Motor Driver

USB

Bootloader

Oscillation System

RS485

MCU Power System

Reset System

Encoder

U1 — STM32F401RET6

Pin	Signal
1	VBAT
19,32,48,64	VDD (3.3V)
13	VDDA/VREF+
14	PA0
15	PA1 — USART_TX_RS485
16	PA2 — USART_RX_RS485
17	PA3 — RE_DE_RS485
20	PA4
21	PA5
22	PA6 — DIR_MOT
23	PA7 — PWM_MOT
41	PA8
42	PA9
43	PA10
44	PA11 — USB_DM
45	PA12 — USB_DP
46	PA13 — SWDIO
49	PA14 — SWCLK
50	PA15
8	PC0
9	PC1
10	PC2
11	PC3
24	PC4 — ENABLE_SIGNAL
25	PC5
37	PC6
38	PC7
39	PC8
40	PC9
51	PC10
52	PC11
53	PC12
2	PC13
3	PC14-OSC32_IN
4	PC15-OSC32_OUT
18,31,47,63	VSS
12	VSSA/VREF-
26	PB0
27	PB1 — BOOT1
28	PB2
55	PB3
56	PB4
57	PB5
58	PB6 — CH_A_ENC_MOTOR
59	PB7 — CH_B_ENC_MOTOR
61	PB8
62	PB9
29	PB10
33	PB11
34	PB12
35	PB13
36	PB14
—	PB15
54	PD2
5	PH0-OSC_IN
6	PH1-OSC_OUT
60	BOOT0
7	NRST
30	VCAP1

USB
- R48 1K, USB3 KP-2012SGC
- C61 0.1uF, C62 0.1uF
- U83 ADUM4160BRWZ-RL
- VBUS1, GND1, VDD1, PDEN, SPU, UD-, UD+, GND1
- VBUS2, GND2, VDD2, SPD, PIN, DD-, DD+, GND2
- C64 0.1uF, C63 0.1uF
- R43 24 ohm, R44 24 ohm, R42 5,1K, R45 24 ohm, R46 24 ohm, R47 330ohm
- USB-TYPE-C-020, TPD2EUSB30DRTR-TP, D15
- USB_DM, USB_DP

Motor Driver
- C1 CEN_5.6nF
- R1 REN_10K
- Motor_power 282836-2, OUT_1, OUT_2
- ENABLE_SIGNAL, ENBL
- U2 L6205PD
  - GND, VSA, VCP, ENA, IN1A, IN2A, SENSEA, OUT1A, GND, GND
  - SLUG, GND, VSB, OUT2B, VBOOT, ENB, IN2B, IN1B, SENSEB, OUT1B
- 12V, OUT_2, VCP, ENBL, PWM_MOT, DIR_MOT, OUT_1
- 12V, OUT_2, VBOOT, ENBL, DIR_MOT, PWM_MOT, OUT_1
- C46 C1_0,1uF, C47 C2_0,1uF
- D7 1N4148W, R37 RP_100R, C49 CP_0,01uF — VCP
- 1N4148W, C48 CBoot_0,22uF — VBOOT

Bootloader
- C52 0.1 uF, 7914G-1-000E, R40 10 k — BOOT0
- C51 0.1 uF, 7914G-1-000E, R39 10 k — BOOT1
- H1: 3.3V, SWDIO, SWCLK, GND

RS485
- U8 MAX485ESA
  - RO, RE#, DE, DI, VCC, B, A, GND
- R12 20K, R13 120, R14 20K
- R15 47R, R16 47R
- D5 SM2T3V3A, D6 SM2T3V3A
- C26 0.1 uF
- RS485 282836-2
- USART_RX_RS485, RE_DE_RS485, USART_TX_RS485

Oscillation System
- PH1-OSC_OUT, PH0-OSC_IN
- R2 1 M, C2 20 pF, X1 16MHz, C3 20 pF

MCU Power System
- C79 1uF, C75 0.1uF, C76 4.7uF, C78 0.1uF, C68 4.7uF
- U79 LD1117S33TR: GND, VOUT, VIN, VOUT
- C59 10 uF, R49 150, KP-1608MGC
- C60 0.1 uF
- C69 0.1uF, C70 0.1uF, C71 0.1uF, C73 0.1uF
- U85 LD1117-5.0: ADJ(GND), VOUT(TAB), IN, TAB
- C81 10uF, C82 22uF, C65 0.1 uF, C66 220uF
- CN2 XT30PW-M30.G.Y, F1 0458005.DR, D19 SS510, D1 SMCJ16A
- 282836-2

Reset System
- C20 0.1 uF, 7914G-1-000E (Reset), R5 10 k — NRST

Encoder
- CN1 DS1011-10SBSiB7-B
- 5v, CH_A_ENC_MOTOR, CH_B_ENC_MOTOR