SeeSV-S205W User's Manual

SM Instruments Inc.

1 Contents

1 Contents 1
2 Introduction of System 3
2.1 Components of System 3
3 Hardware Installation 4
3.1 Hardware Installation 4
3.2 Status of Sound Camera Lamp 7
4 Software Installation 8
4.1 Sound Camera Software Installation 8
4.2 Sound Camera Software Activation 13
4.3 IP Config 15
5 Software Functions 17
5.1 Software Mode 17
5.2 Control Buttons 18
5.3 Sound Camera Image 18
5.4 Image Threshold 19
5.5 Image Range 19
5.6 Image Average 19
5.7 Signal Graphs 20
5.7.1 Time Signal of Microphone 20
5.7.2 Power Spectrum of Microphone 21
5.7.3 Level Trend of Beampower 21
5.7.4 1/3 Octave Level of Microphone 21
5.8 Band Pass Filter 22
5.9 Graph Selector 22
5.10 Device Status Lamp 22
5.11 Setup 22
5.11.1 Data Folder 23
5.11.2 Open Data Folder 23
5.11.3 Prefix of Filename 23
5.11.4 Record Type 23
5.11.5 Trigger Level 24
5.11.6 Duration 24
5.11.7 Product Type 25

5.11.8 Mic Gain 25
5.11.9 Mic Channel 25
5.11.10 Max/Min Level 25
5.11.11 Overlay Mode 26
5.11.12 Transparency 26
5.11.13 Mirror Mode 26
5.11.14 Image Calibration 29
5.11.15 Recording Advanced Setup 29
6 Software shortcut keys 28
7 Maintenance and Troubleshooting 29
7.1 Sound Camera Firmware Update 29
7.1.1 How to update Sound Camera Firmware 29
7.2 Modify the focus of sound camera 32
7.2.1 How to modify the focus of sound camera 32
7.3 Modify the position of overlay image 33
7.3.1 How to modify the position of overlay image 33
8 Specifications 34
9 Caution 35

2 Introduction of System

2.1 Components of System

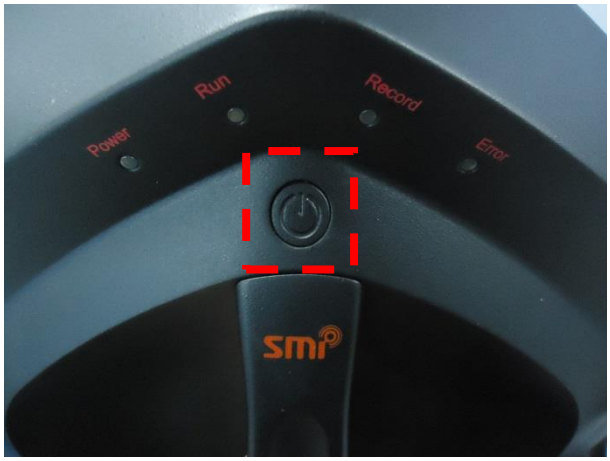
Item	Description
	Portable sound camera.
	AC/DC Power Adaptor
	LEMO to LEMO Cable.(10m)
	RJ45 LAN Cable.(1m)

3 Hardware Installation

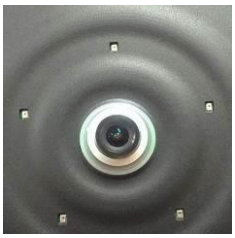
3.1 Hardware Installation

Status	Description
	Open the outer box.
	Open the inner box. - SeeSV-S205W Manual. - SeeSV-S205W Quick Manual. - SeeSV-S205W Install CD
	Take the cables out. - LEMO to LEMO cable. - RJ45 LAN cable - POE Controller

	Take out the sound camera.
	Main components of the system are shown here.

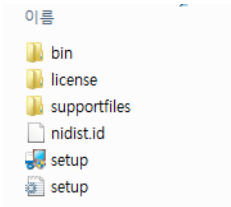
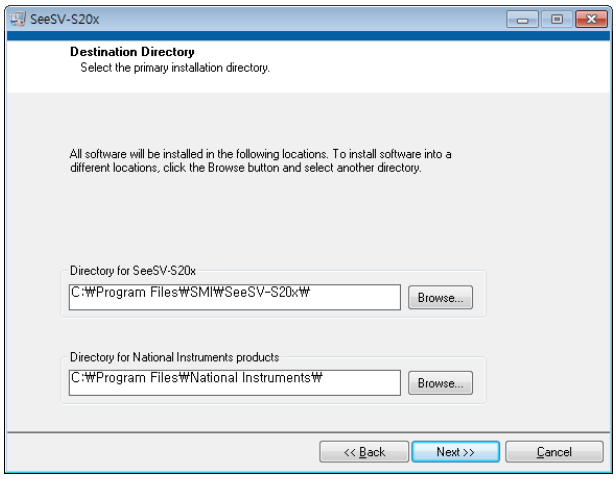
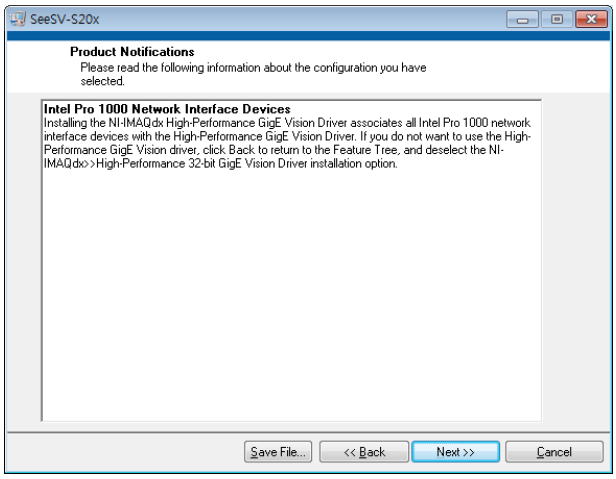
	Power switch.
	The power is turned on, press the button for 3 seconds.

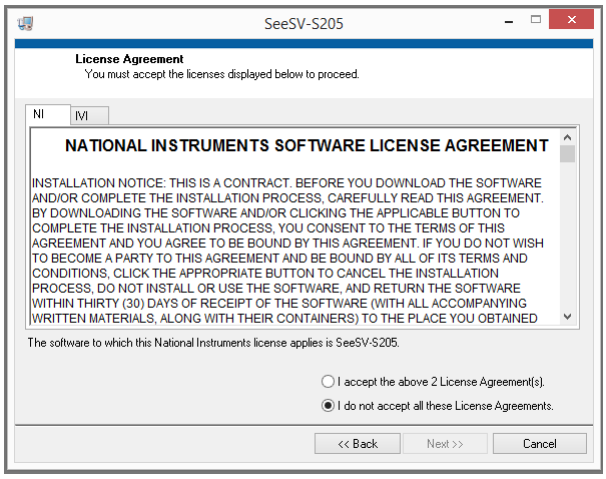
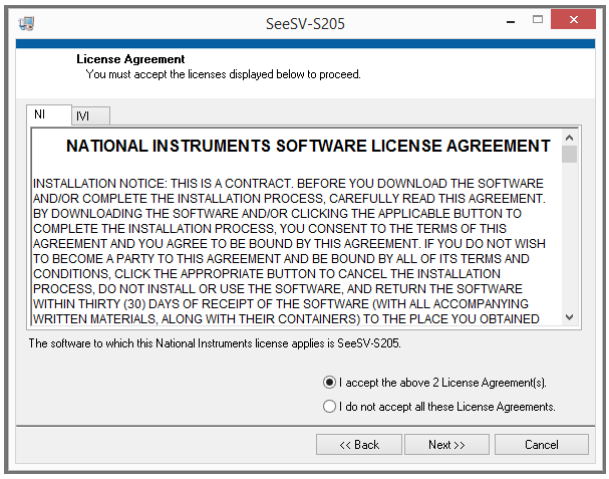
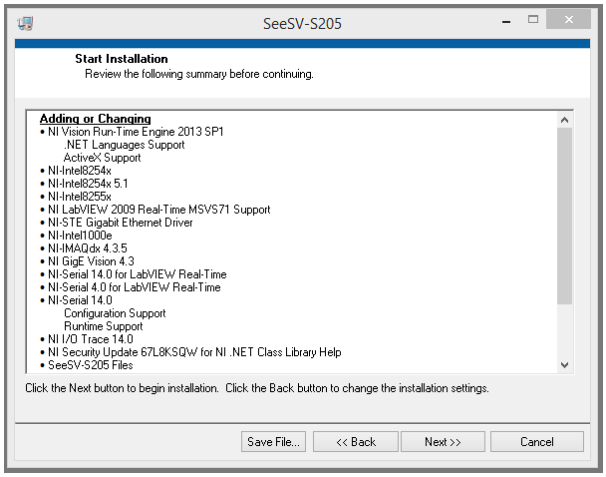
3.2 Status of Sound Camera Lamp

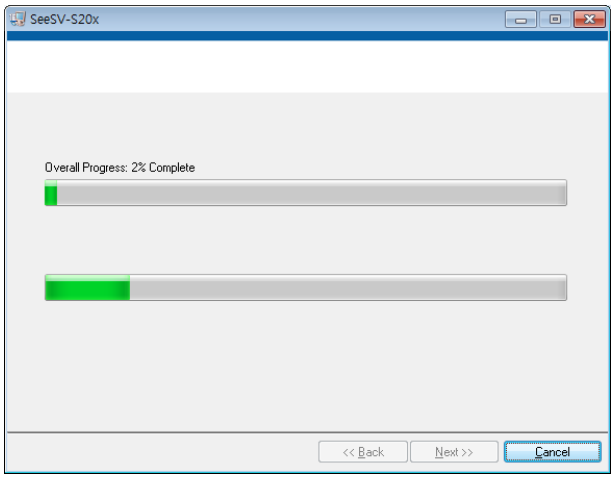
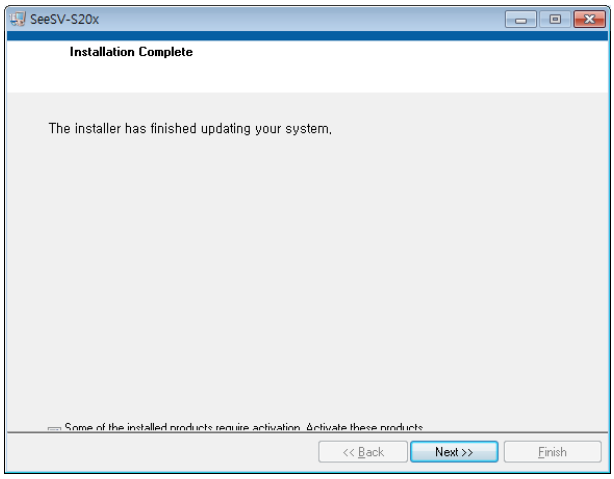
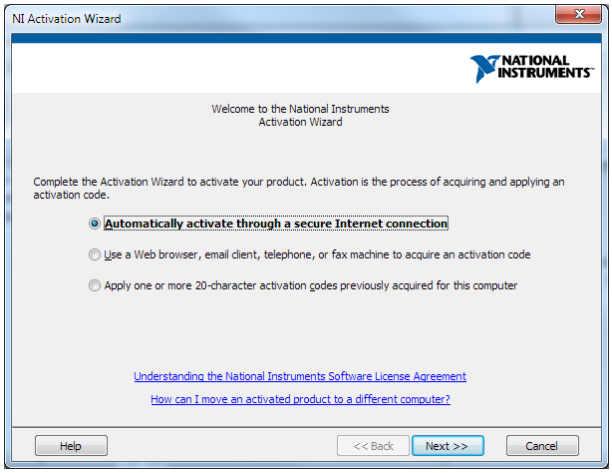
Status	Description
	Not powered.
	Initializing (orange).
	Sound camera is ready to use (green).

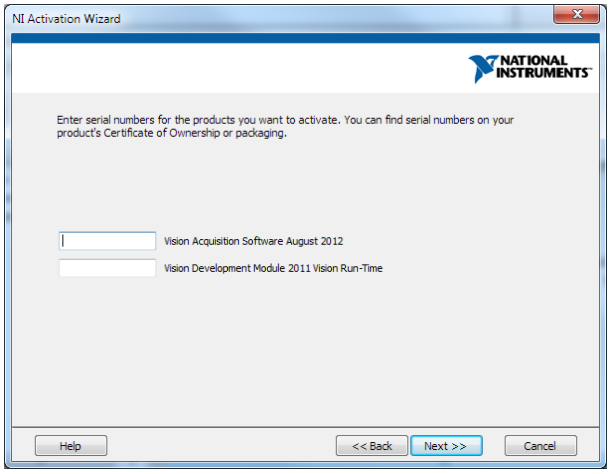
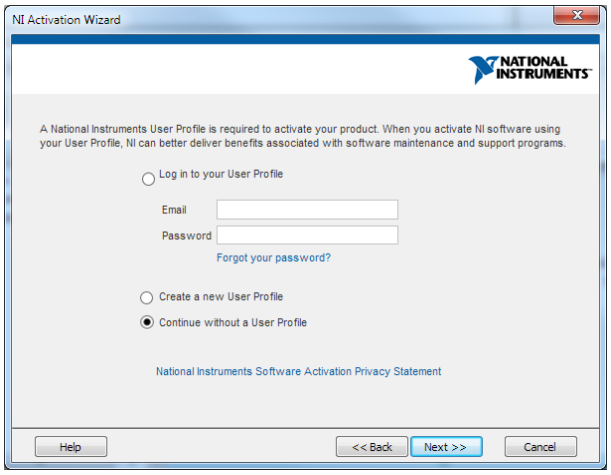
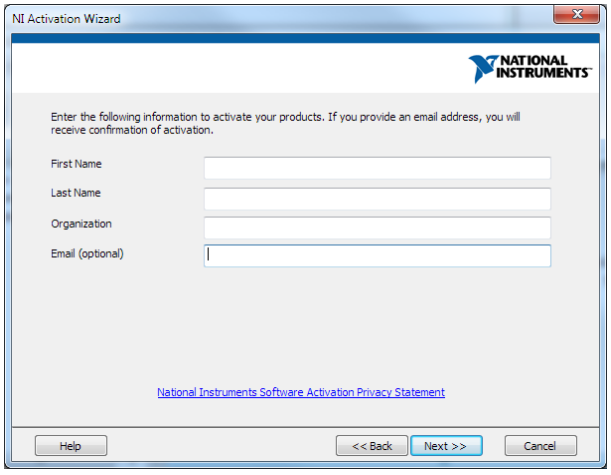
4 Software Installation

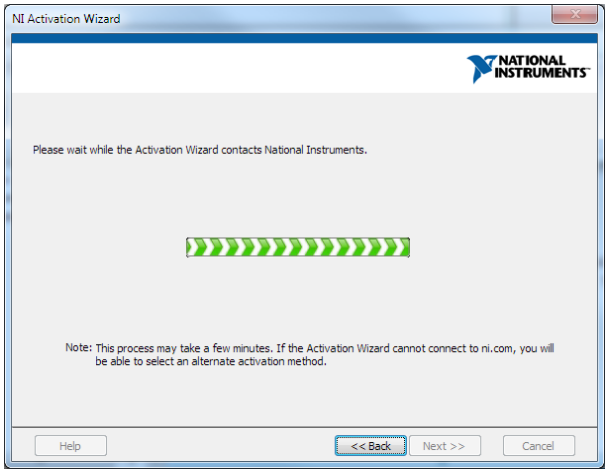
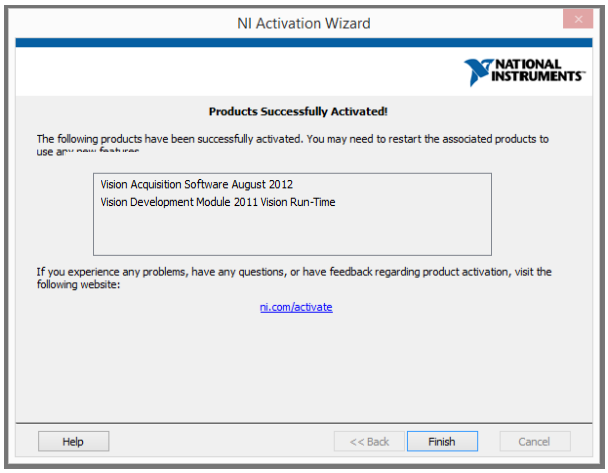
4.1 Sound Camera Software Installation

Item	Description
	Run "Setup.exe".
	Confirm destination directory and click "Next>>".
	Read Product Notifications and click "Next>>".

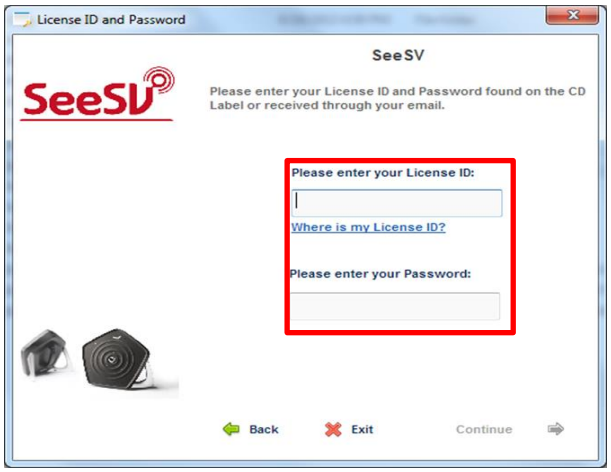
	Read license agreement.
	Check "I accept the above 2 License Agreements" and click "Next>>".
	Confirm items for installing and click "Next>>".

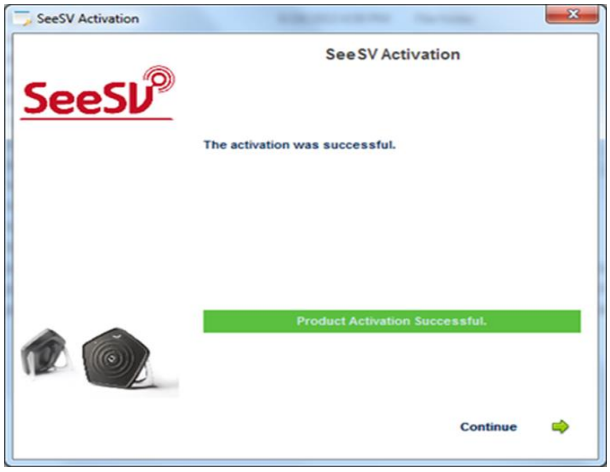
	Installation is proceeding.
	Installation is complete. Click "Next>>".
	The NI vision run-time engine should be activated. Connect PC to the internet and select "Automatically activate through a secure Internet connection". Click "Next>>".

	Input the serial number of NI Vision Run-Time Engine in both boxes.
	For members of "www.ni.com", select "User Profile Login". In this, "Continue without a User Profile" is screenshot shown.
	Input end user information.

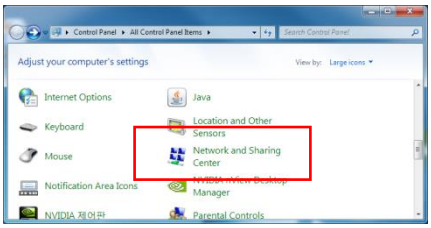
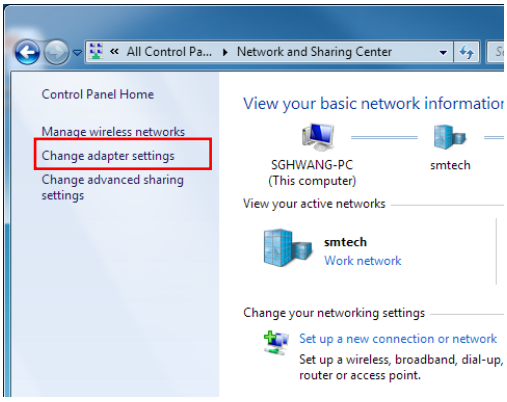
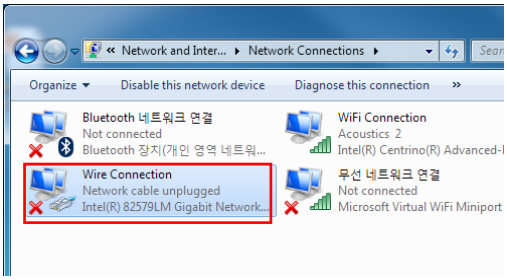
	Activation is in process.
	The NI vision run-time engine is successfully activated. Click "Finish".
	If this is the first time to install the software, you will be requested to restart the PC. Click "Restart". Software installation is complete.

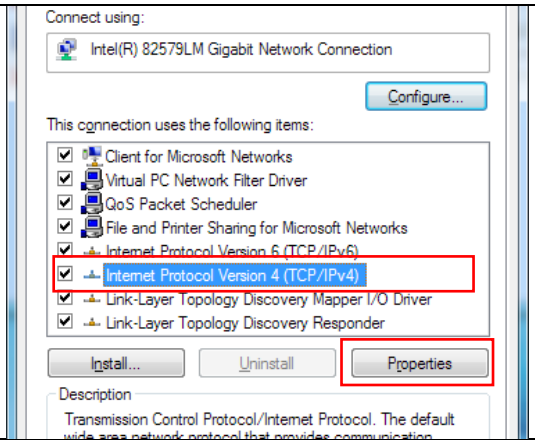
4.2 Sound Camera Software Activation

Item	Description
	If the software is being installed for the first time, the software license confirmation window will appear. Click the "Activate SeeSV".
	Click the "Activate SeeSV Online".
	Input to License ID & password in text box.

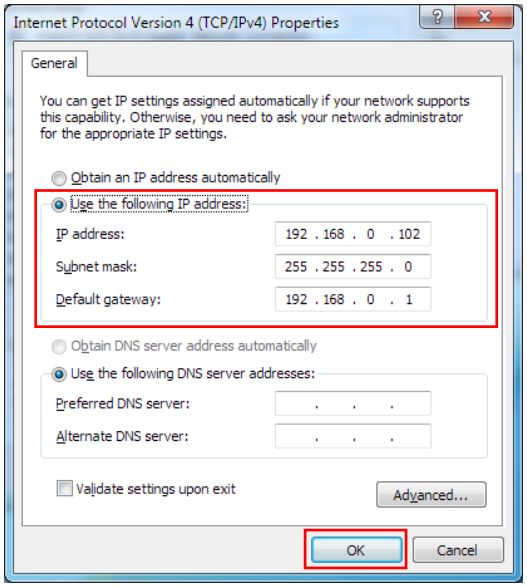
	Software is successfully activated and click the "Continue". The sound camera is ready for use.

4.3 IP Config

Item	Description
	1. Open Network Connections by clicking the **Start** button, and then clicking **Control Panel**.
	2. Click the Network and sharing Center.
	3. Click "Change adapter settings".
	4. Double Click "Wire connection".



5. Click the "Internet Protocol Version 4(TCP/IPv4)", and then click "Properties".



6. Click the "Use the following DNS server addresses", and then, write in the boxes.

   "IP address: 192. 168. 0. 102"

   "Subnet mask: 255. 255. 255. 0"

   "Default gateway: 192. 168. 0. 1"

   Click "OK".

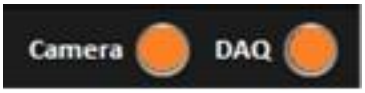
Tip: Except IP address last number 6, 10, and 90

※ Can't use more than 2 devices at the same time.

>>

7. Check connection to main body and pc. Turn on power. Wait until lamp of the main body turns green.

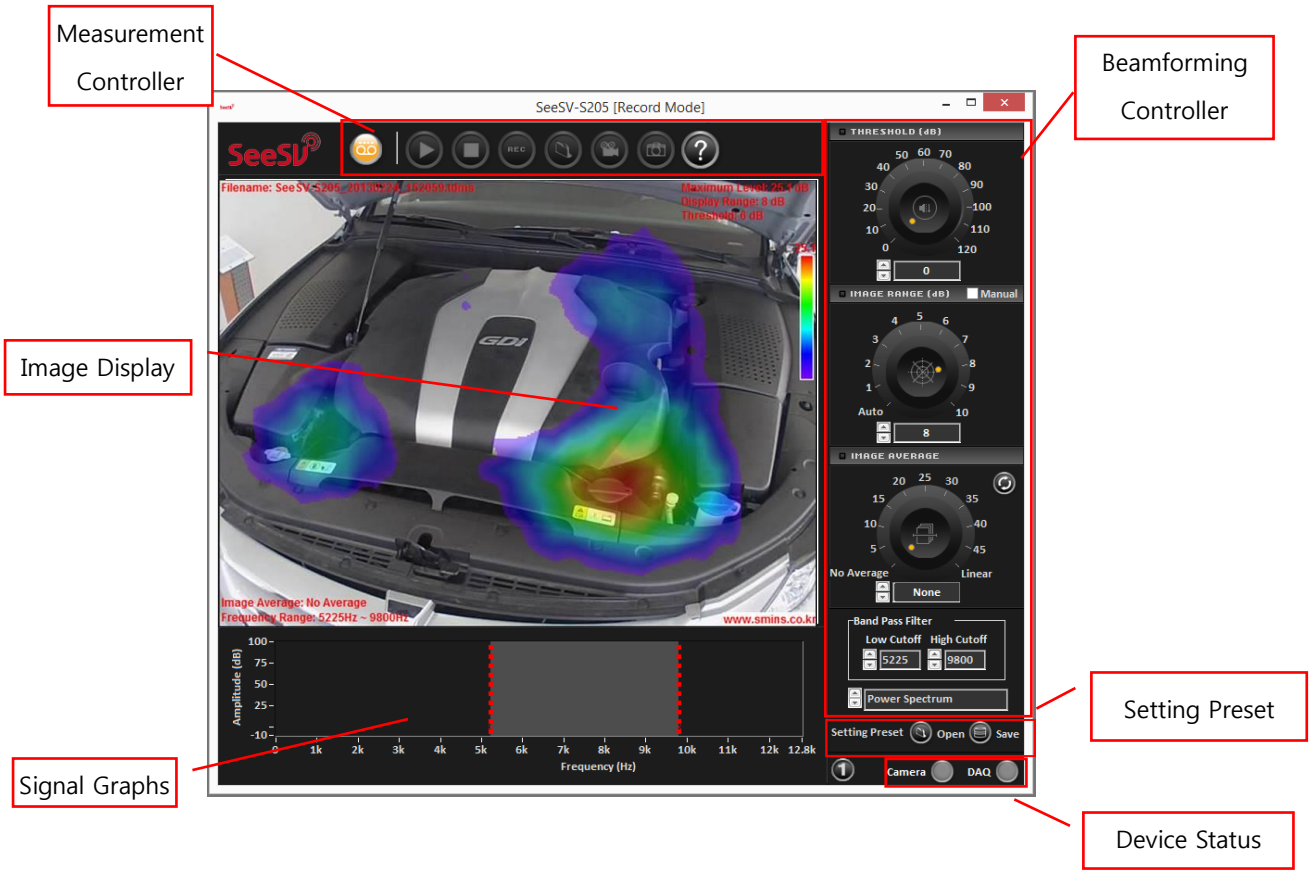
>>



8. Run SeeSV software. Check lamp to DAQ and Camera.

5 Software Functions

Run the software and following screen will appear.



5.1 Software Mode

Select software mode using this button (Record or Replay). Selected mode can be confirmed by the color and icon of the button..

Button status	Description
	Record mode.
	Replay mode.

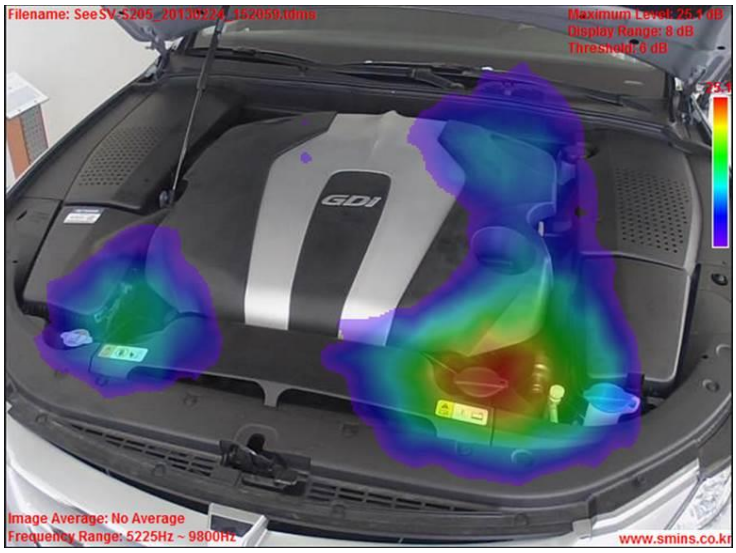
5.2 Control Buttons

Functions of each button are as follows.

Button	Function
	Play recorded data.
	Stop (Record/Replay).
	Record data.
	Restore data file.
	Convert data to movie file and save.
	Save image as PNG (graphic) format.
	Open the documents such as Application Guide, User's Manual, and Quick start Manual.

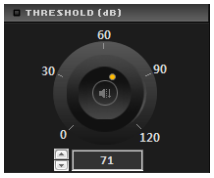
5.3 Sound Camera Image

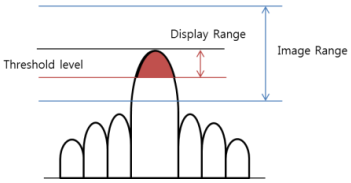
Display the camera, beam power overlaid image and measurement information.



5.4 Image Threshold

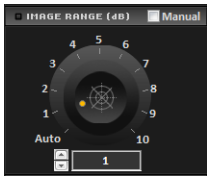
Adjust the threshold level of the beam power which is displayed on the display window. Beam power below the threshold level will not be shown. If the current beam power is less than the threshold level, it will not be shown. When the threshold level is higher than minimum value of the image range, contour image will only include the values between maximum values of the image range and the threshold level.





5.5 Image Range

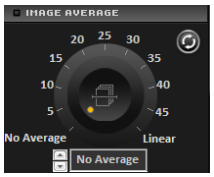
Adjust displayed range of the beam power level. ["Max beam power" – "Image Range"] will be presented.



Value	Meaning
Manual Scale	Manually select Max/Min level. Max/Min level is located in Advanced Setting.
0.01~10	Display beam power level between Max and (Max - adjusted value). If select 3, displayed level will be ["Max"~ "Max-3"].
Auto Scale	Adjust displayed level of beam power automatically.

5.6 Image Average

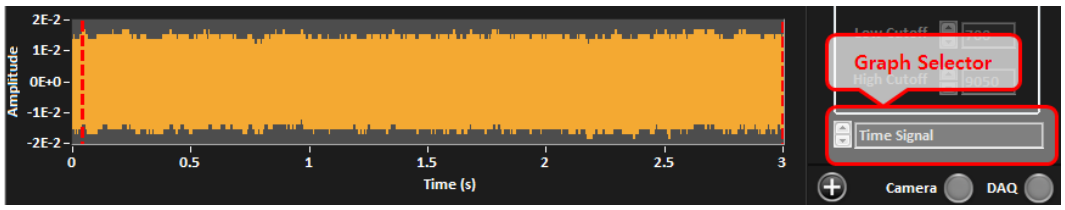
Adjust averaging of the beam power image.



Adjust	Description
None	No averaging.
Exp.1~Exp.49	Exponential average of adjusted number of images.
Linear	Linear image average.
	Refresh image average.

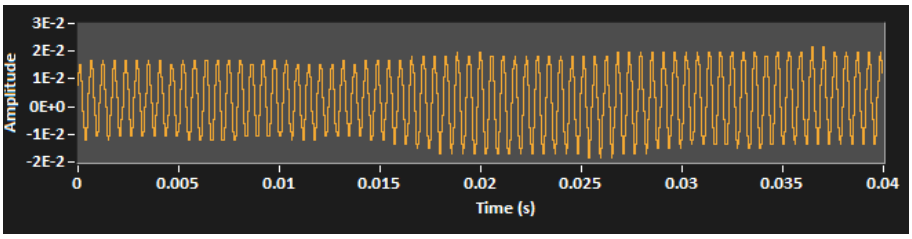
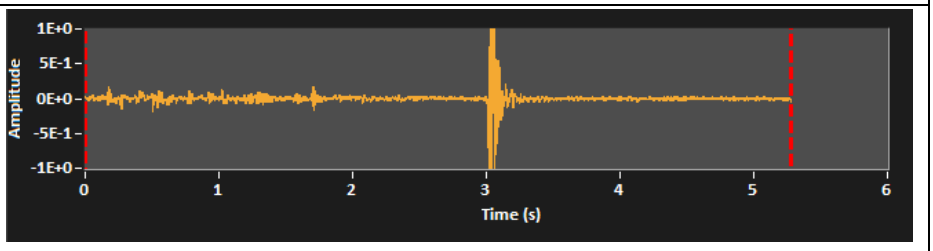
5.7 Signal Graphs

Display time signal of the microphone, power spectrum, 1/3 octave and trend of beam power level. Use the Graph Selector control outlined in red to select the type of graph.



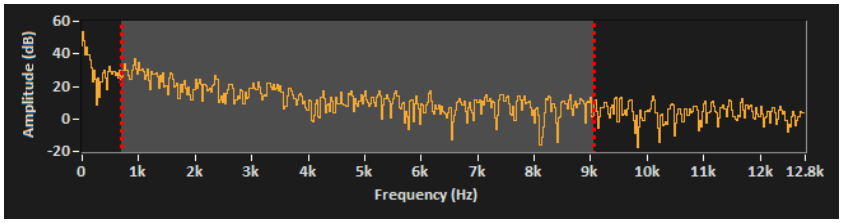
5.7.1 Time Signal of Microphone

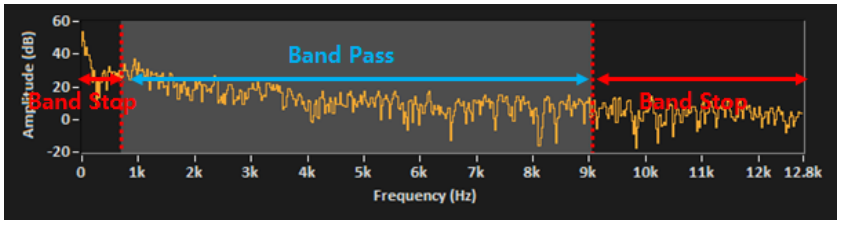
Displays time history signal of the microphone selected.

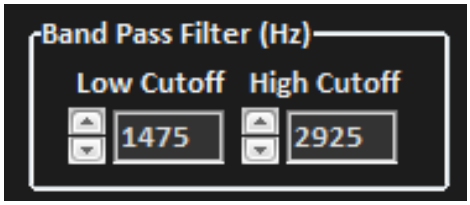
Mode	Description
Record	 Displays instantaneous signal of the microphone on real –time (0.04 sec).
Replay	 Displays whole range of recorded data of the microphone. Use the mouse or cursor key to adjust the section of replay section between two red-dotted cursors. The image will be displayed according to the position of the first cursor.

5.7.2 Power Spectrum of Microphone

Displays power spectrum of the microphone selected. Adjust band pass filter using the two cursors. Adjusted range will be highlighted. Frequency range of the filter can be adjusted using the "Band Pass Filter" controls.

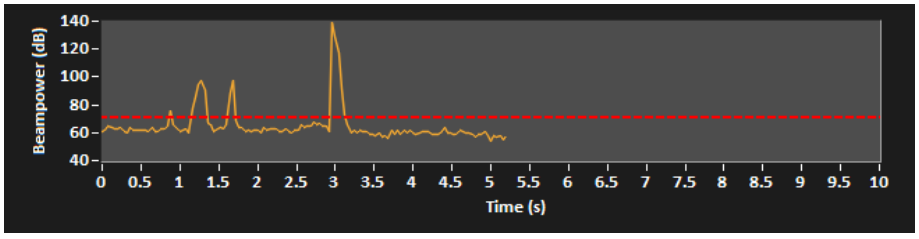






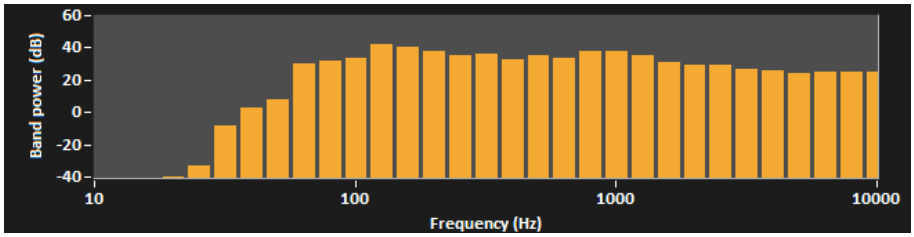
5.7.3 Level Trend of Beampower

Displays of the beam power level trend for 10 sec. The red-dotted line is the threshold, and orange-dotted line is the trigger level when the record mode is "trigger".



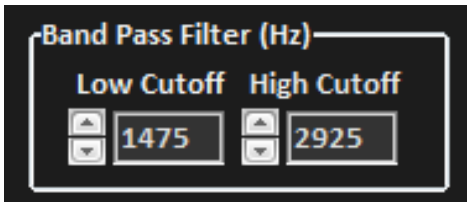
5.7.4 1/3 Octave Level of Microphone

Displays of the 1/3 octave band level of the microphone signal.



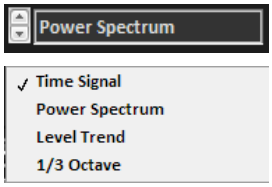
5.8 Band Pass Filter

Adjusts the band pass filter of the beampower.

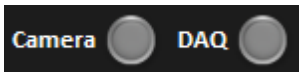


5.9 Graph Selector

Selects graph to display.



5.10 Device Status Lamp



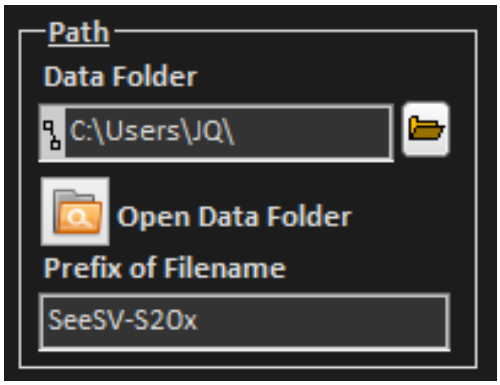
Displays the status of the connection of the sound camera.

Color	Description
	Not connected.
	Connected.

5.11 Setup

Displays or hides items for settings.

Status	Description
①	Threshold, Image Range & average, Band Pass Filter, Graphs, & Basic Display Icons
②	Path, Record, Sound Camera, Display Configuration, and Firmware Update setting
③	Image Calibration, Replay & Record Advanced setting, and DAQ status setting



5.11.1 Data Folder

Defines path of the data file. This path will be the default setting for the following:

- Save data
- Open data file
- Save screenshot
- Convert/save movie

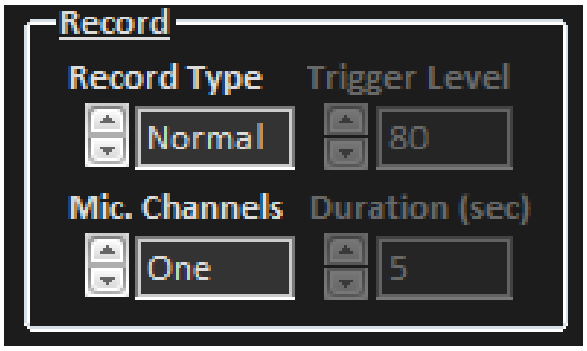
5.11.2 Open Data Folder

Opens the data folder.

5.11.3 Prefix of Filename

Sets prefix of filename to be saved. If the prefix is "SeeSV-S20x", the filename will be as following.

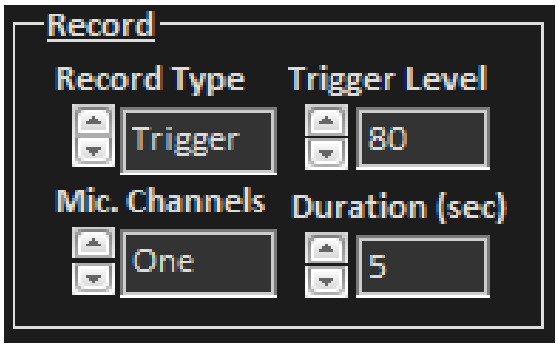
"SeeSV-S20x_[yyyymmdd][HHMMSS].tdms"



5.11.4 Record Type

Sets record type.

- Normal: Continuously saves data when the "Record" and "Stop" buttons are pressed.
- Trigger: After the "Record" button is pressed, records data when it exceeds the trigger level of the beam power

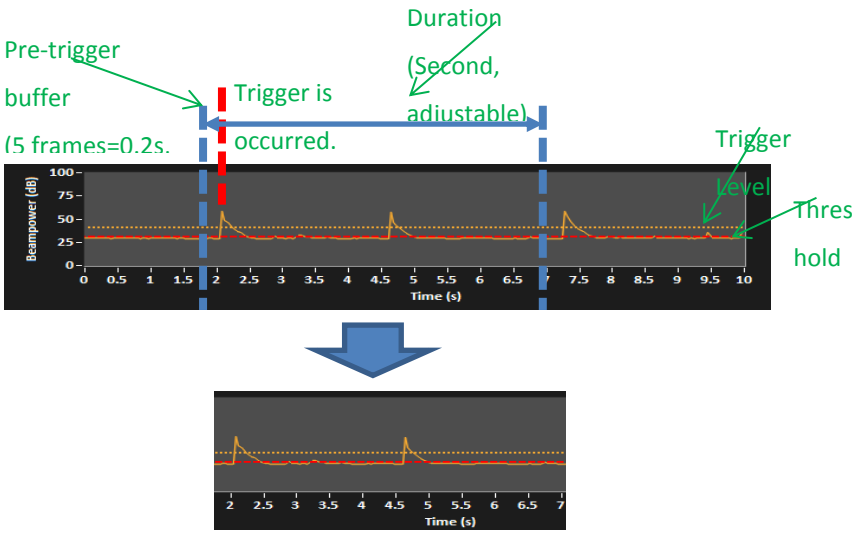


5.11.5 Trigger Level

Sets trigger level.

5.11.6 Duration

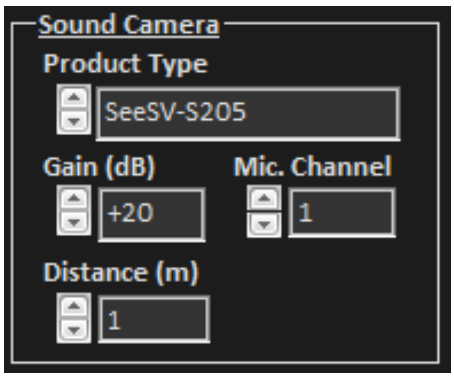
Sets the recording time in seconds when the trigger is activated.



5.11.7 Mic. Channels

Sets number of Microphone channels

- One
- All



5.11.7 Product Type

Select model of sound camera being used.

- SeeSV-S205
- SeeSV-S200
-

5.11.8 Mic Gain

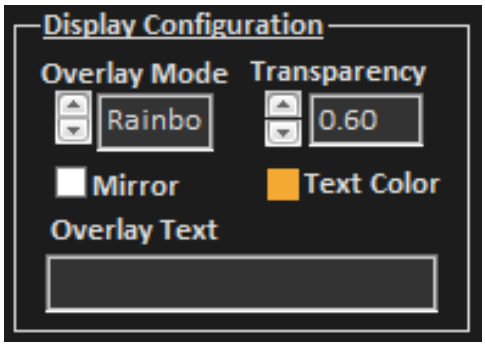
Set the gain of the microphone. The range of gain is -10dB/0dB/+10dB/+20dB/+30dB.

5.11.9 Mic Channel

Select the microphone to be measured and displayed.

5.11.10 Distance (m)

Sets distance between a sound camera and noise source.

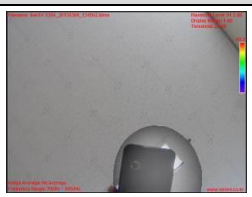
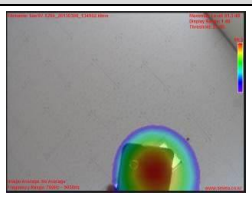
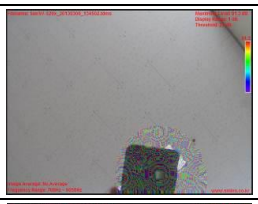
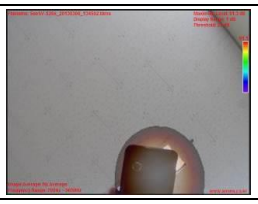
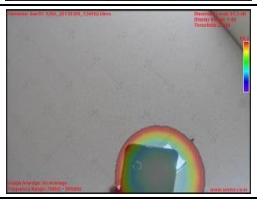


5.11.11 Max/Min Level

When the Display Range is set to User Scale, adjust Max Level and Min Level to be displayed.

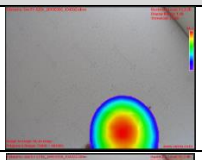
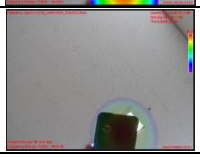
5.11.12 Overlay Mode

Select color set of beam power.

Mode			Description
Gray		Rainbow	
Binary		Temperature	
Gradient			

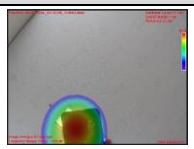
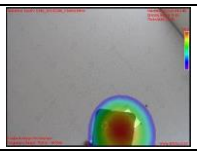
5.11.13 Transparency

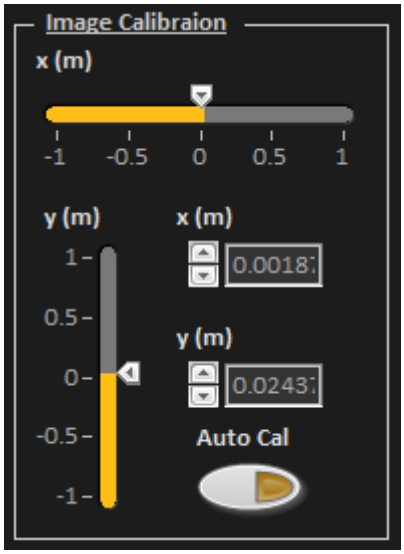
Set transparency of displayed beam power. 0 (opaque) ➔ 1 (transparent)

Value	Description
0.1	
0.9	

5.11.14 Mirror Mode

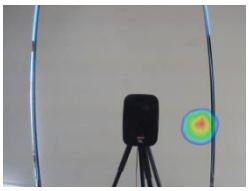
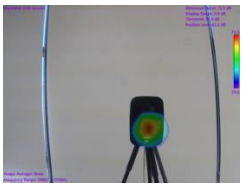
Show mirror image.

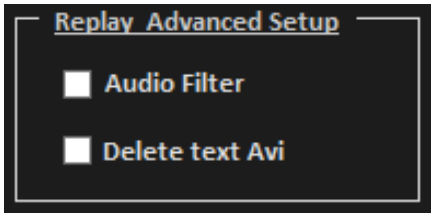
Status	Description
ON	
OFF	



5.11.14 Image Calibration

Show automatic image calibration.

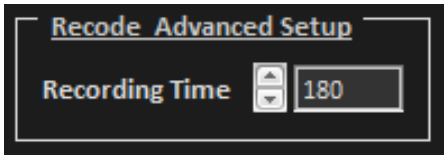
Status	Description
Before	
After	



5.11. 15 Replay Advanced Setup

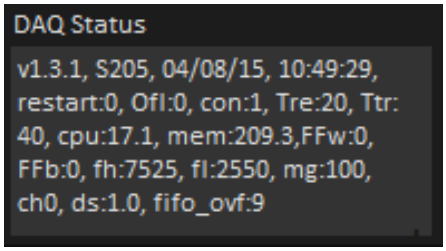
Selects replay advanced setup.

- Audio Filter: Amplifying the volume from noise source when a user coverts t은 file to avi file.
- Delete text Avi.: Removing text data on an avi file.



5.11.15 Recording Advanced Setup

Sets Recording Time up to 180 seconds.



5.11.16 DAQ Status

Shows a sound camera device information.

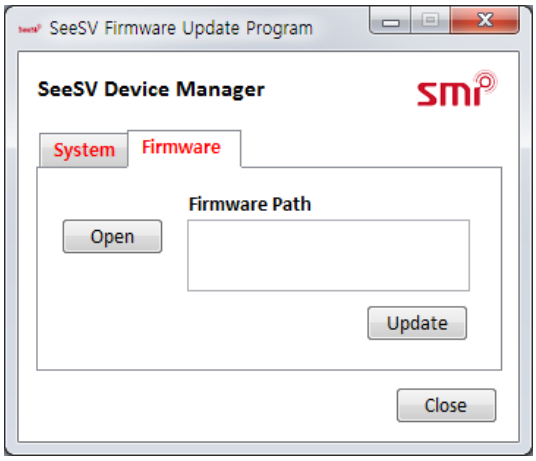
6 Software shortcut keys

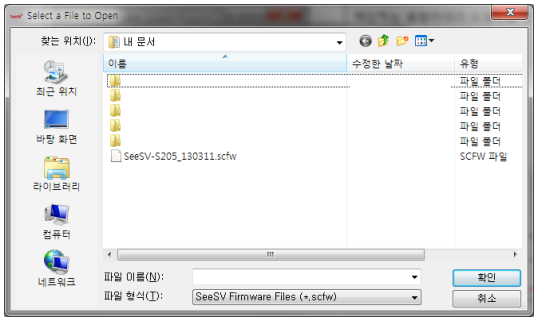
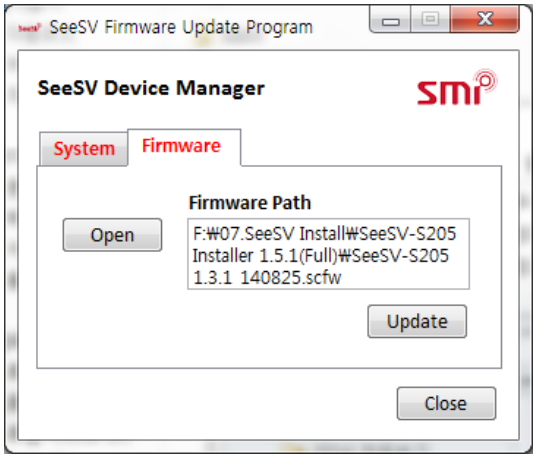
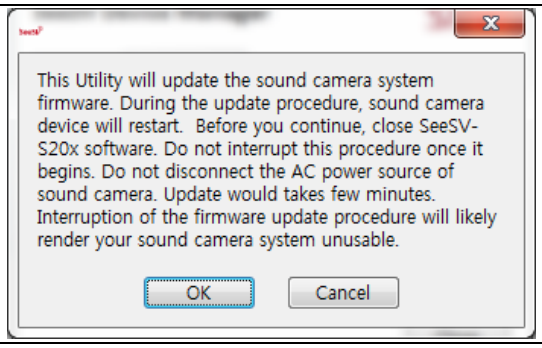
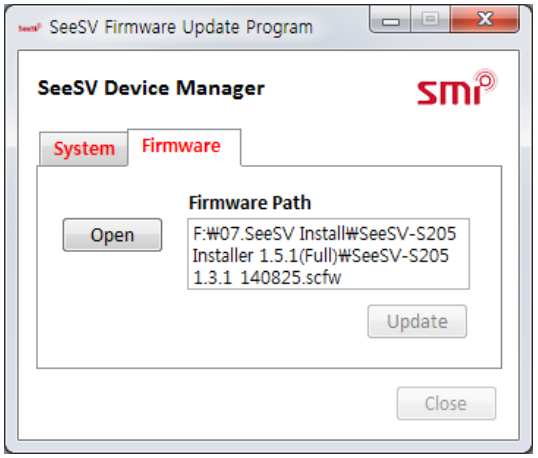
Shortcut	Function
Ctrl+1	Display time history signal of the microphone.
Ctrl+2	Display power spectrum of the microphone.
Ctrl+3	Display trend graph of beam power level.
Ctrl+4	Display 1/3 octave band graph of the microphone.
Left Cursor	Move first cursor to left at time signal graph of review mode
Right Cursor	Move first cursor to right at time signal graph of review mode
Up Cursor	Increase image threshold.
Down Cursor	Decrease image threshold.

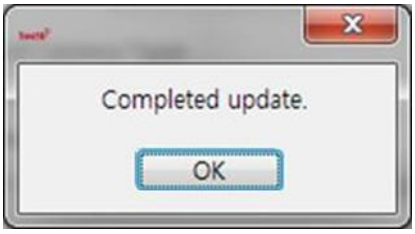
7 Maintenance and Troubleshooting

7.1 Sound Camera Firmware Update

7.1.1 How to update Sound Camera Firmware

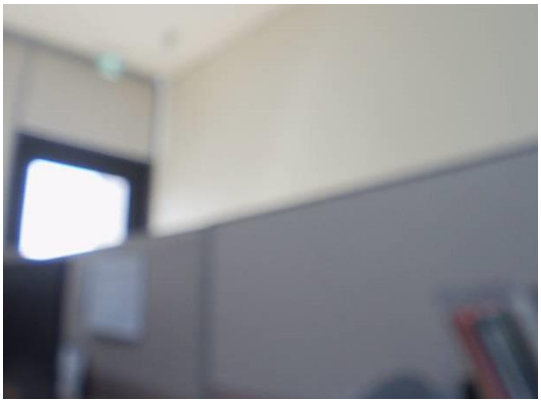
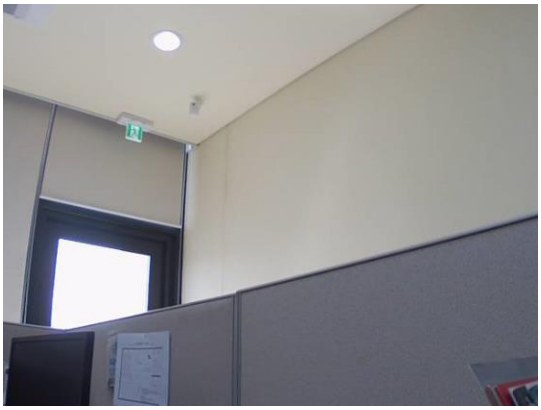
Item	Description
	Run SeeSV software and then click the button.
	Click the button "Firmware".
	Click the button "Open".

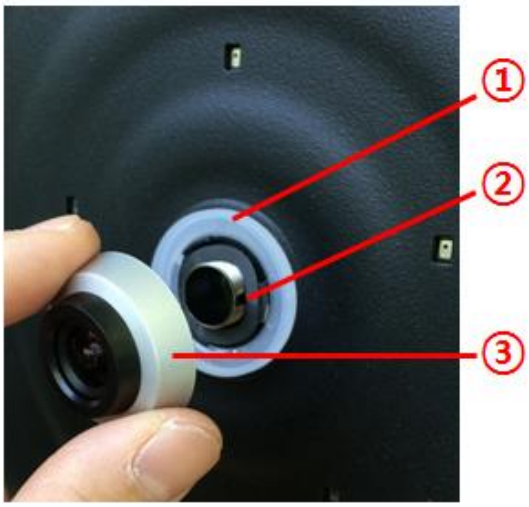
	Select the firmware file which is distributed with the installation file. (*.scfw file)
	Click "Update" to start.
	Before proceeding and during the update. - Confirm the connection of sound camera. - Keep power on. - Keep connection of sound camera connected.
	Update can take several minutes. Wait for notification popup before proceeding.

	Update completed. Run sound camera software to ensure update was successful.

7.2 Modify the focus of sound camera

7.2.1 How to modify the focus of sound camera

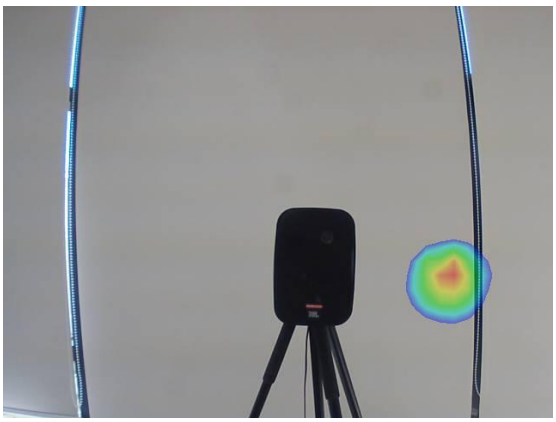
Item	Description
	Previous image to be improved: Abnormal focus image.
	After image improvement: Normal focus image.

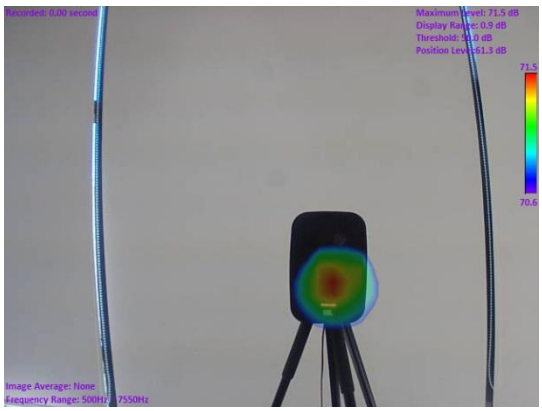
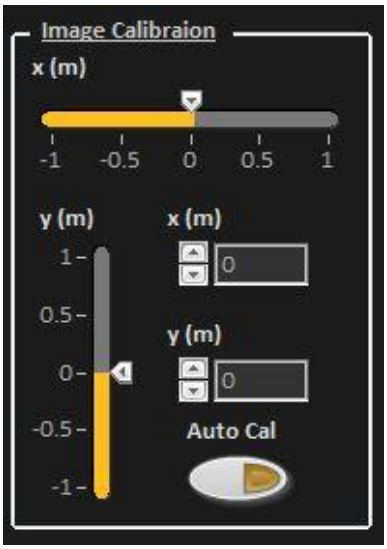
	● Camera lens hardware part. 1. CAM Status LED Indicator 2. Lens Fixed Screw 3. Lens
	Camera focus control method: Turn to the left and right lens fixed focus. ※ Cause: If you turn to the right to force the lens may be damaged.

.

7.3 Modify the position of overlay image

7.3.1 How to modify the position of overlay image

Item	Description
	Previous image to be improved: Abnormal focus image. (Before using Image calibration)

	After image improvement: Normal focus image. (After using Image Calibration)
	Developer's menu is displayed by click the "ctrl +]" key. And Click "x(m) or y(m)" button manually. Or you can control image calibration by "Auto Cal".
	Overlay image control method: 1. Click the Display control icon "Auto Cal". 2. Click center to overlay image. Drag and drop position to noise source.

8 Specifications

Microphone Array	
Microphone Type	Digital MEMS Microphone
Number of Microphones	30
Microphone Sensitivity	70 mV/Pa
Array Diameter	350 mm
Frequency Range (Full)	350 to 12000 Hz
Frequency Range (Recommended)	2000 to 10000 Hz
Measurement Distance	0.2 to 5.0 m (Recommended)
Weight	2.4kg
Data Acquisition and Processing	
Sampling Rate	25.6k S/s/ch
Image Update Rate	25 FPS
Imaging Algorithm	Beamforming (delay and sum)
Image Ranging	Automatic/Manual
Environmental Condition	
Operation Temperature	-20 to 50°C
Humidity	10 to 85 % RH

9 <CAUTION>

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

Caution: Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void user's authority to operate the equipment.

This appliance and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter.

A minimum separation distance of 20 ㎝ must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

CAUTION RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

- **The product can be damaged by external shock.**
- **Please do not disassemble the product.**
- **Please check rated voltage when you charge the product. (for wireless camera model only)**
- **Please keep away from fire and liquid.**

Insuring Indoor Use in 5.15-5.25 GHz Band (15.407 (ii))

FCC 15.407(ii) states: "For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi"