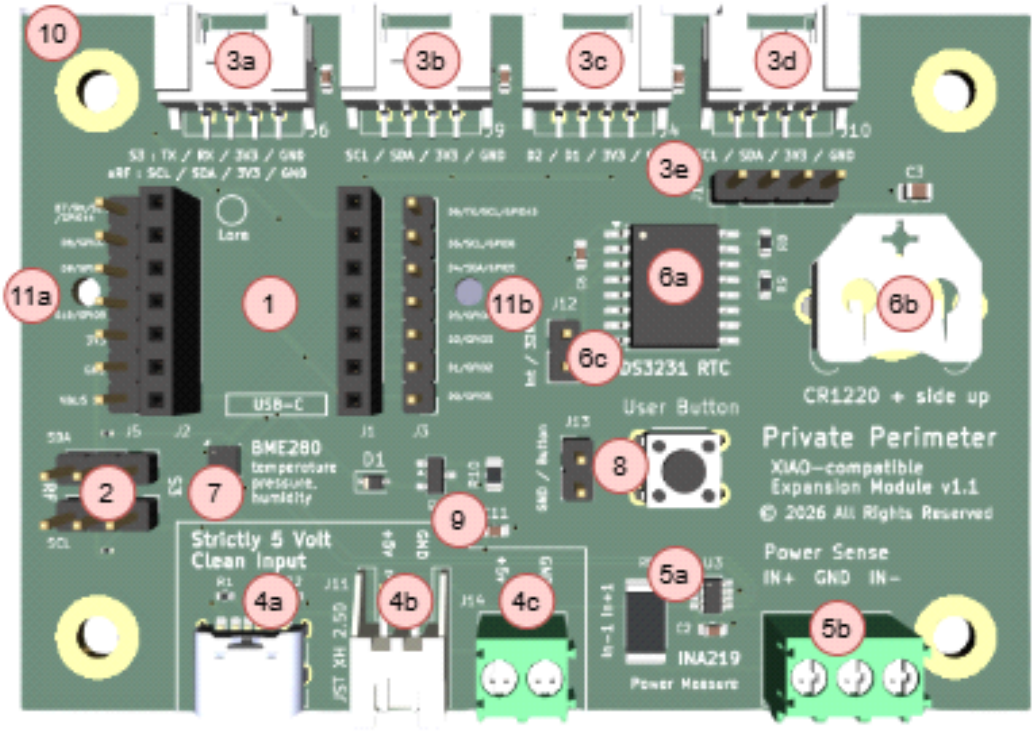


1. Socket for the XIAO module (not included) with USB port facing down. Dupont pins next to each signal for monitoring or jumpering to individual signals.
2. Two rows of jumpers to select processor type:
    LEFT = nRF52840
    RIGHT = ESP32S3
3. Expansion connectors
    3a: Grove connector, depends on jumper setting
        ESP32S3 = additional serial port
        nRF52840 = additional I2C port
    3b: I2C Port (Grove connector)
    3c: Extra ports: D0, D1 and power (Grove connector)
    3d: I2C Port (Grove connector)
    3e: I2C port (Dupont pins)
    Common uses:
    - Plug in a Seeed Studio grove OLED display (requires enabling in the code)
    - Use the serial port for an addition debug console port when USB is not available such as
    - when making power saving measurements.
    - Adding extra I2C sensors or use D0,D1 for powering or monitoring devices
4. 5 Volt Power Input from a Battery Management System (BMS) with 3 ways to input power
    4a: USB-C power only input (use the processor USB-C for firmware update)
    4b: JST-XH
    4c: terminal block
5. Power Sensor (for battery or solar panel measurement)
    5a: INA219 with 1W 1% 0.1 ohm shunt resistor, (~3Amps - up to 3 18650's or a 12V solar panel)
    5b: terminal block for VIN+, GND, VIN-
6. Real Time Clock

6a: DS3231 genuine Analog Devices with TCXO

6b: Battery holder for a CR1220 (not included) for up to 10 years of backup

6c: 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. General purpose user button. jumper it to an available input signal to have an extra user input
9. Protection circuits

    Input power reverse polarity protection

    Diode so that you can plug in to the processor USB-C without disconnecting the main power
10. M3 mounting holes
11. Holes for adding a 3D bracket (available) or a zip tie to secure the XIAO module in harsh environments

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.