

**Dimensions/Weight**

- Height: 103 cm (3.5 feet)
- Weight: 12.5 kg (27.5 pounds)

**Software**

- Android OS
- Full SDK
- Content Editor to easily create content and new activities – drag/drop along a timeline
- Remote control with telepresence
- Will run most standard Android Apps through the chest mounted display

**Connectivity**

- WiFi
- Bluetooth
- Fully cloud connected

**CPU/Memory**

- Rockchip 3288
- 1.8GHz Quad core
- 4GB RAM
- 32GB ROM
- 7 MCUs at various locations to control motors, sensors, etc.
- Allwinner R16 So (ARM) to control the microphone array

**Motors (degrees of freedom)**

- 14/24 motors depending on the model
- For the 24 motor model, 10 motors in each arm -- two at shoulder, two at elbow, one at wrist, one for each finger
- 2 motors in the neck to move head side-to-side and up-down
- 2 motors in base for locomotion
- 14 motors are 12V DC, while the 10 motors for the fingers are 3V DC.
- The 14 12V DC motors have magnetic encoders to measure angles

**Batteries (2 options)**

- A small battery that gives approximately 4 hours of continuous usage
- A large battery that gives approximately 8-10 hours of continuous usage

**Standard Software**

- Conversational speech dialog, natural language understanding, Text to Speech
- Detection of sound direction, detection of emotion, question and answer

- Face recognition, Object tracking and following, Maze-running
- Learning capability to adapt behavior to improve interactions with its environment – for example, learns the preferences and habits of its host family
- Obstacle collision avoidance
- Remote Control by tablet in the same WiFi
- Numerous entertainment applications (songs, stories, dances, etc.) and educational applications (for teaching English, math, science, technology, etc.)
- Software to manage, update, and enhance content
- High level content editor to enable non-programmers to develop robot content combining media (like a song), robot motions, expressions, etc.
- Emotion Recognition and Response

**Microphones (optional configurations)**

- 5 in head, oriented to enable sound direction detection
- 1 in chest

**Sensors**

- 3 infrared sensors for short range object detection
- 5 ultrasound sensors for longer range object detection
- 5 touch sensors on skin

**Chest Display**

- 6 inch screen

**Miscellaneous**

- iPal app store for new apps, education and entertainment content, upgrades, and related products
- Robust modular design, easy to replace parts
- Assembly line designed for production of thousands of units per month
- Can select different color highlights for iPal and other customizations
- No gaps in robot to catch or pinch fingers
- Batteries in base to lower center of gravity and make tipping over unlikely
- Sensors work all the time, so iPal avoids obstacles and moves only when safe
- Outer skin made of non-toxic ABS material
- Tested for collisions, impacts, etc.