

FAST Drive / FAST Dock

User's Manual

Revision 1.09E

Photron

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Introduction

Thank you for purchasing this Photron high speed camera.

This document describes the necessary procedures, settings, and precautions when using the FAST Drive high speed camera and FAST Dock.

Please refer to this document before using the product.

If you have any questions, please contact us using the information listed at the end of this document.

Manual Notation

The following icons and symbols are used in the explanations in this manual.

Icon/Symbol	Description
 Supplement	This symbol indicates supplementary items to be aware of when using the software.
 Reference	This symbol indicates the location of a reference.
 Caution	This symbol indicates instructions that should always be followed when using the software, or things to be careful of when using the software.
 Important	This symbol indicates content that should always be read.
 MEMO	This symbol indicates a space for you to use for making notes.



About This Manual

The following explains the structure of this document.

◆ **Introduction**

The outline of this book

◆ **For Safe and Proper Use**

Rules that must be followed to ensure safe use of this product

◆ **1. Precautions**

Precautions regarding the use of this product

◆ **2. Connecting to the High Speed Camera**

How to connect the FAST Drive to the high speed camera

◆ **3. Connecting to the PC (Using FAST Dock)**

How to connect the FAST Drive to the PC without going through the camera

◆ **4. Remote Controller Operating Instructions**

How to manage data and enter the settings using the remote controller

◆ **5. Photron FASTCAM Viewer Operating Instructions**

How to operate the FAST Drive using the PFV

◆ **6. Product Specifications**

Specifications for the FAST Drive and FAST Dock

◆ **7. Contact Information**

Information for contacting Photron regarding any questions you may have or if the product is defective

Using the System Safely and Correctly

In order to prevent injury to yourself and others, and to prevent damage to property, carefully observe the following safety precautions.

Photron has given its full attention to the safety of this system. However, the extent of damage and injury potentially caused by ignoring the content of the safety precautions and using the system incorrectly is explained next. Please pay careful attention to the content of the safety precautions when using the system.



Warning

This symbol indicates actions that carry the risk that a person could receive a serious injury.



Caution

This symbol indicates actions that carry the risk that a person could receive a moderate injury, or that damage to physical property might occur.

◆ The safety precautions to be observed are explained with the following symbols.



This symbol indicates actions that require caution.



This symbol indicates actions that are prohibited and must be avoided.



This symbol indicates actions that must always be performed.



Warning



- Do not perform actions that will damage the AC cable or plug.
(Do not damage the cable, modify it, use it near a heater, excessively bend, twist or pull on it, place heavy objects on it, or bundle it.)
Using the cable when damaged can cause fire, electric shock, or a short circuit.



- Do not use the system in a manner which will exceed the rating of the power outlet or wiring equipment used.
Exceeding the power rating might cause a fire from excessive heat.



- Do not insert metallic objects inside, or pour liquids such as water on, the system.
Doing so can cause fire, electric shock, or malfunction from short circuit or heat.



- Do not disassemble or modify the system.
There are high voltages inside the system that can cause electric shock.



- Do not plug in or unplug the power cord with wet hands.
Doing so can cause electric shock.



- This chapter lists the contact information to use when contacting Photron if the system malfunctions or if a portion of the manual is unclear.
Not fully plugging in the power cable can cause fire from electric shock or heat.



- When something is wrong with the system, unplug the power cable immediately.
 - When a foreign substance or liquid, such as metal or water, gets inside.
 - When the outer case is broken or damaged, such as from a fall.
 - When the system produces smoke, a strange smell, or strange sound.Using the system in these conditions might cause a fire or electric shock.



Caution



- Always unplug the system when cleaning it or when it is unused for a long period of time. Leaving or storing the system connected to the power source might cause fire from insulation deterioration or electrical discharge.



- Please consult us in advance when you perform an event by which laser light or direct rays fall on the image sensor surface.



- Do not set the system in a location where the temperature gets unusually hot. The trunk and inside of a car can get especially hot in summer. Doing so can cause the outer case and internal components to deteriorate or cause a fire.



- Do not place the system in a location prone to oily smoke or steam, or in a location with a lot of humidity or dust. Oil, moisture, and dust conduct electricity, which can cause a fire or electric shock.



- Ambient temperature 0-40° C, humidity 80% RH or lower, maximum altitude 2,000m or lower. In addition, if exceeding these limits, use in a condensation-free environment. Doing so can cause malfunction.



- Do not store the equipment in a location where the temperature goes below -20°C or higher than 60°C. Also, prevent condensation from forming during shipment



- This device is for indoor use, do not use it outdoors. Do not use in a location that has dust.



- When shipping, remove the connecting cable and use the original packaging or a dedicated carrying case. Do not ship the equipment in an environment where the temperature goes below -20°C or higher than 60°C. Also, prevent condensation from forming during shipment



European Union (and EEA) only



“CE” mark indicates that this product complies with the European requirements for safety, health, environment and customer protection. “CE” mark equipments are intended for sales in Europe.



These symbols indicate that this product is not to be disposed of with your household waste, according to the WEEE Directive (2002/96/EC), the Battery Directive (2006/66/EC) and/or your national laws implementing those Directives.



This product should be handed over to a designated collection point, e.g., on an authorized one-for-one basis when you buy a new similar product or to an authorized collection site for recycling waste electrical and electronic equipment (EEE) and batteries and accumulators. Improper handling of this type of waste could have a possible impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE.



Your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources.

For more information about the recycling of this product, please contact your local city office, waste authority, approved scheme or your household waste disposal service or visit www.photron.com.

(EEA: Norway, Iceland and Liechtenstein)

This product is in conformity with the protection requirements of EU Council Directive 2014/30/EU (Class A) on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.



Cleaning of the Image Sensor Surface

Electro-Static Discharge (ESD) events may cause immediate and unrecoverable damage to the image sensor. Please read the following instructions and take **EXTREME CARE** when cleaning the image sensor surface.



- ALWAYS take appropriate anti-static precautions when cleaning or working near the Image sensor.
- DO NOT use any form of cleaning equipment using electrostatic or 'charged fiber' technology.



- Please discharge any electrostatic build up in your body by touching a grounded metallic Surface before working near the camera sensor.
- Very gently, use only clean and dry air to remove dust from surface of the image sensor.
- To remove stubborn contamination use the highest grade (e.g. VLSI grade) pure Isopropyl alcohol (IPA) with optical wipes of 'clean room' grade.
- Extreme care must be taken! Gently wipe across the sensor in a single action.
(DO NOT rub to avoid abrasive damage to delicate optical coatings on the glass surface.)

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1. Precautions

- ① This document explains how to save data to the FAST Drive and view data when using models that support the FAST Drive from the FASTCAM series.

- ② The explanations in this document also include usage of the Photron FASTCAM Viewer ("PFV").
The PFV must be installed in advance.

- ③ Communication between the FAST Drive and the PC uses Gigabit Ethernet and USB 3.0.
If your PC does not support those standards, the transfer speed may be significantly reduced and save operations may fail.

- ④ The ACCESS light (LED) lights up when connecting to the FAST Drive.
The ACCESS light flashes when accessing or saving data.
Do not disconnect the cable when the light is flashing.
Doing so may result in data corruption or prevent data from being saved.

- ⑤ Refer to the camera unit's hardware manual, PFV user's manual, and your PC's manual before using the equipment.

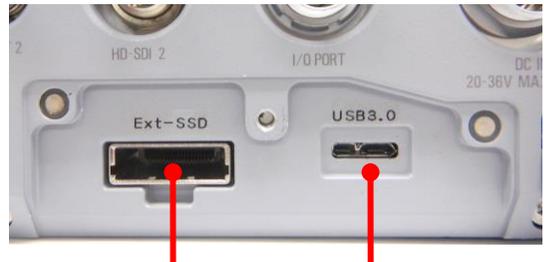
2. Connecting to the High Speed Camera

This section explains how to connect the FAST Drive to the Photron high speed camera.

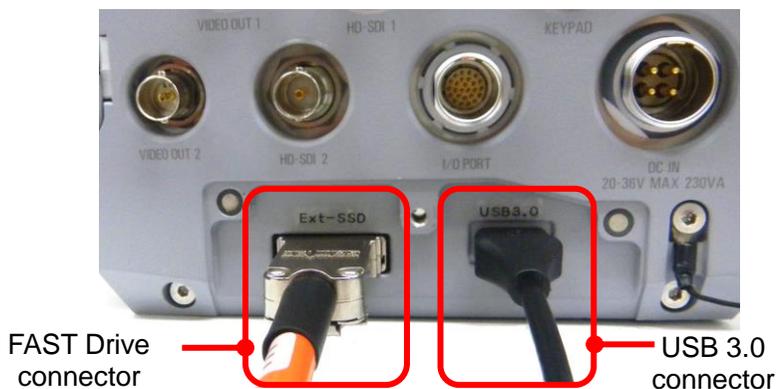
- ① Remove the FAST Drive slot cover on the rear of the camera.



- ② The camera is equipped with a FAST Drive connector and a USB 3.0 connector.



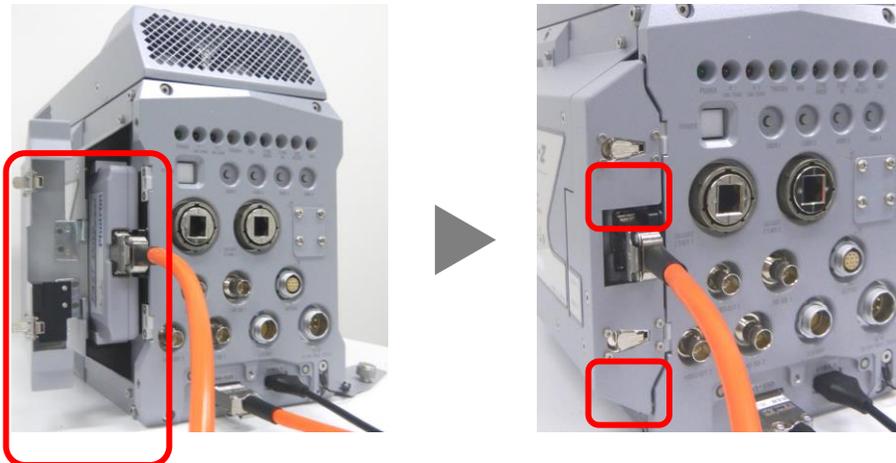
- ③ Connect the dedicated cable to the FAST Drive connector and the USB cable (micro B) to the USB 3.0 connector.



- ④ Connect the opposite end of the dedicated cable to the FAST Drive.



- ⑤ Set the FAST Drive in the camera's dedicated holder and lock it.



- ⑥ Connect the USB cable (type A) to the PC's USB 3.0 connector.

! Caution

- The FAST Drive driver must be installed in advance.
Install the driver in the following location on the install DVD when [Photron FAST Drive Reader] is shown in the Device Manager.
If you are using a PC with a 32-bit OS: Driver¥32bit(x86)¥FAST Drive Driver
If you are using a PC with a 64-bit OS: Driver¥64bit(x64)¥FAST Drive Driver

3. Connecting to the PC (Using FAST Dock)

This section explains how to connect the FAST Drive to the PC without going through the camera. Use the FAST Dock when not connecting through the camera.

- ① Connect the AC power supply adapter to the rear of the FAST Dock.

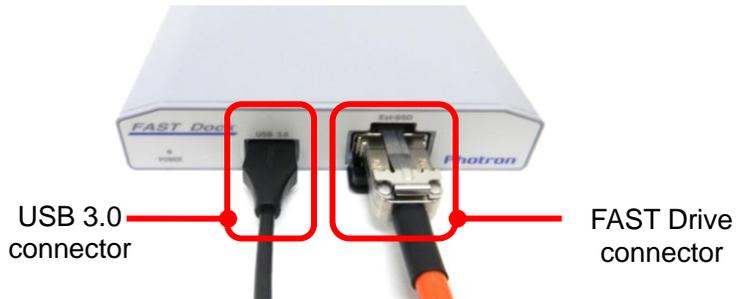


- ② Connect the AC cable to the AC power supply adapter.



- ③ Connect the AC cable to the power outlet.

- ④ Connect the dedicated cable to the FAST Dock's FAST Drive connector and the USB cable (micro B) to the USB 3.0 connector.



- ⑤ Connect the opposite end of the dedicated cable to the FAST Drive.



- ⑥ Connect the USB cable (type A) to the PC.

Caution

- The FAST Drive driver must be installed in advance.
Install the driver in the following location on the install DVD when [Photron FAST Drive Reader] is shown in the Device Manager.
If you are using a PC with a 32-bit OS: Driver¥32bit(x86)¥FAST Drive Driver
If you are using a PC with a 64-bit OS: Driver¥64bit(x64)¥FAST Drive Driver

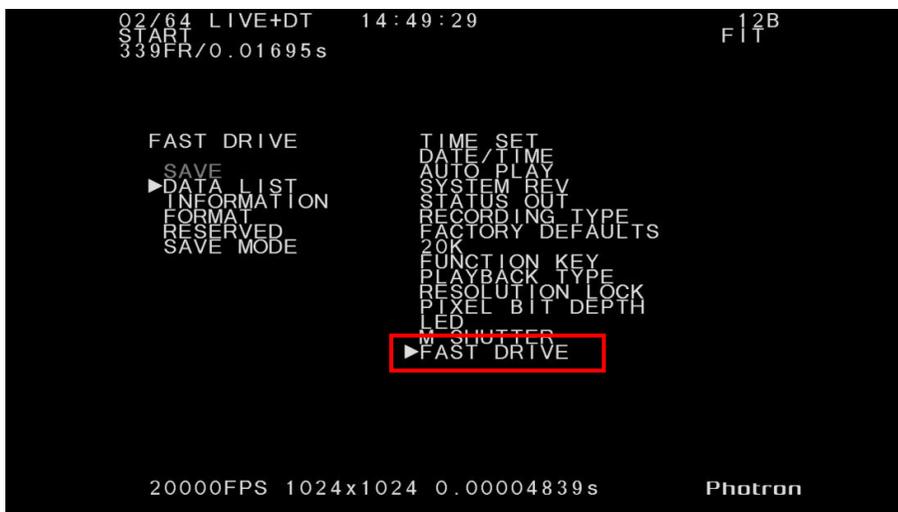
4. Remote Controller Operating Instructions

This section explains how to save data and enter settings using the remote controller.

4.1. FAST DRIVE Menu

Display the menu to operate the FAST Drive.

- ① Press the [MENU] key on the remote controller to open the menu screen.
- ② From the menu screen, press [OTHERS] => [FAST DRIVE] and then the [ENTER] key. The [FAST DRIVE] Menu is displayed.

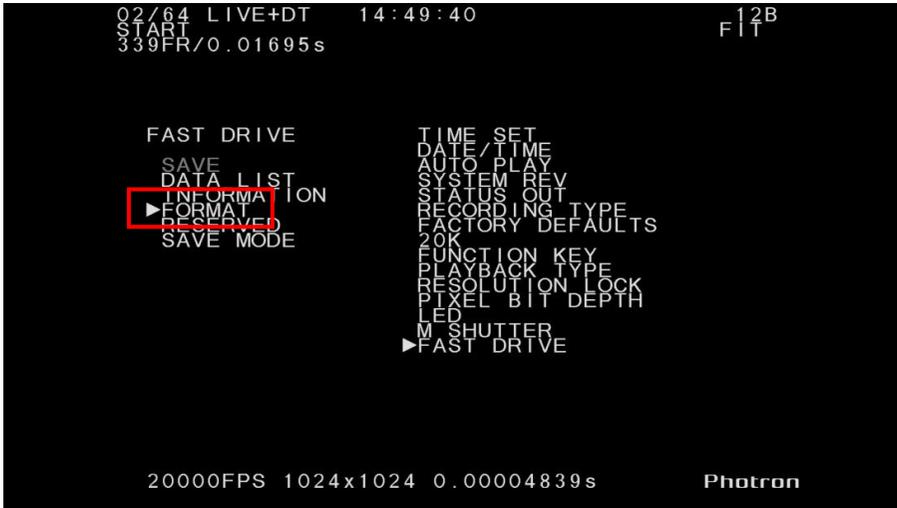


4.2. FORMAT (Erase All)

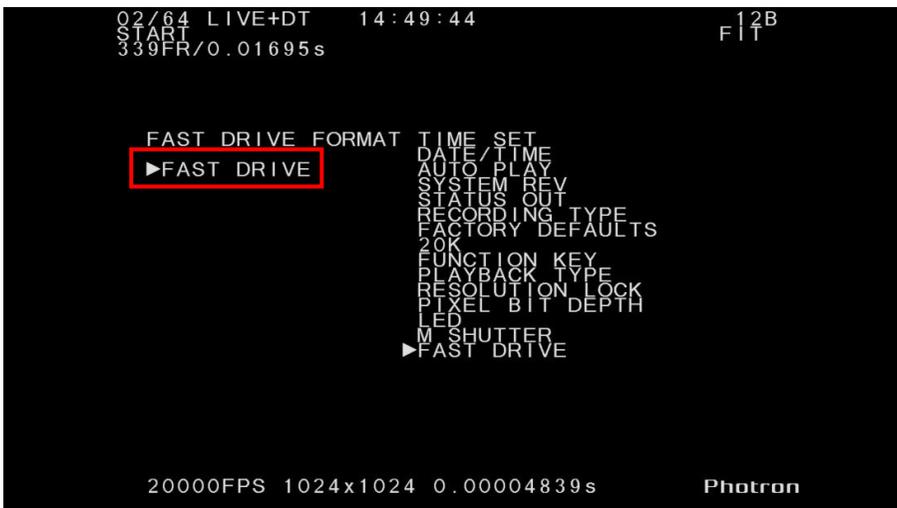
Format the FAST Drive to prepare it for use.

This erases all of the data on the FAST Drive.

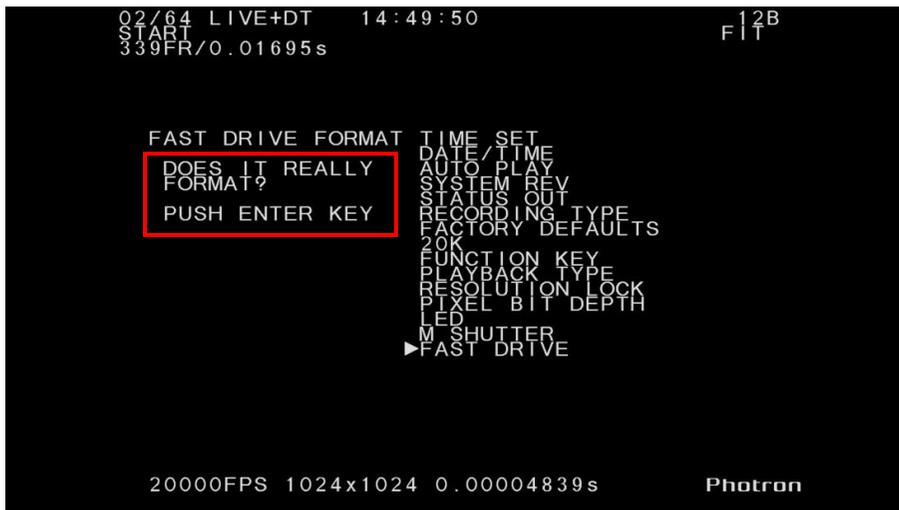
- ① From the [FAST DRIVE] menu, select [FORMAT] and press the [ENTER] key.



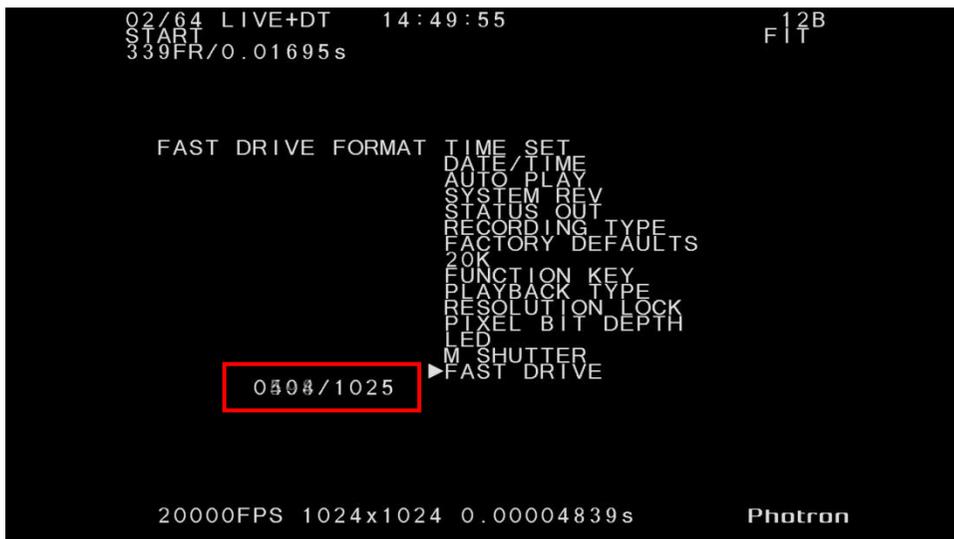
- ② Press the [ENTER] key while [FAST DRIVE] is selected.



- ③ A message is displayed to confirm if you really wish to format the FAST Drive. Press the [ENTER] key if they are no problems.



- ④ The display will count up to 1025 during formatting.

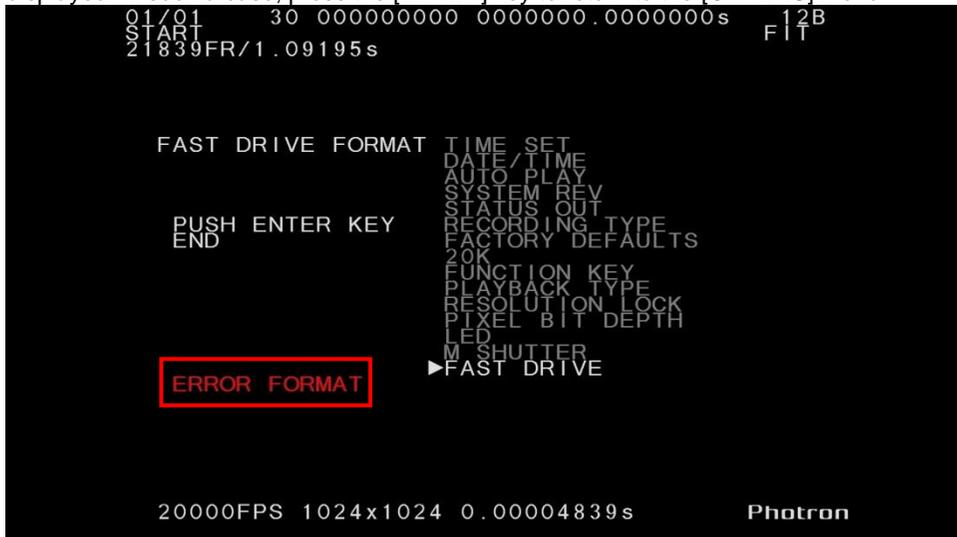


- ⑤ The display returns to the [OTHERS] menu when the formatting has completed.



Supplement

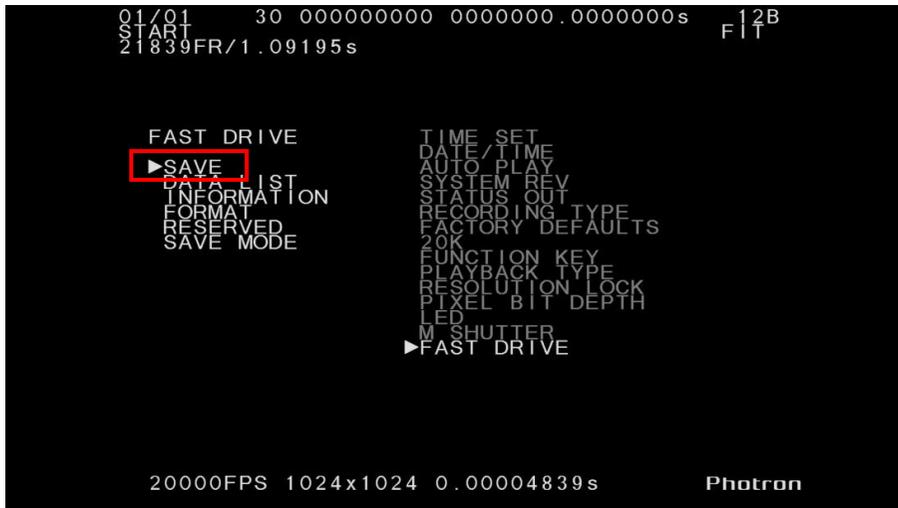
- If for some reason it is unable to format the drive, an error message such as the following is displayed. In such a case, press the [ENTER] key to return to the [OTHERS] menu.



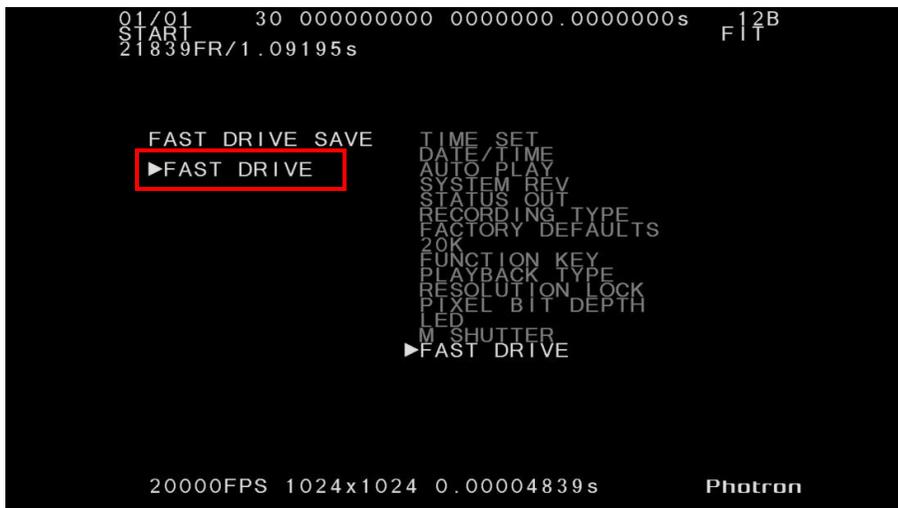
4.3. SAVE

Save the video data in the camera's memory to the FAST Drive.

- ① Set the camera to PLAYBACK status and open the [FAST DRIVE] menu.
- ② Select the [SAVE] item and press the [ENTER] key.

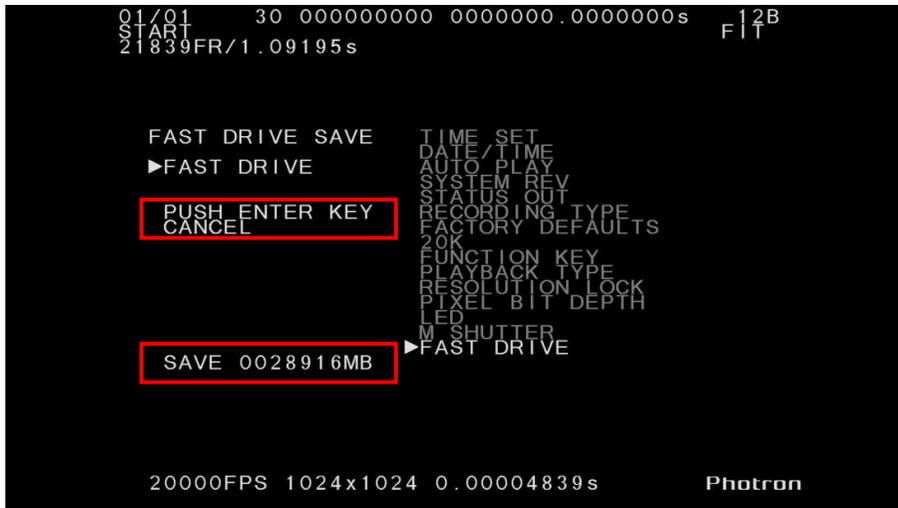


- ③ Press the [ENTER] key while [FAST DRIVE] is selected.



- ④ The save operation begins. While the data is being saved, the display counts down in units of megabytes to show the remaining storage capacity.

Press the [ENTER] key to cancel the operation.



- ⑤ The display returns to the [OTHERS] menu when the save operation has completed.



! Caution

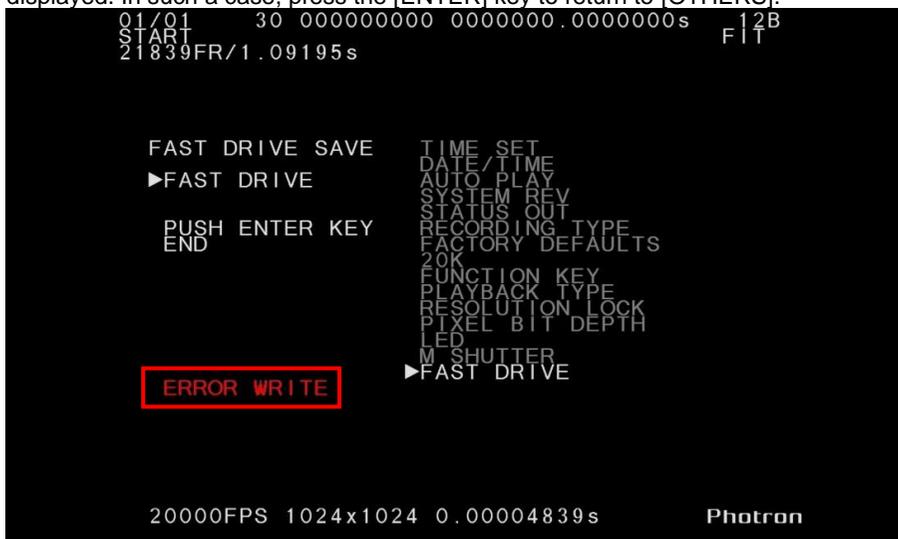
- All of the video data in the camera's memory is saved. You cannot select which data to save.

 Supplement

- Press the [ENTER] key while saving to cancel the operation.
[CANCEL] is displayed on the screen while the operation is being canceled, and then display returns to the [OTHERS] menu.



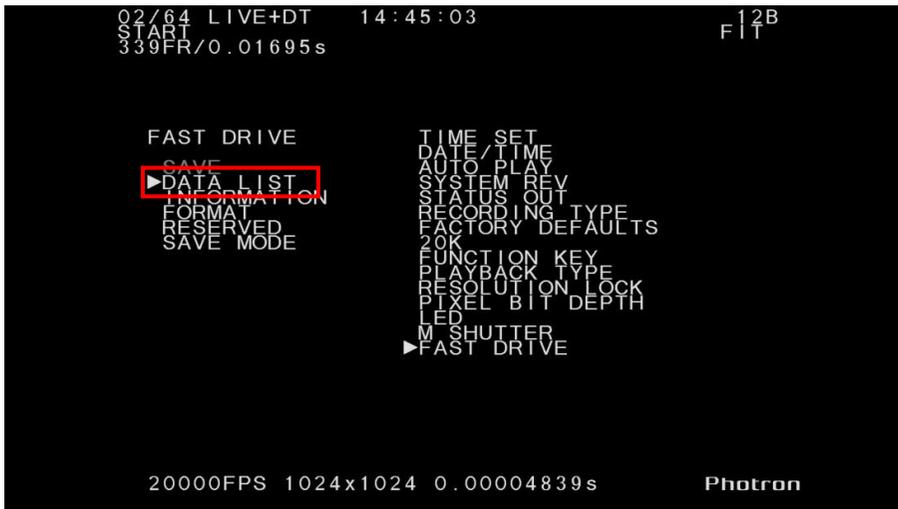
- If for some reason it is unable to save the data, an error message such as the following is displayed. In such a case, press the [ENTER] key to return to [OTHERS].



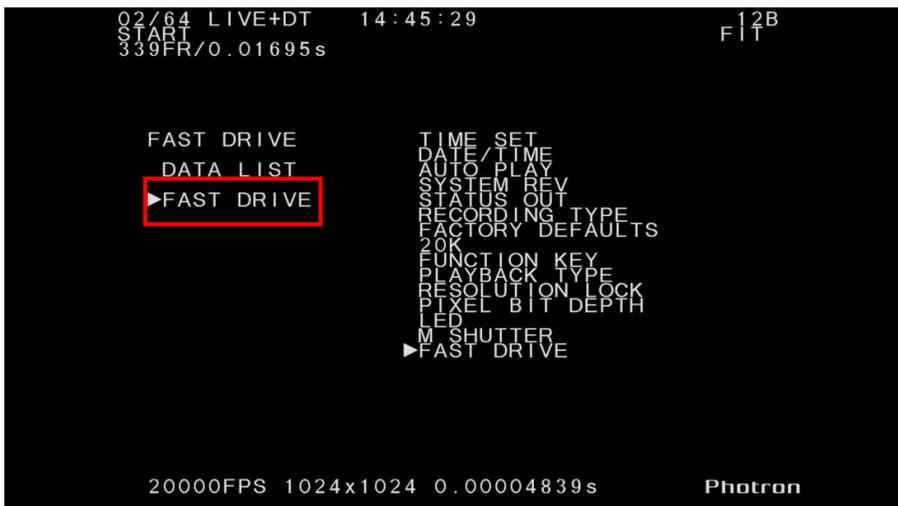
4.4. DATA LIST

Display the data saved on the FAST Drive as a list (8 data items at a time).

- ① From the [FAST DRIVE] menu, select the [DATA LIST] item and press the [ENTER] key.



- ② Press the [ENTER] key while [FAST DRIVE] is selected.



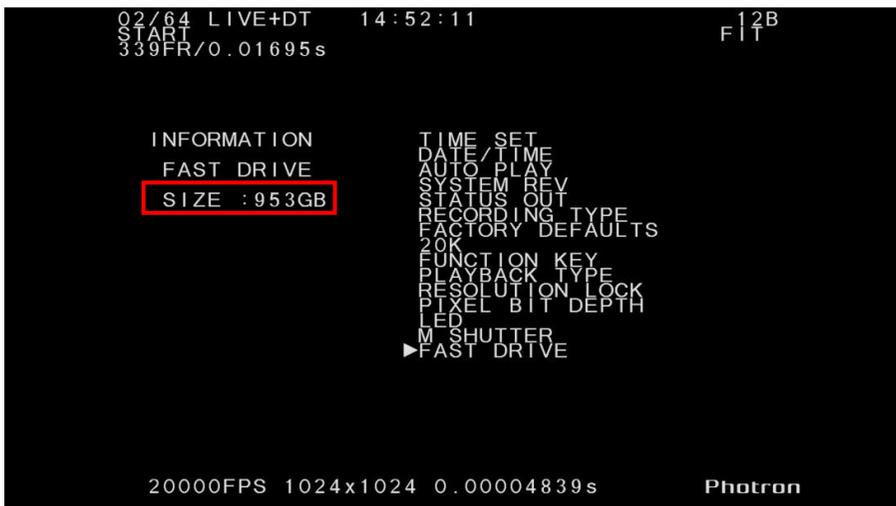
4.5. INFORMATION

Display the total capacity of the FAST Drive.

- ① From the [FAST DRIVE] menu, select the [INFORMATION] item and press the [ENTER] key.



- ② The total capacity of the FAST Drive is displayed.

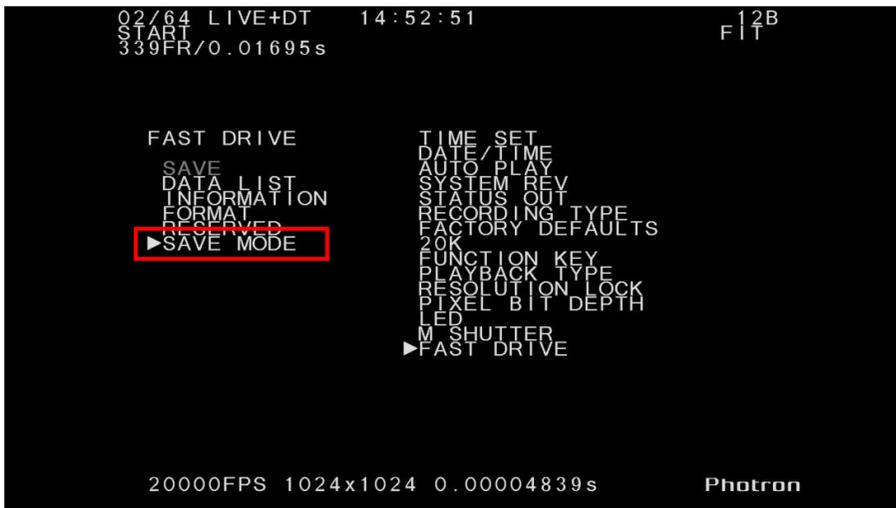


4.6. SAVE MODE

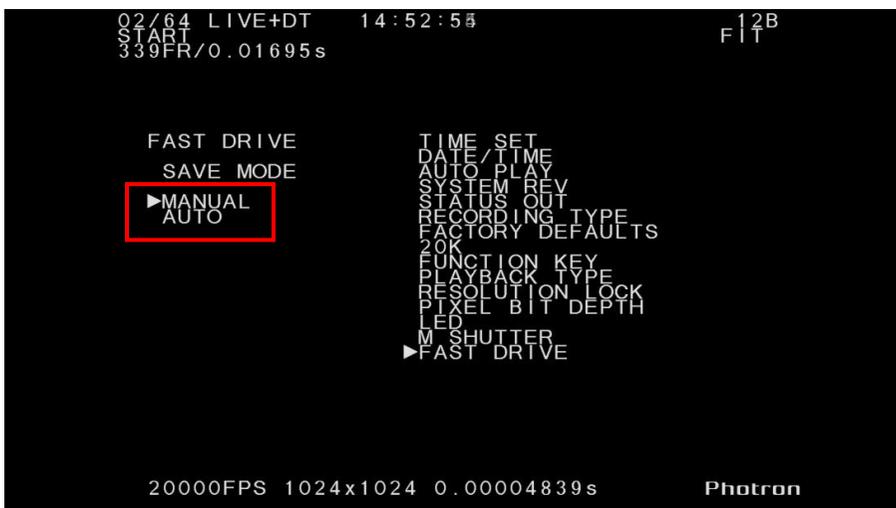
Set either of the following modes to save data to the FAST Drive.

Mode	Setting Description
MANUAL	Save from the FAST DRIVE menu
AUTO	Automatically save when recording finishes

- From the [FAST DRIVE] menu, select the [SAVE MODE] item and press the [ENTER] key.



- Use the remote controller's [▲▼] key to select [MANUAL] or [AUTO] and press the [ENTER] key.



4.1.1 Operation During AUTO Mode

When the SAVE MODE is set to [AUTO], the camera starts saving to the FAST Drive immediately after the recording finishes.

The following explains the operations when the trigger mode is set to [START].

Reference

- The environment settings must be set with the PFV to start saving to the FAST Drive immediately after the recording finishes. For more details, refer to the section 5.2.1 Auto Save.

① Start recording.

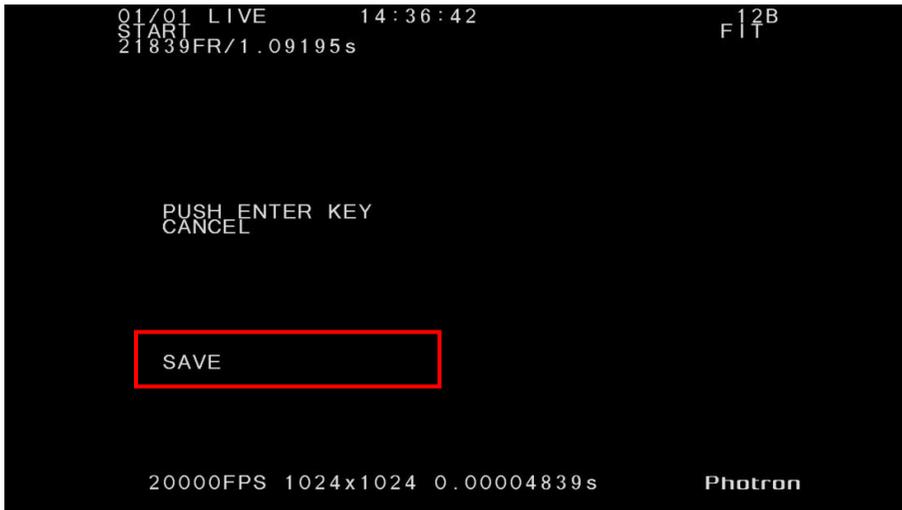
<READY (standby status)>



<REC (recording status)>



- ② [SAVE] is displayed when the recording finishes, and the camera starts saving to the FAST Drive.



- ③ While the data is being saved, the display counts down in units of megabytes to show the remaining storage capacity. Press the [ENTER] key to cancel the operation.

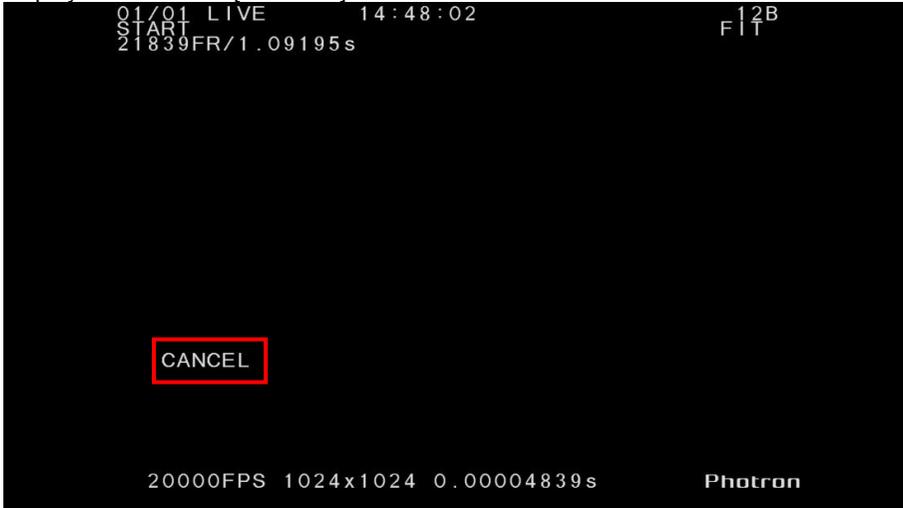


- ④ The display returns to the [LIVE] screen when the save operation finishes.



 Supplement

- Press the [ENTER] key while saving to cancel the operation.
[CANCEL] is displayed on the screen while the operation is being canceled, and then the display returns to the [OTHERS] menu.



- If for some reason it is unable to save the data, an error message such as the following is displayed. In such a case, press the [ENTER] key to return to [OTHERS].



5. Photron FASTCAM Viewer Operating Instructions

This section explains how to operate the FAST Drive using the Photron FASTCAM Viewer (PFV).

The available operations differ depending on the method used to connect to the FAST Drive.

Connection Method	Available Operations
Gigabit EtherNet	Formatting, saving to the FAST Drive
USB 3.0	Formatting, playback of saved data, download to the PC

5.1 Format

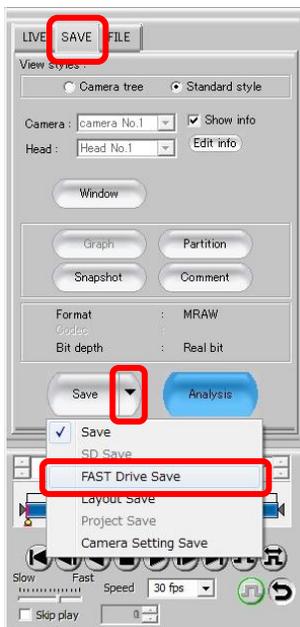
Erase all of the data on the FAST Drive.

5.1.1 Connecting with Gigabit EtherNet

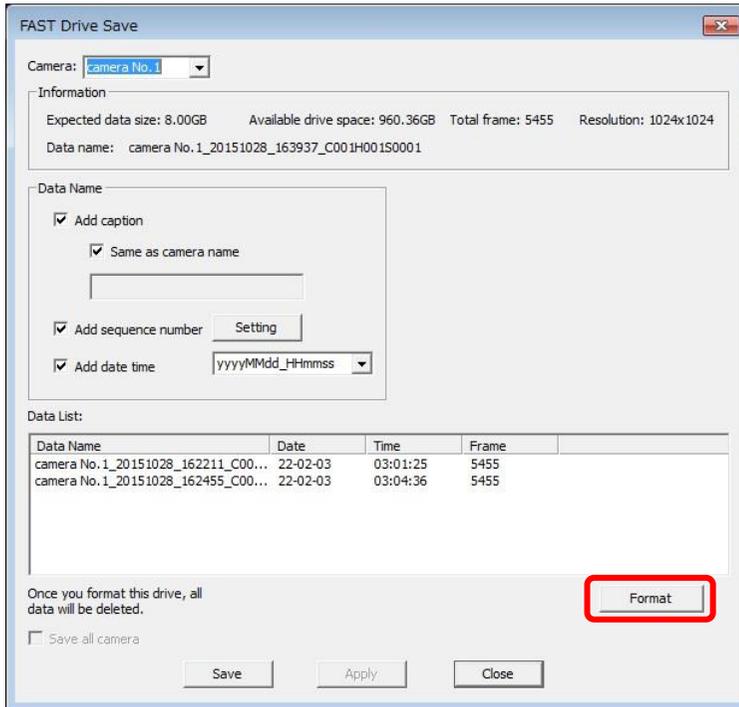
Format the drive from the [SAVE] or [LIVE] tabs in the control panel.

◆ SAVE tab

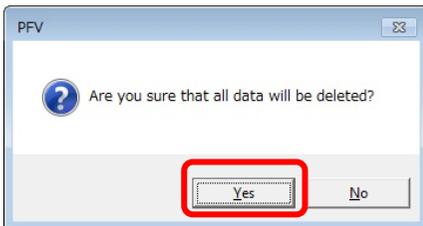
- ① Display the [SAVE] tab, click the [▼] to the right of the [Save] button, and then click [FAST Drive Save].



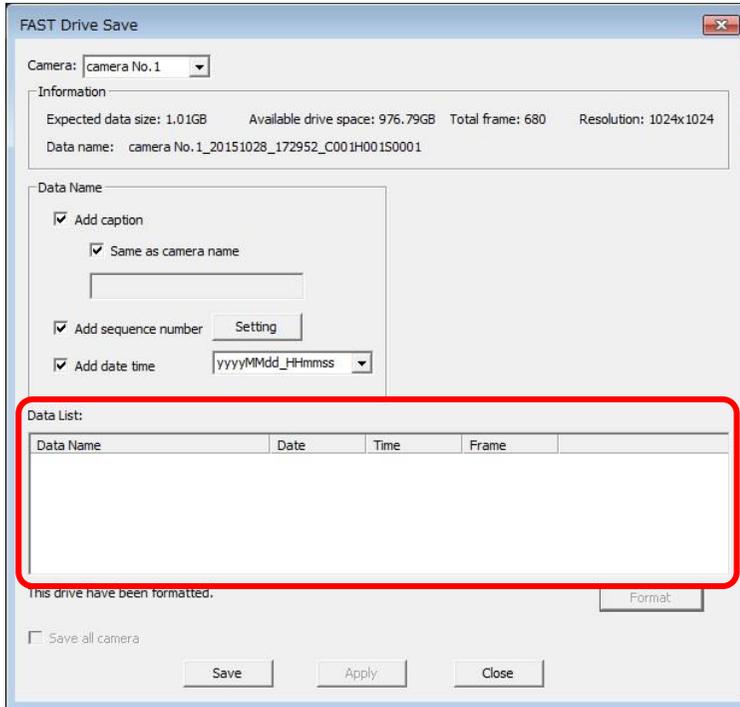
- ② The [FAST Drive Save] dialog box is displayed.
Click the [Format] button.



- ③ The confirmation screen is displayed. Click the [OK] button.

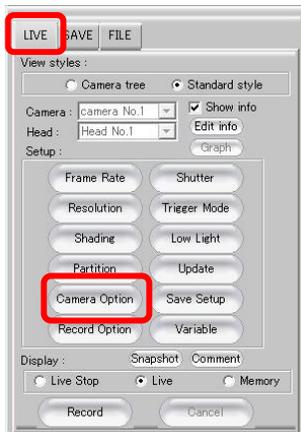


- ④ The [Data List] information disappears when the formatting finishes.

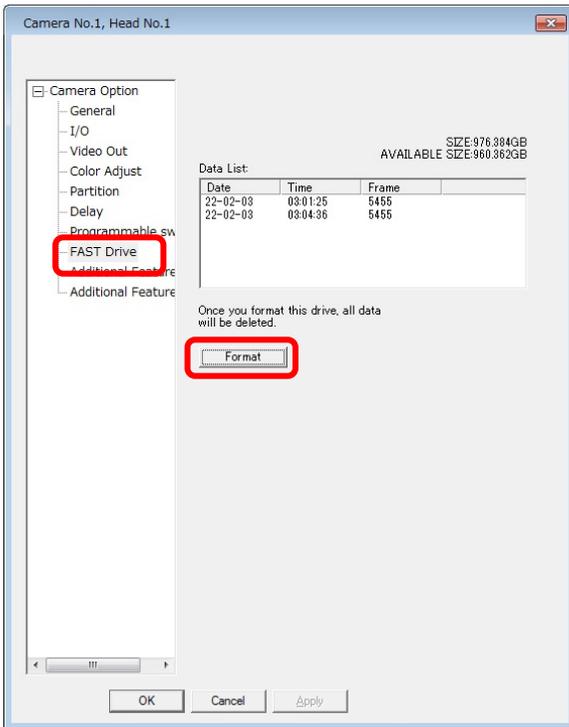


◆ LIVE tab

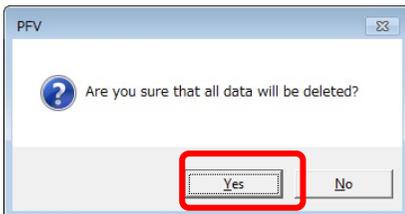
- ① Display the [LIVE] tab and click the [Camera Option] button.



- ② Click the [FAST Drive] entry in the tree on the left side and click the [Format] button.



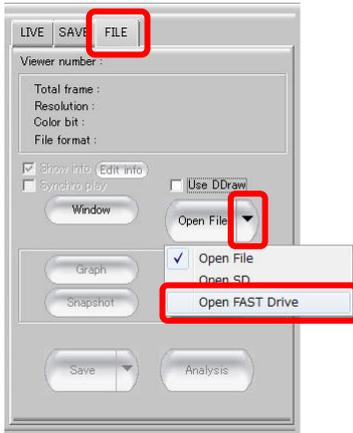
- ③ The confirmation screen is displayed. Click the [OK] button.



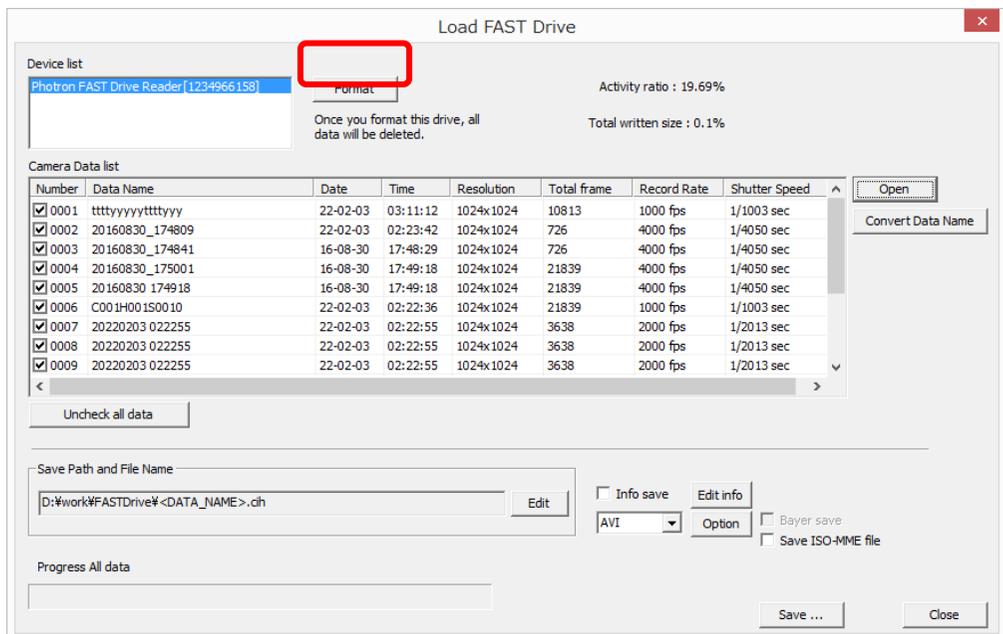
5.1.2 Connecting with USB 3.0

Format the drive from the [FILE] tab in the control panel.

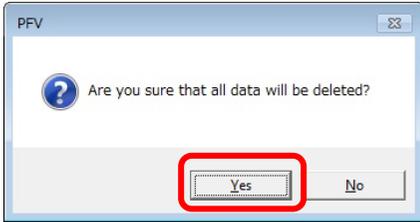
- ① Display the [FILE] tab, click the [▼] to the right of the [Open File] button, and then click [Open FAST Drive].



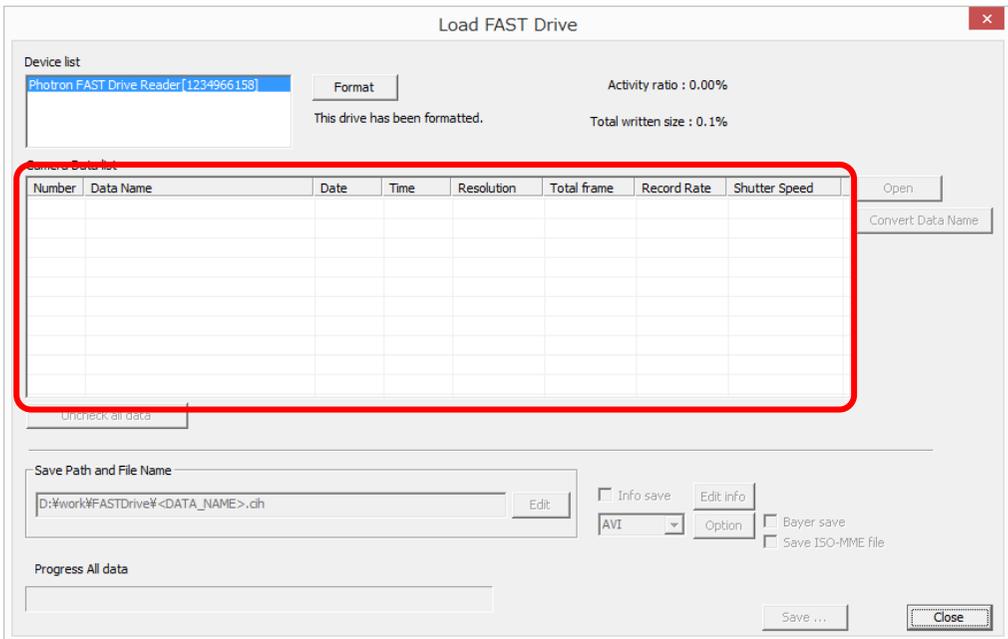
- ② The [Load FAST Drive] window is displayed. Click the [Format] button.



- ③ The confirmation screen is displayed. Click the [OK] button.



- ④ The [Camera Data list] information disappears when the formatting finishes.



5.2 Saving to the FAST Drive

Save the video data in the camera's memory to the FAST Drive.

The data can be saved to the FAST Drive automatically or manually (MANUAL) from the PFV.

Check the remaining storage capacity before saving.

! Caution

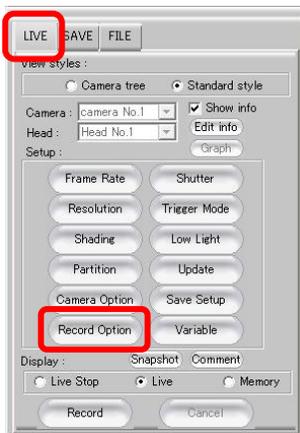
- All of the video data in the camera's memory is saved.
You cannot select which data to save.

5.2.1 Auto Save

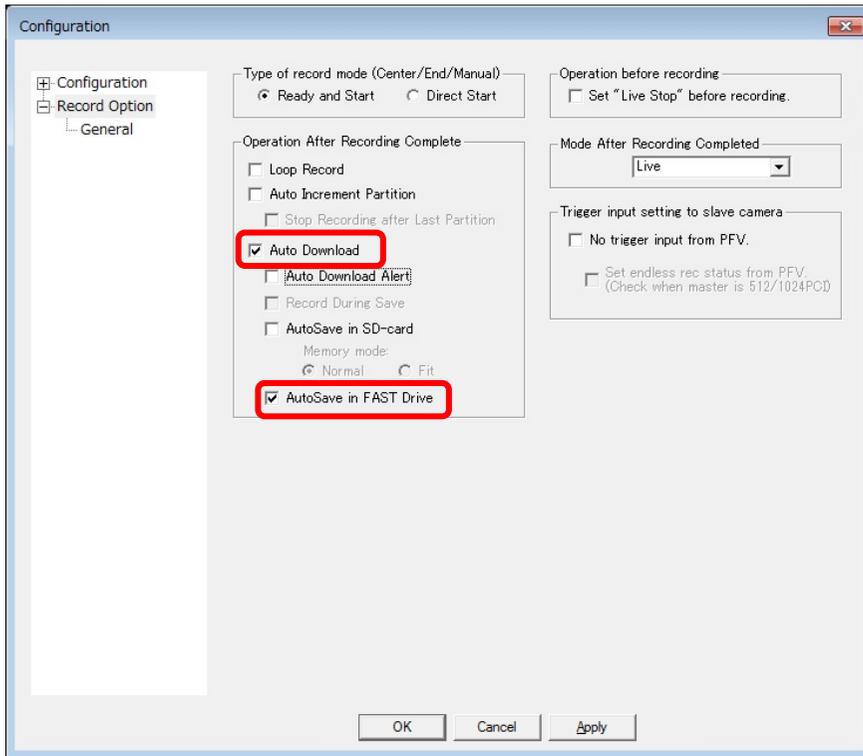
Automatically save the recorded data to the FAST Drive after recording.

Enter the environment settings to automatically save.

- ① Display the [LIVE] tab on the control panel and click the [Record Option] button.



- ② Check the [Auto Download] and [AutoSave in FAST Drive] options under [Operation After Recording Complete].



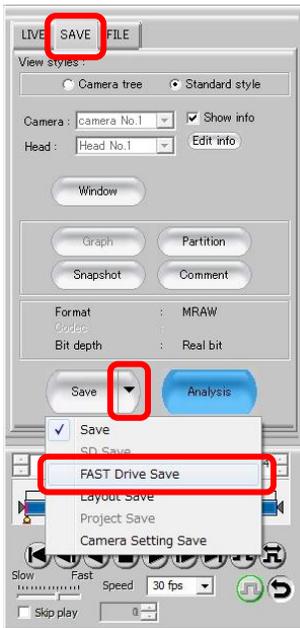
- ③ Click the [OK] button.

Once the settings are entered, the files will be automatically saved to the FAST Drive after recording is complete.

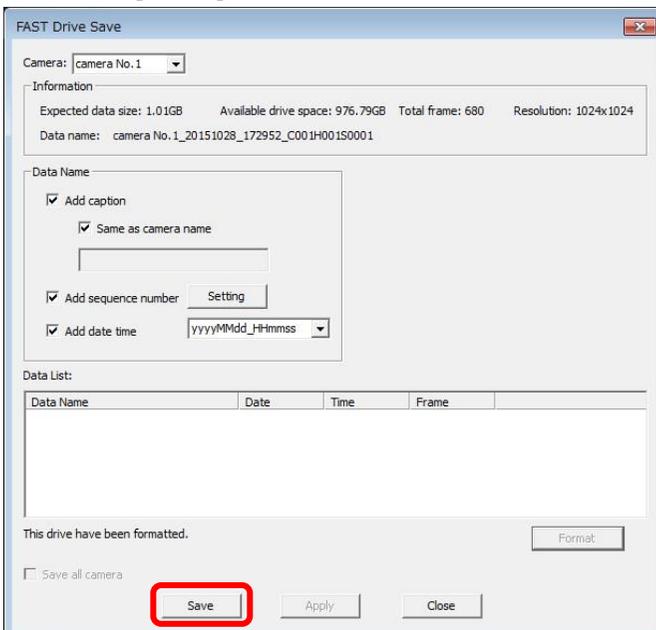
5.2.2 Manual Save

Save the video data in the camera's memory to the FAST Drive.

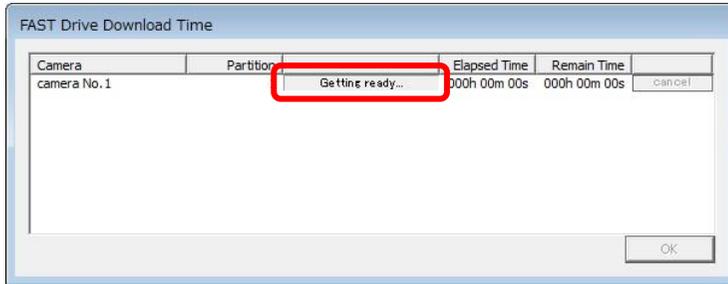
- ① Display the [SAVE] tab on the control panel, click the [▼] to the right of the [Save] button, and then click [FAST Drive Save].



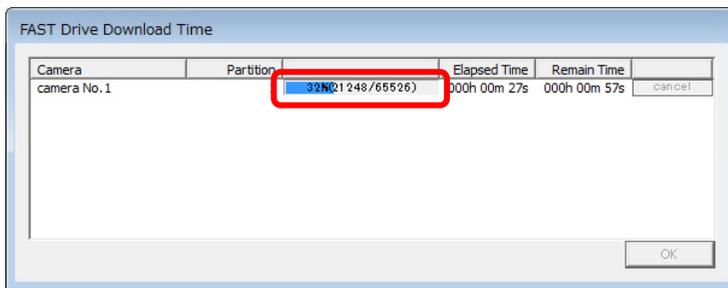
- ② The [FAST Drive Save] dialog box is displayed. Click the [Save] button.



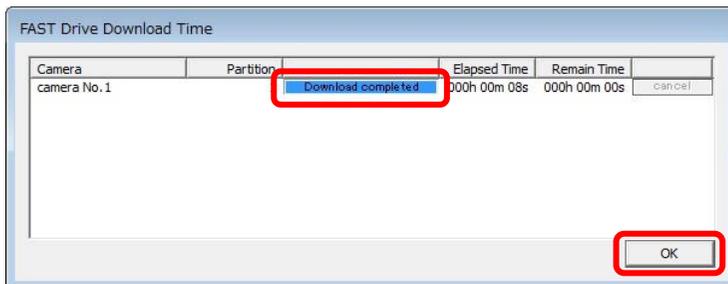
- ③ The [FAST Drive Download Time] screen is displayed.



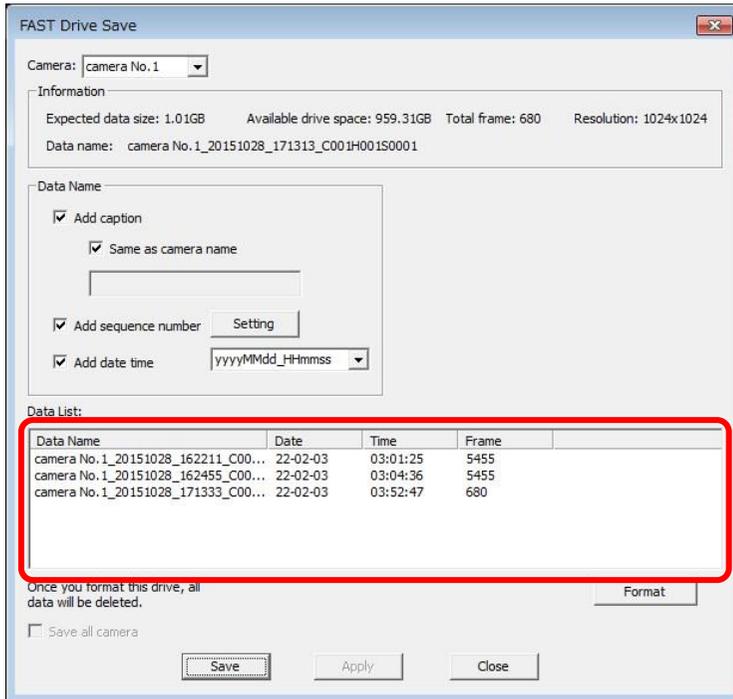
- ④ A progress bar and a remaining capacity countdown are displayed when the save operation begins.



- ⑤ The message [Download completed] is displayed when the save operation is complete. Click the [OK] button.



- ⑥ The details of the saved data are displayed in the [Data List] of the [FAST Drive Save] window.

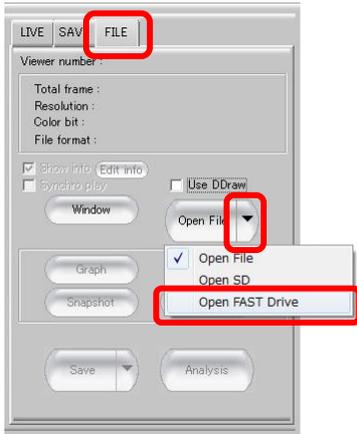


- ⑦ Click the [Close] button.

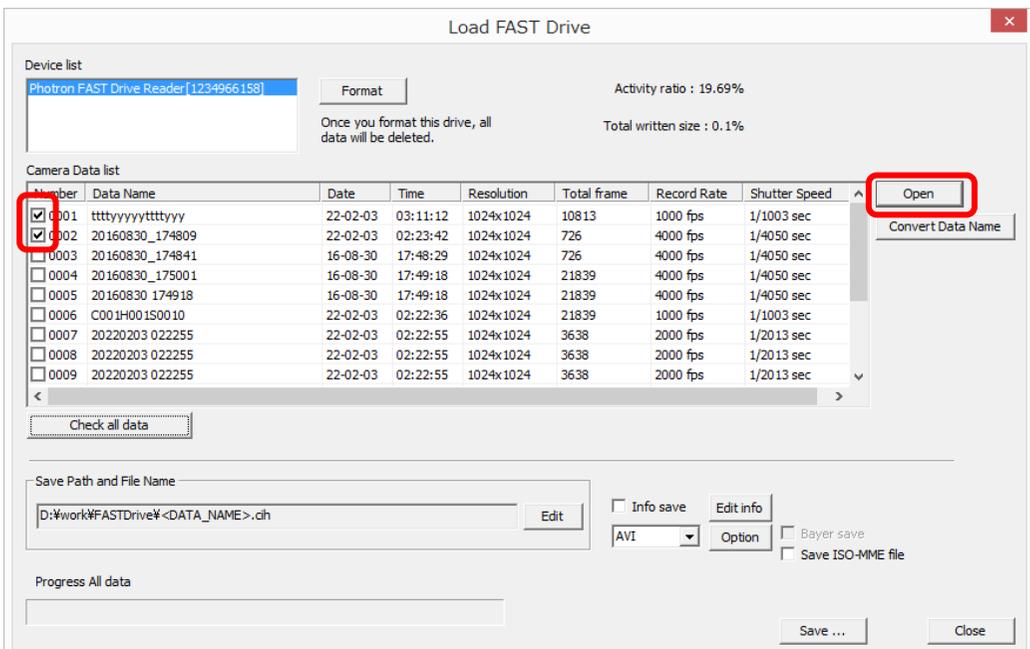
5.3 Playing Saved Data

Play the data that was saved to the FAST Drive.

- ① Display the [FILE] tab on the control panel, click the [▼] to the right of the [Open File] button, and then click [Open FAST Drive].



- ② The [Load FAST Drive] dialog box is displayed. Select the target data from the [Camera Data list] and click the [Open] button.



- ③ The video contained in the selected data is played back.
The same operations can be performed similar to standard file playback.



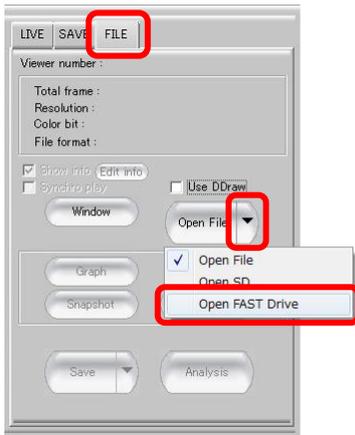
Supplement

- [FAST Drive Data No.xx] is displayed in the screen title when playing data stored on the FAST Drive.

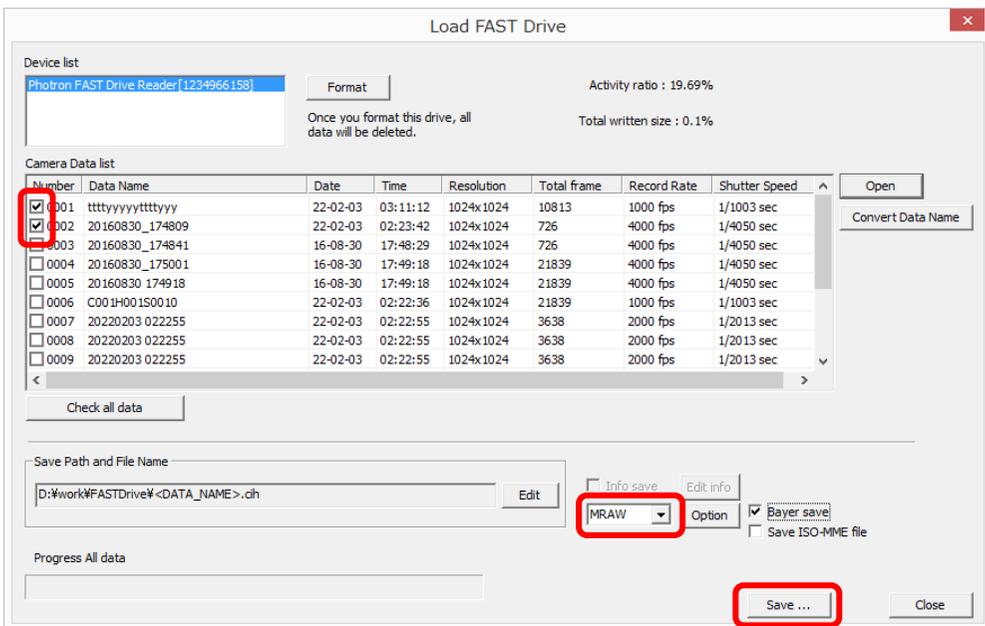
5.4 Downloading to the PC

Download the data on the FAST Drive to the PC.

- ① Display the [FILE] tab on the control panel, click the [▼] to the right of the [Open File] button, and then click [Open FAST Drive].



- ② The [Load FAST Drive] dialog box is displayed. Select the target data from the [Camera Data List], select the save format from the list, and then click the [Save] button.



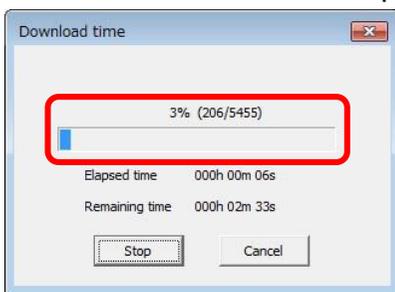
Supplement

- To specify the save destination, click the [Edit] button under the [Save Path and File Name] and set the destination.
- To set the details of the save format, click the [Option] button.

参照

- For more details about the save format options, refer to the “Photron FASTCAM Viewer User’s Manual Operation section”.

③ The download status is displayed when the download begins.



6. Product Specifications

6.1 General Specifications

① FAST Drive

Environmental Conditions	
Storage temperature range	-20 to 60 degrees (prevent condensation)
Storage humidity range	Less than 85% (prevent condensation)
Temperature range for guaranteed performance	0 to 45 degrees (prevent condensation)
Humidity range for guaranteed performance	Less than 80% (prevent condensation)
Maximum altitude for use	Less than 2,000 m
External Dimensions	
Unit	23.0 (H) x 102.0 (W) x 146.5 (D) mm excluding protrusions 0.90" (H) x 4.01" (W) x 5.76 (D)
Weight	
Unit	400 g 0.88lbs

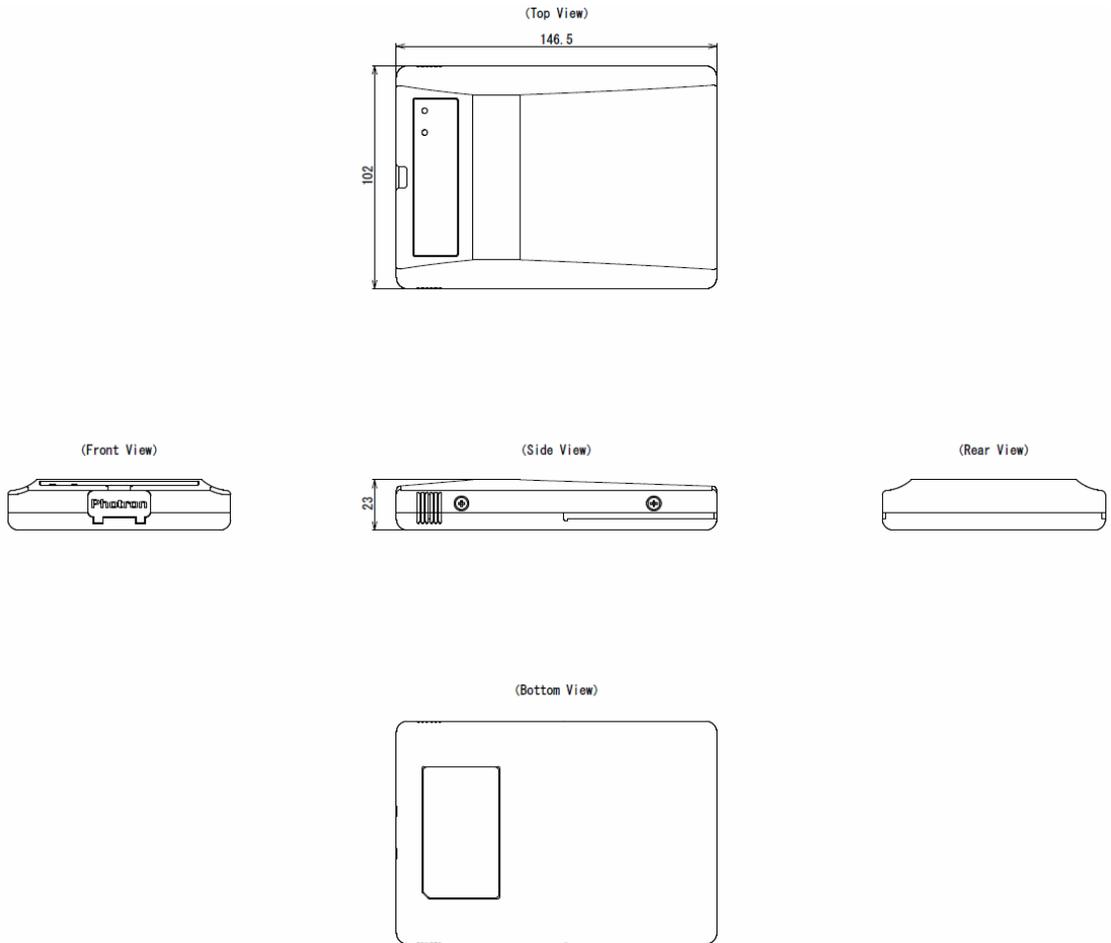
② FAST Dock

Environmental Conditions	
Storage temperature range	-20 to 60 degrees (prevent condensation)
Storage humidity range	Less than 85% (prevent condensation)
Temperature range for guaranteed performance	0 to 45 degrees (prevent condensation)
Humidity range for guaranteed performance	Less than 80% (prevent condensation)
Maximum altitude for use	Less than 2,000 m
External Dimensions	
Unit	27.0 (H) x 140.0 (W) x 193.0 (D) mm excluding protrusions 1.06" (H) x 5.51" (W) x 7.59" (D)
AC/DC power supply adapter	40.0 (H) x 69.0 (W) x 132.0 (D) mm excluding protrusions 1.57" (H) x 2.71" (W) x 5.19" (D)
AC/DC Power Supply Adapter	
Input voltage	100 V to 240 V
Frequency	50 Hz to 60 Hz
Output power supply voltage	24 V/2.7 A
Unit's DC Power Supply	
Power supply voltage	24V
Power consumption	20 VA
Weight	
Unit	600g 1.62lbs
AC power supply adapter	390 g 0.85lbs

6.2 Dimensional Drawings

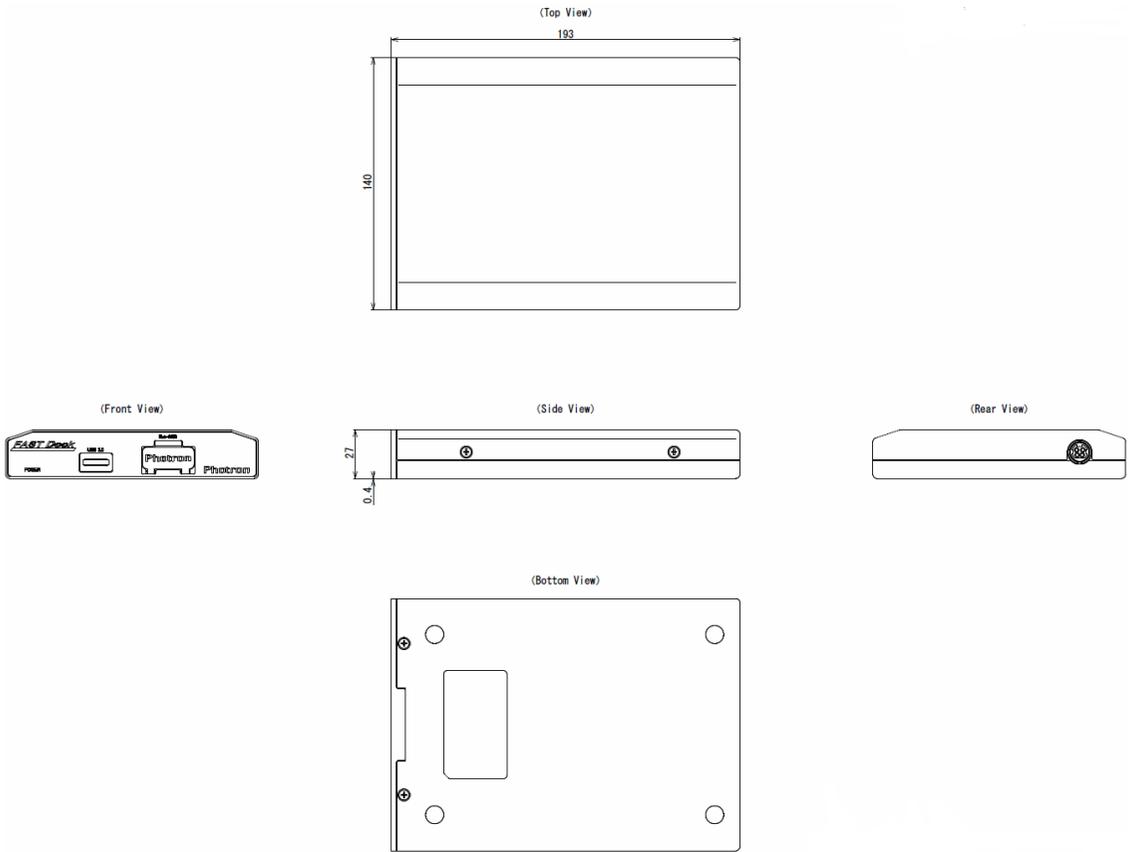
③ FAST Drive

Units: mm



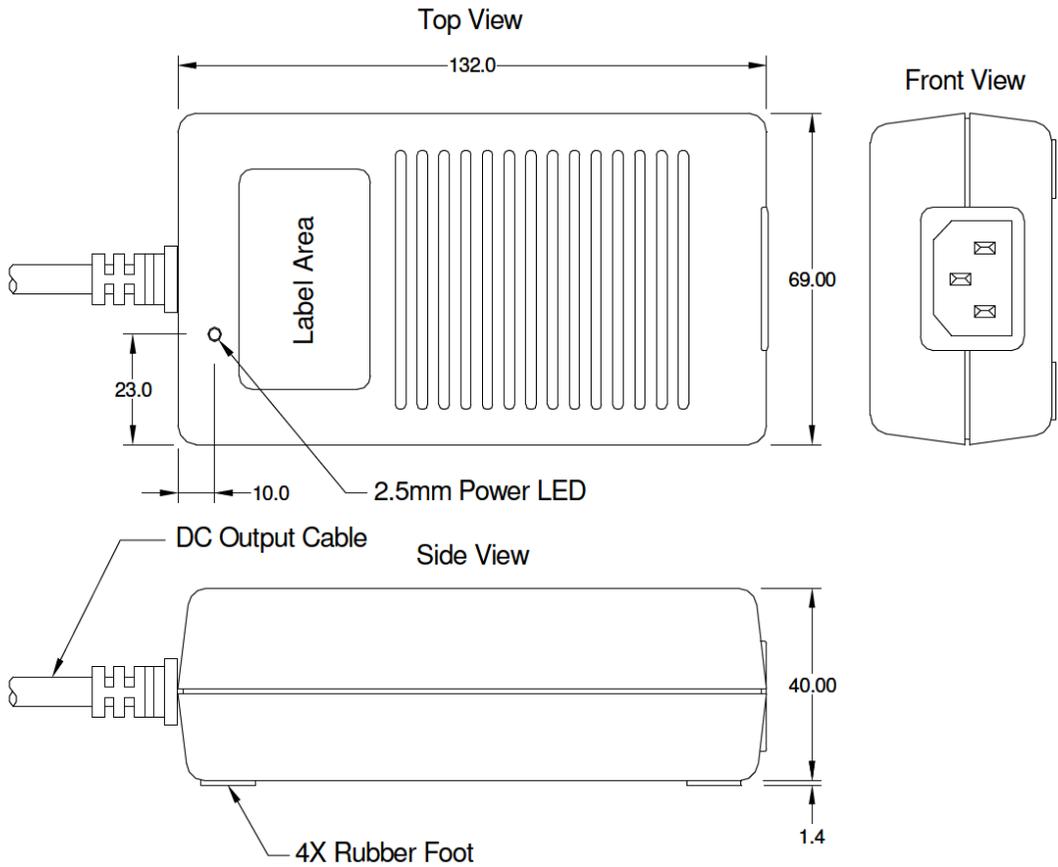
④ FAST Dock

Units: mm



⑤ AC power supply adapter

Units: mm



- Note:
1. AC Inlet : IEC320-C14
 2. Plastic Case Color : Black
 3. Tolerance : $\pm 0.5\text{mm}$
 4. Unit : mm

7. Contact Information

For inquiries related to PFV, contact Photron at the contact information listed below.

Additionally, the following items will be verified when inquiring, so please prepare them in advance.

Items Verified	Concrete Example
Contact Information	Company, school or organization name, customer contact name, contact phone number, Contact e-mail.
Product Name	The Photron FASTCAM Viewer version number and the high-speed camera name, SD Memory Card name. For the version number, check the version information.
Condition of the system and what is known about it.	

Contact Information	
In Americas and Antipodes	<p>PHOTRON USA, INC. 9520 Padgett Street, Suite 110 San Diego, CA 92126-4426, USA Phone : 800-585-2129 or 858-684-3555 Fax : 858-684-3558 E-mail : image@photron.com www.photron.com</p>
In Europe, Africa and India	<p>PHOTRON EUROPE LIMITED The Barn, Bottom Road, West Wycombe, Buckinghamshire, HP14 4BS, U.K. Phone : +44(0) 1494 48 1011 Fax : +44(0) 1494 48 7011 E-mail : image@photron.com www.photron.com</p>
In other areas	<p>PHOTRON LIMITED 21F, Jimbocho Mitsui Bldg., 1-105 Kanda Jimbocho, Chiyoda-Ku, Tokyo 101-0051 Phone : +81 3 3518 6271 Fax : +81 3 3518 6279 E-mail : image@photron.co.jp www.photron.co.jp</p>



FAST Drive / FAST Dock

User's Manual

Revision 1.09E

Publication Date April, 2018

Publisher PHOTRON LIMITED

21F, Jimbocho Mitsui Bldg.,

1-105 Kanda Jimbocho, Chiyoda-ku, Tokyo 101-0051