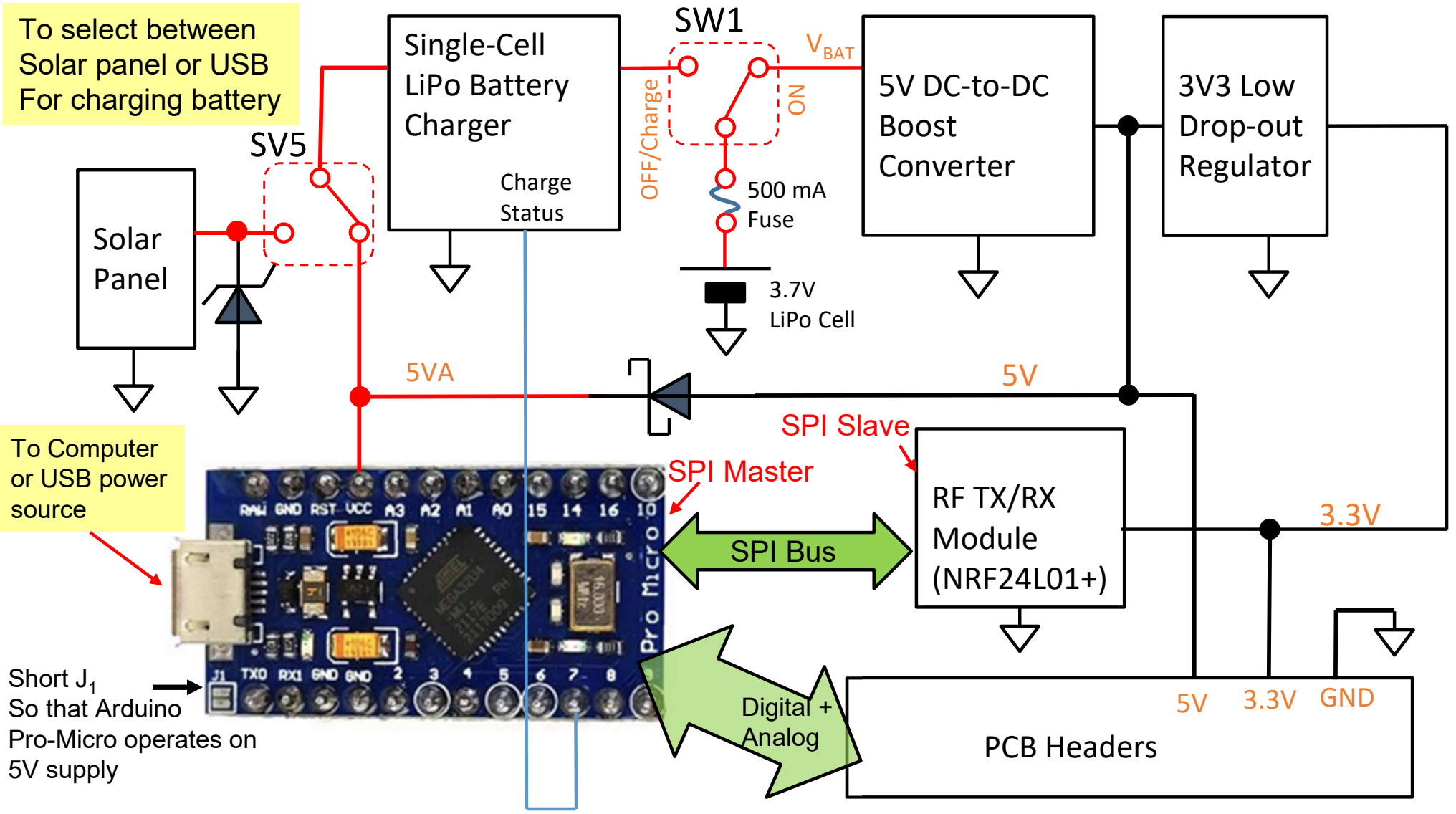
FOE SENSOR NODE

Version 0.99 (Initial Release)

QUICK START GUIDE (REV A0)

Simplified Block Diagram (V0.90 and V0.99)



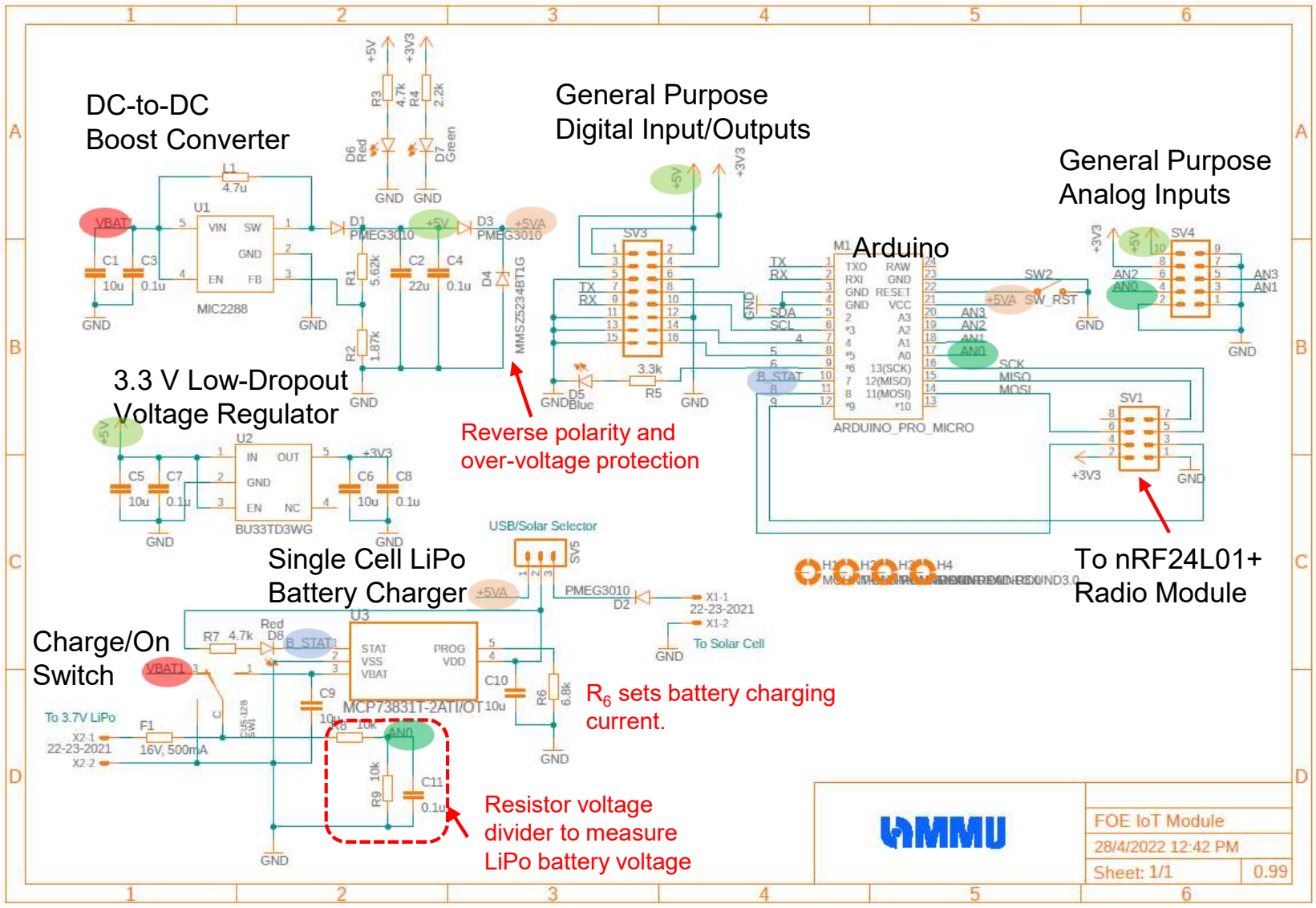
Features

- Arduino based (Arduino Pro-Micro).
- Low power, 3.0 to 5.0 V input voltage to power the device.
- 4 Analog and 5 digital I/O pins, with 5V and 3.3V supply for interfacing with various sensors.
- Secure 2.4 GHz RF link between sensor nodes and a Master node cum Internet gateway (10-20m).
- Rechargeable lithium polymer (LiPo) battery, battery can be charged via micro-USB receptable or optional solar panel.

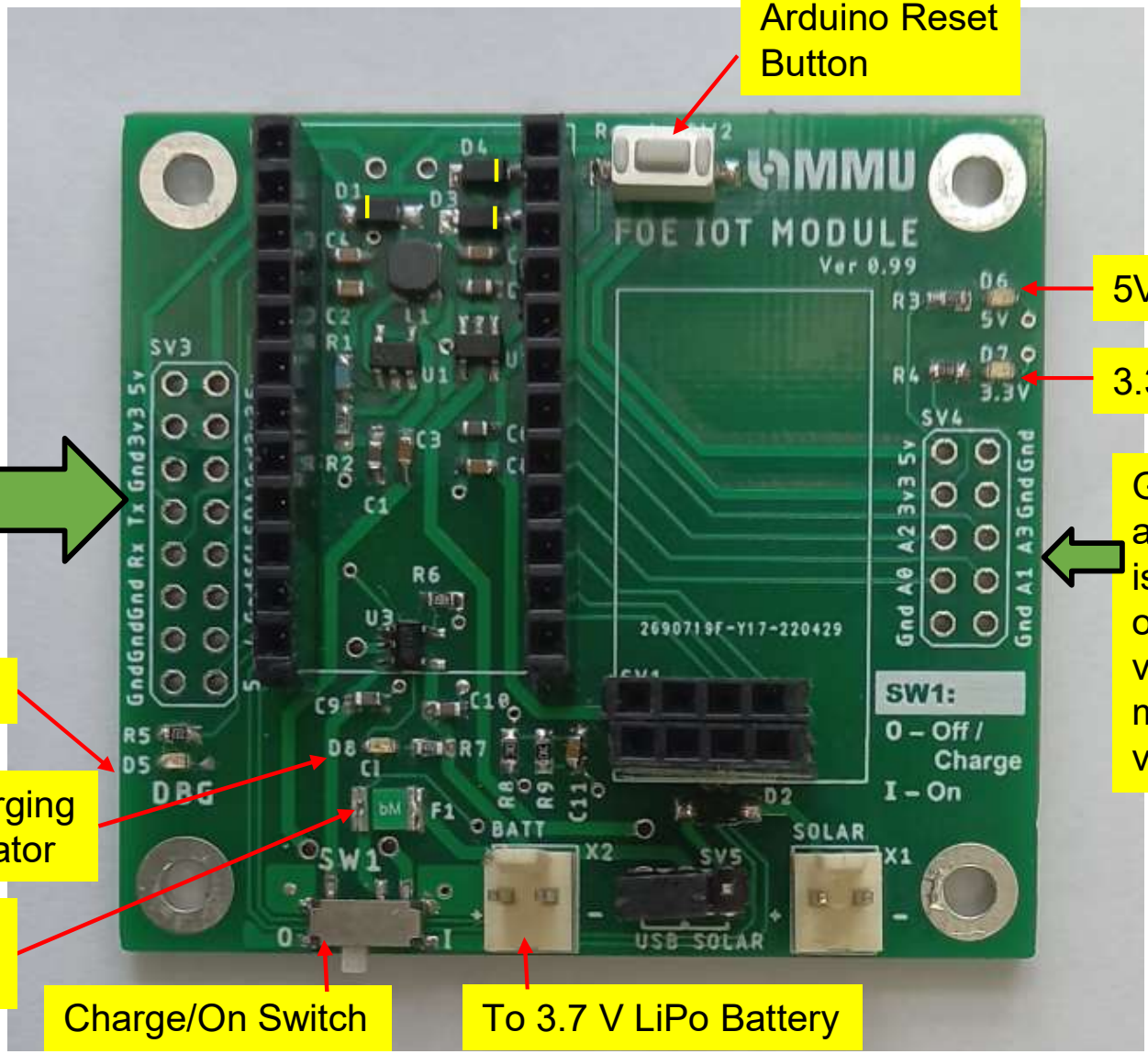
Specifications

- **Main Controller**: Arduino Pro-Micro.
- **Wireless Module**: NRF24L01+ digital radio, 0.0 dBm EIRP with 2 Mbps data rate using GMSK modulation, 2.400-2.4835 GHz ISM band.
- **Analog input pins rating**: 0-5V.
- **Digital input/output pins**: 0-5V, 25 mA source/sink.
- **Battery**: Rechargeable 3.7V LiPo cell, 100 - 1500 mAH.
- **Charging options**: Micro-USB port or Solar Panel.
- **Indicators**: Debug LED, 5V supply LED, 3.3V supply LED.
- **Dimensions**: 55 x 50 x 20 mm

Detailed Schematic



A Fully-Assembled Board



Arduino Reset Button

5V Supply Indicator

3.3V Supply Indicator

General purpose digital Input/Outputs

General purpose analog Inputs (A0 is connected to on-board resistive voltage divider to measure battery voltage)

Debug LED

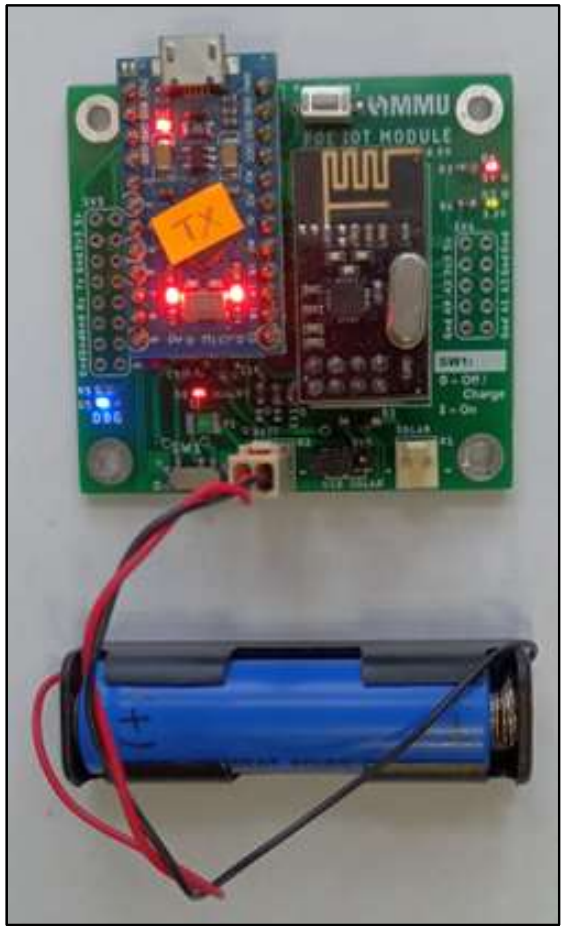
Battery Charging Status Indicator

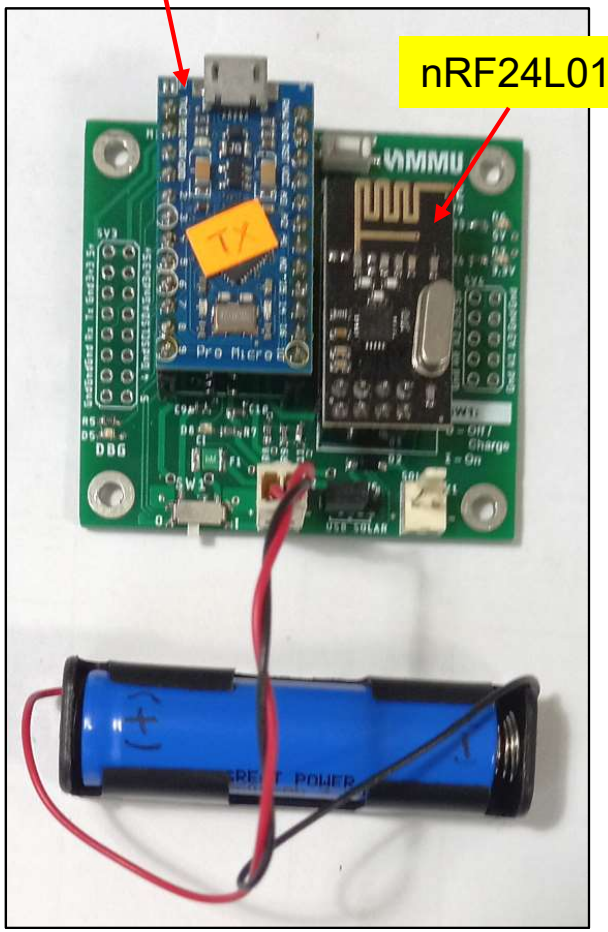
Overload Protection Fuse

Charge/On Switch

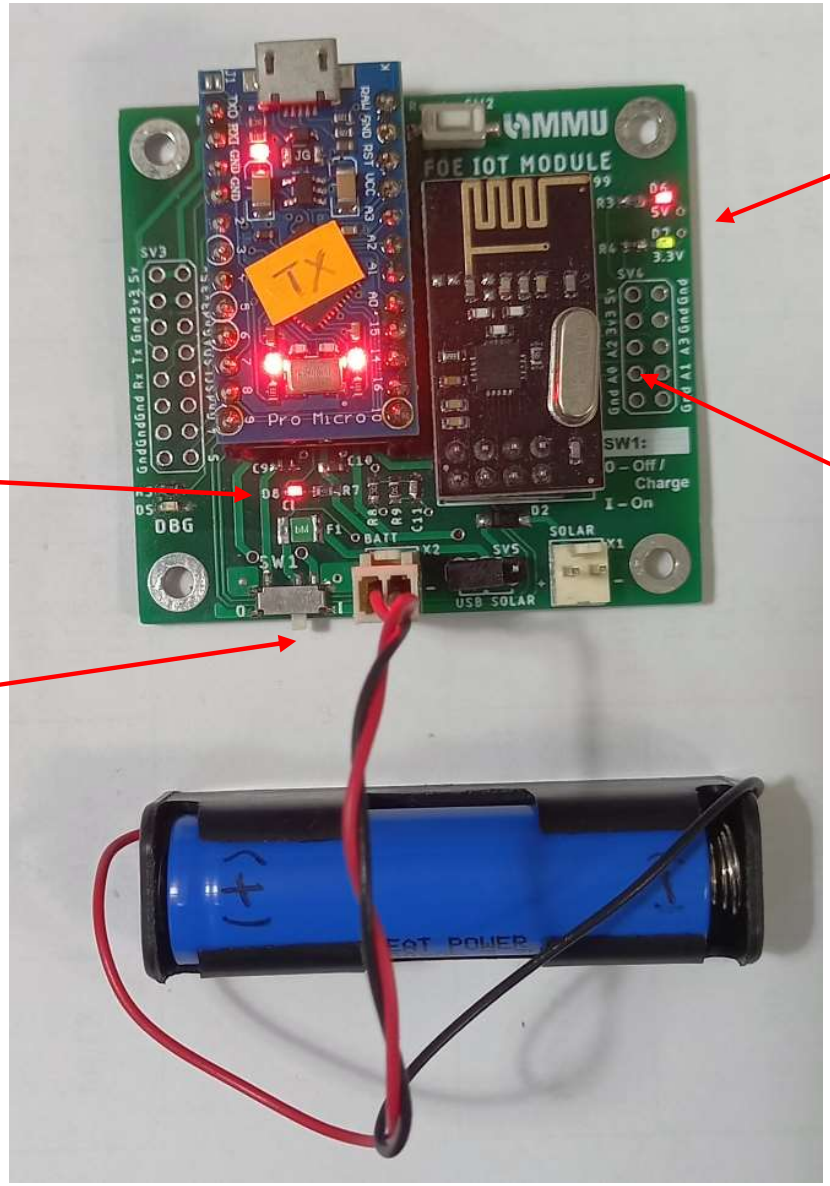
To 3.7 V LiPo Battery

Fully Assembled Board with Arduino Pro-Micro and nRF24L01+ Radio Module Inserted





Normal Operation (On)



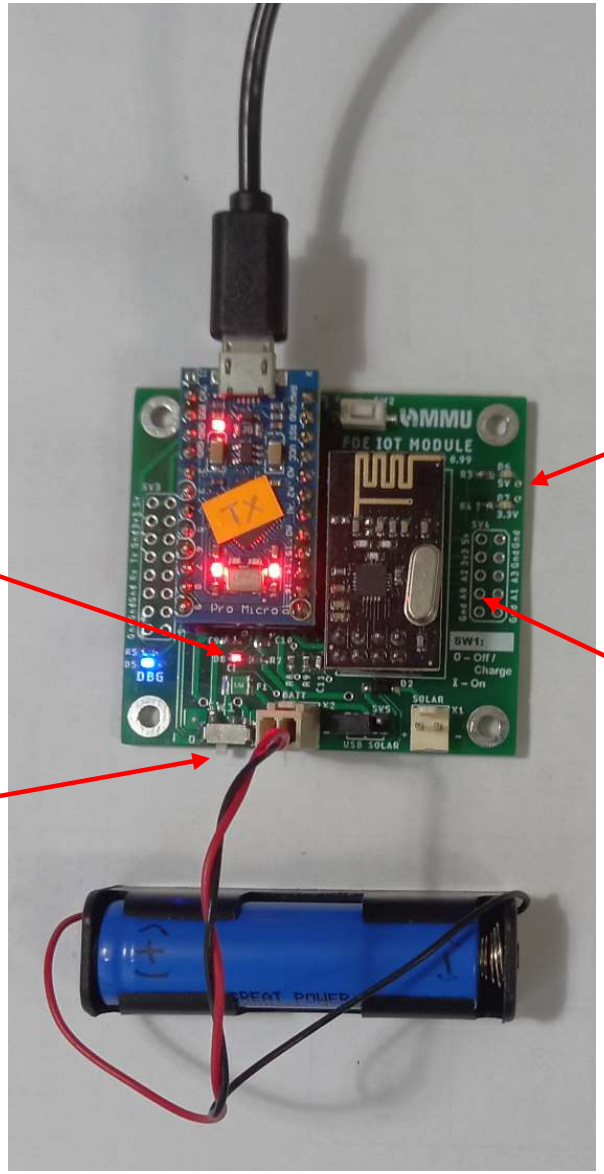
Both supply indicator LEDs should light up

Can ignore battery charging status Indicator during normal operation

SW1 to ‘On’ position

Analog pin A0 indicates battery Voltage level via a divide-by-2 Resistor network.
For example if battery voltage is 3.7 V, pin A0 voltage should be 1.85 V.

Charging LiPo Battery Via USB Port



Battery
charging status
Indicator will lights up
during charging and
turned off when fully
Charged
(Max charging current is
200 mA)

SW1 to ‘Off/Charge’
position

Both supply indicator
LEDs should not light up

Analog pin A0 indicates battery
Voltage level via a divide-by-2
Resistor network.
For example if battery voltage is 3.7 V, pin A0 voltage should be 1.85 V.

APPENDIX