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

FB circuit should be populated with proper resistive voltage divider in case if LM3671MF-ADJ is used

Populate this driver if backlight LED pins (Anode and Cathode) are directly available

GPS Module

Populate one of the suggested modules:

1) Module with wires: populate G10A-F30 or a different GPS module with wires

2) SMD module: populate TU10-F. The additional VBKP circuit with supercapacitor ensures hot/warm start of the module. If not populated - only cold start is possible.

Schematic Part A - USB-UART Converter (optional)

R_PROG [kOhm]	Charging Current [mA]
10	130
5	250
4	300
3	400
2	580
1.66	690
1.5	780
1.33	900
1.2	1000

Passive Buzzer

If Piezo: Populate resistor only
If Magnetic: Populate diode only

Part A populated:	- Spoke can be programmed via USB and STM32 UART bootloader without a need of a programmer. This is actual even for the very first programming. - Spoke console with live navigational data is available to a PC via USB. - Other Spoke devices can be programmed via this USB-UART converter if connected by wires to it. - Additionally, configuration of GPS receiver and BLE module are possible by accessing their UART pins at the MCU console pins after appropriate MUX channel switching. - If the Part B is not populated, then Multeplexer IC is not needed and can be depopulated. Populate 0 Ohm jumpers between UART lines for console and USB.
Part B populated:	- Spoke console with live navigational data is available in your smartphone over BLE. This is planned to be used for Spoke Map application and for Spoke remote control/configuration. - If part A is not populated, then Multeplexer IC is not needed and can be depopulated. Populate 0 Ohm jumpers between UART lines for console and BLE.

Populate if USB is only used (no BLE, no MUX)

Populate if BLE is only used (no USB, no MUX)

Multiplexer (optional) - populate only if both Part A and Part B are populated

MUX_BLE_USB
Low - BLE
High - USB (default)

Schematic Part B - BLE-UART bridge (optional)

Accelerometer/Magnetometer (optional) - populate if you need eCompass function

GPS CONFIG MODE
1) Full Erase MCU
2) Pull MUX S1 high
3) Access GPS TX line at CONSOLE_RXD (see pin header)
3) Access GPS RX line at CONSOLE_TXD (see pin header)
4) Optionally, jumper wire them to USB TX/RX pin header to access via USB-UART

BLE-UART CONFIG MODE
1) Full Erase MCU
2) Pull MUX_BLE_USB low
3) Access BLE TX line at CONSOLE_RXD (see pin header)
3) Access BLE RX line at CONSOLE_TXD (see pin header)
4) Optionally, jumper wire to USB TX/RX pin header to access via USB-UART

For 433 MHz band populate E22-400M22S
For 868/915 MHz band populate E22-900M22S

https://github.com/FeruzTopalov

Sheet: /
File: Spoke.kicad_sch

Title: LRNS SPOKE

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