24V_Power_IN

Power Distribution

J1 Conn_01x02_Pin
F1 Fuse_3A
+24V
D1 Zener_6V
D5 Zener_6V
+12V
D2 1N5401
C1 330uF / 50V
GND
Switch
J5 Conn_01x04_Pin
R1 100
SW_LED
GND

i2C_EEPROM
+3V3
U4 24LC512
A0 VCC SDA
A1 SCL
A2 WP
GND
R16 R17 R18 4.7k
SDA SCL WP

ESC POWER
J9 Conn_01x02_Pin
+24V
GND

Lid Sensor
+3V3
J2 Conn_01x03_Pin
R13 10k
Lid_Sensor
GND

ESC PWM
J8 Conn_01x02_Pin
PWM_SPEED
GND

EMO_SW
+3V3
R14 10k
J4 Conn_01x02_Pin
EMO
GND

Buzzer
BZ1 IMT12D2001AP-Buzzer
R12 100
pBuzzer
GND

ENCODER_SPI
+3V3
J7 Conn_01x06_Pin
ENC_CS
SCK
MOSI
MISO
GND

12-bit 2ch DAC
+5V
C3 100nF
GND
U2 MCP4922-EP
SDI VDD VoutA
SCK
CS
LDAC VrefA
SHDN
MOSI
SCK
ADC_CS
ADC_UPDATE
AVSS VrefB VoutB
aSPEED
+5V
GND

Thermistor (NTC)
+3V3
J6 Conn_01x02_Pin
R8 10k
TEMP
GND

Connectors

U1A NUCLEO-F401RE
+3V3 +5V +12V
+3V3_S1
+5V_S1
E5V
VBAT
VDD
VIN_S1
RESET_S1
BOOT0
PA0
PA1
PA4
PA13
PA14
PA15
PB0
PB7
PC0/PB8
PC1/PB9
PC2
PC3
PC11
PC10
PC12
PC13
PC14
PC15
IOREF_S1
PD2
PH0
PH1
cRPM_METER
PWM_SPEED
MISO
MOSI
READY_IN
DIR
DRV_EN
SW_LED
EMO
Lid_Sensor
GND_S1
GND

U1B NUCLEO-F401RE
AVDD
U5V
PA2
PA3
PA5
PA6
PA7
PA8
PA9
PA10
PA11
PA12
PB1
PB2
PB3
PB4
PB5
PB6
PB8
PB9
PB10
PB12
PB13
PB14
PB15
PC4
PC5
PC6
PC7
PC8
PC9
Phase_MON
TEMP
pBuzzer
WP
SCL
SDA
ADC_CS
SCK
ADC_UPDATE
ENC_CS
AGND
GND_S2
GND

Motor Driver

R4 100
R2 75k
Phase_MON
D3 Zener_3.3V
R3 10k
+24V
ESC Driver hall counter
GND
J3 Conn_01x08_Pin
U3 367661
W1
W2
W3
VCC
GND
HALL_5V
H1
H2
H3
Speed_SET
CUR_LIM
GND
DIR
EN
DigIN2
DigIN1
Ready
R10 4.7k
R6 10k
R9 100
aSPEED
DIR
GND
R7 100
Enable = HIGH
Disable = LOW
DRV_EN
READY_IN
Ready -> ON
Fault -> OFF
C2 100nF
GND GND
D5 R5
D4 LED
GND
Q3 NPN
Lid_Sensor
Magnet O -> HIGH
Magnet X -> LOW
GND
Q2 NPN
EMO
EMR Off -> LOW
EMR On -> HIGH
R11 330
cRPM_METER
ESCON Driver hall counter
Forced stop with Lid & E-STOP
GND

Revision History
- V 0.1
  [-] Change capacitor layout size to large
  - Change resistor layout size to large
  [-] Add zener diode to decrease heat
  - Change BJT layout pinmap
  - Change PWM reading pin to ADC pin
  -

Omniscience
Sheet:
File: Spct.kicad_sch
Title: Spin Coater
Size: A3   Date: 2023-03-14   Rev: Rev 1.0
KiCad E.D.A. kicad (7.0.0-0)   Id: 1/1