Step-Down Voltage Regulator (D36V50F12)
OUTPUT : 12V, 4.5A

J1
Conn_02x06_Odd_Even

+12V 1 2 +12V
3 4
5 6
+24V_BAT 7 8 +24V_BAT
VRP_12V 9 10 VRP_12V
GND EN_12V 11 12 PG_12V GND

12V

Not Use

Specs
Minimum operating voltage:	13.3 V[2]
Maximum operating voltage:	50 V
Continuous output current:	4.5 A[3]
Output voltage:	12 V
Reverse voltage protection?:	Y[4]
Maximum quiescent current:	4 mA[5]
Output type:	fixed 12V

Step-Down Voltage Regulator (D24V25F5)
OUTPUT : 5V, 5.5A

J2
Conn_02x06_Odd_Even

+5V 1 2 +5V
3 4
5 6
+24V 7 8 +24V
VRP_5V 9 10 VRP_5V
GND EN_5V 11 12 PG_5V GND

5V

TP2 EN_5V   TP4 PG_5V

Specs
Minimum operating voltage:	5.5 V[2]
Maximum operating voltage:	50 V
Continuous output current:	5.5 A[3]
Output voltage:	5 V
Reverse voltage protection?:	Y[4]
Maximum quiescent current:	4 mA[5]
Output type:	fixed 5V

Step-Down Voltage Regulator (MP2307)
INPUT : 4.75V - 23V | OUTPUT : 3.3V, 4A

+12V_DCDC
R1 100k
C2 10uF
Link
U2 MP2307
EN IN BS
SS SW
COMP FB
C1 10nF
L1 10uH
Link
+3.3V
C4 0.1uF
C3 3.9nF
R3 10K
R2 26.1K
C5 22uF
R4 6.8k
GND

Power Relay (J115F1K1AH24VDCSK2.25) DataSheet
Battery Power ON / OFF (24V 40A)

+24V +12V +5V +3.3V
PWR_FLAG PWR_FLAG PWR_FLAG PWR_FLAG

+24V_BAT
D2 RB056LAM-40TR
V_R : 50V
I_o : 3A

Use / Out   Input
+24V   +24V_relay

RV1 SFI0805ML330C
2012(0805) Size
DC 26V
Breakdown Voltage 33V
Max Current 100A
Link

Battery POWER Push Switch
J3 Terminal_01x02

K1 J115F1K1AH24VDCSK2.25
1 COIL_1 NO 3
2 COIL_2 COM 4

Coil Voltage : 24V or 18V
Coil Current : 93.8mA
Datasheet 1Page

R9 100   C12 100nF
RC Snubber

GND

Cap Link *

PC & CONTROLLER Switch (Relay)
J15 Terminal_01x02
12V_SW_IN
+12V_DCDC

Logic-Level MOSFET (IRLB8743PBF)
DataSheet
Signal - Uknown Pin(1) / Uknown PIN(2) / Uknown PIN(3)

GPIO_1 4
GPIO_2 3
GPIO_3 2
GND_IN 1
Controller IO Input
J4 Conn_01x04_Pin

+12V_PC
Red 3
Green 2
Blue 1
LED Strip Power Output
J5 Conn_01x04_Pin

Q1 IRLB8743PBF(NMOS)
GPIO_1 G D Red
R5 1K R6 1K
GND_IN
FET_GND
D1 RED
GND GND GND_RED
IRLB8743PbF

Q2 IRLB8743PBF(NMOS)
GPIO_2 G D Green
R7 1K R8 1K
FET_GND
D3 GREEN
GND GND GND_GREEN

Q3 IRLB8743PBF(NMOS)
GPIO_3 G D Blue
R10 1K R11 1K
FET_GND
D4 BLUE
GND GND GND_BLUE

The closest I have found is a 3V3 FET is the IRLB8743pbf, this is the corresponding diagram from its data sheet

BATTERY PWR
INPUT
Use Battery Link
Use Battery Link (2)

J13
+24V_BAT
Vin *
2
1
GND
TP9 +24V_BAT
XT60-M
OUTPUT : 24V

J8 Conn_01x02_Socket
+24V *
Motor Driver PWR
2
1
GND

J6 Conn_01x02_Socket
+24V *
Lift PWR
2
1
GND

TP10

J20 Conn_01x02_Socket
OUTPUT : 12V
18A
12V_SW_IN *
2
1
GND

XT60PW-M
XT30PW-M

TP12 12V_SW_IN
R20 2K D9 Red
+5V
GND

Overvoltage alarm (Voltage comparator)
+12V_DCDC
R18 100K
R15 15K
R17 10K C7 100nF
3 +
2 -
1 compare
U3A LMV358
+5V
V+ 8
V- 4
U3C LMV358
C6 100nF
GND +5V

U3B LMV358
TP1 TestPoint
TP5 TestPoint
TP3 TestPoint
5 +
6 -
7

+5V
C8 10uF
GND
R19 1K
compare
B
S8050 Q5 NPN
3=C 1=B 2=E
BZ1 Buzzer
(AI-1223-TWT-5V-5-R)
1 +
2
GND

Battery indicator pin
J18 Conn_01x02
+24V_relay
1
2
GND

MOUNTINGHOLE (Isolation)
H1 H2 H3 H4
H5

Expansion Sheet
: Expansion_sch.kicad_sch

BOARD SPECIFICATIONS : INPUT - 24V (BATTERY) External DC-DC Converter (?W) | OUTPUT - 24V / 12V / 5V / 3V3 | Voltage distribution and power ON/OFF switching are possible

MARK
* : Inaccurate Mark   * : TEST POIN Mark
: ???   : An unusual device Mark
Theory Note_0 Note_1 Note_2 Note_3 Note_4 Note_5

PCB Artwork - Annotation ()

Prior to assembly, preferential testing is required on the substrate (only that part is assembled and tested first)
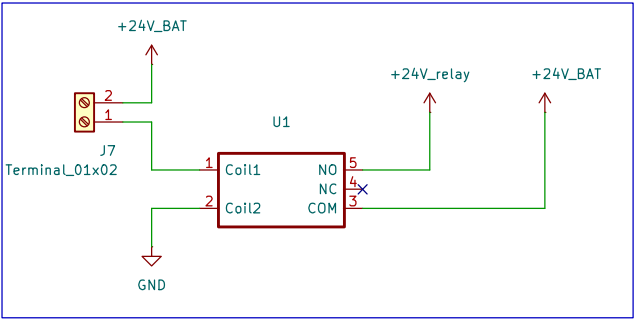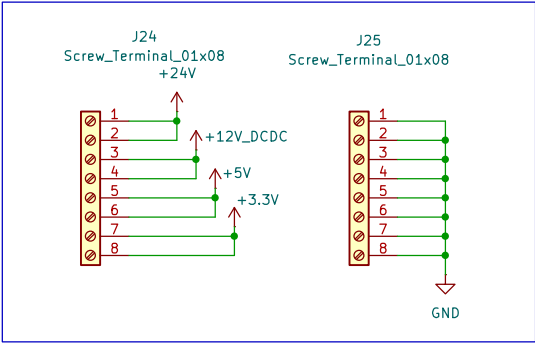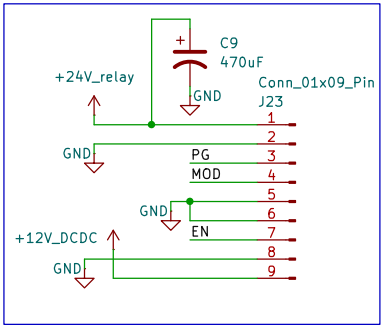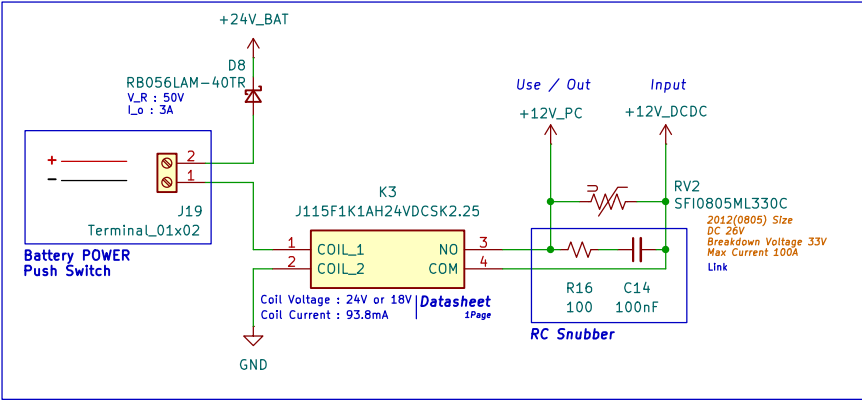
CAPSTONE DESIGN 2024 - 2025
UNCONTROLLABLE OUT OF CONTROL Cubo80 - E.E

Sheet: /
File: Capstone_Power_Distribution_Board_V1.5.kicad_sch
Title: POWER DISTRIBUTION BOARD
Size: A4 | Date: 2025-03-14 | Rev: V1.4
KiCad E.D.A. 9.0.2 | Id: 1/2

SHDN Pin activation & Input power filter
Feedback (voltage distribution) & Ripple voltage reduction

LattePanda PWR IN
JST PH2.0 4PIN

+12V_PC
D7
SM6T15A

GND

J22
Conn_01x04

1
2
3
4

GND

+24V_BAT

D8
RB056LAM−40TR
V_R : 50V
I_o : 3A

Battery POWER
Push Switch

J19
Terminal_01x02

+
−

2
1

K3
J115F1K1AH24VDCSK2.25

COIL_1   NO   3
COIL_2   COM   4

1
2

Coil Voltage : 24V or 18V
Coil Current : 93.8mA

Datasheet
1Page

GND

Use / Out
+12V_PC

Input
+12V_DCDC

RV2
SFI0805ML330C
2012(0805) Size
DC 26V
Breakdown Voltage 33V
Max Current 100A
Link

R16   C14
100   100nF

RC Snubber

+24V_relay

C9
470uF

GND

+
Conn_01x09_Pin
J23

GND

+12V_DCDC

GND

1
2
PG   3
MOD   4
5
GND   6
EN   7
8
9

J24
Screw_Terminal_01x08
+24V

1
2
3
4
5
6
7
8

+12V_DCDC

+5V

+3.3V

J25
Screw_Terminal_01x08

1
2
3
4
5
6
7
8

GND

+24V_BAT

J7
Terminal_01x02

2
1

U1

Coil1   NO   5
NC   4
Coil2   COM   3

+24V_relay

+24V_BAT

GND