

# **Photron *FASTCAM* Viewer**

*for High Speed Digital Imaging*



## **Release Notes**

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**(Ver3.5.3)**

**Photron**

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## Photron FASTCAM Viewer Release Notes (ver3.5.3)

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# Chapter.1 Release Summary

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The following describes the release summary.

## 1.1. PFV ver3.5.3 Summary

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The PFV ver. 3.5.3 is compatible with “type 200K” models of FASTCAM series cameras such as FASTCAM SA-Z, FASTCAM SA-X2, FASTCAM Mini UX100, FASTCAM SA5, FASTCAM SA1.1 and FASTCAM SA4, all of which have been modified to be compliant with the revised Export Trade Control Order locally issued in September 2014.

For FASTCAM SA-X2 with firmware ver. 3.06 and later, new functionalities useful for combustion and flow analyses, such as Rec On Command (REC ON CMD), Random Trigger modes, Straddling Pulse Output and Random Loop Trigger, were added. Moreover, a function to measure the tiny time lapse taking place between trigger entry and exposure timing was added, which makes it possible for the user to execute synchronous recording with external equipment with higher accuracy and certainty. These added features will prove useful in applications such as flow analysis and synchronized shooting involving the crank angle signal in combustion engine performance analysis.

Also added are Fan Control function, which is useful in enlarged-image recording using the microscope, and 128-segment Memory Partitioning, all of which will increase the efficiency of high-speed testing.

The system is now compatible with the Windows 8.1 operation.

In addition to all the above, several known bugs were fixed, which will bring about more comfortable operation of the system to the users.

We would like the users will enjoy the friendly performance of the latest version of PFV, together with the FASTCAM high-speed cameras being used in various application fields.

# Chapter.2 New Function and Operation

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The following describes the new function and the operation.

## 2.1. PFV ver3.5.3 Additional Function

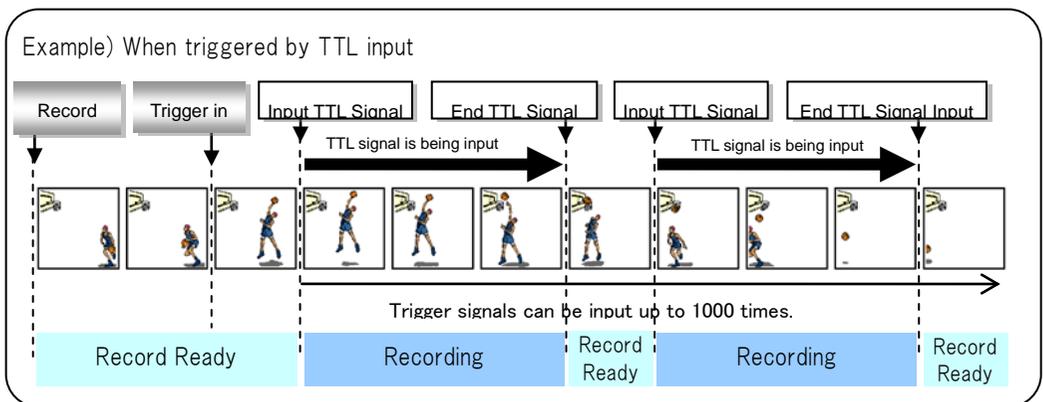
### 2.1.1. Addition of OS compliant IDP-Express R2000/R2000-F

IDP-Express R2000 and R2000-F are now compliant with Windows 8.1 operation.

Execute PFV by "Run as administrator" in the right click context menu when IDP Express is used with Windows8.1.

### 2.1.2. REC ON CMD Mode

In REC ON CMD mode, the content is recorded only while external SW or TTL trigger is input. Recordings stop when the trigger is interrupted and resume when a new trigger is input. While the maximum recordable frame count is not changed, the number of trigger inputs is limited to 1000.

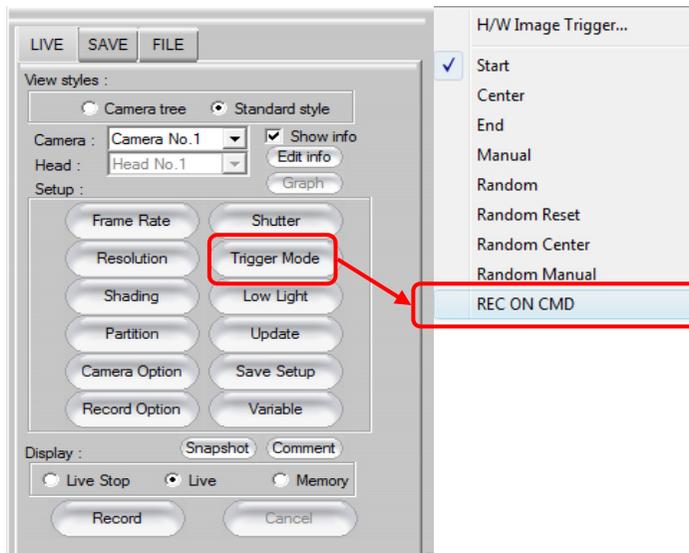


#### ! Caution

- In this mode, you can make the system enter the record ready state but cannot input trigger from PFV. Recordings can be triggered only by external inputs.

When recording in REC ON CMD mode, the settings below must be made in prior to beginning the recording.

1. Click the [Trigger Mode] button and select "REC ON CMD.



### 2.1.3. TRG-EXP (time between trigger and exposure) Display

This camera system has a function to display the time delay between the trigger entry and start of exposure.

TRG-EXP data is only displayed during playback from memory and is not displayed in LIVE MODE.

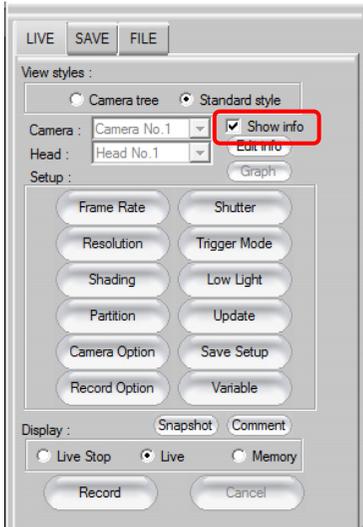
The data is included in the cih file after saving.

Various camera settings (view window information) are displayed in the upper left of the view window.

Display Info Sample	Description
TRG-EXP	<p>The time from trigger input to exposure start Only for playing. Not visible in live mode.</p> 

- Changing Show/Hide

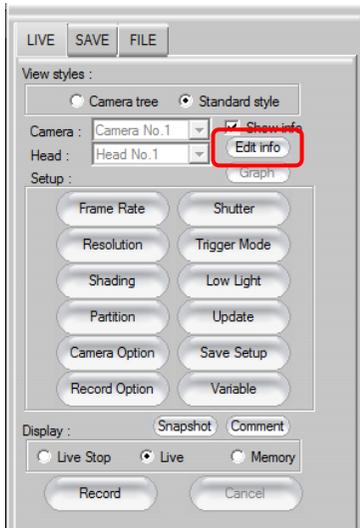
The view window information can be shown or hidden by checking the “Show Info” option on each of the control panel tabs.



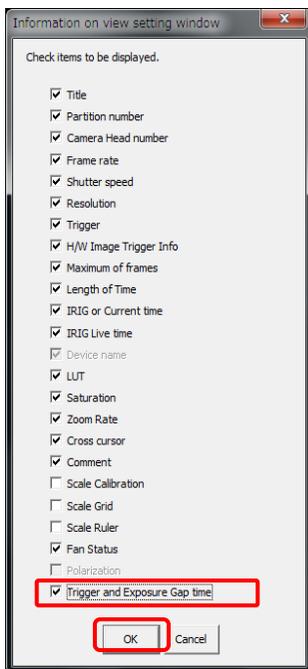
- Customize Display Information

The displayed information can be customized.

- ① Click the [Edit Info] button located on each one of the control panel tabs.



② Select and check the information to display and click the [OK] button.



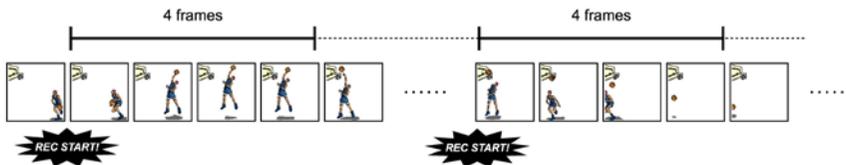
### ! Caution

- Time codes are only displayed during playback. They are not displayed in live mode.
- IRIG codes are displayed even in live mode only for models compatible with IRIG live display. Incompatible models display IRIG codes only during playback, not in live mode.
- The device name is displayed when a file is opened.
- TGP-EXP displays in playback mode only. Does not display in LIVE mode.
- No compatibility is made with Random Reset, Rec On CMD or Random Loop trigger mode.

2.1.4. Restriction on the number of recording operations in Random mode

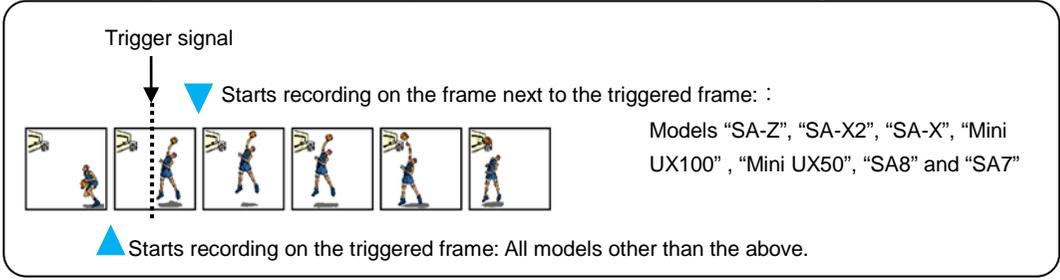
Random Mode is a trigger mode where a predetermined number of frames are recorded in the memory at every entry of trigger. It is useful, for example, in an application where the object of interest intermittently presents special phenomena requiring a trigger signal to be issued. The number of frames to be recorded at each trigger can be set to one up to the maximum number of frames available in increments of one.

It is now possible to restrict the number of recordings per a randomly input trigger to 128. Without restriction, the maximum number of frames to be recorded at every trigger is limitless: the maximum number of frames that can be used is the maximum number of frames that are available for recording in the memory



**Supplement**

- When shooting in the “Random mode”, the first frame to be recorded varies by the model.

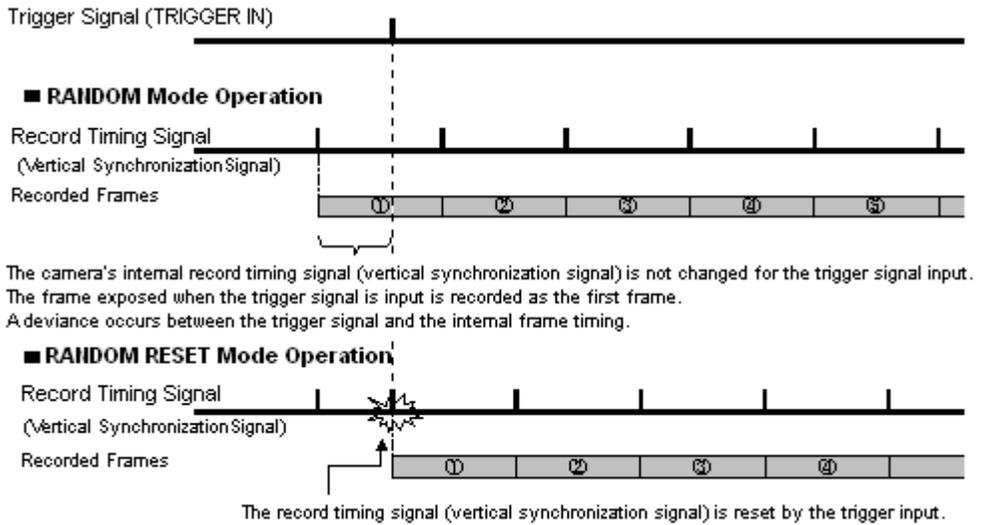


2.1.5. Restriction on the number of recording operations in Random Reset mode

Operation in Random Reset mode can be described in comparison with that of the normal recording mode.

In Random Reset mode, the accuracy of timing between the trigger entry and start of recording is improved by resetting the recording of the camera to the timing of the trigger entry.

The number of recording operations in Random Trigger mode can now be restricted up to 128. The number of recording operations without restriction is limitless up to the number of the frames available to record in the memory.



When the camera is set to the normal RANDOM mode (the same as START mode) and RANDOM RESET mode, the difference in the recording operation for the trigger input is shown graphically.

In the normal RANDOM mode and START mode, the camera starts recording when the trigger is input, but the internal record timing signal is independent and it operates regardless of when the trigger is input. For this reason, there may be situations where the start time of the first frame when the trigger is input is advanced almost a full frame. The range of this overlap also cannot be known.

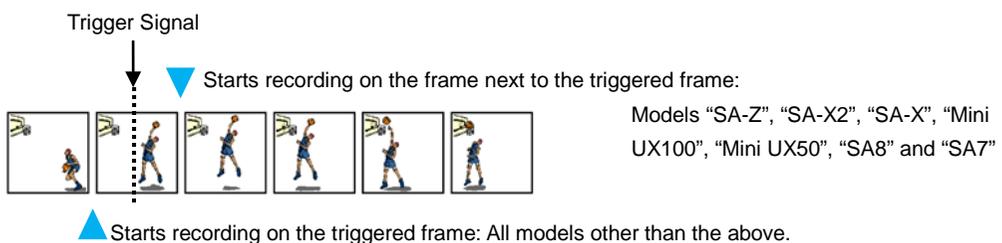
On the other hand, in RANDOM RESET mode, the camera's internal record timing signal is reset by the trigger input and operates anew. For this reason, the trigger input time and the timing of the start of the first frame are the same. The interval from when the trigger is input until the exposure begins is approximately 1.75 us.

### Caution

- When you perform continuation photography using a random reset mode, please prepare the interval of at least 1 or more Frame.  
(In 1000fps, the interval of 1/1000 sec is required)

### Supplement

- When shooting in the "Random Reset Mode", the first frame to be recorded varies by the model.



### 2.1.6. RANDOM LOOP Mode

RANDOM LOOP mode is a trigger mode, similar to RANDOM MODE, where each time a trigger is input, only a predetermined number of frames are saved in memory.

The difference is that RANDOM LOOP mode continues recording, by using the memory as a loop memory unit, and overwriting from the first frame until the trigger input is cut off to stop recording.

When a recording of the predetermined number of frames ends, and if the number of frames remaining in memory to be recorded is smaller than the predetermined number, the system goes back to the first frame of the memory and starts overwriting the image data that was written in the previous recording cycle.

For example, suppose a duration for a RANDOM FRAME recording is predetermined 1000 frames on a system with a memory capacity of 3500 frames, and four trigger inputs are given.

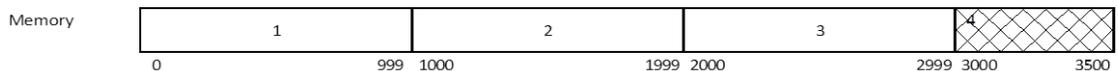
In this case, the number of frames recorded reaches 3,000 after the third trigger, with 500 frames remaining unused in the memory. The system, without recording image data in the remaining 500 frames, goes back to the first frame of the memory and starts overwriting

The overwriting sequence is therefore:

1st 1,000 ⇒ 2nd 1,000 ⇒ 3rd 1,000 ⇒ 1st 1,000 ⇒ 2nd 1,000 etc.

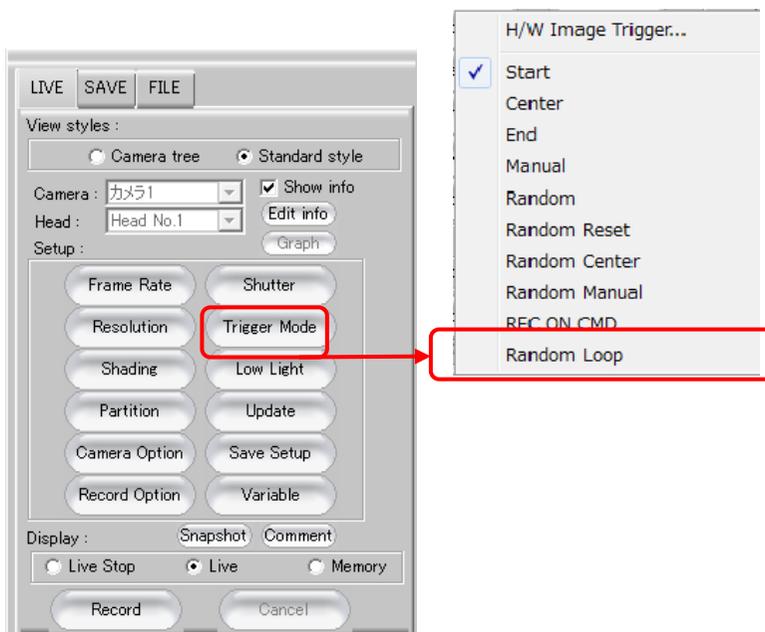
with the last 500 frames always remaining unused (see the below illustration).

The number of frames to be recorded with one trigger can be set to any number from 1 (one) up to the maximum number of frames available to record in the memory.



When recording in RANDOM LOOP mode, the following presetting is necessary:

1. Click [Trigger mode] button and select [Random Loop].



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2. Specify the number of frames to be recorded at each trigger input.  
Input a desired number in [Random frames].



The image shows a software dialog box with a light gray background. It contains two settings: "Random frames" and "Number of Recordings". The "Random frames" setting is a spin box with the number "1" displayed, and this spin box is highlighted with a red rectangular border. The "Number of Recordings" setting is another spin box that is currently empty. Below these settings is a "Close" button.

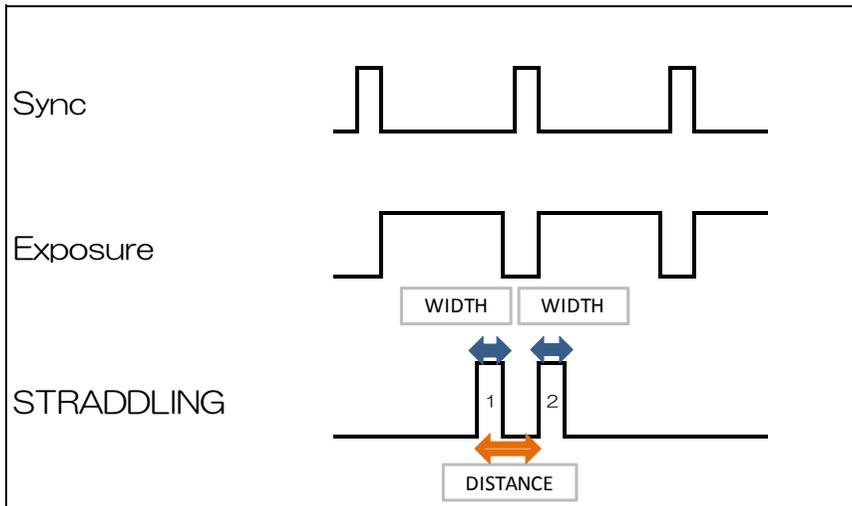
2.1.7. Output of pulse signal for straddling

SA-X2 can now output pulse signal for straddling for PIV measurement application.

Pulses 1 and 2 have the same pulse width.

By manipulating the delay, the width of and the distance between pulses 1 and 2 can be set.

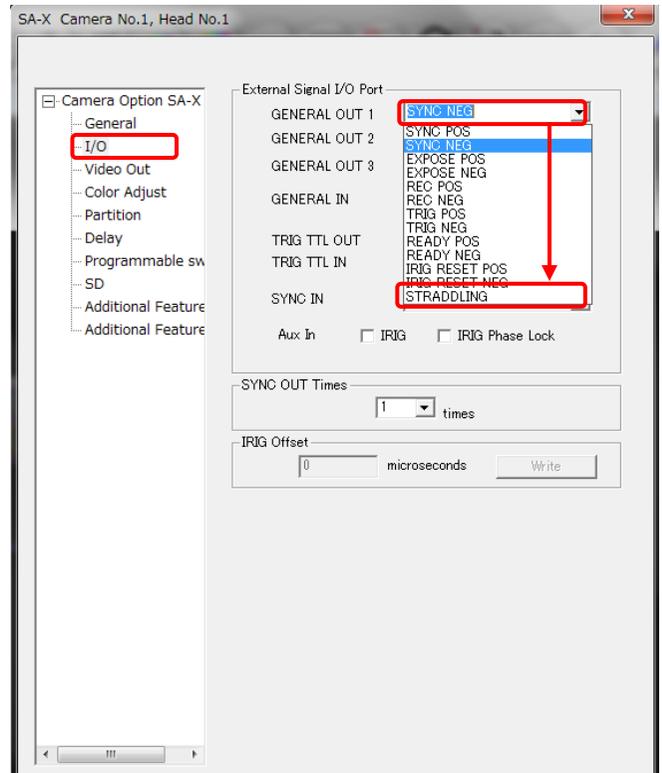
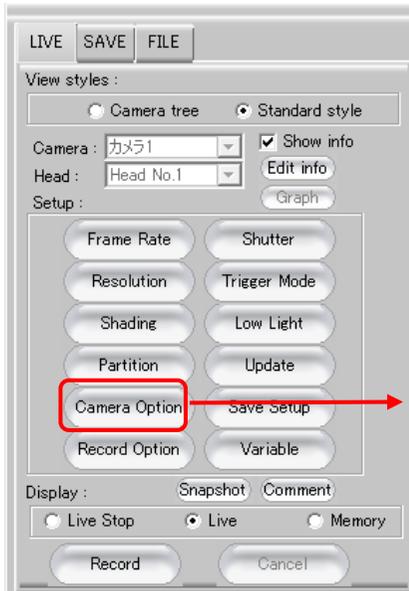
To adjust the distance, the position of pulse 1 is changed while pulse 2 position is fixed.



While the minimum width is fixed to 100 ns, the minimum distance is variable depending on shutter speed.

To output pulse signal for straddling, the following setting is necessary.

1. Click [Set individual camera] button, then, from [External in-out setting] button, select t out of [GENERAL OUT 1 -3] a terminal on which required signal should be output, and finally select [STRADDLING].

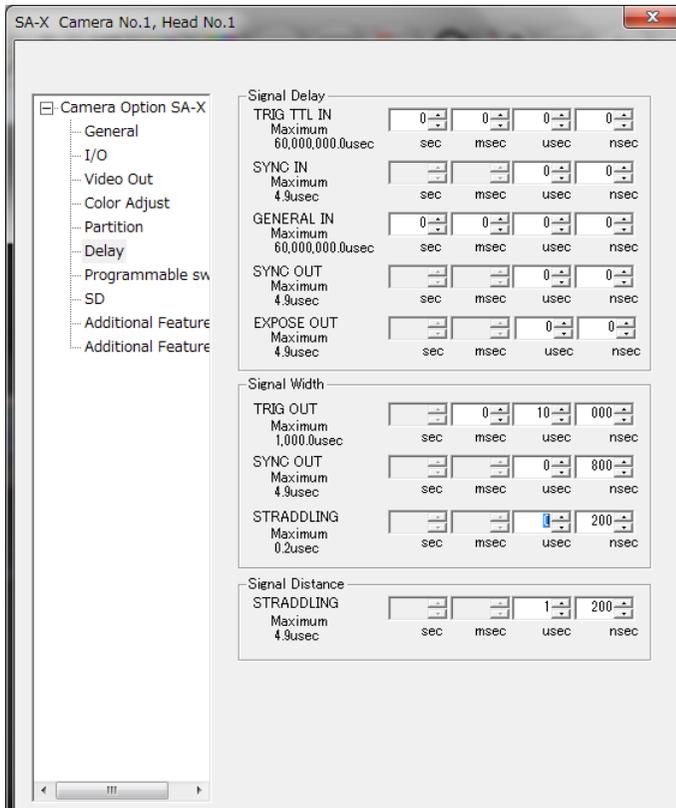


2. Click [Signal delay setting] button and set the width fo [Straddling signal] in [Signal width setting].

\*Setting can be made in increments of 100 ns.

3. Set the distance in [Straddling signal] of [Signal delay setting].

\*Setting can be made in increments of 100 ns.



# Chapter.3 The Contents of Bug Fix

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The following describes the contents of a bug fix.

### 3.1. PFV ver3.5.3 The Contents of Bug Fix

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The following faults have been fixed:

1. The bug found in saving the information in the layout saving dialog, the information edit is applied only to the camera being selected in the list. This fix is now applied to all the camera models.
2. The bug in PFV 352 where recording cannot be made of data from Yokogawa DAQ plug-in.
3. The bug, apparent in the MRAW file reading function for MATLAB/Lab VIEW, in which the data saved in true tone cannot be read in, was fixed.
4. The bug where the number specifying the argument for safe connection mode was shown other way around in the description of PDC\_OpenDevice2 of MATLAB help file.  
After correction, 1 is specified normally. For connection in safer speed on a lower-speed PC, 0 is specified.
5. The bug where the number specifying the argument for safe connection mode was shown other way around in the description of PDC\_OpenSubInterface for PDCLIB help file.  
After correction, 1 is specified normally. For connection in safer speed on a lower-speed PC, 0 is specified.
6. The fault which made it impossible for the EF lens to be controlled from the lens control plug-in of SA3 was fixed.
7. The bug found on the SA-Z camera with a firmware ver. 1.02 and after, in which an all-black image was displayed when image data saved in an SD card was played back, was fixed.

# **Photron *FASTCAM* Viewer**

***for High Speed Digital Imaging***

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