Choo Choo Vision

CAB-CAM 6 User Guide

Updated for Software Version 6.7

8/5/2023

Contents

Introduction

Congratulations! You have purchased a unique technological advancement for Model Railroading that immerses you into the world of your layout.   Take photos of your layout, live-stream video over the internet, or host Remote Operations sessions.

The following instructions will introduce you to the camera's controls, features, initial setup, and use.

Package Contents

- Choo Choo Vision Camera
- Charging Cable
- Lens Heat Shield
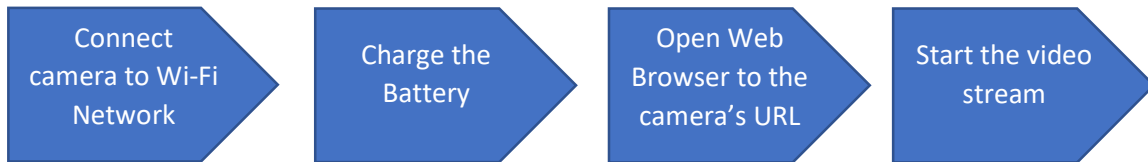- Mounting Putty
- Magnet

Camera Controls

1. Power ON Button
   - Press the Power ON button for 2 seconds to turn the camera ON.   The camera light will blink rapidly upon power-up.
2. Power OFF: Magnetic Reed Switch
   - To turn the camera OFF, swipe a magnet across the area above the camera lens.
3. Status Indicator Light
   - Six Fast Blinks for 2 seconds: Camera is starting up
   - 1 short repeating blink: Complete the initial Setup to configure WiFi settings.
   - Steady Glow: Camera is running and has connected to WiFi
   - Off: Camera is OFF
   - 2 short repeating blinks: Camera is in charging mode.
4. USB Port (external power)
   - Accepts 5V Power from USB Phone Charger
   - Accepts Choo Choo Vision DCC Power Converter
5. Aux Port
   - Accepts secondary auxiliary magnetic switch for powering off the camera
   - Accepts secondary status light (for installation kits)
   - Accepts Pan-Cam interface cable
6. RESET
   - Resets / Reboots the camera.

Initial Setup

It is recommended that you complete the initial setup before installing the camera into an engine or rolling stock. *Note: This section is intended to provide a quick overview of the initial start-up steps. There are additional sections in this guide that provide more detailed explanations.*

The basic initial setup steps are:

Connect camera to Wi-Fi Network → Charge the Battery → Open Web Browser to the camera's URL → Start the video stream

Connect your camera to your local WiFi Network: The Choo Choo Vision camera must be connected to your local WiFi network.   See the section titled "*Connecting a Choo Choo Vision Camera to Your Wi-Fi Network"* for detailed instructions.

Charge the Battery: Before using your Choo Choo Vision camera for the first time, ensure the battery is charged.

- Plug the supplied USB cable into the bottom of the camera.
- Attach the other end of the USB cable to a standard 5V cell phone charger or USB port.
- Turn the camera OFF via the magnetic swipe.
- Allow the camera to charge for 30 minutes.   While charging, the camera light will blink.

Open the Camera's User Screen: After successfully connecting to your local WiFi network, open a web browser on your computer.   Enter the camera's URL (printed on the back of the camera) into a web browser.   The proper format is http://ChooChooVisionxxxx:xxxx where xxxx is your camera ID.   *Notice the colon ":" between the ID numbers.*

- ✓ If your camera ID is 8012, you would enter http://ChooChooVision8012:8012 into the web browser address. *Take notice of the colon ":" between the two camera id values.*
- ✓ Book-mark this screen for future use.

Why does the camera require a port number? Many users have multiple cameras on their layout. Using the port numbers allows you to access multiple cameras using one external IP address.

Powering your CCV Camera

Your CCV camera can be powered by the internal battery or using an external power source.

Battery: A fully charged battery will typically last for about 1/2 hour of video use or function as a keep-alive when installed in an engine or rolling stock using the DCC Power Converter. The standard battery is 140mAh. A larger 400mAh battery that provides approximately 1 hours of run time is available in the Choo Choo Vision Store.   The camera will automatically power OFF if the battery becomes too low.

External Power: The camera can be powered from an external power source such as our DCC Power Adapter or via the USB cable connected to a 5V cell phone power bank, or computer USB port.   External power is also used to re-charge the internal battery.

Power Modes: The Choo Choo Vision camera has three power modes:

- Battery Power: Uses the onboard battery (no external power source is connected)
- External Power: Uses an external power source such as our DCC Power Adapter or via the USB cable connected to a 5V cell phone power bank, or computer USB port.   Note: the internal battery will function as a keep-alive if track power is interrupted.
- Charging: The internal battery will charge whenever an external power source is applied.   The battery will charge whether the camera is ON or OFF. Note: You may operate the camera and charge the battery at the same time.

Power ON/OFF: The method to turn the camera ON/OFF depends on the Power Mode

Battery Power Mode: (no external power source is connected)

- Power ON -- Power Button: Press and hold the Power Button for 2 seconds.   The status light will blink rapidly for 2 seconds to indicate that the camera has been powered ON. Note: The Power ON Button is located on the left side of the camera.
- Power OFF – Magnetic Reed Switch: Swipe the magnet (included) across the area above the lens.   The status light will pulse 3 times and then go out, indicating that the camera has been powered OFF

External Power Mode: (USB or DCC Power Converter connected to the camera)

- Power ON: The camera will automatically turn ON if an external power source is applied, by
    - Plugging the camera into a USB power source
    - Turning track power ON while using DCC power converter
    - Swiping the Magnetic Reed Switch
- Power OFF: To power OFF the camera, swipe a magnet across the area above the lens.   The status light will pulse 3 times and then go out, indicating that the camera has been powered OFF

Note: Software version 6.6.0 or greater allows you to turn off the camera power from the Admin Screen.

Charging your CCV Camera Battery

Your CCV Camera contains an internal battery.   The standard battery is designed to be used as a keep-alive in concert with a DCC Power converter.   The optional 400mah battery is designed to power the camera without an external power source (DCC or similar).   The 400maH battery will typically provide about 45 minutes of continuous video streaming.

Charging Procedure:

- Note: Ensure you have completed the initial WiFi Setup. WiFi setup is only required one time during the initial camera setup.
- Plug the supplied USB cable into the bottom of the camera.
- Attach the other end of the USB cable to a standard 5V cell phone charger or USB port.
- **Turn the camera OFF using the magnet.**
- Allow the camera to charge for 30 minutes then unplug the camera.
- Note: The status light will "blink" two times every couple of seconds to indicate that the camera is in charging mode.
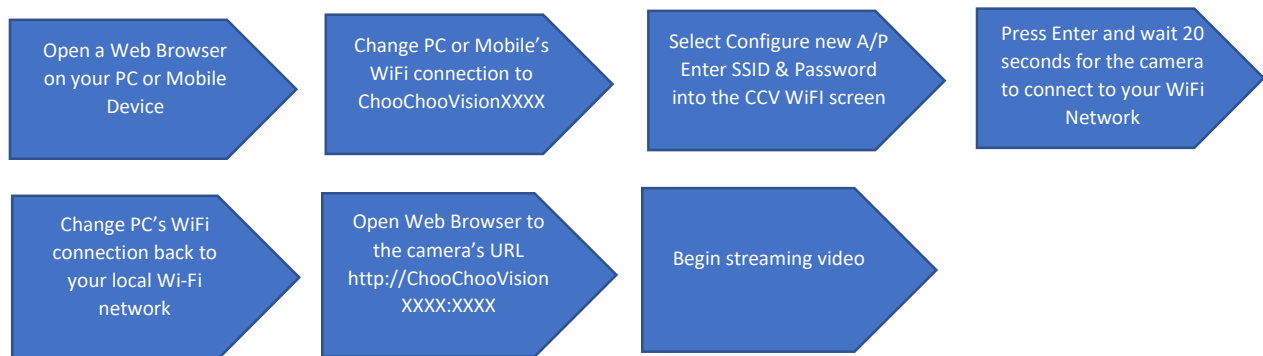
Connecting a Choo Choo Vision Camera to Your Wi-Fi Network for the first time

The Choo Choo Vision Camera is more than just a camera. Contained inside the camera is a web server that allows you to manage camera settings, view video, stream video over the internet, take still images of your layout.

To use the camera, you will need to connect it to your local Wi-Fi network.

Note: Once you have added the camera on your network, it will remember the settings.

The following steps will guide you thru the first-time Wi-Fi setup process:

Open a Web Browser on your PC or Mobile Device → Change PC or Mobile's WiFi connection to ChooChooVisionXXXX → Select Configure new A/P Enter SSID & Password into the CCV WiFI screen → Press Enter and wait 20 seconds for the camera to connect to your WiFi Network

Change PC's WiFi connection back to your local Wi-Fi network → Open Web Browser to the camera's URL http://ChooChooVision XXXX:XXXX → Begin streaming video

- Using the provided USB cable, plug the camera into a 5V USB port. Note: If the camera is installed into an engine, place the engine on the track and turn on track power.
- The camera light will blink rapidly for about 3 seconds, indicating that the camera has powered ON.
- The camera light will then blink once every second, indicating that WiFi setup is needed. Follow the steps below to continue with the Wi-Fi setup…..
- Disconnect your computer from your local Wi-Fi network.
- Connect your computer's Wi-Fi to ChooChooVisionXXXX, where XXXX represents the camera's ID. Wait about 10 seconds for your computer to connect to the camera's web server.
- Open a browser and enter the address is located on the back of your camera into your browser.
- The CCV WiFi Setup webpage should be displayed in the browser window.
- Select "Configure new AP" from the menu.
- Enter the SSID and Password for your router. Press Enter and wait about 30 seconds. Note: your computer screen may not show you if the camera successfully connected. If the screen shows "connection failed", then you probably entered the wrong Wi-Fi password.
- **If the connection was successful, a solid blue light will appear on the camera.**
- Disconnect your computer's WiFi from the ChooChooVisionXXX and reconnect to your local Wi-Fi network.
- Using your browser, enter http://ChooChooVisionXXXX:XXXX where XXXX is your camera's ID number. The Choo Choo vision camera webpage will display
- Press the "Photo" button on the user screen to take a picture and confirm that the camera has been successfully set-up

## Using your Choo Choo Vision Camera:

Menus:

The Choo Choo Vision cameras is controlled by two menu screens, the Main User Screen, and an Admin Screen.

The Choo Choo Vision Admin screen allows you to manage camera settings and control what types of controls are displayed on the User Screen.
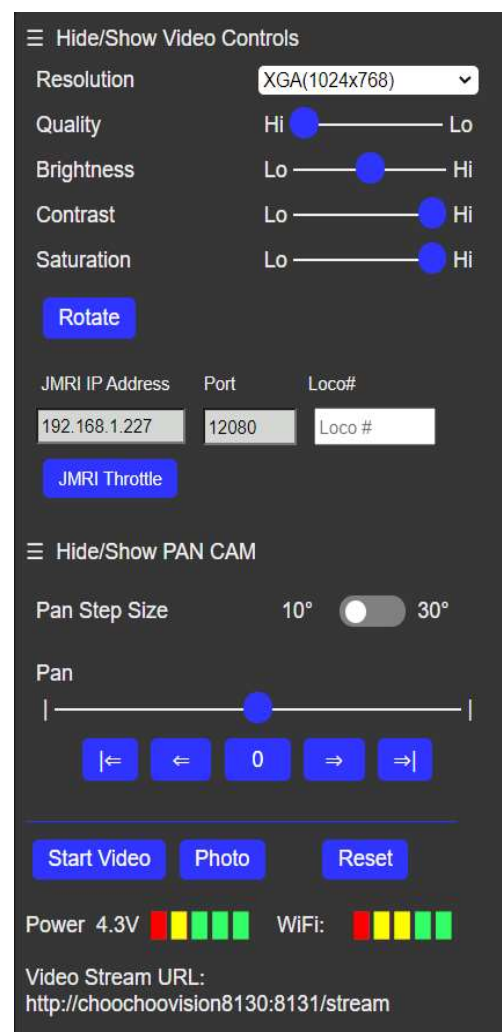
The Choo Choo Vision Main User Screen is the primary screen for viewing video and controlling the camera.

The following sections detail how to access and utilize the Admin Screen and the Main User Screen:

Choo Choo Vision Admin Screen
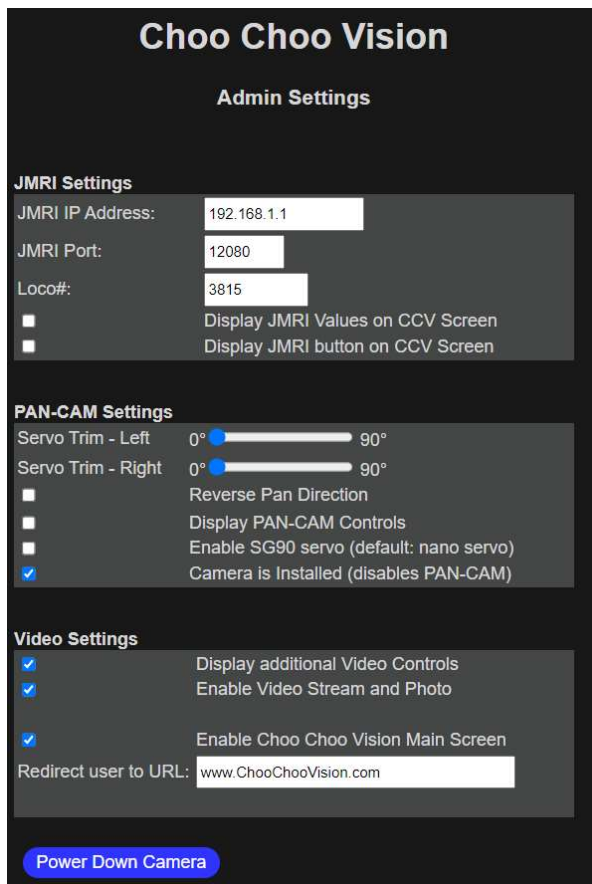
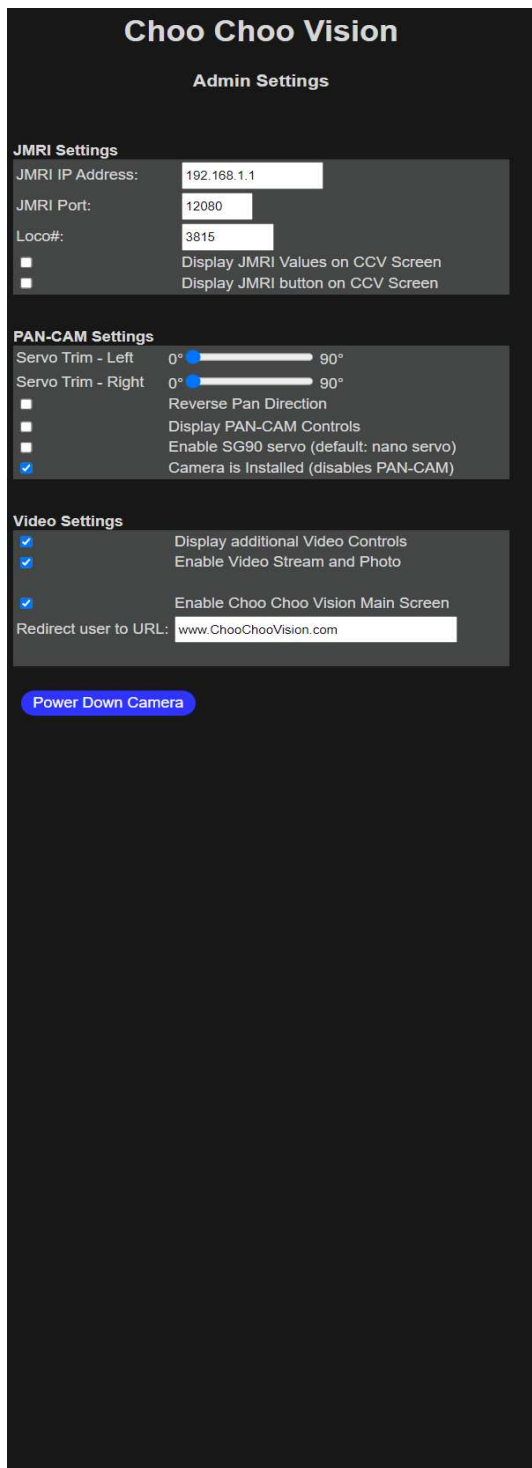**Choo Choo Vision Main User Screen**

Admin Screen

The Choo Choo Vision Admin screen allows you to manage camera settings and control what types of controls are displayed on the Main User Screen.

Accessing the Choo Choo Vision Admin Screen

To access the Admin Screen:

- Turn the camera ON
- Open a web browser on a computer or mobile phone. Note: The computer or mobile phone must be on the same WiFi network as the camera.
- Locate the camera's ID number (printed on the back of the camera).
- Enter the camera's URL into your web browser The proper format is http://ChooChooVisionxxxx:xxxx/admin where xxxx is your camera ID.   *Notice the colon ":" between the ID numbers.*
- For example, if your camera ID is 8012, you would enter http://ChooChooVision8012:8012/admin into the web browser address.   *Take notice of the colon ":" between the two camera id values.*
- ✓ Book-mark this screen for future use.

Admin Screen Settings

Choo Choo Vision

Admin Settings

JMRI Settings

JMRI IP Address:	192.168.1.1
JMRI Port:	12080
Loco#:	3815
☐	Display JMRI Values on CCV Screen
☐	Display JMRI button on CCV Screen

PAN-CAM Settings

Servo Trim - Left	0° ——————	90°
Servo Trim - Right	0° ——————	90°
☐	Reverse Pan Direction	
☐	Display PAN-CAM Controls	
☐	Enable SG90 servo (default: nano servo)	
☑	Camera is Installed (disables PAN-CAM)	

Video Settings

☑	Display additional Video Controls
☑	Enable Video Stream and Photo
☑	Enable Choo Choo Vision Main Screen
Redirect user to URL:	www.ChooChooVision.com

[Power Down Camera]

JMRI Settings JMRI IP Address: Enter the IP address of your JMRI Server.   Note: JMRI's Web Server and WIThrottle services must be ON within JMRI (see the JMRI manual for more information)

• **JMRI IP PORT:**   Port Number for the JMRI WiThrottle. This is typically 12080 or 12090, but can be set to any value within JMRI.

• **LOCO #:**   DCC Address of the locomotive you wish to control with the JMRI throttle.   If you leave this blank, the JMRI system will launch a list of all the JMRI Locos.

PAN-CAM Settings

• **Servo Trim – Left:**   Adjusts the brightness level of the image

• **Servo Trim – Right**: Adjusts the contrast level of the image

• **Pan Direction**:   Reverses the direction of the PAN controls Left/Right to Right/Left

• **Display PAN-CAM Controls**:   Show the PAN-CAM controls on the Choo Choo Vision User Screen

• **Enable SG90 servo:** Adjusts the CCV Software to use an SG90 Servo instead of the default PAN-CAM nano servo.

• **Camera is Installed:** For installation kit only. Enables the secondary external light on the harness to function.

Video Settings

• **Display Video Settings:** Displays additional video image controls on the Choo Choo Vision User Screen (AEC Sensor, ASP, AE Level, etc)

• **Enable Video Stream and Photo**: IMPORTANT: This setting enables / disables the video and photo capabilities on the main page**. It should normally be "checked" to allow you to view video on the main page.**   You may wish to disable the video if you don't want remote viewers to see video.

• **Power Down Camera** – Turn the camera power off from the user screen. Note, in order to turn the camera back on, you must either press the ON button located on the left side of the camera, or use the magnet while under USB power.   See *Powering your CCV camera for further details.*

User Screen Controls and Operation

The User Screen is the primary screen for controlling the camera.

The Choo Choo Vision user screen allows you to view the video feed, take still images, and manage camera settings. This page also is remotely viewable via the internet (with firewall port forwarding enabled on your router).

The Choo Choo Vision User Screen adjusting camera settings, opens a JMRI throttle, runs the PAN-CAM and start/stop the video feed, and take still images.

**Accessing the Choo Choo Vision User Screen**

To access the User Screen:

- Turn the camera ON
- Open a web browser on a computer or mobile phone. Note: The computer or mobile phone must be on the same WiFi network as the camera.
- Locate the camera's ID number (printed on the back of the camera).
- Enter the camera's URL into your web browser The proper format is http://ChooChooVisionxxxx:xxxx where xxxx is your camera ID.   *Notice the colon ":" between the ID numbers.*
- For example, if your camera ID is 8012, you would enter http://ChooChooVision8012:8012 into the web browser address.   *Take notice of the colon ":" between the two camera id values.*
- ✓ Book-mark this screen for future use.

Choo Choo Vision User Screen

Camera Main User Screen Controls

The Choo Choo Vision Main User Screen contains controls for adjusting camera settings, open a JMRI throttle, run the PAN-CAM and start/stop the video feed, and take still images.
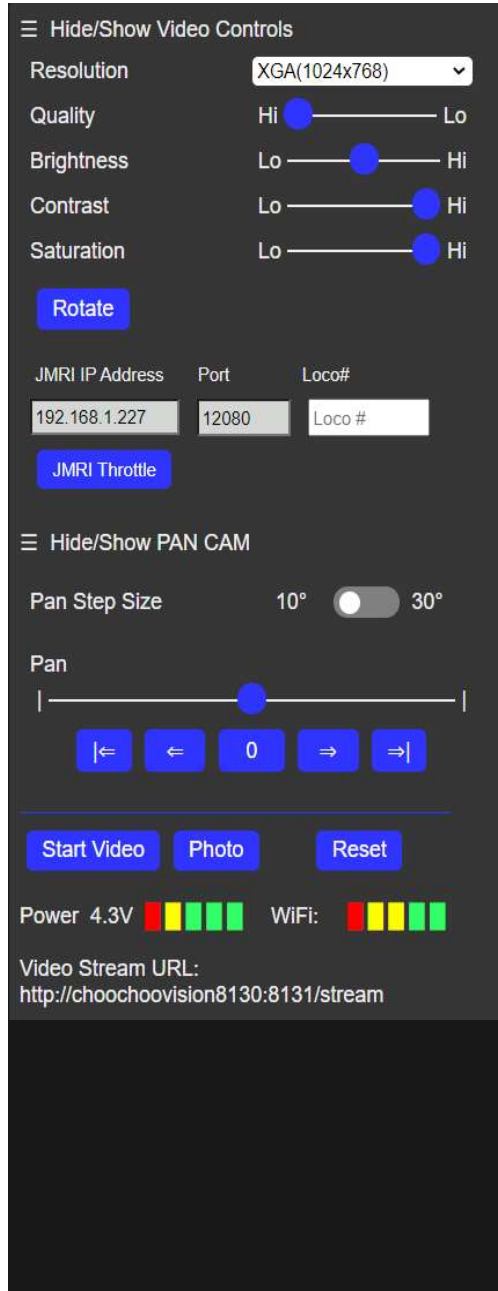
Adjusting Camera Image Settings

- **Resolution**: Sets the image size for the camera. Depending upon your internet speed, VGA mode may perform the best.
- **Quality:** Adjusts the image quality. Depending on your internet speed, you may need to adjust the Quality level.
- **Brightness**: Adjusts the brightness level of the image
- **Contrast**: Adjusts the contrast level of the image
- **Saturation**: Adjusts the saturation level of the image
- **Rotate**: Rotates the image 90 degrees.

- **JMRI IP Address:** IP Address of your JMRI Server
- **PORT:** Port for your JMRI Server
- **Loco#:** DCC address for the LOCO you wish to control. Leave blank to display all JMRI Locos.
- **JMRI Throttle:** Opens the JMRI throttle to control your locomotive. You must have JMRI's Webserver and WiThrottle running on the JMRI server.

- **Pan Step Size**: Sets the number of degrees the PAN CAM will move when using the **<=** or **=>** buttons.
- **Pan Slider**: Moving the Pan slider will move the Pan-Cam left or right.
- **Pan** (|<= , 0 , =>|) buttons: Pans the camera to preset angles of -90 degrees, 0 degrees, or +90 degrees.
- **Pan** (<= , =>) buttons: Pans the camera in increments of 10 or 30 degrees.

- **Start Video**: Starts the video stream.
- **Photo**: Takes a single photo from the camera.
- **Reset Camera**: Remotely reboots the camera module.

- Power Meter: Displays the power available to the camera. Under external power, the Power Meter will typically read 4.0 to 4.2 volts. Under battery power, the Power Meter will display the battery voltage. The camera will automatically shut down when the voltage is less than 3.5 volts.

- WiFi Meter: Displays the strength of the WiFi signal received by the camera.   The WiFi Meter can help you identify areas on your layout with poor WiFi coverage.
- Video Stream URL: Displays the raw video feed without the control panel. Enter the IP address into a web browser to view the camera control screen and display the video. **Note: Only one web browser at a time can be connected to the camera.**

PAN-CAM

The Choo Choo Vision PAN-CAM user guide can be found on our website at www.ChooChooVision.com/support.

JMRI Throttle

The Choo Choo Vision camera has been designed to work with JMRI. It can launch a JMRI Throttle to control your locomotive while you view live video from the camera.

To use the CCV JMRI Throttle,

- Logon to your JMRI Server.
- Enable the JMRI WebServer and WiThrottle servers.   (See the help section in JMRI's documentation for details).
- Navigate the CCV Admin Settings Page
- Enter the JMRI IP Address, Port, and Loco# (optional)
- Navigate to the CCV User Screen
- Press the JMRI Throttle button on the Choo Choo Vision menu to open JMRI's throttle
- Position and resize the JMRI Thottle web page and the CCV Web Page side-by-side.

Note: Leave the Loco# blank to display a list of all available Locomotives.

Remote Viewing over Internet

Your Choo Choo Vision camera has been designed to stream live-video from your layout to remote viewers.   To enable remote viewing, you will need to establish a static IP address for the camera and forward 2 ports thru your router's firewall.

The camera has 2 ports that will require forwarding.

- The first port is the ID number of your camera
- The second port is the ID number of your camera PLUS 1

For example, if your camera ID is 8014, you will need to forward ports 8014 and 8015 in your fire wall.

Remote users can now access the camera using your external IP address and a web browser.

Remote users would enter <<YourExternalIP>>:8014 into their web browser to access the camera.   You can find out your External IP address by going to https://www.whatismyip.com

If you have multiple cameras, you can access each camera using the same external IP address and the port number for the specific camera.

Software Updates

The Choo Choo Vision software is routinely updated to provide additional features and functionality. Many of the new features are suggested by CCV customers, so send us your suggestions.

The following steps will guide you thru a software update:

- Download the software update and save to your computer
- Plug the CCV camera into your computer's USB port using the provided cable
- Open a web browser and enter the URL on the back of your CCV camera.   You can find the current software revision at the bottom of the HOME page.
- From the Menu, select "Update"
- Press the "Choose File" button and navigate to the software update file that you saved to your computer.
- Press the green UPDATE button to start the software update.
- When the update is completed, the screen will display "Successfully updated. Rebooting"
- The CCV camera will automatically reboot.
- Click on HOME to display the help instructions. The new software version will be displayed at the bottom of the HOME page.
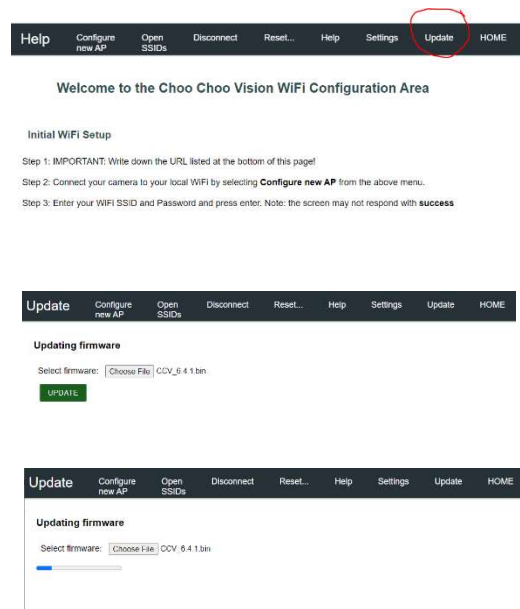
Product Support:

The support area of the Choo Choo Vision website contains several how-to's and tips that may answer your questions.

If you have any question regarding the setup, use, or suggestions, please feel free to contact us.

- Email: support@ChooChooVision.com
- Website: Send a request via our website www.ChooChooVision.com/contact

Appendix A: Wi-Fi Screen Controls and Operation

Your camera's Wi-Fi connection settings are managed thru the CCV WiFi setup screens.

Initially, your camera will not recognize your WiFi network (it does not know the SSID and password for your network). Hence, the camera will become a WiFi access point itself. You can connect to the camera via your computer or mobile phone.   To access the CCV WiFi settings page, change your computer's WiFi settings and connect your computer to the ChooChooVisionXXXX WiFi access point. See "**Configure new AP**" below for instructions.

After you have entered the SSID and password, the camera will connect to your Wi-Fi network. You can then access the CCV WiFi menus using the URL printed on the back of your camera.   Going forward, the camera will remember these settings and automatically connect to your Wi-Fi network when power is ON.

There are several menu options in the CCV Wi-Fi A menu:

- **Configure new AP**: Allows you to enter the SSID and Password Wi-Fi network

- **Open SSIDs**: Lists previously saved SSID.   This is helpful if you have multiple routers / access points and would like to connect to a different network.

- **Disconnect**: Disconnects the camera from the current Wi-Fi network

- **Reset:** Resets the connection between the camera and the local Wi-Fi access point.

- **Help:** Displays some basic instructions for connecting your camera to the local Wi-Fi network.

- **Update**: OTA updates. Used to upload Choo Choo Vision software updates.

- **HOME**: Return to user home page.

Configure new AP: This menu option is used for connecting the camera to your Wi-Fi Network.

The system will scan for all available WiFi access points in the vicinity and displays the WiFi signal strength and security indicator.   To connect the camera to your Wi-Fi network:

- Select a WiFi access point to connect with the greatest signal strength.
- Enter the WiFi SSID and Passphrase and tap "**Apply**" to start a WiFi connection.
- Wait 30 seconds for the camera and router to negotiate the connection
- Reconnect the PC's to your local Wi-Fi network.

- Connect to your camera using a web browser at http://ChooChooVisionXXXX:XXXX

Important: The signal strength from your Wi-Fi access point must be above 75% for the camera to function properly. If the signal strength is too low, you may consider installing a Wi-Fi repeater near your layout.

Static IP Address: If you want to configure your camera with static IP (recommended), uncheck "**Enable DHCP**" setting and follow the steps below:

- Reserve an IP address in your router.
- Enter the reserved IP address, Gateway, and Netmask from your router into the AutoConnect setting.   Note: you do not need to enter a DNS1 or DNS2 value.
- Press APPLY
- Wait 30 seconds and change your PC's Wi-Fi connection back to your local network.
- Connect to your camera using a web browser at http://ChooChooVisionXXXX:XXXX

Open SSIDs menu option displays saved SSID credentials. You can store more than one Wi-Fi network credentials in the camera. Clicking on the green SSID button will connect the camera to that specific network access point.

Disconnect: Disconnects your Choo Choo Vision camera from the Wi-Fi network. After disconnecting**,** you will not be able to reach the AutoConnect menu because the camera is no longer connected to your WiFi network. You disconnect power and reconnect power to the camera to reestablish the Wi-Fi connection.

Reset: Reboots your Choo Choo Vision camera and resets the Wi-Fi network connection.

Settings: Displays network and camera settings for your Choo Choo Vision camera such as the IP address, Gateway, dBM (signal strength)

Appendix B: Lenses – Removal and Installation, Heat Shields, and Lens Care

Your CCV camera system comes with a pre-installed lens.

Changing Lenses: DO NOT ATTEMPT TO CHANGE YOUR LENSE WITHOUT CONTACTING CUSTOMER SUPPORT FOR INSTRUCTIONS.   The CCV camera contains delicate electronic components that can be damaged if mishandled. Our customer support techs will walk you thru the lens removal and installation procedure.

Lens Temperature Management: The CCV lenses are more than just a piece of lens glass – the lens head contains microcircuits that process images, convert images to JPEG or BMP format and transmit data back to the central CCV processor.   As such, the camera head is doing a lot of processing and will become warm during use.

- Internal Lens: Internal lenses do not require a heat shield. There is sufficient cooling within the CCV camera module.
- Long Lenses: External lenses MUST have a heat shield attached to the lens head.   Proper air flow is required to cool the camera lens.   DO NOT COVER THE BACK OF THE CAMERA HEAD AND HEAT SHIELD WITH ANYTHING THAT WOULD PREVENT AIR-FLOW TO THE LENS HEAD AND HEAT SHIED.
    - Inside the CAB lens mounting – square heat shield. The CCV camera can be mounted inside an engine. Lens heads can be placed behind the cab window, or peer-thru a small hole in the front of the cab.   Included in with each long lens is square heat shield. Use the included square heat shield when mounting the lens inside the engine cab.
        - Remove the plastic covering from the back of the lens head.
        - Remove the blue plastic covering from the back of the square heat shield
        - Attach the heat shield to the back of the lens.
        - Place a small ring of mounting putty around the front of the lens head and press forward to mount into the engine cab. Take special care not to get mounting putty on the glass lens or the square heat shield.
    - Top of the CAB lens mounting – brass strip heat shield. The CCV camera can be mounted on top of an engine. The lens head can be placed in front of cab window using the brass mounting strip. The brass strip functions as both a heat sink and lens mounting bracket. The brass strip can be bent to reach down to the cab window from the top of the cab
        - Mount the camera to the top of the engine using mounting putty
        - Place the brass strip along the top of the engine. Bend the end of the brass strip so it reaches over the cab window.   It should now form an "L" shape.
        - Clean the brass strip with rubbing alcohol
        - Remove the plastic tape from the back of the lens head
        - Attach the lens head to the brass strip
        - Attach the brass strip to the top of the engine and adjust to the proper viewing angle.

Lens Care

- Focus Adjustment – The focal point of your CCV lens can be adjusted by making slight turns to the lens glass ring.   Gently turn the lens glass ring left or right to adjust the focal point – typical range is about 1 turn left or 1 turn right. DO NOT UNSCREW FULLY, AS YOU MAY DAMAGE THE LENS WHEN TRYING TO RE-INSTALL.
- Cleaning – If your lens becomes dirty, you may clean the lens glass with a lens or eye glass cleaner.

Appendix C: Troubleshooting:

1) Camera will not power-ON: There are 2 ways to power your camera, via an external 5V power source (USB or Track Power), or the internal battery.
   a. First, confirm camera operation using an external power source:
      i. Apply power to the camera via the camera's USB port. The camera package included a small black USB-C cable.   Plug one end of the cable into the camera's USB port. Plug the other end of the cable into a 5V power source (from a 5V cell phone charger or your computer's USB port).
      ii. After you attach the cable to 5V power, the camera status light should blink rapidly for about 2 seconds, indicating that the camera has powered ON.
      iii. If the light does not blink rapidly, then try resetting the camera. Press the camera's reset button. See the "Camera Controls" section for the location of the reset button.   The button can be pressed by inserting the end of a paperclip into the reset hole.
   b. Second, confirm camera operation using internal battery power.
      i. Charge the camera for 30 minutes using an external power source.
      ii. Disconnect the camera from the external power source (unplug the USB cable from the camera)
      iii. Swipe the magnet across the Power OFF sensor, located above the lens. See the "Camera Controls" section for location.
      iv. Press and HOLD the Power ON button until the status light blinks rapidly (approximately 2 seconds).
      v. If the status light does not blink rapidly, then the battery has not fully charged.   Plug in the external power source and continue charging the battery.

2) Camera Video freezes or will not appear:
   a. Most likely there is a problem with the Wi-Fi signal.   The camera may have lost its connection to your Wi-Fi network, or there may be a poor signal strength.

3) Check the WiFi Signal Strength at the camera:

a. Navigate to the camera's WiFi setup page for your camera. Open a browser on your computer and enter the URL located on the back of the camera. For example http://ChooChooVisionXXXX where XXXX is your camera's ID number.

b. Select "Configure new AP" from the menu

c. What is the signal strength for your Wi-Fi access point?   The camera runs best when the signal strength is greater than 75%.

d. Below is a picture of the SSID, signal strength (76%) and

CXNK00887A4C   76% Ch.1

e. If the Wi-Fi signal strength is less than 75%, then you may need to consider purchasing a Wi-Fi range extender. It is best to have a range extender or Wi-Fi access point located in the same room with your layout.

4) Router: Confirm the router is working and the camera is connected via Wi-Fi to the router.

a. Power ON the camera

b. Confirm your Wi-Fi router is ON and working properly. Can you access the router using another device (i.e., your computer or cell phone)?

c. Locate the Choo Choo Vision camera in your router's Wi-Fi network page.

i. Is the Choo Choo Vision camera present? If not,

1. The camera's Wi-Fi setup needs to be completed.

2. You may have connected the camera to another network (SSID)

ii. Is the Signal Strength for the camera "Good" or "Green"?

2) Ping: Can you ping the camera?

• With the camera on, open a command prompt.   (You can type "CMD" into the Window's search line at the bottom of the screen).

• A black command window will open

• Type "ping choochoovisionXXX" and press enter

• If the camera is connected to the network, you should see 4 replies back from the camera: ie "Reply from <<CAMERA IP ADDRESS>>: bytes xxx..x..... etc"

• If you don't get a reply, try typing "ping CAMERA IP ADDRESS" and see if you receive a response.

Here's the command window responses for camera 8014:   Notice that the response is greater than 300ms… not the best signal

```
Command Prompt                                                    —   □   ×

C:\Users\chala>ping http://choochoovision8014
Ping request could not find host http://choochoovision8014. Please check the name and try again.

C:\Users\chala>ping choochoovision8014

Pinging choochoovision8014.attlocal.net [192.168.1.107] with 32 bytes of data:
Reply from 192.168.1.107: bytes=32 time=317ms TTL=255
Reply from 192.168.1.107: bytes=32 time=209ms TTL=255
Reply from 192.168.1.107: bytes=32 time=112ms TTL=255
Reply from 192.168.1.107: bytes=32 time=334ms TTL=255

Ping statistics for 192.168.1.107:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 112ms, Maximum = 334ms, Average = 243ms

C:\Users\chala>ping 192.168.1.107

Pinging 192.168.1.107 with 32 bytes of data:
Reply from 192.168.1.107: bytes=32 time=261ms TTL=255
Reply from 192.168.1.107: bytes=32 time=138ms TTL=255
Reply from 192.168.1.107: bytes=32 time=379ms TTL=255
Reply from 192.168.1.107: bytes=32 time=260ms TTL=255

Ping statistics for 192.168.1.107:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 138ms, Maximum = 379ms, Average = 259ms

C:\Users\chala>
```

4)   The camera has 2 DNS addresses that resolve to the same IP address.
http://ChooChooVision8014:8014   and   http://ChooChooVision8014.local:8014   see if
using http://ChooChooVision8014.local:8014 resolves any issues.

5) Static IP address: If the WiFi signal strength is OK, then let's set up a static IP address for the
camera.   To set up a static IP address for the camera:
> First, reserve an IP address in your router.   The procedure varies from router to
router.   Here's a link that covers ATT and FIOS https://www.online-tech-tips.com/computer-
tips/assign-fixed-static-ip-addresses-to-devices-on-home-network/

> Once you have reserved a static IP address in the router, you'll need to configure the camera
to use that IP address:
> Navigate to the camera's WiFI menu at 192.168.1.33
> Select "Settings" from the menu
> Write down the follwing values from the Settings page: IP, GW, Subnet Mask

> Select "Configure new AP" from the menu
> Click on the Green Box with your router's name
> Look below, and find the setting titled "Enable DHCP".
> Uncheck the Enable DHCP checkbox.   The screen will then display fields to enter the IP
Address (the one you reserved in the router), Gateway, Netmask, DNS1 and DNS2
settings.   DNS1 and DNS2 are not required)
> Enter the IP Address (that you reserved in the router)
> Enter the Gateway (the GW value from the "Settings" page)
> Enter the Netmask (the Netmask value from the "Settings" page)
> You can leave DNS1 and DNS2 blank

> Click on the APPLY button.   The camera will then negotiate w/ the router and respond back with a list of IP settings.

You now will have a static IP address assigned to the camera.