Charger
U2 TP4056
Vin_main R1 1k D1 LED Vcc BAT BAT+ C3 10u
CE
R3 1K2
CHRG STDBY TEMP PROG
D2 LED
R7 12K R9 30K
C4 10u
BAT_LVL
J1 BAT
GND

Protection
U1 DW01
TD VCC BAT+
R2 100
CS VCC C2 100n
OD GND
SW1 SW_DIP_x02
U4 FS8205A
S1 G1 OD
D1/D2 D1/D2
S2 G2 OC
BAT−

DC−DC 5V
U3 MT3608
V1 C1 22u L1 22u D3 D_Schottky SW_5V Vo_DCDC
IN SW Vo_DCDC
R5 7K5 R8 470
EN FB
R6 1K C5 22u
D4 LED
J2 HDR−2x1 Vo_DCDC
+5V
this circuit convert the 3.7V (4.2 to 3.4 V) from the battery to fix 5V.
V_out = 0.6(R8/R7 + 1)
J2 is the General On/Off switch. Use a jumper or a external button for turn on/off.
LED D4 is only for debugg. DO NOT solder for regular use

Power IN
J8 ON OFF
Vin_main V_USB
IN VIN_5V
J3 GND
R14 10K V_USB D9 D_Schottky Vin_main
VIN_5V
C6 4.7u 16V
Q2 Q_PMOS_GSD
this circuit select whether the board is powered by the USB port or by an external 5V power supply. Jumper J8 can bypass this part of the circuit.

Load sharing
R13 10K Vin_main D8 D_Schottky V1
BAT+ Q1 Q_PMOS_GSD
this circuit select whether the board is powered by the USB port or by the battery

LDO 3V3
J9 HDR−3x1
V_EN EN_VDS/S
+5V U5 AP2112K−3.3 +3.3V
VIN VOUT
C7 1u EN CB C9 1u
+5V U6 AP2112K−3.3 VDL_3V3
VIN VOUT
EN_VDS/S EN C10 C11 1u 1u
+5V U8 AP2112K−3.3 VS_3V3
VIN VOUT
EN C12 1u
R10 1k D5 LED ON/OFF indicador LED
R11 1k D6 LED Datalogger ON − LED
R12 1k D7 LED SENSOR supply − LED
Depending on the load, we recommend using 3 separate power supplies. the first for components and for the micro, the second for the datalogger circuit, and the third for sensors. The last two are controlled by the micro

ESP32−WROOM−32D
U10 ESP32−WROOM−32D
+3.3V VDD
RESET EN IO0
SENSOR_VP TXD0/IO1 TX
SENSOR_VN RXD0/IO3 RX
IO4 RS485_EN
IO5 SD_CS
IO12 SPI2_CLK
IO13 PUMP
IO14 RGB
IO15 LORA_CS
IO16 RS485_TX
IO17 RS485_RX
SDO/SD0 IO18 SPI1_CLK
SDI/SD1 IO19 SPI1_MISO
SHD/SD2 IO21 SDA
SWP/SD3 IO22 SCL
SCK/CLK IO23 SPI1_MOSI
SCS/CMD IO25 LORA_RST
IO26 LORA_D0
IO27 LORA_D1
IO32 SENS_TEMP
IO33 V_EN
IO34 SENS_M
IO35 BAT_LVL
GND
C16 100n C17 10u 16V
R27 330 D10 LED
IO2

Tabla de pines
SPI1_MOSI − GPIO23
SPI1_MISO − GPIO19
SPI1_SCK − GPIO18
CS_SD − GPIO5
RGB − GPIO14
PUMP − GPIO13
LORA_CS − GPIO15
LORA_RST − GPIO25
LORA_D0 − GPIO26
LORA_D1 − GPIO27
I2C_SDA − GPIO21
I2C_SCL − GPIO22
RS485_TX − GPIO16
RS485_Rx − GPIO17
SENS_M − GPIO34
SENS_TEMP − GPIO32
EN_V − GPIO33
BAT_LVL − GPIO35

Switches
SW2 SW_DIP_x02 IO0
SW3 SW_DIP_x02 RESET
R24 10K R26 10K
IO0 RESET
C14 100n C15 100n

USB to Serial
J12 USB_B_Micro
VBUS FUSE F1 V_USB
D− D+
Shield ID GND
PWR_FLAG V_in
U13 R232
VCC TXD RX
RXD TX
CTS
DSR
RI
DCD
UD+ DTR#
UD− RST#
FT231X
C13 100n
+3.3V

Auto reset
R22 10K RESET IO0 R25 10K
DTR# Q3B Q3A RST#
RST# DTR#

RTC : RV−8803
VDL_3V3
D11 BA570−05
U11 RV−8803
VDD CLKOUT
SCL CLKOE
SDA INT
VSS EVI
R33 100k R34 100k
R29 3.3k
C19 10n
BT1 Battery_Cell
EVI J14 Conn_01x02
i2C addres: 0x32

MICROSD READER
J13 HDR−2x1
C/D Dat3
SPI1_MISO R28 3.3k
R30 3.3k
SPI1_CLK
SPI1_MOSI R31 3.3k
SD_CS R32 3.3k
VDL_3V3
J15 Push−Push
GND
Cd
Dat1
Dat0
VSS
CLK
VDD
CMD
CD/Dat3
Dat2
C18 10u C20 100n

RFm95 LoRa
C21 4.7u
+3.3V
U12 RFM95W−915S2
SPI1_CLK SCK
SPI1_MOSI MOSI
SPI1_MISO MISO
LORA_CS NSS
R37 10k
LORA_RST RESET
ANT J17 Conn_Coaxial
DIO5
DIO4
DIO3
DIO2
DIO1 LORA_D1
DIO0 LORA_D0
GND
LoRa RFm95

RS485 converter
U7 MAX3485
VS_3V3 VS_3V3
R17 10k R1B 10k R19 10k R20 10k
RS485_TX RS485_RX
RS485_EN RS485_EN
Data_B RO
RE
DE
Data_A DI
R16 120

Pump driver
JP1 Solder Jumper_3_Open
VS_3V3
PUMP_IN+
JP2 Solder Jumper_2_Open
PUMP_OUT+
R23 1k
D15 CD4148W
D12 LED
PUMP_OUT−
PUMP Q4 BSS138
R21 10k

RGB LED
+3.3V
D14 WS2812B
RGB DIN DOUT
VDD
VSS

Connectors
J4 Cap. Moisture Sensor
GND VS_3V3
SENS_M
J5 ds18b20
GND VS_3V3
R15 4.7k SENS_TEMP
J6 SHT31
VS_3V3 GND SCL SDA
J7 NPK/H Sensor MODBUS SENSOR
GND Data_B Data_A +5V
J10 OLED
VS_3V3 SCL SDA OLED DISPLAY
J11 rgb led
+3.3V RGB GND RGB LED
J18 IN PUMP_IN+ PUMP
J19 IN PUMP_OUT+ PUMP_OUT−