

Configuring an Axis Camera

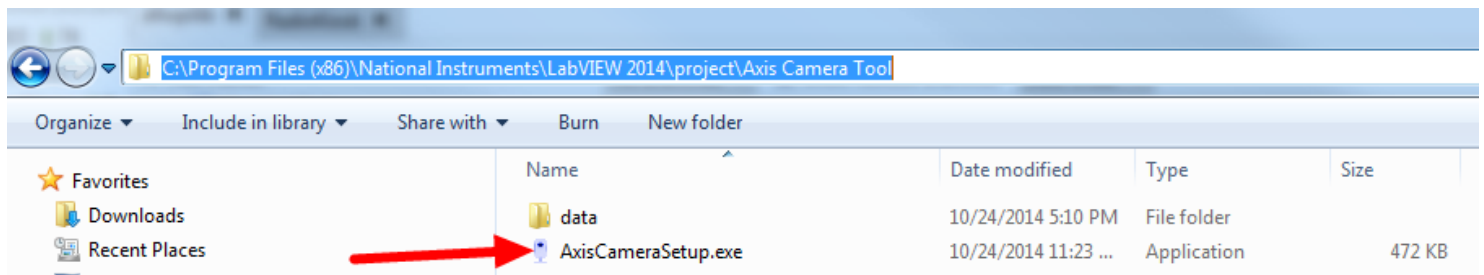
Configuring an Axis Camera

Three different Axis camera models are supported by the FRC software, the Axis 206, Axis M1011 and Axis M1013. This document provides instructions on how to configure one of these cameras for FRC use. To follow the instructions in this document, you must have installed the [NI FRC Update Suite](#) and [Configured your radio](#)

Connect the camera

Connect the Axis camera to the DAP-1522 radio using an Ethernet cable. Connect your computer to the radio using an ethernet cable or via a wireless connection.

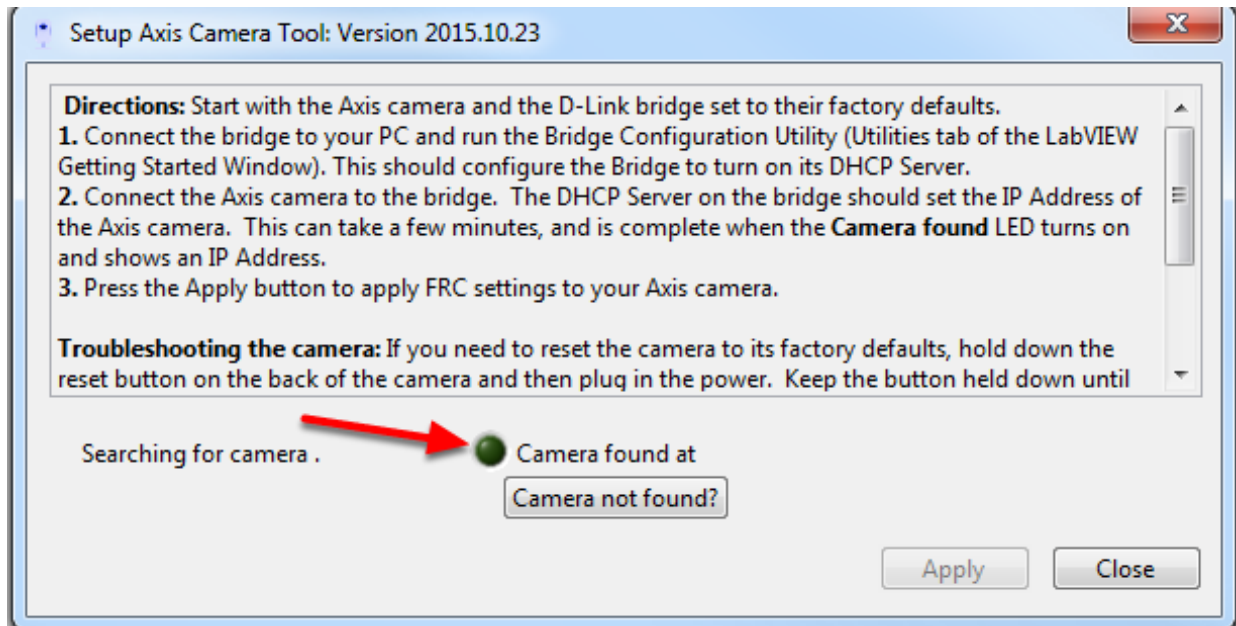
Axis Camera Setup Tool



Browse to C:\Program Files (x86)\National Instruments\LabVIEW 2014\project\Axis Camera Tool and double-click on AxisCameraSetup.exe to start the Axis Camera Setup Tool.

Configuring an Axis Camera

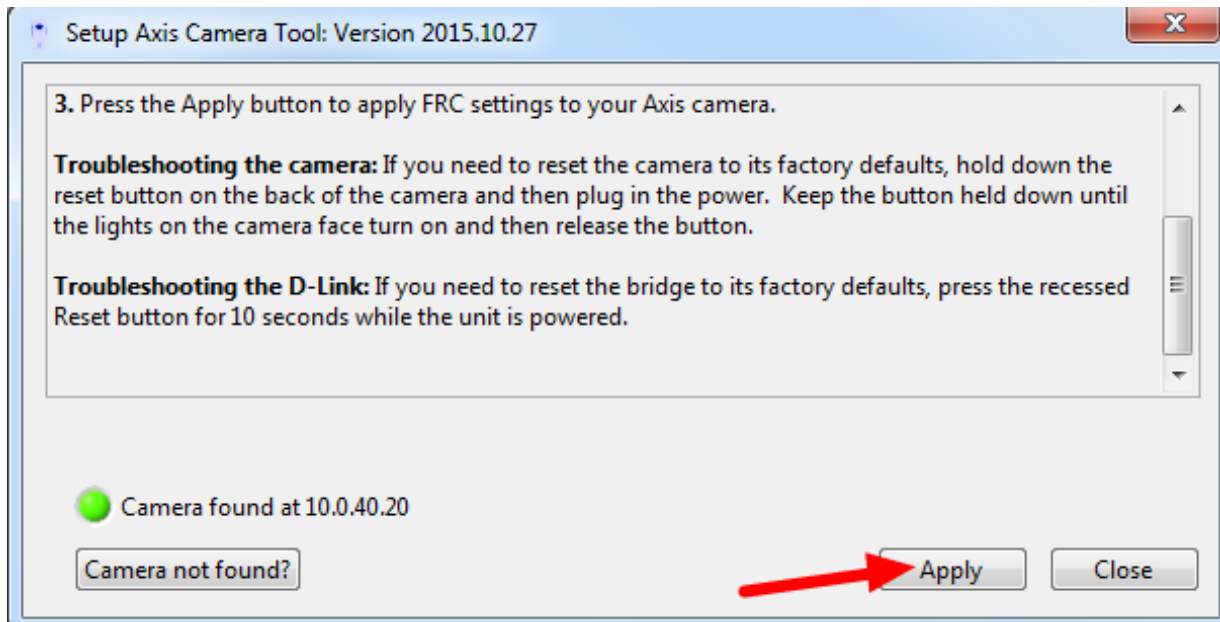
Tool Overview



The camera should be automatically detected and the green indicator light should be lit. If it is not, make sure the camera is powered on (the ring on the camera face should be green) and connected to your computer. If the indicator remains off follow the instructions in the tool textbox next to **Troubleshooting the camera** to reset the camera. You can also use the **Camera not found?** button to check the IP address of your computer, one of the addresses listed should be of the form 10.TE.AM.XX where TEAM is your 4 digit team number.

Configuring an Axis Camera

Setup the Camera



To configure the camera, press Apply. This will configure many of the necessary/recommended settings for using the camera for FRC. Currently the tool does not properly configure the DNS name of the camera in many cases.

Configuring an Axis Camera

Camera Webpage



AXIS
COMMUNICATIONS

Configure Root Password

User name: root

Password:

Confirm password:

OK

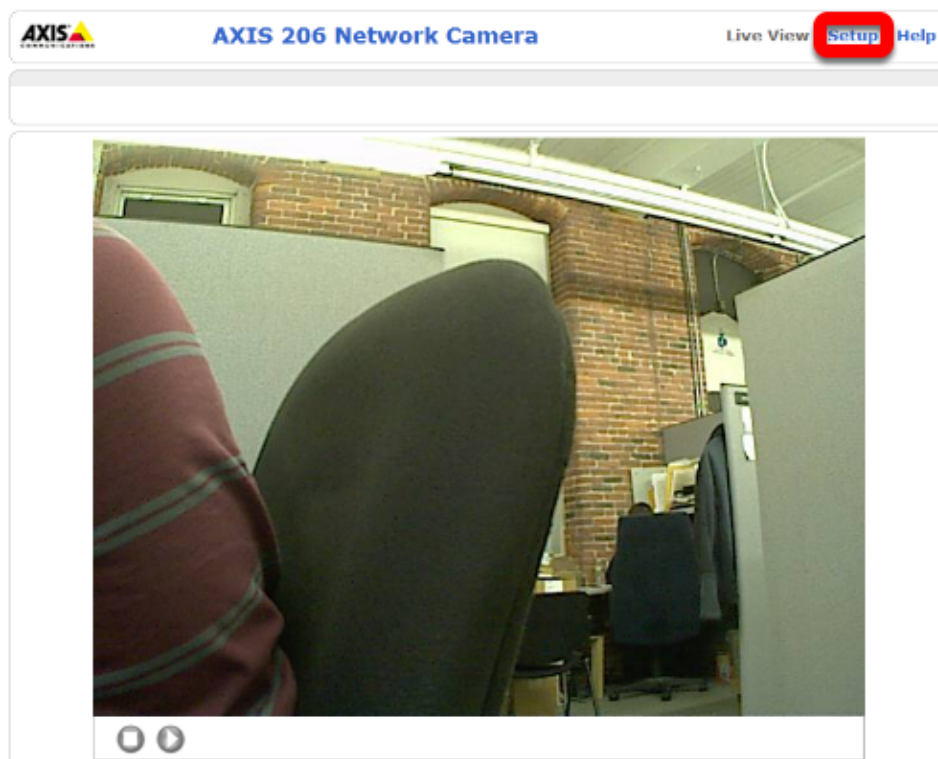
The password for the pre-configured administrator root must be changed before the product can be used.

If the password for root is lost, the product must be reset to the factory default settings, by pressing the button located in the product's casing. Please see the user documentation for more information.

To set the network settings, open a web browser and enter the address shown next to Camera found at in the tool (in the example above this is 10.0.40.20) in the address bar and press enter. You should see a Configure Root Password page, set this password to whatever you would like, but admin is recommended.

Configuring an Axis Camera

Setup Page



Click **Setup** to go to the setup page.

Configuring an Axis Camera

Configure Basic Network Settings

AXIS 206 Network Camera [Live View](#) | [Setup](#) | [Help](#)

Basic TCP/IP Settings ?

Network Settings

View current network settings: [View](#)

IP Address Configuration

2 ☒ Obtain IP address via DHCP

☐ Use the following IP address:

IP address: [Test](#)

Subnet mask:

Default router:

Services

☒ Enable ARP/Ping setting of IP Address

Options for notification of IP address change [Settings...](#)

AXIS Internet Dynamic DNS Service [Settings...](#)

3 [Save](#) [Reset](#)

Left Sidebar:

- Basic Configuration
- Video & Image
- Live View Config
- System Options
 - Users
 - Date & Time
 - Network
 - 1 **Basic**
 - Advanced
 - QoS
 - SMTP (email)
 - UPnP
 - Bonjour
 - LED settings
 - Maintenance
 - Support
 - Advanced
- Language
- About

To configure the network settings of the camera, click the arrow to expand the **System Options** pane, then click the arrow to expand **Network**, then expand **TCP/IP** and select **Basic**. Set the camera to obtain an IP address via DHCP by selecting the bubble. Alternately, you may choose to set a static IP in the range 10.TE.AM.3 to 10.TE.AM.19. This is outside the range handed out by the DAP-1522 radio (home use) or FMS system (event use) so you will avoid any IP conflicts.

Click **Save**.

Configuring an Axis Camera

Configure Advanced Network Settings

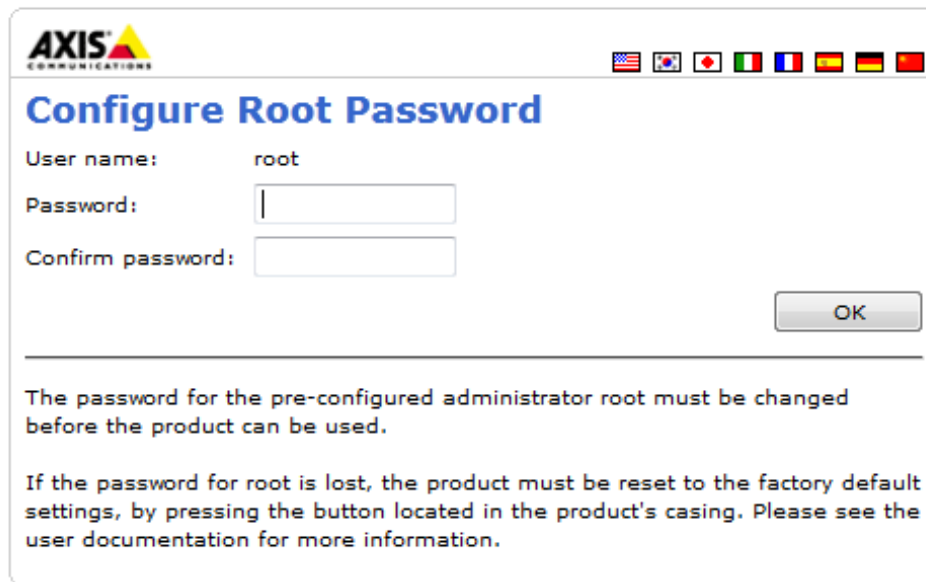
The screenshot shows the 'AXIS 206 Network Camera' configuration interface. On the left sidebar, under 'System Options', 'TCP/IP' is expanded, and 'Advanced' is highlighted with a red circle. The main content area is titled 'Advanced TCP/IP Settings'. It contains several sections: 'DNS Configuration' with options to obtain DNS server address via DHCP or manually; 'NTP Configuration' with similar options; 'Host Name Configuration' where 'Use the host name' is selected with a radio button and 'axis-camera' is entered in the text field (this field is circled in red); 'Link-Local Address' with an 'Auto-Configure Link-Local Address' checkbox; 'HTTP' with a port number of 80; 'NAT traversal (port mapping)' which is disabled; 'FTP' with an 'Enable FTP server' checkbox; and 'Network Traffic' with a 'Connection type' dropdown set to 'Auto-Negotiate'. 'Save' and 'Reset' buttons are at the bottom right.

Next click **Advanced** under TCP/IP. Set the Host Name Configuration to "Use the host name:" and set the value to "axis-camera" as shown. If you plan to use multiple cameras on your robot, select a unique host name for each. You will need to modify the dashboard and/or robot code to work with the additional cameras and unique host names.

Click **Save**.

Configuring an Axis Camera

Manual Camera Configuration



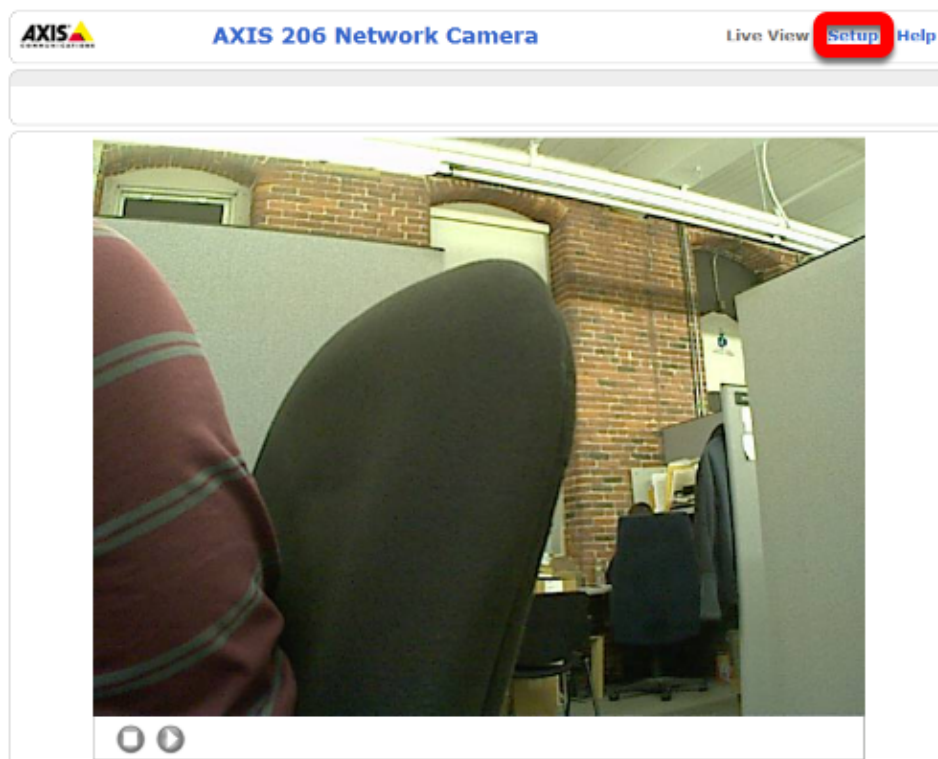
The screenshot shows a web browser window with the Axis Communications logo in the top left and a row of flags in the top right. The main heading is "Configure Root Password". Below this, there are three labels with corresponding input fields: "User name:" with the text "root", "Password:" with an empty text box, and "Confirm password:" with an empty text box. An "OK" button is located to the right of the confirm password field. Below a horizontal line, there is a message: "The password for the pre-configured administrator root must be changed before the product can be used." followed by another message: "If the password for root is lost, the product must be reset to the factory default settings, by pressing the button located in the product's casing. Please see the user documentation for more information."

It is recommended to use the Setup Axis Camera Tool to configure the Axis Camera. If you need to configure the camera manually, connect the camera directly to the computer, configure your computer to have a static IP of 192.168.0.5, then open a web browser and enter 192.168.0.90 in the address bar and press enter. You should see a Configure Root Password page, set this password to whatever you would like, but **admin** is recommended.

If you do not see the camera webpage come up, you may need to reset the camera to factory defaults. To do this, remove power from the camera, hold the reset button while applying power to the camera and continue holding it until the lights on the camera face turn on, then release the reset button and wait for the lights to turn green. The camera is now reset to factory settings and should be accessible via the 192.168.0.5 address.

Configuring an Axis Camera

Setup Page



Click **Setup** to go to the setup page.

Configuring an Axis Camera

Configure Users

AXIS 206 Network Camera

Live View | Setup | Help

Basic Configuration

- 1. Users
- 2. Date & Time
- 3. Video & Image
- 4. Live View Config
- 5. System Options
- Language
- About

Users

User List

| User Name | User Group |
|-----------|---------------|
| root | Administrator |

Add... Modify... Remove

User Settings

☐ Enable anonymous viewer login (no user name or password required)

Maximum number of simultaneous viewers limited to: 10 [0..10]

Subsequent viewers will see a blank image.

Save Reset

On the left side click Users to open the users page. Click Add then enter the Username FRC Password FRC and click the Administrator bubble, then click OK. If using the SmartDashboard, check the Enable anonymous viewer login box. Then click Save.

Configuring an Axis Camera

Configure Image Settings

The screenshot shows the configuration interface for an AXIS 206 Network Camera. The left sidebar contains navigation links: Basic Configuration, Video & Image (selected), Live View Config, System Options, Language, and About. The main content area is titled 'Image Settings' and includes a help icon. It is divided into three sections: Image Appearance, Overlay Settings, and Video Stream. The Image Appearance section has fields for Resolution (320x240 pixels), Compression (30), Rotate image (0 degrees), Color level (50), Brightness (50), and Sharpness (0). The Overlay Settings section has checkboxes for Include date, Include time, and Include text, and a dropdown for placing text/date/time at the top of the image. The Video Stream section has radio buttons for Maximum video stream time (Unlimited or Limited to a specified number of seconds per session) and Maximum frame rate (Unlimited or Limited to a specified number of fps per viewer). At the bottom, there is a 'Test' button and 'Save' and 'Reset' buttons.

AXIS 206 Network Camera Live View | Setup | Help

Image Settings ?

Image Appearance

Resolution: 320x240 pixels

Compression: 30 [0..100]

Rotate image: 0 degrees

Color level: 50 [0..100] *

Brightness: 50 [0..100] (Does not affect Test image)

Sharpness: 0 (Does not affect Test image)

* Changes to color level do not affect Test image (exception 0 = B/W)

Overlay Settings

☐ Include date ☐ Include time

☐ Include text: (Does not affect Test image)

Place text/date/time at: top of image

Video Stream

Maximum video stream time:

☒ Unlimited

☐ Limited to [1..] seconds per session

Maximum frame rate:

☒ Unlimited

☐ Limited to [1..30] fps per viewer

Test

Test settings before saving.

Save Reset Test

Click **Video & Image** on the left side to open the image settings page. Set the **Resolution** and **Compression** to the desired values (recommended 320x240, 30). To limit the framerate to under 30 FPS, select the **Limited to** bubble under **Maximum frame rate** and enter the desired rate in the box. Color, Brightness and Sharpness may also be set on this screen if desired. Click **Save** when finished.

Configuring an Axis Camera

Configure Basic Network Settings

The screenshot displays the configuration web interface for an AXIS 206 Network Camera. The interface is divided into a left sidebar and a main content area. The sidebar contains a menu with categories: Basic Configuration, Video & Image, Live View Config, and System Options. Under System Options, the 'Network' section is expanded, and 'TCP/IP' is selected, with 'Basic' highlighted. The main content area is titled 'Basic TCP/IP Settings' and includes a 'Network Settings' section with a 'View' button. Below this is the 'IP Address Configuration' section, which has two radio buttons: 'Obtain IP address via DHCP' (selected, marked with a '2') and 'Use the following IP address:'. The static IP fields are filled with '192.168.0.90', '255.255.255.0', and '192.168.0.1'. A 'Test' button is next to the IP address field. The 'Services' section includes a checked checkbox for 'Enable ARP/Ping setting of IP Address', a 'Settings...' button for 'Options for notification of IP address change', and another 'Settings...' button for 'AXIS Internet Dynamic DNS Service'. At the bottom, there are 'Save' and 'Reset' buttons, with the 'Save' button marked with a '3'.

To configure the network settings of the camera, click the arrow to expand the **System Options** pane, then click the arrow to expand **Network**, then expand **TCP/IP** and select **Basic**. Set the camera to obtain an IP address via DHCP by selecting the bubble. Alternately, you may choose to set a static IP in the range 10.TE.AM.3 to 10.TE.AM.19. This is outside the range handed out by the DAP-1522 radio (home use) or FMS system (event use) so you will avoid any IP conflicts.

Click **Save**.

Configuring an Axis Camera

Configure Advanced Network Settings

The screenshot shows the 'AXIS 206 Network Camera' configuration interface. The left sidebar contains a navigation menu with categories like Basic Configuration, Video & Image, Live View Config, System Options, and Language. The main content area is titled 'Advanced TCP/IP Settings'. It includes several configuration sections: DNS Configuration (with options for DHCP or manual DNS server address), NTP Configuration (with options for DHCP or manual NTP server address), Host Name Configuration (where 'Use the host name:' is selected and 'axis-camera' is entered), Link-Local Address (with 'Auto-Configure Link-Local Address' checked), HTTP (with port 80), NAT traversal (port mapping), FTP (with 'Enable FTP server' checked), and Network Traffic (with 'Auto-Negotiate' selected for connection type). 'Save' and 'Reset' buttons are at the bottom.

Next click **Advanced** under **TCP/IP**. Set the **Host Name Configuration** to "Use the host name:" and set the value to "axis-camera" as shown. If you plan to use multiple cameras on your robot, select a unique host name for each. You will need to modify the dashboard and/or robot code to work with the additional cameras and unique host names.

Click **Save**.