C30N
Smart Dual-light Night Vision Camera

User Manual (V1.0)

2023.05

Content

Reading Tips

Symbol Explanation

🚫 Prohibition　　⚠ Warning

Product Precautions

1.After use, please store the device in the secure box of C30N and replace the desiccant in a timely manner to prevent fogging of the lens due to high environmental humidity. If fogging occurs, it usually dissipates after a period of operation. It is recommended to store the device in an environment with a relative humidity of less than 40% and a temperature of 20±5°C.

2.Do not aim the infrared camera lens at high-energy sources such as the sun, lava, laser beams, etc. Ensure that the temperature of the observed target is below 800°C to avoid damaging the camera irreversibly.

3.Do not place the camera in direct sunlight, poorly ventilated areas, or near the heat sources such as heaters or radiators.

4.Avoid frequent power-on or power-off of the payload camera. Re-start the device at a at least 30-second interval to avoid impacting the lifespan of camera.

5.Since the supplementary light of C30N is classified as a Class 1 non-visible laser, it is strictly prohibited to direct view against the light or observe the laser beam with optical instruments when the laser light is turned on.

6.Under normal operation of the IR spotlight of C30N, flammable objects must not be within 100cm in front of the lens to prevent fires.

7.Ensure that the payload interface and surface are dry and free from water before installation.

8.Before use, ensure that the payload gimbal is securely installed on the drone, and the SD card protective cover is clean, with no foreign objects and closed properly.

9.Clean the surface of the device before opening the SD card protective cover.

10.Do not insert or remove the microSD card during the operation.

11.Avoid direct contact with the camera lens surface coating using hands or scraping with hard objects, otherwise, it may cause blurry imaging and affect image quality.

12.When cleaning the camera lens, wipe the lens surface with a soft and dry cleaning cloth. Do not use alkaline cleaning agents for cleaning.

I. Disclaimers and Warnings

Thank you for purchasing our intelligent product. The contents mentioned in this article are related to your safety and legitimate rights and responsibilities, so please read this article carefully to set up the product correctly before using. Harms of hurting you or the people around you or this product or other surrounding items may be caused as a result of failing to follow the instructions and warnings herein. The right for final interpretation of this article and all related documents is vested in CZI. Subject to update without notice. Please visit www.gzczzn.com for the latest product information.
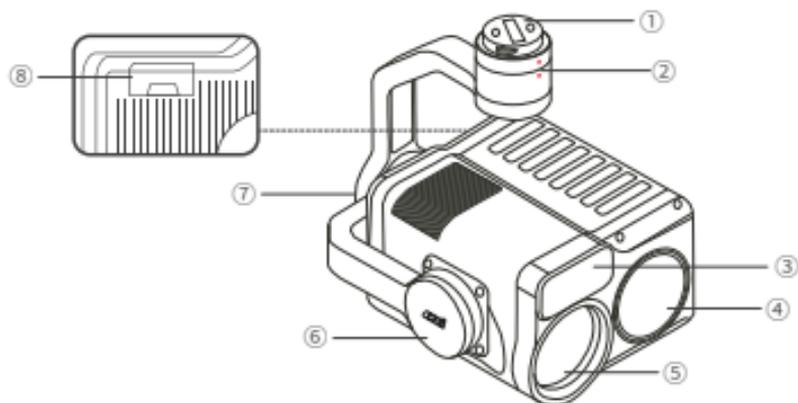
⚠ Warnings

1. · When using C30N, it is necessary to use a single payload gimbal and replace the customized dampers to avoid damage to the original dampers due to excessive load weight.

2. Since the IR spotlight of C30N is classified as a Class 1 non-visible laser, it is strictly prohibited to direct view against the light or observe the laser beam with optical instruments when the laser light is turned on.

3. Under normal operation of the IR spotlight of C30N, flammable objects must not be within 100cm in front of the lens to prevent fires.

4. In case of hardware issues, please return the product to the factory for maintenance. Do not disassemble it on your own, otherwise, any adverse consequences to the product resulting from it will be the sole responsibility of the users.

Precautions

1. The installation method of C30N is the same as that of other payloads. Please ensure that the adapter ring is correctly installed.

2. Before the drone takes off, the power of the laser IR spotlight of C30N will be limited to 10% or below. After takeoff, its power can reach 100%.

II. Introduction to C30N

CZI C30N smart dual-light night vision camera is equipped with a 1K resolution long-wave infrared uncooled thermal imaging camera, a zoom visible light camera, and an infrared spotlight. The thermal imaging with a resolution of 1280 and a focal length of 55mm enables users to conduct long-range searches of suspected targets during nighttime. Additionally, it allows for quick switching to a 30x enhanced optical zoom for detailed observation. The infrared spotlighting provides illumination for the visible light camera IR cut filter in low-light and no-light conditions, enhancing the image details and providing richer visual information during nighttime observations. The C30N is also equipped with a laser ranging device, which can accurately calculate the distance and target position. Additionally, the coordinates of the target can be shared with frontline operatives and command centers through the QR code sharing function in the czi App, making rescue and security operations easier. The C30N is also equipped with an integrated high-precision three-axis gimbal which can be easily installed on the Matrice 300/350 RTK drone for operation. With the czi pilot app or DJI Pilot 2 app, users can achieve real-time monitoring of the captured footage on their mobile devices, and capturing photos and recording videos as well.
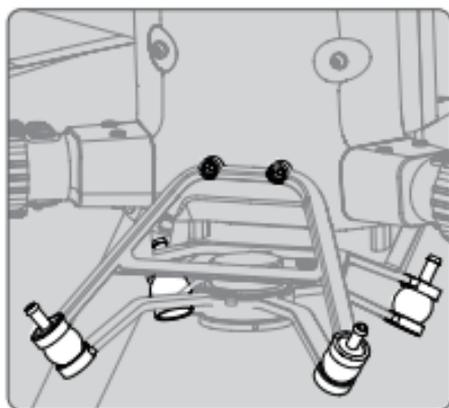

1.Interface 2.Pan Axis Motor 3.Laser Rangefinder + Infrared Laser IR spotlight

4.Zoom Camera 5.Long-range Infrared Camera 6.Tilt Axis Motor

7.Tilt Axis Motor 8.microSD Slot
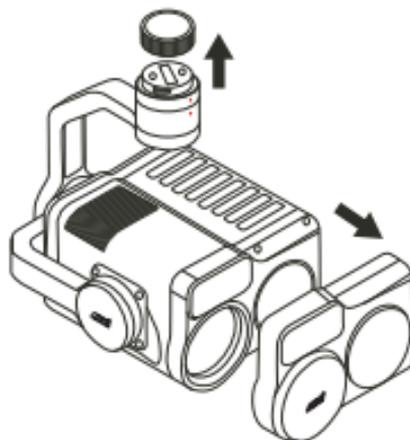
III. Installation

Supported drone types

Matrice 300/350 RTK

Please replace the damper for the first-time use.

Install it into the drone

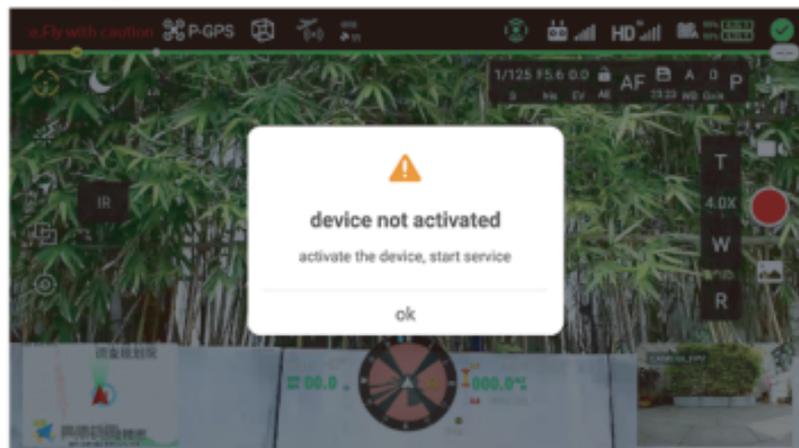1. Remove the gimbal interface protective cover and lens protective cover.

2. Insert the C30N into the installation position of the Matrice 300/350 RTK payload after aligning the white dot and red dot, then rotate the payload interface to the locking position to secure the payload.
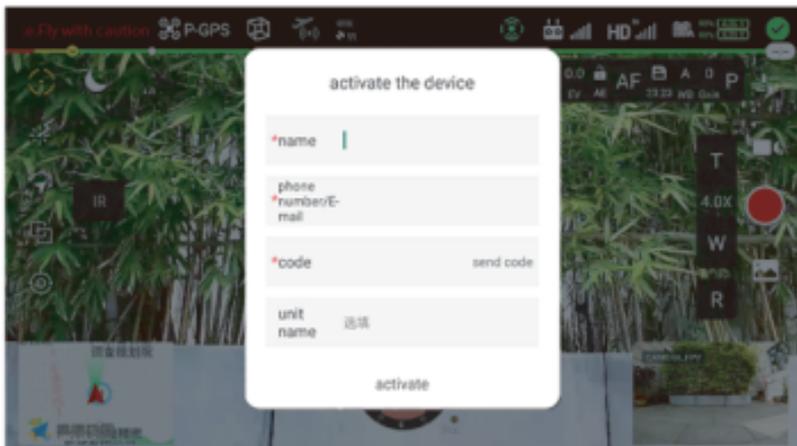

⚠ · The structure of payload interface is designed to be compact, so please use your hand to firmly hold the mounting platform while applying force to rotate it when installing or removing.
· During use or storage, please ensure to cover the micro SD card slot with the protective cover to prevent moisture or dust from entering

IV. Activation

The new C30N payload camera must be activated through the czi pilot App. Please ensure that the payload camera has been installed on the drone before powering on both the drone and the remote controller. Follow the instructions on the remote controller interface to proceed with the activation. During the activation process, the remote controller needs to be connected to the Internet.
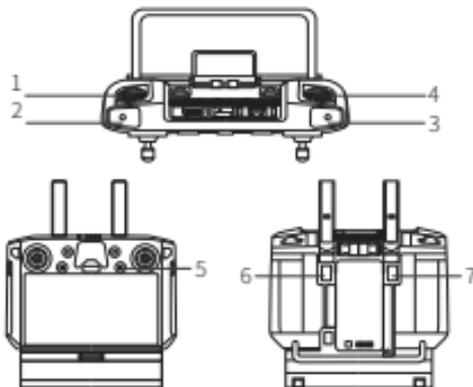
⚠ The payload cannot be operated before activating the device.

V. Control through remote controller

The left and right thumb wheels on the remote controller are used to control the pitch and pan angles of the payload respectively. The photo-shooting and video recording can be controlled using the designated buttons on the remote controller. The custom function button C1 can direct the payload back to the center, while the custom function button C2 can be used to switch between the main and secondary camera views.

1. Left Thumb Wheel
It is for controlling the pitch angle of gimbal payload.

2. Video recording button
Press it once to start recording, and press it again to stop recording.

3. Photo-shooting button
Press it once to capture a photo. During video recording, pressing this button also can capture a photo.

4. Right Thumb Wheel
It is for controlling the pan angle of gimbal payload.

5. Five-dimensional button
It can be customized for different functions using the DJI Pilot 2 App.

6. Custom Function Button C2
It is defaulted to switch the main and secondary camera views, and can be customized for different functions using the DJI Pilot 2 App.

7. Custom Function Button C1
It is defaulted to make the gimbal payload back to the center, and can be customized for different functions using the DJI Pilot 2 App.

VI. Control through czi Pilot App

In addition to the functions set on the remote controller, czi Pilot App also provides other more intuitive and convenient settings options, such as screen display switching, visible/thermal imaging linked zoom, infrared pseudo-color switching, laser ranging, camera parameter settings, etc.

The interface images below are for reference only. The actual effects may vary depending on the version of the App provided

Basic Functions

On the camera page, you can preview the captured image of C30N and make camera parameter adjustments.

Below is an example of the main screen displaying the zoom camera view.

1. Camera Parameter - Shutter Speed Value

It displays the current camera and its corresponding shutter speed value for the main screen. Can be set only available for manual exposure mode or shutter priority mode.

2. Camera Parameter - Aperture Value

It displays the current camera and its corresponding aperture value for the main screen. Can be set only available for manual exposure mode or aperture priority mode.

3. Camera Parameter - Exposure Value

It displays the current camera and its corresponding exposure value for the main screen. Can be set only available for auto exposure mode.

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4. Auto Exposure Lock
Click it to lock the current exposure value.

5. Focus Mode
Click it to adjust the focus mode of the zoom camera, supporting MF (Manual Focus) and AF (Auto Focus).

6. Storage
It displays the current remaining storage of the microSD card.

7. White Balance Mode
It can be set to various white balance modes such as Auto White Balance, Indoor White Balance, Outdoor White Balance, Auto Tracking, and Outdoor Auto White Balance.

8. Gain
It adjusts the gain setting of the zoom camera.

9. Exposure Mode
Auto Exposure, Manual Exposure, Shutter Priority Exposure, and Aperture Priority Exposure modes are available.

10. Camera Settings Menu
· Format SD Card: All the contents in microSD card will be erased after formatting the SD card
· Gimbal Payload calibration.
· Gimbal Payload fine-tuning.
· Video bitrate.
· Focus fine-tuning step.
· Other settings

· Image stabilization	· Defogging
· 2D noise reduction	· 3D noise reduction
· Auto-focus mode	· Focus distance
· Auto-focus sensitivity mode	· Auto low-speed shutter limit
· Gain limit	· Sharpness
· Backlight compensation	· Wide dynamic range(WDR)
· Highlight correction	· Gimbal Payload speed
· Heated glass	

11. Operation Guide

12. Photo/Video Switch Button

Click to switch between photo-shooting and video recording modes, and different photo-shooting or video recording modes are optional.

oto-shooting modes: Single photo-shooting,
uninterrupted photo-shooting,
Timed photo-shooting.

13、14、15. Zoom Adjustment for Zoom Camera

Press and hold it to adjust the zoom ratio of the zoom camera. The zoom ratio for the zoom camera ranges from 1× to 360×. You can also click it for more precise adjustment of the zoom ratio.

16. Photo-shooting or Video Recording Button

Click it to start photo-shooting or start/stop video recording.

17. Playback

Click it to view captured photos and videos.

18. Spot Exposure/Spot Focus Mode Switching

Click it to switch between spot exposure and spot focus modes.

19. Laser-Assisted Focus

Click it to enable/disable laser-assisted focus function.

20. Day/Night Mode

There are three modes including Day/Night Mode Turning off, Light Supplementary Mode, or Night Mode. In Light Supplementary Mode, the filter will be switched and the supplemented light will be turned on, resulting in a grayscale image. In Night Mode, the filter will be switched but the supplemented light will not be turned on, and automatic color correction will be applied, and some color distortion may occur in certain scenes, which is normal.

21. Laser ranging
Click it to enable the laser ranging function. Laser ranging allows the users to measure the distance to objects within the measurement range and displays the distance between the measured object at the center of the screen and the drone.
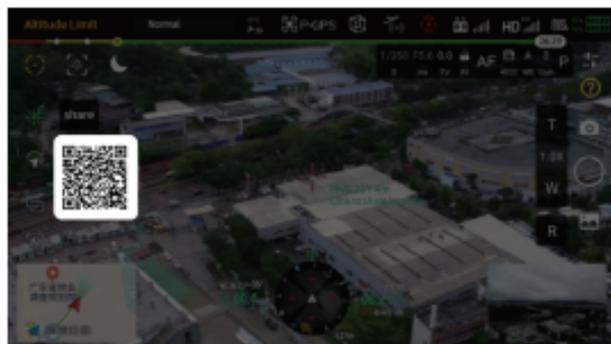**Below is an example of the main screen.**

22. Share target coordinates through QR code
After enabling the laser ranging function, click the share button or the crosshair in the center of the screen, then scan the pop-up QR code with a mobile device to obtain the location of target. You can choose to open it on a map or share it.
Below is an example of the main screen.

23. Infrared/Zoom Mode Switching

It can switch between Infrared Thermal Imaging Mode and Zoom Mode.

24. Split-screen format

The images from the infrared camera and zoom camera are displayed in a split-screen format, with appropriate cropping of the visible light image on the left and right sides.

25. AI Detection /Tracking Mode

Automatic detection, locking, and tracking of people, vehicles, and other targets. After detecting a target, it is indicated by a white dot and automatically locked and tracked, and the camera zoom ratio will be automatically adjusted, and the Gimbal payload will be controlled to keep the target in the center of the frame.

Note:**1**.In low visibility conditions such as nighttime or rain/fog, the detection and tracking performance may be reduced.

2.The tracking performance may be affected in cases of blurry images, high zoom ratios, targets occupying a large or small portion of the frame, or the presence of similar objects around the target.

3.It is recommended to use the tracking mode in open environments, as frequent obstructions may affect the tracking performance.

4.The selection of tracking targets may fail due to poor signal quality of the video transmission link of drone or when the target is moving too fast.

Detection Mode：Automatically detect people or vehicle targets in the frame and indicate it with white dots. Click on the corresponding target dot to switch to the tracking mode. In the detection mode, clicking the algorithm button again can exit the AI algorithm mode.

Tracking Mode：Automatically control camera zoom and Gimbal payload movement to keep the tracked target in the center of the camera frame. In tracking mode, clicking the algorithm button again can cancel the tracking. When the tracking function is enabled, the target is indicated with a green box. If the target's match similarity is low or lost, the green box will turn into a green crosshair. At this time, the Gimbal payload will continue to rotate and search along the target's movement trajectory. If the target is reacquired within a certain period of time, tracking will resume. Otherwise, it will automatically switch to detection mode.

AI Detection Mode   AI Tracking Mode

Swipe Screen Tracking：

In detection and tracking modes, you can manually draw a box around any target by swiping on the screen. After selecting the target by drawing the box, click inside the box to confirm the selection. If you click outside the box, the tracking will be canceled.

26. Wildfire Mode

Click it to enable/disable Wildfire Mode. When it is enabled, the infrared display mode will be optimized for better observation of high-temperature differences, such as fire situations.

27. Infrared Pseudo-color Switching

Various pseudo-color modes such as White Heat, Lava, Iron Red, Hot Iron, Medical, Arctic, Rainbow 1, Rainbow 2, Outline, and Black Heat are available. Pseudo-colors are designed to enhance visual differences and can be selected according to different application scenarios. They can highlight the details of the targets, enhance image recognition, and accelerate target detection.
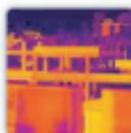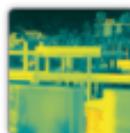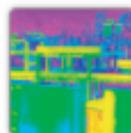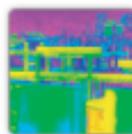
Color Palette

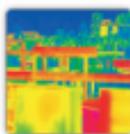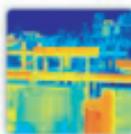White Heat · Lava · Iron Red · Hot Iron · Medical

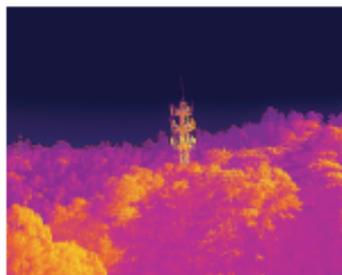Arctic · Rainbow 1 · Rainbow 2 · Outline Red · Black Heat

The colors in thermal images are used to represent temperature, and the temperature range in the image will be mapped to 256 color levels.
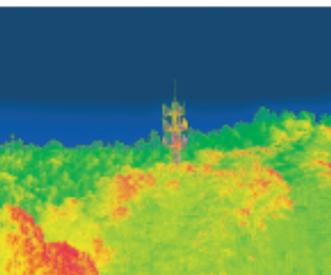

White Heat

Black Heat

Iron Red

Rainbow

28.Infrared Camera Zoom Setting

Auto Mode : The infrared camera is linked with the zoom camera for zooming. You can set it using the continuous zoom control. The maximum zoom level for the infrared camera is 32×.

Manual Mode: 4×, 8×, 16×, 32×: Set the electronic zoom level for the infrared camera.

29.Thermal Imaging FFC Calibration

Click it to perform FFC (Flat Field Correction) calibration. FFC calibration is a function of the infrared camera that optimizes the image quality. During the FFC calibration process, the screen may pause for about 1 second, and the camera may sounds a "kacha" sound.

30.Area Detection

In the thermal mode, you can enable the area detection function. Select any area within the detection area displayed on the screen, and the screen will show the lowest and highest temperature points relative to that area. Click the icon below the area to access the following operations:

1. Close the area detection page.
2. Maximize the current area.
3. Capture and save the current area detection result as a screenshot.
4. Temperature alarm settings.

The temperature measurement function is relatively complex and is subject to environmental influences. Therefore, the measured temperatures should be used for reference only. The environmental factors that can affect temperature measurement include：

1. Object emissivity: Objects with high reflectivity, such as shiny metal surfaces, have higher reflectivity, so the temperature measured by the infrared camera will be closer to the background or ambient temperature, resulting in larger errors.

2. Background radiation temperature: For example, direct sunlight or reflected light from sunlight can have a significant impact on temperature measurement. It is important to avoid direct or reflected sunlight entering the infrared camera.

3. Both air temperature and humidity can have an impact on temperature measurement.

4. The distance to the target: Different distances to the target can also have an influence on temperature measurement.

VII. Control through DJI Pilot2 App

In addition to the functions set on the remote controller, DJI Pilot2 App also provides other intuitive and convenient options, such as screen display switching, visible/thermal imaging linked zoom, infrared pseudo-colors switching, laser ranging, and camera parameter settings, etc.

The interface images below are for reference only, and the actual effects may vary depending on the specific version of the App.

Basic Function

On the camera page, you can preview the shooting screen of the C30N and adjust camera settings.

The example below shows the main screen with the zoom function.

1. Focus Mode

In AF mode, it is set to continuous autofocus. Click it to switch to MF (manual focus) mode, and you can manually adjust the focus by using the focus ring.

2.Storage

It displays the remaining storage on the microSD card.

3. Camera Zoom Ratio Setting

Press and hold the "T" button for continuous zoom in, and press and hold the "W" button for continuous zoom out. Release the button to stop continuous zooming. The number in the center indicates the current zoom ratio, supporting a maximum of 360× zoom. Click the "R" button to reset the zoom ratio to 1×. The default zoom ratio when powering on is 4× for the zoom lens.

4. Photo-shooting/Video Recording Switching Button

Click it to switch between photo-shooting and video recording, and select different modes for photo-shooting and video recording. You can also use the remote control button for quick photo-shooting and video recording.

Photo-shooting modes: Single photo-shooting,

                             uninterruptedphoto-shooting,

                             Timed photo-shooting.

Video Recording: Zoom: 1920×l080@30fps

                        Infrared: 1280×l024@30fps

5. Photo-shooting / Video Recording Button

Click it to start photo-shooting or start/stop video recording.

6. Playback

Click it to view captured photos and videos.

7. Camera Settings Menu

General Settings

Format SD Card: All the contents in microSD card will be erased after formatting the SD card.

8. Focus / Exposure Point Switch Button

It is defaulted to green, that is, focus point mode (only effective in continuous autofocus mode). Click it to switch to yellow, exposure point mode.

9.External Settings Menu in PSDK

10. Display Mode Settings

Click it to select from five modes: Zoom, Infrared, Split Screen, Tracking, and Infrared Thermography.

Zoom Mode: it displays only the zoom camera view.

Infrared Mode: it displays only the infrared camera thermal imaging view.

Split Screen Mode: it displays the views of the infrared camera and zoom camera side by side.

AI Detection Mode: it displays the zoom camera view and automatically detects, locks, and tracks people, vehicles, and other targets.

Once a target is detected, you can select it by framing the target within the screen (people or vehicle). In focus mode (green box icon in the upper left corner), you can click on the target box to initiate tracking. The camera will automatically adjust the zoom level and the gimbal payload will align the target in the center of the screen. Double-clicking the focus button will switch back to detection mode.

(Please refer to the section "24. AI Detection/Tracking Mode" for additional information.)

Infrared Thermography Mode: it displays the infrared camera thermal imaging view and shows the position of the highest and lowest temperature in the center of the screen. Opening the floating window allows you to view the temperatures.

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11.Infrared Pseudo-color Switching

Various pseudo-color modes such as White Heat, Lava, Iron Red, Hot Iron, Medical, Arctic, Rainbow 1, Rainbow 2, Outline Red, and Black Heat are available.
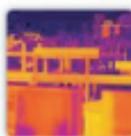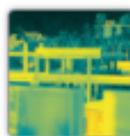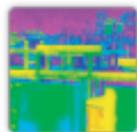
Color Palette

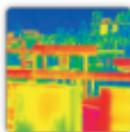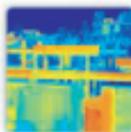White Heat   Lava   Iron Red   Hot Iron   Medical

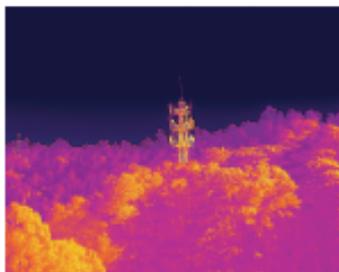Arctic   Rainbow 1   Rainbow 2   Outline Red   Black Heat

The colors in thermal images are used to represent temperature, and the temperature range in the image will be mapped to 256 color levels.
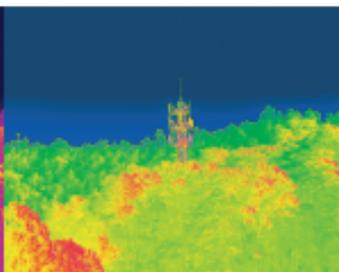

White Heat   Black Heat

Iron Red   Rainbow

12.Infrared Camera Zoom Settings

Auto Mode: The infrared camera is linked with the zoom camera for zooming. You can set it using the continuous zoom control. The maximum zoom level for the infrared camera is 32×.

Manual Mode: 4×, 8×, 16×, 32×: Set the electronic zoom level for the infrared camera.

13.Laser Ranging

It can be chosen to enable or disable the laser ranging function. Laser ranging allows distance measurement of objects within the measurement range and displays the distance between the object at the center of the screen and the drone.

14.Laser-Assisted Focus

Click it to enable or disable the laser-assisted focus function. Note that the laser ranging module needs to be enabled, and this function works only after the focus mode to be set to MF mode.

15. Zoom Camera Exposure Compensation Settings

Adjust the exposure compensation value of camera by dragging to adjust the brightness of the image.

16. Virtual Joystick

Adjustable gimbal payload angle.

17. Floating Window Information Display Switch

It can switch the content displayed in the floating window. By default, it shows the SN and version number of the device, but it can be switched to view the device operating status.

18. PSDK Internal Settings Menu

· **Day / Night Modes**

There are Off, Supplementary Light Mode, and Night Scene Mode available. Supplementary Light Mode switches the filter and turns on the supplementary light, displaying the image in grayscale. Night Mode switches the filter but does not turn on the supplementary light, and automatically enhances color. Some scenes may experience color distortion, which is normal.

· **Brightness**

Slide the slider to adjust the brightness of the infrared supplementary light for easier nighttime observation.

· **Floating Window**

It can switch the content displayed in the floating window. By default, it shows theSN and version number of the device, but it can be switched to view the device operating status.

·Image Stabilization

There are options of Off, Super Stabilization, and Super+ Stabilization.

·Video Bitrate

It adjusts the smoothness of the remote controller's screen through controlling the video bitrate (this function only affects the quality of real-time preview, not the quality of photos and videos).

·2D noise reduction

There are options of Off or Level 5 2D noise reduction.

·3D noise reduction

There are options of Off or Level 5 3D noise reduction.

·Defogging

It can choose enable or disable the defogging mode.

·AF Mode

There are options of Normal Mode, Interval Mode, and Zoom Mode.

·Focus Distance

It can set the focus distance to Far (Infinity), Medium (2 meters), or Near (10 centimeters).

·AF Sensitivity Mode

It can be set to Motion Mode or Static Mode.

·Lens Initialization

Click it to restore the lens to its initial state.

·Exposure Mode

There are options of Auto Exposure Mode, Manual Exposure Mode, Shutter Priority Exposure Mode, and Aperture Priority Exposure Mode.

·Shutter

It can set the shutter speed for the zoom camera, ranging from 1/1 to 1/10000. This setting is only effective in Manual Exposure Mode or Shutter Priority Exposure Mode.

·Aperture

It can set the aperture for the zoom camera, ranging from F1.6 to F14. This setting is only effective in Manual Exposure Mode or Aperture Priority Exposure Mode.

· Gain
Set the gain for the zoom camera.
· Gain Limit
Set the gain limit for the zoom camera.
· White Balance Mode
There are various White Balance Modes such as Auto White Balance Mode, Indoor White Balance Mode, Outdoor White Balance Mode, Auto Tracking White Balance Mode, and Outdoor Auto White Balance Mode.
· Sharpness
Set the sharpness level from 0 to 15 to enhance the quality of image details.
· Backlight Compensation
Click it to enable or disable the Backlight Compensation Mode.
· Wide Dynamic Range (WDR)
It can set the WDR mode to various settings.
· Image Calibration
It can perform high-light calibration in various modes to adjust the brightness.
· gimbal Payload Speed
Adjust the speed of gimbal payload movement by modifying the value on the slider.
· Shutter Release
Click it to trigger the shutter of the infrared camera for FFC calibration, improving the image quality. Note that there may be a momentary pause in the screen, and the camera may make a "kacha" sound.
· Glass Heating
Click it to enable or disable the heated glass, which helps remove fog when the view of zoom camera is obstructed by condensation.
· Focus Fine-tuning (Near)
In MF mode, click it to fine-tune the focus value for the near end.
· Focus Fine-tuning (Far)
In MF mode, click it to fine-tune the focus value for the far end.
· Wildfire Mode
Click it to enable or disable the Wildfire Mode. When it is enabled, the display mode of Infrared Thermography is optimized for observing high-temperature differences, such as in wildfire situations.

· **Infrared Alarm Settings (°C)**
Set the alarm temperature for Infrared Thermography.
· **Map**
When switching to laser ranging, the map used can be shared through for QR code. Amap (default) and Google Maps are optional.
· **Export Logs**
Export the camera logs to the SD card.

VIII. Firmware Upgrade

Upgrade the firmware through microSD card.
Before upgrading, please make sure that the C30N camera has been installed on the drone and the drone has been powered off, the microSD card has sufficient storage and the intelligent flight battery of the drone has been fully charged.

1.Obtain the firmware upgrade package from official channels;

2.Place the firmware upgrade package in the root directory of the microSD card;

3.Insert the microSD card into the microSD card slot of the C30N camera;

4.The camera will perform a self-check and automatically start the firmware upgrade after powering on the drone;

5. The program will restart after completing the upgrade. Please check the version number in the floating window to confirm if the update was successful.

Upgrade the firmware through czi Pilot.
Before upgrading, please make sure that the C30N camera has been installed on the drone and the drone has been powered on, and the intelligent flight battery of the drone has been fully charged.

1. Install the C30N camera on the drone;

2. Connect the remote controller to a WiFi and open the czi Pilot software on the home screen;

3. Follow the prompts to update the firmware immediately or go to the camera firmware version and click on "Check for Updates" to update the firmware as instructed;

4.Wait for the updating of the firmware of camera. After the update is complete, the camera payload will automatically restart;

5. After the camera restarts, please check if the version of camera has been successfully updated.

IX. Technical parameter

Product Name	C30N
Dimension	173×152×191mm
Weight	≤1510g±10g
Safety level of human eyes	class1
Supported models	Matrice300 RTK / Models from other manufacturers
Gimbal parameter	
Gimbal jitter	±0.01°
Installation mode	Detachable
Controllable rotation range	Translation: ± 90°, pitch:-120° to +30°
Structural control range	Translation: ± 100°, pitch: -132.5° to +42.5°, roll:-90° to +60°
Maximum controllable speed	Translation: 50°/s, pitch: -50°/s

Zoom camera	
Image sensor	1/1.8" CMOS with 4 million effective pixels. Focal length: 6.5-162.5 mm (equivalent focal length: about 3L85-796 mm)
Lens	Aperture: f/1.6f/14 Focus distance: 10 cm to infinity
Focus mode	AF/MF
Exposure mode	Manual exposure, automatic exposure in program
Exposure compensation	± 7.0 (with steps of L5dB)
Metering mode	Spot metering
Electronic shutter speed	Photo shooting: 1-1/10000 s Videos: 1/1-1/10000 s
Video resolution	1920×1080@30fps
Video format	MP4
Maximum photo size	1920×1080
Photo format	JPEG

Long-focus infrared camera	
Thermal imaging sensor	Non-cooled Vanadium oxide (VOx) infrared focal plane detector
Lens	DFOV:20.1° Focal length: 55 mm (equivalent focal length: about 121 mm) Aperture: f/1.1 Focusing distance: 100 m to infinity.
Equivalent multiple of digital zoom	4× 8× 16× 32×
Video resolution	1280×1024@30fps
Video format	MP4
Photo resolution	1280×1024
Photo format	JPEG
Pixel spacing	12 μm
Wavelength coverage	8-14 μm
Sensitivity (NETD)	≤50 mK @ f/1.0
Temperature measurement methods	Regional temperature measurement
Temperature Range	-20 - 150°C (The distance varies in different ranges)
Color palette	White heat / Lava / Iron red / Hot iron / Medical / Arctic / Rainbow 1 / Rainbow 2 / Painted red / Black heat

Laser rangefinder	
Wavelength	905nm
Measurement accuracy	<400m ±1m >400m ±0.4%
Measurement range	10-1200m
Laser supplementary light	
Wavelength	850nm
Light output power	≥2W (±0.5W)
Light output angle	3°
Operating range	>400m
Storage	
Memory card type	Support microSD card with maximum capacity of 128 GB and transmission speed reaching UHS-I Speed Grade 3.
File storage system	exFAT