Photron FASTCAM Viewer

for High Speed Digital Imaging

Release Notes

Ver. 4.6.0.0 E

Photron

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Chapter 1. Release Summary

1.1. PFV4 Release Notes

1.1.1. PFV Version

- PFV Ver. 4.6.0.0
- SDK (PDCLIB.DLL) Ver. 4.6.0.0

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. PFV4.6.0.0 New Functions

2.1.1. New Camera Support

FASTCAM Mini W2 / W5 are supported.

2.1.2. Additional Function

Common to the all modes		
Item	**Fixed / Modified Item**	
[MENU]	[Configuration] - [Connection]	The display of the camera auto-search option in the PFV startup settings window has been changed. - PFV 4.5.0.0 and earlier: "Display camera control menu at startup" (checking this disables auto-search) - PFV 4.6.0.0 and later: "Disable automatic camera search at startup" (checking this disables auto-search)
	[Configuration] - [Save]	You can now choose whether to draw the cross cursor in the save settings. - PFV 4.5.0.0 and earlier: When saving with "Apply Image Processing" enabled, the displayed cross cursor is embedded into the image. If you only want to use the cross cursor as an alignment reference, the cursor may unintentionally remain in the image. - PFV4.6.0.0 and later: Added an "Include cross cursor display" checkbox in [Configuration] - [Save] (default is off).
[Adjustments]	[Color Correction]	An histogram display has been added to the auto white balance adjustment function for checking brightness distribution. This allows you to work while confirming the brightness distribution within the specified range during adjustment.
[Edit]	[Trimming]	The Save Range Trimming settings window now allows you to specify a Zoom ratio for each cropping area. Even when multiple trimming ranges are set, you can individually configure the Zoom ratio (10%, 25%, 50%, 100%, 150%, 200%) for each range. This enables you to complete both trimming and Zoom ratio adjustments within a single window, improving workflow efficiency.
[Show info]	Added a feature to display and save the estimated record completion time via Show info and Info save. - Compatible camera: Mini CX, Nova S/R, MH6, Mini R5/R3, Mini W5/W2, Orion S40	
[Snapshot]	Added a [Snapshot] button to the Snapshot Settings window to allow direct snapshot capture. This enables you to capture a snapshot directly from that window after configuring settings like the save destination and format.	

LIVE mode		
Item	**Fixed / Modified Item**	
[MENU]	[Configuration] - [I/O]	When using the "Stop HDMI output when in recording standby" feature with the Mini CX, we have improved it so that the HDMI output automatically turns ON after recording ends. This eliminates the need to manually reset the setting after recording. * A confirmation message will be displayed because erasing data within the camera is required when turning the HDMI output ON.
	[Configuration] - [Camera Option]	"High-Quality" Mode has been added to the Mini R5/R3 and Mini W5. This mode enables higher-quality images with less noise. * The available frame rates differ between Normal and High-Quality modes.
[Function panel]	[Camera controls]	Added a feature to search for and connect to all cameras at the same time for every NIC installed on the PC. Even when the PC (NIC) and camera are on different networks as shown below, the camera can be found. Example: PC: 192.168.111.1, Camera: 192.168.0.10 Additionally, you can change the camera's IP address (Orion S only) from 192.168.0.10 to 192.168.111.102 and connect. This feature allows you to find the camera even if its IP address is unknown. You can then change the IP address and establish a smooth connection without needing to restart the camera.
	[Edit info]	An "IRIG Status" option has been added to the Show info display, enabling users to toggle all IRIG-related status displays at once. Since the Mini CX shares settings between the external synchronization function and the IRIG sync function, the display would show "IRIG Phase Lock" even when using external synchronization, potentially causing confusion. This change allows users to hide unnecessary information based on their usage scenario, preventing confusion.
	[Setup] - [Shading]	When performing shading on a mix of cameras with and without mechanical shutter, a confirmation message now appears. This allows you to choose between executing shading on all cameras at once or only on cameras with mechanical shutter.
[Assistance]	[Synchronization Assistance]	When selecting "ON CAM" or "ON OTHER" in the camera sync settings, a message now displays to ensure the software trigger is used correctly. This prevents unintended trigger duplication during synchronized recording.
[Add-ons]	[DAQ Control]	Improved camera trigger settings to automatically optimize based on the selected DAQ type when using the DAQ plugin. - When using Graphtec DAQ (GL): Automatically sets the TTL OUT signal width to the optimal value (999μsec or 10μsec) based on the Up/Down setting of the level trigger. - When using Yokogawa DAQ (DL): Automatically sets the camera trigger input (INPUT/TRIG IN, etc.) to "TRIG NEG". This eliminates the need for manual settings when using DAQ and prevents configuration errors.

LIVE mode		
Item	**Fixed / Modified Item**	
[Add-ons]	[PFV4 Mobile]	An indicator has been added to the PFV4 Mobile window that displays the communication status and speed with the PC. Even when the image is static, such as during trigger standby, you can now check the current communication status ("Connected", "Not Connected", "Communication Error") and the image download speed (kbps/Mbps) in real time.
	[MCAT]	When "Use Camera Hub" is selected in the MCAT Detailed setting window, the camera trigger setting is now automatically optimized (TRIG IN, TRIG TTL IN, and INPUT2 to "TRIG NEG").
Other	When the "Low light" function is enabled, the previously inactive (unusable) "Live stop" and "Update" functions have been changed to become usable.	

MEMORY/FILE mode	
Item	**Fixed / Modified Item**
[Save]	Improved usability of the multiple save path settings window. Previously, attempting to change one path in the list of multiple save paths could unintentionally change other selected paths as well. This update fixes that issue so only the clicked path is modified. This makes adjusting individual path settings easier. Note that the functionality to modify multiple paths simultaneously by holding down the [Control] key while clicking remains unchanged.
	When deleting a save path currently in use by the camera in the Edit multiple save path window, the target row will now be highlighted simultaneously with the display of the error message.
[Layout save]	When setting the layout area, a guideline (dashed line) indicating the maximum resolution is now displayed. - Recommended maximum resolution savable using GPU (5,000 x 5,000 pixels) - Maximum resolution savable (8,196 x 8,196 pixels)
Recording/ playback panel	Improved playback slider bar operability. - PFV4.5.0.0 and earlier: Dragging and dropping the current frame cursor on the playback slider bar during playback resumes playback from the new position. To stop playback at a specific frame, you must press the stop button. - PFV4.6.0.0 and later: Dragging and dropping the current frame cursor on the playback slider bar during playback stops playback at the new position. This allows for more intuitive and faster operation when you want to check a specific frame during playback.

FILE mode		
Item	**Fixed / Modified Item**	
[Save]	[Report output]	When outputting reports to Word, Excel, or PowerPoint, you can now easily insert the image of the currently displayed frame. The specification has been changed so that if no frame number is specified in the report output template, the currently playing frame (current frame) is automatically inserted. You can pause playback and review at the desired frame, then insert the image into the report with a single click.
[Open]	When loading INF files, you can now directly input the capture speed and T=0 frame (trigger offset) when adding unassociated video files (AVI). This eliminates the need to edit the ini file after loading the file, which was previously required.	
[Batch converter]	The issue where opening a large number of files (especially data from FAST Drive) via Batch converter function caused delays in displaying the list has been fixed. This significantly improves processing speed when opening files, reducing the time per file from approximately 180 milliseconds to about 1 millisecond.	

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Chapter 3. Bug Fix and Other Changes

3.1. PFV4.6.0.0 Fixed Bugs and Changes

Common to the all modes		
Item	**Fixed / Modified Item**	
[MENU]	[Configuration] - [Preference]	When "Hide function panel" was checked, opening the "Trimming" or "Manual tracking" functions caused the range list and tracking point list of the menu to display incorrectly. This bug is fixed.
	[License control]	Clicking "Open the license activation website" did not allow access to the license authentication site. This bug is fixed.
[MENU] / [Snapshot]	[Export support file]	Changing the save location for Snapshot (or support files) also automatically changed the save location for support files (or Snapshots). This bug is fixed.
[Function panel]	[Edit info]	When placing recording information at the top or bottom of an image, text alignment (left-aligned, centered, right-aligned) did not function correctly. This bug is fixed.
[Adjustments]	[HDR]	When applying the HDR feature in versions PFV4.4.0.0 and later, the image became excessively bright. This bug is fixed.
[Edit]	[Trimming]	When multiple cameras were connected and the multi-windows lock function was enabled, performing specific operations such as [Undo] caused the PFV4 to crash. This bug is fixed.
Other	The shortcut keys for the Quick Tools "Rotate," "Invert," and "Zoom", as well as the "Delete Shape" function in Measurements menu, did not function correctly. This bug is fixed.	
	When multiple cameras were connected and the multiple windows lock function was enabled, closing the panel using the "Cancel" button after changing tool settings such as "Trimming" or "LUT" would not revert the settings for cameras other than the one currently being operated. This bug is fixed.	
	When the Variable settings was open, opening the "LUT" function in the effect status bar and then closing both windows caused the effect status bar icon to become unresponsive (disabled). This bug is fixed.	

LIVE mode		
Item	**Fixed / Modified Item**	
[MENU]	[Configuration] - [Image Quality]	When applying the software pixel gain function to cameras lacking calibration data, images appeared without software pixel gain correction applied. This bug is fixed. With this fix, if a camera lacks calibration data, it will behave as follows: - Applying Software pixel gain: A warning message appears, and the setting is not applied. - File saving: Attempting to save a file with the software pixel gain correction applied will be skipped for cameras without data. - Loading configuration files: Even if the software pixel gain correction is enabled in a configuration file (.pcsx), it will not be applied to cameras without data.

LIVE mode		
Item	**Fixed / Modified Item**	
[Function panel]	[Setup] - [Shutter speed]	When changing the shutter speed while the live image was paused, the display lagged by one operation (e.g., the image brightness was updated to the setting from the previous operation). This bug is fixed.
		When the "Low Shutter Speed" function, "Live stop", and "Low light" functions were enabled simultaneously, changing the shutter speed to "1/frame sec" caused the image brightness to fail to update correctly. This bug is fixed.
	[Setup] - [Trigger mode]	Checking the "Separate digits" option for the frame rate display from [MENU] - [Configuration] - [Display] limited the "Record Count Limit" available in random trigger modes. This bug is fixed.
	[Setup] - [Variable]	Performing specific actions, such as repeatedly opening and closing the software image trigger panel, caused the Resolution rectangle graphic to flicker when the Variable settings were subsequently opened. This bug is fixed.
	[Setup] - [Shading]	The shading processing for SA6 did not complete correctly, and images were not corrected with PFV4.4.0.0 or later. This bug is fixed.
[Adjustments]	[LUT] / [Color Correction]	When using Nova R5/R3 or Mini R5/R3, and "Prioritize speed" was checked in the Live update speed setting, the results of Auto white balance of "Color Correction" and auto expand adjustment of "LUT" differed from when the Live update speed setting was disabled. This bug is fixed.
	[Color Correction]	A display issue occurred with the color palette that appears when dragging on the view screen while adjusting saturation. This bug is fixed.
	[Color Correction]	When enabling the [Low light] function while displaying the histogram during color adjustment, the histogram disappeared on the PC but remained visible on the PFV4 Mobile. This bug is fixed.
[Add-ons]	[PFV4 Mobile]	
[Adjustments]	[Binning]	When the "Average Frame Count" setting from [Monitors] - [Histogram] was set to anything other than "None", the following operations could cause the PFV4 to crash. - Switching the binning size setting (Off, 2 x 2, 4 x 4) - Repeatedly executing binning setting changes using the [Undo] or [Redo] buttons
[Dimensions]	[Measurements]	When using Nova R5/R3 or Mini R5/R3, and "Prioritize speed" was checked in the Live update speed setting, the drawn circle appeared smaller than the specified size. This bug is fixed.
	[Calibration]	When displaying the grid with Nova R5/R3 or Mini R5/R3, and "Prioritize speed" was checked in the Live update speed setting, the scale setting displayed on the view (number of pixels in the display range) was shown at double the intended value instead of half. This bug is fixed.
		When the "Binning" function is enabled and the grid is displayed, changing the zoom ratio from full view to 100% view or similar did not update the scale (display size) value shown in the lower-left corner of the view. This bug is fixed.

LIVE mode		
Item	**Fixed / Modified Item**	
[Monitors]	[Histogram]	When using Nova R5/R3 or Mini R5/R3, and "Prioritize speed" was checked in the Live update speed setting, repeatedly enabling/disabling the binning function while using the histogram range display feature caused the coordinates and size display of the rectangle indicating the histogram range to shift. This bug is fixed.
		When setting the [Averaging frame number] in the histogram and enabling the "Binning" function, repeatedly clicking the binning icon in the effect status bar could cause the PFV4 to crash. This bug is fixed.
[Assistance]	[S/W image trigger]	When using Nova R5/R3 or Mini R5/R3, and "Prioritize speed" was checked in the Live update speed setting, the W and H (width and height) values for the target image range in the software image trigger might occasionally display as negative. This bug is fixed.
		When the trigger mode was set to "Random" or "Random Reset" and the record count was set to multiple times, the image trigger would not activate on the second or subsequent records. This bug is fixed.
		After opening "S/W image trigger" function and then operating another functions, opening Variable settings menu caused the effect status bar icon to become unresponsive (deactivated). This bug is fixed.
		Clicking the [Reset] button or switching the connected camera without changing any settings caused the [Apply] button to become active. This bug is fixed.
[Add-ons]	[DAQ Control]	When using a Graphtec DAQ (such as the GL900) in combination with a Random Reset trigger, the camera image and the DAQ waveform data did not synchronize correctly. This bug is fixed.
	[PFV4 Mobile]	When using Nova R5/R3 or Mini R5/R3, and "Prioritize speed" was checked in the Live update speed setting, the ROI (rectangular selection area) displayed by the "Color Adjustment" and "Auto Focus" functions was rendered with different apparent widths even when the pixel width was the same. This bug is fixed.
		When opening settings windows such as Variable settings or Auto exposure control settings, functions like "Binning," "Keystone Correction," and "Lens Calibration" which should normally be temporarily disabled could be enabled from PFV4 Mobile. This bug is fixed.
		When creating a rectangle (ROI) via swipe gesture while rotation or invert settings were applied to the live image, it was not possible to create a rectangle with a width or height of 2 pixels. This bug is fixed.

LIVE mode		
Item	**Fixed / Modified Item**	
[Add-ons]	[MCAT]	When switching to FILE mode or similar while opening or closing the accordion menu on the MCAT window, the "Custom info setting" area became blank and unresponsive. This bug is fixed.
		When checking the "Separate digits" option for the frame rate display from [MENU] - [Configuration] - [Display], entering a value in the "Save end frame" field on the MCAT window's [Save] tab would reset the value instead of setting the value. This bug is fixed.
		After switching from [LIVE] mode to [FILE] mode and then back to [LIVE] mode, the "MCAT Display setting" became inoperable (disabled). This bug is fixed.
[Quick Tools]	When using Nova R5/R3 or Mini R5/R3, and "Prioritize speed" was checked in the Live update speed setting, the RGB values displayed by the Cross cursor showed as "0" everywhere except the top-left area of the screen. This bug is fixed.	
	When using Nova R5/R3 or Mini R5/R3, and "Prioritize speed" was checked in the Live update speed setting, using the Zoom selected area feature caused the center to shift from the mouse pointer's position. This bug is fixed.	
Recording/ playback panel	If [Auto shading calibration when going into Ready state (only for cameras with mechanical shutter)] was checked on [MENU] - [Configuration] - [Image Quality], if the [Record] button was clicked again the instant it switches to [Ready] immediately after shading, the camera became unresponsive (requiring a camera restart). This bug is fixed.	
Other	When functions such as "Binning," "Lens Calibration," and "Keystone Correction" were enabled, opening the Variable settings after opening "S/W image trigger" caused the tool icons on the effect status bar to become unresponsive (disabled). This bug is fixed.	
	When the Auto exposure control setting was open, opening or closing other tools in the effect status bar (such as LUT or Histogram) caused the effect status bar icons to become unresponsive (disabled) even after closing the Auto exposure control setting. This bug is fixed.	
	After restarting PFV4, the camera number assigned to the dummy camera (default: C065) was reset to "C000". This bug is fixed.	

LIVE / MEMORY mode	
Item	**Fixed / Modified Item**
Other	When returning to [LIVE] mode while a graph was open in [MEMORY] mode and then closing the view window, the UI sometimes failed to update correctly, causing the PFV4 to crash under specific conditions. This bug is fixed.

LIVE / FILE mode		
Item	**Fixed / Modified Item**	
[Dimensions]	[Calibration]	When "By camera" was checked, changing the unit (e.g., from millimeters to micrometers) did not update the grid line spacing displayed in the view screen. This bug is fixed.

MEMORY mode		
Item	**Fixed / Modified Item**	
[Monitors]	[Histogram] / [Line Profile]	When displaying the average value of multiple frames, outputting a CSV file did not clear the accumulated average frame information. This bug is fixed.
[Save]	When "FAST Drive" was selected in the save destination settings and both the "Trimming" function and the "Cross Cursor" were applied simultaneously, the cross cursor display position became misaligned in the preview screen of the save window. This bug is fixed.	
[Layout save]	When "FAST Drive" was selected in the save destination settings, checking [Info save] on the Layout Settings and Layout save windows did not reflect the changes in the preview window of the save window. This bug is fixed.	
Other	When using the "Record while saving" feature, pressing the [×] button on the save progress window immediately after the last partition's record completed caused the PFV4 to become unresponsive during data saving. This bug is fixed.	
	When switching to an unrecorded partition during video playback, the currently playing image might remain displayed. This bug is fixed.	

MEMORY/FILE mode		
Item	**Fixed / Modified Item**	
[Dimensions]	[Measurements]	Even after selecting the created shape and pressing the [Delete] key, it did not delete until the mouse cursor was moved. This bug is fixed.
[Save]	When saving videos in H.264 format with GPU encoding enabled, the error message has been improved to be more specific and understandable when the resolution exceeds the upper limit (4,096 x 4,096 pixels). If the limit is exceeded, the message "A file exceeding the saveable resolution exists. Save the image at a size within 4,096 x 4,096." will be displayed.	
	The PFV4 crashed when generating a saved preview under the following settings. This bug is fixed. 1. In the Edit Display Info window, "Layout" was checked and "File name" was placed as an info save item. 2. In the Edit File Name window, "Add information" was checked and "Resolution" was added to the file name.	
	When both the "Auto-conversion after saving" feature and "Skip save" were enabled simultaneously, the skip processing was applied twice to the auto-converted file, resulting in fewer frames than intended. This bug is fixed.	
[Layout save]	When the image with layout number 2 had a resolution other than a 1:1 aspect ratio, repeatedly toggling the "Apply Image Processing" setting while rotating the image 90 or 270 degrees caused the preview image for layout number 2 to gradually shrink. This bug is fixed.	
	When enabling Info save and performing layout save with the display position set off-screen, the aspect ratio of the preview image became distorted. This bug is fixed.	
	After checking [Info save] and unchecking [Display inside image] in the Edit Display Info window, opening or closing files or restarting PFV4 caused the "Info save" data to not appear in the preview on the screen. This bug is fixed.	
	When enabling "Info save" individually for images with the "Binning" function applied, text and cross cursor were displayed enlarged in the preview window. This bug is fixed.	
	When the graph window was included in the layout target on the layout settings window, the "Info save" option on the image became inoperable (disabled). This bug is fixed.	

MEMORY/FILE mode	
Item	**Fixed / Modified Item**
[Save]	When saving in AVI format (.avi) using the H.264 codec, it was unintentionally saved with a variable frame rate (VFR). Other formats (MP4, MOV) saved with a constant frame rate (CFR), meaning the specification differed depending on the file format. This has been fixed so that when saving in AVI format, it also saves with a constant frame rate (CFR).
[Graph]	- In graphs where data starts midway (e.g., CSV files output from measuring instruments), the "Current Y-axis Value" displayed in the legend continued to show as "blank" even at points where data existed. This bug is fixed. - Opening the graph settings window during playback to change settings could cause the PFV4 to crash. This bug is fixed.
Recording/ playback panel	When the dropdown list for the skip function (frame/msec) on the Recording/playback panel was open, switching to another mode (LIVE/MEMORY/FILE) and attempting to operate the list caused the PFV4 to crash. This bug is fixed.

FILE mode		
Item	**Fixed / Modified Item**	
[MENU]	[Configuration] - [Preference]	When "Use GPU encoding/decoding" was unchecked, opening and closing multiple H.264 video files with a specific low resolution (e.g., 4 x 2 pixels) caused the PFV4 to crash. This bug is fixed.
[Assistance]	[Image Overlay]	The maximum and minimum values for "horizontal position" and "vertical position" when adjusting the position of overlaid images were restricted to a narrow range. This bug is fixed.
[Open]	Opening the following data would cause the PFV4 to crash. This bug is fixed. GRAW format data recorded with specific external synchronization settings and shading information was not stored correctly. With this fix, when saving in GRAW format, shading is disabled if no shading data exists, and previously created files of the same type can now be loaded without crashing.	
[Batch converter]	The converted file resolution was not correctly determined, resulting in inappropriate error messages and failed conversions. This bug is fixed.	
[Layout save]	Even after changing the logo size or image in Info save, the changes did not reflect correctly. This bug is fixed.	
	After checking [Stitching] in the layout settings window, changing the "Info save" setting, and then checking [Layout], the changes were not reflected in the preview on the screen. This bug is fixed.	
Other	After opening multiple files and enabling the multiple windows lock feature, then changing tool settings such as "Color Correction", closing the files using the shortcut key [Ctrl] + [W] caused the PFV4 to crash. This bug is fixed.	
	When files displaying graphs and files not displaying graphs are mixed, switching to [LIVE] mode or [MEMORY] mode after maximizing the window for files not displaying graphs, then returning to [FILE] mode, caused the PFV4 to crash. This bug is fixed.	
	When attempting to synchronize playback using a virtual trigger for multiple images with different frame counts (where the frame ranges did not overlap), playback could not be performed correctly.	

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Chapter 4. The Contents of SDK

4.1. The Contents of SDK

4.1.1. New Camera Support

FASTCAM Mini W2 / W5 are supported.

4.1.2. Additional Function / Improvement

N/A

4.1.3. Bug Fix

・ Opening the following data with PDC_GRAWFileLoad caused the application to crash. This bug is fixed.
- GRAW format data recorded with specific external synchronization settings and shading information was not stored correctly.

With this fix, when saving in GRAW format, shading is disabled if no shading data exists, and previously created files of the same type can now be loaded without crashing.

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