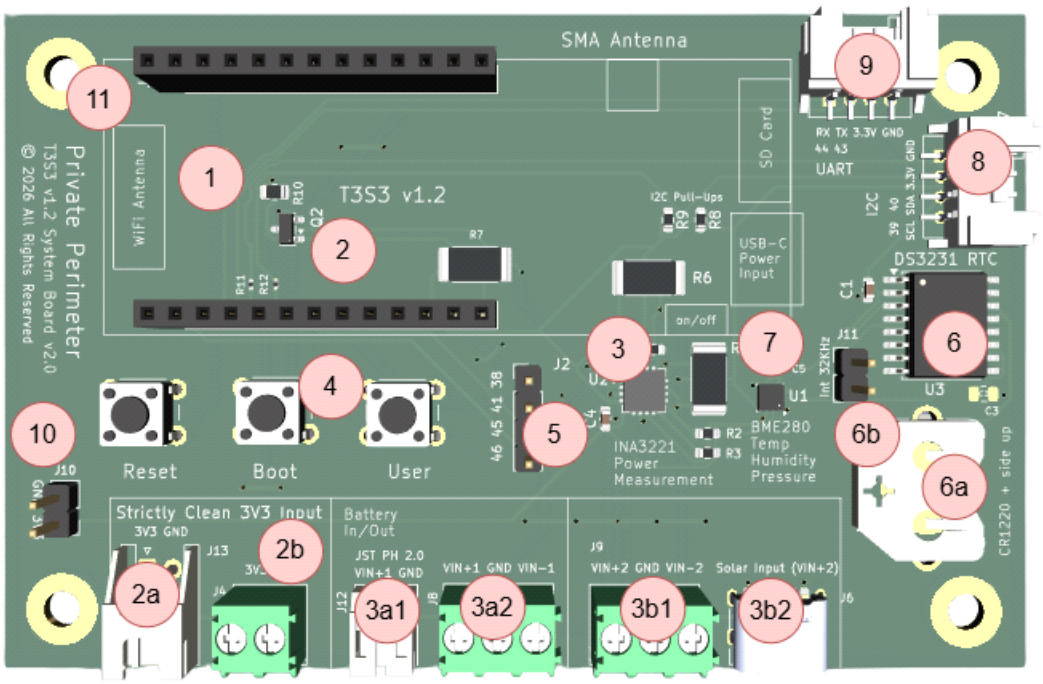
T3S3 Expansion Module Annotated



1. Socket for the T3S3 v1.2 module (not included) with USB port facing right and SMA antenna port facing up.
2. Reverse protection circuit and diode to be able to plug in both the T3S3 USB port and the system power simultaneously.
    - 2a: JST XH port to accept a clean 3.3 Volt signal from a BMS.
    - 2a: Terminal block port to accept a clean 3.3 Volt signal from a BMS.
3. INA3221 three port power sensor
    - 3a1: JST PH 2.0 port to accept a typical 18650 battery holder connector
    - 3a2: Terminal block to accept battery input VIN+1 and output battery power VIN-1
    - 3b1: Terminal block to accept solar panel input VIN+2 and output solar power VIN-2
    - Note: VIN+3 and VIN-3 is internally routed to measure the system power
4. Three user buttons for convenience
    - Reset: same as the real system reset button
    - Boot: same as the real system boot button
    - User: tied internally to the spare GPIO42 for user functions as desired
5. Dupont pins tied to GPIO 38, 41, 45, 46 for expansion use as desired
6. DS3231 genuine Analog Devices Real Time Clock with TCXO
    - 6a: Battery holder for a CR1220 (not included) for up to 10 years of backup
    - 6b: breakout pins for an alarm interrupt and 32KHz signal (optionally jumper the interrupt to an input signal)
7. BME280 environment sensor (temperature, pressure, humidity)
8. I2C expansion port Grove compatible: RX=GPIO44, TX=GPIO43, 3V3, GND, with pullups
9. UART expansion port Grove compatible: SCL=GPIO39, SDA=GPIO40, 3V3, GND
10. Dupont pins for extra connection to 3V3 and GND
    - Input power reverse polarity protection
    - Diode so that you can plug in to the processor USB-C without disconnecting the main power
11. M3 mounting holes

All pins are clearly marked on the board for ease of use.
Circuit includes a solid ground plane, capacitors, pull-up resistors, and signal rounding resistors which are handy for potential FCC compliance.