

Configuring an Axis Camera

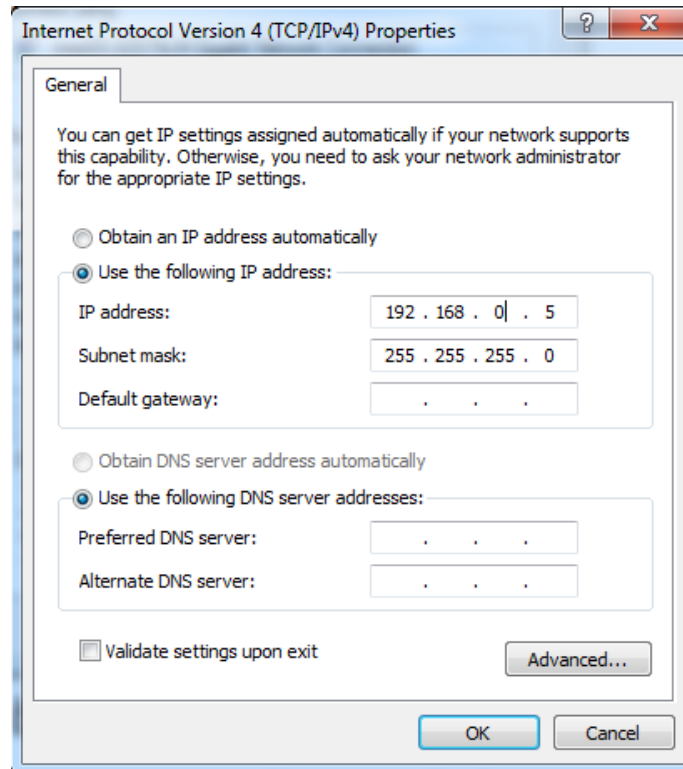
Three different Axis camera models are supported by the FRC software, the Axis 206, Axis M1011, and Axis M1013. This document provides instructions on how to configure one of these cameras for FRC use. To follow the instructions in this document, an installation of [2014 NI FRC Update](#) is required.

Connect the camera

Connect the Axis camera to the computer using an Ethernet cable. Most modern computers are equipped with auto-sensing ports and will work with a normal Ethernet cable, but a crossover cable, or network switch between the devices may be necessary for some computers.

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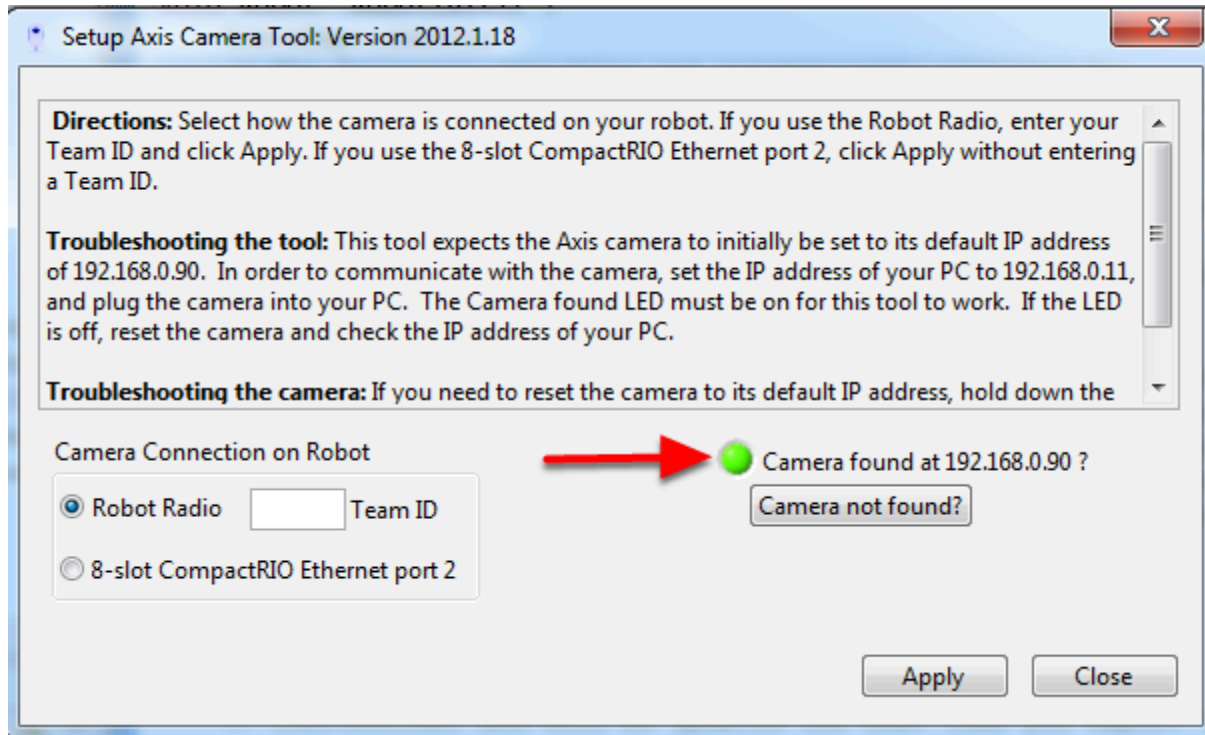
Configure computer IP address



Set your computer's IP address to 192.168.0.5. For instructions on how to set your computer IP, see the [Imaging your cRIO document](#).

Configuring an Axis Camera

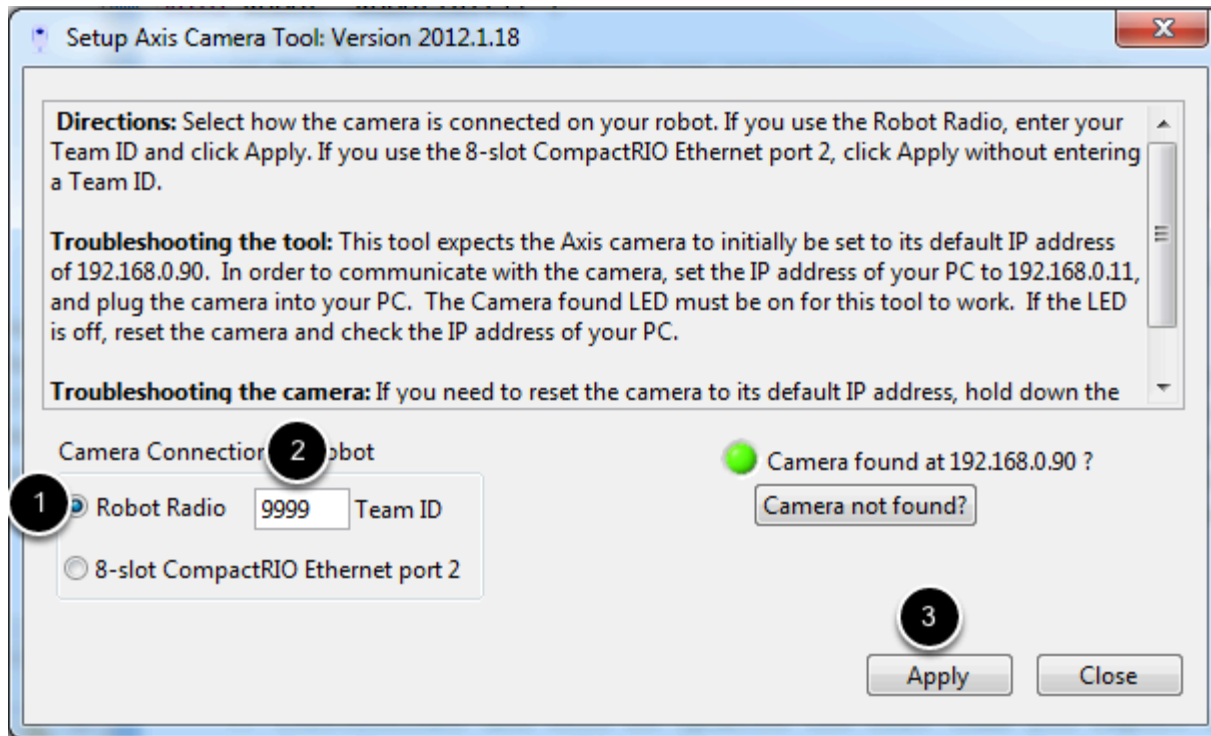
Launch the Setup Axis Camera Tool



Double click on the desktop icon that says Setup Axis Camera to launch the Setup Axis Camera Tool. 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.

Configuring an Axis Camera

Setup the Camera



The recommended configuration (and the default expected by the robot code examples and FRC Dashboard) is to connect the camera to the Robot Radio. To configure the camera for this setup:

1. Make sure the **Robot Radio** bubble is selected
2. Enter your FRC team number in the **Team ID** box
3. Press **Apply**.

This will automatically configure the following settings on the camera:

- IP
- Add Username and Password: FRC/FRC
- Anonymous Viewing: Enabled (required for use with SmartDashboard)
- Resolution: 320x240
- Compression: 30
- Frame Rate: 15FPS

Note that the LabVIEW Dashboard and/or LabVIEW robot code will override these settings for their streams.

Configuring an Axis Camera

For more information about camera image settings see the [Camera Settings](#) article in the Vision Processing manual.

Manual Camera Configuration

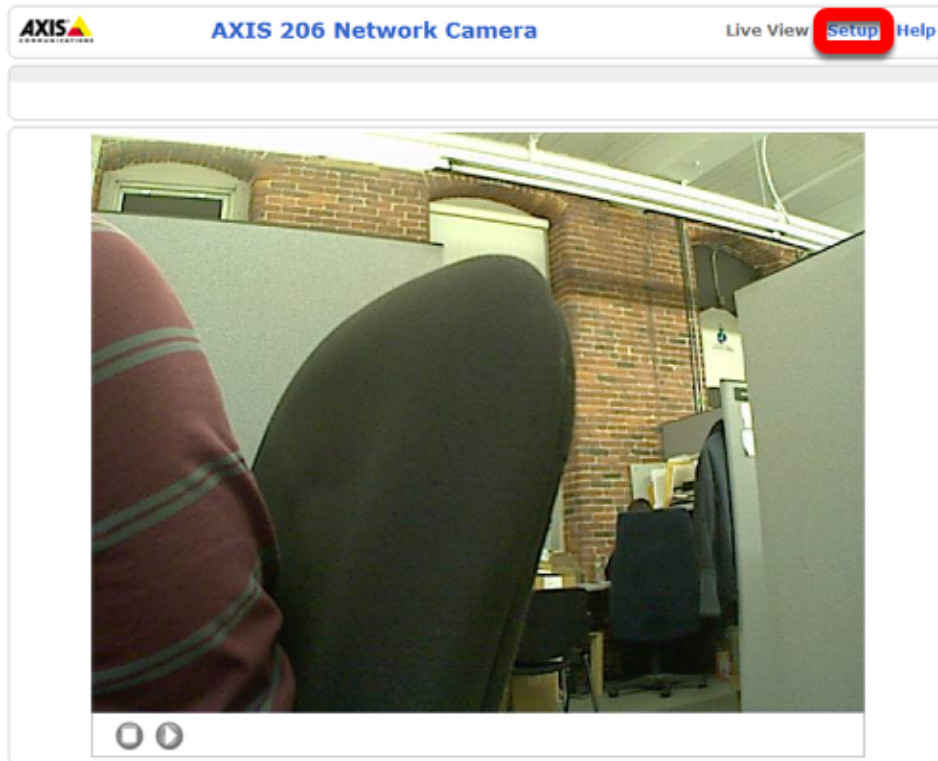


The screenshot shows a web browser window with the Axis Communications logo in the top left and a row of flags (USA, South Korea, Japan, Germany, France, Spain, Italy, China) in the top right. The main heading is "Configure Root Password". Below this, there are three labels with corresponding input fields: "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 paragraph of text: "The password for the pre-configured administrator root must be changed before the product can be used." followed by another paragraph: "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, follow the instructions above for connecting the camera to the computer and setting the IP, 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.

Configuring an Axis Camera

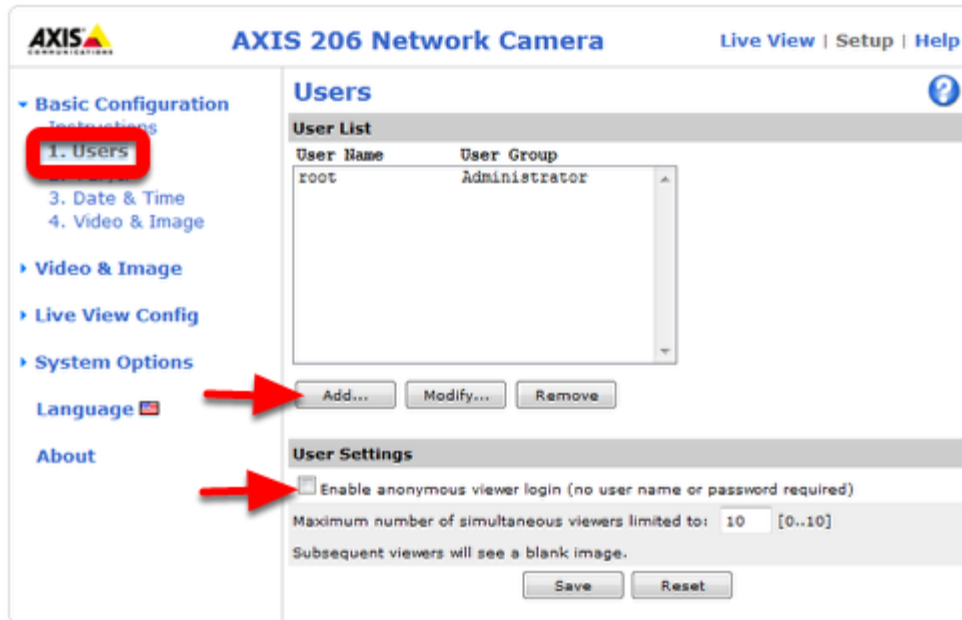
Setup Page



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. System
- 3. Date & Time
- 4. Video & Image

Video & Image

Live View Config

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 several sections: 'Image Appearance' with settings for Resolution (320x240 pixels), Compression (30), Rotate image (0 degrees), Color level (50), Brightness (50), and Sharpness (0); 'Overlay Settings' with checkboxes for Include date and Include time, and a text input field; 'Video Stream' with options for Maximum video stream time (Unlimited or Limited to) and Maximum frame rate (Unlimited or Limited to); and a 'Test' section with a 'Test' button. At the bottom, there are 'Save' and 'Reset' buttons.

AXIS 206 Network Camera Live View | Setup | Help

Basic Configuration

Video & Image

Video & Image

Advanced

Live View Config

System Options

Language

About

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.

Test

Save Reset

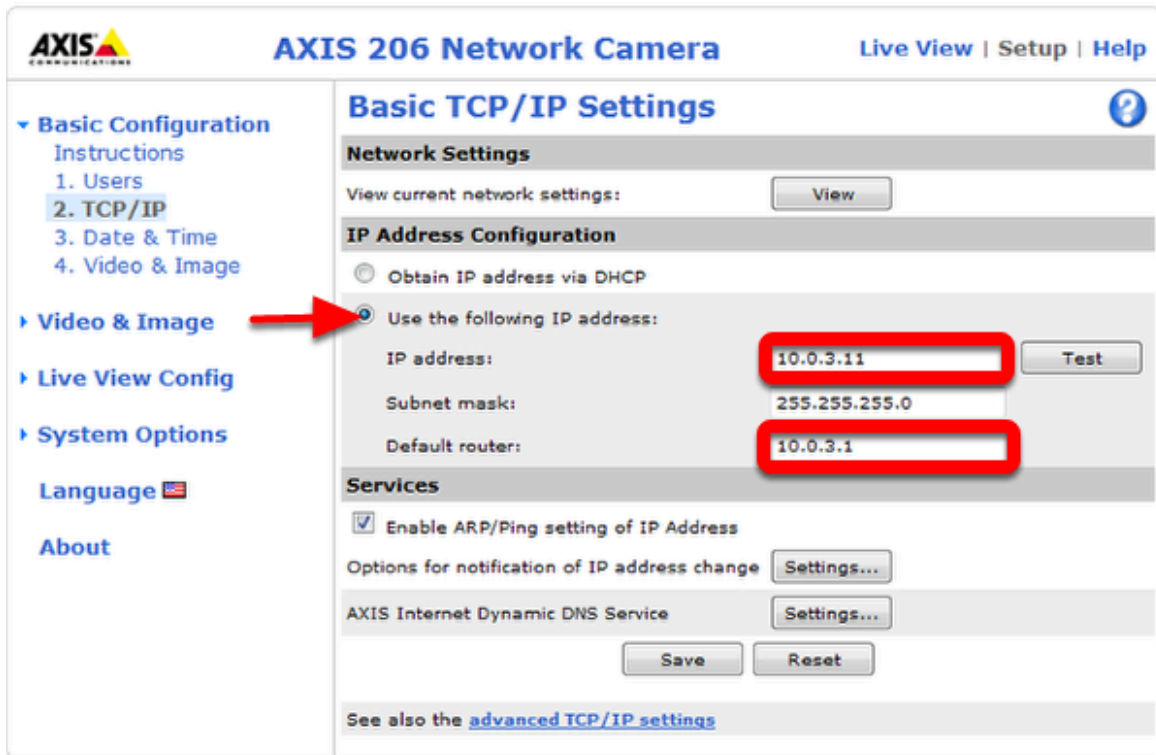
Click **Video & Image** on the left side to open the image settings page. Set the **Resolution** and **Compression** to the desired values (recommended **320x240, 30**). To limit the framerate to under 30 FPS, select the **Limited to** bubble under **Maximum frame rate** and enter the desired rate in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

Note that the LabVIEW Dashboard and/or LabVIEW robot code will override these settings for their streams.

For more information about camera image settings see the [Camera Settings](#) article in the Vision Processing manual.

Configuring an Axis Camera

Configure Network Settings



The screenshot shows the 'AXIS 206 Network Camera' configuration page. On the left, a sidebar lists 'Basic Configuration' with sub-items: 'Instructions', '1. Users', '2. TCP/IP' (highlighted with a red arrow), '3. Date & Time', and '4. Video & Image'. Below this are 'Video & Image', 'Live View Config', 'System Options', 'Language', and 'About'. The main content area is titled 'Basic TCP/IP Settings'. It has a 'Network Settings' section with a 'View' button. Below that is the 'IP Address Configuration' section, where the radio button for 'Use the following IP address:' is selected. The 'IP address:' field contains '10.0.3.11', the 'Subnet mask:' is '255.255.255.0', and the 'Default router:' is '10.0.3.1'. A 'Test' button is next to the IP address field. The 'Services' section includes a checked box 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 are 'Save' and 'Reset' buttons. A link at the very bottom says 'See also the [advanced TCP/IP settings](#)'.

To connect the camera directly to the DLink DAP-1522 on the robot, the IP settings need to be changed. Click **Basic Configuration** then **TCP/IP** on the left side of the screen to go to the network configuration page. Click the bubble to **Use the following IP address**, then enter 10.xx.yy.11 in the box where xxyy is your 4-digit team number (pictured example is set for team 3). In the **Default Router** box enter 10.xx.yy.1. Click **Save**. Your Axis camera is now set up for use on the robot.