**CADDXFPV Polar**

# Caddx Polar Vista Kit HD Starlight FPV Camera System
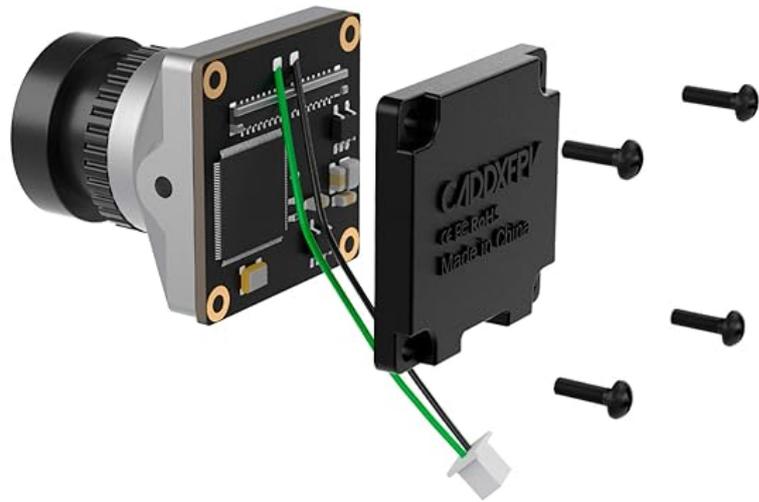
Model: Polar

## INTRODUCTION

This manual provides essential information for the proper installation, operation, and maintenance of your Caddx Polar Vista Kit HD Starlight FPV Camera System. Please read this manual thoroughly before using the product to ensure optimal performance and safety.

## PRODUCT OVERVIEW AND KEY FEATURES

The Caddx Polar Vista Kit is an advanced HD FPV camera system designed for drone racing and aerial photography, particularly excelling in low-light conditions. It integrates a high-definition camera with a Vista image transmission unit, offering a superior visual experience for pilots using DJI FPV Goggles.

- **Superior Night Vision:** Equipped with a 1/1.8-inch Starlight Sensor and F/1.6 Aperture, the Polar Camera provides clear images in extremely low light, making it ideal for night flights.

- **High-Definition Video:** Delivers 720P/60fps video quality when recorded with DJI FPV Goggles, ensuring detailed and smooth footage.

- **Low Latency Transmission:** Features low-latency HD image transmission, crucial for responsive FPV piloting.

- **Extended Range:** The system, combined with the 1.5g Polar antenna, can achieve a transmission distance of up to 10km, maintaining digital high-definition flight.

- **Multi-Drone Support:** Supports up to 8 drones flying simultaneously without interference.

- **Adjustable Power Output:** Users can select between 25mW, 200mW, 500mW, and 700mW power output settings via DJI Goggles.

## Support brightness and saturation adjustment



* Menu board needs to be purchased separately.
* Polar camera supports menu board adjustment,
  this function needs self–soldering, please be CAREFUL
  not to damage the camera structure during welding.

Figure 1: Overview of the Caddx Polar Vista Kit, showing the HD Digital Starlight Camera and the Vista unit.

## POLAR VISTA KIT
### HD Digital Starlight Camera



Figure 2: Visual comparison demonstrating the superior low-light capability of the Polar camera compared to a normal HD camera, highlighting individual pixel size of 5.5 μm.
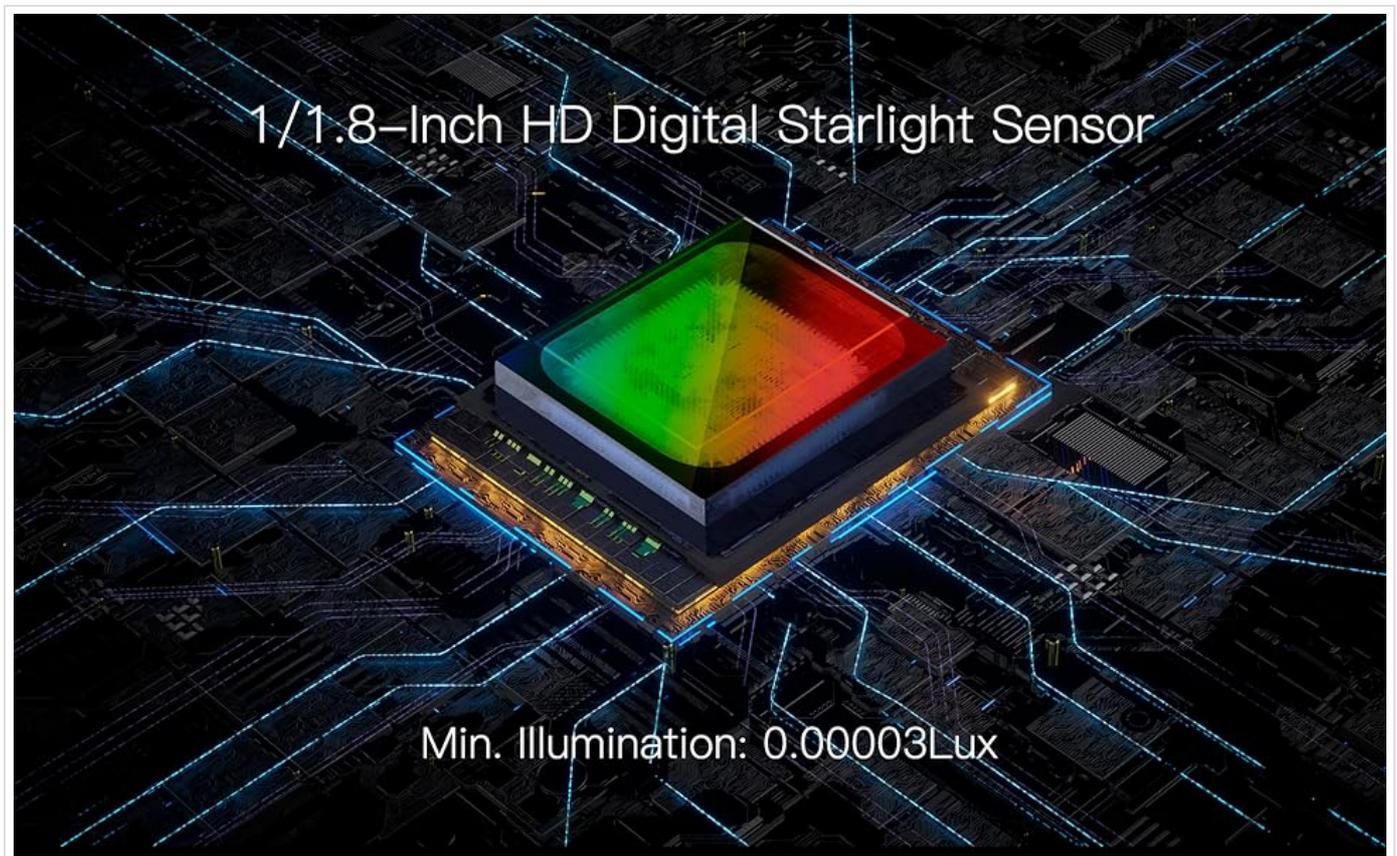
Figure 3: Diagram illustrating the 1/1.8-inch Starlight Sensor, capable of operating with minimal illumination down to 0.00003 Lux.



Figure 4: Details of the custom large aperture lens, featuring 800W pixels, a 162° Field of View (FOV), and an F/1.6 aperture for excellent image quality and true colors.
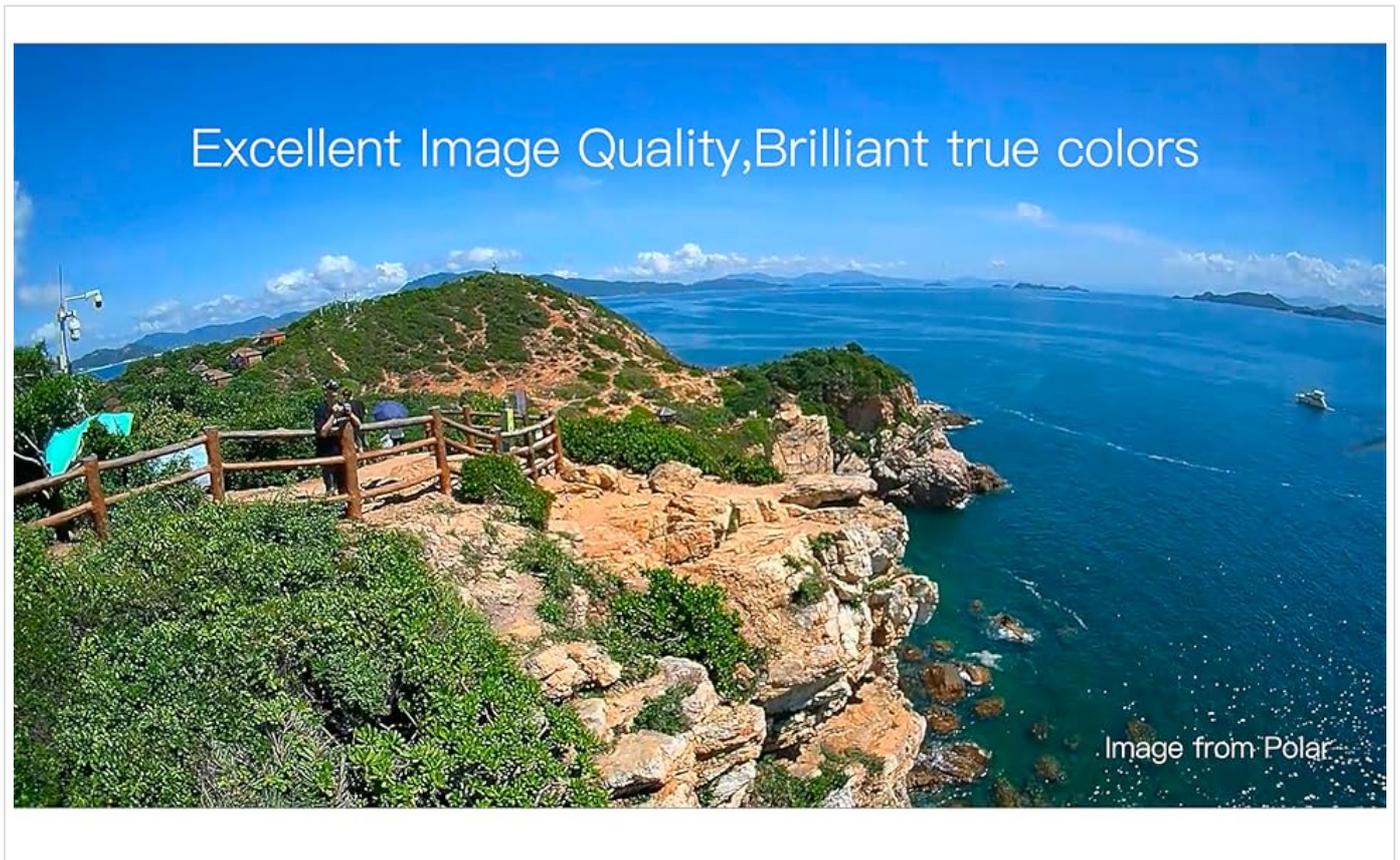
Figure 5: The new lightweight antenna, designed to provide a maximum range of up to 4 kilometers with a VSWR of less than 1.4 and 98% radiation efficiency.

## COMPONENTS AND PACKING LIST

The Caddx Polar Vista Kit includes the following components:

| Item | Quantity |
| --- | --- |
| Polar Vista Kit (Camera included) | 1 |
| M2 screws (3/4/5mm) | 2 |
| Gasket Ring | 4 |
| 3-in-1 cable | 1 |
| Menu cable | 1 |
| User manual | 1 |

The kit also includes a coaxial cable and antenna for the Vista unit.

## PRODUCT SPECIFICATIONS

| MODEL | Polar vista kit |
| --- | --- |
| Weight | Vista Kit(camera included): 28g<br>Antenna: 1.5g |
| Dimensions | Vista Kit: 30×29×13mm<br>Camera: 19×19×24mm<br>Coaxial Cable: 120mm |
| Operating Frequency | 5.725-5.850GHz |
| Transmitter Power(EIRP) | FCC/SRRC/MIC: <30dBm<br>CE: <14dBm |
| Min.latency(end-to-end) | 720p 60fps: <32ms |
| Max.Transmission Distance | FCC/SRRC: 4km;CE: 0.7km |
| I/O Interface | USB-C,IPEX,3-in-1port |
| Supported Flight control System | F3.F4.F7 |
| Operating Temperature Range | 32° to 104°F (0° to 40°C) |
| Input Power | 7.4-26.4V |
| Power Output | 25mW/200mW/500mW/700mW |
| Hardware Included | Polar vista kit /m2 screw/Gasket Ring<br>Menu cable/3-in-1 cable/coaxial-cable/antenna |

| Goggles | Work with DJI goggles |
| --- | --- |
| Camera | Sensor: 1/1.8" starlight cmos<br>Min. Illumination: 0.00003Lux<br>Lens: F/1.6 & 8 Mega<br>Shutter: Rolling shutter<br>ISO: 100-25600<br>FOV: 162°(D);138°(H);75°(V)<br>Aspect Ratio: 16:9 |

### Packing list

| | |
| --- | --- |
| Polar vista kit | ×1 |
| M2 screws 3/4/5mm | ×2 |
| Gasket Ring | ×4 |
| 3-in-1 cable | ×1 |
| Menu cable | ×1 |
| User manual | ×1 |

Figure 6: Detailed product specifications and the complete packing list for the Caddx Polar Vista Kit.

## SETUP AND INSTALLATION

This section outlines the general steps for installing your Caddx Polar Vista Kit onto an FPV drone. Specific installation may vary based on your drone frame and flight controller.

1. **Mount the Vista Unit:** Securely mount the Vista unit to your drone frame using appropriate screws and standoffs. Ensure proper airflow for cooling.

2. **Mount the Polar Camera:** Install the Polar camera in the designated camera mount on your drone. Connect the camera to the Vista unit using the provided coaxial cable.

3. **Connect Power and Data:** Use the 3-in-1 cable to connect the Vista unit to your flight controller for power and data (UART). Refer to your flight controller's manual for specific wiring diagrams. The input power range is 7.4-26.4V.

4. **Install Antenna:** Connect the Polar antenna to the Vista unit. Position the antenna to minimize obstruction and maximize signal range.

5. **Firmware Update (Optional):** Before first use, consider checking for and updating the firmware of both the Vista unit and your DJI FPV Goggles to the latest versions for optimal compatibility and performance.

6. **Binding:** Follow the DJI FPV System binding procedure to link your Vista unit with your DJI FPV Goggles.

**1/1.8 Inch**
Min.illumination: 0.00003Lux

**32ms/4km**
Low-latency HD image transmission

**720p/60fps**
Video recorded by the DJI FPV Goggles

**7 ms**
low latency transmission between the DJI FPV RC and vista

**8 Drones**
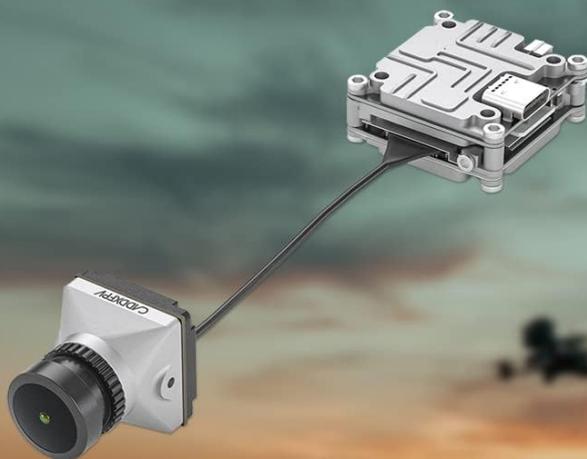drones can be flown simultaneously

**Max 50Mbps**
image quality for the DJI FPV Goggles

Figure 7: The Caddx Vista HD system, demonstrating its compact size and integration with DJI FPV Goggles. Power output settings (25mW/200mW/500mW/700mW) can be selected from DJI Goggles settings.



SMALL SIZE, BIG WORLD
Caddx vista HD system

User can choose 25mW/200mW/ 500mW /700mW from DJI goggles settings

## OPERATION

Once the Caddx Polar Vista Kit is installed and bound to your DJI FPV Goggles, you can begin operation.

1. **Power On:** Power on your FPV drone and DJI FPV Goggles. The video feed from the Polar camera should appear in your goggles.

2. **Adjust Settings:** Access the settings menu in your DJI FPV Goggles to adjust video transmission power (25mW/200mW/500mW/700mW) and other camera parameters.

3. **Brightness and Saturation:** The Polar camera supports brightness and saturation adjustment. Note that a menu board needs to be purchased separately for this function, and self-soldering may be required. Exercise caution to avoid damaging the camera structure during this process.

4. **Flight:** Enjoy your FPV flight, benefiting from the low-latency HD video and excellent low-light performance of the Polar camera.

Figure 9: Exploded view of the Caddx Polar camera, indicating the internal components and a note regarding optional brightness and saturation adjustment via a separately purchased menu board, which may require self-soldering.

Video 1: Demonstration of the Caddx Polar Camera's performance during FPV drone flight, showcasing both daytime and nighttime capabilities in a racing environment.

## MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your Caddx Polar Vista Kit.

- **Cleaning:** Regularly clean the camera lens with a soft, lint-free cloth. Avoid abrasive materials or harsh chemicals.
- **Inspection:** Periodically inspect all cables and connectors for signs of wear or damage. Ensure the antenna is securely attached.
- **Storage:** When not in use, store the kit in a dry, cool environment, away from direct sunlight and extreme temperatures.
- **Firmware:** Keep the firmware of your Vista unit and DJI FPV Goggles updated to benefit from the latest features and bug fixes.

## TROUBLESHOOTING

If you encounter issues with your Caddx Polar Vista Kit, refer to the following common troubleshooting steps:

- **No Video Feed:**
  - Ensure the Vista unit and camera are properly powered.
  - Verify all cable connections between the camera, Vista unit, and flight controller.
  - Confirm the Vista unit is correctly bound to your DJI FPV Goggles.
  - Check for firmware compatibility issues between components.

- **Poor Video Quality/Interference:**
  - Ensure the antenna is securely connected and not obstructed.
  - Check for sources of electromagnetic interference near the drone or receiver.
  - Adjust the video transmission power settings in your DJI FPV Goggles.
  - Inspect the camera lens for dirt or damage.

- **Overheating:**
  - Ensure the Vista unit has adequate airflow for cooling. Avoid enclosing it in tight spaces without ventilation.
  - Reduce transmission power if operating in high ambient temperatures.

- **Power Issues:**
  - Verify the input voltage to the Vista unit is within the specified range (7.4-26.4V).
  - Check for loose solder joints or damaged wires.

If problems persist, contact CADDXFPV customer support for further assistance.

## SPECIFICATIONS

Detailed technical specifications for the Caddx Polar Vista Kit:

| Feature | Detail |
| --- | --- |
| Model | Polar Vista Kit |
| Weight | Vista Kit (camera included): 2.8g, Antenna: 1.5g |
| Dimensions | Vista Kit: 30×29×13mm, Camera: 19×19×24mm, Coaxial Cable: 120mm |
| Operating Frequency | 5.725-5.850GHz |
| Transmitter Power (EIRP) | FCC/SRRC/MIC: <30dBm, CE: <14dBm |
| Min. Latency (end-to-end) | 720p 60fps: <32ms |
| Max. Transmission Distance | FCC/SRRC: 4km, CE: 0.7km |
| I/O Interface | USB-C, IPEX, 3-in-1 port |
| Supported Flight Control System | F3, F4, F7 |
| Operating Temperature Range | 32° to 104°F (0° to 40°C) |
| Input Power | 7.4-26.4V |
| Power Output | 25mW/200mW/500mW/700mW |
| Camera Sensor | 1/1.8" Starlight CMOS |
| Min. Illumination | 0.00003Lux |
| Lens | F/1.6 & 8 Mega |
| Shutter | Rolling shutter |
| ISO | 100-25600 |
| FOV | 162°(D), 138°(H), 75°(V) |
| Aspect Ratio | 16:9 |

## WARRANTY AND SUPPORT

For warranty information, technical support, or any inquiries regarding your Caddx Polar Vista Kit, please refer to the official CADDXFPV website or contact their customer service directly. Keep your proof of purchase for warranty claims.

CADDXFPV is committed to providing quality products and support. If you have any questions or problems with Caddx products, please contact us for a reasonable solution.

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