

Dear Customer:

NetVision Inc.  
Marketing Department

## About SVI-03

Dear Sirs:

In this time, thank you for buying the SV series.

It is happy if it is possible to refer because it boiled in the one turning which uses the first time SVI-03 and it mediated between the overview of the manual.

Cordially yours

View

### 1、 The installation and the folder explanation

Refer to the readme file which is in the top of the CD. This is Japanese brochure.

Overview at the Readme file:

#### 1-1 About the software CD

¥Appl folder: SVI application ¥Driver folder: device driver ¥Doc folder: documents etc

#### 1-2 Installation of the device driver for the SVI board

- ① Connect SVI-03 and a PC with the USB2.0 cable.
- ② Turn on the power of SVI-03.
- ③ It requires driver installation, set a CD-ROM in the drive.

#### 1-3 Installation of the application

- ① It is storing an application in the Appl folder of the CD-ROM, copy all contents of the ¥Appl folder on to hard disk.

### 2、 Setup of the board

Refer to the hard ware specification in the Doc folder.

We request a connection procedure below.

- 1- The VDDL voltage level adjustment by SVI-03 (The voltage level adjustment with the target)
- 2- Connect a target and SVI-03.
- 3- Connects a PC and SVI-03.
- 4- SVI-03 electric power switch (S5&S6) ON
- 5- Software of SVImon start-up for the monitor

\*Attaches the excerpt of the hard ware specification beforehand.

\*Attaches the excerpt of the software manual beforehand.

End

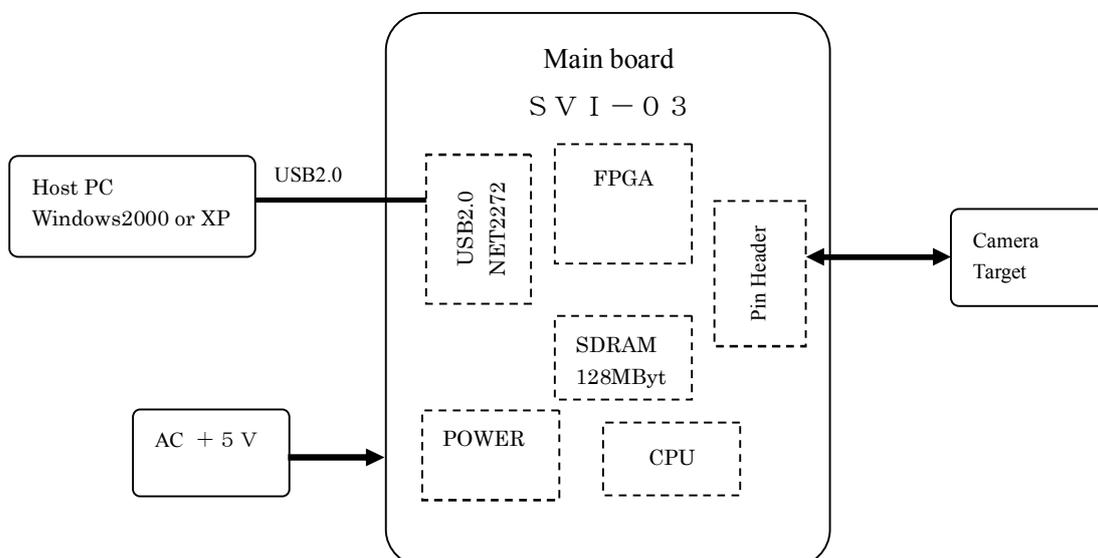
## 1. Hardware overview

The camera I/F board which uses this manual by the camera module evaluation: It is the hard ware manual of SVI-03. PC has USB2.0 interface can be used and can enter the image of the camera real-time easily.

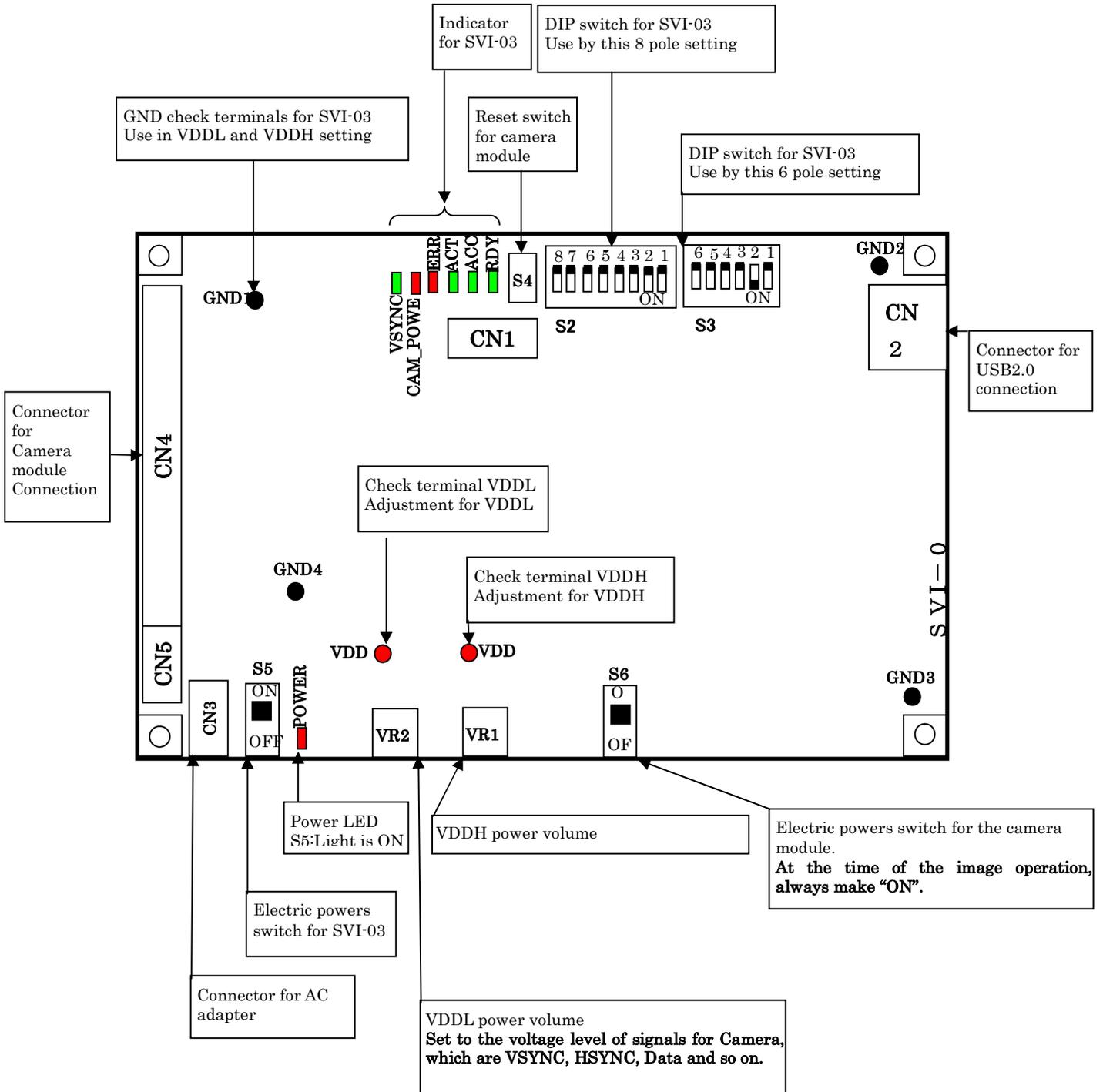
- Host PC I/F is USB2.0/480Mbps.
- Data fetch which doesn't have pulling-out is possible with having SDRAM (It is possible to have to 256 MB option from 128-MB).
- It supports the monitoring mode, recording mode 2 corner mode. For the details, interferes to the postscript.
- The communication facility of I2C  
It is possible for the V synchronous register to read with the host feature of I2C.  
It publishes a read data in the header information or the blanking data and it transfers it to the host PC.
- There is fixed period well-informed man Tomoki ability to the host PC.
- It is able for a change to be entered by the image data from the camera module, being 8bit(YUV,4:2:2), 8bit(RGB, 4:4:4), 16bit(YUV,4:2:2).
- The save the Raw data of 10 or 12 bits
- The setting to the evaluation board, the status reading in and so on are possible by having a general output-port 8 bits and Input-port 8 bits.
- By having a PLL internal organ clock generator for image CLK, the system clock to the camera module can be optionally changed.

## 2. Connection diagram

This manual is the H/W specification of evaluation substrate (SVI-03) for the CCD/CMOS camera module.



SVI-03 outline arrangement



3. Powers VDDH, VDDL for the camera module

3.1. VDDH

Use VDDH with the inner power of the camera module and so on.

It adjusts in VR1 to load on the SVI-03 substrate. The adjustable-range is adjustable to +1.25V-+4.00 V.

In case of shipment, it sets to +2.9 V.

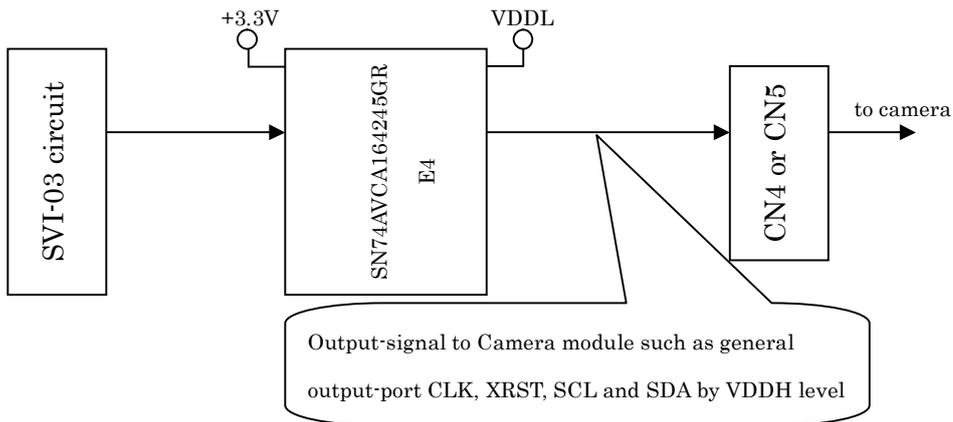
3.2. VDDL

VDDL is a power for the I/O signal level to the camera module.

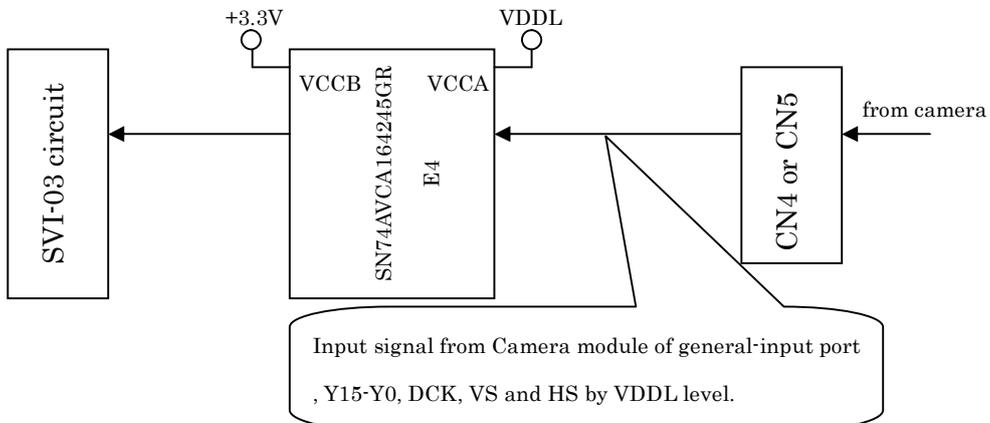
It adjusts in VR2 to load on the SVI-03 substrate. The adjustable-range is adjustable to +1.25V-+4.00 V.

In case of shipment, it sets to +2.9 V. The input/output outline circuit from the camera module is as follows.

3.2.1. Output cur kit image



3.2.2. Input cur kit image

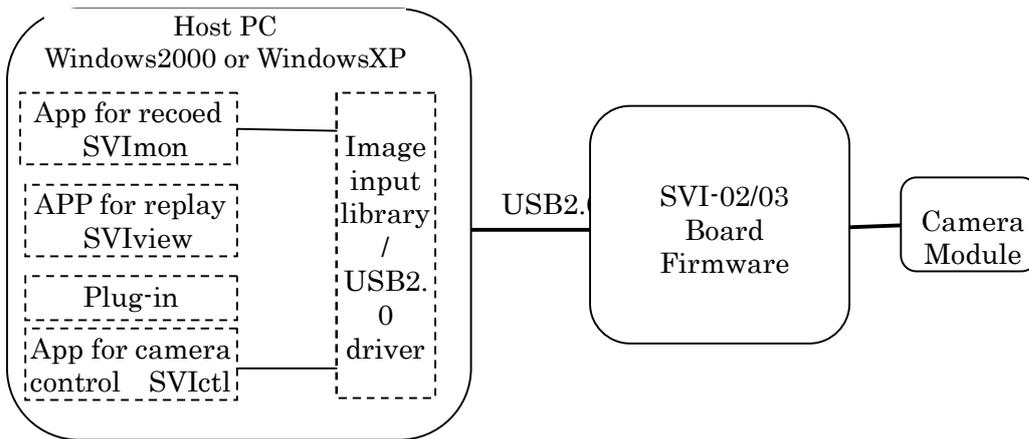


- Download a data sheet from Texas Instruments' HP and refer to the electric specification of the driver-(SN74AVCA164245GRE4).

4. SVI software overview

Sky Vision Image, It is composed of software and SVI board on Windows the purpose of which was the evaluation of the camera module, and firmware and SVI transfer-station substrate. The camera module becomes the module which the customer tries to evaluate.

【Figure 1】 System configuration figure



This system is the system which can capture the image data of the camera module which was controlled by the SVI board by the USB2.0 interface at the WindowsXP/Windows2000 built-in host PC.

【Table 1】 SVI composition list

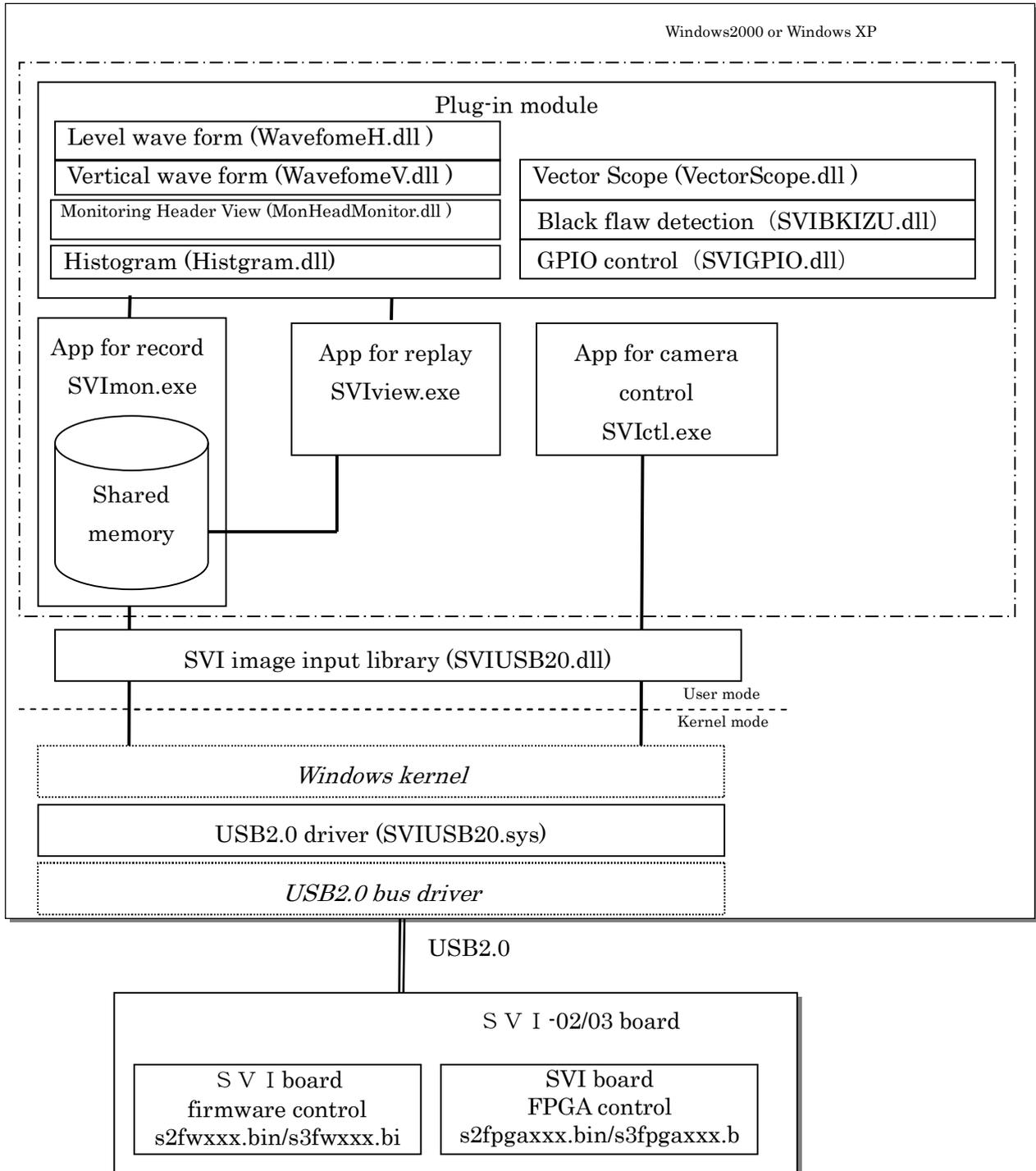
Application	App for the record	SVImon (SVImon.exe)
	App for the replay	SVIview (SVIview.exe)
	Plug-in	Monitoring Header View (MonHeadMonitor.dll)
		Histogram (Histogram.dll)
		Black flaw detection (SVIBKIZU.dll)
		GPIO control (SVIGPIO.dll/SVIGPIO3.dll)
		Vectors Cope (VectorScope.dll)
	Level wave form (WaveformH.dll)	
Vertical wave form (WaveformV.dll)		
App for camera control	SVIctl (SVIctl.exe)	
Driver	Driver	SVI board exclusive use USB2.0 driver (SVIUSB20.sys)
		SVI image input library (SVIUSB20.dll)
Firmware	SVI board	SVI board control software

	control	(s2fwxxx.bin/s3fwxxx.bin)
Hard ware	SVI board	SVI-02/03
	SVI board FPGA	The FPGA data for the SVI board (s2fpgaxxx.bin/s3fpgaxxx.bin)

5. SVI software structure figure

The software structure of SVI is described in [figure 2]. The software of the broken line frame is included in the OS.

[Figure 2] software structure figure



6. Application for the record-SVImon (SVImon.exe)

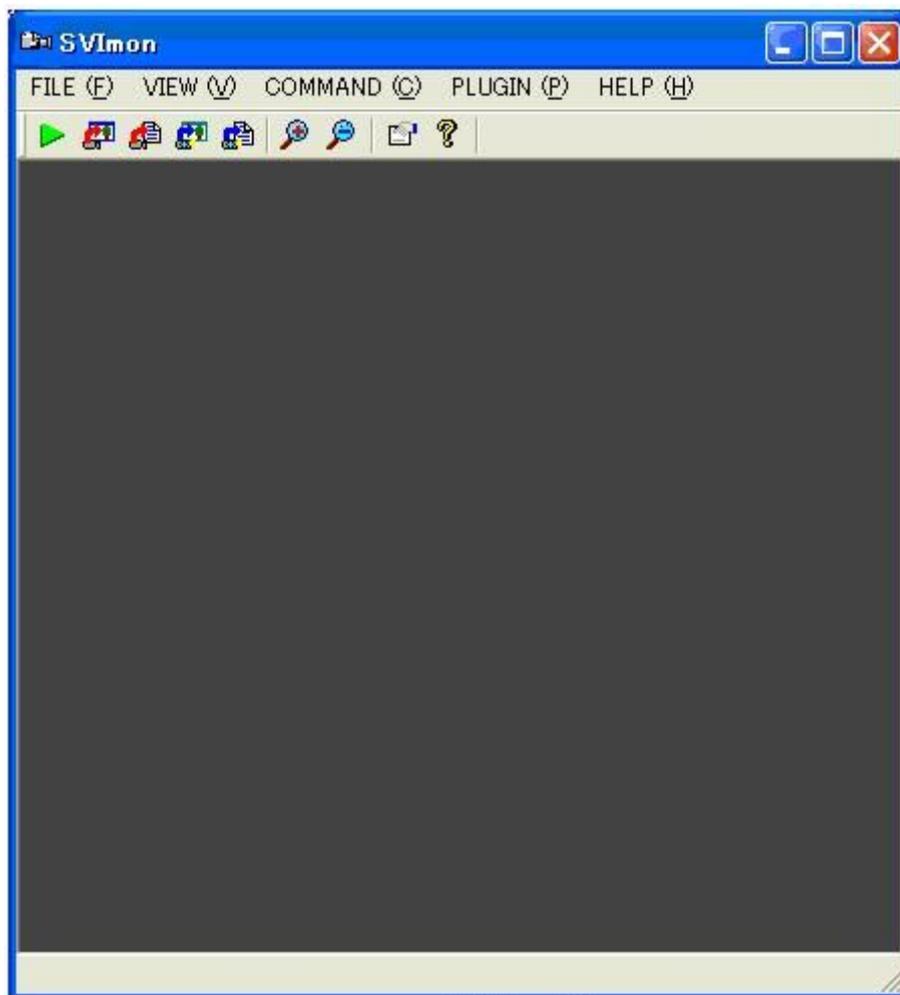
It displays (the monitoring operation) image data from the SVI board and SVImon saves (the recording operation).

It real-time displays the image data which was taken in from the SVI board with the monitoring operation.

It captures the recording image data which was accumulated by the SVI board, using a shared memory with the memory which is loaded into the SVI board and same size (128MB) in this shared memory and it saves with the recording operation.

Also, SVImon has a plug-in interface and can add a feature newly, too. A plug-in is automatically added to the Tool menu of the main window in case of SVImon start-up when it does save beforehand into the plg directory which is in the SVImon execution module and the same directory.

【Figure 3】 SVImon main window



Menu list of SVImon is shown in 【table 2】.

【Table 2】 SVImon menu list

FILE	
Option	It opens a dialog for the option setting and it sets cut size, video setting, auto resize setting, buffer size, and so on.
Firmware Update	Firmware of the SVI board is updated.
FPGA Update	FPGA data of the SVI board is updated.
PLL Update	Changes PLL setting by the SVI-03 board.
Exit	It ends SVImon.
VIEW	
Zoom Up	It expands a display image (2 > 4 > 8 >16).
Zoom Down	A display image is reduced (1/2 > 1/4 > 1/8).
Tool Bar	It changes the display of tool bar/non-display.
Status Bar	It changes the display of status bar/non-display.
Monitoring Information	It displays image information, general I/O port value, camera signal status of the SVI board and so on.
Color Bar	It displays the RGB value, the YUV value, the 8x8 dump of the mouse position.
COMMAND	
Monitoring Start	It begins monitoring operation and it displays captured image data.
Monitoring Stop	It stops monitoring operation.
Recording & View	It displays image data with specification size by capturing SVIview about whether or not it is a specification framing.
Recording & Save	It saves image data with specification size in the taking-in DAT form about whether or not it is a specification framing.
1Frame Recording & View	It displays the image data of 1 frame by capturing SVIview.
1Frame Recording & Save	It saves the image data of 1 frame in the taking-in BMP format or the DAT form.
Bitmap Save	It saves the data which is displayed at present with the BMP format as the still image.
Monitoring & Save	It preserves a monitoring image just as it is in the hard disk.
PLUGIN	
Monitoring Head Monitor	It displays the frame information to be monitoring.
Histogram	It displays a histogram in the image data to be monitoring.
SVIBKIZU	It detects a black flaw from the image data to be monitoring.
SVIGPI0/SVGP103	It accesses the general port which was connected with the SVI-02/03 board.
VectorScope	It displays the distribution map of the color.
WaveformH/V	It displays the level of the color in the corrugation (H: Level/ V : Vertical).
Help	

Index	It displays help.
About SVImon	It displays version information.

Feature list of SVImon is shown in 【table 3】

【Table 3】 SVImon feature list

Monitoring feature	
Display	
Zoom	It scales the display image to be monitoring. The expansion : 1 time, twice, quadruple, 8 times, 16 times (The simple extension of the pixel unit) The reduction : 1/2 times, 1/quadruple, 1/8 times (The cull)
Auto resize	It automatically changes the window size to be monitoring into the bustle image size.
Scroll bar	In the window size to be monitoring, when fixing, the scroll bar becomes valid/invalid automatically with the size with bustle image size.
Frame rate display	It displays the frame rate of the present display frame rate/the camera (factual) in the status bar.
Status display	It displays with "Monitoring..." in the title bar when monitoring and it blinks.
Color change	
YUV-> RGB8 change	When the image data is YUV form, it changes into the 24-bit RGB data for the display.
RGB5 >YUV > RGB8 change	When the image data is a RG B-type, it changes after the change and moreover into the 24-bit RGB data for the display to the YUV.
RAW > RGB8 change	When the image data is RAW form, it changes gray into the 24-bit RGB data for the display.
Save	
Continuation save for frame	Frame data from camera save to hard disk. Header information is added to each frame.
Recording feature	
Display	
Status display	It displays with "Recording..." in the title bar when recording and it makes blink.
SVIview co-operation	
1 frame	It displays the image data of 1 frame by capturing SVIview.
The specification framing/the specification size	It displays an image sequence data by capturing SVIview.
The save	
1 frame	It saves the image data of 1 frame in the taking-in BMP format or the DAT form.
Specification framing / Specification size	It saves an image sequence data in the taking-in DAT form.
Bitmap	It saves the data which is displayed at present with the BMP format as the still image.

Setting feature	
Pointed cut setting	
Pointed cut position	It begins and it sets the position of the display to the reference in the original size of the camera module output.
Video setting	
Image data form	It sets YUV form, a RGB-type / RAW form.
RAW bit row	It sets an entry bit at the time of 10 bits of RAW, 12 bits of RAW.
Display setting	
Auto Resize	It sets the validity/none of the auto resize feature.
DirectX	It sets the validity/none of the monitoring image by DirectX.
Environment setting	
The buffer size for the monitoring	It sets the size of the buffer for the monitoring.
The sharing memory size	It sets the size of the shared memory. Basically, it sets the size which is identical with the memory on the hard ware.
The monitoring mode	It sets whether or not to do a monitoring mode with the double buffer or the ring buffer.
Another function	
Plug in-system	It captures the SVI special use plug-in module which was created as DLL of the Windows. It is possible to use from SVImon, SVIview with the API. It is possible to add to the pull-down menu of the PLUGIN menu automatically when finding SVI special use plug-in in the folder of the specification in case of SVI app start-up.
Buffer management	It manages a buffer for the display, a double buffer for the monitoring, a shared memory.
Image information display	It displays while image information is real-time updated.
SVI board displaying the information	It displays while contents at the general I/O port of the SVI board, the contents, and the version Information of the camera signal status register are real-time updated.
Update	The firmwares, the FPGA data, the PLL data of the bustle hard ware are updated via USB2.0.
Setting content save	It preserves each set value in the installation folder as the .INI file. In case of start-up, it reflects setting in the reading in last time.

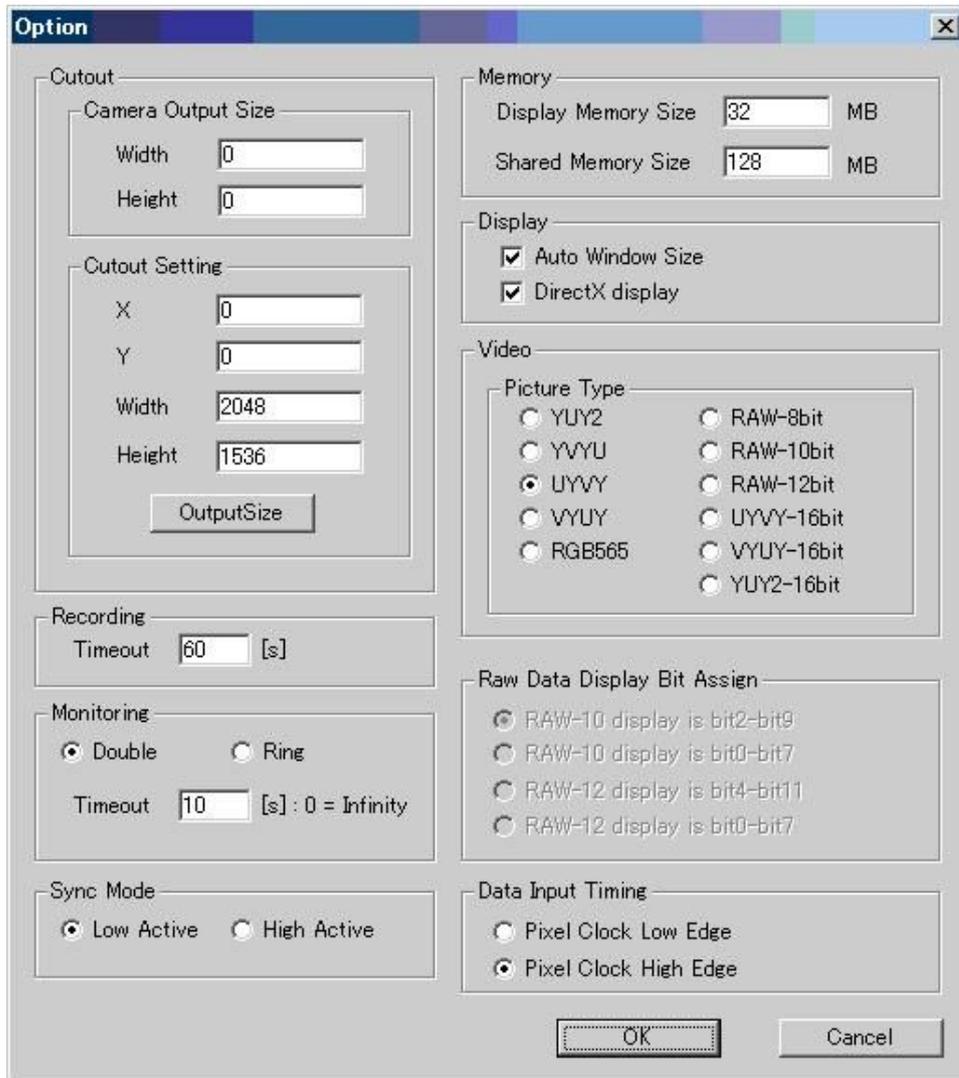
6.1. Menu details

6.1.1. The File menu

FILE(F)
Option.
F12
Firmware Update
FPGA Update
PLL Update
Exit

6.1.1.1. Option

It opens a dialog for the option setting and it sets a pointed cutting size, video setting, auto resize setting, and buffer size and so on. (It allocates for the F12 key).



Cutout

Camera Output Size

Width It displays the size width which the camera module is outputting.

Height It displays the size height which the camera module is outputting.

Cutout Setting

The X It specifies an X-coordinate in the pointed knife range (The even number).

The Y It specifies a Y-coordinate in the pointed knife range (The even number).

Width It specifies the size width of the pointed knife range (The even number).

Height It specifies the size height of the pointed knife range (The even number).

Output Size It copies the output size (the width, the height) of the camera module.

Video

Picture Type

YUY2 It assumes that the output image form from the camera module is YUY2 (YUYV).

VYU It assumes that the output image form from the camera module is VYU.

UYVY It assumes that the output image form from the camera module is UYVY.

VYUY It assumes that the output image form from the camera module is VYUY.

RGB565 It assumes that the output image form from the camera module is RGB565.

RAW-8bit It assumes that the output image form from the camera module is -8 bits of RAW.

RAW-10bit It assumes that the output image form from the camera module is -10 bits of RAW.

RAW-12bit It assumes that the output image form from the camera module is -12 bits of RAW.

UYVY-16bit It assumes that an output image form from the camera module does output of -16 bits of UYVY.

VYUY-16bit It assumes that an output image form from the camera module does output of -16 bits of VYUY.

YUY2-16bit It assumes that an output image form from the camera module does output of 2-16 bits of YUY.

Display

Auto Window Size It adjusts to the size that the camera module is outputting a monitor ring window size automatically.

DirectX display It displays a monitoring image by DirectX.

Memory

Display Memory Size It specifies the size of the buffer memory for the display (The 1-MB unit).

Shared Memory Size It specifies the size of the sharing memory (The 1-MB unit).

Recording

Timeout			It sets a time-out (the second) in recording.
Monitoring			
Double			It sets a memory manner of use on the SVI board to the double buffer.
Ring			It establishes a memory manner of use on the SVI board in the ring buffer.
Timeout			It sets a time-out (second) in monitoring. (None is 0).
Raw Data Display Bit Assign(※)			
RAW-10	display	is	It specifies to display bit9 from bit2 in 10 bits at the time of -10 bits of RAW.
RAW-10	display	is	It specifies to display bit7 from bit0 in 10 bits at the time of -10 bits of RAW.
RAW-12	display	is	It specifies to display bit11 from bit4 in 12 bits at the time of -12 bits of RAW.
RAW-12	display	is	It specifies to display bit7 from bit0 in 12 bits at the time of -12 bits of RAW.
Sync Mode			
Low Active			It assumes that the polarity of the synchronous idle which is output from the camera module is Low Active.
High Active			It assumes that the polarity of the synchronous idle which is output from the camera module is High Active.
Data Input timing			
Pixel Clock Low Edge			The SVI board captures the timing which captures image data from the camera module by the <u>↓</u> getting off the pixel clock.
Pixel Clock high Edge			The SVI board captures the timing which captures image data from the camera module in the rising of the pixel clock.
The OK			It saves setting and it ends a dialog for the option setting.
Cancel			It repeats setting and it ends a dialog for the option setting.

※ The "Data Input timing" setting is SVI-02 the FPGA version is 220, SVI-03 the FPGA version supports from 100.

※ As for the taking-in data assignment by "Video-Picture Type" and the SVI board, see "the 10. PictureType supplement".