

Mondy Psychological Healing Robot - Hardware Production Specification

1. Structure and Appearance

- Overall Shape: Humanoid design without legs, suitable for fixed placement on a desk or inside a "mental rest cabin."

The head is round with an alien-like friendly image, giving a sense of kindness. The body uses smooth curves to reduce sharp edges, ensuring child safety.

- Posture: Natural standing posture facing forward to maintain eye contact with children sitting opposite.
- Usage Scenario: Mainly deployed in school psychological counseling rooms and rest cabins. Designed for desktop placement, no mobility required.

2. Suggested Dimensions

- Height: ~450 mm (sitting robot height)
- Width: ~300 mm (maximum width including arms)
- Depth: ~250 mm (maximum depth from head to back)
- Display Screen: Embedded OLED display (~5 inch), placed horizontally in the center of the face.

3. Materials and Surface Treatment

- Shell: ABS engineering plastic (flame-retardant, non-toxic, drop resistant).
- Edges: Flexible TPU coating at joints (arms, chin, screen edges) for better touch and safety.
- Surface: Matte UV spray coating for anti-glare and skin-friendly finish. Nano coating for fingerprint and stain resistance.
- Screen Protection: Tempered glass or explosion-proof acrylic.

4. Color Design

- Main Tone: Neutral white or soft grey to create calmness.
- Details: Arm outlines indicated with subtle lines.
- Screen Style: Expressions use dark background with bright dynamic graphics.

5. Expression and Motion Interaction

- Face Display: OLED screen supporting dynamic expressions (happy, thoughtful, comforting, surprised).
- Expressions triggered by JSON instructions from app output.
- Arm Motion: Driven by micro servos. Supports simple gestures (open arms, slight waving). Triggered by voice interaction, not continuous for energy efficiency.

6. Audio and Voice Interaction

- Microphones: 2 front-facing with noise suppression, pickup range 1-2 m.
- Speaker: 1W stereo speaker with clear, soft output for indoor use.
- Voice Activation: Custom wake words ("Hello Mondy"), local keyword recognition, advanced recognition via cloud.

7. Main Control and Connectivity

- Controller: AI module with edge computing and OTA support (e.g., RK3566 or ESP32 + codec).
- Connectivity: Wi-Fi 2.4 GHz (auto or QR code pairing), optional BLE.
- Protocols: VolcRTC for audio/video, WebSocket/MQTT for control commands (play sound, set expression, arm motion).

- Interface: JSON command format with APIs like playSound(id), setExpression(type), setArmMotion(mode).

8. Maintenance and Expansion

- OTA firmware upgrade via cloud.
- Heartbeat Report: Every 30s reports status (online, battery, Wi-Fi strength).
- Error logs and diagnostics reporting.
- Maintenance Port: Micro-USB/Type-C for debugging and log export.

9. Power and Stability

- Battery: 5000 mAh Li-ion battery, USB Type-C 5V/2A charging.
- Runtime: ≥ 4 h active dialogue, ≥ 8 h standby.
- Base: Weighted with anti-slip pads or magnetic base for stability.