J1
battery
1
2
GND

VBUS battery-protection
VBUS
VIN
GND
VOUT
+BATT
File: battery-protection.sch

voltage-regulation
+BATT
VIN
GND
VOUT
+3V3
File: voltage-regulation.sch

+3V3
C10
4.7u
GND

R19 1M
U3 RFM95W-868S2
RFM_SCK   4 SCK   3,3 ANT 9 ANTENNA 1 ANT
RFM_MOSI 3 MOSI   DIO5 7   2 J2
RFM_MISO 2 MISO   DIO4 12   GND
RFM_NSS   5 NSS   DIO3 11
                               DIO2 16 DIO02
RFM_RST   6 RESET   DIO1 15 DIO01
                               DIO0 14 RFM_IRQ
R17 1M
GND   GND GND GND
              1   8   10
             GND

VBUS
J9
VBUS 1
3 D+
2 D-
4 ID
Shield
6 5 GND
GND
D4   D1
1   2   1   2
3   3
GND

+3V3
+3V3
C14 C5 C6 C8   C9
1u   1u 1u 1u   1u
GND   GND

J5
1
2 SWD_IO
3 SWD_CLK
4
5
6
SWD
GND
R25 1k
+3V3

Y1
32.768
C1   C2
22p   22p
GND   GND
C4
1u
GND

U2 ATSAMD21G18A-AUT
17 VDDIO 44 VDDIN 6 VDDANA 43 VDDCORE
1 PA00
2 PA01
BATT_MON   3 PA02   PB02 47
MCU_AREF   4 PA03   PB03 48
LED1   9 PA04   PB08 7
LED2   10 PA05   PB09 19 RFM_MOSI
RFM_NSS   11 PA06   PB10 20 RFM_SCK
DIO01   12 PA07   PB11
RFM_RST   13 PA08   PB22 37 TX
RFM_IRQ   14 PA09   PB23 38 RX
RS485_RE 15 PA10
RS485_DE 16 PA11
RFM_MISO 21 PA12
          22 PA13
RS485_ENABLE 23 PA14
I2C_ENABLE 24 PA15
          25 PA16
          26 PA17
          27 PA18
          28 PA19
          29 PA20
          30 PA21
I2C_SDA   31 PA22
I2C_SCL   32 PA23
D-   33 PA24
D+   34 PA25
          39 PA27
          41 PA28
SWD_CLK   45 PA30
SWD_IO   46 PA31
MCU_RST   40 RESET
GND GNDANA
18   5
GND GND

SW1
SW_Test
2 1
4 3
GND
LED3 8

R11 20k
BATT_MON
R12 10k   C13 1u
GND
TODO: batt monitoring is for 6V b

+BATT +3V3 RS485-interface
VIN
BATT   VOUT 1
RS485_ENABLE ENABLE   A 2 rs485
TX DI   B 3
RX RO   4
RS485_DE DE   J4
RS485_RE RE   GND
GND
File: rs485-interface.sch

+3V3 I2C-interface
VIN   VOUT 1
          SDA 2 I2C_SDA i2c
I2C_ENABLE ENABLE SCL 3 I2C_SCL J3
                      4
GND   GND
File: i2c-interface.sch

H1 MountingHole
H2 MountingHole
H3 MountingHole
H4 MountingHole
FID1 Fiducial
FID2 Fiducial

SW2
SW_Reset
1   2
3   4
GND
+3V3
R1 1k
C3 1u
GND
MCU_RST

LED1 R13 1k D6
LED2 R14 1k D7
LED3 R15 1k D8
GND

VIN

TH1

D5

GND

Q3

3 2

D2
7.6V

R21
1M

Q4

2 3

VOUT

R24
1M

GND

VBUS

D3
1N4148

VIN

C16
4.7u

C7
4.7u

GND

U4
NCP718

1 Vin   Vout 5

3 $\overline{\text{SHDN}}$ GND

2

VOUT

C11
4.7u

VIN

Q7

VOUT

R4
1M

R6
4.7k

R7
4.7k

SCL

R5
150

SDA

ENABLE

D9

2   1

GND

GND