Photron FASTCAM Viewer

for High Speed Digital Imaging

Release Notes

Ver. 4.3.0.0 E

Photron

Contents

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Chapter 1. Release Summary

1.1. PFV4 Release Notes

1.1.1. PFV Version

- PFV Ver. 4.3.0.0
- SDK (PDCLIB.DLL) Ver. 4.3.0.0

1.1.2. Contents of the installation data

-	PFV Setup64:	PFV installer for 64bit Windows
-	PFA:	PFA (Photron FASTCAM Analysis) installer
-	SDK:	SDK components, documents, and samples
-	LabVIEW and MATLAB:	SDK for LabVIEW and MATLAB, documents, and samples
-	Doc:	PFV4 Users Manual, First Step Guide, and License Activation Guide
-	CheckerBoard:	Image data of checkerboard for lens distortion correction
-	ReleaseNotes:	PFV4 Release Notes
-	ReportSample:	Sample data for Report output function
-	Driver:	Device drivers

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Chapter 2. New Functions

2.1. PFV4.3.0.0 New Functions

2.1.1. New Camera Support

FASTCAM Mini R3-4K is supported.

2.1.2. Additional Function

Common to the all modes		
Item	**Fixed / Modified Item**	
[MENU]	[Configuration] – [Camera Option]	Added the function to individually delete correction data (shading data and pixel gain data) stored in the PC of connected cameras. - Supported cameras: Nova S/R, Mini R5/R3, Mini AX, MH6
	[Configuration] - [Display]	The frame rate, shutter speed, and number of frames displayed in the "Information Display" can now be displayed in three-digit separations. This improves the visibility of the numbers. *The delimitation method differs depending on the language setting of your PC.
[Adjustments]	[Color Correction]	The auto white balance adjustment function has been improved. - When you click the [Start sampling] button, the adjustment is now executed immediately. - The "ROI display" checkbox has been added.
[Quick Tools]	[Tile windows]	View window layout can now be specified with any number of columns and rows.

LIVE mode		
Item	**Fixed / Modified Item**	
[Function panel]	[Setup] - [Variable]	Variable settings can now be made for multiple cameras of the same type connected at once. This saves time and effort that would otherwise be required to make variable settings for each camera.
	[Camera Controls] - [Camera list] - [Edit]	Camera names can now be easily edited by referring to a specific CSV file.
[Add-ons] – [MCAT]	[Edit Camera Info]	- Conditions: MCAT license is activated. - Method: Create a CSV file (character code: Shift-Jis, UTF-8) with the group name (first column) and camera name (second column and after) in the following path. C:\Users\Public\Documents\Photron\PFV4
	The selection state (display state) of other cameras is now maintained even when camera names are edited. This eliminates the need to reconfigure the screen display, as the selection state of the camera will no longer be changed only to the camera that has been changed.	
	Changed so that the lens control settings cannot be changed when the camera is locked. This prevents the user from changing the focus or zoom from the lens control settings after locking the camera.	

MEMORY/FILE mode		
Item	**Fixed / Modified Item**	
[Monitors]	[Brightness Change]	The CSV output speed of luminance values has been increased.
Recording/ playback panel	Added the function to enlarge the specified range of the playback slider bar. This improves the operability of frame specification with the mouse.	

Other
The display of scale setting values in the information display has been changed as follows. Old) Calibration value (pixel scale) unit/px lens optical magnification New) Calibration value (pixel scale/lens optical magnification) unit/px
Shading is now performed when external sync is enabled and a sync signal is input when Mini R5/R3 or Nova S/R is connected.

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Chapter 3. Bug Fix and Other Changes

3.1. PFV4.3.0.0 Fixed Bugs and Changes

Common to the all modes		
Item	**Fixed / Modified Item**	
[MENU]	[Configuration] - [Image Quality]	Software pixel gain calibration did not work properly when the Nova S20 had a 10-bit operating bit setting. This bug is fixed.
[Dimensions]	[Calibration]	The "Camera" setting in "By camera" calibration was not initialized after clicking the [Reset] button. This bug is fixed.
		PFV4 had incorrect pixel size value settings for Nova R5/R3 and Mini R5, resulting in incorrect scale values when the scale was set from the optical magnification of the lens. This bug is fixed.
		Changed so that "0" cannot be entered for the size of one pixel in manual settings.
		A ruler was not drawn at the set length depending on the set value of optical magnification. This bug is fixed.
[Assistance]	[S/W image trigger]	PFV4 crashed when the following operations were performed. This bug is fixed. Pattern A 1. Connect camera and check "Image trigger enabled" from [Asistance] - [S/W image trigger]. 2. Shift to [FILE] mode. Pattern B 1. In [FILE] mode, check "Image trigger enabled" from [Asistance] - [S/W image trigger]. 2. Shift to [LIVE] mode, or [MEMORY] mode.
	[Image Overlay]	When the zoom ratio was changed for an image with image overlay, if the "Vertical position" and "Horizontal position" values were rounded to the maximum value, the values were normal but the ovelaid image was not displayed according to the settings. This bug is fixed.
[Special Effects]	[Lens Calibration]	After loading the lens distortion correction file, the lens distortion correction might become invalid by changing modes or opening other tools. This bug is fixed.
[Quick Tools]	[Tile windows]	The item names for "Horizontal tiles" and "Vertical tiles" in the "Tile windows" menu were reversed. This bug is fixed.

LIVE mode		
Item	**Fixed / Modified Item**	
[MENU]	[Configuration] - [Connection] - [Ethernet settings]	After optimization, camera settings (frame rate, shutter speed, resolution, and trigger mode) were set differently than before. This bug is fixed. - Applicable cameras: MH6, Mini CX, and Multi
	[Configuration] - [Trigger]	A camera control related error message was displayed when the following operations were performed when using Mini CX. This bug is fixed. From now on, a message confirming the deletion of recorded data will appear and clicking the [OK] button will allow you to change the settings. 1. Connect the camera and perform recording. 2. Shift to [LIVE] mode and click [MENU] - [Configuration] - [Trigger]. 3. Check or uncheck [Enable Noise Filter function].
[Assistance]	[S/W image trigger]	When "Image trigger enabled" is checked, the recording button display might remain "Ready". This bug is fixed.
	[Image Overlay]	The image overlay display was not maintained when the following operations were performed. This bug is fixed. 1. Open image (A) in [FILE] mode. 2. Shift to [LIVE] mode, connect to camera, and select image (A) as overlaid target from [Asistance] - [Image Overlay]. 3. Shift to [FILE] mode and play image (A). 4. Shift to [LIVE] mode.
[Special Effects]	[B/G Subtraction]	Inter-frame background removal in the Background Subtraction feature was not applied when "Prioritize speed" was checked in the "Live update speed" setting. This bug is fixed.
[Add-ons]	[PFV4 Mobile]	PFV4 Mobile did not work when changing the value of ports 1 and 2 to something other than the default value. This bug is fixed.
		When the following operations were performed, the rectangle for automatic white balance adjustment would be displayed before the automatic adjustment was executed. This bug is fixed. 1. Start PFV4 Mobile and tap [Adjustments] - [Color Correction]. 2. Tap [Start sampling] button of Auto white balance. The rectangle for Auto Adjustment appears. 3. Tap [Update] button of PFV4 Mobile. Auto white balance adjustment menu is closed and the adjustment rectangle disappears. 4. Tap [Adjustments] - [Color Correction] again.
		When using PFV4 Mobile, if auto focus was set in the lens control menu on a PC, the message "Auto focus setting in progress" was displayed on the PFV4 Mobile screen even after completion. This bug is fixed.
	[MCAT]	The Ready (waiting for recording) indicator appeared on the front of the message and the PFV4 might become inoperable. This bug is fixed.

LIVE mode		
Item	**Fixed / Modified Item**	
[Function panel]	[Setup] - [Shutter speed] - [Auto Exposure Settings]	Clicking the "Show histogram" checkbox repeatedly might cause PFV4 crash. This bug is fixed.
	[Setup] - [Low light]	PFV4 crashed when trying to adjust color temperature settings from [Adjustment] - [Color Correction] in low light mode. This bug is fixed. From now on, the color adjustment cannot be performed in low light mode.
	[Setup] - [Trigger mode]	The number of "Record count limit" for random triggers was not correctly reflected when loading PCSX files. This bug is fixed.
	[Setup] - [Lens control]	Changed so that when the [Update] button is clicked, the lens settings of only the currently selected camera are updated. - PFV4.2.0.0 or earlier: Lens settings of all connected cameras were updated.
	[Camera Controls] - [Save/Load camera control settings]	When using the Mini AX200, if a PCSX file created with the high quality mode "Off" was loaded with the high quality mode "On", it would be restored with frame rates and resolution settings that exceeds the high quality mode limit setting. This bug is fixed.
[Snapshot]	If a snapshot was taken with the following settings, the correct image would not be saved. This bug is fixed. -Set the "Trimming" function in [LIVE] mode. -Check "Prioritize speed" in [Function Panel] - [Setup] - [Live update speed].	
Other	When the following settings were made, it became possible to operate on PFV4 Mobile a camera that was not selected for shading (not subject to shading) when shading was started. This bug is fixed. 1. Connect two cameras (e.g. Nova, Mini AX) that do not compatible with parallel shading. 2. Change the following settings in [MENU] - [Configuration] - [Image Quality]. - "Shading Settings": Enable - Check "Auto shading calibration when going into Ready state". 3. Start PFV4 Mobile and check which camera is selected on PFV4 Mobile. 4. Click the [Record] button.	
	When using MH6, when the following settings were made, the process of switching the save destination to FAST Drive might take a very long time. This bug is fixed. - Check "Auto save after recording". - Check "Display a dialogue when the auto save after recording starts".	
	When the following settings were made, the cross cursor's coordinate values would be displayed as "0". This bug is fixed. - When "Prioritize speed" is checked in the live update speed setting. - When the scale value is set to less than "1" in calibration setting.	

MEMORY mode		
Item	**Fixed / Modified Item**	
[Save]	When images were downloaded to the FAST Drive without the camera head connected when MH6 is connected, differences in image processing occurred compared to when the same images were downloaded with the camera head connected. This bug is fixed.	
	[Save option]	The Skip Save setting value was not retained or could not be changed when the following operations were performed. This bug is fixed. Pattern A 1. Open the save window in [MEMORY] mode and uncheck all checks in the file list. 2. Change the Skip Save setting value, click the [Apply] button, and then click the [Cancel] button to close the save window. 3. Click the [Save] button to open the save window and the Skip Save setting values are not retained. Pattern B 1. When using MCAT, click the [Save] button and open the save window with the playback confirmation check unchecked. 2. The Skip Save setting values cannot be changed.
		When "Info save" was enabled with data that had been trimmed in the saving range in "Triming" function, the resolution information before trimming was displayed. This bug is fixed.
	[Layout save]	When MH6 was connected via USB port, recording data could not be saved in the following cases. This bug is fixed. 1. "Use IP address as camera name" is enabled in the function panel. 2. Perform recording, switch to [MEMORY] mode, and perform the layout save. 3. The camera is not displayed in the camera list on the save screen and cannot be saved.
		The image display position would overlap in Layout save when the following operations were performed. This bug is fixed. 1. Connect three or more cameras and perform recording. 2. Shift to [MEMORY] mode and click [Layout save]. 3. Set the layout option to "Auto fit" or "Auto alignment" in the "Layout Settings" window. 4. Uncheck one file in the target window and click [Auto layout] button. 5. Check the file that was unchecked in step 4.
Recording/ playback panel	PFV4 might become inoperable when the [Enter] key was holded down for a little less than a second after clicking the [Play] button (▶).This bug is fixed.	
	PFV4 might become inoperable when playing back the recording data from multiple cameras and moving the current frame cursor. This bug is fixed.	

MEMORY/FILE mode		
Item	**Fixed / Modified Item**	
[Dimensions]	[Manual tracking]	After creating a graph using the manual tracking function and then changing the scale setting in [Dimensions] - [Calibration], the change was not reflected in the graph. This bug is fixed. *Changes are reflected when a new graph is created.
[Monitors]	[Brightness Change]	With synchronized playback enabled, when analysis was performed using [Monitors] - [Brightness Change], playback was not performed on the first click of the [Play] / [Reverse play] button. This bug is fixed.
[Save]	[Save option]	The value of "#OriginalInitialValue" in the waveform data (CSV) output with "Save waveform in CSV" enabled was not the original top data value before integration. This bug is fixed.
		When the following operations were performed, the skip save setting value was not displayed correctly and the spin button did not work properly. This bug is fixed. 1. Open a file that has frame rate information and a file that does not have it. 2. Click the [Save] button. 3. Check both files in the file list checkboxes. 4. Click the file that does not have frame rate information to select it (the background of the column turns green). 5. Check "Skip save" and change the unit to "msec".
	[Graph]	When the graph was enlarged, it was displayed with the minimum value of the Y-axis included. This bug is fixed.
		When a graph was enlarged, the graph might not be drawn correctly (missing plots, disappearing lines, or unnecessary lines). This bug is fixed.
		PFV4 became inoperable when the following settings were made before clicking the magnification icon on an XT graph and click on the graph. This bug is fixed. 1. Perform recording and shift to [MEMORY] mode. 2. In [Dimensions] - [Calibration], check [By camera] and input a value of "99,999" or more for optical magnification. 3. In [Dimensions] - [Manual tracking], add one tracking point. 4. Click [Graph] button and create an XT graph.
		Y-axis values on graphs might not be displayed. This bug is fixed.
		If the value on the Y-axis of a graph was in exponential notation and had more than four decimal places, the integer part might be cut off. This bug is fixed.
		When the [Align Windows] setting in Quick Tools was "Horizontal tiles" or "Vertical tiles", the graph would not be drawn correctly. This bug is fixed.
		PFV4 became inoperable when a large number was set as the maximum value on the graph scale. This bug is fixed.

MEMORY/FILE mode		
Item	**Fixed / Modified Item**	
[Save]	[Graph]	When the MIN and MAX values were set for the X-axis and Y-value settings and the graph was displayed, the graph would not be plotted correctly. This bug is fixed.
		A graph was not drawn correctly when tracking points were not contiguous. This bug is fixed.
		When a range was specified in an interlocking graph, the range of the graph setting was not synchronized. This bug is fixed.
		PFV4 crashed when the following operations were performed. This bug is fixed. 1. Open a file in [FILE] mode, click [Monitors] - [Brightness Change], click the [Analysis] button, and create a time series graph. 2. Click [Dimensions] - [Manual tracking] and add several tracking points. 3. Click the [Graph] button, specify "Tracking" on the graph setting screen, and click the [OK] button. 4. Right-click on the displayed graph, click [Graph Settings], and click [Interlocking graph] button on the "Graph Settings" screen.
		When the XT graph was enlarged using the mouse, the T-axis scale setting and Y-axis display range remained set to automatic, and did not switch to manual settings. This bug is fixed.
	[Layout save]	PFV4 might crash, if the [Layout save] button was clicked when the number of cameras and files was different in [MEMORY] mode and [FILE] mode. This bug is fixed.
		Wrong values were displayed for "Resolution" and "Predicted size" in the file list when "Save scaling" was checked. This bug is fixed.
		When the "Info save" was unchecked and [Auto layout] was clicked, the image would be displayed with the image squashed horizontally. This bug is fixed.
	[Save option] - [Edit Display Info]	Clicking the [100%] icon changed the image display position, but did not initialize the image position information used for the movement processing. This bug is fixed.
		Changed so that when the "Fix font size ratio" box is checked, if the width and height ratios of the font size both exceed 1, the size with the smaller ratio is used.
Recording/ playback panel	A virtual trigger was automatically set at an unintended location (start frame or last frame close to the actual trigger point) when the following operations were performed. This bug is fixed. 1. Perform recording and shift to [MEMORY] mode. 2. Adjust the playback range so that the actual trigger point does not overlap the start or last frame in the recording playback panel. 3. Click [MENU] - [Configuration] and click the [OK] button or [Cancel] button on the window to exit. 4. Click the [Enable virtual trigger] button.	

MEMORY/FILE mode		
Item	**Fixed / Modified Item**	
[Save]	When saving files without frame rate information, "msec" unit could be selected for skip saving. This bug is fixed.	
	[Report output] - [Save option]	When the following operations were performed, the unit of the set value for skip save was displayed as "msec", but the setting could not be set correctly. This bug is fixed. 1. Open a file and click [Report output] button. 2. Check "Skip save" and change the unit to "frame". 3. Check "Playback frame rate".
	[Graph]	PFV4 crashed when a graph was already displayed, trying to open a graph by importing the same waveform data (CSV, MME) from the "Graph Settings" window. This bug is fixed.
[Batch converter]	A Camera control related error message appeared when formatting FAST Drive from FAST Dock. This bug is fixed.	
	A problem in which formatted data remained after formatting the FAST Drive from the FAST Dock when the FAST Drive was connected to the camera and the data was checked, has been corrected by changing the initialization method from the FAST Dock.	
	The [Initialize] button, which is not available on CFast cards, was displayed. This bug is fixed.	

Other
Frame count was not displayed correctly when opening a file where the virtual trigger was outside the playback range. This bug is fixed.
When two or more files including a grouped file were being played back synchronously, right-clicking on the grouped file and changing the group file to be displayed would stop playback. This bug is fixed.
When using the following tools, right-clicking on a grouped file and changing the displayed group file, the tool settings were not reflected. This bug is fixed. - Tools: Line Profile, Manual tracking, Trimming, Keystone Correction
When right-clicking on a grouped file and changing the group file to be displayed, the current frame information would maintain the information of the file before switching the display. This bug is fixed.
The frame rate of a file with skip saving was displayed at the actual frame rate before skip saving. This bug is fixed.
When starting PFV4 from a PCSX file, if the following settings were used, a message appeared indicating that the camera could not be recognized and the network settings screen opened. This bug is fixed. - "Display camera control menu at startup": Off, "Display PC network setup window when camera was not found at startup": On in [MENU] - [Configuration] - [Connection] - Check "PFV settings only" in the PCSX settings restore message.

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Chapter 4. The Contents of SDK

4.1. The Contents of SDK

4.1.1. New Camera Support

FASTCAM Mini R3-4K is supported.

4.1.2. Additional Function / Improvement

N/A

4.1.3. Bug Fix

Other
Due to changes in the CIHX tag configuration in PFV4.0.4.0, values would not be obtained when specifying old CIHX keys in the following functions. This bug is fixed. *The CIHX tag configuration has not been changed in PFV4.3.0.0. - Target functions: PDC_GetCihxValueA, PDC_GetCihxValueW, PDC_GetCihxValue
8bit save using PDC_MRAWFileSaveOpenEx() failed on Nova and Mini R5. This bug is fixed.

A

A. Appendix

A.1. Cache Storing Specification Change

Starting with PFV4.0.6.0, cache data is stored in the PC to speed up the startup process.

■ **Target model**
   PFV (SDK): Ver. 4.0.6.0 or later
   Camera: Nova S/R series, Mini R5, MH6, and cameras to be released in the future

■ **Expected Benefits**

   Faster connection between PFV and camera
   When connecting to a camera, correction data was loaded from the camera.
   This loading process took a long time for the connection.
   By storing the cache data in the PC, the data loading time from the camera can be reduced and the connection speed can be improved.

■ **Storring Location**

   Cache data is stored in the following folder.
   C:\Users\User Name\AppData\Roaming\Photron\PDCLIB\Devices\Camera Name\XXXXXXXX
   *   "User Name" is the user's local folder name.
   *   "XXXXXXXX" is a non-duplicate alphanumeric string based on camera and head information.
   e.g.   C:\Users\User Name\AppData\Roaming\Photron\PDCLIB\Devices\Nova
        S12\978C95093DC3BC7EDAEAFEAB771CA6F2

■ **Contents of Data**

   Cached data includes camera correction data (pixel gain, shading, and missing pixel).

■ **Details**

   The camera's MAC address (Serial number) is used to link to the cached data.
   As long as there is no camera with the same MAC address (Serial number), incorrect (from another camera) data will not be linked.

⚠ **CAUTION**

When a camera is returned to Photron for maintenance or repair and the camera's image quality is readjusted, the cache data remaining on the PC must be deleted so that the old cache data is not referenced.
See "How to Delete Cache Data" on page 21 for detailed instructions.
* If the camera is connected without deleting the old cache data, the camera will use the old correction data before image quality readjustment for its operation. In this case, the correction data inside the camera will not be overwritten.
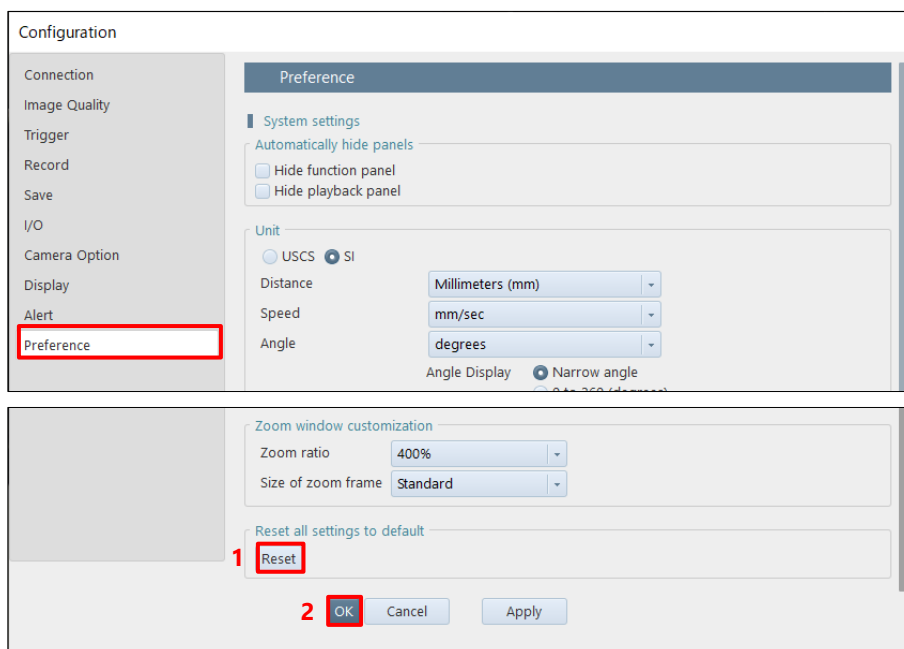
■ **How to Delete Cache Data**

- If using PFV4, do A), B), or C).

- If using SDK, do C) or D).

A) Initialize the camera from PFV4 to factory settings (after connecting the camera).
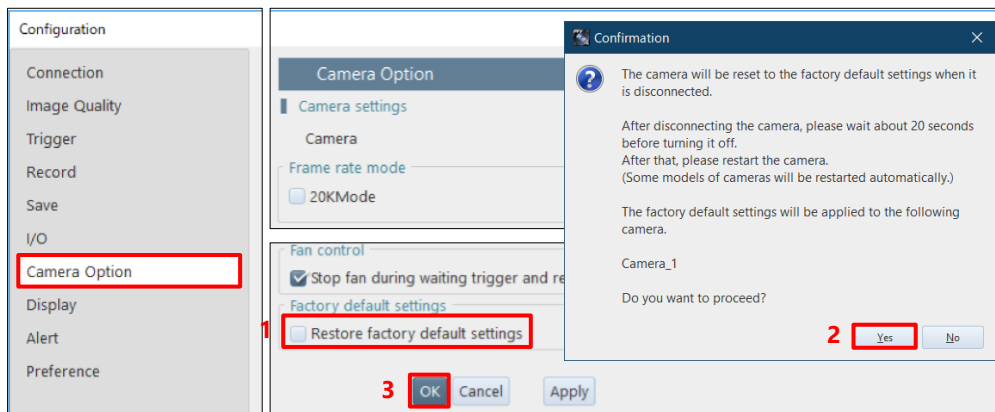
B) Perform PFV4 reset (before connecting the camera).

C) Delete cache data directly in the AppData folder (before connecting the camera).

C:\Users\User Name\AppData\Roaming\Photron\PDCLIB\Devices\Camera Name\XXXXXXXX

D) Execute the SDK function "PDC_EraseCachedCorrectionData()" (before connecting the camera). For details, refer to the SDK Help file.

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