

Capture Software for SVM-03U

[NVCap]

Software Manual

V1.21

Revision History

Edition	Date	Detail	Charge
1.00	2015/08/12	New file	H. Yamada
1.10	2016/01/04	Changed chapter format, added some charts	H. Yamada
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1. Outline

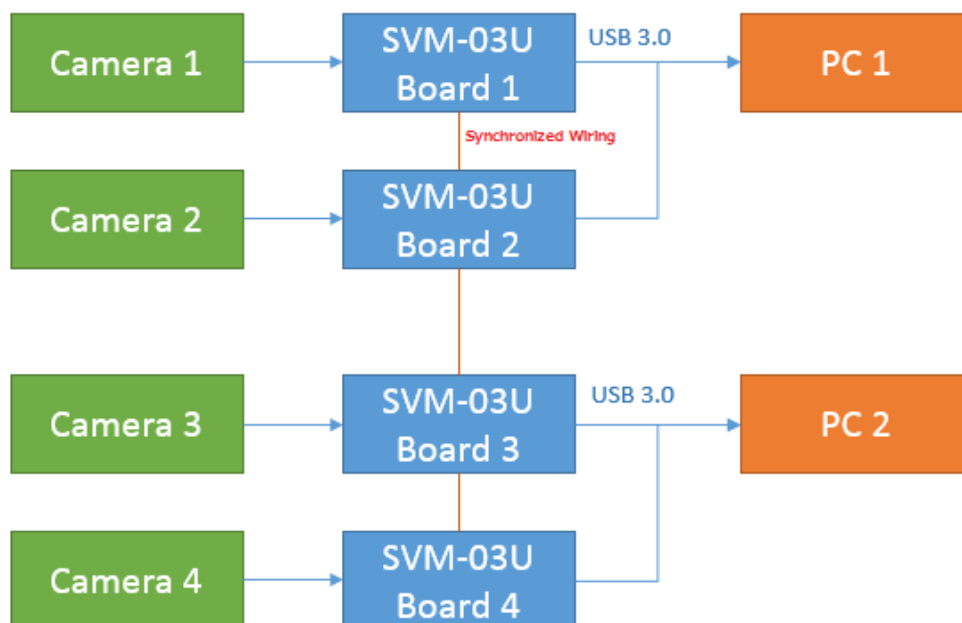
【Figure 1.1】 NVCap Previewing Window



Capture software “NVCap” is a program on Windows that works on the environment using UVC capture board “SVM-03U” (SVM board), made by NetVision Corp. This program has simple user interface to preview/capture video shown as 【Figure1.1】. In addition, the NVCap can record video as .avi format and control the target sensor and the SVM board.

The “NVCap” software is corresponding to not only single channel capturing using one SVM board but also multi channel capturing using multiple SVM boards up to 4ch. Block diagram of multi channel SVM-03U based capture environment is shown as 【Figure 1.2】. In this figure, two SVM-03 boards are conncted to one PC are connected through USB3.0 cable in this configuration to optimize the load. Optionally, it is able to synchronize start/end timing for recording between multiple SVM-03 boards by using wiring. Recording multi-channel HD image is possible by using high performance PC and SSD (Solid State Disk). Many kinds of digital image sensor can be captured by SVM boards and NVCap application.

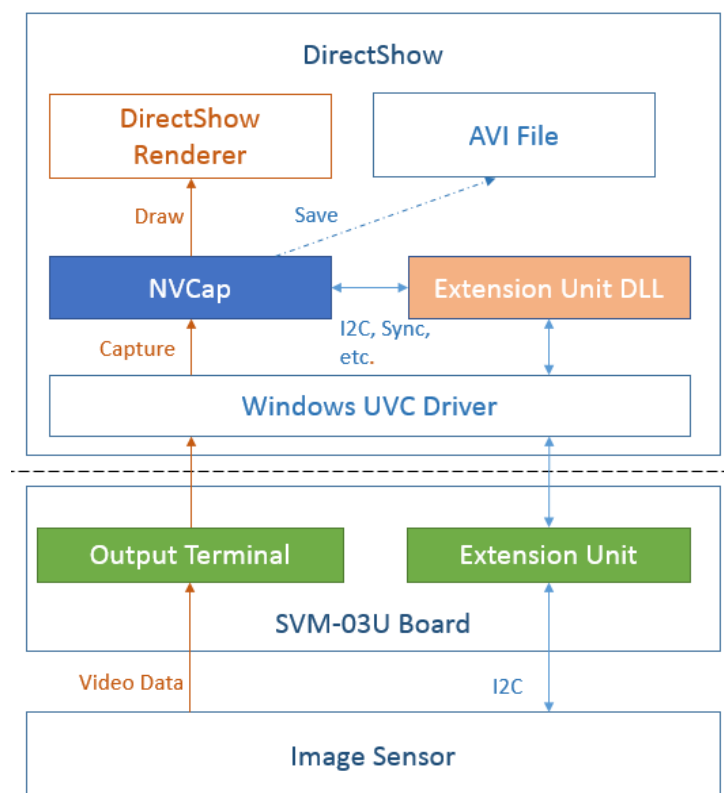
【Figure 1.2】 SVM-03U 4ch Capture Environment Configuration Example



This software is able not only to capture/record video image but to transmit camera setting through I2C and start capturing using external trigger signal (synchronized capturing). These functions are extension; installing “Extension Unit DLL” is required to use these extension function. How to install DLL is referred to the 3rd chapter. To use this software installing hardware driver is not required.

– When you use USB3.0 hub (or PC card-based USB3.0 controller), operating instability is caused depending on a USB controller mounted on the hub. We recommend to use USB controller of TI Company.

【Figure 2.2】 Software Block Diagram



Software block diagram is shown on 【Figure 2.2】. “NVCap” and “Extension Unit DLL” is on the figure are the composition of the software.

As shown on the figure, NVCap has capturing video data function, saving function and I2C transceiver function. Capturing and saving are available by OS standard driver. I2C transceiver to sensor etc is done through extension unit. It is done in the framework of DirectShow by way of Windows standard driver through our original “Extension Unit DLL” installed in the PC.

For detailed information etc of SVM-03U board, refer to attached summary specifications.

2. Install and Uninstall

2.1. How to Install

2.1.1. Install “NVCap” Software

【Figure2.3】 File list

(Date of modification, size is different for version)

名前	更新日時	種類	サイズ
NVCap.exe	2015/07/27 12:54	アプリケーション	80 KB
NVExtensionPlugin.dll	2015/05/19 14:24	アプリケーション拡張	39 KB

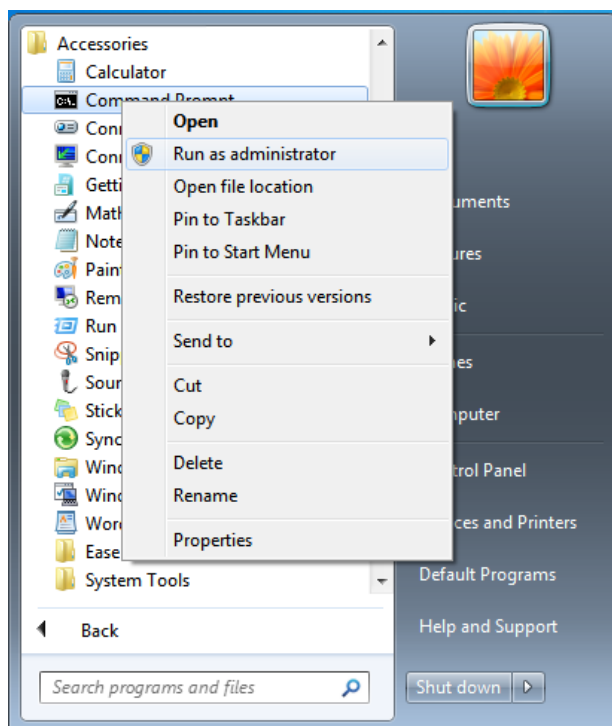
Currently there is no installer. Copy “NVCap.exe” and “NVExtensionPlugin.dll” in the “NVCap” folder in the CD into appropriate folder on your PC. Installation is finished just copying these files. To run NVCap application click (or launch) “NVCap.exe”.

If you would use “Extension Unit DLL” please refer section 2.1.2.

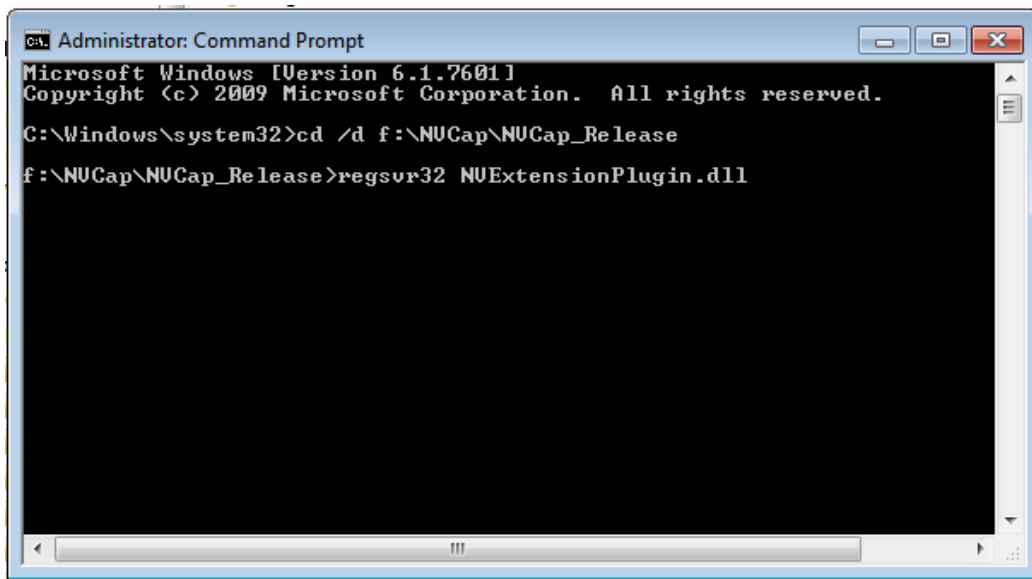
“Microsoft Visual C++ Redistributable Package(x86)” and “Microsoft Visual C++ SP1 Redistributable Package(x86)” that Microsoft provide to us is required to operate program. If these programs are not installed in your PC, you need to install separately. For details, refer to web page of Microsoft.

2.1.2. Install “Extension Unit DLL”

1. Run “Command prompt” as administrator.

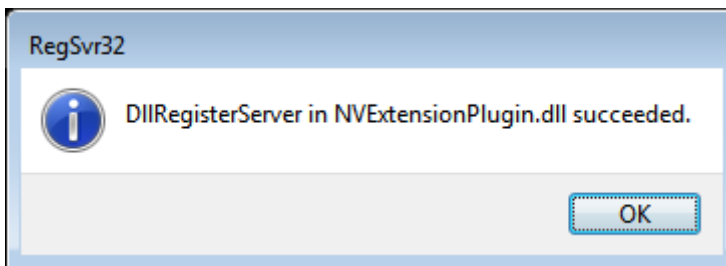


2. Move the current folder by `cd` command into where NVCap is installed.



– Note that the destination directory may be differ in your environment.

3. Register DLL to PC by “`regsvr32 NVExtensionPlugin.dll`”.
4. If the following dialog are displayed, installation of Extension Unit DLL is succeeded.



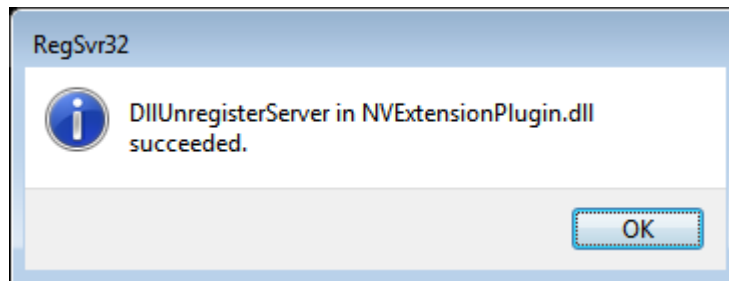
2. 2. How to Uninstall

2.2.1. Uninstall of “NVCap” Software

Uninstallation is finished by deleting file copied on chapter2.2. You need to uninstall “Extension Unit DLL” previously if “Extension Unit DLL” is installed. (Refer to 2.2.2)

2.2.2. Uninstall “Extension Unit DLL”

1. Move to folder that NVExtensionPlugin.dll is existing by similar procedures of chapter 2.1.2
2. Unregister DLL from PC by commanding “`regsvr32 /u NVExtensionPlugin.dll`”.
3. If the following dialog are displayed, uninstallation process is succeeded.

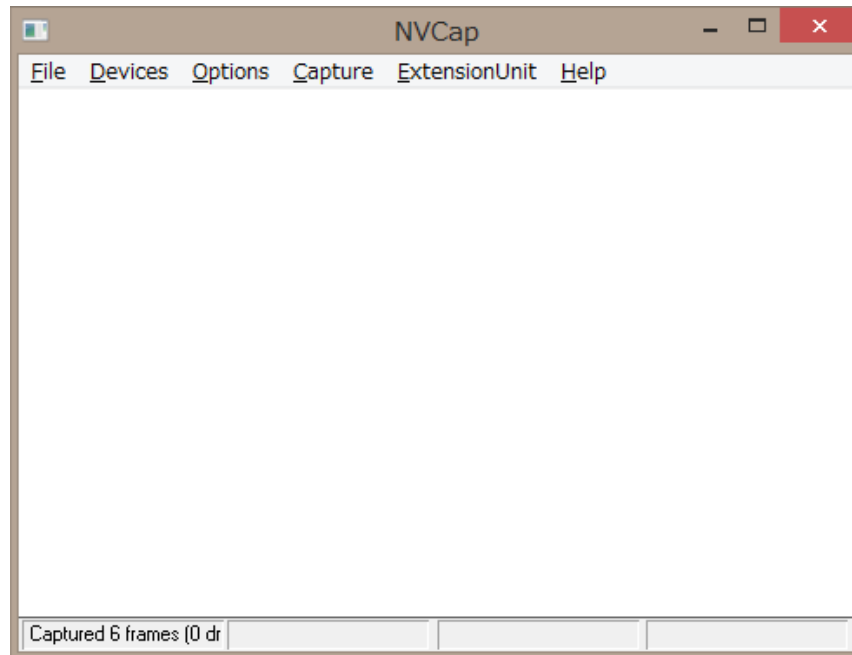


3. Capture Software for SVM-03U (NVCap) Detailed Description

Capture Software for SVM-03U (NVCap) is GUI software for Windows 7/8 that has function of previewing and saving image that captured by SVM board up to 4ch.

3.1. NVCap Window Explanation

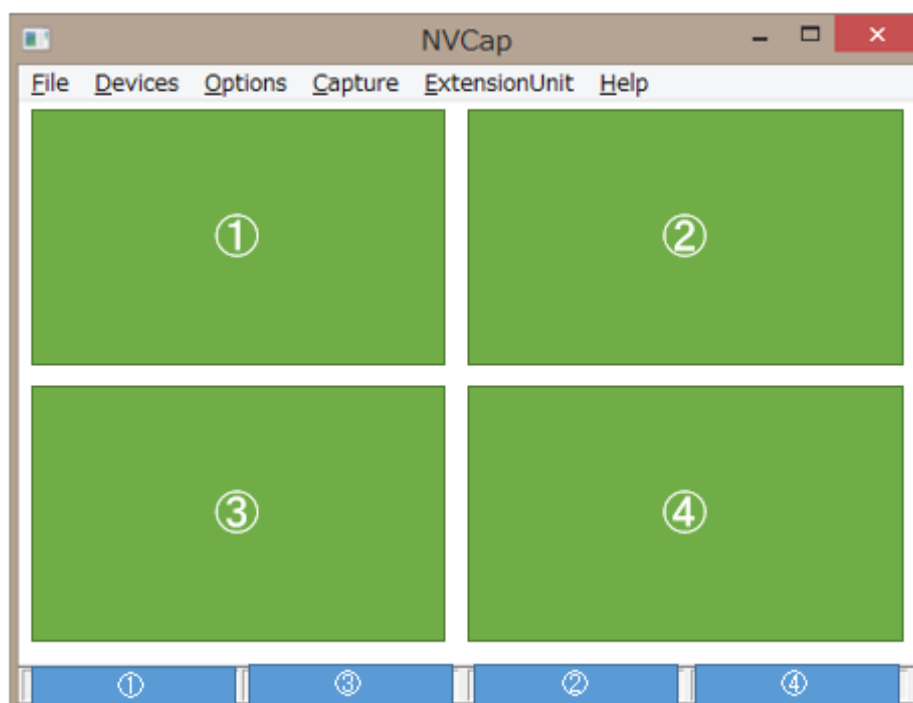
【Figure 3.1】 NVCap Main Window



As shown on Figure 3.1, main window is simple that is constructed with menu bar, picture view area, and status bar. In picture view area, image from device is displayed at one area in case of connecting one device, divided for four sub areas in case of connecting multiple device.

Corresponding of camera number that is set by device setting (File -> Settings...) , picture view area and status bar is shown on 【Figure 3.2】.

【Figure 3.2】 Corresponding of Multi Channel Chaptering

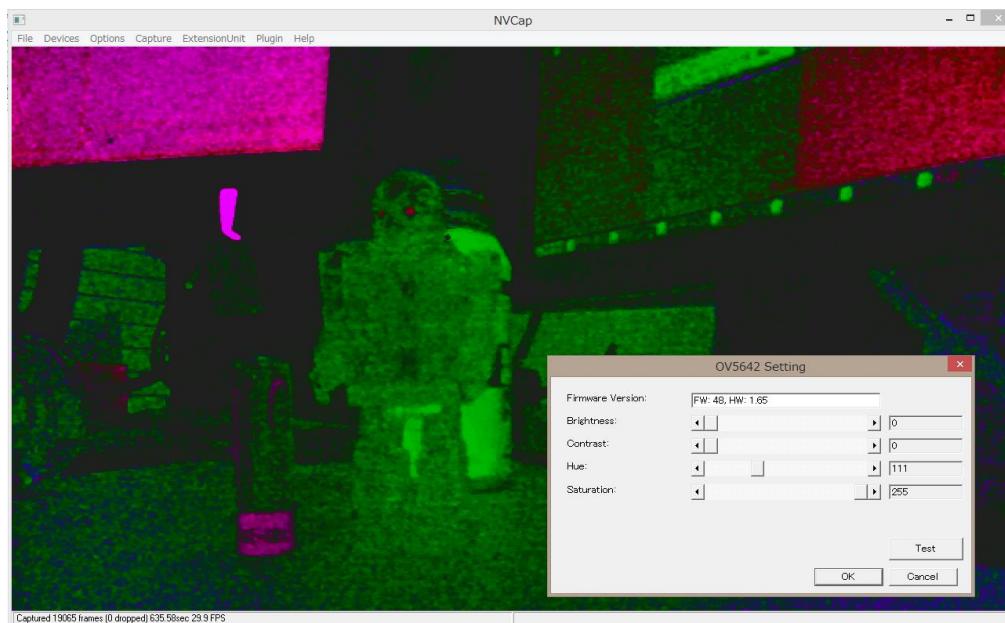


3.2. Menu List

- File
 - Settings... Show Option Setting dialog.
 - Quit Quit NVCap application.
- Devices Recognized devices list are displayed below “Devices” menu.
 - (Device name) If you click to check, capturing device is set to “(device name)”.
- Options
 - Preview Start / end previewing video.
 - Audio Format... (Not used)
 - Video Capture Filter... Show capture filter dialog.
 - Video Capture Pin... Show capture pin dialog.
- Capture
 - Start Capture Start AVI capturing.
 - Stop Capture Stop AVI capturing.
 - Capture Audio (Not used)
 - Set Time Limit... Set time limit of AVI capturing.
 - Screen Shot... Save screenshot (.bmp format).
- ExtensionUnit
 - I2C Transceiver... Display “I2C Transceiver” dialog.
 - I2C Stream Sender... Display “I2C Stream Sender” dialog.
 - Test (Not used)
 - HW Reset (Not used)
 - Reset Enable (Not used)
- Plugin Call registered plugin DLLs.
- Help
 - About... Show version information dialog.

3.2.1. Plugin DLL Function

【Figure 3.4】 Example of image quality adjustment by plugin DLL



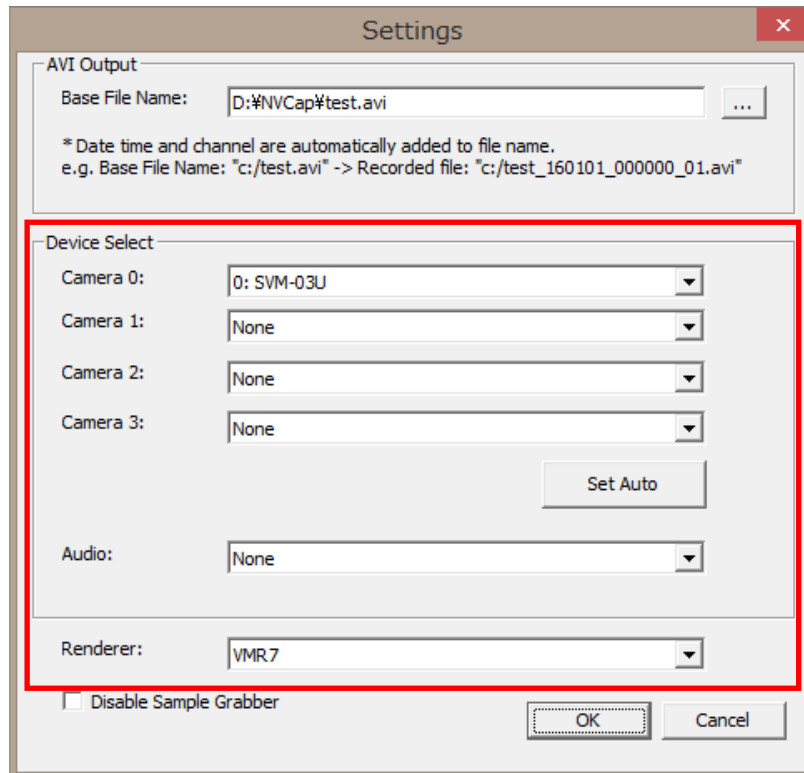
NVCap has “plugin DLL function” for setting original function of camera on dialog form by using optional DLL. Adjustment of brightness, hue through I2C signal and so on is done by dialog called by plugin DLL.

For more information about plugin DLL function please contact us.

3.3. NVCap Operation Method

3.3.1. Preview Video

1. Setting device setting (File -> Settings)



Setting device that capture from “Camera 1” to “Camera 4”. You can set up to four SVM-03U boards. Automatically set from recognized devices on PC by pressing “Set Auto”. NVCap opens device by pressing “OK” button.

If you want to capture audio at the same time, you need to set device to “Audio”. But recording multi channel, audio is output only for device appointed to camera 0.

Select the renderer used for window display in “Renderer”. It is able to recover from symptom by changing this setting in case of occurring error and failing previewing at the time of using high-resolution image sensor.

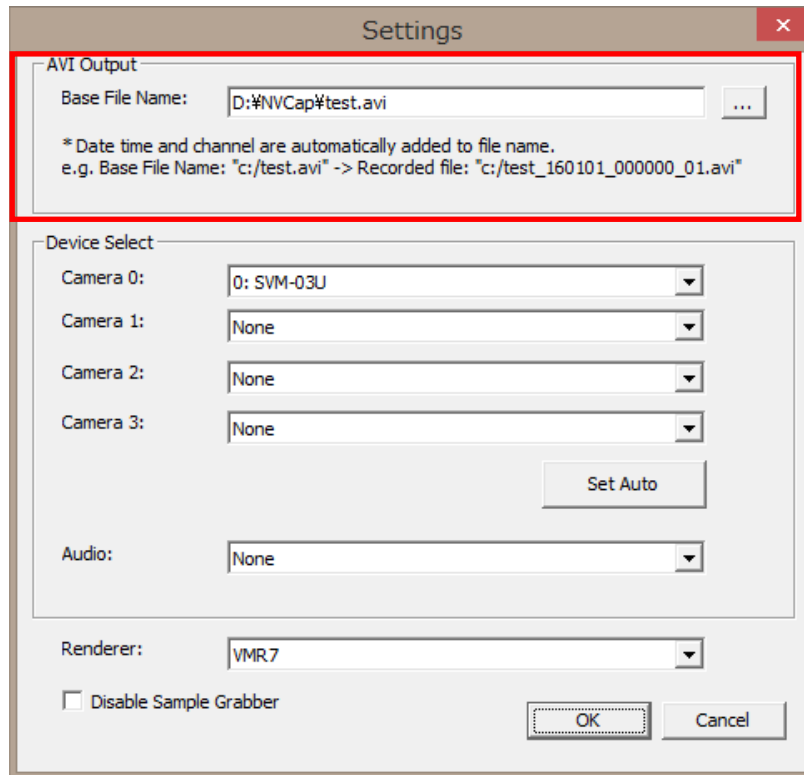
You don't need to configure settings at the time from the second starting on, because set contents are saved. At the time from the second starting, devices are opened caused by previous setting.

But, if it is failed to open devices by the reason such as connected devices are changed, this setting is reset and you need to set anew.

2. Transmit to initial setting to camera through I2C as necessary.
(ExtensionUnit → I2C Transceiver / ExtensionUnit → I2C Stream Sender)
The details such as I2C transfer methods are mentioned later.
3. Start previewing. (Options → Preview)

3.3.2. Capture Video (.avi format)

1. Set format of output file. (File -> Settings)



Set the base file name of output file to “Base File name” used for capture(.avi) and screenshot(.bmp) and so on. For example, base file name is test.avi, file name made by capture is

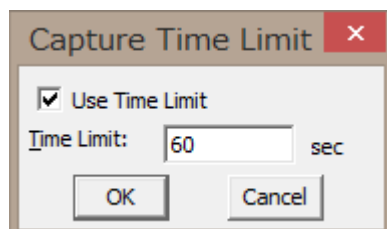
test_[date]_[time]_[ch].avi

file name made by screenshot is

test_[date]_[time]_[ch].bmp

Date and time are expressed as a numeral of six digits.

2. If you want to display image during capturing, preview image. (refer to 3.3.1)
3. Set time limit as needed.



4. Start capturing. (Capture -> Start)

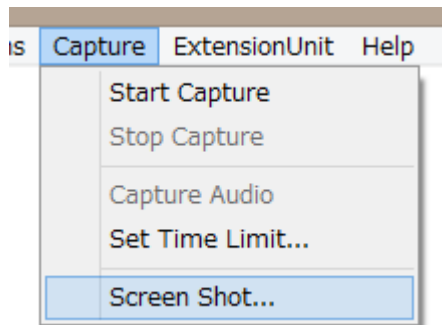
In case of multi channel capturing, start capturing for all device in turn, we don't guarantee about the time identity of the start frame. About the way of starting capture synchronized to trigger

signal, we mention at 3.3.6.

5. Finish capturing. (Capture → Stop)

3.3.3. Save Screenshot (.bmp)

1. Preview image. (refer to 3.3.1)
2. Save screenshot in an arbitrary timing. (Capture → Screen Shot)

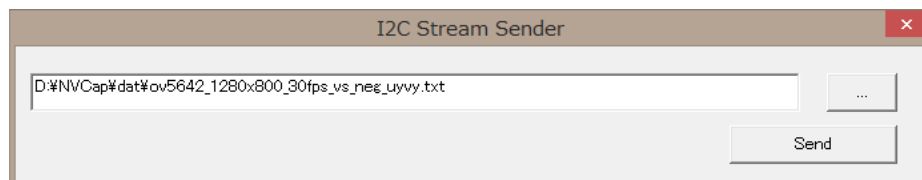


Saved file path and file name are mentioned at the chapter of image capturing. At the case of using plural numbers of SVM-03U devices, screenshots are generated to different files for each device. Start capturing screenshot for all device in turn, we don't guarantee about the time identity of the frame.

3.3.4. Text-based I2C Transmitter

NVCap can transmit contents of configuration file used for our SV series and SVMctl (SVM-03U utility software) (.txt / .dat form) to opened device through I2C bass on SVM-03U board. If plural numbers of devices are opened, file is transmitted to all devices in turn. About format of setting file, please refer to another document.

1. Display I2C Stream Sender dialog. (ExtensionUnit → I2C Stream Sender)



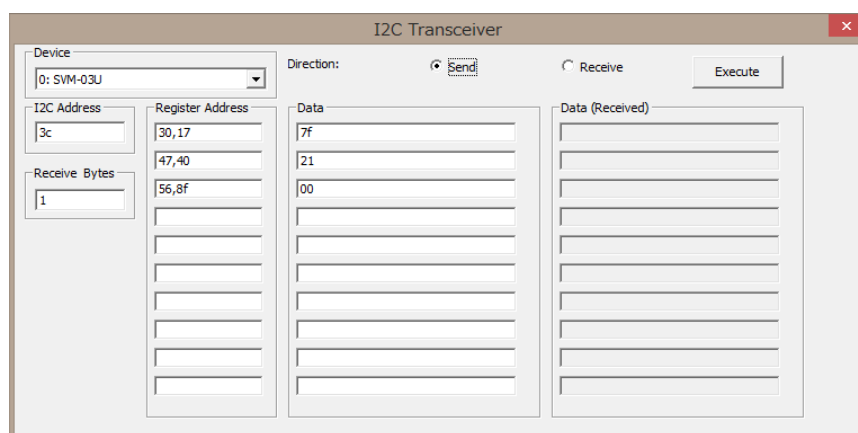
2. Press "Send" button after selecting setting file.
3. If the message of sending is automatically closed, I2C transmitting is finished.



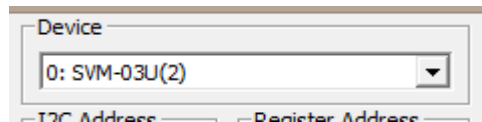
Yet, if errors are occurred at the process of transmitting or Extension Unit DLL is not installed, error message is displayed.

3.3.5. Dialog-based I2C Transceiver

1. Display I2C Transceiver dialog. (ExtensionUnit -> I2C Transceiver)



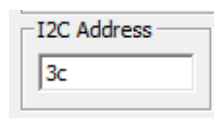
2. Select the device to communicate.



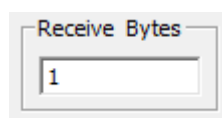
3. Select "Send" or "Receive".



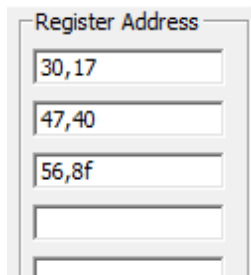
4. Set slave address (I2C Address).



5. Set maximum receive bytes. (in case of receiving)



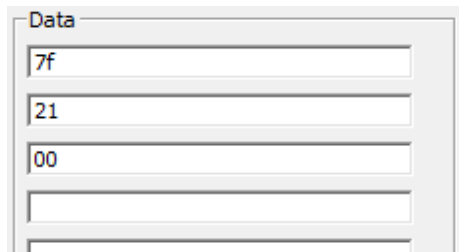
6. Set sub address (Register Address) for number of items.
(1 – 8 bytes, comma separated value)



Register Address

30,17
47,40
56,8f

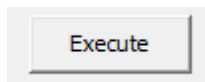
7. Set sending data (Data) for number of items. (in case of sending)
 (1 - (30 - (Register Address)) bytes, comma separated value)



Data

7f
21
00

8. When you click "Execute" button, transmission or reception is carried out.
 Received data is input in "Data(Received)" box.



Execute

*The number of packets that transmit or receive is up to ten.

If Register Address is blank, it is skipped.

*If the number of bytes that was really received is fewer than set (including reception error), indefinite value is displayed on dialog.

*Format of I2C packet that received and transmitted is shown below.

【Figure 3.3】 I2C Packet Format

Send Request



Receive Request



S: Start Bit

P: Stop Bit

W: Write Bit (0)

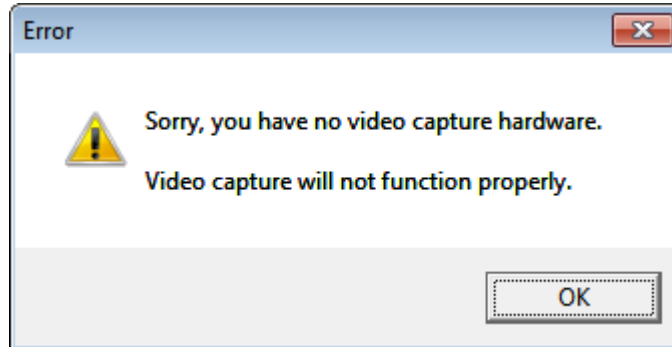
R: Read Bit (1)

A: Ack

N: Nack

4. FAQ

- When starting an error dialog as below is shown.



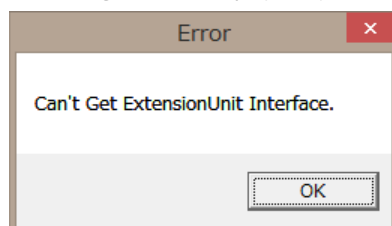
⇒ SVM-03U board is not recognized by PC. Because it takes several seconds for starting SVM-03U board, you need to wait a while before starting NVCap after USB connected.

- SVM-03U is recognized, but image is kept black screen and not displayed after starting preview.

⇒ The following problems may be caused.

- Connected by USB2.0 cable.
(USB3.0 cable is required according to resolution and data rate.)
- Image from camera is not received.
(Please confirm blinking of "VSYNC" LED on board.)
- Resolution set to SVM-03U board is different from the resolution of camera signal.
- The board started in SVM-03 mode.

- The dialog below is displayed by controlling ExtensionUnit menu.



⇒ Installation of Extension Unit DLL is not succeeded.

Please install it according to this document.

5. Recommended System Requirements

OS: Windows 7, 8.1 / 64bit, 32bit

CPU: Intel Core i5-4590 3.30 GHz or higher

RAM: 8.0 GB or higher

Connecting through USB 3.0 port

- These are recommended specifications. NVCap would work on lower specs.
- High-speed storage device such as SSD (Solid State Disk) should be used for multi channel capturing.