



Integration Note

Manufacturer:	Axis
Model Number(s):	216FD
Minimum Core Module Version:	4.0 Build 366
Comments:	AXIS IP Utility 2.21.0, Camera Firmware 4.40
Document Revision Date:	2/13/2013

OVERVIEW AND SUPPORTED FEATURES

Installing the Axis cameras can be broken down into the following steps:

1. Install cameras at desired locations, and pull power and Cat5 cabling as needed. Refer to the Axis documentation for mounting details.
2. Connect the cameras electrically to the home network and configure the cameras. See **Camera Configuration**.
3. Integrate the cameras into the **g!** system and test proper operation. This step is outlined in **g! Configuration Details**.

THE AXIS CAMERAS SUPPORT THE FOLLOWING FEATURES:

Audio In: The camera includes a built-in microphone and a microphone jack. Sound that is picked up by the camera is played at the Viewer interface.

Video Out: The camera includes an analog video output, which can be connected to an analog DVR to provide separate recording, or to a TV modulator to enable camera viewing on a television.

Image Flip: The camera can be mounted upside-down to a ceiling, and the image will appear normal.

Motion Detection: The camera's motion detection feature is supported.

Any feature not specifically noted as "supported" is not supported.

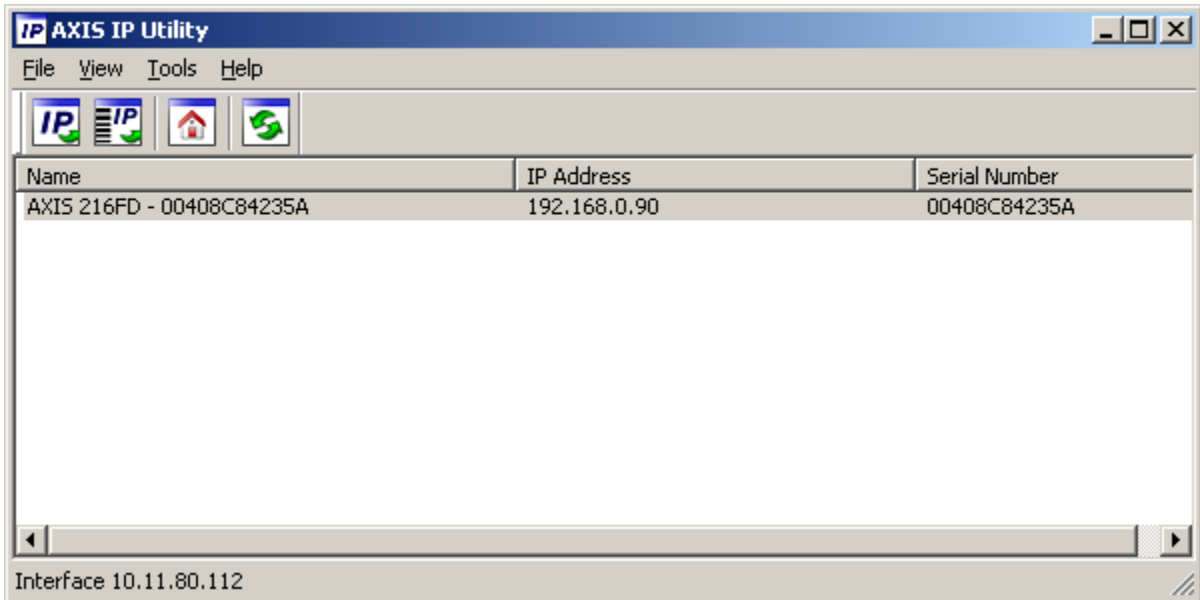
CAMERA CONFIGURATION

The camera configuration is done with software provided by Axis, which must be run from a computer with Windows also connected to the same network as the camera.

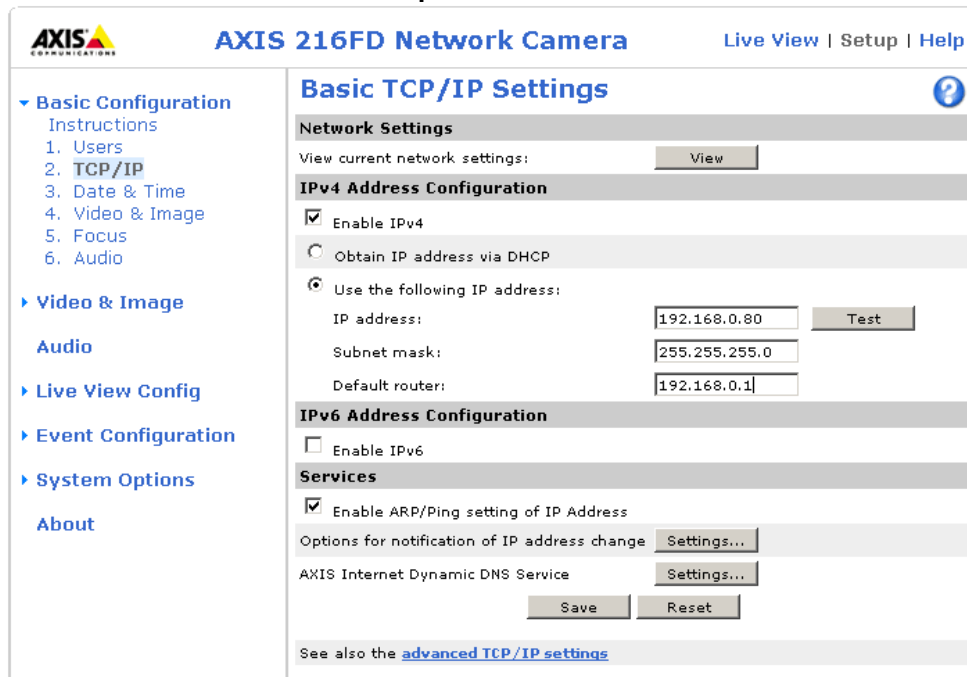
The software program from Axis is the **AXIS IP Utility**, and the version used for this document is shown above.

CAMERA SETTINGS

1. Start the AXIS IP Utility Setup Program.
2. Wait a moment to allow the software to find the camera: the following screen appears, then select the desired camera.



3. Click the "Home" button in the utility to get to the camera's configuration screen. You will be prompted for a user name and password. The default user name is "root", and the default password is "root"
4. Click the "Setup" Link in the upper right corner of the home page.
5. Select "TCP/IP" under "Basic Setup" on the left.



6. Set the IP address to the desired value, we suggest setting the first camera to 192.168.0.80, the second to 192.168.0.81, and so forth.
7. Set the DNS server address, also as shown above.


8. Select **"Date & Time"** from the menu on the left. Configure for your location.

The screenshot shows the 'Date & Time Settings' page for an AXIS 216FD Network Camera. The left sidebar contains a 'Basic Configuration' menu with options: Instructions, 1. Users, 2. TCP/IP, 3. **Date & Time**, 4. Video & Image, 5. Focus, and 6. Audio. Below this are 'Video & Image', 'Audio', 'Live View Config', 'Event Configuration', 'System Options', and 'About'. The main content area is titled 'Date & Time Settings' and includes a help icon. It has sections for 'Current Server Time' (Date: 2001-10-19, Time: 23:37:38), 'New Server Time' (Time zone: GMT (Dublin, Lisbon, London, Reykjavik), Automatically adjust for daylight saving time changes: unchecked, Time mode: Synchronize with NTP server selected, NTP server: No server specified, Set manually: Date: 2001-10-19, Time: 20:02:55), and 'Date & Time Format Used in Images' (Specify date format: Predefined YYYY-MM-DD selected, Own %F; Specify time format: Predefined 24h selected, With resolution: 1 second selected, Own %T). At the bottom are 'Save' and 'Reset' buttons.

9. The camera can be mounted to a ceiling. If this is true in your situation, select **"Video & Image"** under **"Basic Settings"** and select **"180"** from the **"Rotate Image:"** dropdown.

The screenshot shows the 'Image Settings' page for an AXIS 216FD Network Camera. The left sidebar is identical to the previous screenshot, but the 'Video & Image' option is highlighted. The main content area is titled 'Image Settings' and includes a help icon. It has sections for 'Image Appearance' (Resolution: 640x480 pixels, Compression: 30 [0..100], Rotate image: 0 degrees, White balance: Automatic), 'Text Overlay Settings' (Include date: unchecked, Include time: unchecked, Include text: Parking Lot Cam, Place text/date/time at top of image), 'Video Stream' (Maximum video stream time: Unlimited selected, Limited to [1..] seconds per session; Maximum frame rate: Unlimited selected, Limited to [1..30] fps per viewer), and a 'Test' section (Test settings (using Motion JPEG) before saving., Test button). At the bottom are 'Save' and 'Reset' buttons.

10. Select **“Audio”** under basic settings. Set **“Encoding”** to **“G726”** and set **“Bitrate”** to **“32 Bit”**:



AXIS 216FD Network Camera

Live View | Setup | Help

Basic Configuration

- Instructions
- 1. Users
- 2. TCP/IP
- 3. Date & Time
- 4. Video & Image
- 5. Focus
- 6. **Audio**

Video & Image

- Audio**

Live View Config

Event Configuration

System Options

About

Audio Settings ?

Enable Audio

☒ Enable audio

Audio Channels

Audio mode: Half duplex

☐ Send the sound from the active client to all other clients

Audio Input

Source: Microphone

☒ Enable microphone power. If your microphone is dynamic or battery powered, this should be off.

Input gain: 0 dB (0 = medium default level)

Encoding: G726

Bit rate: 32 kbits/s

Alarm level: 50 [0..100] %

Audio Output

Output gain: 0 dB (0 = medium default level)

Note: The Java applet only supports G711 audio. QuickTime supports G711 and AAC.

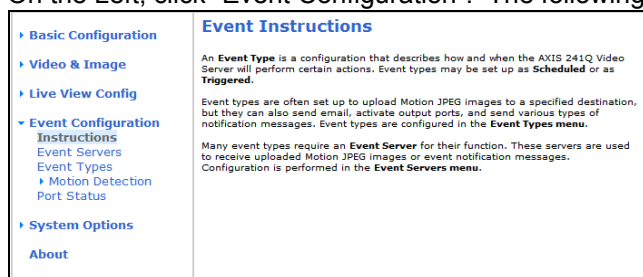
SaveReset

MOTION DETECTION SETUP

Motion detection setup is only required if you will be using motion detection by the camera as an event map trigger. This is most commonly used for the **g!** DVR recording.

Note: We recommend using **Internet Explorer** as your browser when setting up motion detection as we have found this process may be slow with other browsers.

1. Access the Video Server's configuration by opening a web browser and entering the camera's IP address. Enter the root user credentials.
2. Click the "Setup" link in the upper right.
3. On the Left, click "Event Configuration". The following window will appear:

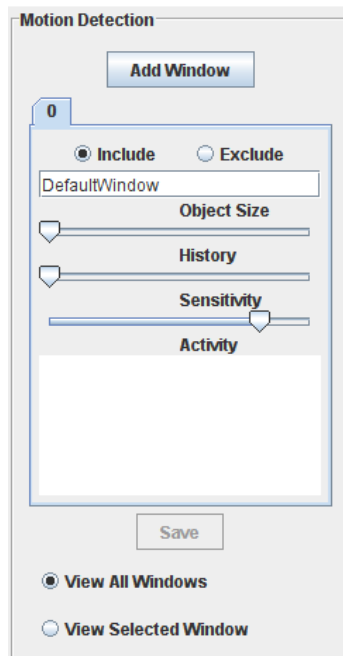


4. Select "Motion Detection" to access a screen similar to the following:



5. Click **Add Window** to add an include window to the image. For motion detection the camera will need at least one include window to define the area to look for motion. Additional include windows may be added as well as exclude windows to mask motion from items that may frequently move but are not desired to be considered motion.
6. For example: To limit the area where the server is looking for motion, decrease the size of the Default Window and drag it to center on the area of the image where relevant motion is expected. This will limit the number of false triggers due to background motion, thus conserving disk space. If you wish to capture all motion that the camera sees, this window can be left full screen. Additional windows can also be added, and the windows can be set to "Include" or "Exclude" depending on your preference. An "Exclude" window might be useful if there is a tree or flag in the image that is frequently moved by the wind, and it is not desired to trigger an event if the tree or flag moves.

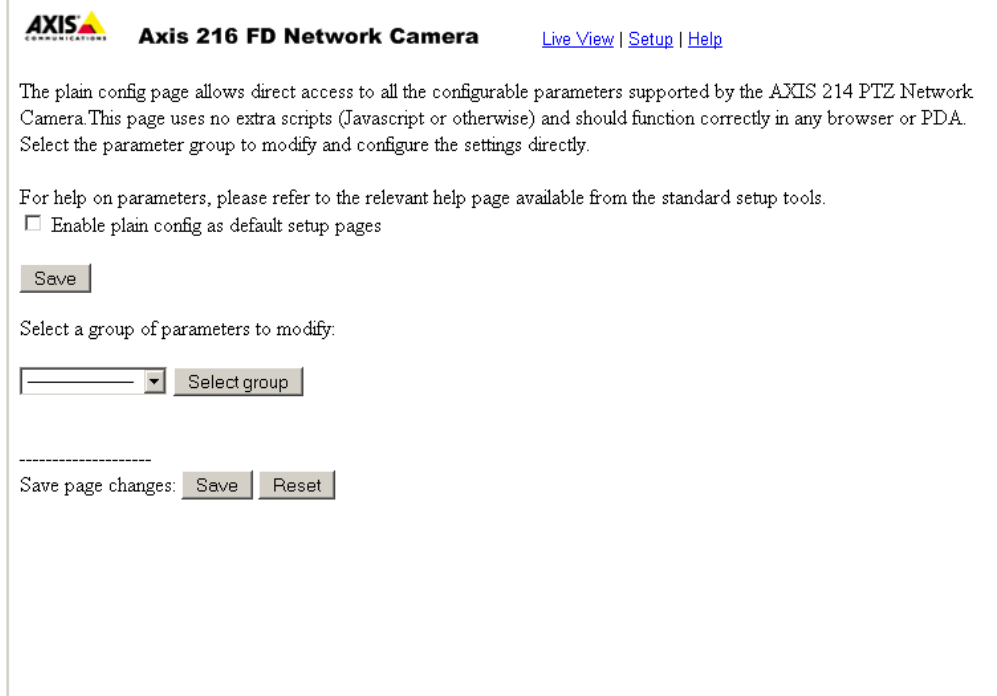
7. For configuring the Motion Detection sensitivity there are three values that can be individually set for all included windows, “Object Size”, “History”, and “Sensitivity”:



The image shows a 'Motion Detection' configuration window. At the top is an 'Add Window' button. Below it is a tab labeled '0'. Inside the tab, there are radio buttons for 'Include' (selected) and 'Exclude'. Below these is a text field containing 'DefaultWindow'. There are three sliders: 'Object Size', 'History', and 'Sensitivity'. Below the sliders is an 'Activity' label. At the bottom of the window is a 'Save' button. Below the 'Save' button are two radio buttons: 'View All Windows' (selected) and 'View Selected Window'.

- Object Size refers to the number of pixels that need to change to trigger a motion event. The larger the object size, the less sensitive the detection. It is recommended that this be set to the minimum value possible.
- History refers to the length of time a moving object remains in the window before it is considered to be a non-moving part of the scene. A high setting will continue to trigger motion as long as the object is moving. A low setting will trigger motions when the object initially moves but then will be ignored. It is recommended that this slider be set high somewhere above 80%.
- Sensitivity refers to the difference in luminance from one frame to the next. A low setting will only trigger motion if there is a great difference in luminance, i.e. a bright object suddenly appears on a dark background. It is recommended to set this slider as high as possible. Typically greater than 90%. This setting will most likely need adjustment during initial setup to obtain the most reliable motion detection.

11. Select “**System Options**” on the left, then choose “**Advanced**”, then “**Plain Config**”:



The image shows the 'Plain Config' page for an Axis 216 FD Network Camera. At the top is the Axis logo and the text 'Axis 216 FD Network Camera'. Below this are links for 'Live View', 'Setup', and 'Help'. The main text explains that the plain config page allows direct access to all configurable parameters and that it uses no extra scripts. Below this is a checkbox labeled 'Enable plain config as default setup pages'. There is a 'Save' button. Below the 'Save' button is a section titled 'Select a group of parameters to modify:' which contains a dropdown menu and a 'Select group' button. At the bottom, there is a section titled 'Save page changes:' with 'Save' and 'Reset' buttons.

12. Using the dropdown box, select “**Image**” as the group of parameters to modify. In the first section, “Image”, check the box for “**Trigger Data Enabled**”:

Image	
Referrers enabled:	<input type="checkbox"/>
Referrers:	<input type="text"/>
Max viewers:	<input type="text" value="20"/> [0..20]
Nbr of configs:	<input type="text" value="5"/>
Overlay path:	<input "="" type="text" value="/etc/overlays/axis("/>
Privacy mask type:	<input type="text" value="None"/>
Date format:	<input type="text" value="YYYY-MM-DD"/>
Own date format:	<input type="text" value="%F"/>
Own date format enabled:	<input type="checkbox"/>
Time format:	<input type="text" value="24"/>
Own time format:	<input type="text" value="%T"/>
Own time format enabled:	<input type="checkbox"/>
Time resolution:	<input type="text" value="1"/>
Trigger data enabled:	<input checked="" type="checkbox"/>

13. Scroll down to the bottom of the page and place a check in the box labeled “**Motion Level Enabled**”:

Image IO TriggerData:	
IO enabled:	<input checked="" type="checkbox"/>
Audio enabled:	<input checked="" type="checkbox"/>
Motion detection enabled:	<input checked="" type="checkbox"/>
Motion level enabled:	<input checked="" type="checkbox"/>
Video loss enabled:	<input checked="" type="checkbox"/>
User triggers:	<input type="text"/>
Save page changes:	<input type="button" value="Save"/> <input type="button" value="Reset"/>

14. Click “**Save**” and wait for a few moments: once the settings have saved you should see a small dialog box that confirms the changes were made.

See the DVR Technical Note for information on setting up motion detection in the g! Software.

g! CONFIGURATION DETAILS

The following table provides settings used in the **g!** Configurator. Please refer to the *Configurator Reference Guide* for more details.

In the table below:

- “<User Defined>”, etc. Type in the desired name for the item.

Devices	Variable Name	Setting	Comments
Communication Device	N/A (See Note 1)	N/A (See Note 1)	
Video Cameras	Name	<User Defined> (Default: AXIS 216FD)	
	Device Type	AXIS 216FD	
	Location	<User Defined> (Not Required)	
	IP Address	<User Defined> (Default: 192.168.0.80) (See Note 2)	
	Port	80	
	Login Name	<User Defined> (Default: root)	
	Password	<User Defined> (Default: root)	
	Default Resolution	<Select> (Default: <Don't Change>)	
	Record Tolerance	<Select> (Default: <0% (Keep All Frames)>)	
	Motion Detect	<Select> (Default: Enabled)	
	Software Motion Trigger	<Select> (Default: 0%) (See Note 3)	

Notes:

1. No **Communication Device** is needed: just add **Video Cameras**.
2. By default, set the first camera to 192.168.0.80, the second to 192.168.0.81, and so on.
3. Set this value based on the procedure outlined in the notes above.