High Speed Camera

User Guide

Table of Contents

Copyright

Disclaimer

Our company make no warranty of any kind with regard to the content of this user guide, and the content of this user guide is subject to be revised without prior notice. We will not take the responsibility including any compensation for any mistake found in this user guide.

Chapter 1 Getting Started/Overview

HiBestViewer is Software Suite applied for PC control, and the feature descriptions are as follows:

1. *HiBestViewer* is PC control software, also the accompanying software to the "High-Speed Camera" (Except others are not supported by *HiBestViewer*).
2. *HiBestViewer,* Windows Program, should be installed in Windows 7 and latest Windows OS version or above.
3. At least 2GB RAM is recommended, so 64-bit PC and 64-bit version Windows OS are recommended to run *HiBestViewer.*

Main functions for *HiBestViewer* are classified as below:

(1) Acquire View
(2) Strip View
(3) Working View

1 Acquire View

Help user capture images, and Acquire View functions are as follows:

1.1 Automatically connect to "High-Speed Camera" from PC, and it is listed on the context menu.User can select "High-Speed Camera" on the context menu.

1.2 Adjust camera's capture setting, e.g.: resolution, exposure time and gain.

1.3 Preview used to capture images and displayed on PC screen, is to make sure the images are confirmed, and also the preparation is ready before storing.

1.4 Trigger is to start storing image, and user can set up "the number of images can be stored" before trigger.

1.5 Figure 1-1 is Acquire View :

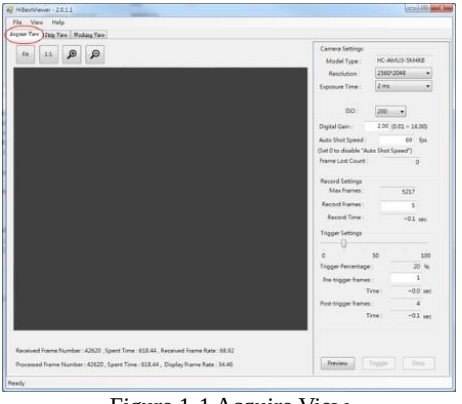


Figure 1-1 Acquire View

2 Strip View

Help user view a series of stored images, and Strip View functions are as follows:

2.1 Quickly browse all of series images in order to find out the key images segment.

2.1.1 Provide image thumbnails and display a series of image thumbnails at one time for user to view images.

2.1.2 Provide the function of zoom in/out for user to adjust images range if necessary.

2.1.3 Provide frame number and time (unit: micro-second) for user to realize “the sequence of serial images and the range of a certain segment”.

2.2 User can preview a specified image by selecting its thumbnail for detail inspection.

2.3 Mark the specified image thumbnails:

2.3.1 Set the specified image as the origin of the coordinates (Frame number 0).

2.3.2 Set the specified image as the start point (A point) of A-B play range or set the specified image as the end point (B point) of A-B play range.

2.4 Display basic information about a series of images, e.g.: total number of images, frame rate and image resolution when capturing.

2.5 Save a series of images as general-purpose video file or image file, e.g.: MP4, Mpeg2, and Bmp.

2.6 Figure 1-2 is StripView :

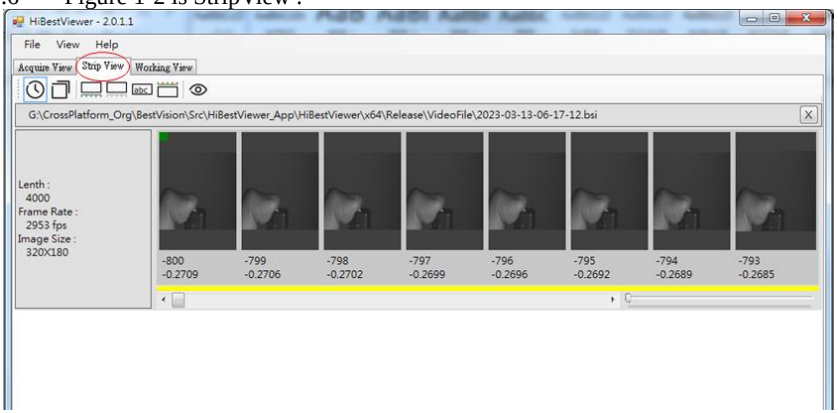


Figure 1-2 Strip View

3 Working View

Help user play back a series of stored images, and Working View functions are as follows:

3.1 Versatile play back:

- 3.1.1 Play forward
- 3.1.2 Play backward
- 3.1.3 Play one step forward
- 3.1.4 Play one step backward
- 3.1.5 Back to the start point
- 3.1.6 Forward to the end point
- 3.1.7 Replay in loop

3.2 Set A and B point of A-B play back range.

3.3 Set the specified image as the origin image (Frame number 0).

3.4 Set the play interval. It indicates how many images will be skipped between current to the next image during play back.

3.5 Set up the play back speed.

3.6 Set a Bookmark to the image or remove Bookmark.

3.7 Set a comment to the image or remove comment.

3.8 Provide coordinate information of a specified position within image (using mouse to click or drag to specify the position).

3.9 Figure 1-3 WorkingView :

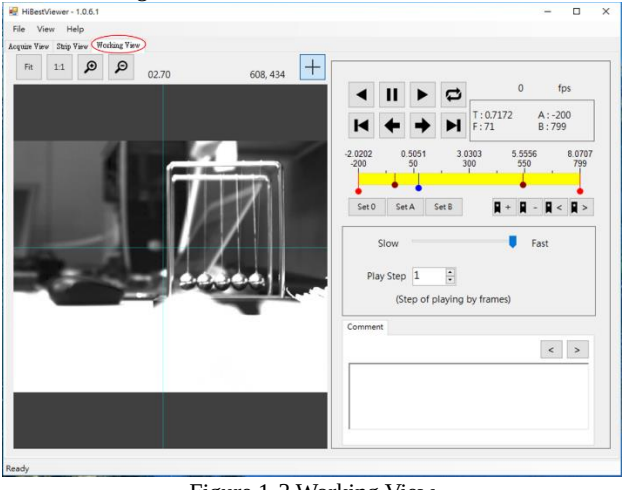


Figure 1-3 Working View

Chapter 2 Install *HiBestViewer*

1 Installation Environment

1.1 PC Hardware Equipments:

1.1.1 CPU speed should be more than or equal to 2.0 GHz, and Intel 64-bit CPU is recommended.

1.1.2 At least one or more USB 3.0 port, and Intel USB 3.0 host controller is recommended.

1.1.3 RAM should be more than or equal to 2GB.

1.1.4 Hard disk capacity (i.e. free disk space) should be more than or equal to 512MB.

1.2 OS Environment:

1.2.1 Windows 7 or above Windows version.

1.2.2 Windows 64-bit version is recommended.

1.2.3 Run “Windows Update” and install all important patches to Windows (Based on PC updating condition, it may need more than one time to update).

2 Install *HiBestViewer* Software Suite

2.1 Turn on PC, insert the setup CD that contains *HiBestViewer* Software Suite into the CD-ROM drive, and run “Setup_HiBestViewer.exe”.

2.2 After executing "Setup_HiBestViewer.exe", the installation program will first start "Install High-Speed Camera Driver". The user only needs to follow the instructions on the Setup screen, accept all the requirements for "Account Control" and "Control Authority", and follow the instructions on the screen in sequence

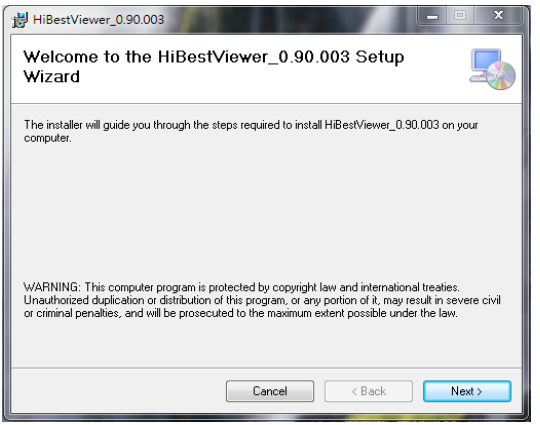


Figure 2-1 Setup starting

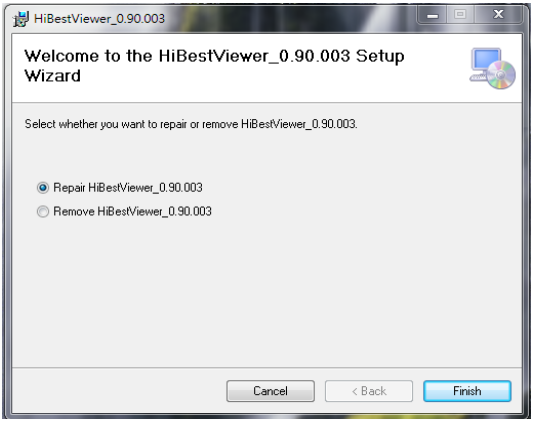


Figure 2-2 Once installed *HiBestViewer* Setup

(If selecting "Repair *HiBestViewer*", it will be re-installed; if selecting "Remove *HiBestViewer*", it will be removed.)

2.3 After finishing "camera driver installation", "Setup_HiBestViewer.exe.exe" will invoke "the setup program of HiBestVieser", user may view Figure 2-1 or Figure 2-2 (version number may be different). If see Figure 2-2, it means that user has installed HiBestViewer Software Suite before.

2.4 User follow prompts on the setup screen to complete installation.

2.5 When *HiBestViewer* is installed, *HiBestViewer* shortcut will be shown on the desktop (See Figure 2-3), and also Windows Programs will create a *HiBestViewer* Program Folder (See Figure 2-4).

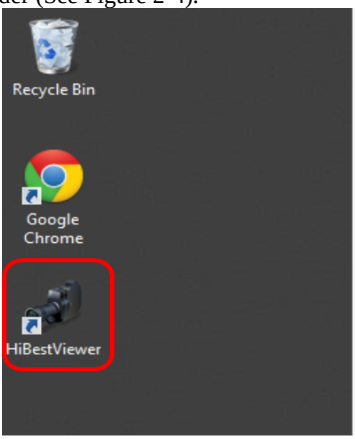


Figure 2-3 *HiBestViewer* shortcut on PC Screen

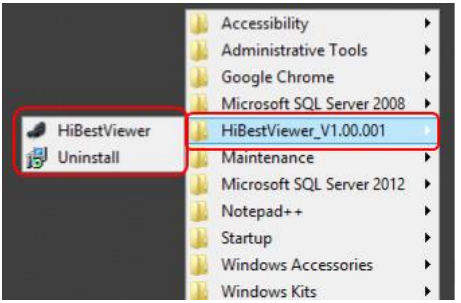


Figure 2-4 *HiBestViewer* Program Folder in Windows Programs

2.6 Attention! Do not install *HiBestViewer* in "Windows" or "Program Files" or "Program Files (x86)". Because in these folders, it is not allowed to create sub-folders or files unless user owns "administrator priviledge", this restriction will cause the main functions of *HiBestViewer* out of order.

2.7 Attention! *HiBestViewer* setup program does not install driver; in other words, "High-Speed Camera" is required to install driver individually.

3 Manually Install High Speed Camera driver

If user wants to install camera driver manually, then just follow steps listed below:

3.1 Install "USB High Speed Camera" driver:

3.1.1 Insert the setup CD and run "Setup_USB_Driver\Setup_BestInc_USB_Driver.exe".

3.1.2 User just accepts all requests of "user account control" and "priviledge level promotion", and then just follows prompts of setup screen to install the camera driver.

3.2 Install "U3V High Speed Camera" driver: "U3V" is the abbreviation of "USB3 Vision Standard"

3.2.1 Insert the setup CD and run "Setup_U3V_Driver\Setup_U3V_Driver.exe".

3.2.2 User just accepts all requests of "user account control" and "priviledge level promotion", and then just follows prompts of setup screen to install the camera driver.

4 Uninstall *HiBestViewer* Software Suite

If want to remove *HiBestViewer*, user can run Uninstall program in *HiBestViewer* Program Folder (See Figure 2-5), or "Programs and Features" via the Control Panel (See Figure 2-6).

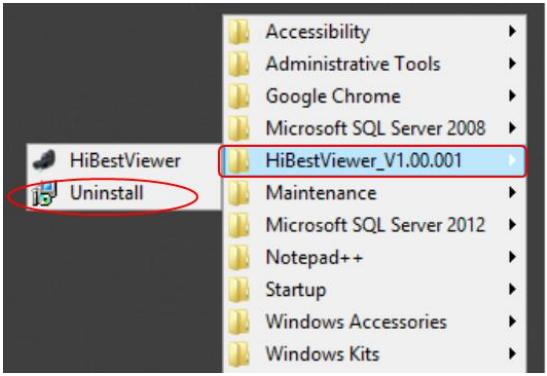


Figure 2-5 Uninstall Program in *HiBestViewer* Program Folder

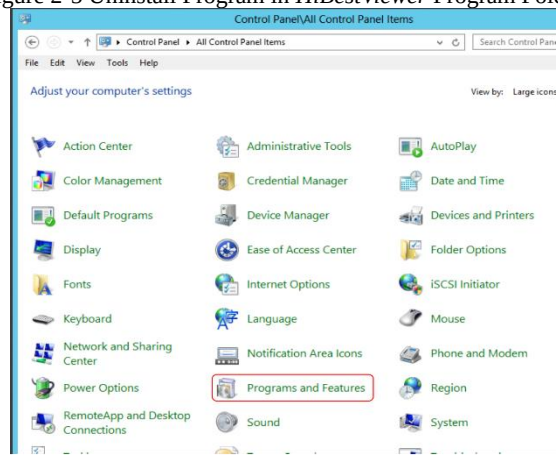


Figure 2-6 “Programs and Features” in Control Panel

Chapter 3 Acquire View, Capture Series Images

This chapter explains how to use Acquire View in *HiBestViewer* to take a series of images through shooting the observed object and store these images. Takes "HC-AMU3-5M8K High-Speed Camera" for example.

1 Install High-Speed Camera

1.1 Use qualified USB 3.0 cable (the length should be shorter than three meters), directly connect "High-Speed Camera" to USB 3.0 port of PC. If the distance between PC and "High-Speed Camera" is more than three meters, user has to use USB 3.0 hub with external input power to connect USB 3.0 ports between PC to "High-Speed Camera".

1.2 When PC connects to "High-Speed Camera" via USB cable, Windows will automatically recognize "High-Speed Camera". If successful, Windows will install drivers for "High-Speed Camera".

1.3 If Windows cannot recognize "High-Speed Camera", user has to install drivers manually for "High-Speed Camera". Also, "driver setup program" is attached to "High-Speed Camera" products.

2 Start up *HiBestViewer*

2.1 Double click "*HiBestViewer* shortcut" to start up *HiBestViewer*. The default user interface is Acquire View; therefore, user will see Acquire View at the beginning.

2.2 If the driver has been installed and at least one "High-Speed Camera" directly connects to PC, then user will see Figure 3-1. It is shown that *HiBestViewer* detects "High-Speed Camera" and automatically selects it as "controlled target". Therefore, in Figure 3-1, Acquire View shows the mode type of "High-Speed Camera" and provides options for manipulating and also user may preview the result.

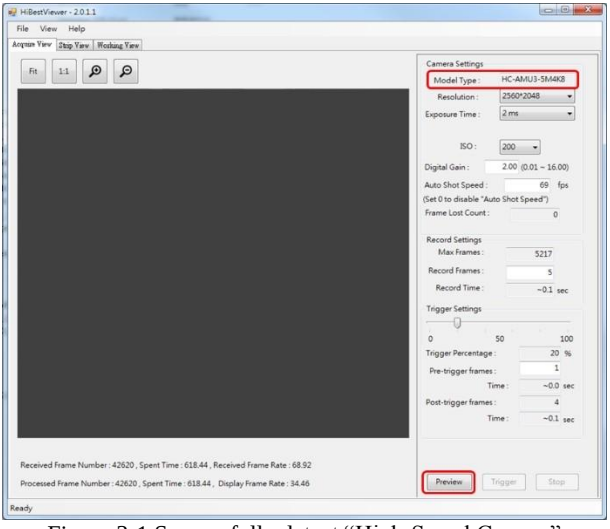


Figure 3-1 Successfully detect “High-Speed Camera”

2.3 On the contrary, if fail to detect camera, then user will see Figure 3-2, all the information are blank. It means that all options are disabled. Prevew function cannot work, either.

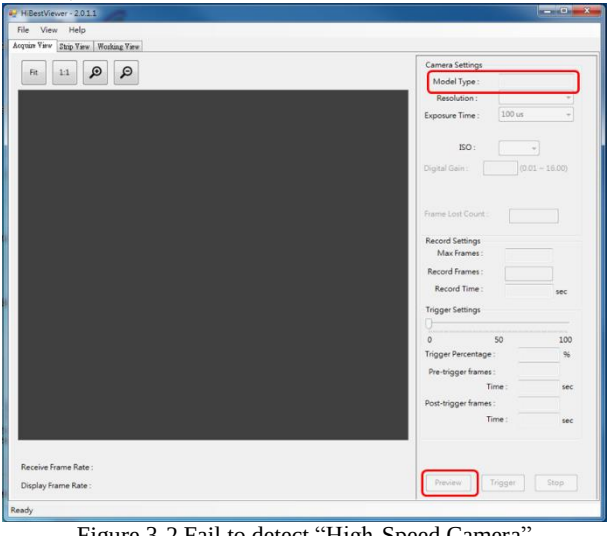


Figure 3-2 Fail to detect “High-Speed Camera”

2.4 *HiBestViewer* can automatically detect “if High-Speed Camera is connected”. Therefore, if user connects “High-Speed Camera” after *HiBestViewer* running, then it will take approximately 10 ~ 20 seconds to be well aware of “High-Speed Camera”. It takes times since Windows needs to enforce all USB standard procedures for a new connected USB device. If successful, user interface will be restored to Figure 3-1.

3 Acquire View Function Description

If “High-Speed Camera” successfully connects to PC, then available functions are as below:

3.1 Camera Settings: *HiBestViewer* provides user interface to control five basic parameter settings (See Figure 3-3).

3.1.1 Camera Resolution Setting: The resolution supported by camera is limited, so user is only allowed to select appropriate resolution via the “Resolution combobox”.Please note that “High-Speed Camera” model “HC-AMU3-5M8K” support two additional groups of resolution options (currently only “HC-AMU3-5M8K” support it). These two groups own the same resolution options and select the resolution from the first group will get higher frame rate and lower image quality. In the other hand, select the resolution from the second group will get lower frame rate and higher image quality.

3.1.1.1 The first group of resolution options are “higher frame rate and lower image quality”. They are “320*128-8K fps”, “320*180-8K fps” and “320*256-8K fps”. The first half of option name (which is the portion before ‘-‘) is the resolution, and the second half of option name (which is the portion before ‘-‘) is “8K fps” which means the frame rate may above 8000 fps. See Figure 3-4.

3.1.1.2 The second group of resolution options are “lower frame rate and higher image quality”. They are “320*128”, “320*180” and “320*256”. The frame rate of this group may above 4000 fps, but they are not capable to reach 5000 fps. See Figure 3-4.

3.1.2 Camera Exposure Time Setting: Ordinarily user selects appropriate exposure time from the “Exposure Time combobox”. But if there is no appropriate exposure time in the combobox, then user may select the last item what is “User Define” in the combobox. After selected “User Define”, there will be a manual input editor box show up below the “Exposure Time combobox”. User may manually inputs any exposure time that meet the need of application. Note that only digital numbers is allowed to be inputted and its time unit is microsecond. Take figure 3-5 as an example, user’s input is 5120 which means exposure time will be set to 5120 microsecond (in other words, exposure time is 0.005120 second). Moreover if user manually inputs exposure time while preview is going, then after inputting digital numbers,

user must press “Enter” to let the input to take effect! Actually “High-Speed Camera” does not accept any exposure time value. So if “High-Speed Camera” can not accept user’s input value or selection, then the real exposure time which is taken by camera will replace user’s input or selection automatically and displays it at GUI.

3.1.3 Camera ISO (Gain) Value Setting: The ISO (gain) value supported by camera is limited, so user is only allowed to select appropriate gain value via the “ISO combobox”.

3.1.4 Camera Digital Gain Value Setting: Not all types “High-Speed Camera” support adjusting digital gain. If camera support adjusting digital gain (e.g. “HC-AMU3-5M8K” high speed camera support adjusting digital gain), then the field which labeled as “Digital Gain” at GUI will be enabled. Otherwise it will be disabled. Note that only digital numbers including one decimal point is allowed to be inputted.

3.1.5 Auto Shot Speed Setting: This fearture is used to control camera to take pictures in fixed speed while go previewing. The unit of speed is “Frame per Second” (i.e. fps). If user set the speed as 0 fps, then it means to disable “preview in fixed speed” (i.e. use full speed to preview). Takes figure 3-6 as example, user’s input is 30 fps, so when preview is going, camera will take pictures in fixed speed of 30 fps. Note that only digital numbers is allowed to be inputted and its time unit is fps. Moreover “Auto Shot Speed Setting” is a new added feature. Hence this feature does not exist at early camera. So if HibestViewer is aware of that the connected camera does not support this feature, then this operating user interface will be disabled automatically. In addition, if user’s settings let exposure time is larger than or equal to the time interval of taking a picture in fixed speed, then HiBestViewer will show an error message to explain what’s going wrong and rolls back the setting to the one before it was changed automatically. Takes figure 3-7 as example, user’s input is 30 fps, so the time interval of taking a picture is 33.333ms. Since we set exposure time as 40ms, HibestViewer will show error message and rolls back the exposure time automatically.

In addition, when “Preview” is in progress, any setting options are disabled except “Exposure Time”, “ISO (Gain)” and “Digital Gain”. In other words, user may change “Exposure Time” or “ISO (Gain)” or “Digital Gain” while previewing. So user can observe the result of changing “Exposure Time” or “ISO (Gain)” or “Digital Gain” in real time.

Lastly, the following is the explanation for “Frame Lost Count”. “Frame Lost Count” is an information field. It is read only and can not accept any input. If “High Speed Camera” support “Frame Lost Count” (e.g. “HC-AMU3-5M8K” support “Frame Lost Count”), then it will show how many frames are dropped by camera at latest “Preview” operation. The “Frame Lost Count” implys the performance gap between PC system (including PC hardware, OS and application) and camera. In other words,

if PC system processing speed can not catch up camera, then it will cause camera drop frames. So the bigger values of "Frame Lost Count", may let user observe more obvious lag at "Preview". If such lag hinder user's operations, then user can set lower "Auto Shot Speed" (i.e. let camera taking picture at lower fixed speed) for preventing lag. It's well-known that there is upper limit of transfer rate of USB 3.0. So the system performance is not possible to exceed it.

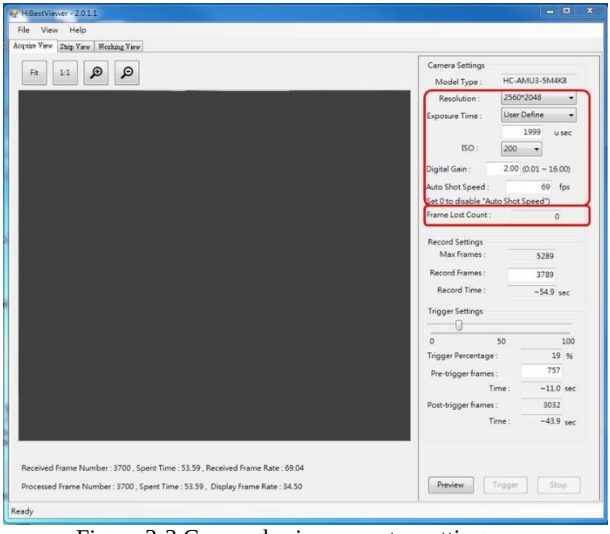


Figure 3-3 Camera basic parameter settings

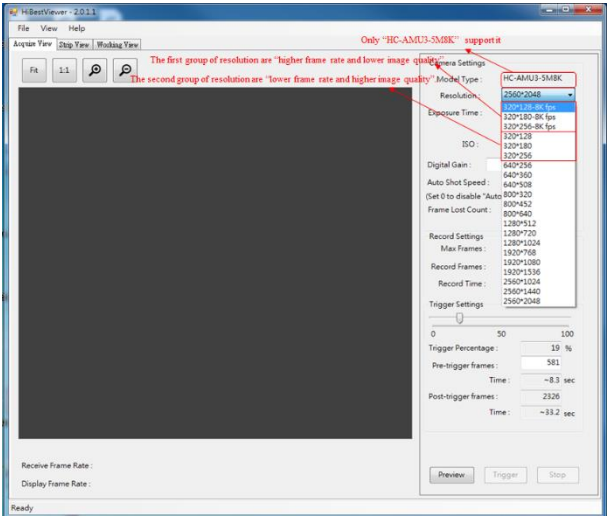


Figure 3-4 “HC-AMU3-5M8K” support two additional groups of resolution options

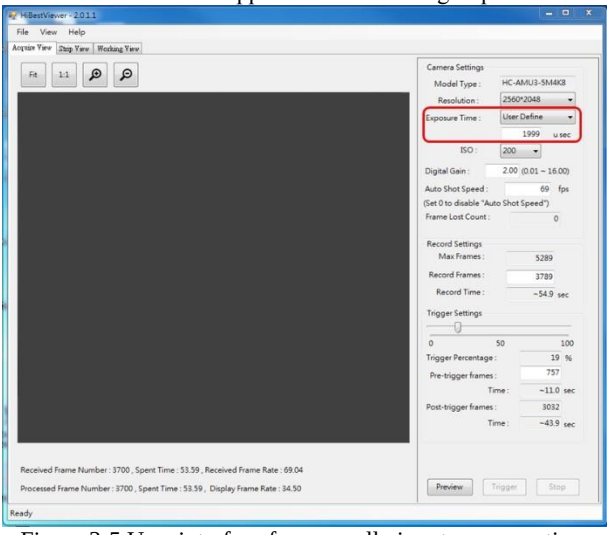


Figure 3-5 User interface for manually input exposure time

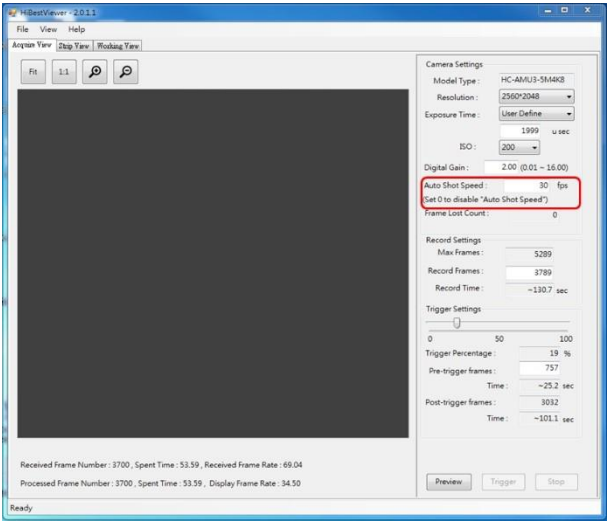


Figure 3-6 Set “Auto Shot Speed” as 30 frames per second

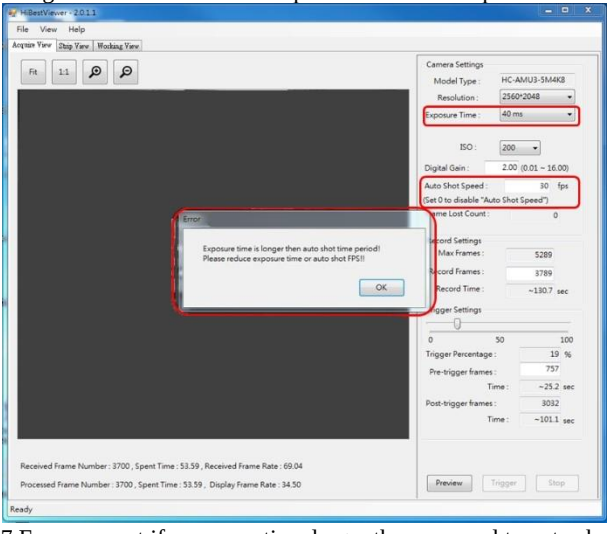


Figure 3-7 Error prompt if exposure time larger than or equal to auto shot interval

3.2 Record Settings: See Figure 3-8

3.2.1 Max Frame: It shows that the maximum of images can be stored. It is an information field and cannot be revised. Its value depends on “current total available memory capacity” and “memory capacity for one image”. Therefore, this value will change if total available memory capacity is changed. If user needs to store more images, then it is recommended to close unnecessary applications and refresh Acquire View (e.g.: switch to Strip View or Working View and then switch back to Acquire View). Besides, if PC memory capacity is actually increased, it also works.

3.2.2 Record Frames: Set up the number of images want to be stored. User can set up the value based on requirements, but the maximum cannot be over the former field (Max Frames), and the minimum cannot be less than or equal to 0.

3.2.3 Record Time: It is an estimated time to complete the record job. The estimation is based on the former field (Record Frames) and frame rate of capturing image. It cannot be revised (unit: second).

3.2.4 Trigger Settings: Set the trigger position. 0% ~ 100% is as setting range, and its definition is as below:

3.2.4.1 When setting value is 100%: It means all of series images that have been captured and kept in the memory will be stored when the trigger occurs. In other words, when the trigger occurs, just store what user has got before trigger, and it is not necessary to capture any new images.

3.2.4.2 Setting value is 0%: It means when the trigger occurs, the system will start to capture images from zero. And it will keep capturing images and put captured images into memory until reach the number that is specified in Record Frames field or user stops the operation. In other words, when the trigger occurs, the system will drop all images that have captured before trigger. And then restart to capture images until reach the goal or user stops the operation.

3.2.4.3 Setting value is n% and n > 0, n < 100. It means that before trigger, n% images already are kept in the memory. Therefore, the system will keep capturing images and put captured images into memory until reach (Record Frames value * (100% - n %)) or user forces to stop the operation. And then store all of series images from the memory.User can use mouse to drag “Trigger Settings Bar” to set up trigger position. The detailed information is displayed on the bottom of “Trigger Settings Bar” (See Figure 3-9).Besides dragging “Trigger Settings Bar”, user may set up trigger position through inputting “Pre-trigger frames” number directly (See Figure 3-9). Note that user can only input digits for “Pre-trigger frames” number. Moreover after inputting “Pre-trigger frames” number, user need to press “Enter” key or let the “input exdit box” for ”Pre-trigger frames” loss its input focus, and then the input value will take effect. If

the input value for the ”Pre-trigger frames” is not acceptable, then system will modify it automatically! For example, if the input value exceed the upper bound, then it will be set to upper bound automatically. Moreover all other information except ”Pre-trigger frames” are read only (See Figure 3-9).

3.2.4.4 Trigger Percentage: Display setting value after dragging Trigger Settings Bar, or the setting value after modifying the value of “Pre-trigger frames”. The range is 0% ~ 100%.

3.2.4.5 Pre-trigger frames: Total number of images that has been kept in the memory before trigger. User can modify this number.

3.2.4.6 Pre-trigger Time: The estimated record time before trigger. This field cannot be set up or modified.

3.2.4.7 Post-trigger frame: Total number of images that needs to be captured after trigger. This field cannot be set up or modified.

3.2.4.8

3.2.4.9 Time (Post-trigger Time): The estimated record time after trigger. This field cannot be set up or modified.

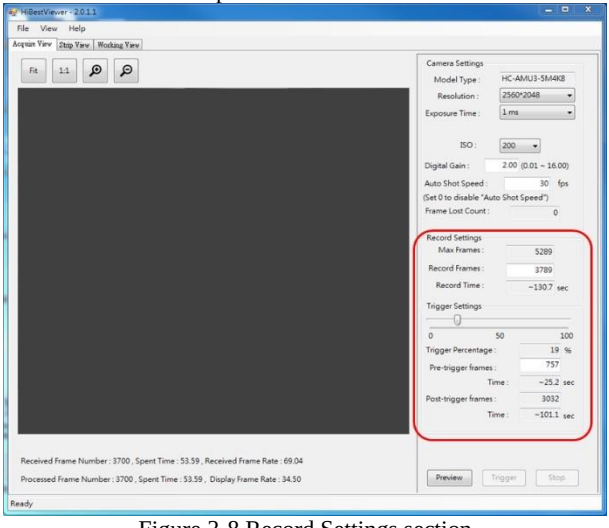


Figure 3-8 Record Settings section

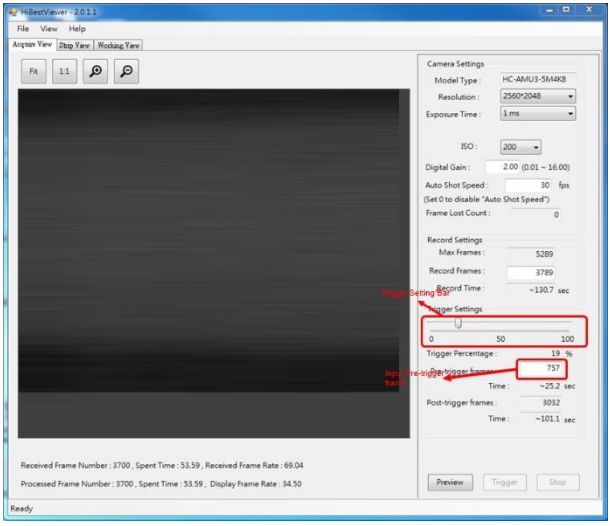


Figure 3-9 Trigger Settings Bar section

3.3 Preview: Click “Preview button” to start, a series of images will be sent back to PC through USB and displayed in the Preview Window. Also, “Preview Progressing Information” on the bottom of Preview Window shows the received number of image frames, passed time, (Unit is second, and accurate to 2 decimal places) and frame rate (fps) Note: Received Frame Number is the actual number of images sent back to PC from camera; Processed Frame Number is the number of images processed by application. These two values should be the same under the normal condtion (See Figure 3-10).

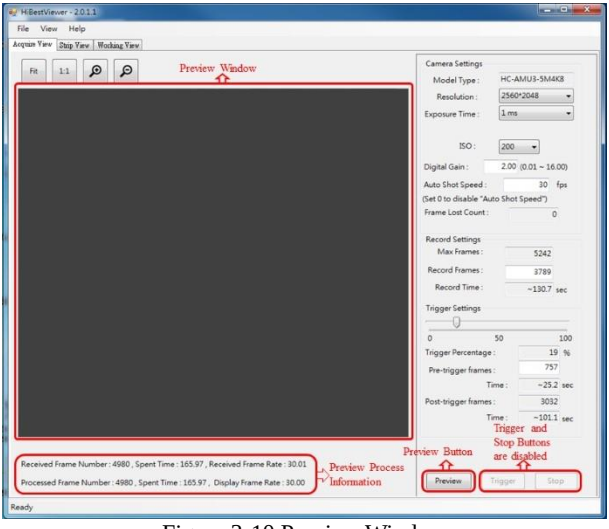


Figure 3-10 Preview Window

3.4 Adjust the display of images in Preview Window: User can adjust the way of images displayed in Preview Window. Acquire View currently supports two display modes:

3.4.1 “Fit”: Fit to Window, based on the size for Preview Window, automatically be adjusted by the program. See Figure 3-11.

3.4.2 “1:1”: Based on the actual size to display. Because the image size is not equal to the size of Preview Window, user may only view the part of image. See Figure 3-11.

3.4.3 Use mouse to click “Zoom In” or “Zoom Out” button will zoom in or zoom out the image within the Preview Window. See Figure 3-11.

3.4.4 User may use keyboards to scroll image. Type “Up arrow key” to scroll image up. In the same way, type “Down arrow key” or “Left arrow key” or “Right arrow key” will scroll image to down or left or right.

3.4.5 Type “W” or “w” key will zoom in the image and type “Q” or “q” key will zoom out the image.

3.4.6 Roll the mouse wheel forward will zoom in the image and roll the mouse wheel backward will zoom out the image.

3.4.7 Double click mouse left button will display image based on its actual size. It is equivalent to click “1:1” button.

3.4.8 Click mouse middle button or press mouse middle wheel will display image based on the size of Preview Window. It is equivalent to click “Fit” button.

3.4.9 Hold down mouse right button and move mouse, we can drag image to

move. It is equivalent to scroll image.

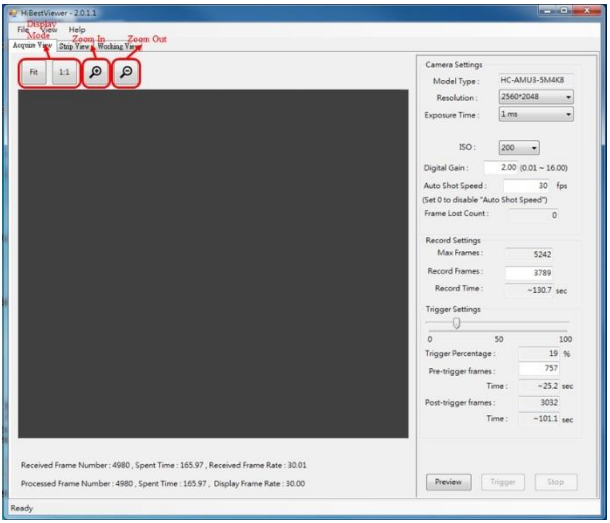


Figure 3-11 Display Mode and Zoom In / Zoon Out

3.5 Stop “Preview” and “Store a series of images”: If user starts Preview, “Stop button” will be enabled (See Figure 3-12).

3.5.1 Stop Preview: Once click “Stop button”, Preview will be stopped immediately, and “Preview button” is enabled while Trigger and “Stop button” are disabled (See Figure 3-13).

3.5.2 Stop “Preview” and “Store a series of images”: Click “Stop button”, user also already triggers, and the system will not only stop preview but also cancel the stored images (See Figure 3-14).

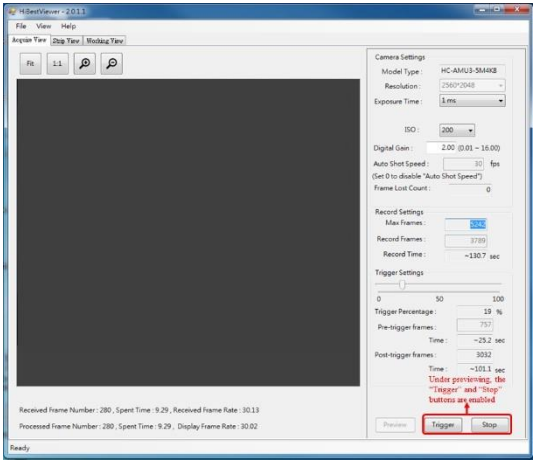


Figure 3-12 “Trigger and Stop Button” in the process of Previewing

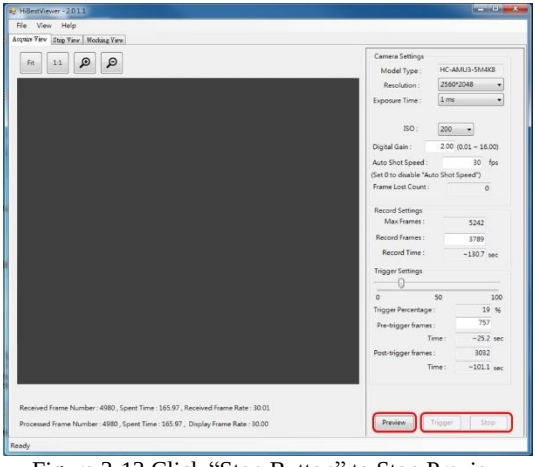


Figure 3-13 Click “Stop Button” to Stop Preview

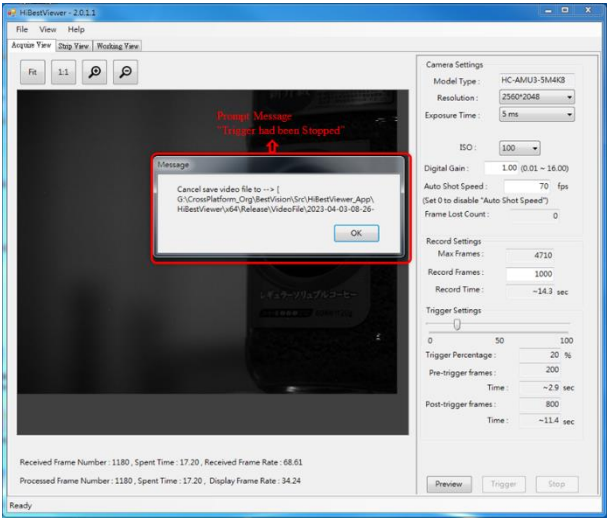


Figure 3-14 Click “Stop Button” to stop Preview and Trigger

3.6 Trigger: If user starts Preview, (See Figure 3-12), user can click “Trigger button” any time or use “external triggering signal” to store a series of images. Once being triggerd, the description is as below:

3.6.1 Follow the trigger position to store a series of images in the memory (Please refer to 3.2.4 Trigger Settings for the detailed description).

3.6.2 If user clicks “Stop button” before a series of images are completely stored, the system will cancel storing a series of images (Please refer to 3.5.2 for the description).

3.6.3 In the process of storing serial images, user interface will show the progress status. Also, “Trigger button” cannot be enabled (See Figure 3-15).

3.6.4 If a series of images is completely stored, the system will automatically stop Preview, and user interface will show the message about the path and filename of serial stored images (See Figure 3-16). In addition, when user clicks “OK” to close the message, the system will automatically switch to Strip View.

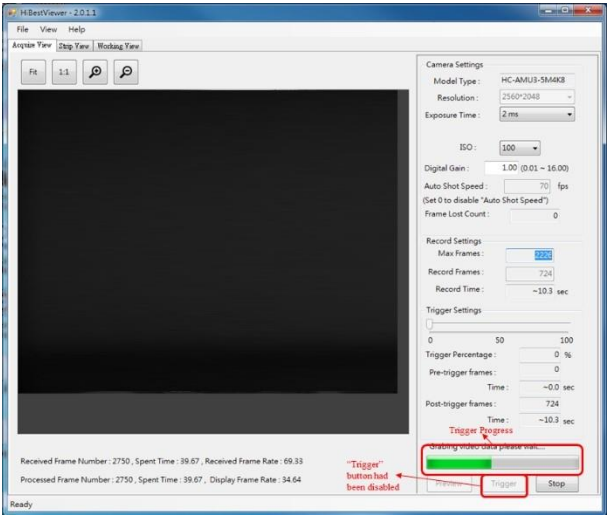


Figure 3-15 User Interface in the process of Trigger

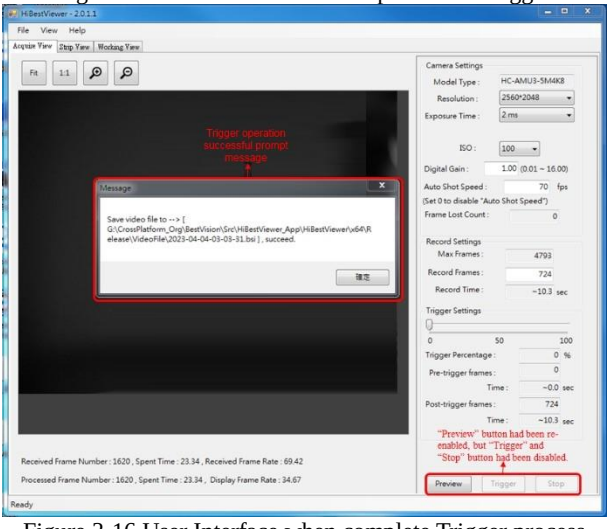


Figure 3-16 User Interface when complete Trigger process

Chapter 4 Strip View, Browse and View Images

This chapter explains how to use Strip View in *HiBestViewer* to browse and view a series of stored images. Besides, user can select a range of data to set up as A-B Play range.

1 How to switch to Strip View

Three ways to switch to Strip View:

1.1 Use mouse to select Strip View on user interface (See Figure 4-1). Attention: If there is no "a series of stored image", Strip View will be blank. Besides, Strip View supports to open only one serial image.

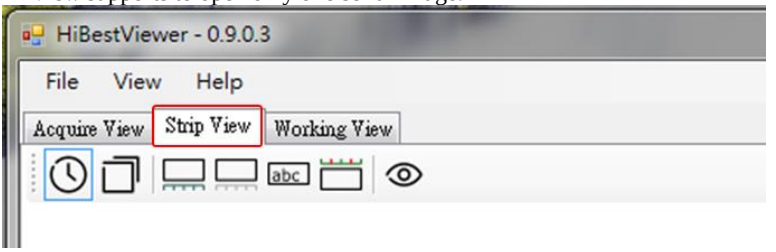


Figure 4-1 Select Strip View Tab Control

1.2 After Acquire View triggers, a series of images will be stored, and the system will automatically switch to Strip View (Please refer to 3.6 in Chapter 3 for detailed description).

1.3 User opens one stored series image before, procedure is as below:

1.3.1 Use mouse to select "File✦ Open" on Menu Bar (See Figure 4-2).

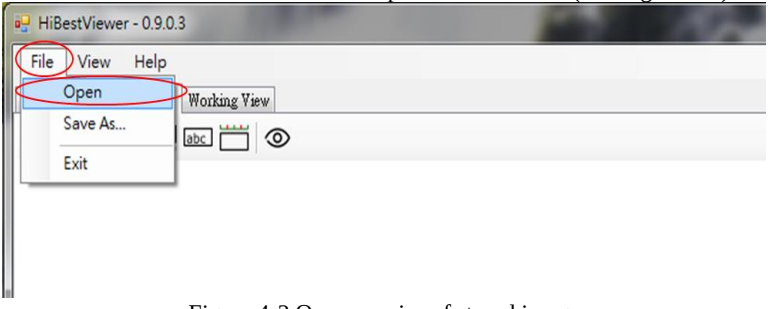


Figure 4-2 Open a series of stored image

1.3.2 The system will open a “Standard Windows File Browser” (See Figure 4-3), and user can select the file to open. If user opens the file successfully, (File format should be fit in with the defined format by *HiBestViewer*) the system will automatically switch to Strip View.

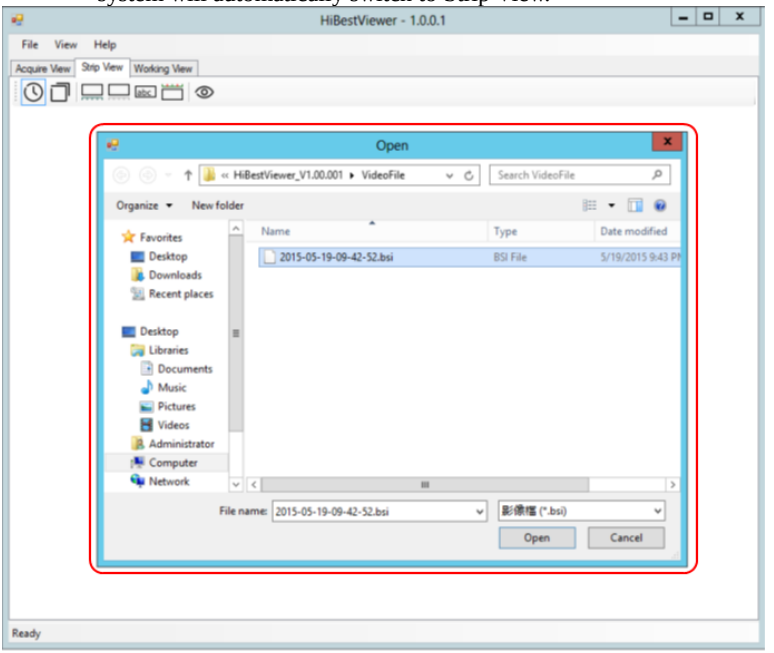


Figure 4-3 Browse and select the file

2 Strip View Static Information

If user successfully opens one serial image, six static information will be displayed on user interface (See Figure 4-4).

2.1 Full path name of the file.

2.2 A series of images attribute data:

2.2.1 Length: Take Figure 4-4 for example, the total number of images is 1000.

2.2.2 Frame Rate: Take Figure 4-4 for example, the Frame Rate is 99 fps.

2.2.3 Image Size: Take Figure 4-4 for example, the image size is 1280x1024 pixels.

2.3 A series of image thumbnails helps user to browse (See Figure 4-4).

2.4 Bookmark makers: Marker is a brown square, on the right corner of image, for indicating the image is signed.

2.5 Frame number is corresponded to each image thumbnail on the left corner (See Figure 4-4). The sorting rule of frame number is as below:

2.5.1 The image frame number is 0 at the trigger position.

2.5.2 Frame number, a series of images before trigger, is negative. Decrease one backward sequentially.

2.5.3 Frame number, a series of images after trigger, is positive. Increase one forward sequentially.

2.6 The relative time of capturing images is corresponded to each image thumbnail on the left corner of image, on the bottom of frame number (Time unit is second and accurate to the fourth decimal place). The sorting rule of relative time is as below (See Figure 4-4):

2.6.1 The image relative time is 0 at the trigger position.

2.6.2 The relative time, a series of images before trigger, is negative. Decrease sequentially.

2.6.3 The relative time, a series of images after trigger, is positive. Increase sequentially.

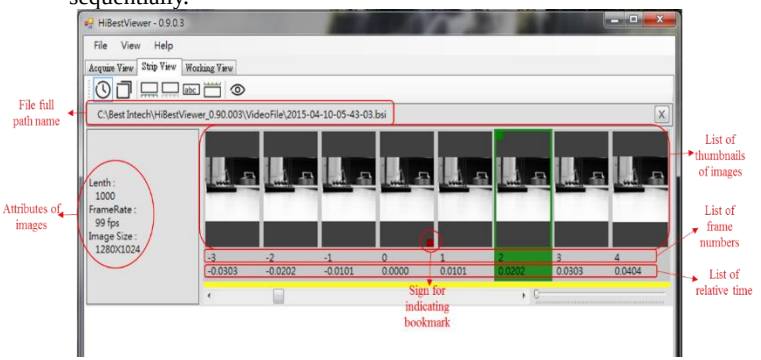


Figure 4-4 Strip View Static Information

3 Strip ViewAuxiliary

In addition to static information, Strip View provides a variety of auxiliary functions, including two parts. The first part: Seven icons on Icon Bar, operates seven view functions. The second part: The function of Scroll Bar and Zoom In/Zoom Out Bar (See Figure 4-5).

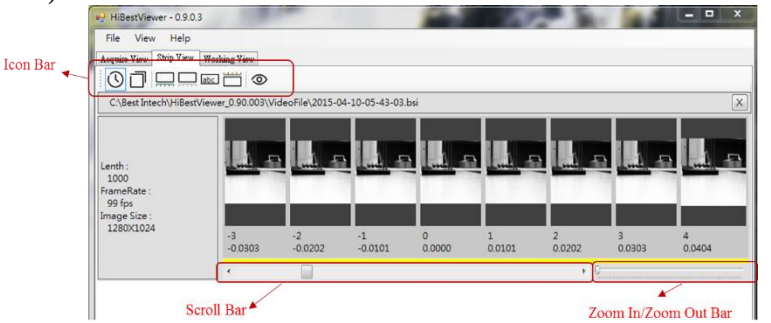


Figure 4-5 Strip View Auxiliary

If want to operate the auxiliary function on Icon Bar, user can use mouse to click the corresponding icon (See Figure 4-6).

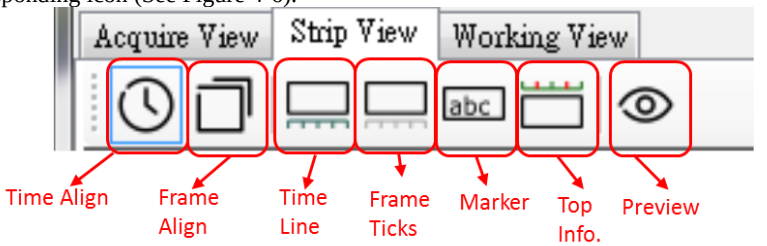


Figure 4-6 Icon Bar View Auxiliary

Auxiliary functions on Icon Bar are as follows:

3.1 Frame Ticks: The fourth icon is counted from the left. Use mouse to click this icon to open or close Frame Count Meter. When Frame Count Meter is opened, it will be displayed on the bottom of relative time. Frame Ticks icon will be framed by blue lines. User can use mouse to click Frame Ticks icon to switch. Besides, on the bottom of relative time, there is a list of yellow rectangles aligned left to correspond to the above image thumbnails. User can easily view the yellow rectangles over Frame Count Meter, and realize the interval and position among image thumbnails (See Figure 4-7).

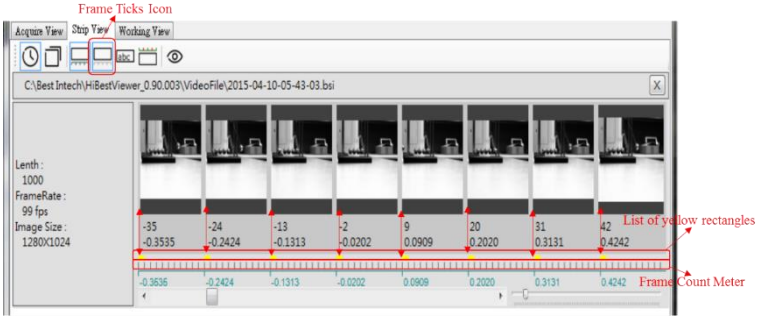


Figure 4-7 Frame Ticks

3.2 Time Line: The third icon is counted from the left. Use mouse to click this icon to open or close Time Line. When Time Line is opened, it will show Time Line over the Scroll Bar, and Time Line icon will be framed by blue lines (See Figure 4-8).

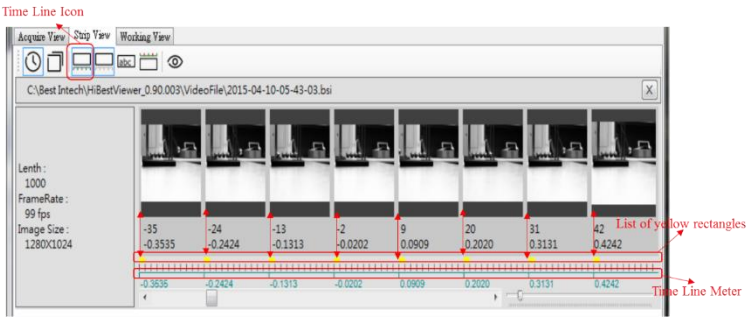


Figure 4-8 Time Line

3.3 Time Align and Frame Align: The first and second icon is respectively counted from the left. These two icons are for switching two units of Time Line. The first unit is time. The second unit is frame number. However, some restrictions are as below:

3.3.1 Only when Time Line is opened will it show the unit of Time Line.

3.3.2 Time Align and Frame Align cannot be displayed at the same time.

User can switch unit to relative time (unit is second and accurate to the fourth decimal place) by selecting Time Align icon (See Figure 4-9). User can also switch unit to frame number by selecting Frame Align icon (See Figure 4-10).

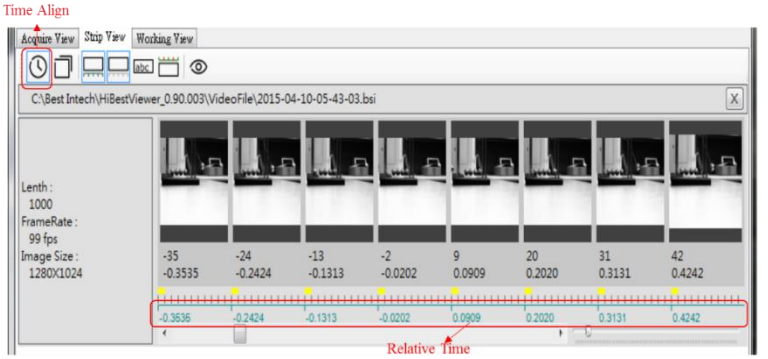


Figure 4-9 Time Align

Figure 4-10 Frame Align

3.4 Marker: The fifth icon is counted from the left. User can use mouse to click Maker icon to switch comment on image thumbnails. When Marker is opened, comment will be displayed on the bottom of images (See Figure 4-11).

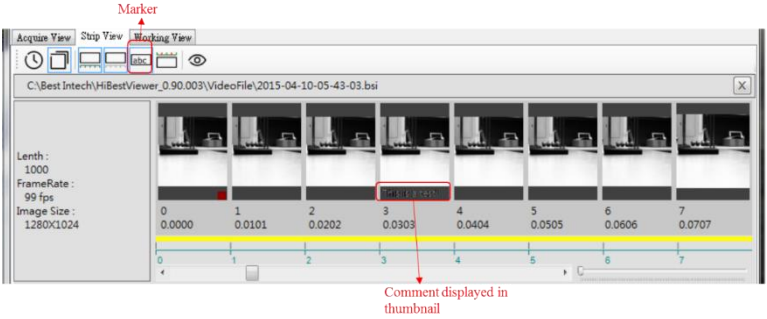


Figure 4-11 Marker

3.5 Top Info: The sixth icon is counted from the left. User can use mouse to click Top Info icon to open or close the display of A-B Play range. A-B Play range means that user can specify the range for a series of images. The origin of this range is called A point while the terminal of this range is called B point. The detailed description will be explained in this chapter 5-1. Besides, only one A-B Play range is supported by the system. When opening A-B Play range, there is a red line over the image thumbnails (Take Figure 4-12 for example, Frame Number of A point is -4 while Frame Number of B point is 6).

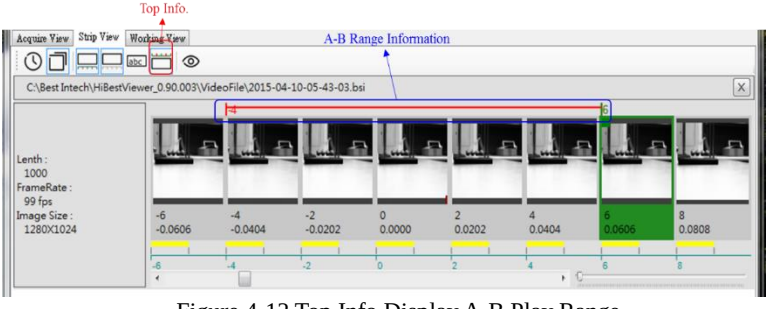


Figure 4-12 Top Info Display A-B Play Range

3.6 Preview: The seventh icon is counted from the left. User can use mouse to click to Preview icon to open or close a single image. User can use mouse to select image thumbnails, which is highlighted to display. When opening Preview, the system will show the image in a new window (See Figure 4-13). Besides, if user selects a series of image thumbnails (not only select a single image), the system will only show the last selected image when opening Preview instead of showing several images.Moreover user can manipulate image through keyboard and mouse.

3.6.1 User may use keyboards to scroll image. Type “Up arrow key” to scroll image up. In the same way, type “Down arrow key” or “Left arrow key” or “Right arrow key” will scroll image to down or left or right.

3.6.2 Type “W” or “w” key will zoom in the image and type “Q” or “q” key will zoom out the image.

3.6.3 Roll the mouse wheel forward will zoom in the image and roll the mouse wheel backward will zoom out the image.

3.6.4 Double click mouse left button will display image based on its actual size.

3.6.5 Click mouse middle button or press mouse middle wheel will display image based on the size of Preview Window.

3.6.6 Click and hold mouse right buttom to drag the image in the Preview Window. It is equivalent to scrolling the image using the scroll bar.

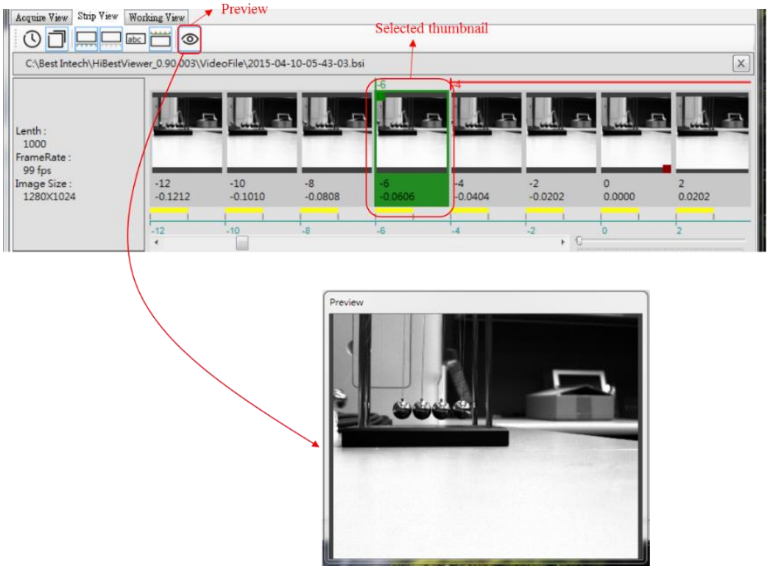


Figure 4-13 Preview Image

3.7 Scroll Bar: Use mouse to click or drag Scroll Bar to scroll a series of image thumbnails, and user can move the view across all image thumbnails. When scrolling, it can show animation (See Figure 4-14).

Figure 4-14 Scroll Bar

3.8 Zoom In/Zoom Out Bar: Use mouse to click zoom in/out to adjust the view range of a series of image thumbnails (See Figure 4-15).

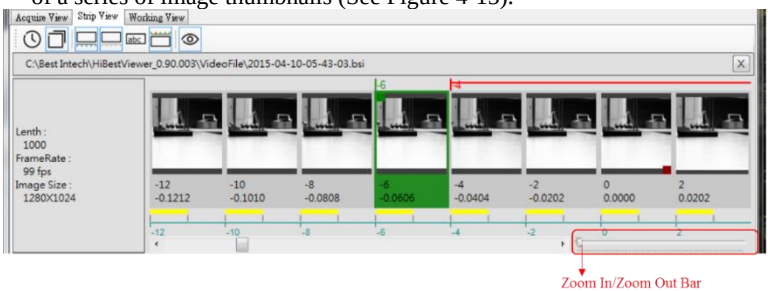


Figure 4-15 Zoom In/Zoom Out

4 Save a series of images as general-purpose video file

After successfully opening a series of images data, user can save them as general-purpose video file or bitmap files. It can be saved as MPEG2 video file or MP4 video file, supported by the current system. A series of images also can be saved as serial bitmap files (Microsoft bmp file format).

4.1 Two ways to start “Save as User Interface”:

4.1.1 Use mouse to select File ✦ Save As (See Figure 4-16).

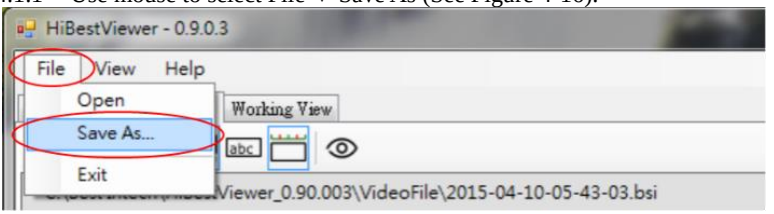


Figure 4-16 “Save as User Interface” from Menu Bar

4.1.2 Within image thumbnails, right click to select Context Menu and then select Save As (See Figure 4-17).

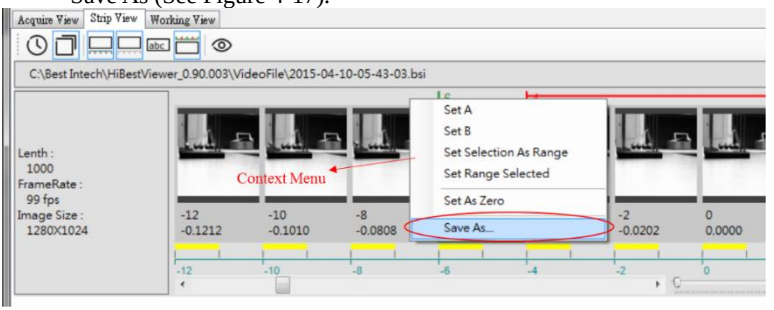


Figure 4-17 “Save as User Interface” from Context Menu

4.2 “Save as User Interface”：

4.2.1 “Save as User Interface” is similar to “Windows Save As User Interface”. Therefore, User can select the path and file name on this interface (See Figure 4-18).

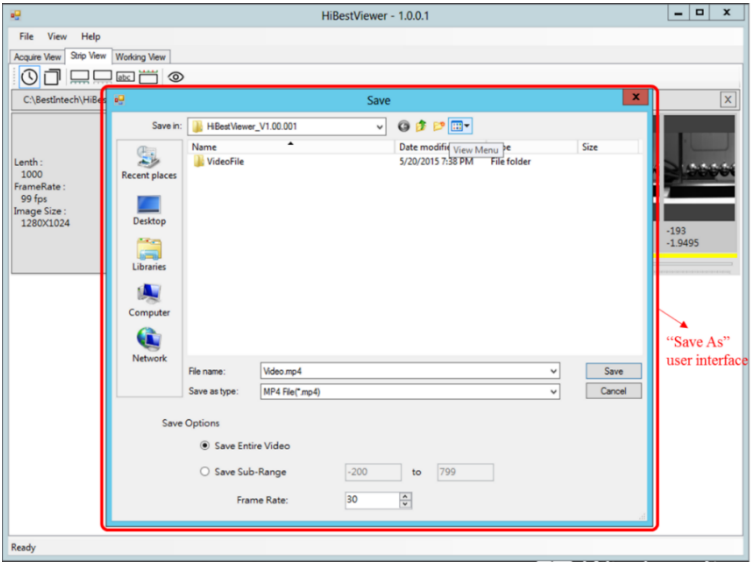


Figure 4-18 "Save As" User Interface

4.2.2 File type: User can select file type on user interface based on requirements. Take Figure 4-19 for example, it is selected as MP4 video file type.

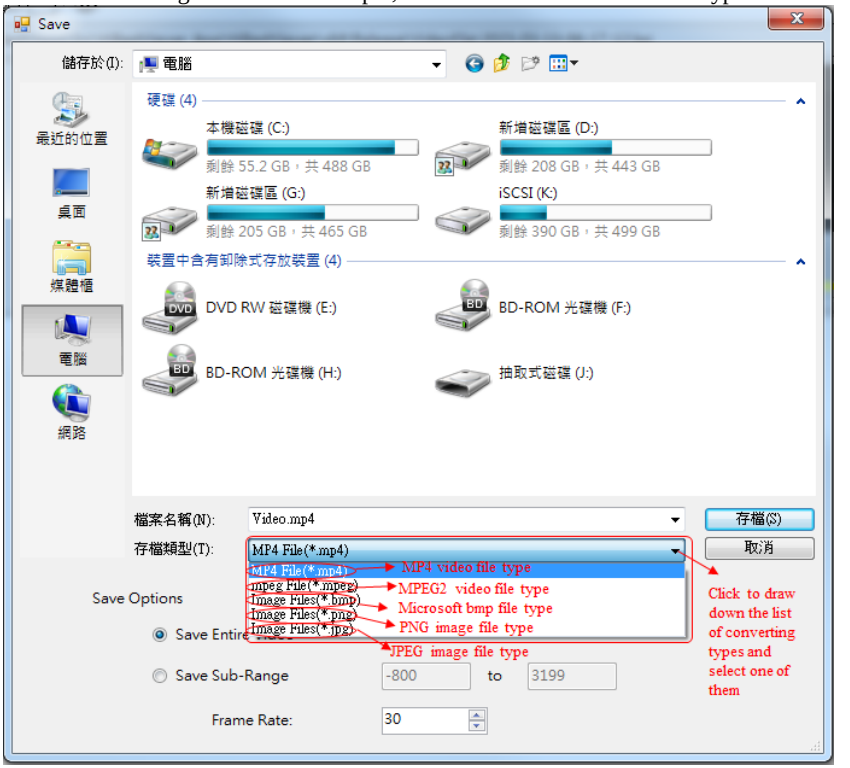


Figure 4-19 Select Save as File Type

4.2.3 Select “Save Options” (See Figure 4-20), there are three options described as below:

4.2.3.1 Save Entire Video: Select this option if want to convert and save all of series image data as another file type.

4.2.3.2 Save Sub-Range: Select this option if want to convert and save part of a series of images as another file type. Also, user has to specify the start and the end of frame number.

4.2.3.3 Select this option to specify frame rate, but it is vaild only when the file is save as MP4 video file type or MPEG2 video file type.

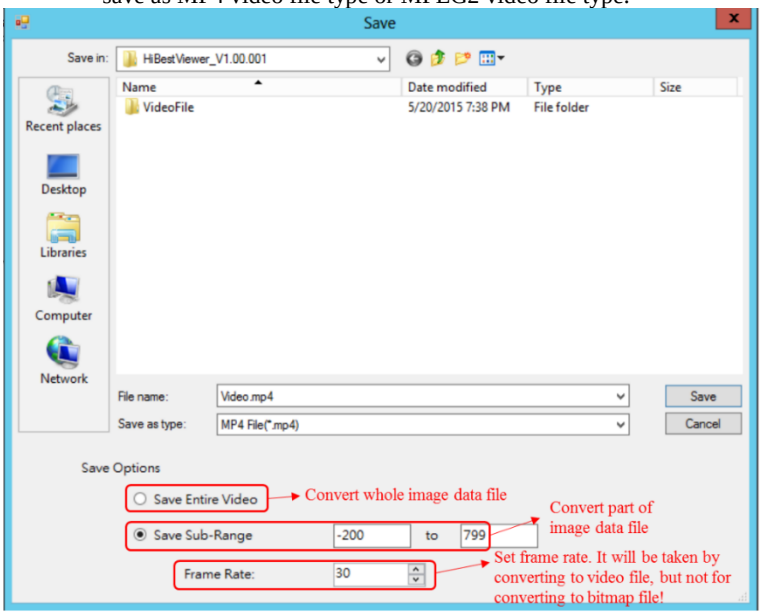


Figure 4-20 Save Options

5 Context Menu Function within Image Thumbnails

Right click mouse to show Context Menu within image thumbnails (See Figure 4-21).

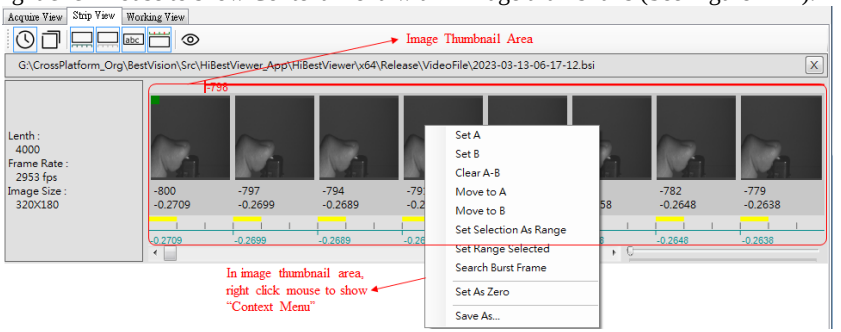


Figure 4-21 Context Menu

Context Menu functions are described as follows:

5.1 Set A and Set B: Set A-B Play range (See Figure 4-22).

5.1.1 The default A-B Play range includes all images. In other words, A point is the first image frame while B point is the last image frame.

5.1.2 Select "Set A" in Context Menu, and the system will set the selected image as A point (the start) of A-B Play range.

5.1.3 Select "Set B" in Context Menu, and the system will set the selected image as B point (the end) of A-B Play range.

5.1.4 Nothing will happen if there is no selected image when setting A point or B point.

5.1.5 On the contrary, if there are more than one selected images when set A point or B point, then the last selected image will be the setting target.

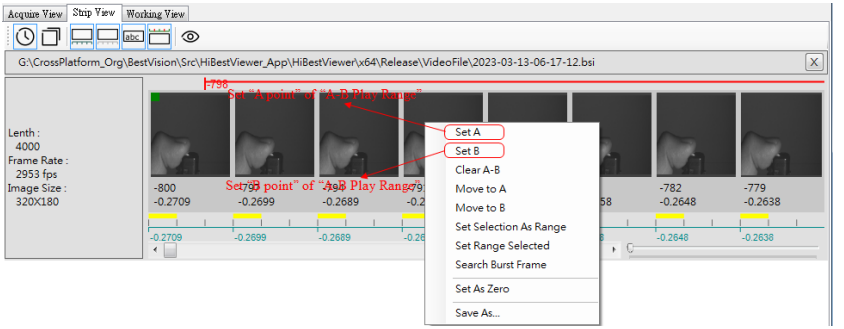


Figure 4-22 Set A-B Play Range

5.2 Clear A-B: Clear "A-B Play range", if there exist one. If there is no "A-B Play range", then it wil do nothing. See Figure 4-23.

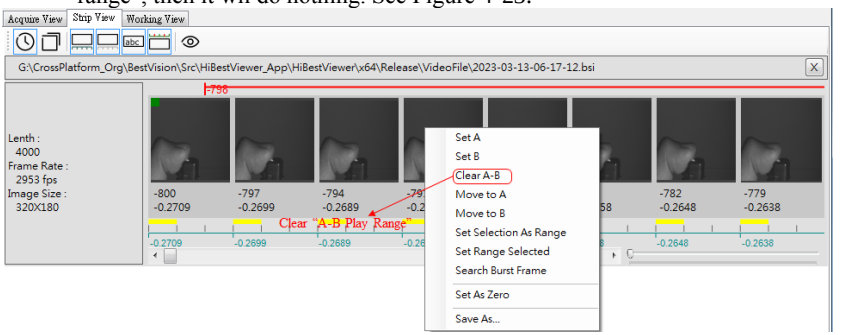


Figure 4-23 Clear A-B Play Range

5.3 Move to A: Request the application to scroll the continuous image thumbnail to the position of A point in the A-B Play section. When the number of continuous image thumbnails is huge, the user probably wants to quickly return to the position of A point in the A-B Play section, and this function can be used at this time. Please refer to Figure 4-24. Of course, if the user does not set the A-B Play section, the user will see an error message. Please refer to Figure 4-25.

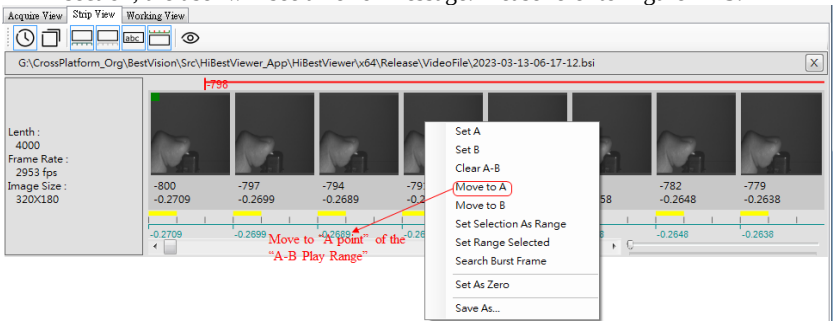


Figure 4-24 Move to "A point" of "A-B Play range"

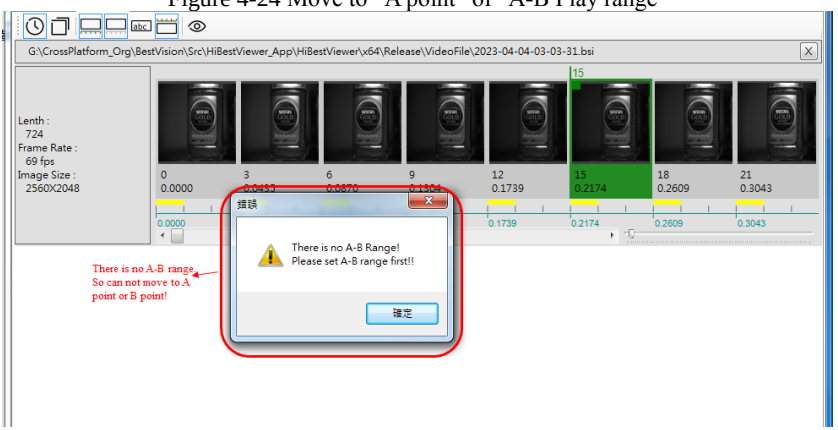


Figure 4-25 Failure message of moving to "A point" or moving to "B point"

5.4 Move to B: Request the application to scroll the continuous image thumbnail to the position of B point in the A-B Play section. When the number of continuous image thumbnails is huge, the user probably wants to quickly return to the position of the B point in the A-B Play section, and this function can be used at this time. Please refer to Figure 4-26. Of course, if the user does not set the A-B Play section, the user will see an error message. Please refer to Figure 4-25.

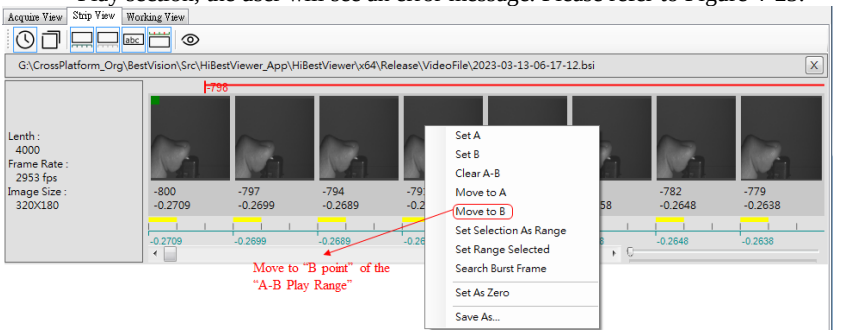


Figure 4-26 Move to "B point" of "A-B Play range"

5.5 Set Selection As Range: Set "a series of images segment" as A-B Play range (See Figure 4-27).

5.5.1 Select a series of images segment:

5.5.1.1 Use mouse to select a point (the start or end) in a series of image thumbnails segment. Selected image thumbnails will be highlighted.

5.5.1.2 Hold down "Ctrl key" or "Shift key".

5.5.1.3 Use mouse to select the other point in a series of image thumbnails segment. And all image thumbnails in a series of image thumbnails segment will be highlighted.

5.5.2 After selecting a series of image thumbnails segment, and then select "Set Selection As Range" in Context Menu to set A-B Play range.

5.5.3 Nothing will happen if there is no selected image thumbnails when clicking "Set Selection As Range".

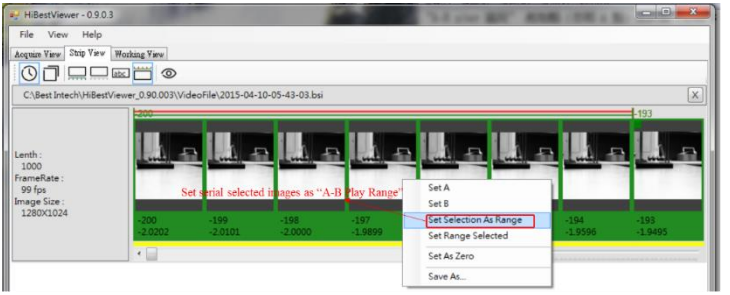


Figure 4-27 Set selected images as A-B Play Range

5.6 Set Range Selected: All image thumbnails are selected in A-B Play range. After clicking this menu item, user will see all image thumbnails highlighted in A-B Play range (See Figure 4-28).

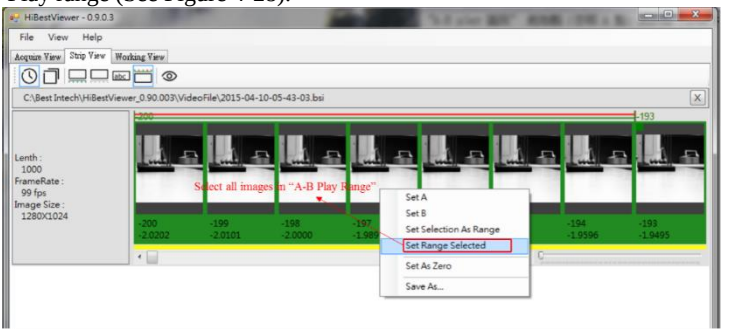


Figure 4-28 Select all images in A-B Play Range

5.7 Search Burst Frame: What is “Brust Frame”? Simply put, it is a frame which contains changed dramically if compared with previous frame. System define a measurement which called “Area Threshold” to juge whether difference of contains between current and previous frame is large or not. If the difference value exceed “Area Threshod”, then the current frame is “Burst Frame”. This feature will help user to pick up the frame where change happening from numerous frames. The following the operation guide for “Search Burst Frame”:

5.7.1 In “Image Thumbnail Area”, right click mouse to invoke “Contex Menu”. And then use mouse to select “Search Burst Frame” menu item. See Figure 4-29 (upper part).

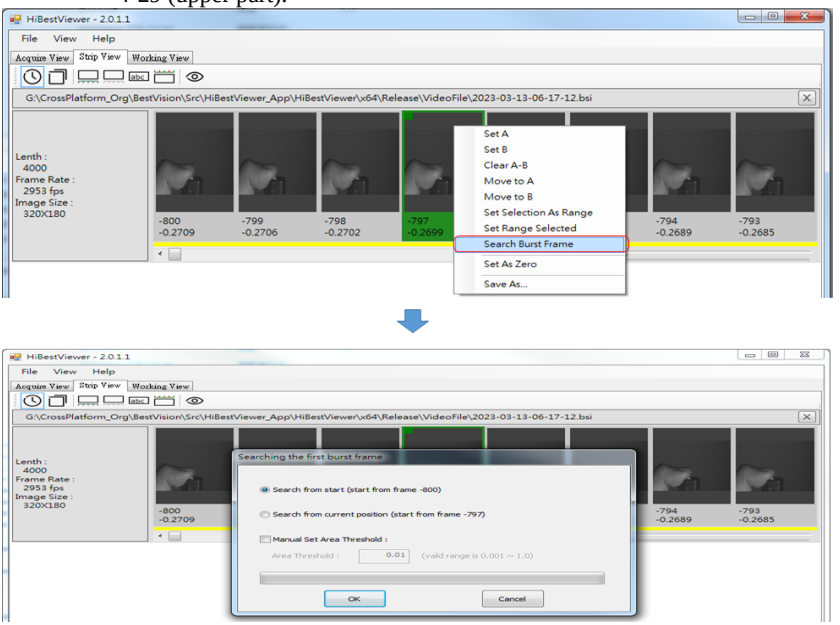


Figure 4-29 Use “Search Burst Frame” feature

5.7.2 After select “Search Burst Frame” menu item, system will show a Dialog Box. See Figure 4-29 (lower part).

5.7.2.1 In dialog box, use mouse to click “Search from start” (this option is default), and then click “OK button” to start excution. System will start to search “Burst Frame” from the beginning (i.e. from the first frame). See Figure 4-30.

5.7.2.2 The other option is using mouse to select “Search from current position”, and then click “OK button” to start excution. System will start to search “Burst Frame” from the selected frame but not from the

beginning. If user does not select any frame, then system will search from beginning. In the other hand, if user selected a serial of frames, then system will search from the last selected frame. See Figure 4-30.

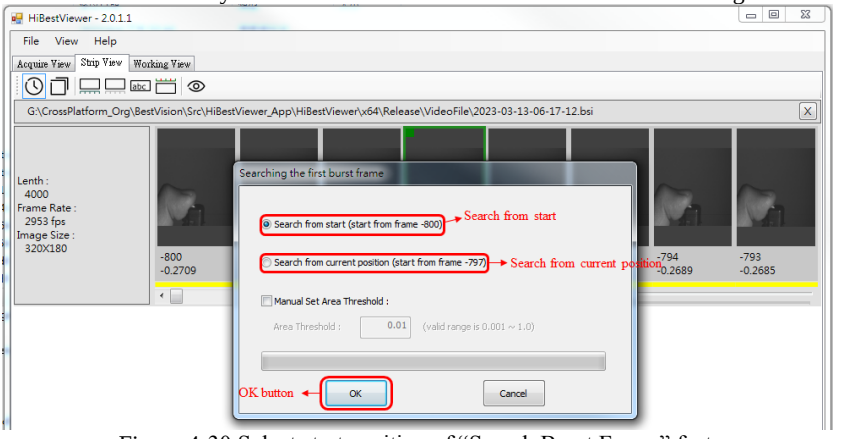


Figure 4-30 Select start position of “Search Burst Frame” feature

5.7.2.3 System will choose the value of “Area Threshod” through internal analysis by default. But if user does not satisfy with the searching result, then user may modify the value of “Area Threshod” and try again. How to modify “Area Threshod”? Just click “Manual Set Area Threshold” and then input the value of “Area Threshod”. See Figure 4-31.

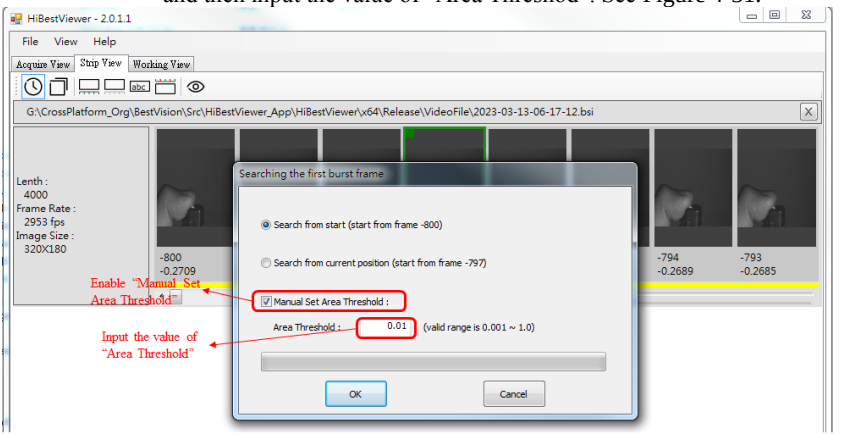


Figure 4-31 User set the value of “Area Threshold”

5.7.3 Whenerver user click “OK button”, system will start searching “Brust Frame”. See Figure 4-32.

5.7.3.1 If system find “Brust Frame” successfully, then system will locate its position and select the “Brust Frame” (for highlight it) automatically. See Figure 4-33.

5.7.3.2 In the other hand, if system fail to fine “Brust Frame”, then system will show message to let user know. See Figure 4-34.

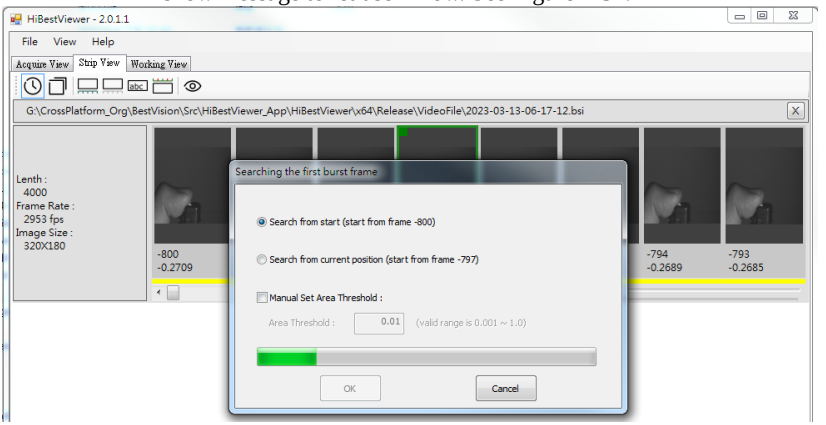


Figure 4-32 Searching “Burst Frame”

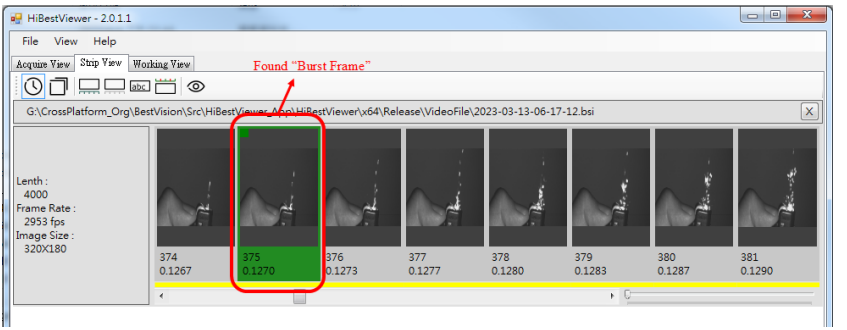


Figure 4-33 Find “Burst Frame” successfully and highlight it

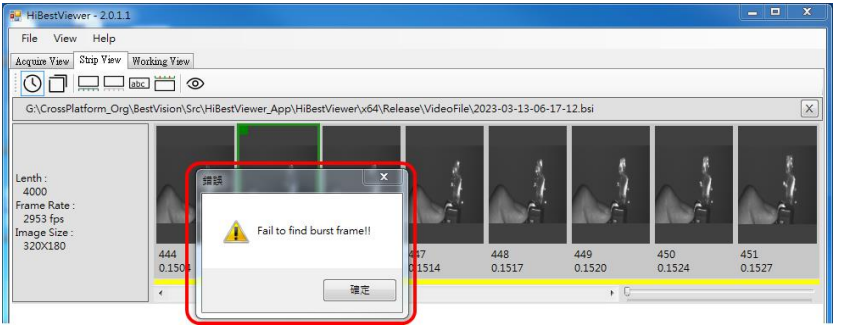


Figure 4-34 Prompt message ”Fail to find burst frame”

5.7.4 At last user can cancel “Search Brust Frame” anytime by click “Cancel button”. See See Figure 4-35.

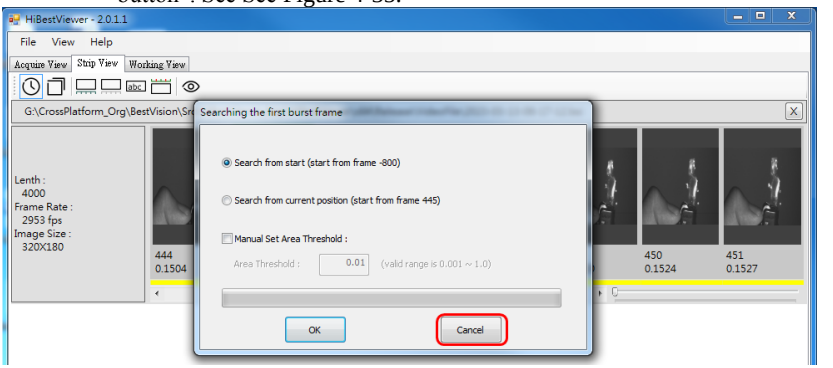


Figure 4-35 Click ”Cancel button” to cancel ”Search Burst Frame” operation

5.8 Set As Zero: Set frame number and relative time of selected image to 0, and the system will revise frame number and relative time of all images based on “sequence correlation”. Take Figure 4-36 for example, the selected frame number is 75 and changes it to Frame number 0. However, two exceptions are described as below:

5.8.1 If there is no selected image, then nothing will happen when enforce “Set As Zero”.

5.8.2 On the contrary, if “Set As Zero” is selected, and there are more than one images selected. The system will take the last selected image to be the 0 frame.

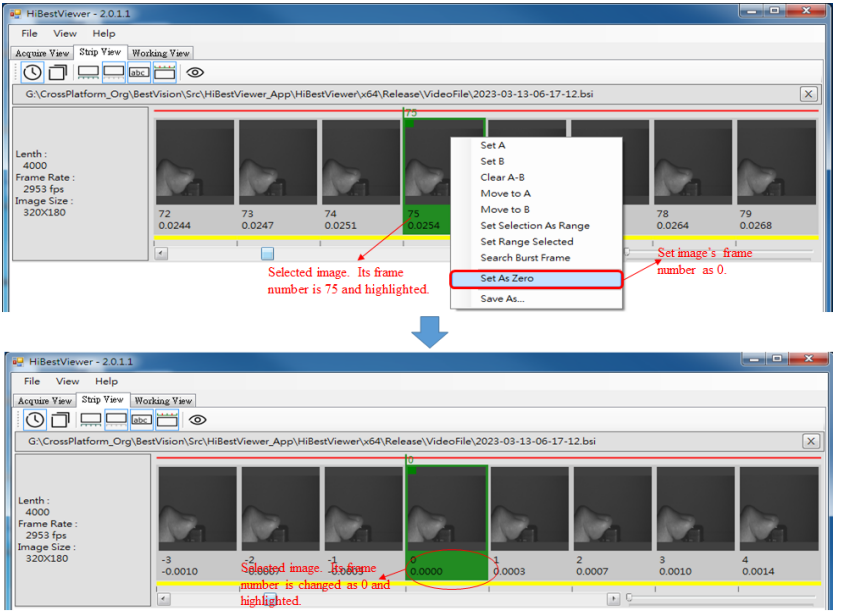


Figure 4-36 Set As Zero

5.9 Save As…: User can save a series of images as general-purpose video file or bitmap files. Please refer to the section 4 in this chapter for the detailed description.

6 Switch from Strip View to Working View

User can switch Strip View to Working View by double clicking within image thumbnails. After switching to Working View, Play Head will move to the image which user double clicks in Strip View.

Chapter 5 Working View, Further Examinng and Processing

This chapter explains how to use Working View in *HiBestViewer* to examine and process stored images.

1 How to switch to Working View

Two ways to switch to Working View. It is highly recommended to take “switch from Strip View to Working View” method. Because it is the only method to guarantee the file displayed in Working View that is exactly the same file opened in Strip View.

1.1 Use mouse to click Working View tab control on user interface (See Figure 5-1).
Attention: Working View will be blank if user never opens any a series of stored images or switches from Strip View to Working View before.

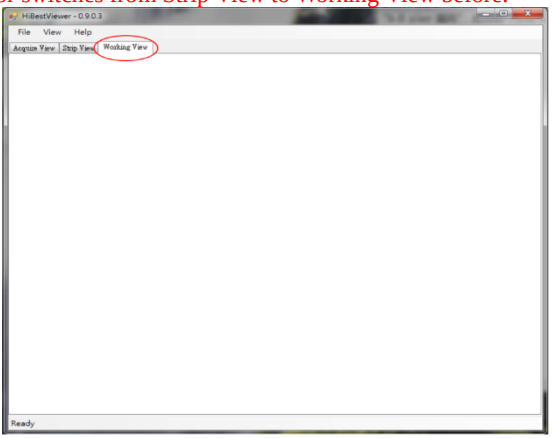


Figure 5-1 Select Working View Tab

1.2 Switch from Strip View to Working View: Double click within image thumbnails in Strip View (See Figure 5-2).

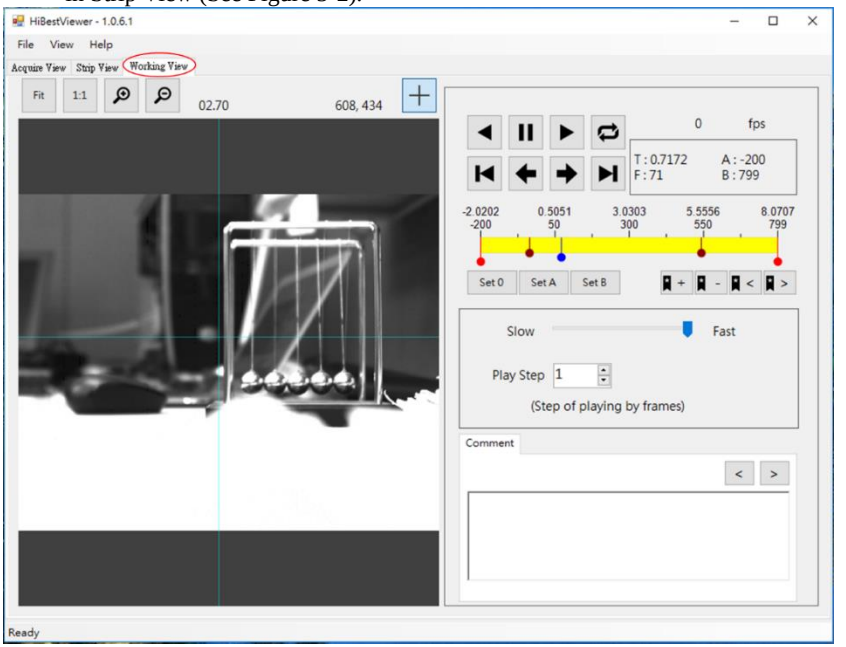


Figure 5-2 Switch from Strip View to Working View

2 Play Control

Play control is classified as five parts: (1) Play Control Buttons (2) Play Status Information (3) Play Progress Bar (4) Play Frame Rate & Play Step Interval (5) Play Display Windows & Display Settings (See Figure 5-3).

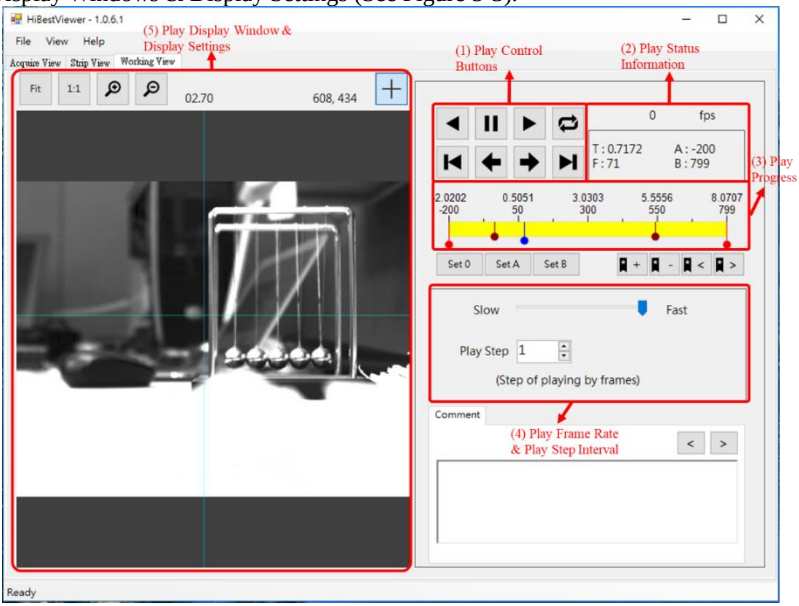


Figure 5-3 Five parts of Play Control

User can use these Play Control buttons for fine tuning play back and display image in order to further examine the image data and correlation among a series of images. Functions of each part are described as follows:

2.1 There are eight Play Control Buttons shown as below:

2.1.1  (Reverse Play Button): Use mouse to click this button to make images display backward sequentially from Play Head position until user click “Stop Play Button” or all images in A-B Play range has just finished playing.

2.1.2  (Stop Play Button): Use mouse to click this button to stop the play. Nothing will happen if there is no play back proceeding.

2.1.3  (Normal Play Button): Use mouse to select this button to make images display forward sequentially from Play Head position until user clicks “Stop Play Button” or all images in A-B Play range has just finished playing.

2.1.4  (Cyclic Play Button): Use mouse to turn on/off cyclic play mode. This

button will be highlighted when being turned on, see Figure  . When this mode is turned off, the button will restore to the original, see Figure  . Under cyclic play mode, after playing all images, it will replay again automatically.

2.1.5  (Move to A point Button): Use mouse to click this button to make Play Head move to A point in A-B Play range (the start point in A-B Play range).

2.1.6  (Reverse Step Play Button): Use mouse to click this button to make images play only one step backward from Play Head position.

2.1.7  (Normal Step Play Button): Use mouse to click this button to make images play only one step forward from Play Head position.

2.1.8  (Move to B point Button): Use mouse to click this button to make Play Head move to B point in A-B Play range (the end point in A-B Play range).

2.2 There are five Play Status Information as follows:

2.2.1 Play Speed: The number of images will be displayed per second, see Figure 5-4 (fps ✦ frame per second).

2.2.2 Play Head position: This information is represented by Frame Number and Relative Time. Time unit is second and accurate to the fourth decimal place (See Figure 5-4).

2.2.3 A-B Play Range: This information is for A point and B point as Frame Number (See Figure 5-4).

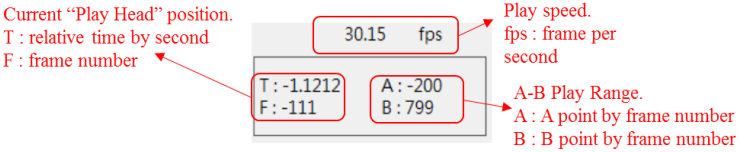


Figure 5-4 Play Status Information

2.3 Play Progress Bar: It provides several information, the setting of A-B Play range, and Play Head position:

2.3.1 Overview on Play Progress Bar: The length of the progress bar represents amount of all images data. Scales over the progess bar are marked corresponding to Frame Number and Relative Time. The time unit is second and accurate to the fourth decimal place (See Figure 5-5).

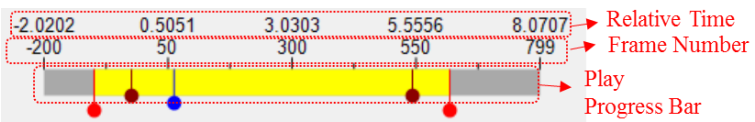


Figure 5-5 Overview on Play Progress Bar

2.3.2 Position marker: User will see three kinds of position marker on Play Progress Bar.

2.3.2.1 (Play Head): The current position of Play Head. If want to know Play Head information, user can check Play Status Information (Please refer to 2.2.2 for the description). It will be updated when playing.
Besides, all play back functions (such as Reverse Play, Normal Play, Normal Step Play, …) in Working View may work only if Play Head locates within A-B Play range. If Play Head does not locate within A-B Play range, then all play back functions will not work. For letting play back functions work, user can adjust A-B Play range or use mouse to click "Move to A Point Button" (or "Move to B Point Button") to make Play Head move into A-B Play Range.

2.3.2.2 (A-B Play Range): There are two markers on Play Progress Bar. A point located on the left is marked while B point located on the right is marked. A-B Play range on Play Progress Bar is shown as yellow rectangle. If want to know the information about A-B Play range, please check Play Status Information (Please refer to 2.2.3 for the description). If user only sees one marker, it means that A point is the same as B point, resulted in overlapping. User can use mouse to drag the marker to separate them.

2.3.2.3 (Bookmark): User can use Bookmark to mark a position where user want to remember on Play Progress Bar.

2.3.3 Operate the position marker: User can use mouse to drag the marker.

2.3.3.1 Use mouse to drag (Play Head) to change Play Head position even play back is going, only within A-B Play range.

2.3.3.2 Use mouse to drag (A-B Play range marker) to change A-B Play range.

2.4 Play Frame Rate & Play Step Interval: User can set Play Frame Rate (frames per second). User can adjust the play interval for every step.

2.4.1 Set Play Speed (frame per second): Use mouse to drag Play Speed Slider, and the speed will be shown on the bottom of Slider (See Figure 5-6).

Figure 5-6 Play Speed Slider and the Corresponding Play Speed

2.4.2 Set Play Step: Use mouse to click Play Step ComboBox to set Play Step (See Figure 5-7).

Figure 5-7 Set Play Step

2.5 Play Display Windows & Display Settings: When play back is going, user will see what is playing in Play Display Window. Besides, it supports other settings as below (See Figure 5-8).

2.5.1 "Fit": Fit to Window, based on the size for Preview Window, image display size will be adjusted automatically by the program.

2.5.2 "1:1": Based on the actual image size to display. Because the image size is not equal to the size of Preview Window, user may only view the part of image. User may need to scroll image for observing the part of image which is out of Preview Window (please refer section 2.5.4).

2.5.3 Zoom In/Out: Use mouse to click the corresponding button to enforce zoom in or zoom out (See Figure 5-8).

2.5.4 User may use keyboards to scroll image. Type "Up arrow key" to scroll image up. In the same way, type "Down arrow key" or "Left arrow key" or "Right arrow key" will scroll image to down or left or right.

2.5.5 Type "W" or "w" key will zoom in the image and type "Q" or "q" key will zoom out the image.

2.5.6 Roll the mouse wheel forward will zoom in the image and roll the mouse wheel backward will zoom out the image.

2.5.7 Double click mouse left button will display image based on its actual size. It is equivalent to click "1:1" button.

2.5.8 Click mouse middle button or press mouse middle wheel will display image based on the size of Preview Window. It is equivalent to click "Fit" button.

2.5.9 Hold down mouse right button and move mouse, we can drag image to move. It is equivalent to scroll image.

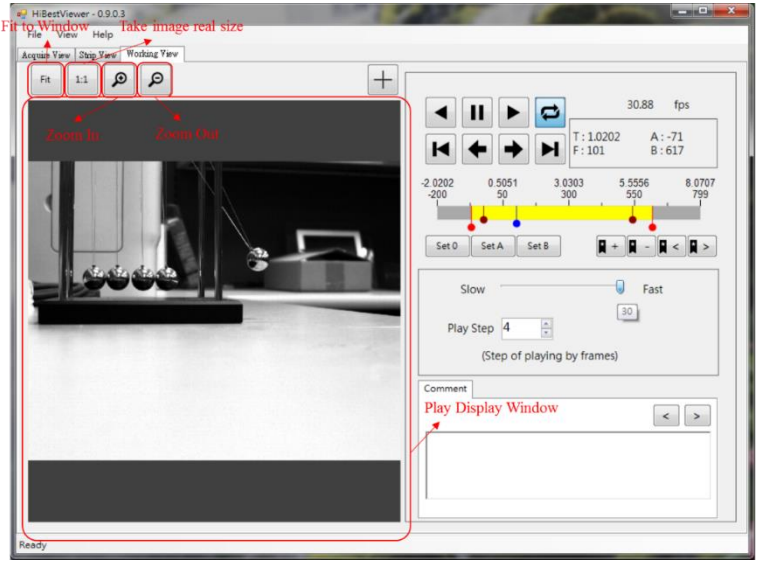


Figure 5-8 Play Display Window & Display Settings

3 Other functions in Woking View

Other functios are supported: (1) Set a specified image as frame 0 (2) Set A point in A-B Play range (3) Set B point in A-B Play range (4) Add/Remove Bookmark & Move to Next/Previous Bookmark (5) Add/Modify/Remove comment & Move to Next/Previous comment (6) Display the coordinate position of image (Unit is pixel). Functions are described as follows:

3.1 Set a specified image as frame 0 (the image is specified by current Play Head position): Use mouse to click “Set 0 button”, the system will set the image where current Play Head locates at as frame 0. Set as frame 0 means that set both of Frame Number and relative time as 0. At the same time, the system will revise Frame Number and relative time of all images based on “correlation sequence” (See Figure 5-9). It is the same as “Set As Zero” in Strip View” (Please refer to 5-4 in chapter 4 for the detailed description).

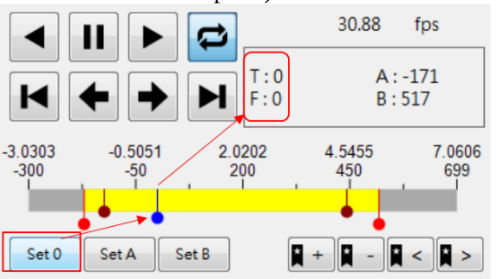


Figure 5-9 Set Play Head position as frame 0

3.2 Set Play Head position as A point in A-B Play range: Use mouse to click Set A button, and the system will set Play Head position as A point in A-B Play range (See Figure 5-10).

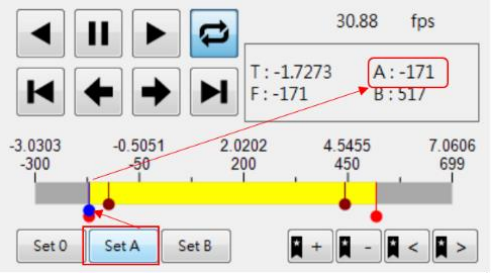


Figure 5-10 Set Play Head as A point in A-B Play range

3.3 Set Play Head position as B point in A-B Play range: Use mouse to click “Set B button”, and the system will set Play Head position as B point in A-B Play range (See Figure 5-11).

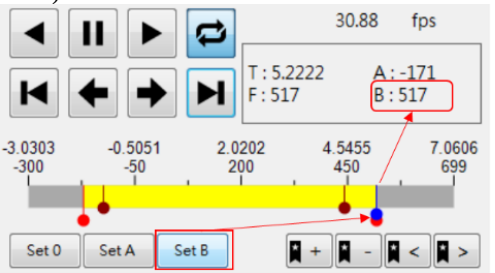


Figure 5-11 Set Play Head as B point in A-B Play range

3.4 Add Bookmark: Use mouse to click  button, and the system will add Bookmark on Play Head position. Nothing will happen if there is already a Bookmark on Play Head position (See Figure 5-12).

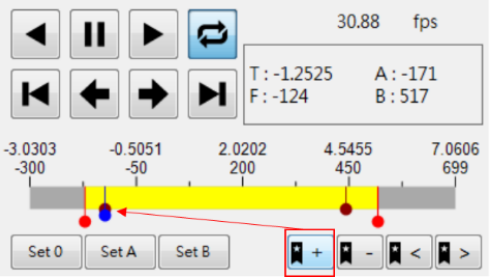


Figure 5-12 A Bookmark is added on Play Head position

3.5 Remove Bookmark: Use mouse to click  button, and the system will remove Bookmark on Play Head position. Nothing will happen if there is no Bookmark on Play Head position (See Figure 5-13).

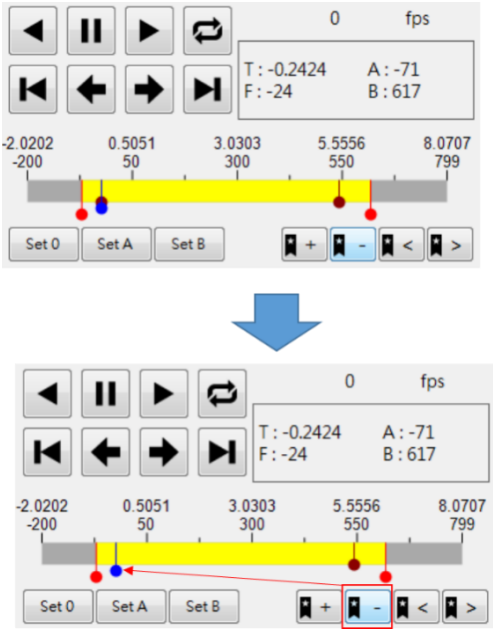


Figure 5-13 A Bookmark is removed on Play Head position

3.6 Move to Previous Bookmark: Use mouse to click < button. If there is a Bookmark before Play Head, the system will move Play Head to previous Bookmark. Nothing will happen if there is no Bookmark before Play Head.

3.7 Move to Next Bookmark: Use mouse to click > button. If there is a Bookmark after Play Head, the system will move Play Head to next Bookmark. Nothing will happen if there is no Bookmark aftert Play Head.

3.8 Add/Modify/Remove Comment: User can add, modify, and remove comment on the specified image (the image is specified by current Play Head position). Descriptions are as below:

3.8.1 Move Play Head to the specified image. User can check Play Status Information any time to confirm the current Play Head postion. User can drag Play Head to nearby the specified image, and use “Forward Step Play” or “Reverse Step Play” in order to move Play Head to the target postion. Take Figure 5-14 for example, make a comment at Frame Number 100.

3.8.2 Comment Editor Area: Write down comments on the images, including modify or remove existing comments. Take Figure 5-14 for example, it is written down “This is a test!” at Frame Number 100.

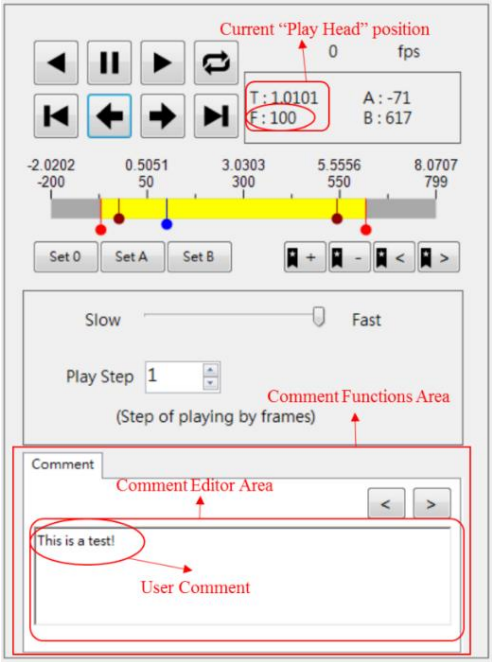


Figure 5-14 Add/Modify/Remove Comment

3.9 Move to Previous Comment: Use mouse to click < button, and move to previous comment. If there is a comment before Play Head, the system will move Play Head to the marked position and the comment will be shown on Comment Editor Area. Nothing will happen if there is no comment before Play Head.

3.10 Move to Next Comment: Use mouse to click > button, and move to next comment. If there is a comment next to Play Head, and the system moves Play Head to the marked position and the comment will be shown on Comment Editor Area. Nothing will happen if there is no comment next to Play Head.

3.11 Relative time of current frame (in seconds): “Current frame” is the frame at current Play Head position. Moreover, “Relative time of current frame” is the time distance from “The first frame” to the “Current frame” in seconds and accurate to the second decimal place (See Figure 5-15). Let’s take Figure 5-15 as example:

3.11.1 The relative time of current frame is 02.70 seconds.

3.11.2 The frame number of the current frame is 71 and the frame number of the first frame is -200. Hence “the frame distance” from the first frame to the current frame is 71-(-200)=271 frames.

3.11.3 So we can figure out the frame rate is (71-(-200))/2.7=100.37 frames per seconds.

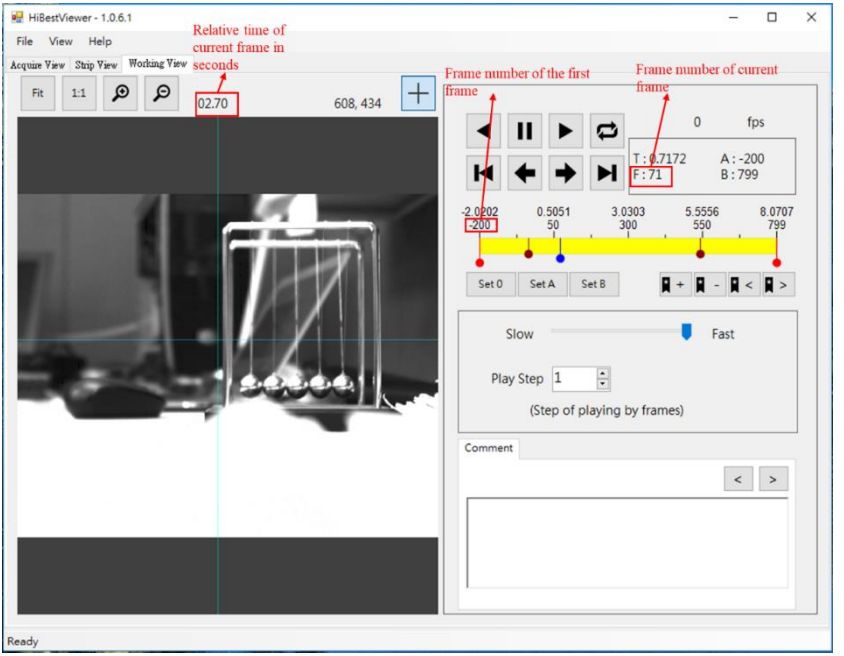


Figure 5-15 Display Relative time of current frame

3.12 Display the position coordinate (Unit is pixel): Turn on “Cross Line button” to get the position coordinate of a specified image, and descriptions are as below:

3.12.1 Use mouse to click  button to turn on/off “Cross Line button”. After turning on it, user can see a blue Cross Line shown on Display Window, and the coordinate value of Cross Point will be also shown on the upper right

corner (See Figure 5-16). If want to turn off it, just click  button again.

3.12.2 Use mouse to click anywhere on Play Display Window to move Cross Point to the position which mouse clicks, and its coordinate value will change to the new position.

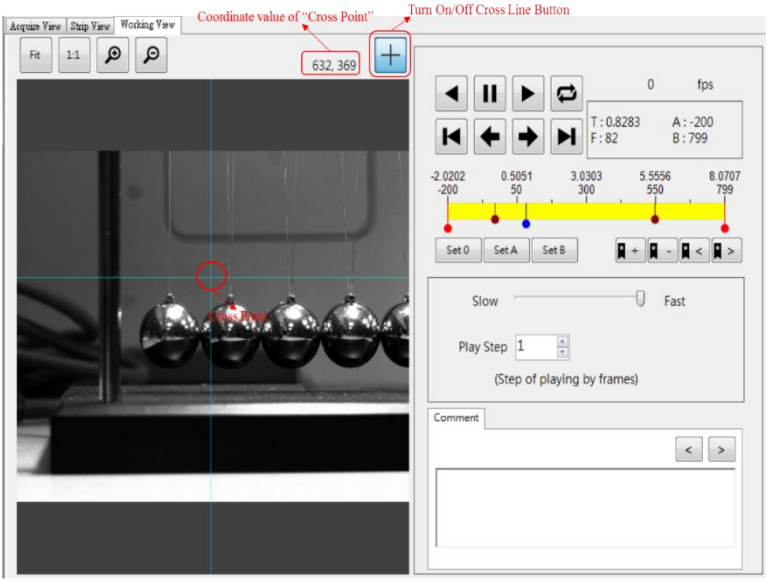


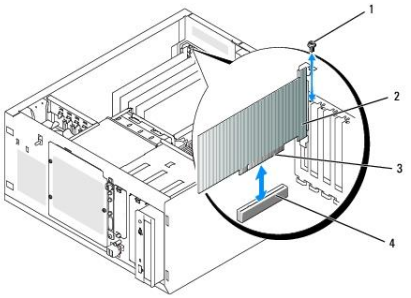
Figure 5-16 Display the coordinate of the specified position

Chapter 6 Hardware Installation

1 Installing the Camera

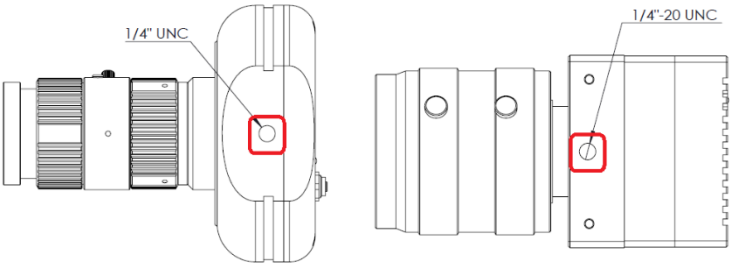
Install a PCI express x1 Gen2 host adapter USB3.0 Card, if there is no USB3.0 ports of PC. (Option)

* PCI Express USB 3.0 Card

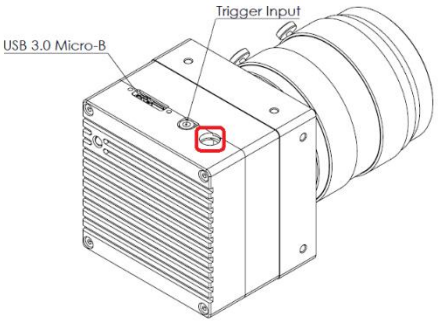


* Install PCI Express USB 3.0 Card into PCI Express Slot, be operated by professionals.

The camera is mounted on the tripod, using the mount point of the camera.

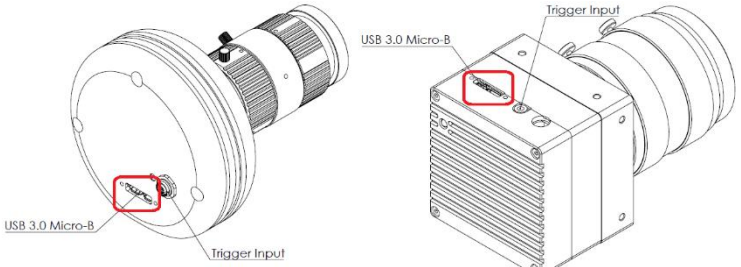


External power supply is needed for HC-AMU3-5M8K.

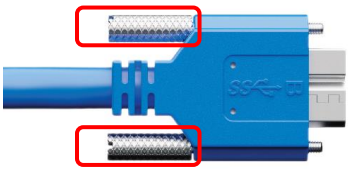


Connect the USB 3.0 Micro-B Head of the USB 3.0 Cable to the camera, tighten thumbscrews locks for a secure connection. Connect the USB Type A Head of the USB 3.0 Cable to the USB 3.0 Type A port of PC.

* High-Speed Camera USB 3.0 Cable, Left Type A Connector, Right Micro-B Connector.

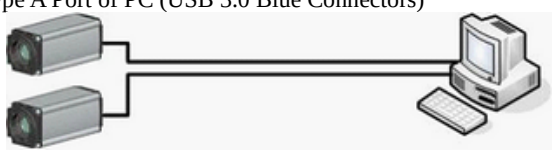


The USB 3.0 Micro-B Port with two thumbscrew holes.

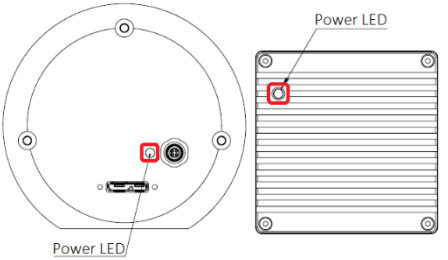


* The USB 3.0 Micro-B Cable with two thumbscrews.

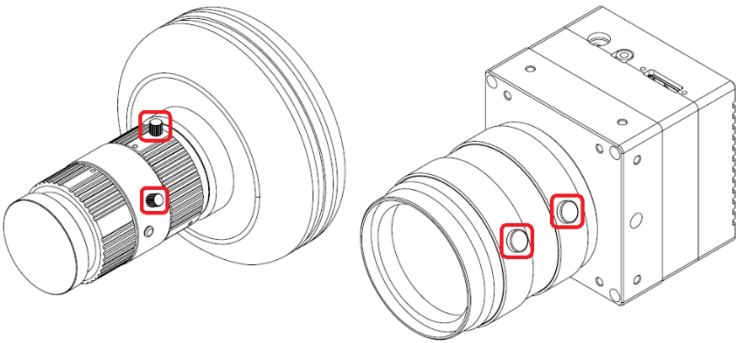
* USB 3.0 Type A Port of PC (USB 3.0 Blue Connectors)



* The Diagram of the High-Speed Camera System.
Power Indicator Green LED now is lighting.

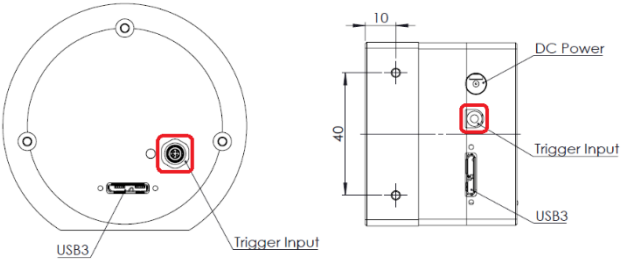


Run the Software Suite of the Camera in the PC.

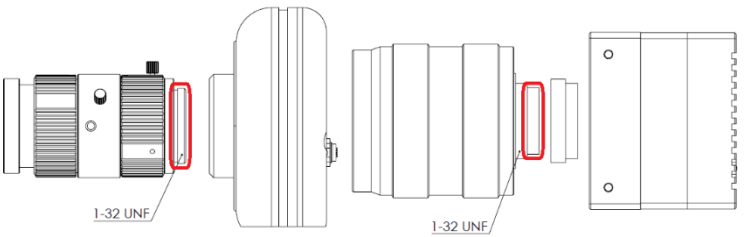


Take off the cover of the lens. To get better image, please turn the aperture and the focal length of the camera by moving the sticks.

Press the button of the external trigger cable to Capture Image.



Notes:
Please use a USB 3.0 Cable, 3 meter maximum.
The High-Speed Camera is compatible with all C-mount lenses with respect to imager size.



The photo marked * is reference only.

Chapter 7 HiBestViewer Application Troubleshooting

1 Application GUI huddle together on 4K or higher resolution monitor

1.1 Symptoms of the problem as the figure 7-1

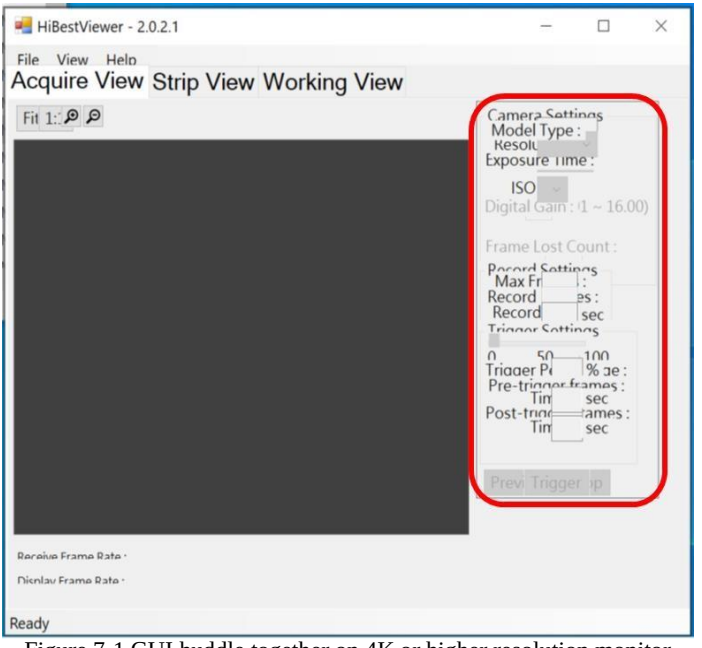


Figure 7-1 GUI huddle together on 4K or higher resolution monitor

1.2 Please close “HiBestViewer Application” first, and then follow steps listed below to change the property of “HiBestViewer Application”.

1.2.1 Use mouse to select “HiBestViewer Application” (or its shortcut), and then using mouse right click to invoke “Context Menu”. Next, use mouse to select “Property” menu item in the “Conext Menu”. Just as figure 7-2.

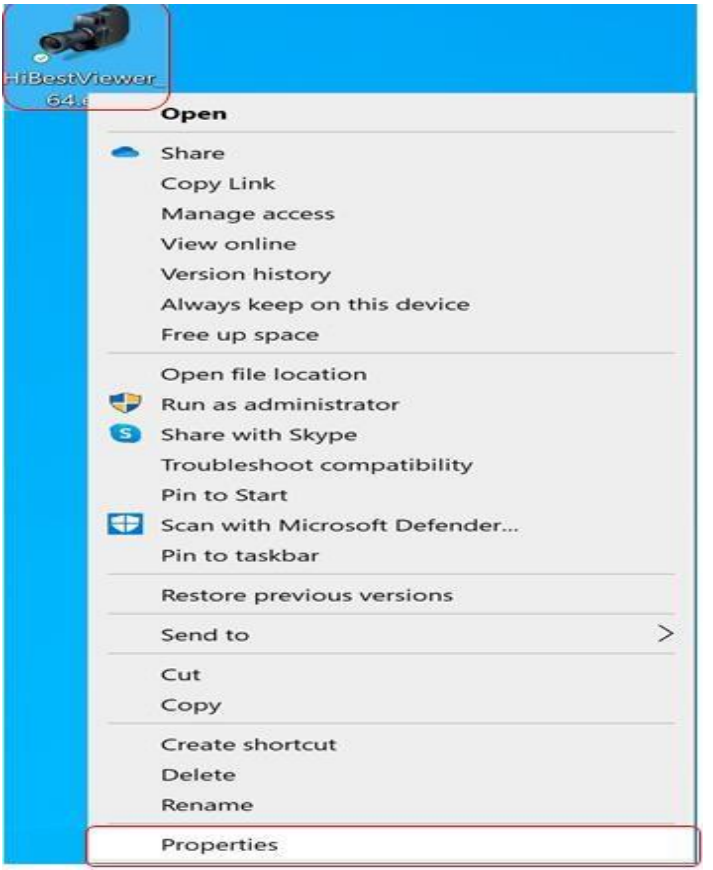


Figure 7-2 Invoke “Context Menu” of HiBestViewer and select “Property”

1.2.2 Next, select “Compatibility” tab. In “Compatibility” tab page selects “Change high DPI settings” to invoke GUI for setting “high DPI behavior options” for HiBestViewer. Just as figure 7-3.

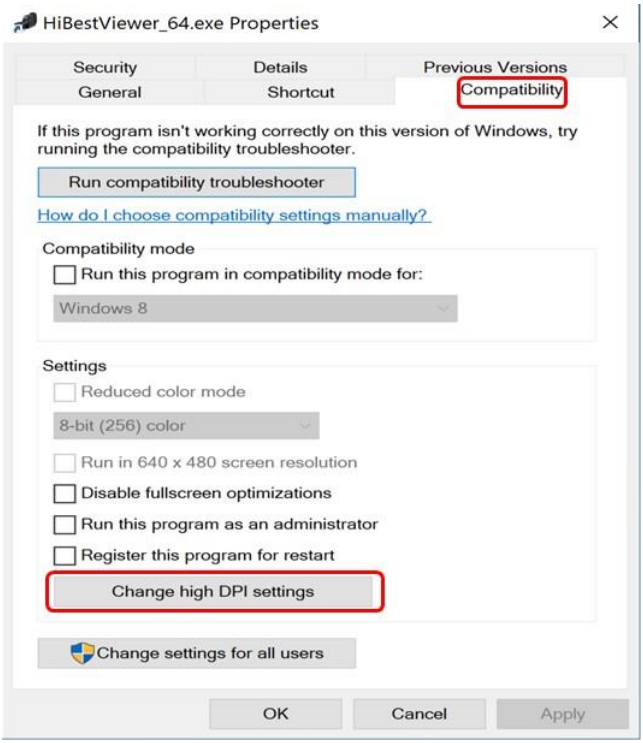
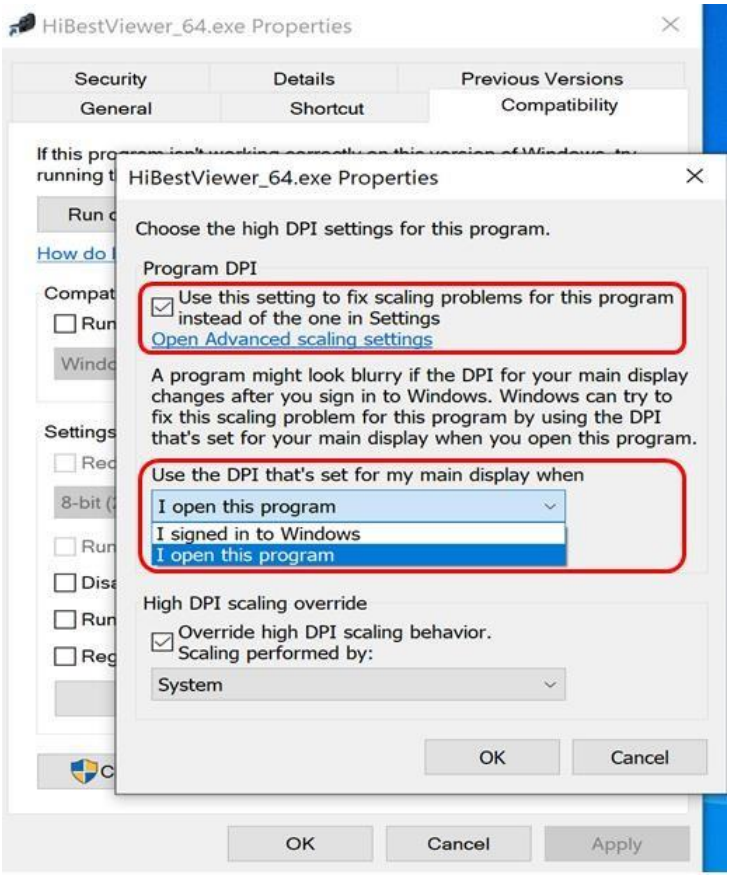


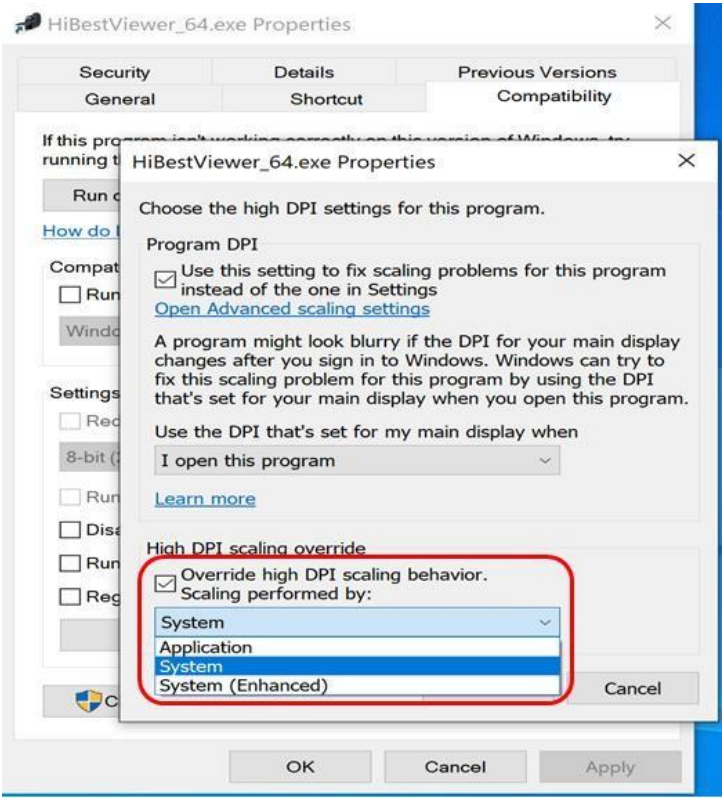
Figure 7-3 Invoke GUI of “high DPI behavior options” for HiBestViewer

1.2.3 Next, use mouse to select “Use this setting to fix scaling problems for this program instead of one in Settings” first, and then select “I open this program” which is under “Use the DPI that’s set for main display when”. Just as figure 7-4.



Fighure 7-4 Set the first “high DPI behavior” for HiBestViewer

1.2.4 Next, use mouse to select “Override high DPI scaling behavior.” first, and then select “System” which is under “Scaling performed by：”. Justas figure 7-5.



Fighure 7-5 Set the second “high DPI behavior” for HiBestViewer

1.2.5 After completion all above steps, just use mouse to click “OK”. And when back to “Compatibility” tab page, just use mouse to click “Apply”.

1.2.6 Now just start to execute “HiBestViewer” again.

2 Application GUI will be truncated on 4K or higher resolution monitor

2.1 Symptoms of the problem as the figure 7-6

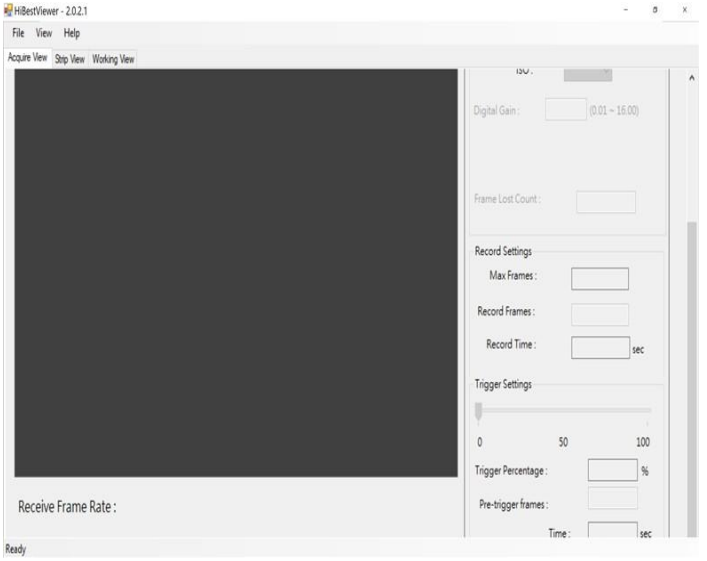


Figure 7-6 Application GUI was truncated

2.2 Please close “HiBestViewer Application” first, and then follow steps listed below to change the “System Font Size scale” (i.e. select smaller font size scale).

2.2.1 Use mouse to click Windows “Start” icon. And then, use mouse to click “Settings”. It will invoke a GUI for changing all kind of system settings. Just as Figure 7-7.

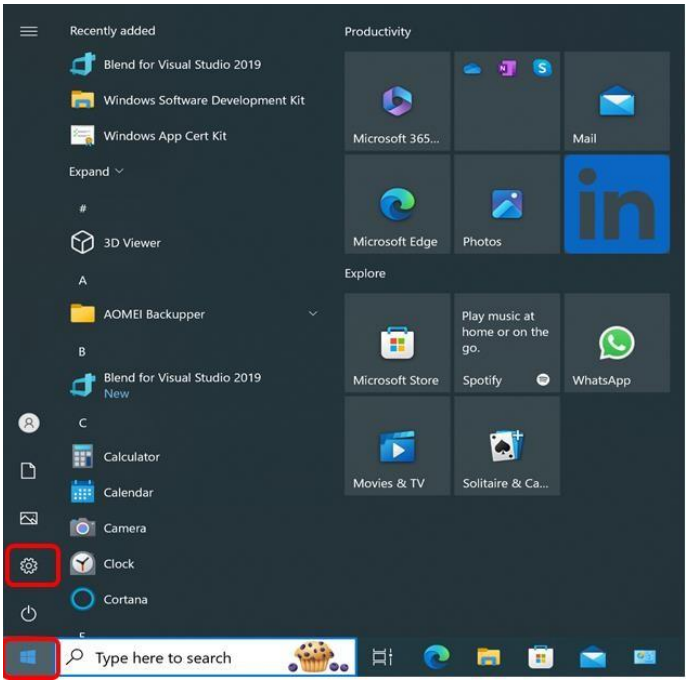


Figure 7-7 Invoke a GUI for changing all kind of system settings

2.2.2 Next, use mouse to click “System” icon to invoke all setting options for “System”. Just as Filgure 7-8.

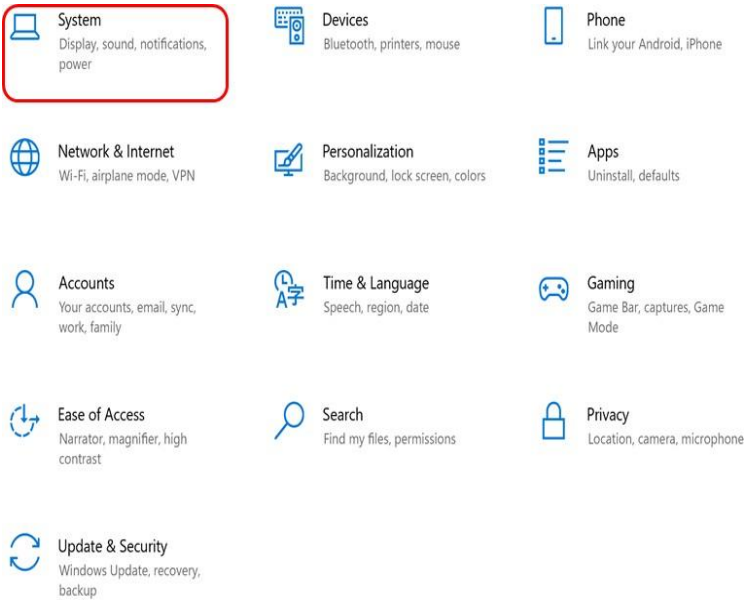


Figure 7-8 Invoke all setting options for “System”

2.2.3 Next, use mouse to select “Display” item, and then use mouse to select smaller scale which is under “Change the size of text, apps, and other items”. Let’s take figure 7-9 as example ✦ Current scale is “200%” and we need change it to smaller scale (for example, user may select “150%”).

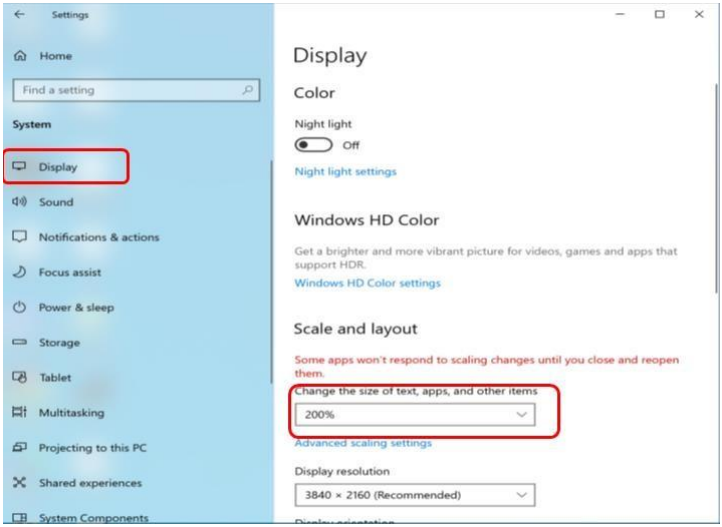


Figure 7-9 Select smaller scale

2.2.4 Next, start to execute “HiBestViewer” again and observe that problem isfixed or not. If the problem is still existing, then just repeat above steps to select much smaller scale. Keep repeating above steps until the problem is fixed.