

Starlight App

APP User Manual

1. Connect With Camera

- a) Connect the camera and the device to the same network. (Camera Wi-Fi password: teche720)

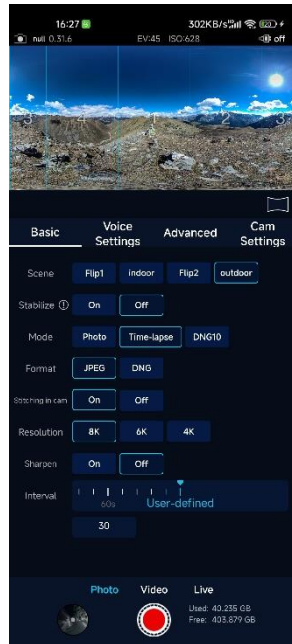


- b) Tap the app to run the program. (Currently supported on iOS and Android systems. For iOS, search "teche" in the App Store to download.)
- c) Enter the app connection interface, select the camera connection in the middle of the screen, and enter the camera's control preview interface.

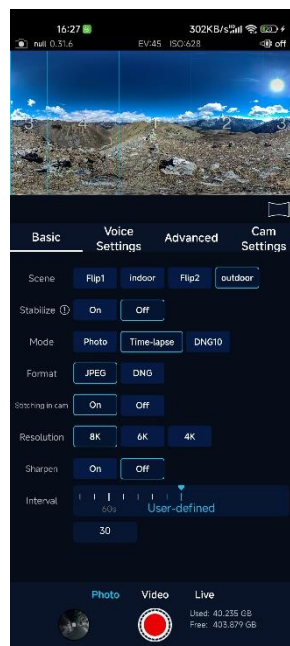


2. UI Structure

The camera is divided into three modes: single shot, video and live streaming. When you enter the camera, it defaults to single shot mode. Click the shooting button below to take photos and videos. Click the shooting button again to end the shooting. (As shown below)



- a) The upper part of the screen shows the panoramic view stitched from the four camera lenses.
 - b) The middle of the screen is the basic settings interface, parameter settings interface.
 - c) Below the screen are the photo, video, and live modes, where you can switch between modes and adjust exposure settings. The real-time capacity of the camera is displayed in the bottom right corner.
3. Take a photo

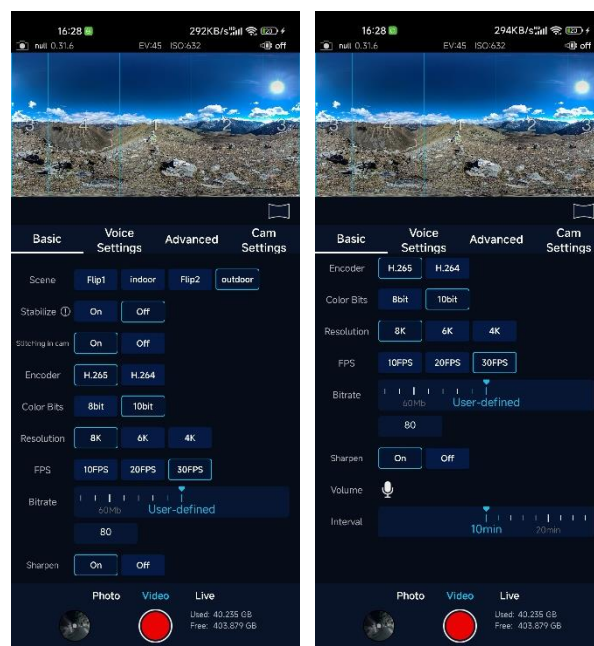


- a) Shooting modes include Normal, Continuous Shooting, and DNG10. In Normal

mode, users manually choose when to capture photos. Continuous Shooting mode automatically controls the camera to capture photos periodically according to the user's selected frequency. DNG10 captures 10 DNG images per lens.

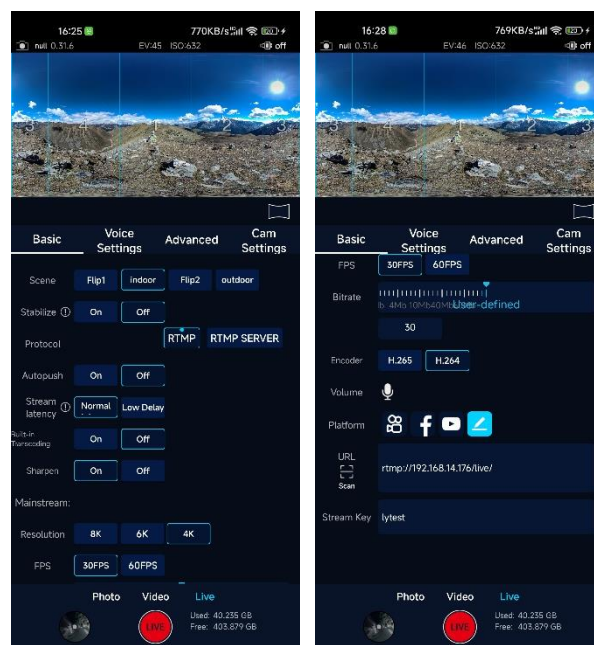
- b) Shooting scenes: Adjust the real-time preview stitching effect based on the shooting scene selected by the user.
- c) Image formats: JPG and DNG
- d) Resolution: External stitching is available in 8k, while internal stitching offers options of 4k, 6k, and 8k.
- e) Time-lapse Photography: When the mode is set to automatic photography, this setting becomes active. Under automatic continuous shooting, options include 1s/shot, 3s/shot, 5s/shot, and custom time intervals, with a maximum setting of up to 1200s/shot.
- f) Internal Stitching: Whether to enable or not. When enabled, the camera will automatically generate a panoramic image inside the camera after each shot, eliminating the need for post-processing with other software.
- g) Sharpness Enhancement: Choose to enable/disable. When enabled, the sharpness of captured images will be enhanced.

4. Recording Video



- a) Shooting scenes: Adjust the real-time preview stitching effect based on the shooting scene selected by the user.
- b) Resolution and Frame Rate: External stitching provides 8K at 30FPS, while internal stitching offers 4K at 30/60FPS, 6K at 30FPS, and 8K at 30FPS.
- c) Bitrate: External stitching supports up to 100Mbps, while internal stitching allows selection from 1 to 100Mbps.
- d) Volume: You can set whether to mute or not.

- e) Segment Time: Set the duration of individual video files. Currently, options include 10 minutes, 20 minutes, 30 minutes, 60 minutes, and continuous recording. Users can choose according to their needs.
 - f) Internal Stitching: Enable or disable. When enabled, the camera automatically stitches together a panoramic video after recording a video, eliminating the need for additional software for stitching.
 - g) Video Format: For external stitching, only H.265 encoding is supported, while for internal stitching, both H.264 and H.265 formats are available.
 - h) Color Depth: 8-bit, 10-bit
 - i) Sharpness Enhancement: Choose to enable/disable. When enabled, the recorded video will have higher sharpness.
5. Live Streaming

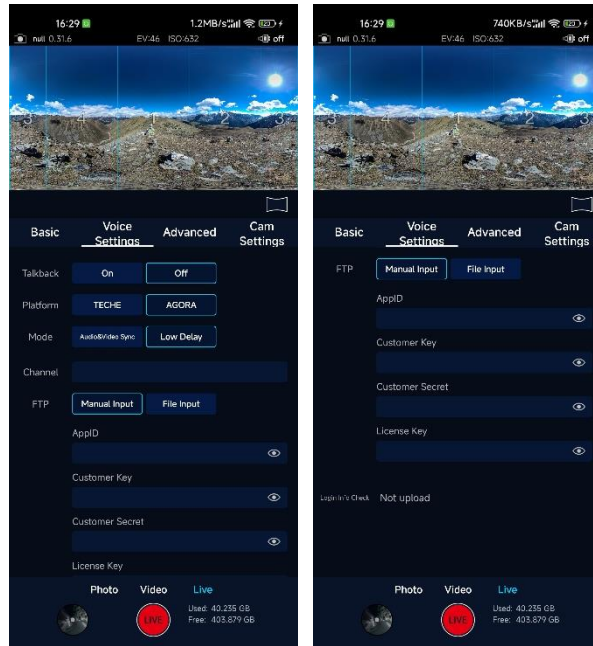


- a) Shooting scenes: Adjust the real-time preview stitching effect based on the shooting scene selected by the user.
- b) Live Streaming Protocols: Available options include RTMP, RTSP, RTMP SERVER, SRT and GB28181.
- c) Is transcoding enabled internally? Enabling it allows for dual-stream live streaming, with a main stream and a sub-stream.
- d) Live streaming mode: Internal stitching
- e) Resolution: 8K (20, 30 FPS), 6K (30 FPS), 5.5K (30 FPS), 4K (30, 60 FPS)
- f) Bitrate: Adjust the output bitrate of the live video, ranging from 1 to 100 Mbps. Choose according to the actual network bandwidth.
- g) Volume: You can set whether to mute or not.
- h) Auto Run: When enabled, the device will automatically resume broadcasting if it loses power and restarts while in broadcasting mode.
- i) RTMP Push Address: Set the RTMP server address. The controller will push the

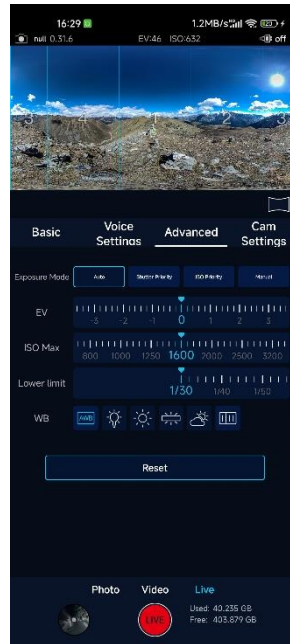
video stream from the camera to the specified server, allowing viewers to watch via the playback address provided by the live streaming platform.

- j) Stream Key: Customers should fill in the corresponding stream key based on their server's streaming address.
- k) RTSP: After setting the live streaming protocol to RTSP, three playback addresses will be automatically obtained: the camera's fixed IP playback address, the camera's automatically obtained IP playback address, and the camera's WiFi IP playback address. Based on the corresponding retrieval address, users can input the streaming address in the player to watch the live broadcast.
- l) RTMP SERVER: Upon selection, multiple playback addresses will be obtained. Based on the corresponding retrieval address, users can input the pulling address in the player to watch the live broadcast. In RTMP SERVER mode, the camera provides built-in RTMP service, which is intended for use within the local area network by a small number of playback terminals.
- m) SRT: SRT protocol usage is similar to RTMP in general. If streaming to a server, configure the corresponding streaming address for the camera. If the camera acts as its own server, you can configure `srt://0.0.0.0:10000?mode=listener` as the streaming address. In this case, playback can be done via `srt://{cameraIP}:10000`.
- n) Transcoding: Enabling transcoding functionality allows for the simultaneous output of two live streams. Parameters such as resolution, bitrate, and streaming address can be adjusted for the secondary stream.
- o) GB28181: Settings: As shown in Figure 1, this is the controller settings interface. The required parameters are all provided by the SIP server. Below is the SIP server interface (Note: Different SIP server configuration interfaces may vary, for reference only). SIP username, authentication ID, password, transport protocol, validity period, heartbeat period, maximum heartbeat timeout count should be filled in according to the server requirements.

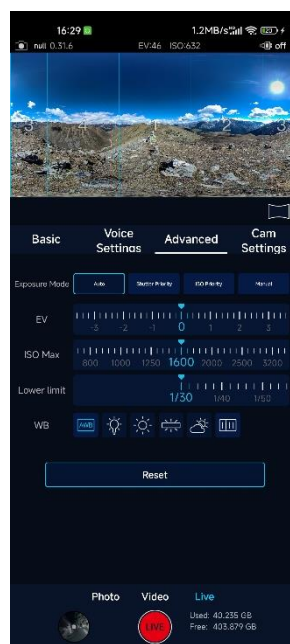
6. Voice Intercom



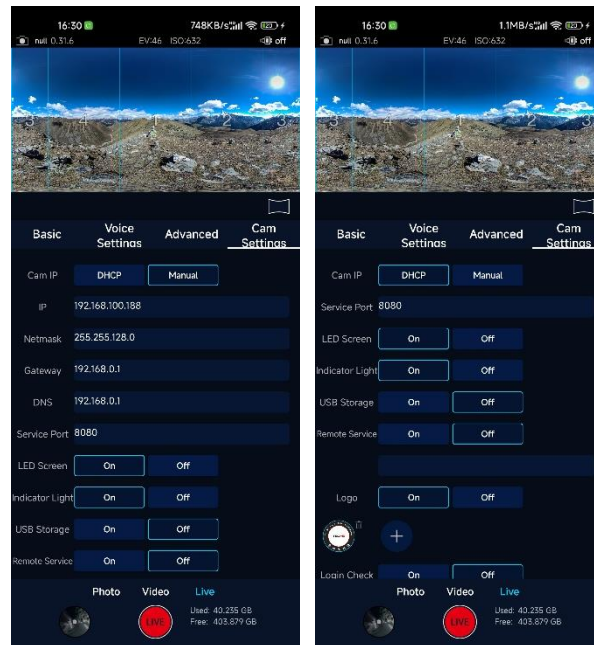
- a) Connect an external microphone to the camera's bottom type interface, and enable the voice intercom mode. In the status bar at the top left corner, the voice intercom is shown as enabled, indicating that the voice intercom mode is activated. When all voice settings take effect, the voice status at the top left corner shows "In Call", otherwise, it indicates "Connection Failed".
 - b) Voice Mode:
 - i. Low Latency: In Low Latency mode, the RTMP live stream only contains video without audio. The audio is routed through the voice intercom service.
 - ii. Audio-Video Synchronization: In Audio-Video Sync mode, both the video and audio from the camera are included in the RTMP live stream.
 - c) Configuration Details: Display Name, Channel, Password, Service Address. All four items are obtained through registration on the Teche Voice Service Platform. Once filled in correctly, the two-way voice intercom function can be activated.
7. Advanced Settings
- a) Exposure Settings



- i. Exposure settings include four modes: Auto Exposure, Manual Exposure, Shutter Priority, and ISO Priority. Different modes adopt distinct parameter adjustment strategies.
 - ii. EV value adjustment: Adjusts the brightness level of the image in real-time by changing the EV value within the range of -5 to +5.
 - iii. ISO setting: Can be set to either "Auto" or "Locked". The ISO value ranges from a minimum of 100 to a maximum of 6400.
 - iv. Shutter speed: Can be set to either "Auto" or "Locked". The fastest speed is 1/8000, and the slowest is 1/30.
- b) White balance: White balance settings include "Auto", "Incandescent", "Daylight", "Fluorescent", "Cloudy", and "Manual Adjustment".



8. Camera Settings

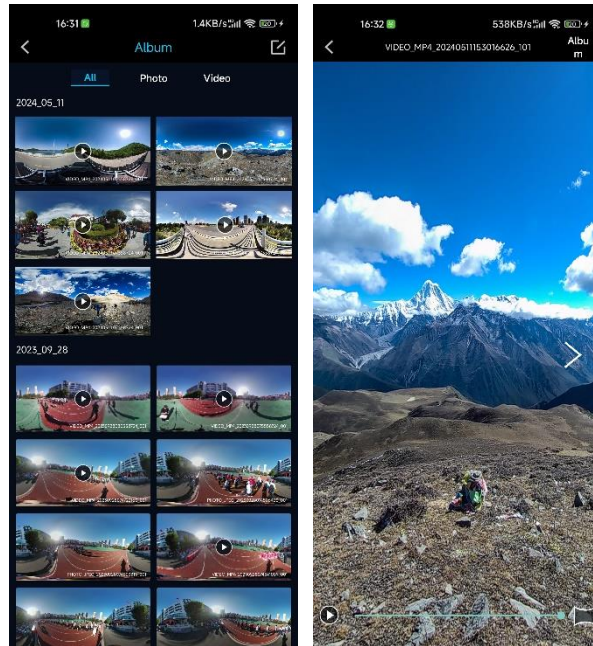


- a) IP Settings: Selecting Fixed IP allows you to set a static IP address for the camera. After switching to DHCP, it returns to automatic mode. The default port for camera service is 8080, and it can be changed as needed.

Note: Do not change to 1935 or 8554. Please enter a valid port number for the service

- b) LED Indicator: LED indicator can be configured to be turned on or off.
- c) Connect to remote service: Configure the camera to actively connect to the WebSocket server for remote camera control. When connected to the remote service, local control software cannot send control commands. To regain control, you need to disable this mode.
- d) Logo Settings: When the internal stitching is activated, add a logo at the top or bottom of the image. Click the "Plus" button below to upload a picture to the camera. You can upload up to 5 supplementary images. The sliding action range allows for image resizing.

9. Material playback



- a) Click the circular thumbnail icon in the lower left corner to enter the playback interface.
- b) The playback interface is as shown in the figure. By clicking "Edit" in the upper right corner of the playback interface, you can delete the materials.
- c) You can view a specific video or image in full screen, or in VR mode.