Yahboom Nuwa-HP60C

Yahboom ROS Depth Camera Nuwa-HP60C Instruction Manual

Model: Nuwa-HP60C

Brand: Yahboom

1. Product Overview

The Yahboom ROS Depth Camera Nuwa-HP60C is an advanced 3D vision solution designed for robotics and AI development. It utilizes structured light 3D imaging to provide high-precision depth maps, enabling robust mapping, navigation, and obstacle avoidance for robots in indoor environments. This camera is compatible with a wide range of development platforms and supports both ROS1 and ROS2 systems.

Key Features:

- **3D Visual Technology:** Employs structured light 3D imaging for high-precision depth maps within a 0.2 to 4-meter range, ideal for depth modeling, visual mapping, and navigation.
- **High-Performance Depth Computing:** Features a built-in depth computing chip for efficient obstacle avoidance, reducing reliance on external processing resources.
- **AI Function Support:** Integrates with various AI functions including OpenCV, AR vision, gesture control, and motion capture, suitable for diverse human-computer interaction scenarios.
- **Wide Compatibility:** Supports Raspberry Pi, NVIDIA Jetson series controllers, PCs, and industrial personal computers, as well as ROS, Raspberry Pi, JETSON series, and RDK series robots.
- **Comprehensive Information:** Provides SDKs for ROS1/ROS2 systems, facilitating robot and 3D vision development. Available as a standalone depth camera or with an adjustable bracket.

2. Package Contents

Please verify that all items are present and in good condition upon unpacking.

- Yahboom ROS Depth Camera Nuwa-HP60C
- Adjustable Bracket (if purchased with bracket option)
- USB Type-C 2.0 Cable
- Mounting Screws and Nuts

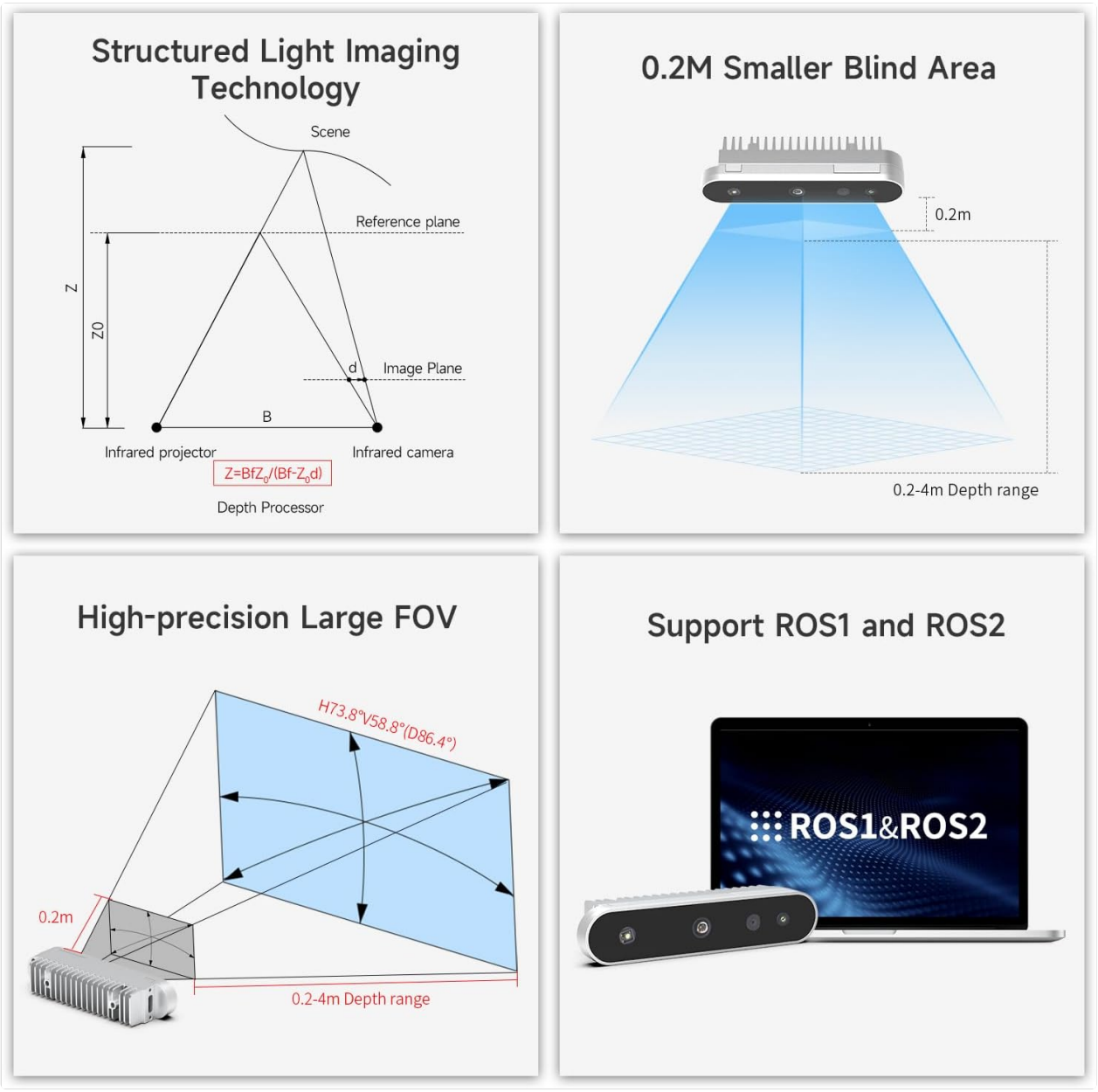

Image: The Yahboom Nuwa-HP60C Depth Camera, including the camera unit, adjustable bracket, USB cable, and mounting hardware.

3. Setup

3.1 Assembling the Adjustable Bracket (if applicable)

If your package includes the adjustable bracket, follow these steps to assemble it and attach the Nuwa-HP60C Depth Camera.

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Video: This video demonstrates the assembly process for a camera acrylic case, which can be used as a general guide for assembling similar camera brackets. It shows how to fit the camera module into the case and secure it with screws.

Step 1: Carefully remove the protective film from all acrylic bracket pieces.
Step 2: Align the camera module with the designated slots on the bracket pieces. Ensure the ribbon cable is correctly positioned.
Step 3: Secure the camera module within the bracket using the provided screws and nuts. Do not overtighten.
Step 4: Attach the assembled camera and bracket to your robot platform or desired mounting point using the appropriate hardware.

Image: The Nuwa-HP60C Depth Camera is shown mounted on a robot chassis with an adjustable bracket, illustrating its 120-degree range of motion (Up 30°, Down 90°).

3.2 Connecting the Camera

Connect the Nuwa-HP60C Depth Camera to your host device (Raspberry Pi, Jetson, PC, etc.) using the provided USB Type-C 2.0 cable. Ensure a secure connection.

4. Operating Instructions

4.1 Software Installation and SDK Usage

To utilize the full capabilities of the Nuwa-HP60C, you will need to install the appropriate SDKs and development environments for your chosen platform (ROS1/ROS2, Raspberry Pi, Jetson, PC).

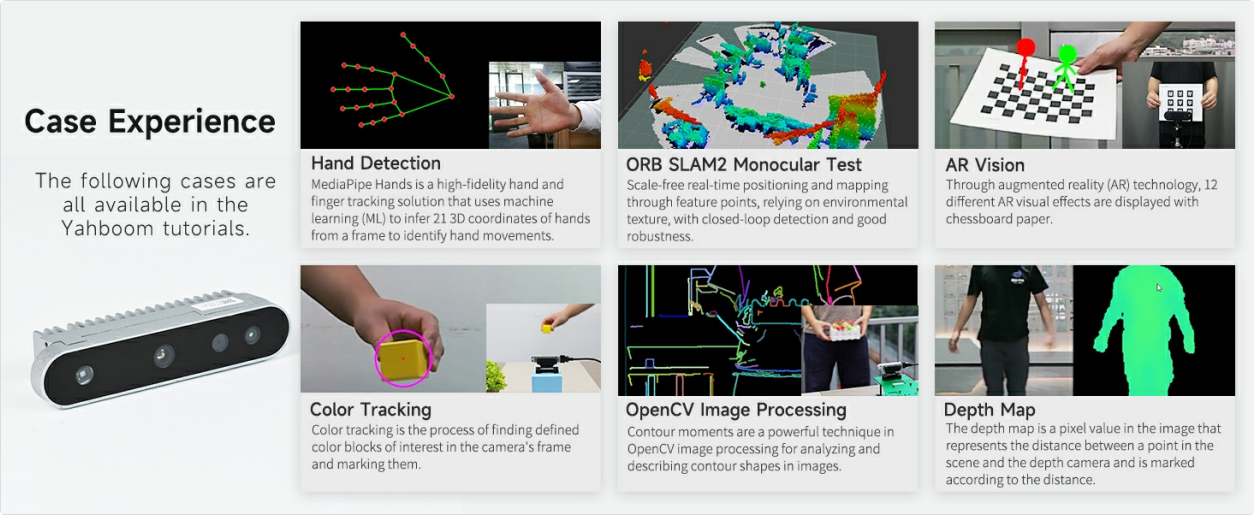

Image: The SDK provides a multi-platform (Windows/Linux) software development kit for secondary development, offering access to depth/RGB data, hardware settings, sensor control, frame synchronization, and various algorithm capabilities.

Refer to the official Yahboom documentation and tutorials for detailed installation guides specific to your operating system and development board. The SDK provides functionalities such as:

- Access to Depth/RGB and other sensor information.
- Configuration of hardware settings.
- Frame synchronization and alignment control.
- Filtering and advanced algorithm capabilities.
- Support for different systems (Windows/Linux).

4.2 3D Vision and AI Applications

The Nuwa-HP60C camera is designed to support various 3D vision and AI applications. Its structured light imaging technology provides accurate depth data for tasks such as:

- **3D Visual Mapping:** Create detailed 3D maps of indoor environments for robot navigation.
- **Obstacle Avoidance:** Detect and avoid obstacles in real-time using high-performance depth computing.
- **AI Functions:** Implement applications like hand detection, ORB SLAM2 monocular test, AR vision, color tracking, OpenCV image processing, and depth map generation.

Image: Various case experiences demonstrating the camera's capabilities, including hand detection, ORB SLAM2 monocular testing, AR vision, color tracking, OpenCV image processing, and depth map visualization.

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Video: This video showcases the Robify 3D Depth Camera Astra Pro, demonstrating its adjustable angle, humanoid robot vision capabilities, and real-time obstacle avoidance for fast-moving objects. It highlights the camera's use in robotics research, AI vision, and SLAM applications.

5. Specifications

Feature	Detail
Brand Name	Yahboom
Model Name	Nuwa-HP60C
Item Model Number	Depth Camera+Adjust Bracket
Special Features	Advanced 3D Depth Measurement and Modeling
Photo Sensor Technology	Other
Video Capture Resolution	640p
Flash Memory Type	Internal flash memory

Feature	Detail
Video Capture Format	AVI
Connectivity Technology	USB
Camcorder Type	Video Camera
Depth Range	0.2 to 4 meters
Field of View (FOV)	73.8° (Horizontal) x 58.8° (Vertical) x 86.4° (Diagonal)
Dimensions (Camera)	89.8mm x 25mm x 19mm
Power Consumption	< 2W
Interface	USB 2.0 Type-C
Working Temperature	10°C to 50°C
Storage Temperature	-50°C to 80°C
Power Supply Method	USB
RGB Image Resolution/Frame Rate	640x480@20fps (Recommended: 640x480@20fps, 640x480@20fps)
Development Platform	Windows, Linux

6. Maintenance

To ensure optimal performance and longevity of your Yahboom ROS Depth Camera Nuwa-HP60C, follow these general maintenance guidelines:

- **Cleaning:** Gently wipe the camera lenses and body with a soft, dry, lint-free cloth. Avoid using abrasive cleaners or solvents that could damage the surfaces.
- **Storage:** When not in use, store the camera in a cool, dry place away from direct sunlight and extreme temperatures. Use the original packaging or a protective case to prevent dust accumulation and physical damage.
- **Cable Care:** Avoid bending or twisting the USB cable excessively. Always grasp the connector, not the cable, when plugging or unplugging.
- **Software Updates:** Regularly check the official Yahboom website for firmware and SDK updates to benefit from improved performance, new features, and bug fixes.

7. Troubleshooting

This section provides solutions to common issues you might encounter with your Nuwa-HP60C Depth

Camera. For more complex problems, refer to the official Yahboom support resources.

- **Camera Not Detected:**
  - Ensure the USB cable is securely connected to both the camera and the host device.
  - Try connecting to a different USB port on your host device.
  - Verify that the necessary drivers and SDKs are correctly installed for your operating system.
  - Restart your host device.
- **No Depth Data/Incorrect Readings:**
  - Check for any obstructions in front of the camera's sensors.
  - Ensure the camera is within its optimal depth range (0.2 to 4 meters) for the objects being scanned.
  - Avoid strong direct light sources or highly reflective surfaces that can interfere with structured light imaging.
  - Confirm that the camera's firmware is up to date.
- **Software Crashes/Freezes:**
  - Ensure your host device meets the minimum system requirements for the SDK and applications.
  - Close other demanding applications running in the background.
  - Reinstall the SDK or relevant software components.

8. Warranty and Support

For warranty information, technical support, or further assistance, please refer to the official Yahboom website or contact their customer service directly. Keep your purchase receipt as proof of purchase for warranty claims.