the slicer starting script - please customise for your slicer
  of choice
508 gcode:
509     G32                        ; home all axes
510     G1 Z20 F3000              ; move nozzle away from bed
511
512
513 [gcode_macro PRINT_END]
514 # Use PRINT_END for the slicer ending script - please customise for your slicer of
  choice
515 gcode:
516     M400                      ; wait for buffer to clear
517     G92 E0                    ; zero the extruder
518     G1 E-10.0 F3600           ; retract filament
519     G91                        ; relative positioning
520     G0 Z1.00 X20.0 Y20.0 F20000 ; move nozzle to remove stringing
521     TURN_OFF_HEATERS
522     M107                      ; turn off fan
523     G1 Z2 F3000               ; move nozzle up 2mm
524     G90                        ; absolute positioning
525     G0 X125 Y250 F3600        ; park nozzle at rear
526     BED_MESH_CLEAR
527
528
529 [bed_mesh]
530 speed: 300
531 horizontal_move_z: 2
532 ##-----
533 ## Uncomment below for 250mm build

```

```

534 #mesh_min: 40, 40
535 #mesh_max: 210,210
536
537 ## Uncomment for 300mm build
538 #mesh_min: 40, 40
539 #mesh_max: 260,260
540
541 ## Uncomment for 350mm build
542 mesh_min: 40, 40
543 mesh_max: 310,310
544 ##-----
545 fade_start: 0.6
546 fade_end: 10.0
547 probe_count: 5,5
548 algorithm: bicubic
549 relative_reference_index: 12
550
551
552 [gcode_macro CANCEL_PRINT]
553 # Cancel the actual running print
554 rename_existing: CANCEL_PRINT_BASE
555 gcode:
556     TURN_OFF_HEATERS
557     CANCEL_PRINT_BASE
558
559 ## Thermistor Types
560 ## "EPCOS 100K B57560G104F"
561 ## "ATC Semitec 104GT-2"
562 ## "NTC 100K beta 3950"
563 ## "Honeywell 100K 135-104LAG-J01"
564 ## "NTC 100K MGB18-104F39050L32" (Keenovo Heater Pad)
565 ## "AD595"
566 ## "PT100 INA826"
567
568 ### <----- SAVE_CONFIG ----->
569 ### DO NOT EDIT THIS BLOCK OR BELOW. The contents are auto-generated.
570 ###
571 ### [heater_bed]
572 ### control = pid
573 ### pid_kp = 35.524
574 ### pid_ki = 1.471
575 ### pid_kd = 214.476
576 ###
577 ### [extruder]
578 ### control = pid
579 ### pid_kp = 24.884
580 ### pid_ki = 1.550
581 ### pid_kd = 99.848
582 ###
583 ### [stepper_z]
584 ### position_endstop = -0.160
585 ###
586 ### [bed_mesh default]
587 ### version = 1
588 ### points =
589 ###     -0.145000, -0.105000, -0.070000, -0.077500, -0.123750
590 ###     -0.095000, -0.085000, -0.041250, -0.001250, -0.083750
591 ###     -0.086250, -0.051250, 0.000000, 0.052500, -0.021250
592 ###     -0.063750, -0.025000, 0.042500, 0.078750, 0.040000
593 ###     -0.055000, 0.015000, 0.101250, 0.160000, 0.127500

```

```
594 ### tension = 0.2
595 ### min_x = 40.0
596 ### algo = bicubic
597 ### y_count = 5
598 ### mesh_y_pps = 2
599 ### min_y = 40.0
600 ### x_count = 5
601 ### max_y = 310.0
602 ### mesh_x_pps = 2
603 ### max_x = 310.0
604
```