

Repeaters

Here you will find all the information needed to get into building repeater infrastructure.

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Repeater Choice

Recommended choices

Repeater Choice

Things to avoid

Repeater Builds

If choosing a prebuilt repeater isn't for you, then you can get community advice on custom builds [here](#).

Recommended choices

Things to avoid

Shawn's cheap build V1

This cheap build is the first version of a series of very cheap but complete repeaters I put together.

It contains the following:

- 22\$ Seeed XIAO nRF52840 & Wio SX1262 Kit (black module)
- 16\$ Enclosure
- 8\$ 5V Solar Panel
- 5\$ 5dBi Antenna and SMA cable
- 1.5\$ MPPT solar battery charger (blue module)
- 0.5\$ 1S BMS battery protector (green module)

The only thing missing in the price was the variable shipping price for the XIAO specifically (10\$ divided by the number ordered) and the cost of the lithium cell but I got that 21700 (3Ah) out of a Dyson battery pack I found in the trash (one cell was open circuit). ((And yes, the antenna is wrapped in electrical tape for UV protection and to waterproof it's 5\$ indoor design))



This is the parts list for my now 49\$ Repeater Build

- 16.5\$ Seeed XIAO nRF52840 & Wio SX1262 Kit (black module)
<https://www.aliexpress.com/item/1005010599348765.html>
- 17\$ Enclosure
<https://www.amazon.ca/dp/B08KY7VK8W>
- 8.5\$ 5V Solar Panel
<https://www.aliexpress.com/item/1005008932865297.html>
- 5\$ 5dBi Antenna and SMA cable
<https://www.aliexpress.com/item/1005008668004468.html>
- 1.5\$ MPPT solar battery charger (blue module)
<https://www.aliexpress.com/item/1005007205313935.html>
- 0.5\$ 1S BMS battery protector (green module)
<https://www.aliexpress.com/item/1005007629849009.html>
- Use this antenna if you want an upgrade
<https://www.aliexpress.com/item/1005004607615001.html>
- Use this if you prefer an ESP32-S3 with an external bluetooth antenna but higher power consumption
<https://www.aliexpress.com/item/1005008094638318.html>

1) The Xiao has an integrated li-ion battery charger, it limited to 0.1A, that's slow AF, so I bought a 1.5\$ MPPT solar li-ion battery charger that can charge at a potential current of 1A and the MPPT part of it should track the best charge current to avoid collapsing the solar panel voltage in theory. So that helps make use of the full potential of a "larger" solar panel.

2) A Li-ion raw cell battery needs a battery protector, it must not be charged over 4.2V and discharged under 2.5V. This 0.5\$ BMS protects the battery against overcharge at $4.25 \pm 0.05V$ and overdischarge detection at $2.54 \pm 0.1V$, plus it has overcurrent detection over 3A, and will disconnect the battery under any of those scenarios.

Plug the battery + to the BMS B+

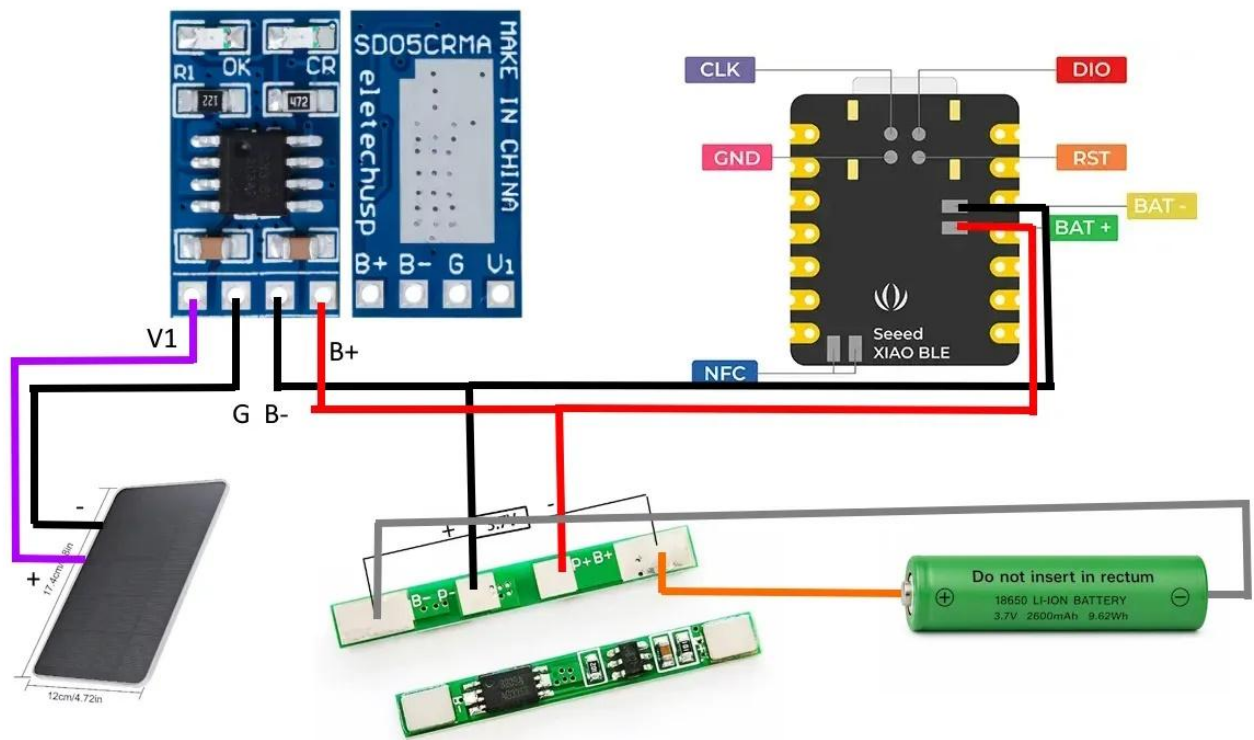
Plug the battery - to the BMS B-

Plug the MPPT Vi to the 5V Solar panel +

Plug the MPPT G to the 5V Solar panel -

Plug the BMS P+ to both the MPPT B+, and the XIAO BAT + (small pads under the nRF board)

Plug the BMS P- to both the MPPT B-, and the XIAO BAT -



Cheap build V1.2, second iteration:

Addition:

0.54\$ Waterproof Nylon Vent Plug (for humidity control)

<https://www.aliexpress.com/item/1005006370919409.html>

0.27\$ Mini Push Button Switch (to disconnect battery during storage)

<https://www.aliexpress.com/item/10000000767509.html>

9.99\$ Gizont 915MHz 40cm antenna (for improved range)

<https://www.aliexpress.com/item/1005007121522456.html>

