



Motion Engineering Company

Quick Start Operating Instructions

Photron MC 2

High Speed Camera System Components



Camera Body



Camera Head



Camera Cable



Trigger Cable



Ethernet Cable



AC Power Supply

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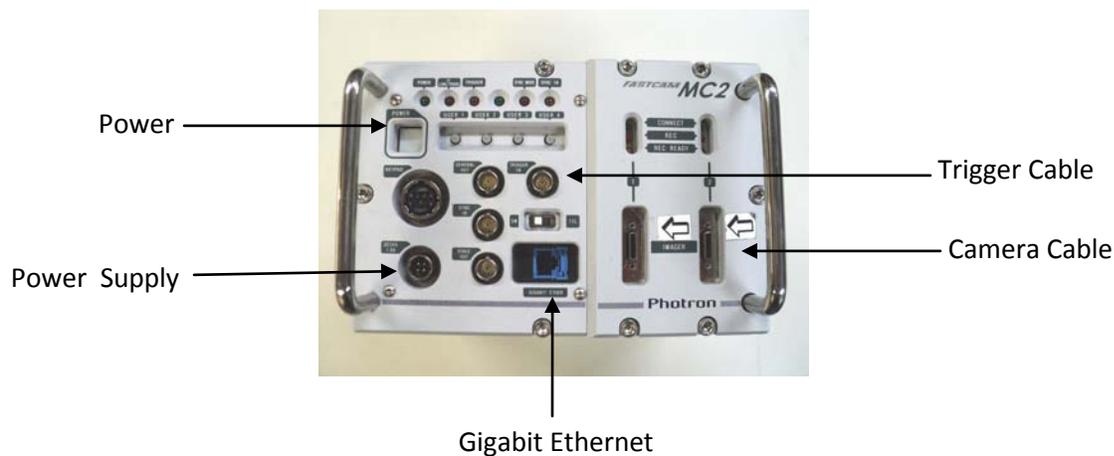


DAMAGE TO EQUIPMENT FOR IMPROPER CONNECTION BETWEEN CAMERA, CABLES, AND COMPONENTS IS AT CUSTOMER'S RISK....See Rental Agreement for clarification.

PLEASE NOTE: PFV can only be installed on PC's with Windows based Operating Systems. If you will be using a MAC to edit videos, you may only want to save you video files in BMP, TIFF, or AVI formats.

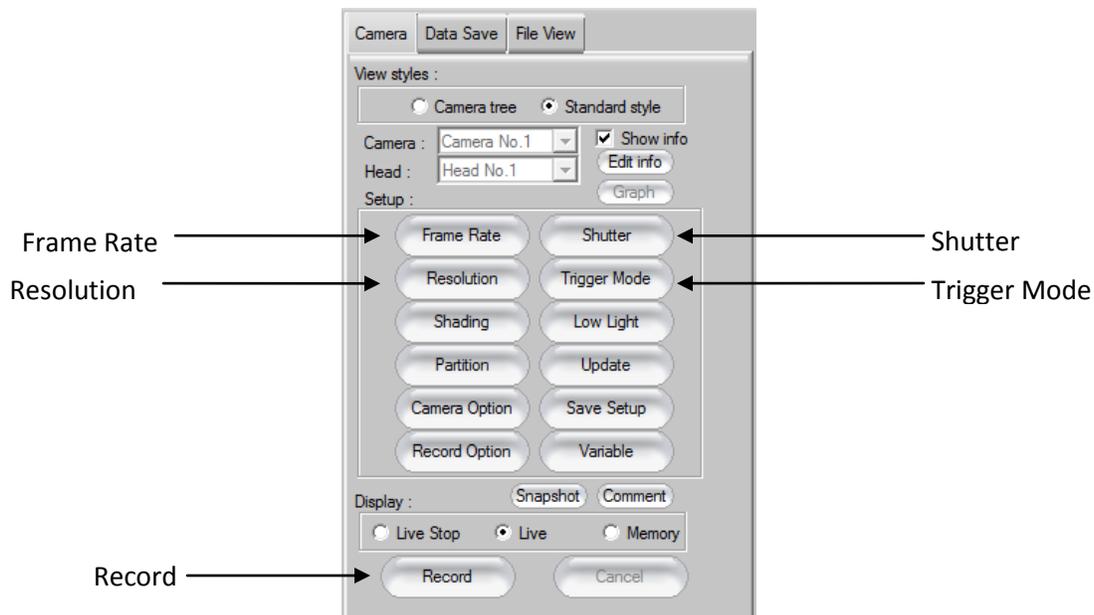
Instructions:

1. Connect the Power Supply to the back of the Camera Body.
2. Connect the Ethernet Cable between Laptop and back of Camera Body.
3. Connect the Red Trigger Cable to the "Trigger In" connector located on the back of the processor.
4. Connect Camera Cable(s) to the processor. The Camera Cable will only connect to the processor one way. Line up the arrows found on cable and processor. Only finger tighten the screws, never use a screwdriver.



5. Connect the Laptop Power Supply and then turn on the Laptop.
6. At the Windows "Log On" Screen, type "pci" as the User Name, and "pci" as the Password.

7. Press the Power Button located on the Camera Body
8. Once the camera is connected to the laptop, you will see an icon with a yellow triangle and an exclamation point over the network connection icon located on the bottom right of the desktop. (Note: This may take a minute or two)
9. After the camera is connected, double click on the “PFV 3.x” software icon located on the desktop.
10. Attach the desired lens to the Camera Head(s). C-Mount lenses connect directly to the camera heads. F-Mount Nikon Lenses require you to attach the C-F Mount Adapter before attaching lens to camera head(s).
11. Once the software has loaded the software will display a live image.
12. Select the desired Frame Rate, Resolution, Shutter Speed, and Trigger Mode.



13. To make a recording select “Record” icon located on the bottom of the toolbar

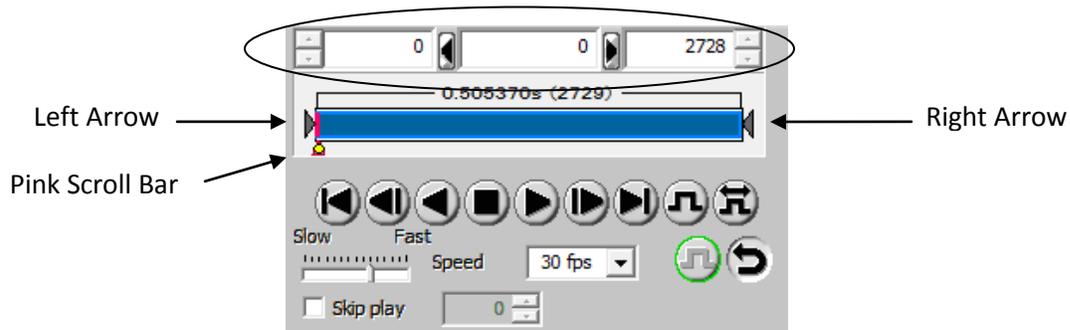
Start Trigger → “Trigger In”

Center, End, Manual → “Endless Record”

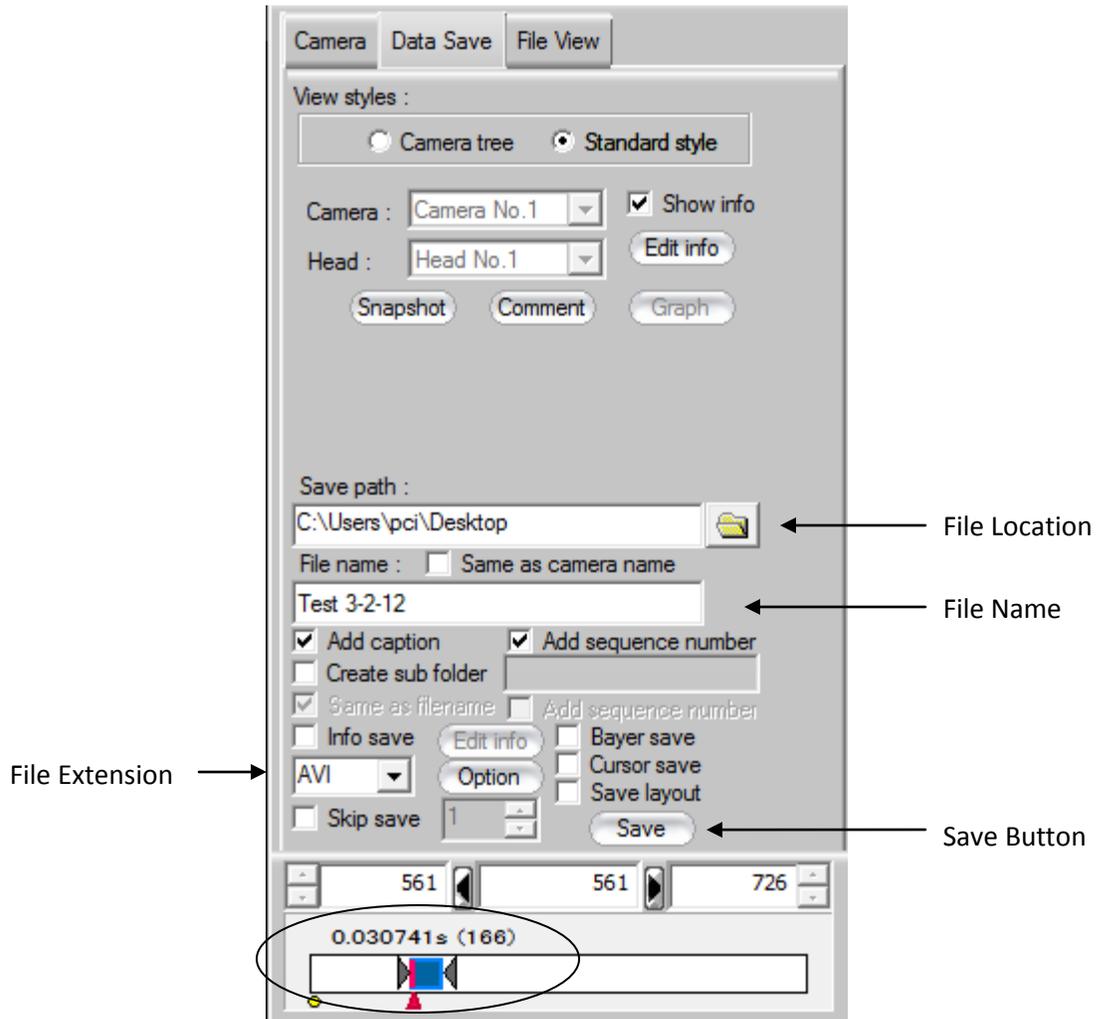
14. There are several Trigger Modes, but the START, CENTER, and END are the most commonly used.

- **START:** When a Trigger Signal is received, a Start Trigger Command will start filling the Memory Buffer with images, until it is full. All the images in the Buffer will have occurred AFTER the trigger signal was received.
- **END:** An END Trigger Command will stop the filling of the Memory Buffer with images, until it is full. All the images in the Buffer will have occurred BEFORE the trigger signal was received.
- **CENTER:** When the Trigger Command is received, the Memory Buffer will continue to fill to the 50% level, and then stop. Half of the images will have occurred before receipt of the trigger signal, and half after receipt of the trigger signal.

15. Use the left arrow or pink bar to the first frame of interest within the recording. Then either drag the pink scroll bar or use the other arrow to the last frame of interest. The solid blue bar indicates those images will be viewed/ saved. You may also manually enter the frames you would like saved from the text boxes located above the blue bar.



16 . To save image, use the “ Data Save” tab located on the top of the right tool bar.



Camera “Dark Screen” Calibration (SA3, SA4, SA1.1 and SA5 ONLY)

Before capturing images, it is first necessary to calibrate the camera. This should only be done if the images appear to be more “Grainy” than you would like them to be, and is more often needed with the color cameras than with the monochrome. Also, the image quality can degrade somewhat if frequent changes are made to the framing rate and/or shutter settings, thus requiring a “re-calibration”. Calibration is not needed for basic camera performance, only to improve the quality of the captured images.

Select desired operating **Frame Rate and Sutter Speed**.

Place the lens cap over the end of the lens, so that no light gets into the camera.

Hit the “**Shading**” Button in the Control Panel on the right side of the screen, and then “**Calibrate**”.

Remove the Lens Cap

Hit the “**Camera Options**” Button on the Control Panel, then choose “**Color Adjust**”.

If Using a Monochrome Camera, Skip This Step. If Using Color Camera, select 3100°K if you are operating with artificial light, or 5100°K if you are operating in sunlight. Go to the next Step.

For Both Monochrome or Color Cameras, Set the “**LUT-Mode**” for “**Def 1**” or “**Def 2**”. Def 1 gives an overall better image quality, but Def 2 provides a small amount of camera gain which boosts the ability to see under lower light conditions. Def 3 and Higher apply even more gain, but also add more “noise” to the images. Hit “**Okay**”.

Basic Operation:

Refer to the FASTCAM PFV-3 Manual for detailed instructions.

- The camera operating settings are displayed in the upper left corner of the viewer window. There are three (3) Operating Mode Tabs in the upper right corner of the window, above the Control Panel, “**Camera**”, “**Data Save**”, and “**File Viewer**”.

Camera Tab: For set-up, control and playback. The primary set-up and control functions are:

Frame Rate: Sets the camera recording rate, in frames per second. (fps)

Shutter: Sets the frame exposure time. Increasing the shutter speed (decreasing the shutter time) has the effect of reducing motion blur in the images, but also increases the need for more light getting to the camera sensor. To increase the light to the sensor you can open the lens aperture and/or increase the camera sensitivity setting. (Def 2, Def 3 mentioned earlier, etc.)

Resolution: Sets the size of the image, in pixels. The maximum resolution capability of the camera decreases as the frame rate is increased above a certain threshold fps. Operating at a resolution less than the maximum will increase the record time of the camera buffer. In

addition, smaller images will download faster, and require less file space on the hard drive, etc. Selecting “Variable” takes you to a menu where you can create your own non-standard resolution, aspect ratio and framing rate. (See Manual for details)

Trigger: Controls the filling of the Record Memory Buffer. START, CENTER and END are the most often used settings. Of these three, END Trigger is best for most applications. The Trigger Command can come from the external remote trigger switch or from the “Record” button on the Computer Screen.

Start: When a Trigger Signal is received, a Start Trigger Command will start filling the Memory Buffer with images, until it is full. All the images in the Buffer will have occurred AFTER the trigger signal was received.

End: An End Trigger Command will stop the filling of the Memory Buffer. All the images in the Buffer will have occurred BEFORE the trigger signal was received.

Center: When the Trigger Command is received, the Memory Buffer will continue to fill to the 50% level, and then stop. Half of the images will have occurred before receipt of the trigger signal, and half after receipt of the trigger signal.

Frame Numbers: The “trigger” frame is designated as Frame 0. Frames recorded after receipt of the trigger signal have a positive Frame Number, and those recorded before the trigger have a negative Frame Number.

“Live” Display Button: Displays a Live Image in the viewer window. This live image has the same size, shape, focus, brightness, etc. as the recorded image will have. At higher resolutions, movements may seem somewhat “jerky” due to the refresh/update speed of the computer display screen.

“Memory” Display Button: When this mode is selected, you are viewing recorded images from the Memory Buffer in the Camera. These will be retained in the Buffer until you record over them, or you remove power or shut off the Camera.

Record” Button: Click on this button to “Arm” the camera and start filling the Memory Buffer. The Button label will change to “**Endless**” (for Center or End Trigger), or to “**Trigger In**” (for Start Trigger). The Buffer will fill, and then continue overwriting itself until a Trigger Command is received. Upon receipt of a trigger signal, the programmed record cycle will be executed. When completed, the system will automatically switch to the “Memory Playback” Mode.

To Trigger the Camera, Hit this Button Again, or Press the Hand-Held Remote Trigger Button.

Playback: The Memory Buffer is represented by the Blue Bar. The beginning and ending frame numbers are shown in boxes above the blue bar, as is the number of the frame currently being displayed in the view window (center box). The Control Buttons below the Blue Bar are used to control the playback direction and select the playback speed. The playback end points, as well as the displayed frame number, can be changed by typing a frame number in the appropriate box, or by “dragging” the end point arrows and the current frame arrow to the desired location.

Save Tab:

To “Save” a video clip to the computer hard drive, follow these steps:

Adjust the Blue Bar end points to encompass the desired frames to be saved.

Note that the larger the size of the video clip to be saved, the longer it will take to download, and the greater the file space needed on the hard drive and any subsequent USB/ External Hard Drives, etc.

Select a “Save Path”, a “File Name” and a “Format”. We suggest C:\Customer Video Images as the File location, and AVI as the format. This will create a single video file containing all the saved images. Choosing one of the other formats (BMP, TIF, JPEG, RAW, etc.) will create a series of individual files, one for each frame in the sequence.

Select (check) all the Options under File name, i.e. Add Captions, Add Sequence Numbers, Create Sub-Folder, and Same As File Name.

Hit the Save Button. When finished downloading hit OK. Select the Camera Tab to see a live image and start a new Record session, or select the File Viewer Tab to load and Play a file from the hard drive.

File Viewer Tab:

Hit the “Open” Button and browse to find the desired file folder.

Select and open a file having a .cih file extension. This will open the video file and all of the camera header information associated with that video. If you select a .cih file associated with a series of individual BMP, TIF, JPEG, etc. files, the system will open all the individual files. The software will allow you to playback these individual files as if they were a single video file.

Using the “Save” Button, you can create a new file of another format and size from the displayed file.

Control Buttons:

There are several Control Buttons located above the viewer window. Most users will only need to use the **%**, **100%**, **FIT**, and **LUT Reset Buttons**.

FIT: Adjusts the size of the viewed image to fit the available screen size.

100%: Displays the recorded image at its actual size, i.e. a 512 x 512 resolution image will be displayed using 512 x 512 pixels on the display screen.

LUT RESET: If you “screw up” the brightness, contrast or other display parameter of the image, or if you accidentally change the function of the Mouse Pointer, click on the LUT Reset Button to restore the image and the mouse to their original settings.

Memory Partitions (not all models):

There are instances when it is desirable to be able to capture successive events without first downloading the previous event video.

This feature can be useful if several events can happen in quick succession and/or randomly. To accommodate this scenario, the camera memory can be divided into multiple independent segments (partitions). The memory can be partitioned into 2, 4, 8, 16, 32, or 64 segments of equal size.

When partitioned the memory behaves as if there were multiple independent memory segments. As before, the trigger can be set to “Start”, “Stop”, “50/50”, etc.

When the camera is set to **“Live”** and the **“Record”** button is activated, the images will flow into **Partition #1** and will continue to do so until a Trigger Signal is received.

When the capture sequence is completed, the images will begin flowing into **Partition #2**, and will continue to do so until a second trigger signal is received.

When the second capture sequence is complete, the images will begin flowing into **Partition #3**, etc.

When the last Partition is completed, the camera will switch to the **Playback Mode**. The videos in the individual Partitions can now be “Trimmed” and Downloaded

Partition Setup:

- In the **Main Window**, click on **“Options”** at the top of the display. Choose **“Configuration”**
- Select **“Record Options – General”**. Check **“Loop Record”**, **“Auto Increment Partition”**, and **“Stop Recording After Last Partition”**.
- In the **“Mode After Recording”** section, choose **“Live”**. Hit **Apply** and **Okay**
- On the Control Panel on the Right Side of the Display, Select **“Camera Options”**.
- Select **“Partition”** and Enter the desired number of Partitions in the **“Number”** box.
- Select **Partition # 001** to be the first Active Partition. Hit **Apply** and **Okay**.
The Active Partition Number will be displayed in the top left corner of the display (P-001, etc.)
To begin, set the desired **“Trigger”**, hit the **“Record”** Button and the images will begin flowing into Partition #1. Each time the camera is triggered, the video capture will automatically advance to the next Partition. After the last Partition is recorded, the Trigger will be de-activated. You may now trim and download the desired video clips.