Single Li-Ion cell
DOUBLE CHECK CELL PINOUT BEFORE CONNECT!

J2 BAT+
+BATT
J1 B2B-PH-K-S
J3 BAT-
GND
Q1 AO3407A
Q2 AO3407A
VCC
R2 0R
R7 100kR
D1 BAT54C
BTN_PWR
SW1 PWR
Q3 AO3400
PWR_HOLD
C4 100nF
R9 100kR

VCC
C8 10uF
U4 LM3671MF-3.3
VIN
SW
EN
GND
FB
L1 2.2uH
R20 0R
C9
R16
C12
C13 10uF
+3V3

+3V3
C14 47uF
C16 100nF
C17 100nF
C18 100nF
C20 100nF

U6 STM32F103C8T6
VBAT
VDDA
VDD_1
VDD_2
VDD_3
PA0 BUZZER_P
PA1 BUZZER_N
PA2 VBAT_SENSE
PA3 RF_RESET
PA4 RF_CS
PA5 RF_SCK
PA6 RF_MISO
PA7 RF_MOSI
PA8
PA9 LCD_DC
PA10
PA11 RF_TXEN
PA12 RF_RXEN
PA13 SWD_IO
PA14 SWD_CLK
PA15 PWR_HOLD
NRST MCU_RESET
BOOT0 BOOT0
PB0 RF_IRQ
PB1 RF_BUSY
PB2 PPS_BOOT1
PB3 BTN_ESC
PB4 BTN_OK
PB5 BTN_PWR
PB6 I2C_SCL
PB7 I2C_SDA
PB8 LED_RED
PB9 LED_GREEN
PB10 GPS_RXD
PB11 GPS_TXD
PB12 LCD_CS
PB13 LCD_SCK
PB14 LCD_RESET
PB15 LCD_MOSI
PC13 I2C_INT
PC14 MUX_BLE_USB
PC15 LCD_BL
PD0
PD1
VSSA
VSS_1
VSS_2
VSS_3
X1 8MHz
C15 12pF
C19 12pF
R22 1kR
R23 100kR
CONSOLE_TXD
CONSOLE_RXD

Populate if backlight LED pins are directly available
+3V3
R38 100R
J10 BL-A
J11 BL-C
LCD_BL
Q5 AO3400
R37 100kR

+3V3
A3 GM12864-01A
128 x 64 px ST7567
LCD_SCK
LCD_MOSI
LCD_DC
LCD_RESET
LCD_CS
LCD_BL
C29 100nF

+3V3
A4 GN-801
GPS
GPS_TXD
GPS_RXD
GPS_PPS
C27 47uF
C30 100nF

SW2 OK/UP
BTN_OK
SW3 ESC/DN
BTN_ESC

+3V3
R15 100kR
J8 PLS-1x6
MCU_RESET
SWD_CLK
SWD_IO
C10 100nF

J7 PLS-1x3
USB_TXD
USB_RXD
J9 PLS-1x3
CONSOLE_TXD
CONSOLE_RXD

VBUS
R5 22.1kR
R6 47.5kR
C2 4.7uF
C3 100nF
VDD
C6 100nF
C7 4.7uF
TP1

J4 GCT USB4105/USB4110
VBUS
A9B4
A4B9
CC1
CC2
D-
D-
D+
D+
A8
B8
SBU1
SBU2
SHIELD
GND
GND
A1B12
A12B1
R1 5.1kR
R3 5.1kR
U1 SP0503BAHTG
USB_DN
USB_DP
R8 1kR
U3 CP2102N-A02-GQFN28
RST
VREGIN
VDD
VBUS
D-
D+
TXD
RXD
RTS
CTS
DSR
DTR
DCD
RI/CLK
TXT/GPIO.0
RXT/GPIO.1
SUSPEND
SUSPEND
RS485/GPIO.2
WAKEUP/GPIO.3
GPIO.4
GPIO.5
GPIO.6
CHREN
CHR0
CHR1
NC
GND
GND
R12 1kR
R11 100kR
USB_TXD
USB_RXD

SW4 BOOT
BOOT0
R17 100kR
PPS_BOOT1
R21 3.9kR
GPS_PPS
Q4 AO3400

LED_RED
R26 1kR
D3 Red
LED_GREEN
R27 1kR
D4 Green
BUZZER_P
R28 1kR
LS1 Buzzer-Passive

VCC
R35 100kR
VBAT_SENSE
R36 100kR
C22 100nF

+3V3
A2 E22-400M22S
GND
ANT
NSS
SCK
MOSI
MISO
NRST
BUSY
DIO1
VCC
DIO2
RXEN
TXEN
LoRa SX126x
RF_CS
RF_SCK
RF_MOSI
RF_MISO
RF_RESET
RF_BUSY
RF_IRQ
TP14
TP16
TP18
C25 47uF
C26 100nF
ANT
J12 Amphenol 132289

Populate if USB is only used (no BLE, no MUX)
R18 0R
R19 0R
USB_RXD
USB_TXD
CONSOLE_TXD
CONSOLE_RXD

Populate for automatic control of the BLE sleep mode (experimental)
R24 0R
MUX_BLE_USB
BLE_WKP_SLP

Populate if BLE is only used (no USB, no MUX)
R33 0R
R34 0R
CONSOLE_TXD
CONSOLE_RXD
BLE_RXD
BLE_TXD

+3V3
C31 10uF
C32 100nF
U7 LSM303DLHC
VDD_IO
SCL
SDA
INT2
INT1
C1
GND
VDD
SETC
SETP
RES_(GND)
RES_(GND)
DRDY
RES_(NC)
I2C_SCL
I2C_SDA
I2C_INT
TP13
TP15
TP17
R39 3.9kR
R40 3.9kR
C28 4.7uF
C33 220nF

VBUS
+BATT
J5 USB+
J6 USB-
GND
U2 TP4056
TEMP
PROG
GND
VCC
CE
CHRG
STDBY
BAT
EXPOSED_PAD
D2 Red
R10 1kR
C1 10uF
R4 3.9kR
C5 10uF

VDD
+3V3
R13 100kR
C11 100nF
TP2
TP3
U5 74HC4052PW
1Z
2Z
S0
S1
E
VEE
GND
VDD
1Y0
1Y1
1Y2
1Y3
2Y0
2Y1
2Y2
2Y3
CONSOLE_TXD
CONSOLE_RXD
MUX_BLE_USB
BLE_RXD
USB_RXD
BLE_TXD
USB_TXD
R14 100kR
MUX_BLE_USB
Low - BLE
High - USB (default)

+3V3
TP4
TP5
TP6
R25 1kR
R29 100kR
R31 100kR
R32 100kR
BLE_TXD
BLE_RXD
BLE_WKP_SLP
A1 E104-BT5005A
UART-BLE
TXD
RXD
WAKEUP/SLEEP
MODE
DATA
DISC
nRESET
GND
VCC
NC
NC
SWDIO
SWDCLK
LINK
GND
TP7
TP8
TP9
TP10
TP11
TP12
R30 100kR
C21 100nF
C23 100nF
C24 47uF

H1 MountingHole
H2 MountingHole
H3 MountingHole
H4 MountingHole

https://github.com/FeruzTopalov
Sheet: /
File: Spoke.kicad_sch
Title: LRNS SPOKE
Size: A2
Date: 2025-09-20
Rev: 2.0
KiCad E.D.A. 9.0.4
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