Microcomputer Software XCAPTURE-1

Text by 西川善司

Unique developed a video capture device, and sales to have microcomputer software that assumes the recording of the video game. The company so far, the expansion card type of several working and the product, I also PCI Express card-type of product "Before about two and a half years SC-500N1 / DVI was that reviewed the ".

To become the first USB-connected video capture device by such microcomputer software, to pick up this time is "**XCAPTURE-1** is ". Use the USB 3.0 interface to connect to the PC, resolution 1920 × 1080 dots (or less, 1080p) it's products is characterized by because the video of the can record at 60Hz (60fps).

XCAPTURE-1
Studio: Microcomputer Software
Contact:Micom_supportattomicomsoft.Co.Jp , telephone number 06-6203-2827
prevailing price: 35,000 yen around (currently June 23, 2014)

I had passed some time from the sale, but let's evaluate the strength and ease of use.

Equipped with extensive input terminal in a small box-type device Extensive analog input was Old gamers salivating

The product box of XCAPTURE-1, USB 3.0 cable and private cable "video / S + audio composite cable" to use when you want to record analog video of SD image quality (with analog audio and set), for connecting the body and the PC (hereinafter referred to as analog AV cable) are included two.

XCAPTURE-1 with the bundled product.The two AV cable, summarizes the S-video and composite video into one, is correct for the input through output

Might "there? AC adapter is that? Does not come" Some people I thought, there is no need because XCAPTURE-1 operates in the bus power of USB 3.0. XCAPTURE-1 of the body is small, the size is 124 in the actual measurement (W) × 124 (D) × 30 and (H) mm, it is the size that can be placed also feel free around the television and game consoles. By the way weight was about 211g in the actual measurement.

This small body, what an interface such rich is the major feature of XCAPTURE-1. Input terminals, digital HDMI (Type A) and analog D, analog RGB (D-Sub 15-pin), for analog AV cable corresponding to the S & composite video input, and, using the D and analog RGB video Equipped with analog sound input for also recording sound at the time of inputs (mono RCA × 2). Analog RGB or S-Video, what me also supports legacy analog inputs such as composite video, is probably a product likely features of microcomputer software.Incidentally, HDCP is copyright protection technology can not record the HDMI signal including the (High-bandwidth Digital Content Protection system).

Body front. Has become from the left D input terminal, and monaural RCA pin terminal × 2, HDMI input terminal for analog sound input

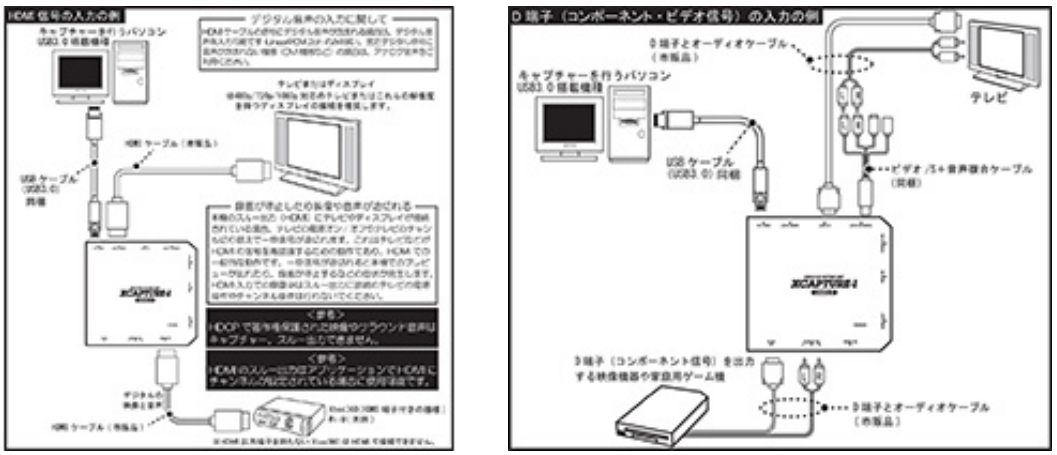
Body right side. RGB through output terminal, analog RGB input terminal, an input terminal for analog AV cable line from left

The rear body, and through the output terminal for analog AV cable, D-through output terminal, HDMI through output terminal, a USB 3.0 terminal has been prepared from the left

Connecting the various cables is simple, connect the video and audio from the game machine and XCAPTURE-1 side of the input terminal, and further, it is good if connected through an output terminal and a display device corresponding to the entered interface. It's image, such as to sandwich the XCAPTURE-1 during the game machine and the display device.

Image to connect the analog AV cable.Capture both video and audio on a single

Incidentally, such displays from the HDMI through output by converting the image of the analog RGB input to the HDMI, no function for outputting by converting the input image into a different signaling. Analog RGB input image, it is necessary to display from analog RGB-through output.



XCAPTURE-1 and the game console, PC, showed a connection form of the display figure (quoted from ※ Manual). The figure on the left HDMI signal, the right of the figure's case of component video signal input using the D terminal. Since D cable and analog RGB cable is not only the transmission video signal, sound separately, there is a need to input using the analog sound terminal that is provided next to the D terminal at the front panel. Of using the sound output of the analog AV cable at the time of output, I would like to note that a little to become irregular connection

By the way, is a conversion adapter (sold separately) " **XSYNC-1**"(related article Using the), analog by the first generation PlayStation and Super Nintendo, SCART 21-pin terminals such as a game board of the control box had been adopted (※ so-called RGB 21-pin) The RGB signal, can be output is converted into an analog RGB signal D-Sub 15 pin.

So, combining the XCAPTURE-1 and XSYNC-1, but not the video of these Old game machine becomes possible capture. For Old gamers, or would not be a very attractive combination.

XSYNC-1 is an optional conversion adapter separates the composite synchronizing signal of RGB21 pin, to convert the output into an analog RGB signal of the D-Sub 15 pin. And if Old gamers, it might a good idea to have one

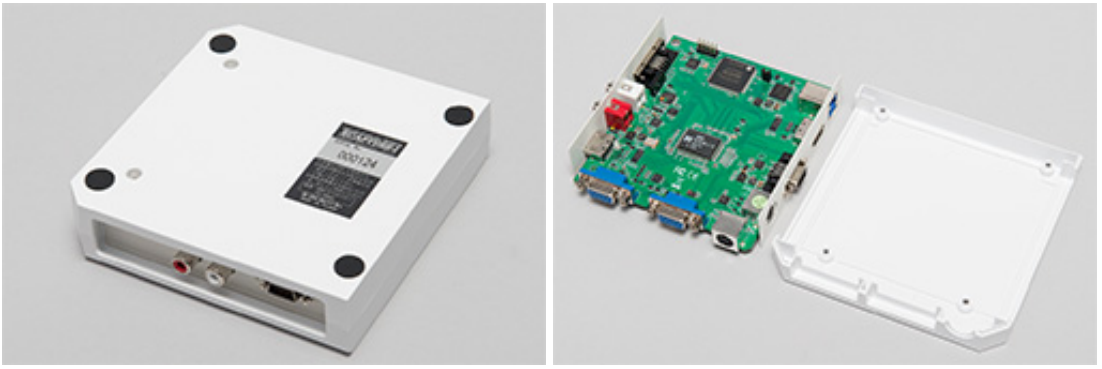
Well, as I mentioned at the beginning, XCAPTURE-1's capture device to be used to connect a PC and USB 3.0. video data XCAPTURE-1 is captured is transmitted to the PC via USB remain uncompressed. Stably without dropping frames of video data 60Hz at 1080p for transmission to the PC and to use the USB 3.0 which can perform high-speed transmission, it can be said that the current of the most easy and secure way the PC.

But it can be a failure to achieve this "stable high-speed transmission" is, but compatibility issues of USB host controller and the device. And, in order to avoid it, XCA P TU RE -1 in **as a USB 3.0 host controller on the PC side, it is recommended to use those made of Intel made or Renesas Electronics.** All the way to the manual, " Etron Inc. / ASMedia Inc. / FrescoLogic Inc. / TI, Inc. / VLI

(VIA), Inc. / AMD Inc. of USB 3.0 operation at the host controller does not guarantee "that the (※ sic) It's about being written. The details will be discussed later, but, in fact, it is not called "completely does not work in other than the recommended environment." However, although the order to avoid the compatibility of USB port tangling, and for that case in mind to the user until the type of USB 3.0 host controller, it seems a little like a high hurdle.

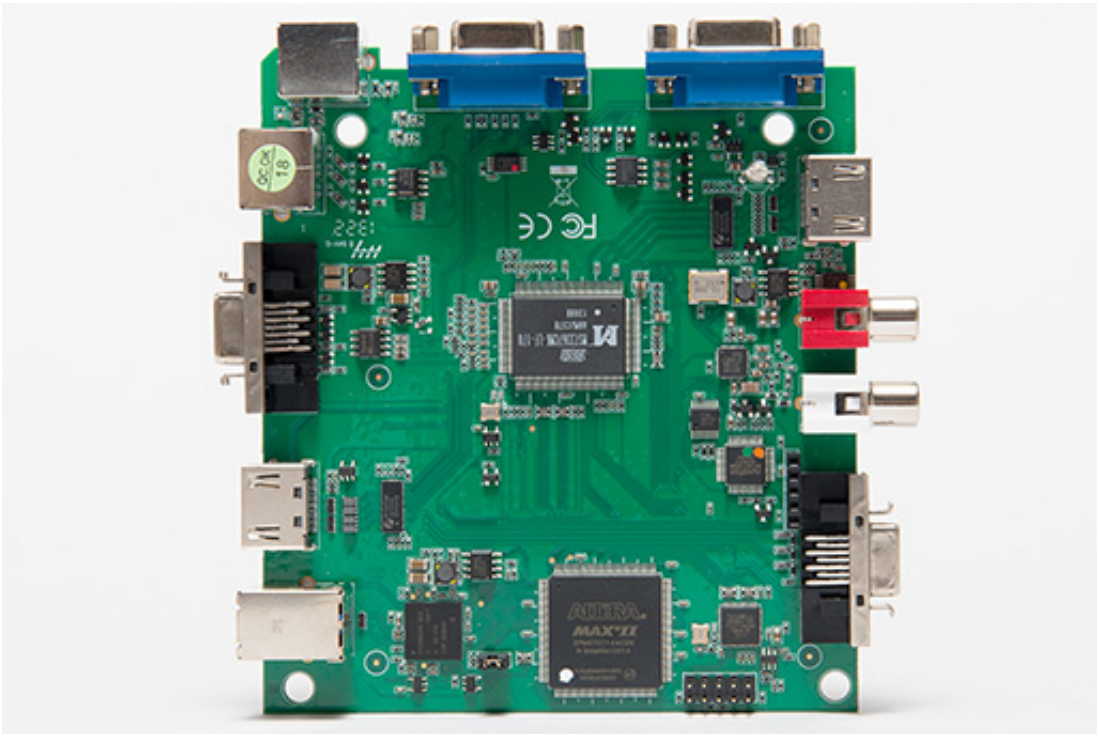
Inside the board, and it employs a chip that is also used in other Microcomputer Software Ltd. capture device

In the video capture device review of 4Gamer the body decomposition that feeling that has become customary, I went even XCAPTURE-1. Although there is a promise in the articles in this hand, decomposition of the body is a manufacturer warranty of the act, since no guarantee is received at the time of the decomposition, and please do not earnestly to imitate. Well, decomposition itself is very simple, just remove the four removed in the top surface side of the cover the screws on the bottom. After that easily I removal of the board from the bottom side cover.



If you flip the XCAPTURE-1, see the screw holes on the bottom (left). By removing it, you can access to the substrate by opening the housing cover

The photo below, but the surface of the substrate taken out. "M" and a chip that contains the mark, chip it closer a little to the right than the lower middle photograph has become a thing eye-catching.



XCAPTURE-1 on the surface of the substrate. Are major chip is mounted on here

M mark of containing the chip Taiwan MStar Semiconductor made of the video processor "MST3367CMK-LF-170". Another prominent chip's belonging to the programmable logic device "Max II CPLD" family manufactured by Altera "EPM570".

These, the author previously review the microcomputer software video capture card " SC-500N1 / DVI are the same as those that were also used. "

The back surface of the substrate. I do not see particularly noticeable chip

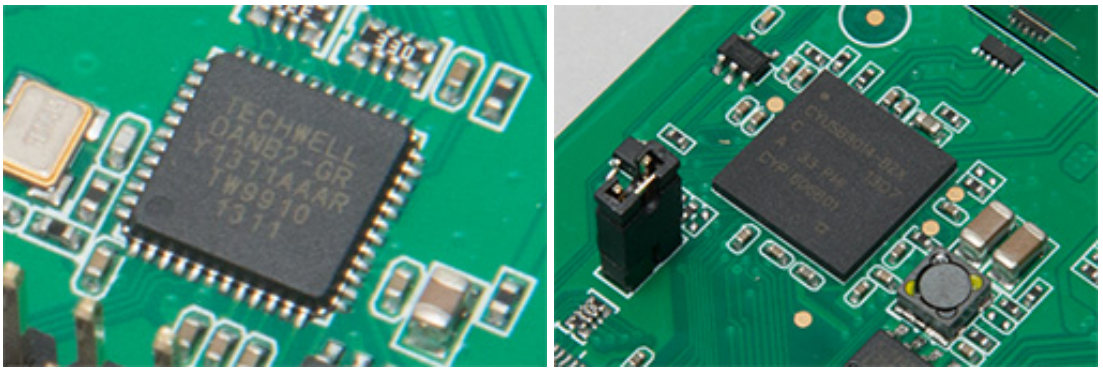
MST3367CMK-LF-170 located in the center of the substrate (left) video processor.Large chip at the bottom of Altera EPM570 (right)

Smaller chips also let me check.

Made of Taiwan Nuvoton Technology "NUC100L C18N" it is, from the model number, but perhaps micro controller which adopted the Cortex-M0 processor to the CPU core. US Intersil video decoder "TW9910-NB2-GR", it seems to be a for decoding an analog video signal.

Processing of the USB, Cypress Se mi con du c t or made of USB 3.0 controller "CY USB 30 14 - BZ XI "is supposed to be in charge.

"NUC100L C18N". Although the same model number product information page of Nuvoton Technology not listed, it may have found a product that belongs to the possibly NuMicro N100 series



And Intersil video decoder TW9910-NB2-GR (left), Cypress Semiconductor of USB 3.0 controller CYUSB3014-BZXI (right) is also mounted

Except for the points corresponding to the USB 3.0, the contents of XCAPTURE-1 appears to have become to similar hardware design and SC-500N1 / DVI. to treat familiar parts of a combination of the USB 3.0 controller, I wonder where such XCAPTURE-1.

Use the capture software "VideoKeeper2" is the recording. A wide choice of resolution and bit rate

In To the recording XCAPTURE-1, it is necessary to install the software on the PC side, the product box, and driver software for XCAPTURE-1, the video capture software made of microcomputer software " **VideoKeeper2** "(Video Keeper 2) the CD-ROM was recorded are included. However, of XCAPTURE-1 product information page at, because the latest version of both the software is distributed, the better was introduced to download from here.

In addition, the corresponding OS's Windows 8 and Windows 7 SP1 or later. and your attention to the point that Windows Vista & XP is not supported.

The VideoKeeper2, XCAPTURE-1 and the video capture card "SC-512N1-L / DVI , such as, "It's capture software of microcomputer software-party video capture device general-purpose. In XCAPTURE-1, imaging operations of the recording and the still image (screen shot), the choice of

such capture images from any input line, it becomes possible to perform all operations and settings in VideoKeeper2. That has become a major feature in such a VideoKeeper2, Sandy Bridge and later hardware video encoder that is integrated with an Intel CPU "Intel Quick Sync Video" (hereinafter, QSV) and, to NVIDIA's GPU computing technology "CUDA" also thing corresponding (related article). In short, if you use the QSV and CUDA. Video encoding while maintaining low CPU load is not that it becomes possible. The effect I want to validate at a later stage.

Microcomputer Software-party video capture device common capture software "VideoKeeper2"

File format of recordable video H.264 (MPEG-4 AVC). Setting the recording quality is carried out from the "Capture Settings" in the configuration dialog of VideoKeeper2. Here are 4 set of ready "high / medium / low" three and recording quality preset called "manual", between the manual setting at the time of 1 ~ 40Mbps, it's a mechanism to choose any of the bit rate in increments of 1Mbps .

Recording quality setting of VideoKeeper2.Use of QSV and CUDA it can also be selected here

In addition, preset side of the bit rate, so that changes by the resolution of the image to be recorded, I want to mention in the part of the test for this. It's then recording resolution, but in XCAPTURE-1, by the input interfaces, the resolution that can be selected different. Specifically, **Table 1** because shown in, it's fortunate, if I refer to. Point, as mentioned at the beginning, where that can record a 60Hz even 1080p is the maximum resolution. In addition, not only a common HD video and SD video game machine, also said to attractions around that are also widely supported PC-specific resolution.

表1　XCAPTURE-1が対応する録画解像度

		HDMI	D端子	アナログRGB	Sビデオ	コンポジットビデオ
ゲーム機の解像度	NTSC 240p (60p), PAL 288p (50p)	−	○	○	○	○
	NTSC 480i(60i), PAL 576i(50i)	−	○	○	○	○
	480p(60p), 576p(50p)	○	○	○	−	−
	720p(60p/50p)	○	○	○	−	−
	1080i(60i/50i)	○	○	○	−	−
	1080p(24p)	○	−	−	−	−
	1080p(60p/50p)	○	○	○	−	−
PCの解像度	640×400ドット (56Hz)	−	−	○	−	−
	640×480ドット (60Hz)	○	−	○	−	−
	720×480ドット (60Hz)	○	−	○	−	−
	800×600ドット (60Hz)	○	−	○	−	−
	1024×600ドット (60Hz)	○	−	○	−	−
	1024×768ドット (60Hz)	○	−	○	−	−
	1280×720ドット (60Hz)	○	−	○	−	−
	1280×768ドット (60Hz)	○	−	○	−	−
	1280×1024ドット (60Hz)	○	−	○	−	−
	1360×768ドット (60Hz)	○	−	○	−	−
	1440×900ドット (60Hz)	○	−	○	−	−
	1920×1080ドット (60Hz)	○	−	○	−	−

To verify the pass-through output that is touted as display delay zero

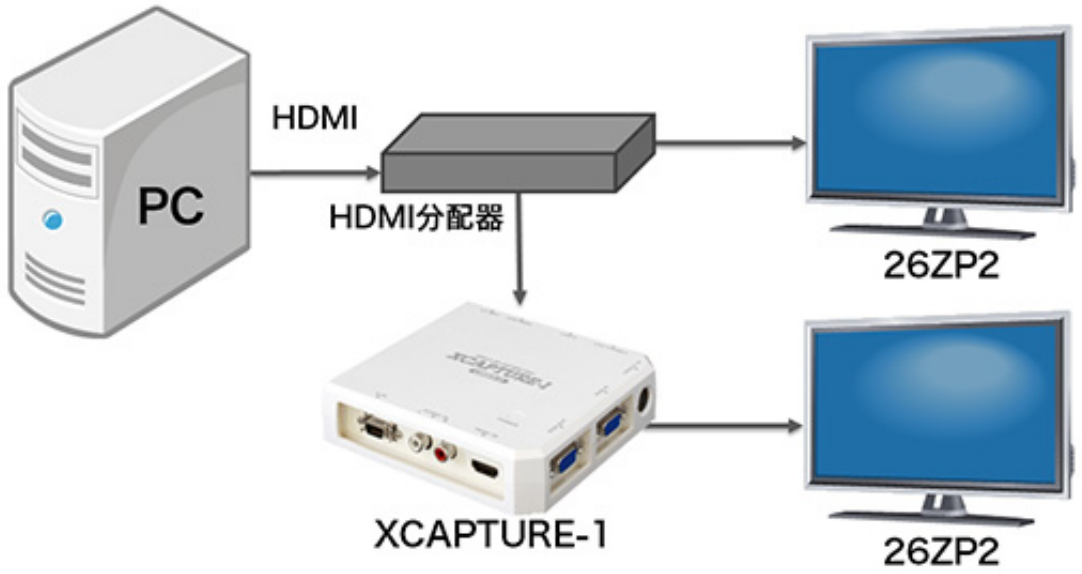
So the first to start a real test. This evaluation is, I went in my personal belongings PC. Of the test environment spec's As noted below, but are using the APU and motherboard of AMD, USB 3.0 host controller to be mounted also a made AMD. That is, the operation guaranteed environment previously described. That said, actually it is XCAPTURE-1 with AMD-based test environment to operate, so was operating without problems encoding function by CUDA of VideoKeeper2, the point I want to refuse here. **● test PC main specs**

- CPU：A10-6800K（定格クロック4.1GHz，最大クロック4.4GHz，4C4T，L2キャッシュ容

量2MB×2）

- **マザーボード**：GIGA-BYTE TECHNOLOGY「G1.Sniper A88X」（AMD A88X，BIOS F7）
- **メインメモリ**：PC3-10600 DDR3 SDRAM 8GB×2
- GPU: GeForce GTX 780 Ti (graphics memory capacity 4GB)
- HDD：Western Digital「WD Green」（3TB，SATA 6Gbps，型番 WD30EZRX-00DC0B0）
- OS：64bit版Windows 7 Ultimate SP1

However, it can not be said at all that there is no problem. In very, very rare, immediately after you have made the configuration changes VideoKeeper2, preview screen there was a thing disappear. If this happens, disconnect once the USB cable that led to XCAPTURE-1 from the PC, and insert again the changes were found to return to the proper operation while being reflected.People using the PC similar, I think, if I refer to as the operation case. Of course, operation in other than the recommended environment of microcomputer software can also not forget that it is self-responsibility. So, it is the first verification, it's the presence or absence of the display delay. Both video output terminal of the XCAPTURE-1, in order to output the intact to pass through the input image, it is touted as substantially display delay is zero. This is not mean Let's verify whether such as billed. Display device used in this time of delay verification, TV Toshiba is the author of personal belongings "REGZA 26ZP2" (hereinafter, 26ZP2) is but two. The display delay 26ZP2 is about 0.2 frames during 1080p / 60Hz input at a nominal value (about 3ms). Validation When distributes an HDMI signal output from the test PC to two systems with HDMI distributor, one in 26ZP2, in that the other connecting to 26ZP2 via XCAPTURE-1, is shown in the lower **figure**, such as a test environment it was constructed. This "LCD Delay Checker" on the test PC from the state (version 1.4) is the execution, 26ZP2 two of the display taken as a moving picture of 240Hz in the Casio digital camera "EX-FC150", of delay in moving slow-motion It is a flow that to verify the presence or absence.



Connection diagram of the test PC and XCAPTURE-1,26ZP2 used for delay verification

Let me posted under the videos that were taken verification.Moving the first half, it used to validate the delay of the Pass-Through two 26ZP2. On the other hand, the second half of video, has become one of verifying whether the preview screen VideoKeeper2 being displayed on the PC, there is a degree of display delay. Of course it is there is a delay in the preview screen, but it is not mean let us confirm whether there is a degree of delay.

Display delay verification of XCAPTURE-1

First of all it's delay verification of the first half, but if you look at the movie exactly the same display on two 26ZP2 is you will see that have been made. In other words, the **pass-through feature of XCAPTURE-1, the display delay is certainly zero** 's not said to be.

In the second half of the verification, it was confirmed that there is a delay of about 114ms to the

preview screen. You can easily find at 60Hz, so calculations are also delayed about 6.8 frames. Since this is a truly hard to play games on, when recording a play videos XCAPTURE-1, it follows that that should connect the display device to the pass-through output.

Whether the degree which is processing load by recording in XCAPTURE-1?

And subsequently, when it was the recording process in VideoKeeper2, let's look at how much of the load is applied to the test PC's CPU.

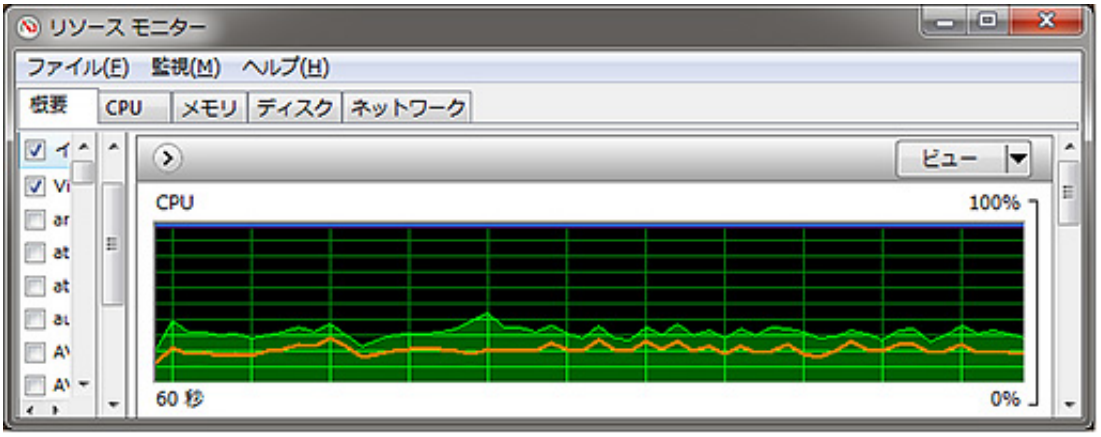
Here, the CPU load when the live-action footage of the circuit run by race cart to play in Sony notebook PC "VAIO F VPCF22AJ", was recording in the test PC to capture the video to XCAPTURE-1 via HDMI, Windows It took the way to that observed in the "Resource Monitor" 7 of accessories.

Upon the encoding process using the CUDA, in order to examine in recording quality even if the load is changed, the bit rate is used to 16Mbps of the 40Mbps of "manual", "low". By the way, the material of the video, the thing that I was taken by attaching a GoPro-party video camera "HERO3" on the helmet. The material is 48Hz of resolution 1280 × 960 dots But, to display it on a notebook PC in 1080p / 60Hz, you have input to XCAPTURE-1 via HDMI.

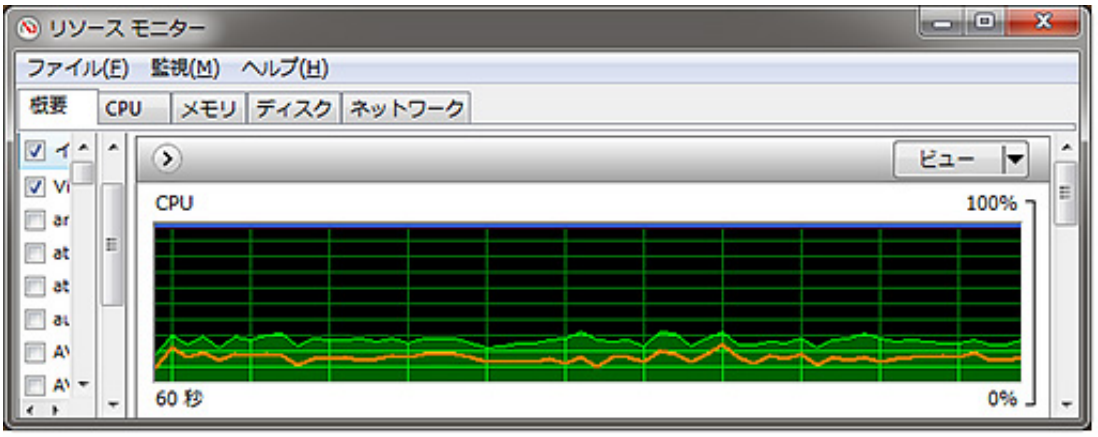
Video that was prepared for the CPU utilization verification of XCAPTURE-1

The results were as image shown below. With those green polygonal line represents the usage rate of the entire CPU, the orange line shows the CPU utilization of VideoKeeper2.

In the case of 40Mbps, the highest possible quality video recording in XCAPTURE-1, utilization of the entire CPU to transition between 30 ~ 40%, VideoKeeper2 was almost 20 per cent.Meanwhile, in the state where lowering the recording quality to 16Mbps, the usage rate of the entire CPU about 20 to 30%, the utilization VideoKeeper2 dropped to about 15-20%.



CPU utilization graph when it is recorded in the 40Mbps of recording quality "manual"



CPU utilization graph when it is recorded in the 16Mbps of recording quality "low"

Although the GPU acceleration due to CUDA is good for encoding, recording by XCAPTURE-1 is, I work quite a high load on the PC.The video XCAPTURE-1 is captured 1080p / 60Hz, and the is transmitted to the PC via remain USB 3.0 uncompressed, by turning it to the encoding process is developed in the main memory, write the encoded data at any time in the HDD So there is a matter of course.

Therefore, a built-in hardware encoder, type of video capture device to store the recorded data to the PC - for example, I previously reviewed the AVT-C875 - When compared with, is more of XCAPTURE-1 CPU utilization absolutely higher. That said, because it was less than 40% CPU utilization even in the highest quality of 40Mbps, if recording a video game machine, I think it is a use without having to worry about dropped frames.

Video recording quality test its 1
Recording of the PS3 by component video

So finally the jailing in the evaluation of image quality. First PlayStation 3 (below, PS3) and to

connect the XCAPTURE-1 in the D terminal cable, and tried to record the analog component video.

Know as, since the HDMI output of the PS3 contains HDCP signal, is not available XCAPTURE-1 in an HDMI input to a recording PS3.In order to do Locle play videos on PS3 games, but is it necessary to use the component video output that has not been subjected to a process of copyright protection. This time AVT-C875 Like the review Part of, 720p / 60Hz specification of " BLAZBLUE CHRONOPHANTASMA "(hereinafter, BLAZBLUE) to use, and to record a replay video at XCAPTURE-1, and look at the difference in image quality due to the recording quality. Recording quality that was used, four patterns of "low / medium / high" and "manual".However, if the resolution is 720p, respective maximum bit rate is as follows. Therefore, in this test, we have set the manual bit rate to 30Mbps.

- 低：10Mbps
- 中：12Mbps
- **High:** 14Mbps
- 手動：30Mbps

Videos posted below, I used to edit the video that was recorded at a low / medium / high / manual setting of each into one. Since this has only been recompressed for me, also it had been uploaded actually recorded video file. I want to see the actual image quality people want you to check in after the download.

XCAPTURE-1: the difference in the recording quality you see in BLAZBLUE CHRONOPHANTASMA

Video Download: XCAPTURE-1_BLZBL_30Mbps.Zip

Video Download: XCAPTURE-1_BLZBL_High.Zip

Video Download: XCAPTURE-1_BLZBL_Mid.Zip

Video Download: XCAPTURE-1_BLZBL_Low.Zip

As you can see the video, the video of BLAZBLUE is, or the entire screen to scroll , in so on or dancing characters effect of combo counter back and forth in the screen, it has become a type of video encoding process of MPEG system and weak.

However, the difference in the bit rate by recording quality is, because there is only 2Mbps With the exception of the manual setting, overall image quality does not change much. There is a difference, it's time to block noise is eliminated. Or move the entire screen, when a large effects and character is or is displayed, but he block noise is generated in the part, this is the time to become clear as the video is seen disappear, it can be seen differences . In the case of low-setting, for a while after leaving the effect it looks still block noise, disappear in an instant when it comes to a high setting.In 30Mbps setting of "manual", he time remaining block noise becomes further shorter, but since the occurrence tendency itself of block noise not much different as compared with the high setting, need to not likely to use force to 30Mbps setting I think also. In view of the free space of storage to be a recording destination, a high setting if there is room, or would not be sufficient in the proper use of the extent there if low setting, such as. Although a little story swerve, XCAPTURE-1 of a still image (screen shot) shooting functions were also tried. In this feature, you can save the screen in the JPEG format or BMP format uncompressed,. Setting of quality during JPEG, the low / medium / high of three patterns only, manual setting is not. It was posted on the underlying, and BMP format, is an image taken at a low / medium / high of JPEG format.Because when you click is adapted to display an image of the original size, by all means but I think, if I have compare using there, the difference in picture quality is clear. In the vicinity of the color boundaries and contours in the low-quality, but block noise and fuzz noise can be seen, according to raise the medium to high and quality, these noise is gradually being reduced. But clear image quality difference of by setting, given the recent storage capacity, it seems not likely need to save a screen shot in the purposely low quality. Or it would not be good to the extent that selectively using JPEG high set or BMP format, depending on the application.

Screenshots in uncompressed (※ image is Yes to convert to PNG format)

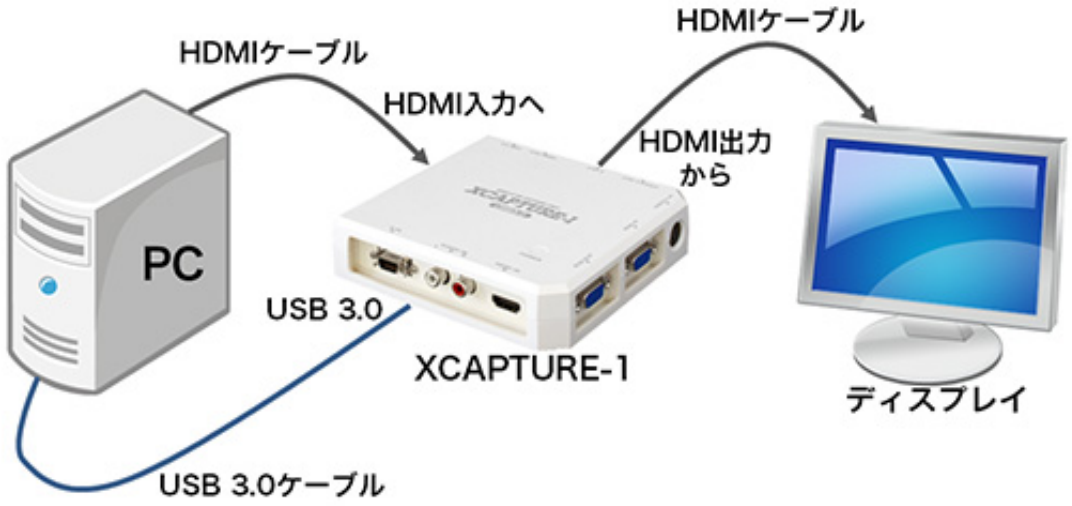
Screen shot of a low quality

Screen shot of a medium quality

Screen shot of a high-quality

Video recording quality test its 2
The challenge to the "bird own PC" in the HDMI connection

PC you need to recording in XCAPTURE-1. So, by moving the game on the PC itself that connected the XCAPTURE-1, or it will be able to record this. And of course it's a high-performance PC is required, but this is will be possible to record and play PC1 units if possible. If it will place such as "self-taken by the PC." However, even looking at the XCAPTURE-1 of the manual, such connection method have not been described. Why can not you might think or not than to say before the conclusion, if prepared for self-responsibility, self-bird PC due to XCAPTURE-1 can be carried out.How to connect posted under **figure** at as, input and connection of XCAPTURE-1 video output of the PC, but only further connect with XCAPTURE-1 of the through output and display of the input.



Connection example of if you want to record a play animation of PC games on a single PC. Here, it is possible to connect the display to XCAPTURE-1 which was connected to a PC

If you do the encoding of the game play and XCAPTURE-1 at the same time on a single PC, of course, CPU becomes a scramble by the game and VideoKeeper2. It also GPU If you want to use the CUDA. In other words, if there is no significant performance margin to the CPU and GPU, game or with corners, there would be a possibility that the recorded videos or skips. But, it is not impossible to do a all recordings and play one if they have machine power.

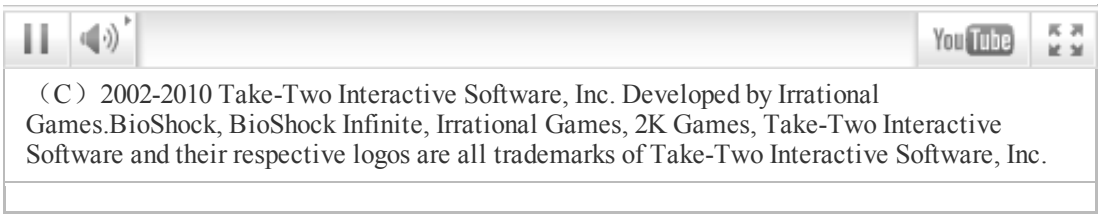
Incidentally, in this environment XCA P TU RE -1 image PC that has been input to be displayed in the preview screen of VideoKeeper2. And that because they are input to the video also XCAPTURE-1 again in the preview screen, the preview screen of VideoKeeper2 is if it were combined mirror a little funny to become the mysterious display as.

The PC's own image that connected the XCAPTURE-1 by entering into XCAPTURE-1, state in which to display the preview screen of VideoKeeper2. So that the mating mirror

When you press the Record button of VideoKeeper2 in this state, recording is started properly. In addition, once to minimize the window of VideoKeeper2, it is possible to avoid the combined mirror state. By moving the PC game in full-screen display in this state, it is possible to record the video at a normal size, would not particular problem. In fact in this environment, PC version of " BioShock Infinite I tried to record a state in which moving the benchmark mode ". Graphics setting of benchmark mode, of the highest quality "UltraDX11_DDOF" (hereinafter, Ultra) and uses the standard "Normal", the screen resolution of the game is set to 1080p. In this test, the recording quality that was used is a 4 pattern of low (16Mbps) / Medium (18Mbps) / high (20Mbps) / manual (40Mbps). If you look at the quality of the recorded video, none of the low-medium and high, are can be recorded at a fairly high quality. The video of the benchmark mode, because basically the point of view is a walk-through specific content that will come to the back, I wonder easy to motion vector prediction of each pixel. Compared to the image of BLAZBLUE, noise is less noticeable due to compression. If you still of BioShock Infinite, smooth gradation expression of Moya took part and walls, block noise is visible in the fade-in at the time of

blackout at the time of the fade-out and Akiraten. Higher bit rate is low the video, but remains noise is long in such a scene, the bit rate is high is not noticeable noise, even gradation expression looks smooth. I want you to watch the video by focusing on these points.

XCAPTURE-1: the difference in the recording quality you see in BioShock Infinite of Ultra setting



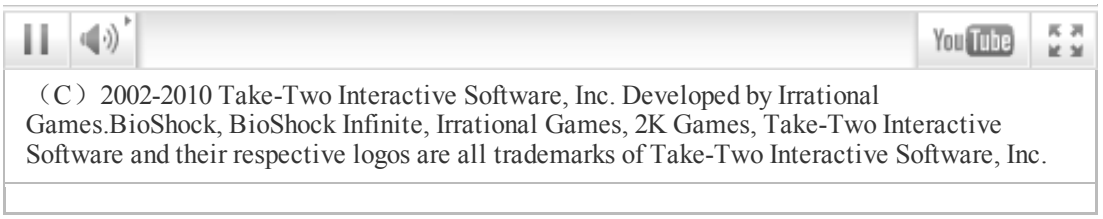
Video Download: XCAPTURE-1_BSI_Ultra_40Mbps.Zip

Video Download: XCAPTURE-1_BSI_Ultra_High.Zip

Video Download: XCAPTURE-1_BSI_Ultra_Mid.Zip

Video Download: XCAPTURE-1_BSI_Ultra_Low.Zip

XCAPTURE-1: the difference in the recording quality you see in BioShock Infinite of Normal setting



Video Download: XCAPTURE-1_BSI_Normal_40Mbps.Zip

Video Download: XCAPTURE-1_BSI_Normal_High.Zip

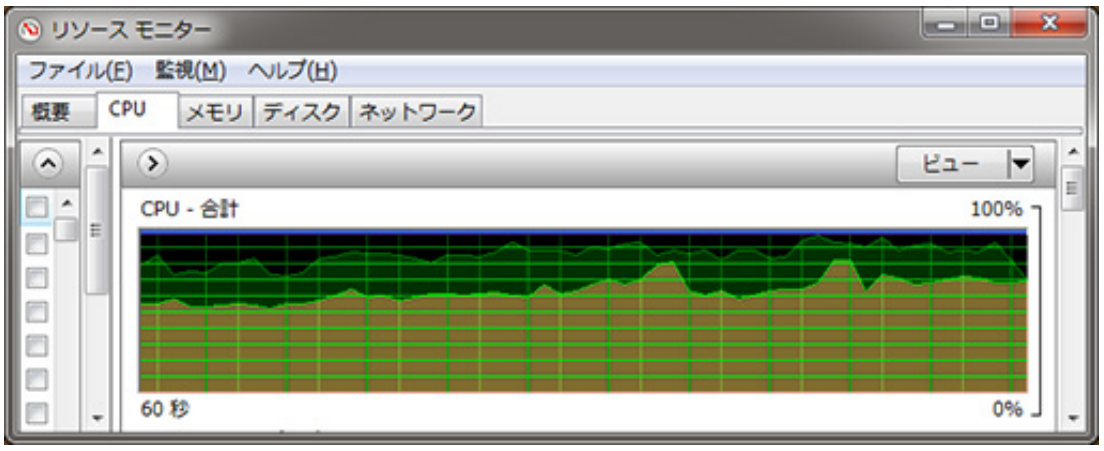
Video Download: XCAPTURE-1_BSI_Normal_Mid.Zip

Video Download: XCAPTURE-1_BSI_Normal_Low.Zip

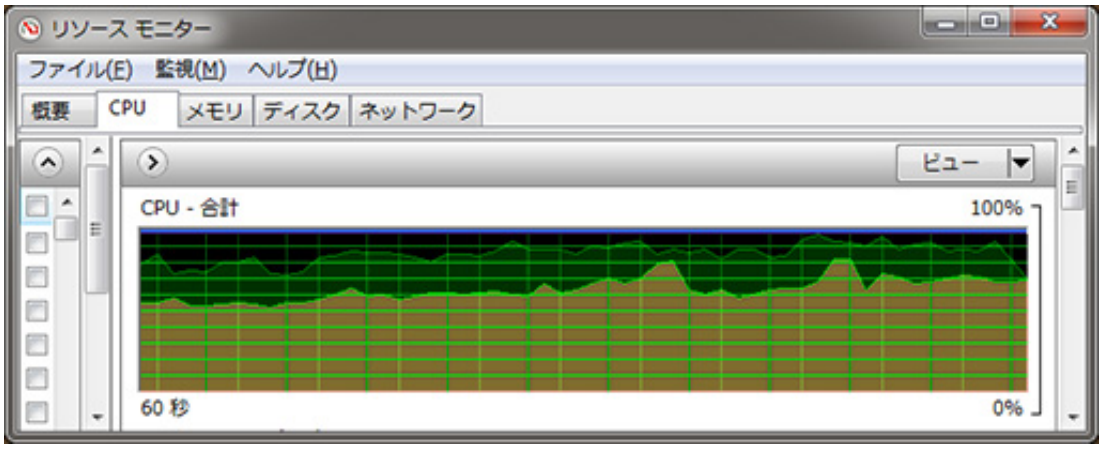
In any case, as long as you look at BioShock Infinite benchmark mode, a low setting of 16Mbps But it can be said that it has secured sufficient quality. You can easily find enough to cut editing to post such as the video-sharing service, it is also is a problem that seems to recording at a low setting.

The CPU utilization while playing the game rise 20% The frame rate decreases as the 20 ~ 25fps

Well, it would have been if the CPU utilization of the time take its own PC. CPU usage at the time of recording in the state of moving the BioShock Infinite benchmark mode, and I compared to that of the benchmark mode alone. Image that was posted on the bottom, something that has been piled up image when you view the CPU utilization and benchmark mode alone of CPU utilization during recording at 40Mbps in the resource monitor to one. When the thin green is 40Mbps, brown is the CPU usage at the time of the benchmark mode alone. As a reference value, the CPU usage when recording in benchmark mode alone and low / medium / high / 40Mbps, it should be listed in the table as a rough average.



Benchmark mode single CPU utilization on the Ultra setting the (tea), CPU utilization when it is recorded with 40Mbps while moving benchmark which was superimposed a graph of (light green)



Also, those of extensive CPU utilization graphs in Normal Setting

Of the contents of the graph easily summarized is, following**Table 2** is.

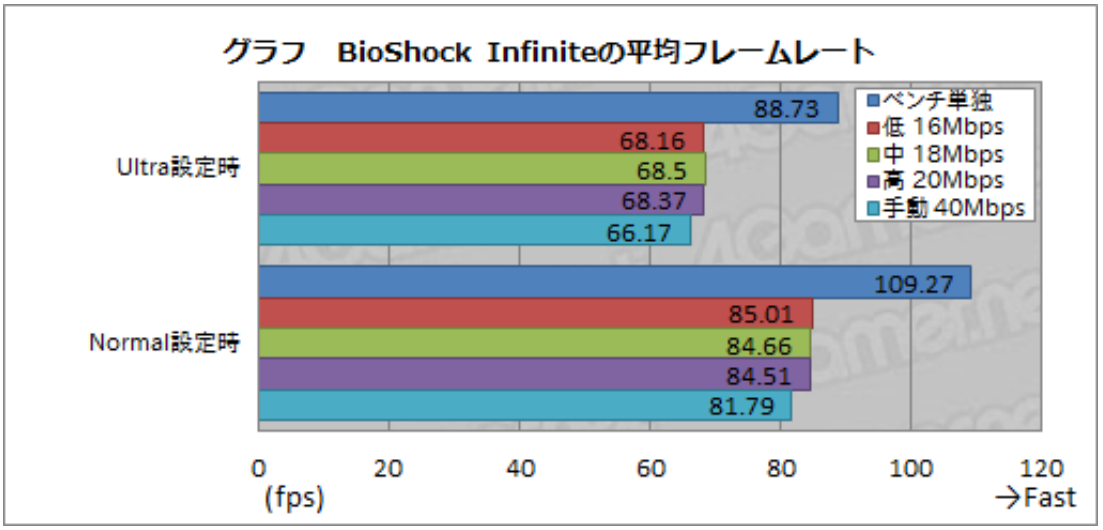
The average CPU usage in Table 2 Ultra settings and Normal setting

Bench alone	低 16Mbps	中 18Mbps	High 20Mbps	手動 40Mbps
65% before and after	85% before and after	85% before and after	85% before and after	Around 90%

To view these, even if the graphics settings are Ultra, of either Normal, CPU utilization during the benchmark mode alone against What about 60 ~ 70%, CPU usage during the recording had reached 80-90%. This means that when taking PC own is not that CPU utilization is increased approximately 20%.

This number, because the CPU utilization by VideoKeeper2 at the time of recording of BLAZBLUE matches as was about 20 percent, or where such results convincing. Well, in this test, we have used the GPGPU encode due to CUDA in the encoding process. Sonaruto, apart from the game at the time of recording, it should load of encoding process is applied to the GPU. To measure this load, the average frame rate of BioShock Infinite benchmark mode performed during recording, we were examined for each recording quality in both the Ultra / Normal settings. The results **graph** is as. (In the graph ※ bench alone hereinafter) benchmark tests alone as compared with the case of, is found to have reduced the frame rate about 20 ~ 25fps during recording. Meanwhile, change of the frame rate even by changing the recording quality is not generally only about the

error. That is, in the case of the GeForce GTX 780 Ti with the author, performing the encoding process by the CUDA in VideoKeeper2, it means that GPU of resources corresponding to 20 ~ 25fps worth of BioShock Infinite is taken to the encoding side.



Even at high state of most burden of recording the benchmark mode of Ultra settings in 40Mbps, the average frame rate is over 60fps. Since recording also can be properly captured at 60fps, practical performance can be said to be able to keep.

In other words, if you also recorded with XCAPTURE-1 while playing the game on a single PC, it means that need a PC of high performance. If you do "self-take" of the self-responsibility, and I want to hold this point.

Capture devices that help to keep a high quality possible play videos

So it's put together.XCAPTURE-1 is the catchphrase as expected called "1080p / 60Hz video recording correspondence", meet the desire to leave the play higher-quality video, is an excellent video capture device.Per that the video output is possible pass-through output of all delay zero also, I said that the design that stood in gamer's point of view.

XCAPTURE-1 product box

Since the analog video input is also rich in a variety of game machine, it will be also useful to those who would like

especially to keep the game of retro gaming machine in the video. Compatibility with USB 3.0 host controller's the place to be worried about, but if there is no need to stick to the operation in less PC, XCAPTURE-1 as a video capture device for playing video recording, it would be a great choice.

I want to record as it is a non-compressed video in XCAPTURE-1 and VideoKeeper2

Although become digression, it came up to have tested the XCAPTURE-1, maniac demand there is one.

XCAPTURE-1 has transmitted a video image captured leaving PC in uncompressed encoding VideoKeeper2 is doing. If it, I wonder what you are not going to the video you can also save remain uncompressed. "Tokyo Game Show 2013" author, the plurality that he was on stage in the event to introduce gamers video capture device of AVerMedia Technologies booth, but are utilizing the video capture device to validate the test play in the field of game development from game developers, "the image from the game machine, is recorded in a non-compression, you want to use for debugging," it there was a request that. For example, suppose during a test play you have found a small problem such as "uneven reversal of the normal map" or "polygon of dot unit embedment and crossing". It's not to play the video that was recorded in order to point out the "here is wrong," says programmers and artists, but there is that detail has got lost by MPEG compression, the situation is that the "do not know may be seen." but there are likely many can become. Even a gamer, there will be hope that "only detail of this video want to leave." Of it is lost by recording quality, it's still sad thing. It is, of course, there is that can you can use the video capture software other than VideoKeeper2, and because much trouble became easier to use capture software made of microcomputer software, it is easier for me to complete this alone. If you are able to capture an image of uncompressed XCAPTURE-1 side, it is directly stored in the PC, the user would also extend to the usage will be able to or encode or edited depending on the application. I think that by all means I want you to consider the support of uncompressed capture.