// This file is autogenerated by VESC Tool

#ifndef MINI\_OUTRUNNER\_CONFIG\_H\_

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// PWM Mode

#define MCCONF\_PWM\_MODE 1

// Commutation Mode

#define MCCONF\_COMM\_MODE 0

// Motor Type

#define MCCONF\_DEFAULT\_MOTOR\_TYPE 2

// Sensor Mode

#define MCCONF\_SENSOR\_MODE 0

// Motor Current Max

#define MCCONF\_L\_CURRENT\_MAX 23.896

// Motor Current Max Brake

#define MCCONF\_L\_CURRENT\_MIN -23.896

// Battery Current Max

#define MCCONF\_L\_IN\_CURRENT\_MAX 10

// Battery Current Max Regen

#define MCCONF\_L\_IN\_CURRENT\_MIN 0

// Absolute Maximum Current

#define MCCONF\_L\_MAX\_ABS\_CURRENT 65

// Max ERPM Reverse

#define MCCONF\_L\_RPM\_MIN -100000

// Max ERPM

#define MCCONF\_L\_RPM\_MAX 100000

// ERPM Limit Start

#define MCCONF\_L\_RPM\_START 0.8

// Max ERPM Full Brake

#define MCCONF\_L\_CURR\_MAX\_RPM\_FBRAKE 300

// Max ERPM Full Brake Current Control

#define MCCONF\_L\_CURR\_MAX\_RPM\_FBRAKE\_CC 1500

// Minimum Input Voltage

#define MCCONF\_L\_MIN\_VOLTAGE 6

// Maximum Input Voltage

#define MCCONF\_L\_MAX\_VOLTAGE 26

// Battery Voltage Cutoff Start

#define MCCONF\_L\_BATTERY\_CUT\_START 10.2

// Battery Voltage Cutoff End

#define MCCONF\_L\_BATTERY\_CUT\_END 9

// Slow ABS Current Limit

#define MCCONF\_L\_SLOW\_ABS\_OVERCURRENT 0

// MOSFET Temp Cutoff Start

#define MCCONF\_L\_LIM\_TEMP\_FET\_START 85

// MOSFET Temp Cutoff End

#define MCCONF\_L\_LIM\_TEMP\_FET\_END 100

// Motor Temp Cutoff Start

#define MCCONF\_L\_LIM\_TEMP\_MOTOR\_START 85

// Motor Temp Cutoff End

#define MCCONF\_L\_LIM\_TEMP\_MOTOR\_END 100

// Acceleration Temperature Decrease

#define MCCONF\_L\_LIM\_TEMP\_ACCEL\_DEC 0.15

// Minimum Duty Cycle

#define MCCONF\_L\_MIN\_DUT*Y 0.005*

// Maximum Duty Cycle

#define MCCONF\_L\_MAX\_DUT*Y 0.95*

// Maximum Wattage

#define MCCONF\_L\_WATT\_MAX 1.5e+06

// Maximum Braking Wattage

#define MCCONF\_L\_WATT\_MIN -1.5e+06

// Max Current Scale

#define MCCONF\_L\_CURRENT\_MAX\_SCALE 1

// Min Current Scale

#define MCCONF\_L\_CURRENT\_MIN\_SCALE 1

// Duty Cycle Current Limit Start

#define MCCONF\_L\_DUTY\_START 1

// Minimum ERPM

#define MCCONF\_SL\_MIN\_RPM 150

// Minimum ERPM Integrator

#define MCCONF\_SL\_MIN\_ERPM\_CYCLE\_INT\_LIMIT 1100

// Max Brake Current at Direction Change

#define MCCONF\_SL\_MAX\_FB\_CURR\_DIR\_CHANGE 10

// Cycle Integrator Limit

#define MCCONF\_SL\_CYCLE\_INT\_LIMIT 62

// Phase Advance at BR ERPM

#define MCCONF\_SL\_PHASE\_ADVANCE\_AT\_BR 0.8

// BR ERPM

#define MCCONF\_SL\_CYCLE\_INT\_BR 80000

// BEMF Coupling

#define MCCONF\_SL\_BEMF\_COUPLING\_K 600

// Hall Table [0]

#define MCCONF\_HALL\_TAB\_0 -1

// Hall Table [1]

#define MCCONF\_HALL\_TAB\_1 1

// Hall Table [2]

#define MCCONF\_HALL\_TAB\_2 3

// Hall Table [3]

#define MCCONF\_HALL\_TAB\_3 2

// Hall Table [4]

#define MCCONF\_HALL\_TAB\_4 5

// Hall Table [5]

#define MCCONF\_HALL\_TAB\_5 6

// Hall Table [6]

#define MCCONF\_HALL\_TAB\_6 4

// Hall Table [7]

#define MCCONF\_HALL\_TAB\_7 -1

// Sensorless ERPM Hybrid

#define MCCONF\_HALL\_ERPM 2000

// Current KP

#define MCCONF\_FOC\_CURRENT\_KP 0.0031

// Current KI

#define MCCONF\_FOC\_CURRENT\_KI 24.66

// Zero Vector Frequency

#define MCCONF\_FOC\_F\_Z*V 30000*

// Dead Time Compensation

#define MCCONF\_FOC\_DT\_US 0.12

// Encoder Inverted

#define MCCONF\_FOC\_ENCODER\_INVERTED 0

// Encoder Offset

#define MCCONF\_FOC\_ENCODER\_OFFSET 180

// Encoder Ratio

#define MCCONF\_FOC\_ENCODER\_RATIO 7

// Sin/Cos Sine Gain Compensation

#define MCCONF\_FOC\_ENCODER\_SIN\_GAIN 1

// Sin/Cos Cosine Gain Compensation

#define MCCONF\_FOC\_ENCODER\_COS\_GAIN 1

// Sin/Cos Sine Offset

#define MCCONF\_FOC\_ENCODER\_SIN\_OFFSET 1.65

// Sin/Cos Cosine Offset

#define MCCONF\_FOC\_ENCODER\_COS\_OFFSET 1.65

// Sin/Cos Filter Constant

#define MCCONF\_FOC\_ENCODER\_SINCOS\_FILTER 0.5

// Sensor Mode

#define MCCONF\_FOC\_SENSOR\_MODE 0

// Speed Tracker Kp

#define MCCONF\_FOC\_PLL\_KP 2000

// Speed Tracker Ki

#define MCCONF\_FOC\_PLL\_KI 30000

// Motor Inductance *(L)*

#define MCCONF\_FOC\_MOTOR\_L 3.1e-06

// Motor Inductance Difference *(Ld - Lq)*

#define MCCONF\_FOC\_MOTOR\_LD\_LQ\_DIFF 5.8e-07

// Motor Resistance *(R)*

#define MCCONF\_FOC\_MOTOR\_R 0.0247

// Motor Flux Linkage *(?)*

#define MCCONF\_FOC\_MOTOR\_FLUX\_LINKAGE 0.000538

// Observer Gain *(x1M)*

#define MCCONF\_FOC\_OBSERVER\_GAIN 3.4549e+09

// Observer Gain At Minimum Duty

#define MCCONF\_FOC\_OBSERVER\_GAIN\_SLOW 0.05

// Observer Offset

#define MCCONF\_FOC\_OBSERVER\_OFFSET -1

// Duty Downramp Kp

#define MCCONF\_FOC\_DUTY\_DOWNRAMP\_KP 10

// Duty Downramp Ki

#define MCCONF\_FOC\_DUTY\_DOWNRAMP\_KI 200

// Openloop ERPM

#define MCCONF\_FOC\_OPENLOOP\_RPM 1400

// Openloop ERPM at Min Current

#define MCCONF\_FOC\_OPENLOOP\_RPM\_LOW 0

// D Axis Gain Scaling Start

#define MCCONF\_FOC\_D\_GAIN\_SCALE\_START 0.9

// D Axis Gain Scaling at Max Mod

#define MCCONF\_FOC\_D\_GAIN\_SCALE\_MAX\_MOD 0.2

// Openloop Hysteresis

#define MCCONF\_FOC\_SL\_OPENLOOP\_HYST 0.1

// Openloop Lock Time

#define MCCONF\_FOC\_SL\_OPENLOOP\_T\_LOCK 0

// Openloop Ramp Time

#define MCCONF\_FOC\_SL\_OPENLOOP\_T\_RAMP 0.1

// Openloop Time

#define MCCONF\_FOC\_SL\_OPENLOOP\_TIME 0.05

// Hall Table [0]

#define MCCONF\_FOC\_HALL\_TAB\_0 255

// Hall Table [1]

#define MCCONF\_FOC\_HALL\_TAB\_1 255

// Hall Table [2]

#define MCCONF\_FOC\_HALL\_TAB\_2 255

// Hall Table [3]

#define MCCONF\_FOC\_HALL\_TAB\_3 255

// Hall Table [4]

#define MCCONF\_FOC\_HALL\_TAB\_4 255

// Hall Table [5]

#define MCCONF\_FOC\_HALL\_TAB\_5 255

// Hall Table [6]

#define MCCONF\_FOC\_HALL\_TAB\_6 255

// Hall Table [7]

#define MCCONF\_FOC\_HALL\_TAB\_7 255

// Hall Interpolation ERPM

#define MCCONF\_FOC\_HALL\_INTERP\_ERPM 500

// Sensorless ERPM

#define MCCONF\_FOC\_SL\_ERPM 4000

// Sample in *V0* and *V7*

#define MCCONF\_FOC\_SAMPLE\_*V0*\_*V7* 0

// High Current Sampling Mode

#define MCCONF\_FOC\_SAMPLE\_HIGH\_CURRENT 0

// Stator Saturation Compensation

#define MCCONF\_FOC\_SAT\_COMP 0

// Temp Comp

#define MCCONF\_FOC\_TEMP\_COMP 0

// Temp Comp Base Temp

#define MCCONF\_FOC\_TEMP\_COMP\_BASE\_TEMP 25

// Current Filter Constant

#define MCCONF\_FOC\_CURRENT\_FILTER\_CONST 0.1

// Current Controller Decoupling

#define MCCONF\_FOC\_CC\_DECOUPLING 0

// Observer Type

#define MCCONF\_FOC\_OBSERVER\_TYPE 0

// HFI Start Voltage

#define MCCONF\_FOC\_HFI\_VOLTAGE\_START 20

// HFI Run Voltage

#define MCCONF\_FOC\_HFI\_VOLTAGE\_RUN 4

// HFI Max Voltage

#define MCCONF\_FOC\_HFI\_VOLTAGE\_MAX 10

// Sensorless ERPM HFI

#define MCCONF\_FOC\_SL\_ERPM\_HFI 2000

// HFI Start Samples

#define MCCONF\_FOC\_HFI\_START\_SAMPLES 15

// HFI Observer Override Time

#define MCCONF\_FOC\_HFI\_OBS\_OVR\_SEC 0.001

// HFI Samples

#define MCCONF\_FOC\_HFI\_SAMPLES 1

// Run calibration at boot

#define MCCONF\_FOC\_OFFSETS\_CAL\_ON\_BOOT 1

// Current Offset 0

#define MCCONF\_FOC\_OFFSETS\_CURRENT\_0 2052.44

// Current Offset 1

#define MCCONF\_FOC\_OFFSETS\_CURRENT\_1 2052.26

// Current Offset 2

#define MCCONF\_FOC\_OFFSETS\_CURRENT\_2 2052.24

// Voltage Offset 0

#define MCCONF\_FOC\_OFFSETS\_VOLTAGE\_0 0.0004

// Voltage Offset 1

#define MCCONF\_FOC\_OFFSETS\_VOLTAGE\_1 0.0002

// Voltage Offset 2

#define MCCONF\_FOC\_OFFSETS\_VOLTAGE\_2 -0.0006

// Voltage Offset Undriven 0

#define MCCONF\_FOC\_OFFSETS\_VOLTAGE\_UNDRIVEN\_0 0

// Voltage Offset Undriven 1

#define MCCONF\_FOC\_OFFSETS\_VOLTAGE\_UNDRIVEN\_1 0

// Voltage Offset Undriven 2

#define MCCONF\_FOC\_OFFSETS\_VOLTAGE\_UNDRIVEN\_2 0

// Enable Phase Filters

#define MCCONF\_FOC\_PHASE\_FILTER\_ENABLE 1

// Maximum ERPM for phase filters

#define MCCONF\_FOC\_PHASE\_FILTER\_MAX\_ERPM 4000

// MTPA Algorithm Mode

#define MCCONF\_FOC\_MTPA\_MODE 0

// Field Weakening Current Max

#define MCCONF\_FOC\_FW\_CURRENT\_MAX 0

// Field Weakening Duty Start

#define MCCONF\_FOC\_FW\_DUTY\_START 0.9

// Field Weakening Ramp Time

#define MCCONF\_FOC\_FW\_RAMP\_TIME 0.2

// Q Axis Current Factor

#define MCCONF\_FOC\_FW\_Q\_CURRENT\_FACTOR 0.02

// Buffer Notification Length

#define MCCONF\_GPD\_BUFFER\_NOTIFY\_LEFT 200

// Buffer Sampling Interpolation

#define MCCONF\_GPD\_BUFFER\_INTERPOL 0

// Current Filter Constant

#define MCCONF\_GPD\_CURRENT\_FILTER\_CONST 0.1

// Current KP

#define MCCONF\_GPD\_CURRENT\_KP 0.03

// Current KI

#define MCCONF\_GPD\_CURRENT\_KI 50

// PID Loop Rate

#define MCCONF\_SP\_PID\_LOOP\_RATE 5

// Speed PID Kp

#define MCCONF\_S\_PID\_KP 0.004

// Speed PID Ki

#define MCCONF\_S\_PID\_KI 0.004

// Speed PID Kd

#define MCCONF\_S\_PID\_KD 0.0001

// Speed PID Kd Filter

#define MCCONF\_S\_PID\_KD\_FILTER 0.2

// Minimum ERPM

#define MCCONF\_S\_PID\_MIN\_RPM 900

// Allow Braking

#define MCCONF\_S\_PID\_ALLOW\_BRAKING 1

// Ramp eRPMs per second

#define MCCONF\_S\_PID\_RAMP\_ERPMS\_S 25000

// Position PID Kp

#define MCCONF\_P\_PID\_KP 0.025

// Position PID Ki

#define MCCONF\_P\_PID\_KI 0

// Position PID Kd

#define MCCONF\_P\_PID\_KD 0

// Position PID Kd Process

#define MCCONF\_P\_PID\_KD\_PROC 0.00035

// Position PID Kd Filter

#define MCCONF\_P\_PID\_KD\_FILTER 0.2

// Position Angle Division

#define MCCONF\_P\_PID\_ANG\_DI*V 1*

// Gain Decrease Angle

#define MCCONF\_P\_PID\_GAIN\_DEC\_ANGLE 0

// Position PID Offset Angle

#define MCCONF\_P\_PID\_OFFSET 0

// Startup boost

#define MCCONF\_CC\_STARTUP\_BOOST\_DUT*Y 0.01*

// Minimum Current

#define MCCONF\_CC\_MIN\_CURRENT 0.05

// Current Controller Gain

#define MCCONF\_CC\_GAIN 0.0046

// Current Control Ramp Step Max

#define MCCONF\_CC\_RAMP\_STEP 0.04

// Fault Stop Time

#define MCCONF\_M\_FAULT\_STOP\_TIME 500

// Duty Ramp Step Max

#define MCCONF\_M\_RAMP\_STEP 0.02

// Current Backoff Gain

#define MCCONF\_M\_CURRENT\_BACKOFF\_GAIN 0.5

// ABI Encoder Counts

#define MCCONF\_M\_ENCODER\_COUNTS 8192

// Sensor Port Mode

#define MCCONF\_M\_SENSOR\_PORT\_MODE 0

// Invert Motor Direction

#define MCCONF\_M\_INVERT\_DIRECTION 0

// DR*V8301* OC Mode

#define MCCONF\_M\_DR*V8301*\_OC\_MODE 0

// DR*V8301* OC Adjustment

#define MCCONF\_M\_DR*V8301*\_OC\_AD*J 16*

// Minimum Switching Frequency

#define MCCONF\_M\_BLDC\_F\_SW\_MIN 3000

// Maximum Switching Frequency

#define MCCONF\_M\_BLDC\_F\_SW\_MAX 35000

// Switching Frequency

#define MCCONF\_M\_DC\_F\_SW 25000

// Beta Value for Motor Thermistor

#define MCCONF\_M\_NTC\_MOTOR\_BETA 3380

// Auxiliary Output Mode

#define MCCONF\_M\_OUT\_AUX\_MODE 0

// Motor Temperature Sensor Type

#define MCCONF\_M\_MOTOR\_TEMP\_SENS\_TYPE 0

// Coefficient for PTC Motor Thermistor

#define MCCONF\_M\_PTC\_MOTOR\_COEFF 0.61

// Hall Sensor Extra Samples

#define MCCONF\_M\_HALL\_EXTRA\_SAMPLES 1

// Motor Poles

#define MCCONF\_SI\_MOTOR\_POLES 12

// Gear Ratio

#define MCCONF\_SI\_GEAR\_RATIO 2.769

// Wheel Diameter

#define MCCONF\_SI\_WHEEL\_DIAMETER 0.083

// Battery Type

#define MCCONF\_SI\_BATTERY\_TYPE 0

// Battery Cells Series

#define MCCONF\_SI\_BATTERY\_CELLS 3

// Battery Capacity

#define MCCONF\_SI\_BATTERY\_AH 6

// Motor No Load Current

#define MCCONF\_SI\_MOTOR\_NL\_CURRENT 1

// BMS Type

#define MCCONF\_BMS\_TYPE 1

// Temperature Limit Start

#define MCCONF\_BMS\_T\_LIMIT\_START 45

// Temperature Limit End

#define MCCONF\_BMS\_T\_LIMIT\_END 65

// SOC Limit Start

#define MCCONF\_BMS\_SOC\_LIMIT\_START 0.05

// SOC Limit End

#define MCCONF\_BMS\_SOC\_LIMIT\_END 0

// Forward CAN to Local

#define MCCONF\_BMS\_FWD\_CAN\_MODE 0

// MINI\_OUTRUNNER\_CONFIG\_H\_

#endif