

Walfront HBVCAM-F20216HD V22

Walfront USB Camera Module HBVCAM-F20216HD V22 User Manual

Model: HBVCAM-F20216HD V22

1. INTRODUCTION

The Walfront HBVCAM-F20216HD V22 is a compact and versatile USB camera module designed for various applications requiring high-definition video capture. It features a 2-megapixel sensor, 1080P resolution, a 92-degree wide-angle lens, and manual focus capabilities. Its plug-and-play design with UVC protocol support ensures broad compatibility across multiple operating systems, making it suitable for industrial, educational, and DIY projects.

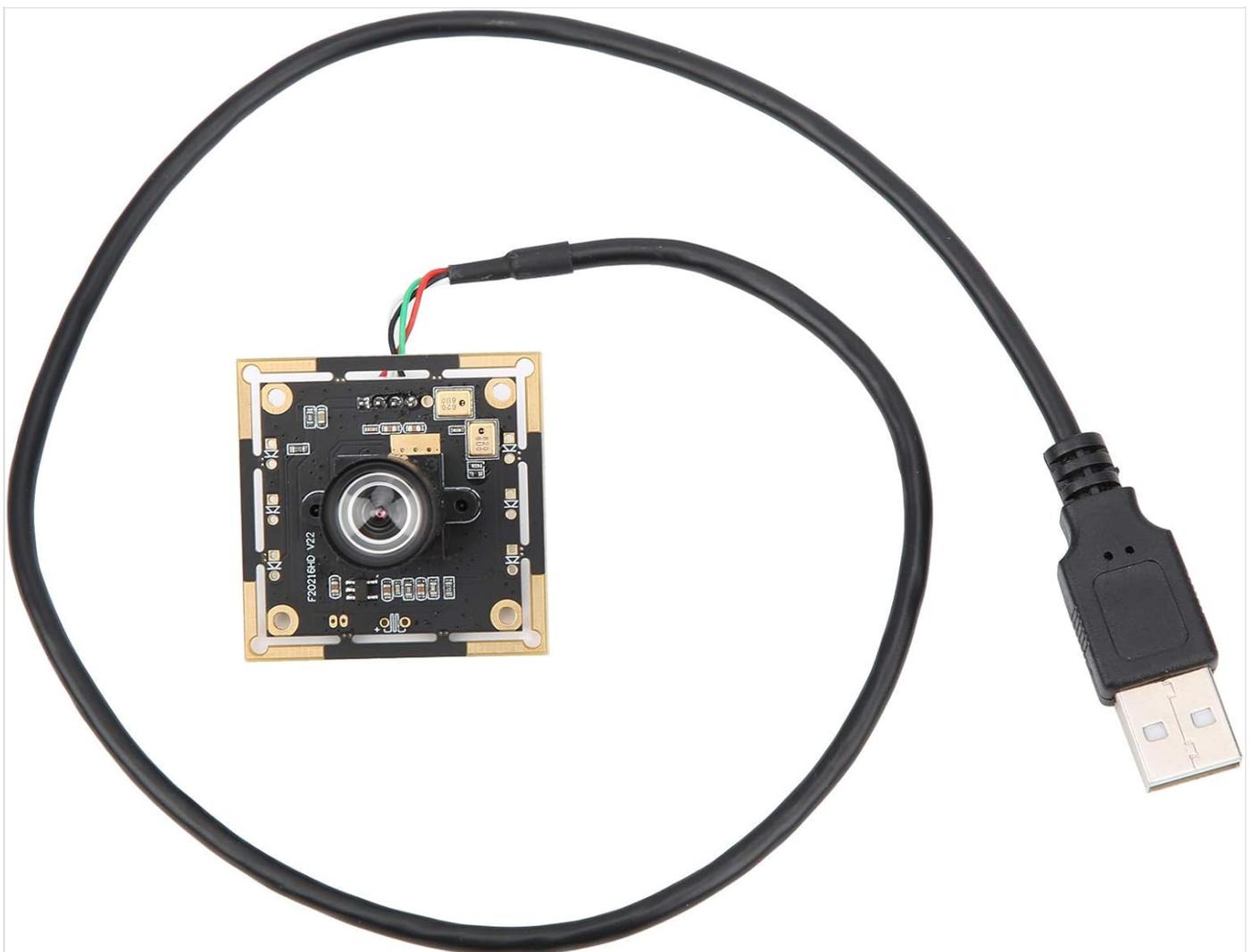


Figure 1.1: Top view of the Walfront HBVCAM-F20216HD V22 USB Camera Module, showing the lens and attached USB cable.

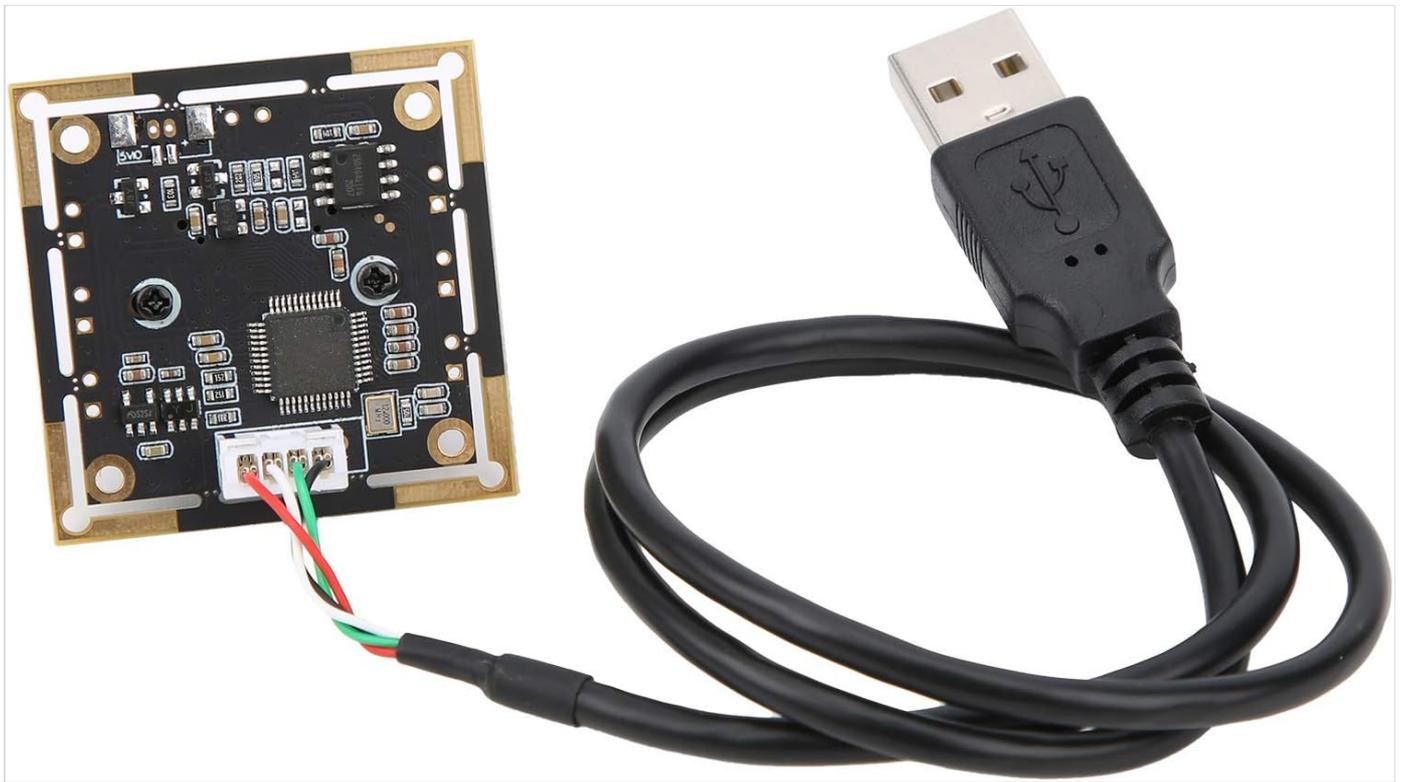


Figure 1.2: Bottom view of the Walfront HBVCAM-F20216HD V22 USB Camera Module, showing the circuit board and connector for the USB cable.

2. FEATURES

- **High Resolution:** Supports 1920 x 1080P and 640 x 480 at 30 frames per second (MJPG format) for clear video capture.
- **Manual Focus:** Equipped with a twisted lens for precise manual focus adjustment, allowing for sharp images at various distances.
- **Wide Angle Lens:** Features a 92-degree wide-angle lens with a 3.5mm focal length, providing an expansive field of view.
- **Integrated Microphone:** Includes a built-in microphone for audio capture alongside video.
- **Broad Compatibility:** Plug-and-play functionality with standard UVC protocol support, compatible with WinXP, Win7, Win8, Win10, OS X, Linux, and Android operating systems.
- **Infrared Fill Light Support:** Capable of accessing infrared fill light for enhanced night vision and clearer images in low-light conditions.
- **Compact Design:** Small dimensions (approx. 38 x 38 x 24 mm / 1.5 x 1.5 x 0.9 inches) make it suitable for integration into various projects.
- **Durable Sensor:** Utilizes an F22 high-definition photosensitive chip for stable and reliable performance.



Figure 2.1: Close-up view of the camera module's lens, highlighting its manual focus ring.

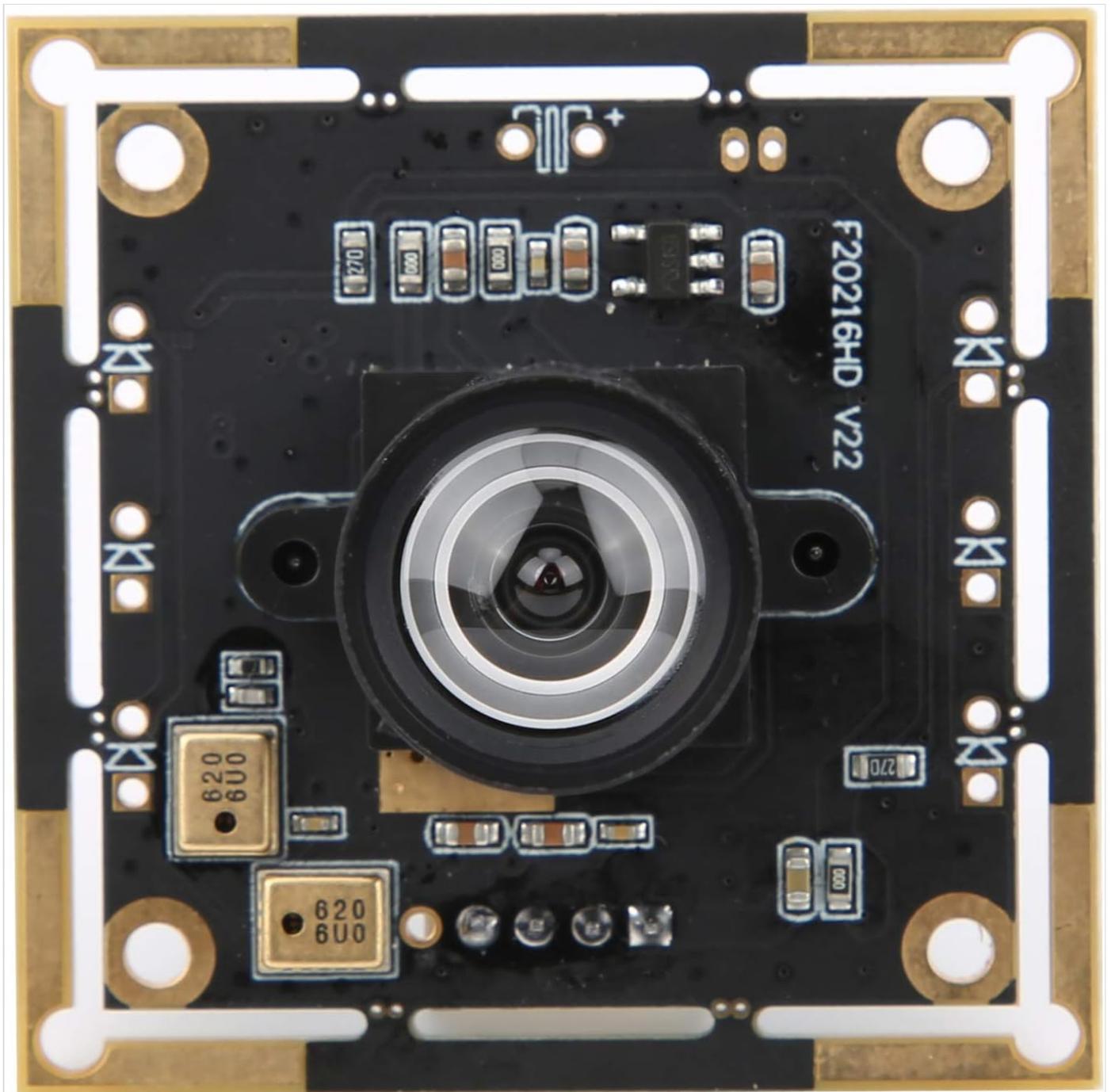


Figure 2.2: Frontal view of the Walfront camera module, showing the lens and mounting holes.

3. SPECIFICATIONS

Specification	Value
Brand	Walfront
Model	HBVCAM-F20216HD V22
Resolution	1920 x 1080P / 640 x 480 (30F MJPG)
Focus Mode	Manual Focus (Twisted Lens)
Field of View (FOV)	92°
Focal Length	3.5 mm

Specification	Value
Photosensitive Chip	F22 HD Sensor
Connectivity Technology	USB, Infrared
Interface	USB (Driver-free, UVC Protocol)
Built-in Microphone	Yes
Dimensions (L x W x H)	Approx. 38 x 38 x 24 mm (1.5 x 1.5 x 0.9 inches)
Cable Length	Approx. 40 cm (15.7 inches)
Compatible OS	WinXP, Win7, Win8, Win10, OS X, Linux, Android
Effective Still Resolution	2 Megapixels

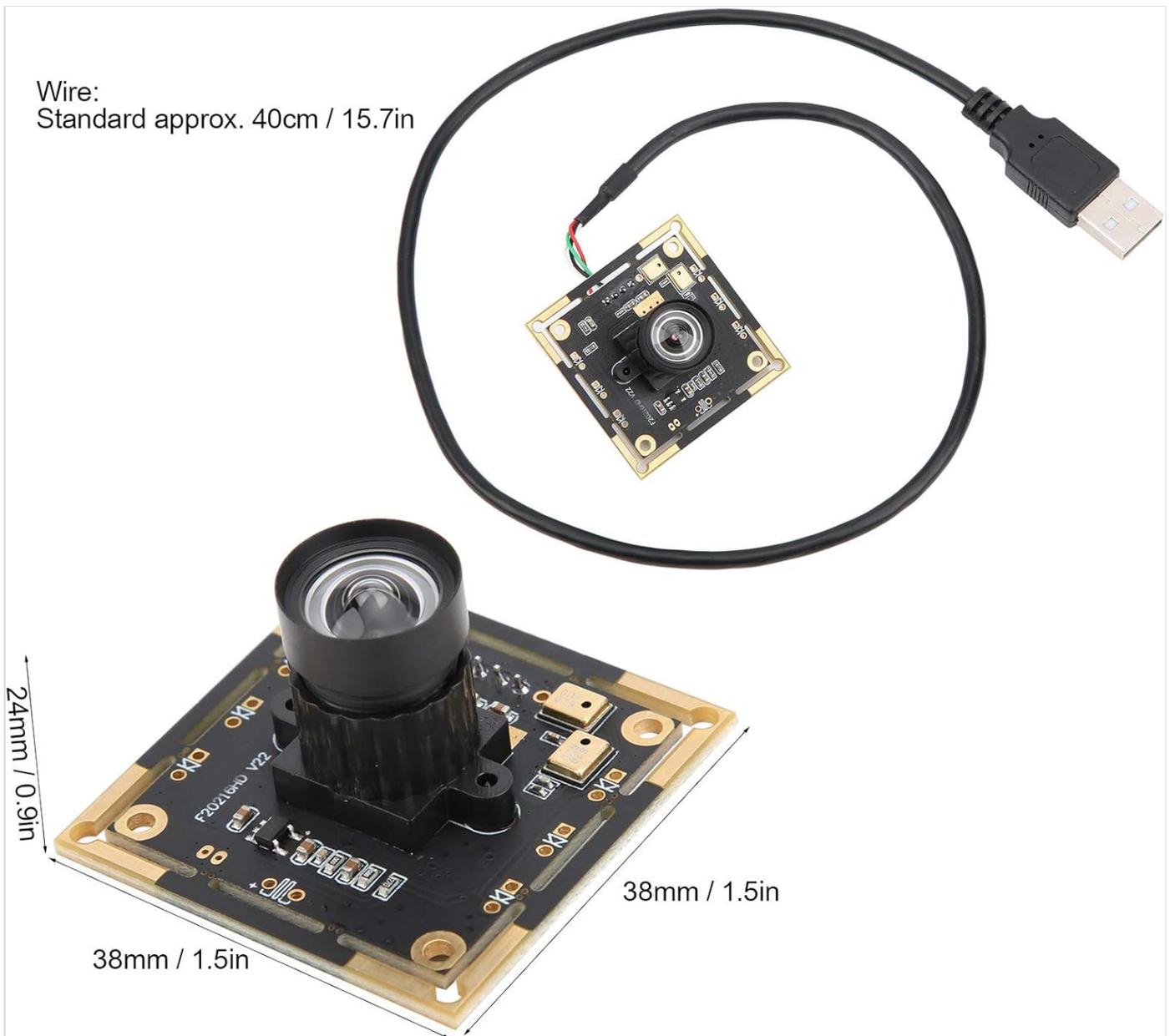


Figure 3.1: Diagram showing the dimensions of the Walfont HBVCAM-F20216HD V22 camera module and its cable length.

4. SETUP

1. **Unpack the Module:** Carefully remove the camera module and its USB cable from the packaging.
2. **Connect to Device:** Plug the USB connector of the camera module into an available USB port on your computer, embedded system, or compatible device.
3. **Driver Installation (Automatic):** The module supports the standard UVC (USB Video Class) protocol, meaning it is typically plug-and-play. Your operating system (Windows, macOS, Linux, Android) should automatically detect and install the necessary drivers without manual intervention.
4. **Verify Detection:**
 - **Windows:** Open Device Manager and check under "Cameras" or "Imaging devices" for the detected camera.
 - **macOS:** Open "System Information" (under "About This Mac" > "System Report") and navigate to "USB" to see if the camera is listed.
 - **Linux:** Use commands like `lsusb` to verify USB device detection and `v4l2-ctl --list-devices` to check for video devices.
5. **Positioning:** Mount or position the camera module in your desired location, ensuring it has a clear view of the area you wish to monitor or capture.

5. OPERATING INSTRUCTIONS

5.1 Basic Operation

1. **Access Camera Feed:** Use a compatible camera application or software on your connected device to access the live video feed from the module. Examples include:
 - **Windows:** Built-in Camera app, OBS Studio, VLC Media Player.
 - **macOS:** Photo Booth, QuickTime Player (File > New Movie Recording), OBS Studio.
 - **Linux:** Cheese, OBS Studio, VLC Media Player.
 - **Android:** Various third-party USB camera apps available on the Play Store.
2. **Adjust Focus:** The camera features a manual focus lens. Gently twist the lens barrel clockwise or counter-clockwise until the image appears sharp and clear at your desired distance.
3. **Capture Images/Video:** Within your chosen camera application, use the provided controls to capture still images or record video.

5.2 Advanced Usage (Examples)

The Walfront camera module is highly adaptable for various projects and environments:

- **Industrial Monitoring:** Integrate into machinery or production lines for quality control or process monitoring.
- **Security Systems:** Use as a component in custom surveillance setups, especially with its infrared fill light compatibility for night vision.
- **Robotics:** Provide visual input for robotic projects, enabling navigation or object detection.
- **DIY Projects:** Ideal for hobbyists building custom camera systems, dashcams, or other embedded vision applications.



2MP HD lens
HD sensor chip F22
92° wide angle, larger viewing range
Support access to infrared fill light

Figure 5.1: The camera module shown in an outdoor industrial environment, demonstrating its potential for monitoring access points.



Figure 5.2: The camera module depicted with a drone in the background, illustrating its use in aerial or mobile vision systems.



Figure 5.3: The camera module shown in an indoor setting, suggesting its application in home or office surveillance.

6. MAINTENANCE

- **Cleaning the Lens:** Use a soft, lint-free cloth specifically designed for optics to gently wipe the lens if it becomes dusty or smudged. Avoid abrasive materials or harsh chemicals.
- **General Cleaning:** For the module body, use a dry, soft cloth to remove dust. Do not use liquid cleaners directly on the module.
- **Storage:** When not in use, store the camera module in a clean, dry, and dust-free environment, away from extreme temperatures and direct sunlight.
- **Handle with Care:** The camera module contains sensitive electronic components. Avoid dropping it or subjecting it to strong impacts.

7. TROUBLESHOOTING

Problem	Possible Cause	Solution
No image/Camera not detected	<ul style="list-style-type: none"> Loose USB connection Faulty USB port Driver issue Incompatible software 	<ul style="list-style-type: none"> Ensure USB cable is securely plugged into both the module and the device. Try a different USB port on your device. Restart your computer/device. Verify the camera is detected in Device Manager (Windows) or System Information (macOS/Linux). Try a different camera application.
Image is blurry/out of focus	<ul style="list-style-type: none"> Incorrect manual focus adjustment Lens is dirty 	<ul style="list-style-type: none"> Gently twist the lens barrel to adjust focus until the image is clear. Clean the lens with a soft, lint-free optical cloth.
Poor image quality/Low frame rate	<ul style="list-style-type: none"> Insufficient lighting USB bandwidth issues Software settings 	<ul style="list-style-type: none"> Ensure adequate lighting in the environment. Try connecting to a USB 3.0 port if available, or disconnect other high-bandwidth USB devices. Check your camera application's settings for resolution and frame rate options.
Infrared (IR) function not working	<ul style="list-style-type: none"> No external IR fill light connected Software not configured for IR 	<ul style="list-style-type: none"> Ensure an external infrared fill light is properly connected and powered, if you intend to use this feature. The module supports IR access but does not include an integrated IR illuminator. Check your camera software for any specific settings related to IR or low-light modes.

8. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation provided with your purchase or contact Walfront customer service directly. Details regarding specific warranty periods and support channels are typically available on the official Walfront website or through your point of purchase.

For further assistance, you may visit the Walfront brand store on Amazon: [Walfront Brand Store](#)

