Estimated Time to Build One Sensor Box

Mechanical fabrication, assembly, electrical soldering/assembly and software upload

Overview

Building a complete sensor box from start to finish takes approximately **6.5 to 7 hours**, assuming smooth workflow and no major delays. The time varies slightly depending on tool access, part availability, and operator familiarity. Batch processing improves efficiency, but the following estimates reflect a single unit build.

Breakdown by Stage

1. Machine Shop Time – Approx. 3.0 Hours

This includes:

- Drilling, tapping, and milling operations
- Setup and operation of machinery for a single back plate

Note: In batch production (e.g., 50 boxes), setup time is reduced, significantly reducing per-box time.

2. Hardware Assembly – Approx. 1.5 Hours

- Mounting internal and external brackets
- Aligning components like the sound sensor bracket
- Following hardware checklist and performing mechanical checks

3. Electronics Assembly and Testing – Approx. 2 to 2.5 Hours

- Soldering all electronic components
- Functional testing of connections and signal paths
- Cable routing and management

Total Estimated Time

- **Machine shop work:** 3.0 hrs
- **Mechanical assembly:** 1.5 hrs
- **Electronics + testing:** 2.5 hrs (upper bound)

Total Time: 7 hours per sensor box

Note: These times assume all tools and parts are readily available and no troubleshooting is needed. Time efficiency improves significantly during batch production, especially during machining.