DIY vs Pre-built Kits

You can build a Meshtastic repeater from scratch or purchase a pre-built kit. The right choice depends on your budget, technical skills, and time available.

DIY builds

Building from components gives you full control over every aspect of the hardware and can be lower cost if you have relevant skills or existing parts.

Core components needed

- **LoRa board** - ESP32 or nRF52-based board with SX1262 or similar radio ($20 - $40). Must support 915 MHz and have an external antenna connector.
- **Antenna** - quality 915 MHz external antenna ($5 - $20 for omni, more for high-gain)
- **Weatherproof enclosure** - IP65-rated box with cable glands ($10 - $20)
- **Power system** - LiFePO4 battery, solar panel (if remote), charge controller

Note on compliance: the FCC certification of a LoRa module can be tied to specific antenna gains. When you pair a board with your own external antenna, you remain responsible for staying within Part 15 conducted-power limits and the 6 dBi antenna-gain reduction rule (47 CFR 15.247(b)(4)) - for every dB of antenna gain above 6 dBi you must reduce conducted power by the same amount. Use the firmware's region setting to cap power, and reduce conducted power for any antenna over 6 dBi.

Challenges

- Reliable weatherproofing requires attention to detail - water ingress through cable glands or enclosure seals is the most common failure mode
- Power system sizing requires calculation to ensure adequate runtime through cloudy periods
- Soldering may be required depending on the board and power connections

Pre-built kits

Several manufacturers offer kits designed for easy Meshtastic deployment. These trade customization for convenience: weatherproofing is engineered from the factory, power systems are pre-integrated, and setup is primarily software.

Advantages

- Engineered weatherproofing - no DIY enclosure work required
- Integrated power system - battery, solar, and charge controller in one unit
- Faster time to deployment
- Known-good hardware compatibility with Meshtastic firmware

Disadvantages

- Higher upfront cost ($60 - $150+)
- Limited hardware customization

Which to choose

Factor	DIY	Kit
Cost	Lower potential, more variable	Higher, more predictable
Setup time	Significant	Minimal
Technical skill needed	Moderate to high	Low
Customization	Full control	Limited
Weatherproofing reliability	Skill-dependent	Generally good to excellent

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