
DSI

P3 Video

Model: PNM-110-VIDEO
Manual: MU00278-001
Revision 52



DSI™

Data Sciences International
119 14th Street NW, Suite 100
St. Paul, MN 55112
Phone: +1 (651) 481-7400
US: +1 (800) 262-9687
Email: support@datasci.com
www.datasci.com



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Contents

- Overview 1**
 - Introduction 1
 - Video Theory of Operation 1
 - Camera Operation..... 1
 - Video Data Collection 2
 - Video Data Review..... 2
 - Components 2
 - Installation 3

- Operation 5**
 - Camera Setup..... 5
 - Assumptions 5
 - To Configure a Camera 5
 - Deleting a Camera 8
 - Editing a Camera 9
 - Configuring P3 Acquisition..... 10
 - Operation 10
 - Previewing Data from a Configured Camera 10
 - Verifying Camera Communication 11
 - Recording Video Data 11
 - Previewing Video Data..... 12
 - Maintenance..... 13

- Appendix A 14**
 - Specifications..... 14
 - Troubleshooting 14
 - Camera Not Found 14

- Product Issue Report 15**
 - Product Issue Report Form 15

- Feature Request 16**
 - Feature Request Form..... 16

Overview

Introduction

Available as an accessory to the P3 Plus software as a pay for option, P3 Video allows for the recording of video data along with data from other sources such as telemetry. Once recorded, video data can be synchronized and reviewed with the associated data to complement the analysis process. One example of its use is the association of video data with ECG, Blood Pressure and Activity data for assistance in analyzing artifacts within the data and to associate behavioral changes to the telemetered data.

P3 Video does not exist as a separate module in the P3 Plus application. Functions and controls associated with P3 Video are integrated into the Acquisition and Analysis modules and are only activated if the P3 Video option was purchased.

Video Theory of Operation

Camera Operation

Some video cameras can be connected directly to a network and allow a computer on the same network to access the camera's video data. P3 Plus makes use of this ability to record video of animal behavior from a network camera and incorporate the video data with data from other sources such as telemetry.

Network cameras have a variety of settings including variable frame rate, resolution, and video quality. Other settings such as video compression, or resolutions not directly supported, may be available depending on the model of camera being used. The P3 Plus program can regulate these settings when a camera is configured.

The P3 Plus program directly supports Axis[®] and Sony^{®*} network cameras, allowing for easy manipulation of their video acquisition settings. Other network cameras can be used with P3 Plus through an advanced configuration of the camera's URL. Information about the proper format of a network camera's URL can be found in the camera's support literature. Edits can be made to any camera's URL whether or not it is directly supported. These edits can be made to enable, disable, or change any number of settings, the availability of which depends on the camera's abilities.

In addition to being compatible with various types of network cameras, the P3 Plus program also directly supports the Axis Video Server. An Axis Video Server connects directly to a network and controls video feeds from up to four analog cameras. It allows a user to collect data from the connected analog cameras and potentially combine video data from up to four cameras into a single video stream.

Stand-alone network cameras, and analog cameras being used with the Axis Video server, are the only camera types compatible with P3 Video. Other camera types are not compatible with P3 Video.

Video Data Collection

Data from up to eight video cameras can be collected simultaneously by the Acquisition program. A video camera is not necessarily associated with only one Animal ID. Depending on cage design and room layout, it may be possible for one camera to focus on multiple animals. The association of one camera with multiple Animals can be set up in the software so the same video data can be accessed when analyzing each of the Animal's data.

As video data is collected, it is saved to a temporary folder until the video collection is stopped or until the current video file reaches the maximum video file size. The completed video file is then transferred to a subdirectory of the study folder. Video data cannot be reviewed until it has been moved from the temporary folder. Choosing a larger video file size will allow the Acquisition and Analysis programs to run more efficiently with shorter loading times. However, this larger limit will also prevent the immediate review of the video data until sampling is stopped or until the maximum video file size is reached. Also, if the Acquisition program is stopped unexpectedly, such as during a power failure, video data that has not been moved from the temporary folder may be lost. This is another consideration to take into account when determining the maximum video file size.

Video Data Review

When physiologic and video data are collected for a specific **Group**, the two types of data can be reviewed together. After loading the non-video data in the Analysis program, associated video data can be synchronized and displayed in the video player window. This synchronization of video and other data can be useful for analysis of physiologic data such as sleep scoring.

***Important information if using a Sony brand camera**

Sony cameras use a default video format of MPEG-4. This setting must be changed to the MJPEG format for use with the P3 Plus application. This can be done using the Sony configuration utility included with the camera. Refer to the camera's support literature for additional information.

Components

The following items comprise the Video recorder option:

1. PNM-P3P-xxx software on CD
2. PNM-P3P-VIDEO option enabled in license file

The following items are needed and are not included with the Video recorder option:

1. Recommended video cameras
2. Ethernet switch if supporting multiple Ethernet based cameras
3. Appropriate cabling

Installation

Refer to the **Ponemah Physiology Platform Manual** to install the P3 Plus software and P3 Video Option. After the installation is complete, a system reboot may be required.

NOTE: In order to use the P3 Video option, the correct license file is needed with the P3 Video option enabled.

Operation

Camera Setup

At least one camera must be configured in the Video Camera Configuration window before video data can be collected.

Assumptions

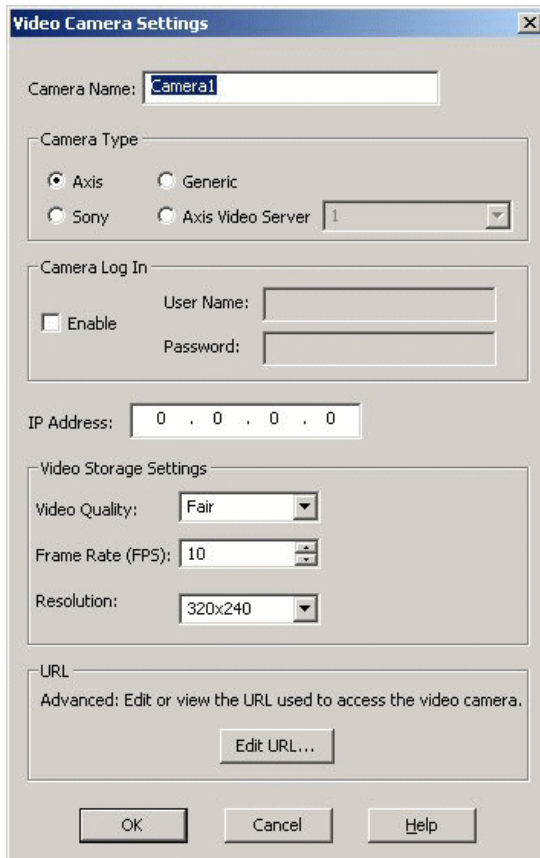
- At least one network camera is set up at a network location accessible to the data acquisition computer. Information regarding the correct installation of the network camera can be found in the camera's documentation.
- The camera is powered on and ready to be accessed.
- The camera is set to the MJPEG video format.

To Configure a Camera

1. From the main menu bar under the **Hardware** menu, select **Video Configuration**. The Video Camera Configuration window opens.

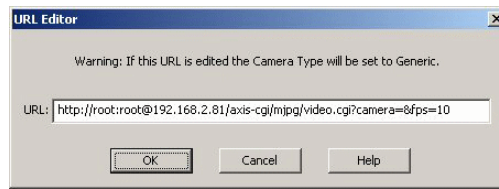


2. Use the **Add...** button to launch the Video Camera Settings window.

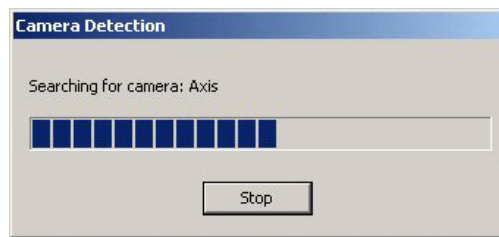


3. Choose a name for the camera and enter it into the **Camera Name** field. The **Camera Name** field is limited to alphabetical and numeric characters; no spaces or special characters are allowed.
4. Choose the **Camera Type** by selecting one of the options below:
 - **Axis** - Axis® brand stand-alone camera.
 - **Sony** - Sony® brand stand-alone camera.
 - **Generic** - other camera type. Skip to Step 8 below.
 - **Axis Video Server** - Axis brand four-source analog video server. Choose which of the four video inputs is desired from the drop-down menu. Choose the Quad option to combine inputs from the four analog video inputs into a single video stream.
5. If the camera requires a **User Name** and **Password**, place a check mark in the box next to the word **Enable**. Enter the correct **User Name** and **Password** in the appropriate fields.
6. Enter the **IP Address** for the camera. This address allows the Acquisition program to locate the camera over the network.
7. Choose the desired Video Storage Settings:
 - **Video Quality** - Available choices are Poor, Fair, Good, and Excellent. Better video quality produces a higher-quality video image but takes up more disk space.

- **Frame Rate (FPS)** - Valid frame rates are between 1 and 30 frames per second.
 - **Resolution** - Controls the video window size. The Auto option will collect video data using the default video size from the camera. Larger resolutions will store the video data in a larger window size and will use more disk space. This option is not available for Sony cameras.
8. To change the advanced settings of the camera or to configure a Generic camera type, select the **Edit URL...** button to launch the URL Editor window. This step is not required for Axis cameras, Sony cameras, or Axis Video Servers unless additional settings need to be defined. Generic cameras must be configured using the URL Editor. See the camera support literature for URL formatting information.



9. Enter the appropriate URL address to locate the camera on the network and set the desired options. Click **OK** to close the URL Editor window.
10. Click the **OK** button to close the Video Camera Settings window and return to the Video Camera Configuration window. The Camera Detection window will appear while the program verifies connection to the newly configured camera.



11. The Camera Name will be listed in the Video Camera Configuration window. If communication with the camera has been verified, the word “**yes**” will appear in the **Camera Detected** column; otherwise the word “**no**” will appear.



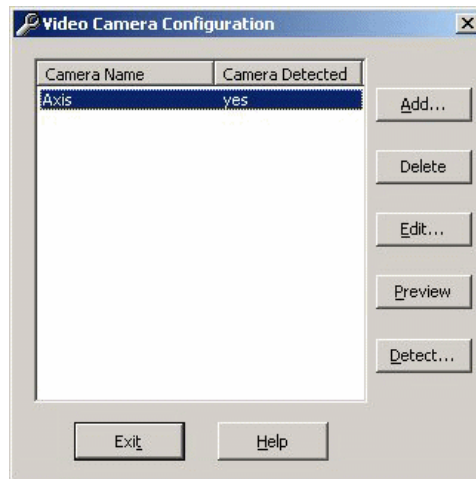
12. Repeat steps 2 through 11 above for each camera to be configured.

Notes:

- Each time the Video Camera Configuration window is opened, it will verify communication with all configured cameras.
- The Axis Video Server is only compatible with analog video cameras.
- The actual frame rate of recorded video may vary depending on network traffic and camera settings. The following cases illustrate possible scenarios.
 - The frame rate is set to 30 frames per second (fps) in the camera and software, but if the network is too busy the actual recorded video frame rate will be less.
 - The camera is set to 30 fps but the software settings are set to 1 fps. This will result in the video being saved at a frame rate of 1 fps.
 - The software settings are set to 30 fps but the camera is set to 1 fps. This will also result in the video being saved at a frame rate of 1 fps.

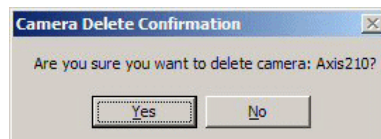
Deleting a Camera

1. From the Video Camera Configuration window, select one of the configured cameras.



2. Click the **Delete** button.

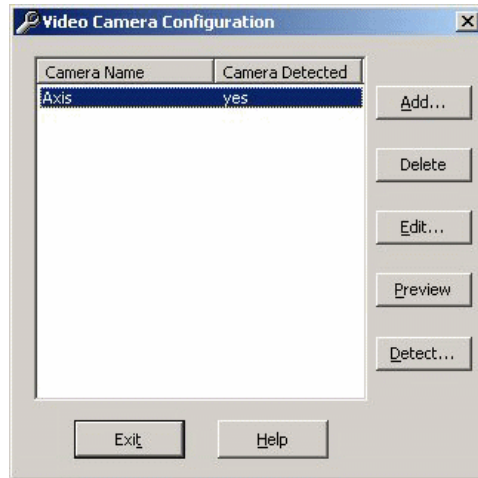
3. The Camera Delete Confirmation window opens.



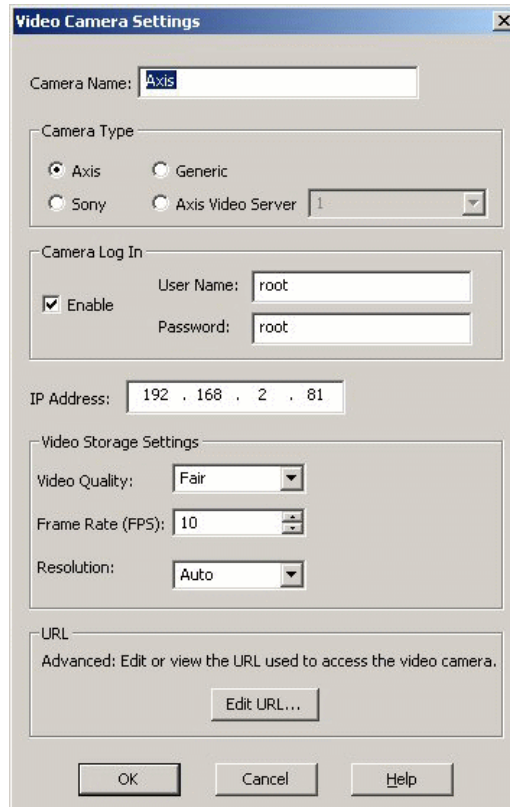
4. Choose **Yes** to remove the camera from the configuration. Choose **No** to return to the Video Camera Configuration window without deleting the camera.

Editing a Camera

1. From the Video Camera Configuration window, select one of the configured cameras.



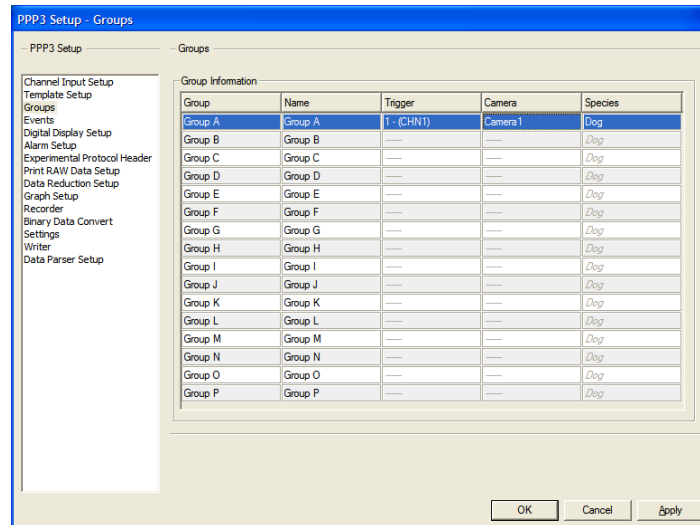
2. Click the **Edit...** button.
3. The Video Camera Settings window appears.



4. Edit the settings in this window then click **OK**. The program will re-verify communication with the camera and return to the Video Camera Configuration window.

Configuring P3 Acquisition

In order for video data to be saved, each **Group** must be assigned to a configured camera. To access the **Group** setup dialog this is under the **Setup** menu, **P3 Setup - Groups**.

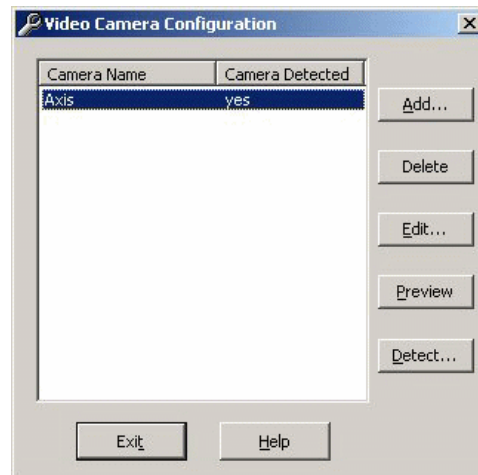


A camera can be used for recording data from more than a single Group. This is useful if a camera is set up to record data from a group of animal cages.

Operation

Previewing Data from a Configured Camera

1. From the Video Camera Configuration window, select one of the configured cameras that have been successfully detected by the program.



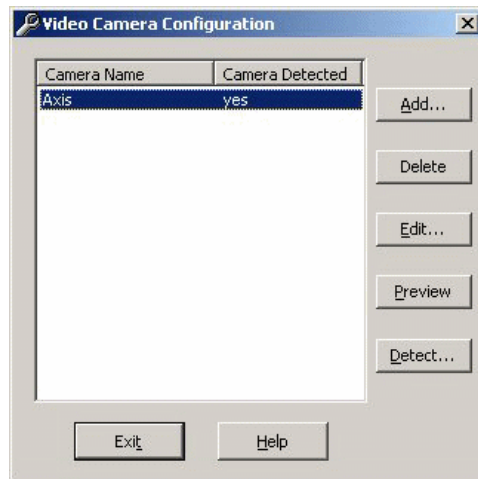
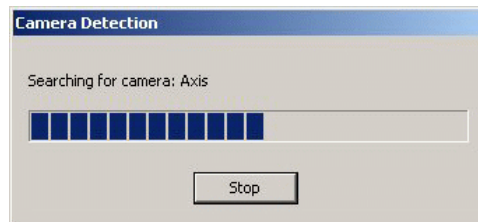
2. Click the **Preview** button.
3. A new window will open that includes a preview of the video data from the selected camera. The camera name appears in the title of the preview window.
4. Close the preview window using the X in the upper right corner of the window to return to the Video Camera Configuration window.

Note:

Only one video stream can be previewed at a time.

Verifying Camera Communication

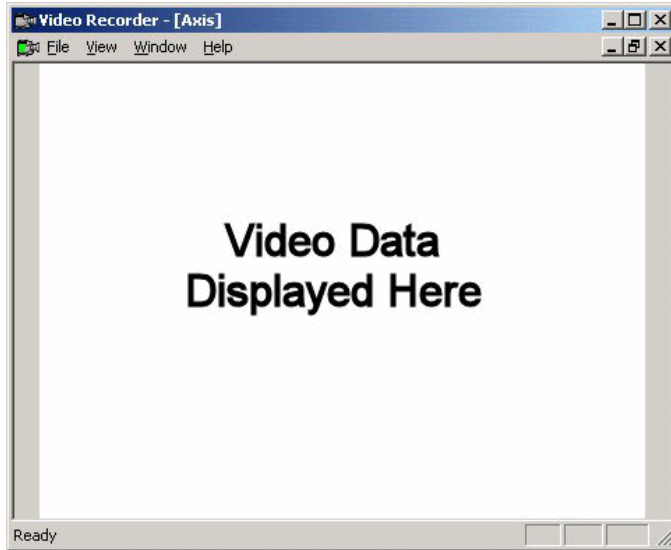
1. From the Video Camera Configuration window, click the **Detect...** button. The Camera Detection window appears while communication with each configured camera is tested in turn.



2. The status of each configured camera will update in the **Camera Detected** column of the Video Camera Configuration window.

Recording Video Data

Once a camera is associated with **Group**, it will automatically display the **Video Recorder** window and save the video stream whenever the user has enabled the saving of video data.



The saving of the video stream will stop recording when acquisition is stopped.

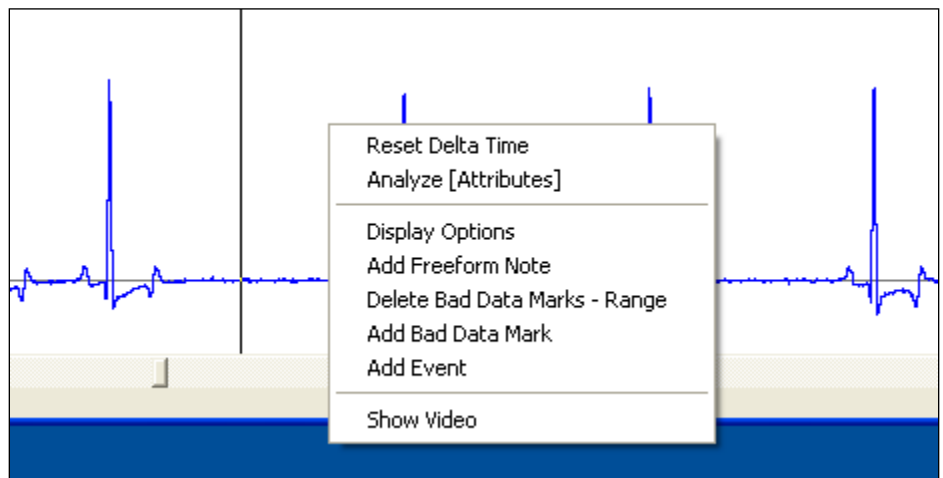
The user has the ability to manually turn on and off the saving of video data from within the **Functions** menu, or the saving of video data can be automated by the use of the **Scheduler** setup.

Using the **Link Video Data** the user can have the saving of the video stream and the saving of the analog signal data be saved simultaneously. For example when the user turns on the saving of the analog signal data then the video stream will be saved.

Previewing Video Data

Video data can be reviewed directly within the Review mode in the Movie window.

In order to access the video that would be associated with a specific time point, right click the mouse in the Primary graph page on the time point of interest and select **Show Video** as displayed below.



A movie window will be displayed with the Video data at the specified time point.



A green cursor tracks video time in all graph pages associated with that camera, except XY presentations. Additionally, derived parameter and data reduction windows can be synced with video as it plays. Users may sort and scroll on the derived data which will stop the synchronization. The user may then double-click on a derived data line or click on the **Sync** button (video window) to resume the sync. Users may disable the sync feature in the **Review** menu in the **Application Configuration** dialog.

Maintenance

For the camera maintenance, refer to the manual that came with the cameras.

Appendix A

Specifications

Support for:

1. Up to 8 video cameras may be supported but the host workstation may not be able to support 8 cameras.
2. Frame rate from 1 to 30 FPS.
3. Support for different resolutions.

Troubleshooting

Camera Not Found

This can be caused by multiple issues:

1. Camera not connected through the network correctly.
2. IP address of Camera not set or does not match the P3 Plus Video configuration. Refer to the camera manual on setting its IP address and verify that it is the same in P3 Plus Video Configuration.
3. If on a corporate network, IT may block certain IP addresses. Verify with IT that the IP addresses that are being used are allowed.
4. Depending on PC specifications, CPU usage could be taxed if settings for Resolution and Video Quality are set to the highest level. It is recommended to select moderate settings.

Product Issue Report

Product Issue Report Form

Sales Person: _____
Customer Name: _____
Company: _____
Address: _____

Phone Number: _____
Email Address: _____

P3 Plus Version (including Service Pack): _____
Serial Number: _____
Priority: _____
Date: _____
Hardware: _____

Status of issue (check one)
 Unreproduced Reproduced
 Needs repair As intended

Computer hardware/software
Brand/Model: _____
CPU Speed: _____
RAM: _____
Operating System (including Service Pack): _____

Networked
 Yes No

Issue: _____

Steps to Repeat

Feature Request

Feature Request Form

Sales Person: _____
Customer Name: _____
Company: _____
Address: _____

Phone Number: _____
Email Address: _____

P3 Plus Version (including Service Pack): _____
Serial Number: _____
Priority: _____
Date: _____
Hardware: _____

Feature (check one)
 Unevaluated Pending
 Implement Already Exists

Description: _____

