Spark-E II™

H.264/AVC Encoder
and Live Streaming Appliance

Manual

June 13, 2016

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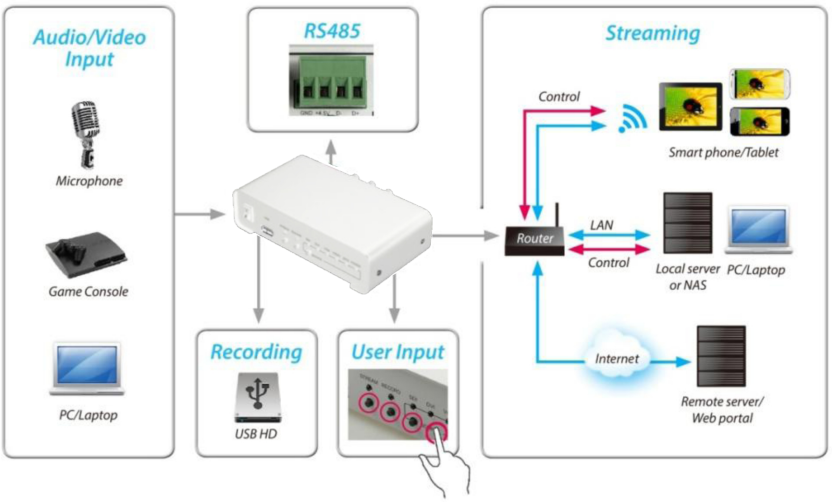
Spark-E II Overview

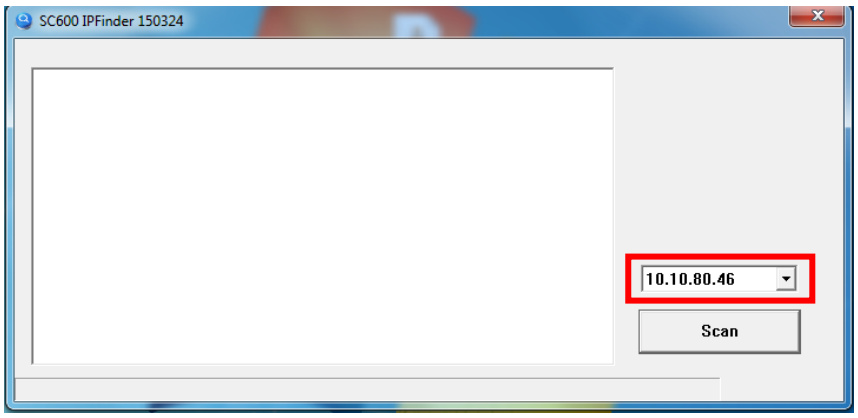


Item	Description
Input Interfaces	● Video ■ 1x BNC for 3G / HD / SD-SDI ■ 1x HDMI, 1x DVI-I for DVI-D/HDMI and DVI-A/ VGA ■ 3x BNC for YPbPr/CVBS/S-Video ● Audio ■ 1x Stereo audio through ◆ 1xRCA for Analog L/R audio ◆ SDI/HDMI/DVI-D embedded audio ◆ 1x3.5 mm phone jack
Video Feature	● H.264/AVC, Main / High Profile ● Configurable bit rate up to 10 Mbps ● Supported input /output resolutions ■ 1080@50p / 60p (1080p25 / 30p output) ■ 1080@50i / 59.94i / 60i ■ 720p@50p / 59.94p / 60p ■ 576@50p / 480@59.94p ■ 576@50i / 480@59.94i
Audio Feature	● AAC-LC ● Configurable bit rate range from 32 Kbps to 384 Kbps ● Sample rate: 48 KHz, 16 bit
Network Feature	● 1x RJ45 for 10/100 Mbps Ethernet ● DHCP client
Supported Streaming Protocols	● TS over TCP/UDP (unicast & multicast) ● RTSP over HTTP/TCP/UDP (RTSP Elementary Stream) ● RTMP (Local & Publish) ● HLS
Misc. Features	● RS-485 ● 1x USB 2.0 Host for USB storage ● Web UI for system configuration ● Firmware upgradable ● LED indicator ● Auto Signal Detection
Record Format	● MP4 ● TS
Power Supply	DC 12V (With DV Adapter)

1. IP Finder

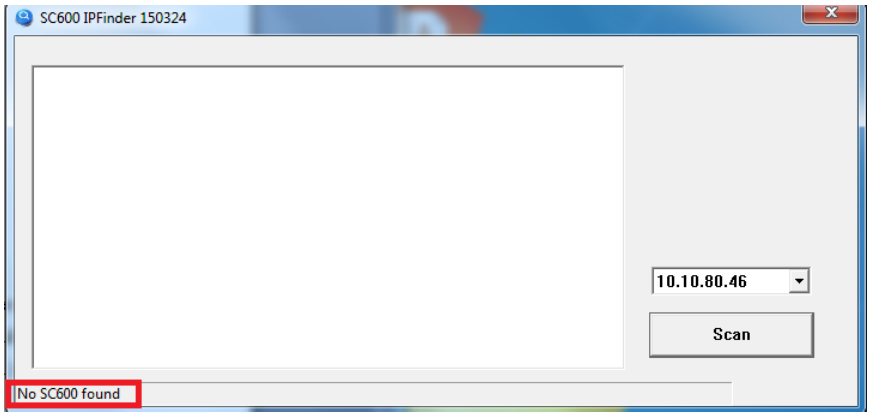
a. Make sure your computer and the Spark-E II are in the ***same Local Area Network.*** **(Make sure Spark-E II is connected to a Router not a Hub!!)**

b. Execute SC601 IP Finder.exe .



i. If the network is available, the local IP Address is displayed. (Pic 1.).

(Pic 1.)

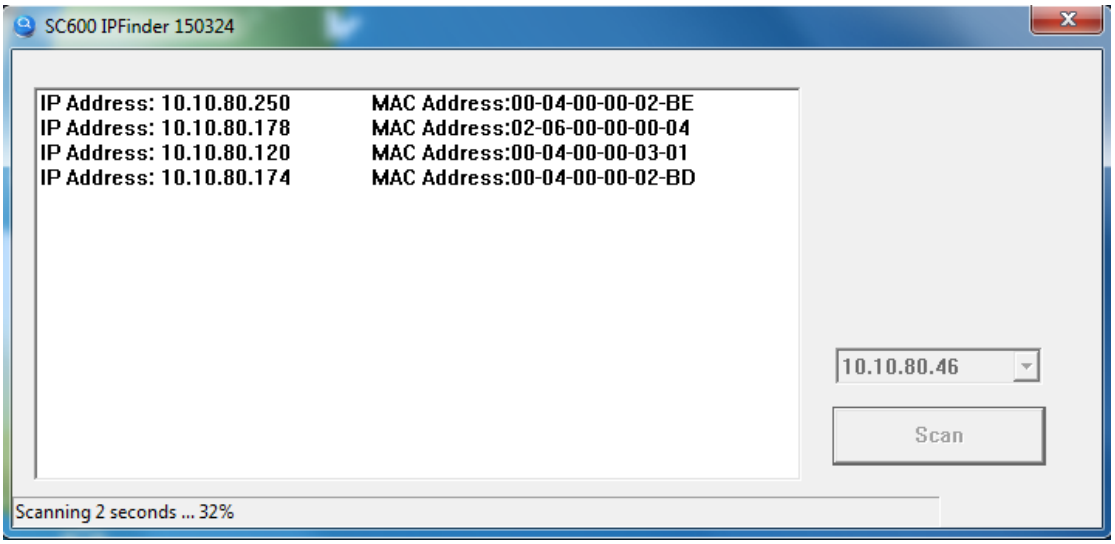


ii. If the network is NOT available, the message "No SC600 found" appears. (Pic 2.).

(Pic 2.)

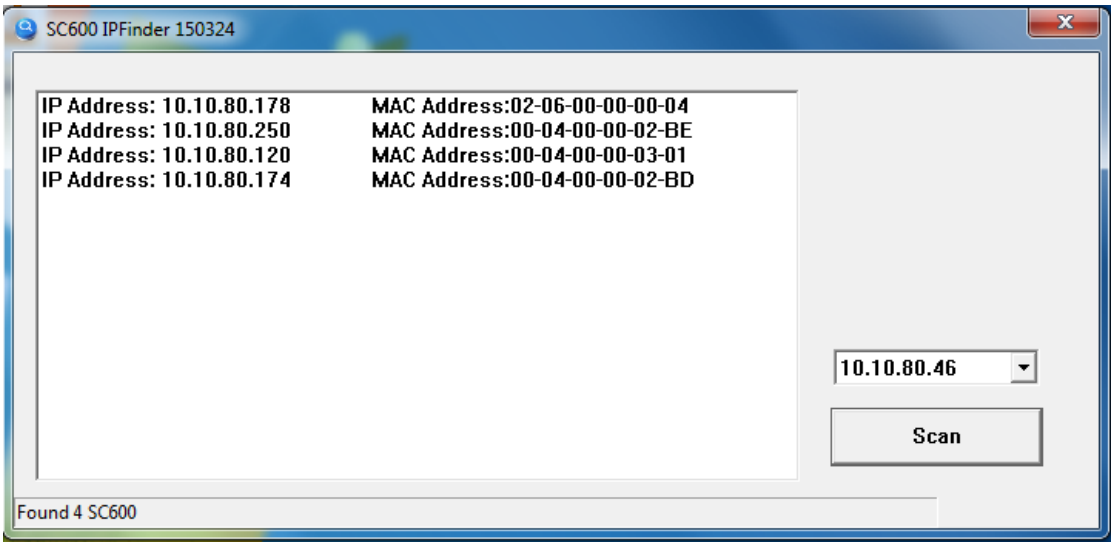
c. Click “Scan”.

i. In scanning



(Pic 3.)

ii. Scan completed.

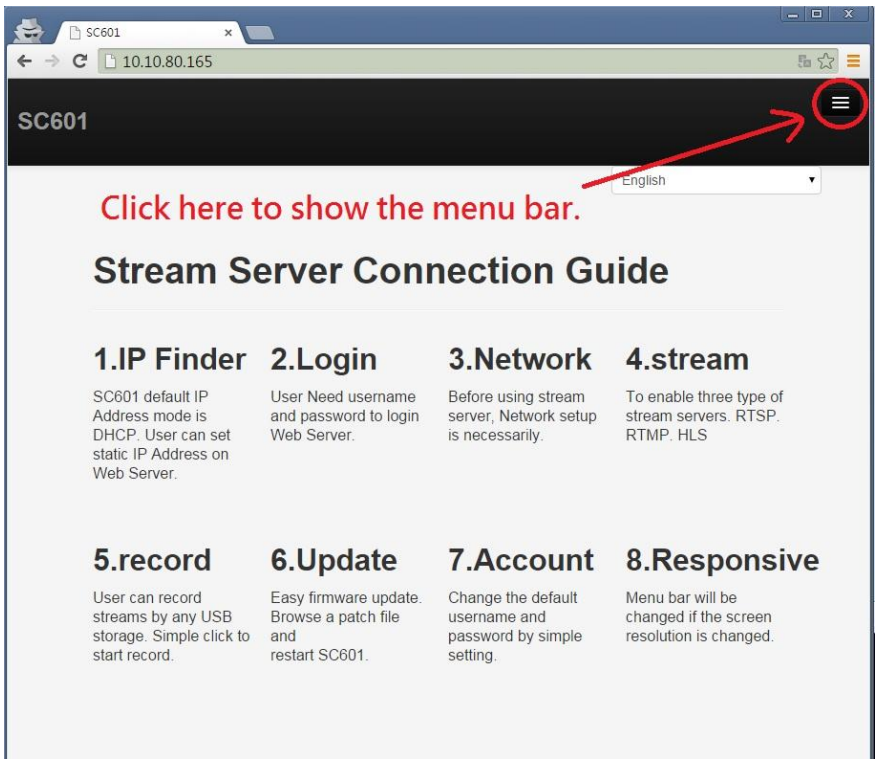


(Pic 4.)

The default IP Address mode is dynamic by **DHCP**. The user can set it as a static IP IP Address on the Web Server.

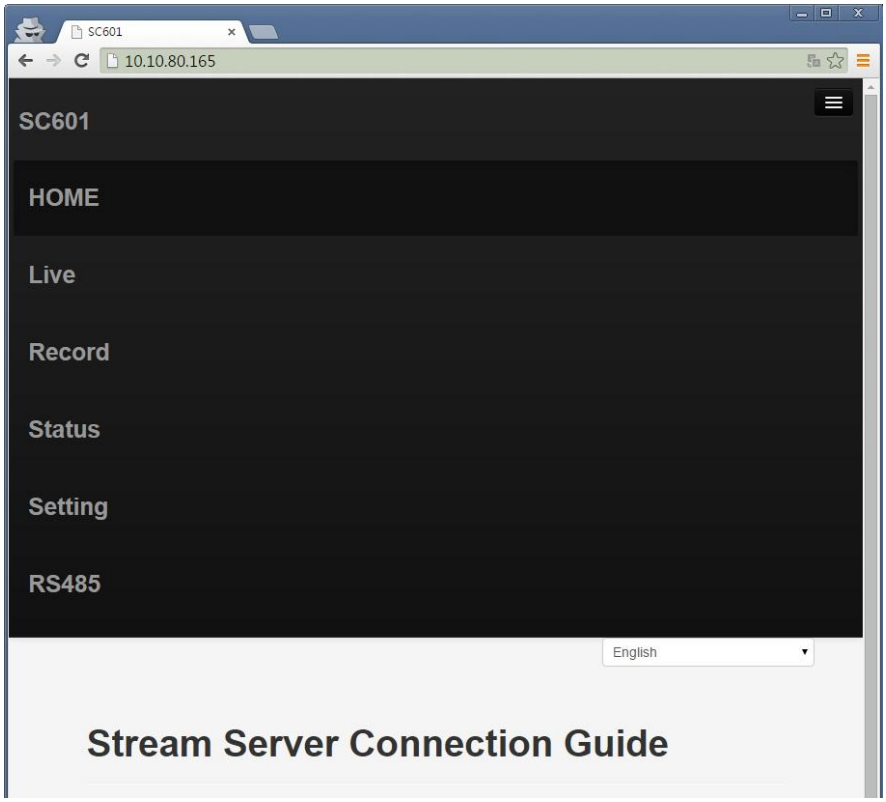
(Tips:User can double click the column of IP address or MAC address, and the home page of stream server will pop out on the default server.)

2. Responsive Bootstrap



If the screen resolution of the browser is less than **1024x768**, the menu bar will be automatically moved to an icon in the upper right hand corner.

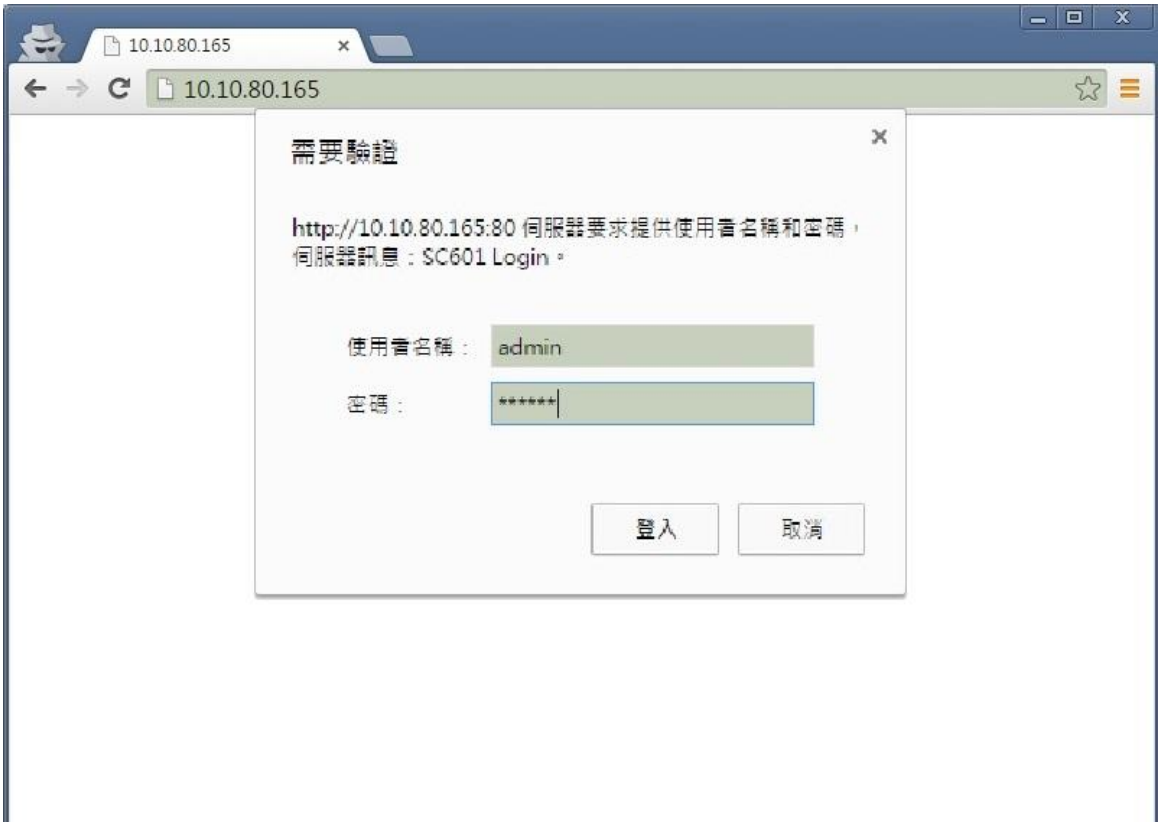
(Pic 5.)



Click the button in the upper right hand corner to show the full menu bar.

(Pic 6.)

3. Login to Web Server

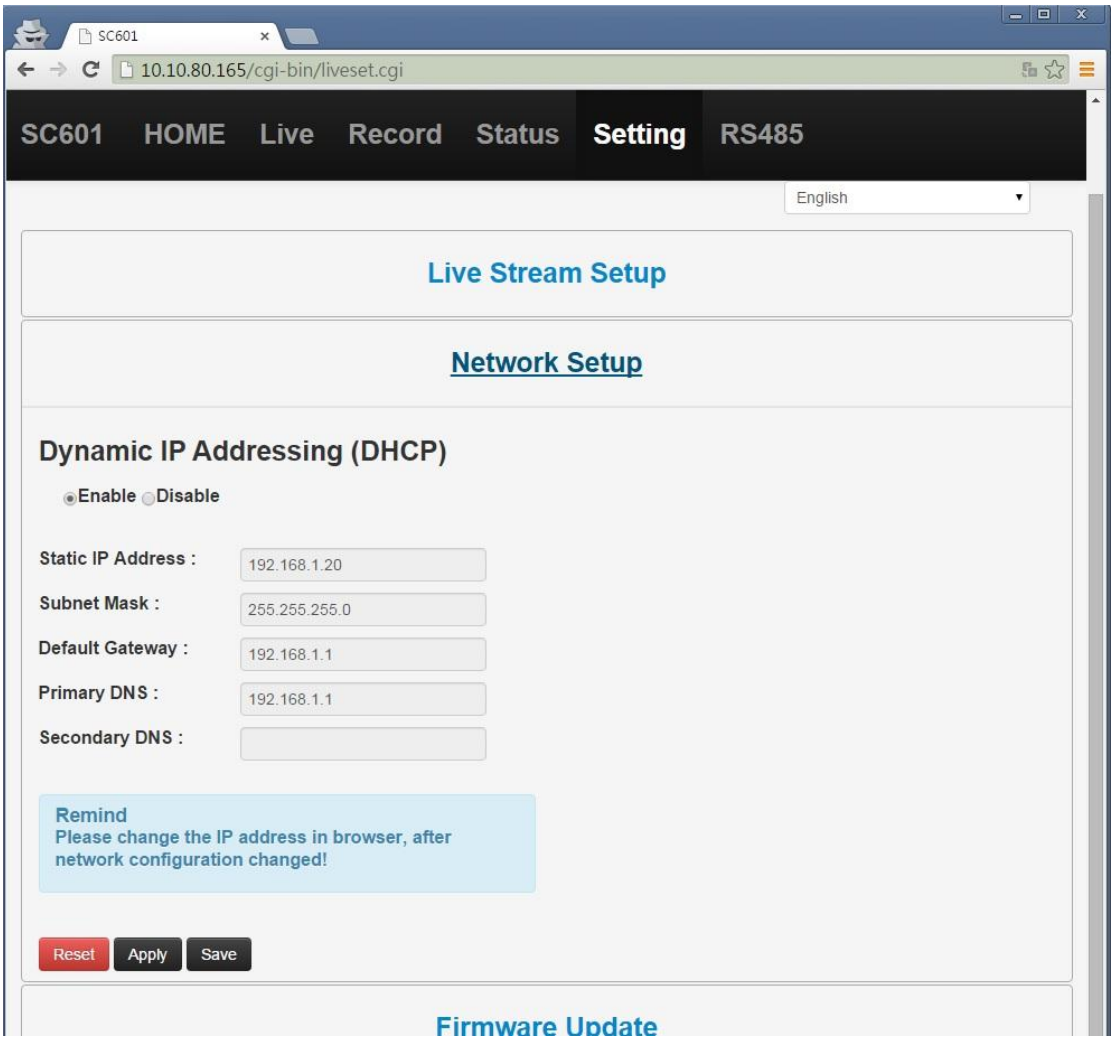


(Pic 7.)

Before logging in to the web server, input the Username and Password.

Username: admin Password:000000.

4. Network Setup



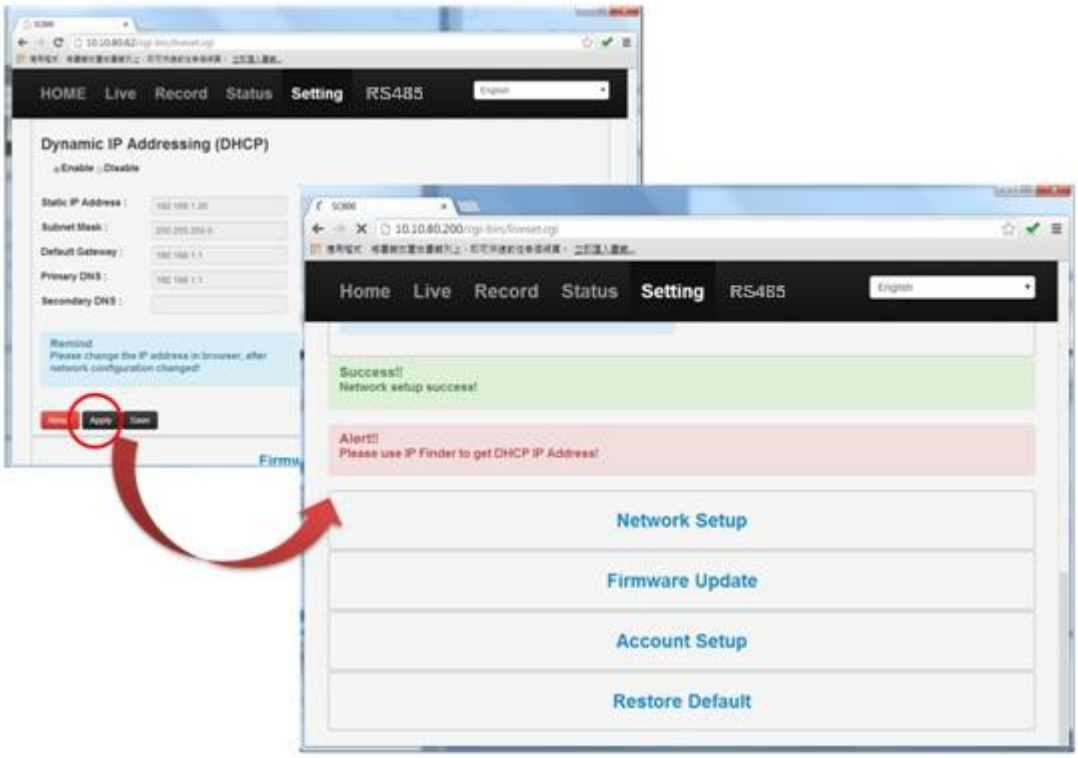
(Pic 8.)

Login to Web Server and select **Setting → Network Setup**, as above. There are two IP Address modes, **Dynamic (DHCP)** and **Static (fixed).**

Save — Click the Save button to save the network configuration.

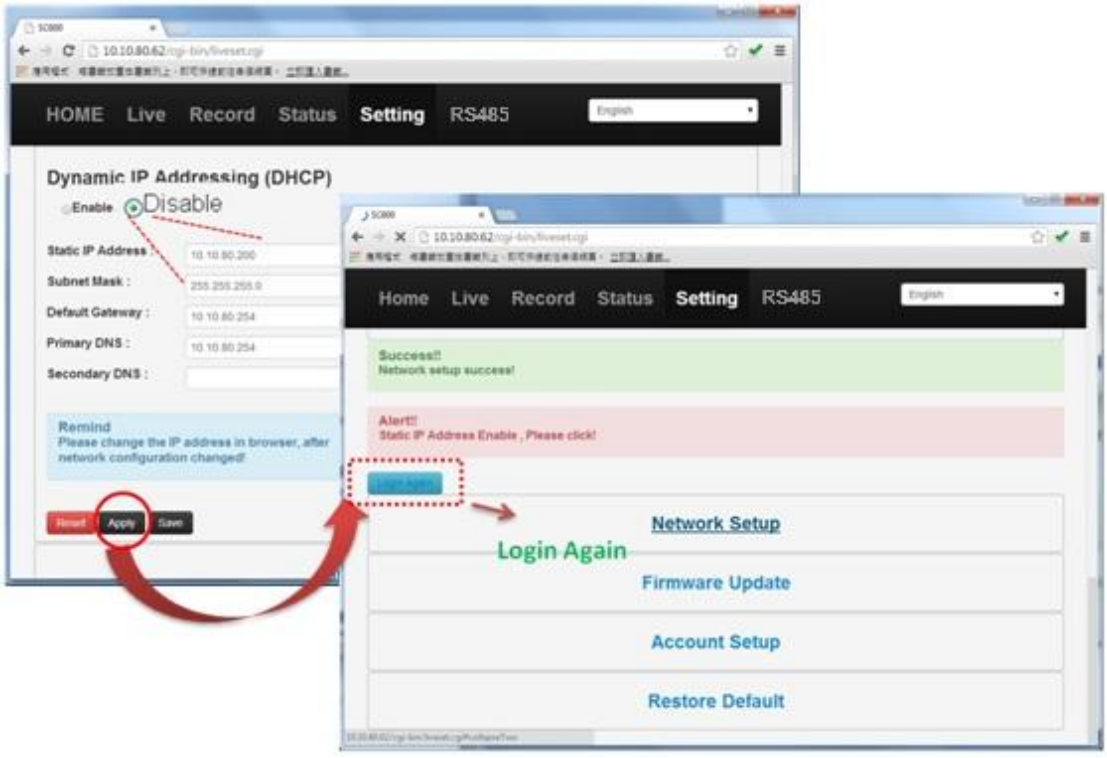
Apply — Click the Apply button to show the configuration changed immediately but will not be saved.

Reset — Clear all values of current input.



(Pic 9.)

After Enabling DHCP, please use IP Finder to get the dynamic IP address and login again.

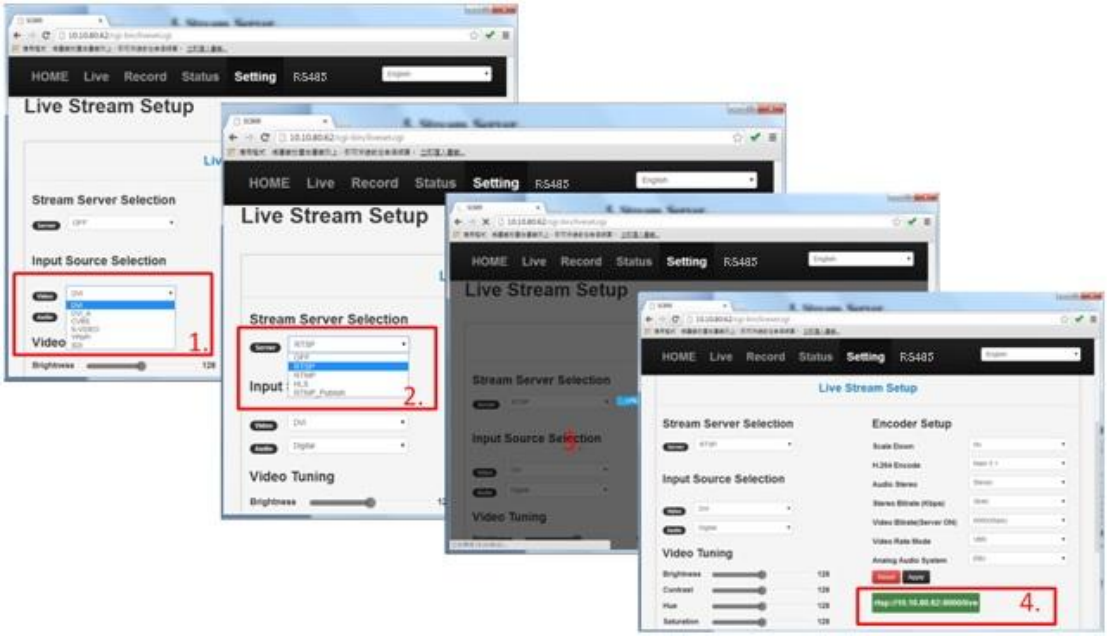


(Pic 10.)

After disabling DHCP, please click the button "**Login Again**" to log in again.

5. Stream Server

General Settings



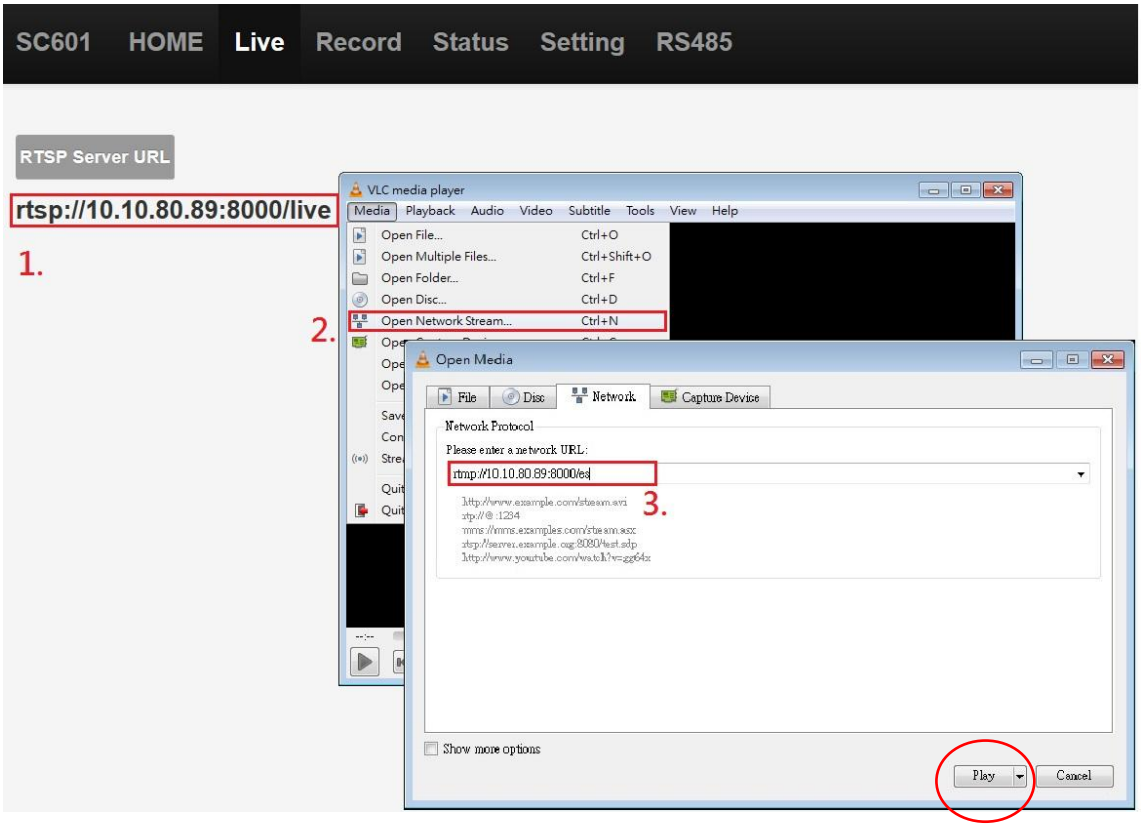
(Pic 11.)

1. Select source first. (HDMI, DVI, DVI_A, CVBS, S-Video, YPbPr, SDI)
2. Then select server and apply setting. (RTSP, RTMP, HLS, RTMP_Publish, RTSP_ES and Raw UDP)
3. Press the button of Apply and Loading.
4. The RTSP URL will be showed.

(Tips: HLS can only be streamed on the devices which are produced by Apple co. (Examples: iPad, iPhone))

(Tips: Press Reset button to initial the status of Live Stream Setup.)

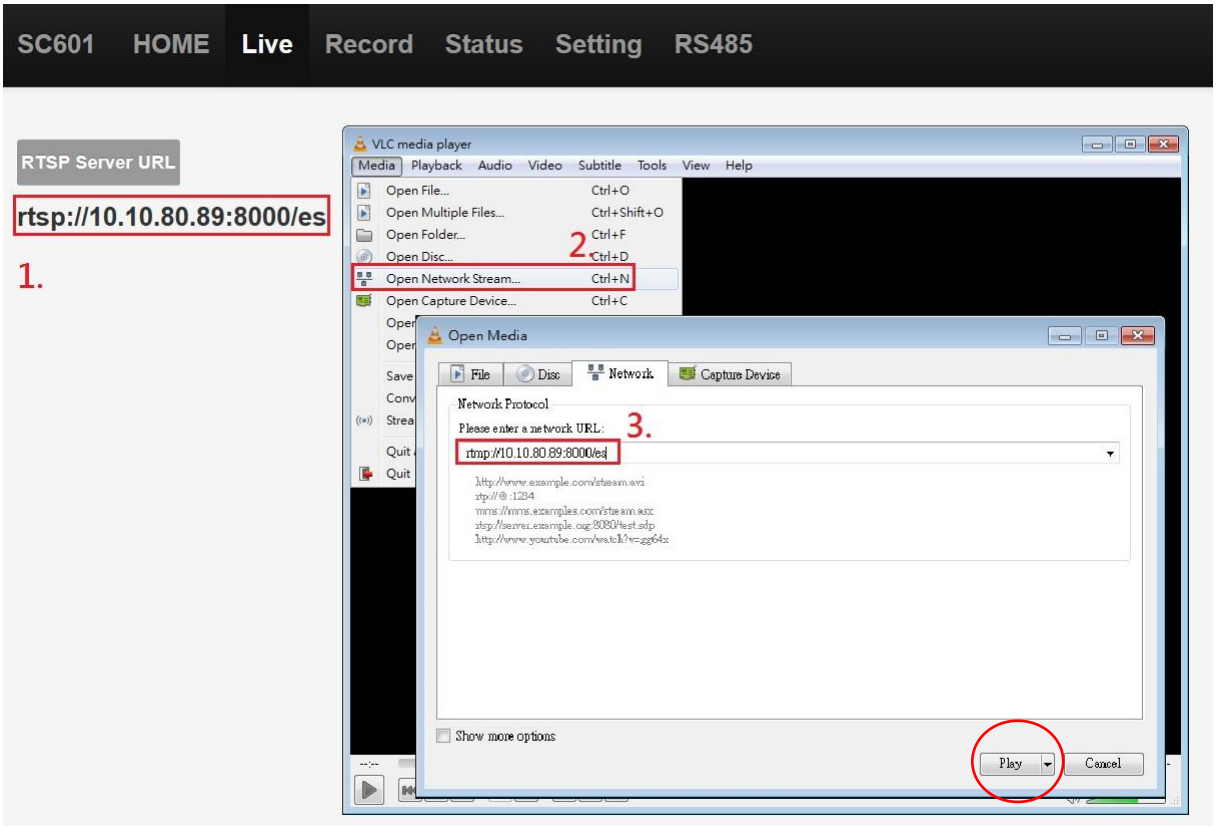
RTSP



(Pic 12.)

1. After the server of RTSP has started, user can go to the RTSP address first.(Pic 12.)
2. Open VLC media player and follow the instruction.
3. Copy the RTSP URL to the column.
4. Click "Play".

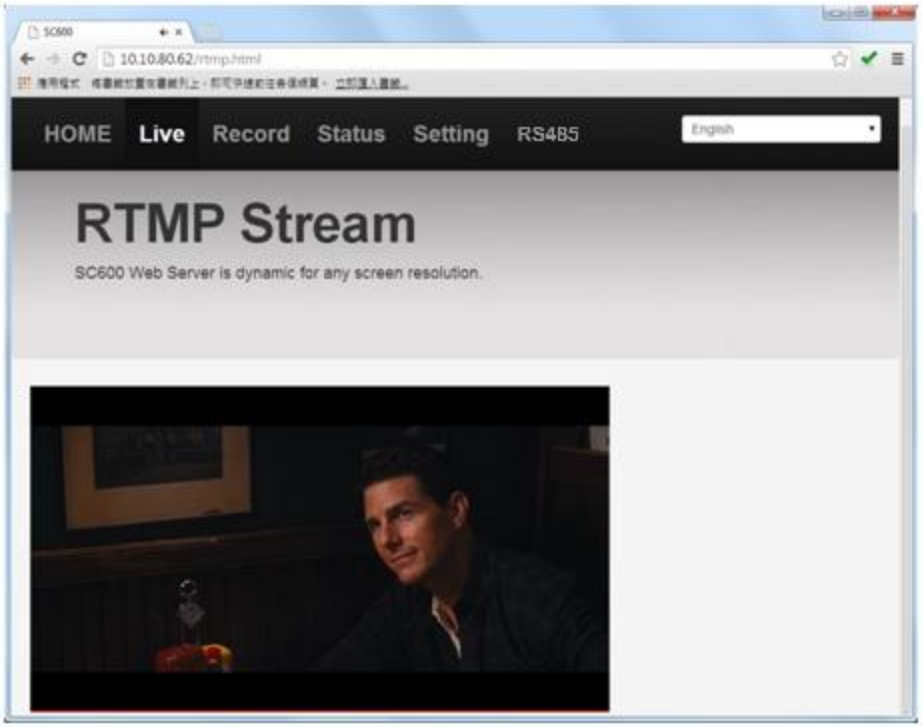
RTSP_ES



(Pic 12-1.)

1. After the server of RTSP_ES has started, user can go to the RTSP address first.(Pic 12-1.)
2. Open VLC media player and follow the instruction.
3. Copy the RTSP URL to the column.
4. Click "Play".

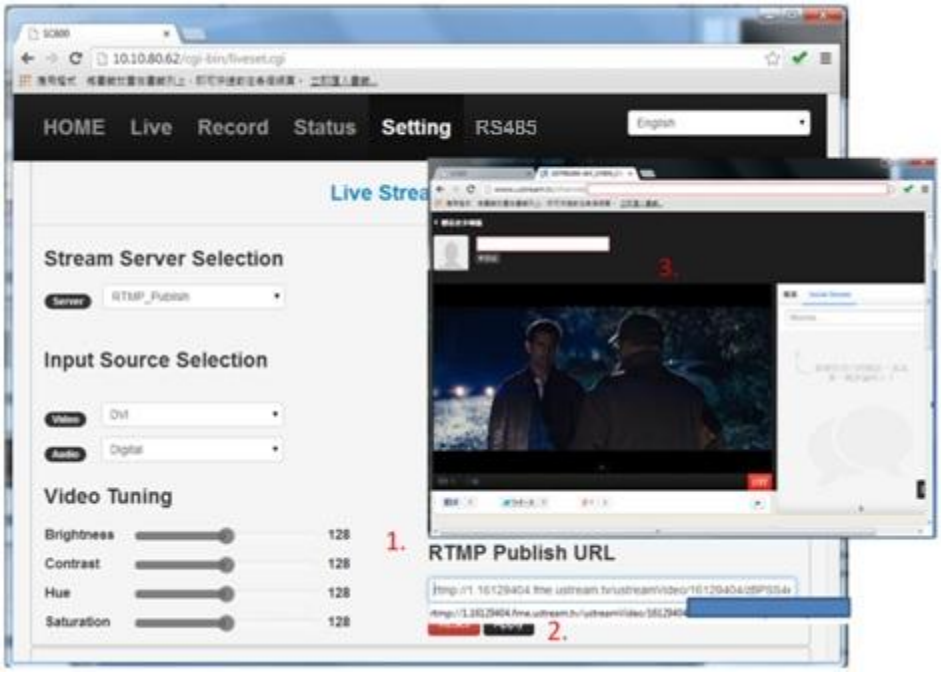
RTMP



(Pic 13.)

1. The setting of RTMP is the same as“general setting”.(Pic 11.)
2. After stream server and source are running, go to the live page to watch the RTMP streaming.

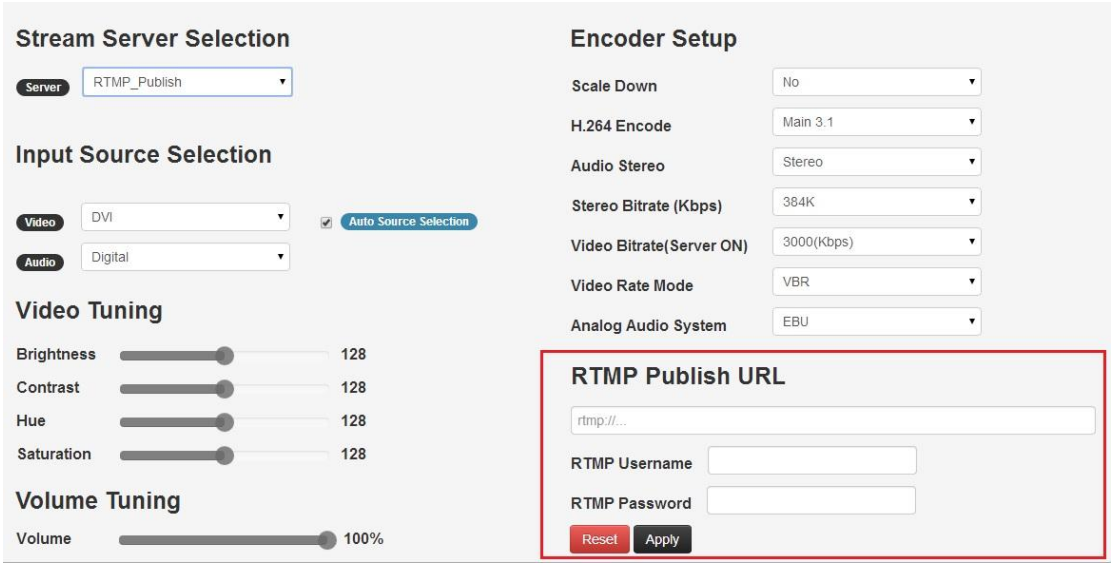
RTMP Publish



(Pic 14.)

1. If there is a RTMP Publish URL, the RTMP URL can be pasted into the corresponding column.
2. Apply setting.
3. Go to your channel and watch the live streaming.

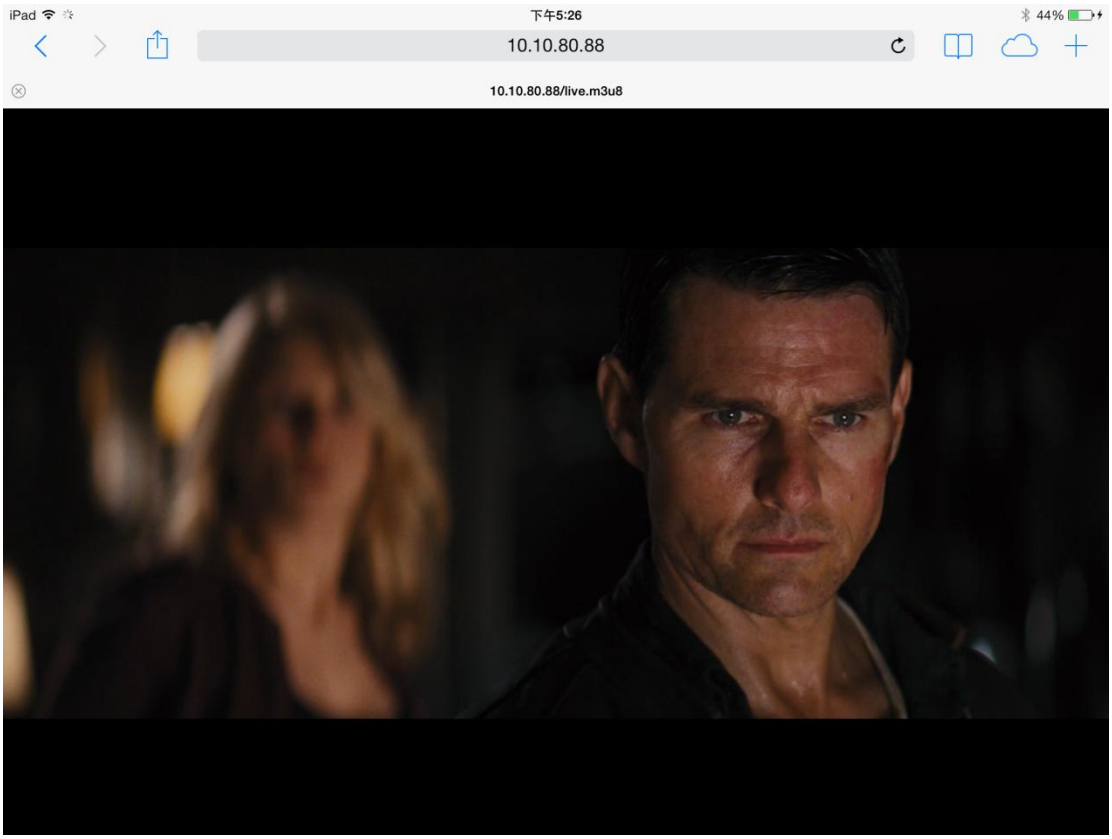
RTMP Publish Authentication



(Pic 15.)

RTMP authentication is only valid for publishing to **Adobe Flash Media Server & Wowza Server.** The user can set multiple sets of account information on Adobe Flash Media Server.

HLS

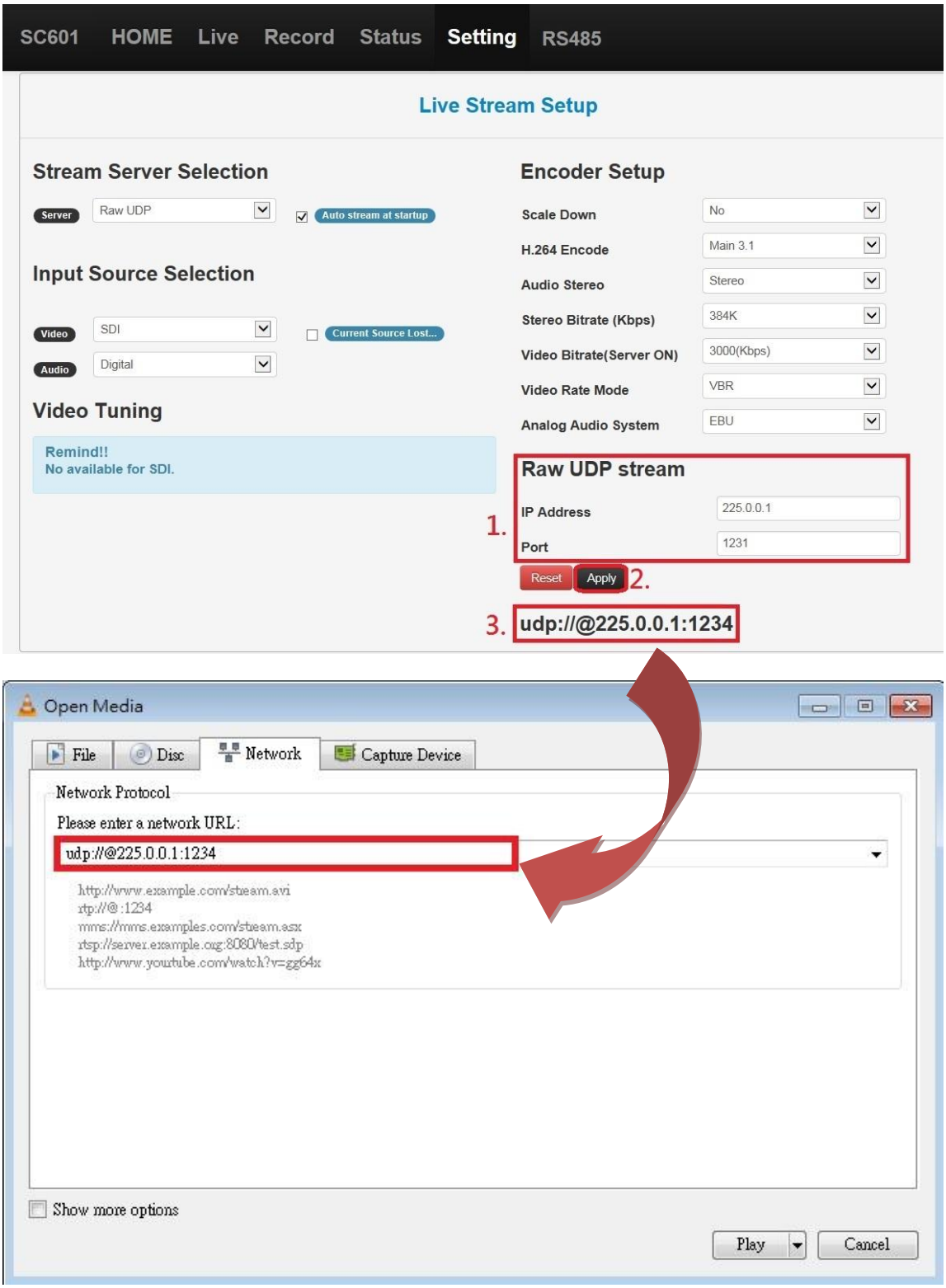


(Pic 16.)

For Apple devices, such as iPad or iPhone, log in to the Web Server using the Safari browser.

(Tips: The Spark-E II supports live streaming to the internet via "Wowza Server", "Adobe FMS", "Ustream", "Twhich", and "Youtube". The way of obtain steaming key can be found on the related website.◦)

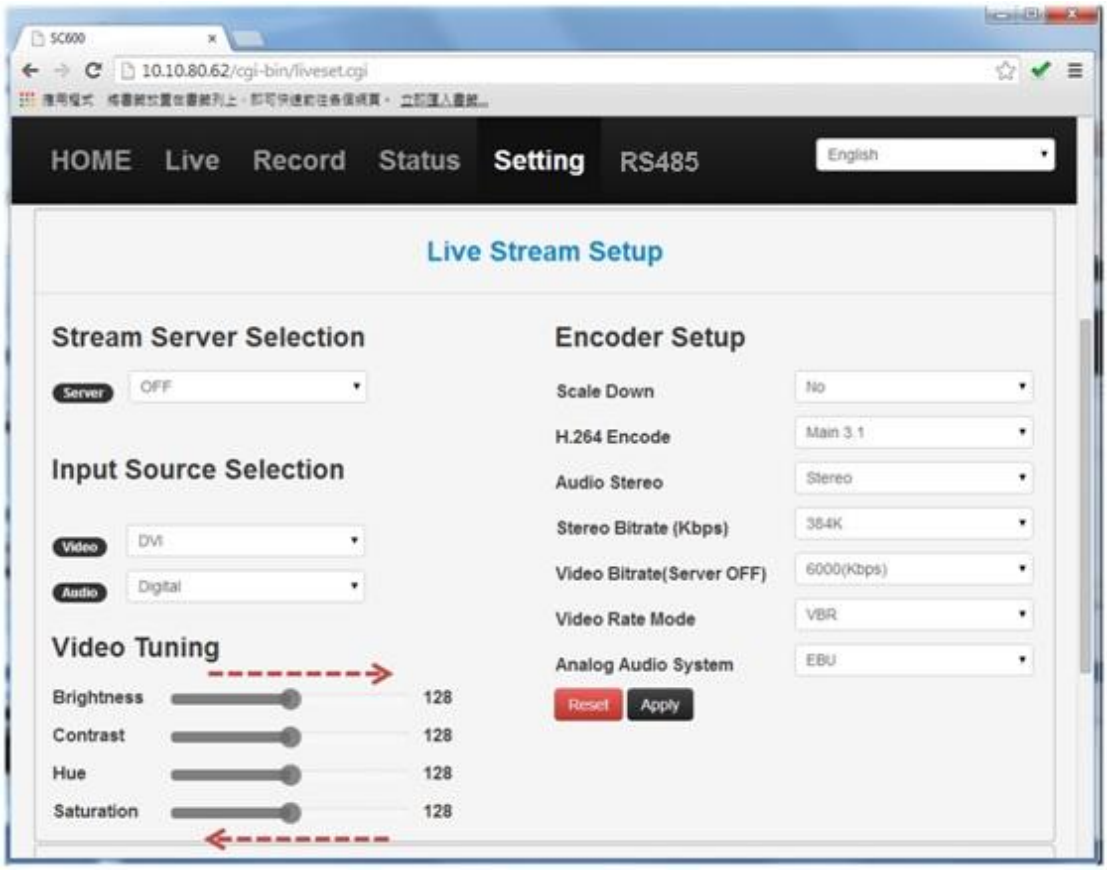
Raw UDP



(Pic 16-1.)

1. Enter the IP address (in the range of 224.0.0.0 to 239.255.255.255) and Port number.
2. Click Apply
3. Open VLC and follow the instructions.

6. Video Tuning

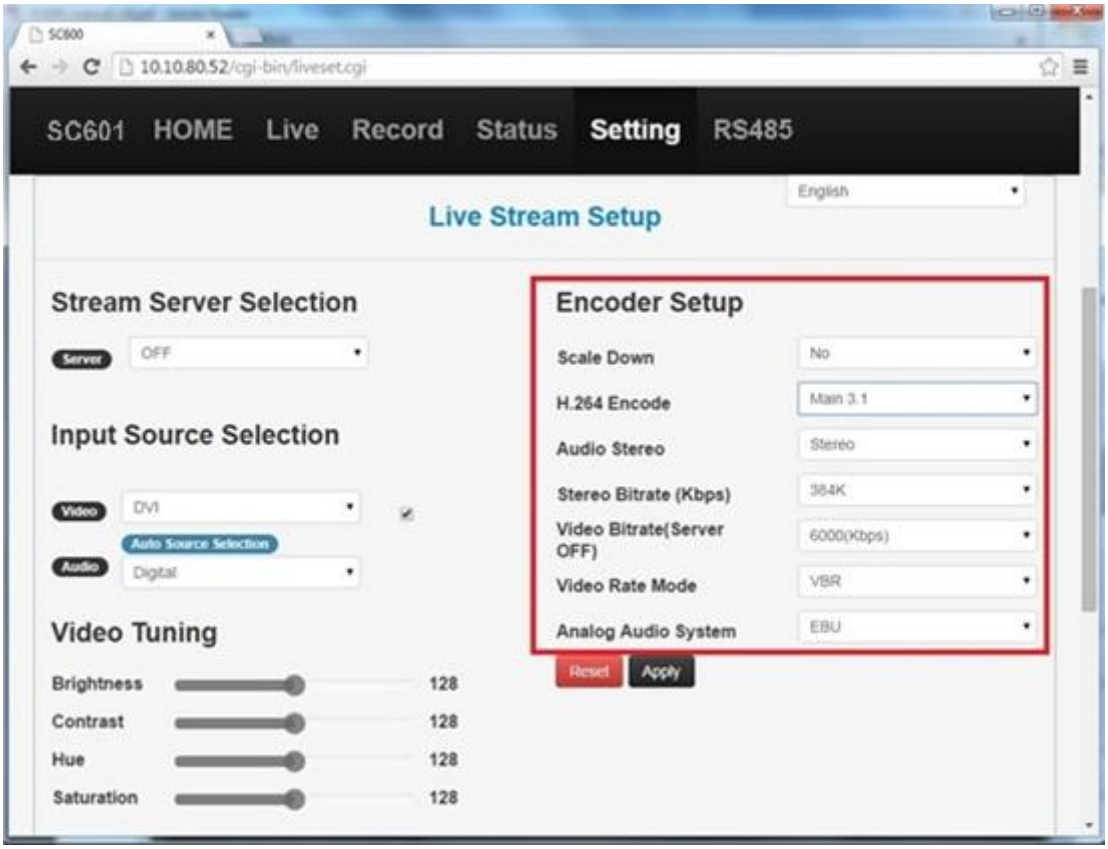


(Pic 17.)

Users can adjust these parameters while watching the live stream. The extra function of CVBS and S-Video is Sharpness. When users watch a live stream while doing video tuning, the stream server will not be terminated or restart.

(Tips:There is no video tuning option in SDI input source)

7. Encoder Setup



(Pic 18.)

1. Scale Down	(Table 2.)
2. H.264 Encoder:	Support Main 3.0, Main 3.1 and High 4.0
3. Audio Stereo:	Provide (Stereo) & (Mono)
4. Stereo Bitrate:	From 32 (Kbps) to 384 (Kbps)
5. Video Bitrate (Server OFF):	Record Only (bear). Up to 16000 (Kbps)
Video Bitrate (Server ON):	Stream Only (bear). Up to 12000 (Kbps) Record+stream: Up to 6000 (Kbps)
6. Video Rate Mode:	VBR & CBR
7. Audio Source:	Only HDMI and DVI and SDI Support Digital
8. Analog Audio System:	EBU & SMPTE

(Table 1.)

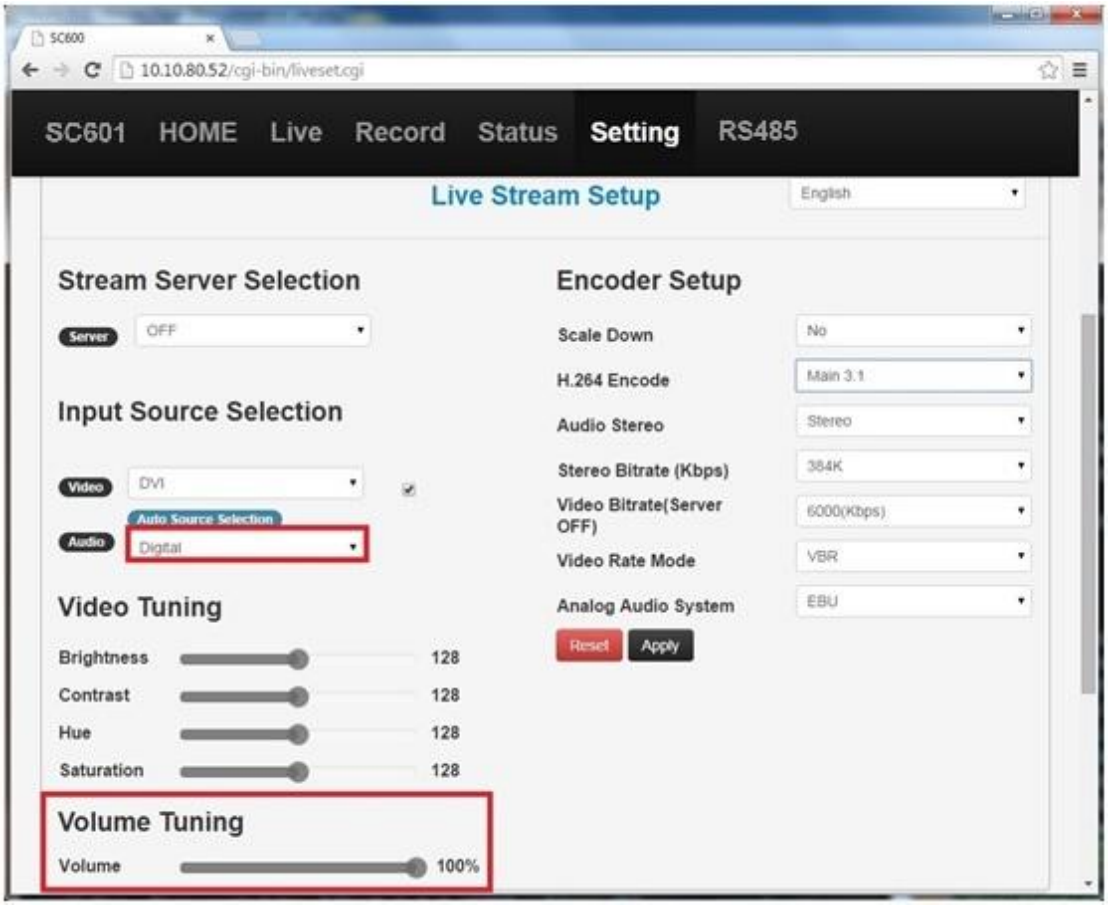
(Tips: When video bitrates are higher than 6000 kbps and the system is recording at the same time, the system does not guarantee the quality in the status.)

*Scale Down

Output / Input	Output							
	1920x1080	1440x1080	1440x900	1280x720	960x540	720x576	720x480	320x240
1080p60 (to p30)	O	Down	Down	Down	Down	Down	Down	Down
1080i60	O	Down	Down	Down	Down	Down	Down	Down
1080p50 (to p25)	O	Down	Down	Down	Down	Down	Down	Down
1080i50	O	Down	Down	Down	Down	Down	Down	Down
720p60	N/A	N/A	N/A	O	Down	Down	Down	Down
720p50	N/A	N/A	N/A	O	Down	Down	Down	Down
576p60	N/A	N/A	N/A	N/A	N/A	O	Down	Down
480p60	N/A	N/A	N/A	N/A	N/A	N/A	O	Down
PAL (digital)	N/A	N/A	N/A	N/A	N/A	O	Down	Down
NTSC (ditital)	N/A	N/A	N/A	N/A	N/A	N/A	O	Down
PAL (analog)	N/A	N/A	N/A	N/A	N/A	O	Down	Down
NTSC (analog)	N/A	N/A	N/A	N/A	N/A	N/A	O	Down
		Original						
		Scaling down						
		N/A	(Not Allow)					

(Table 2.)

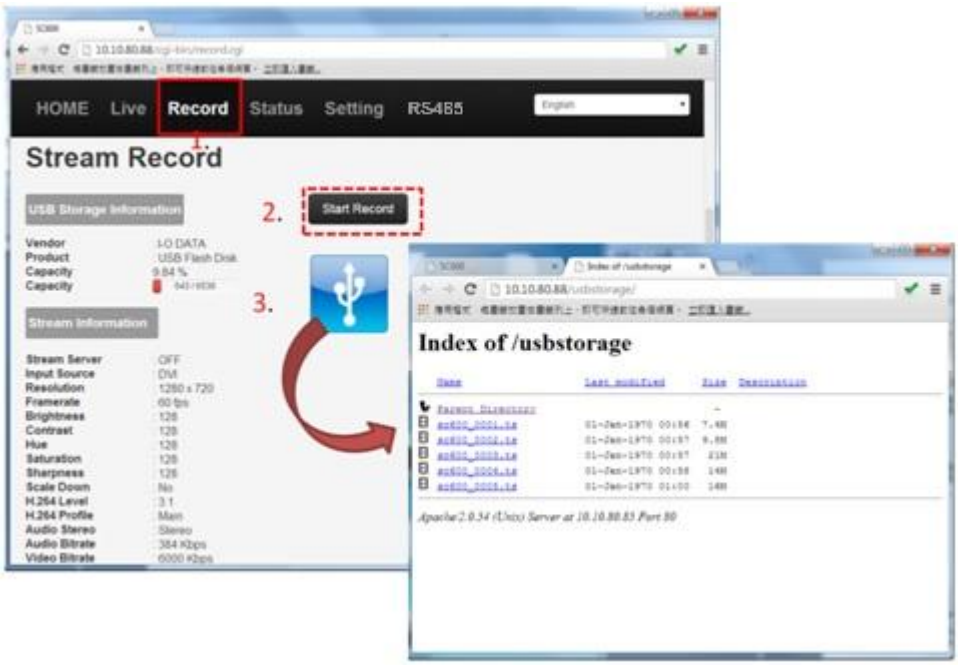
8. Volume Tuning



(Pic 19.)

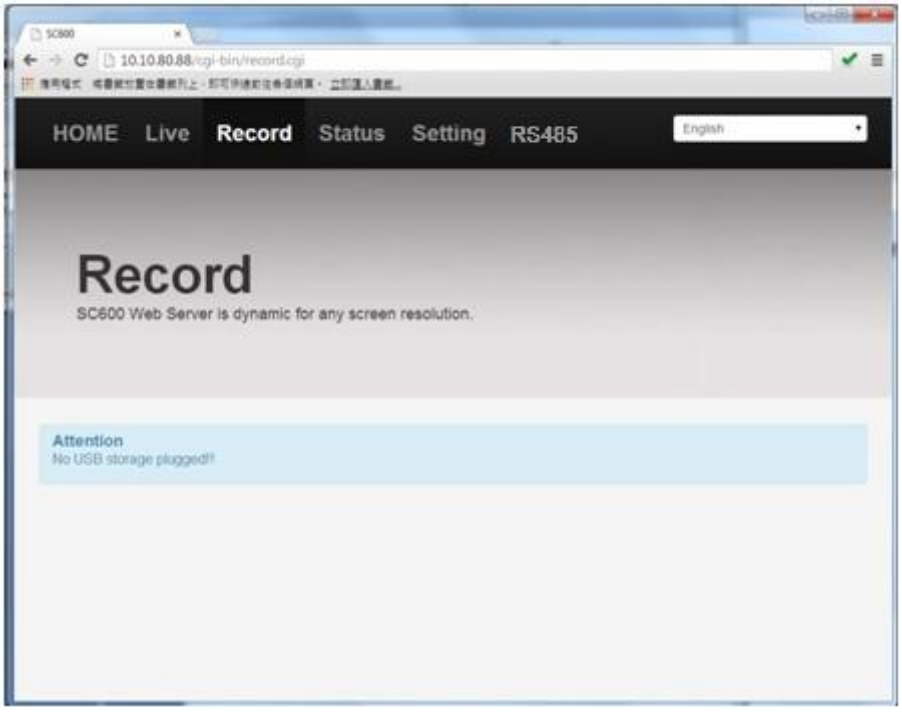
User can adjust HDMI and DVI volume when audio source input is digital. The Volume can be down or up. The volume can only be adjusted for digital source input.

9. Record Stream



(Pic 22.)

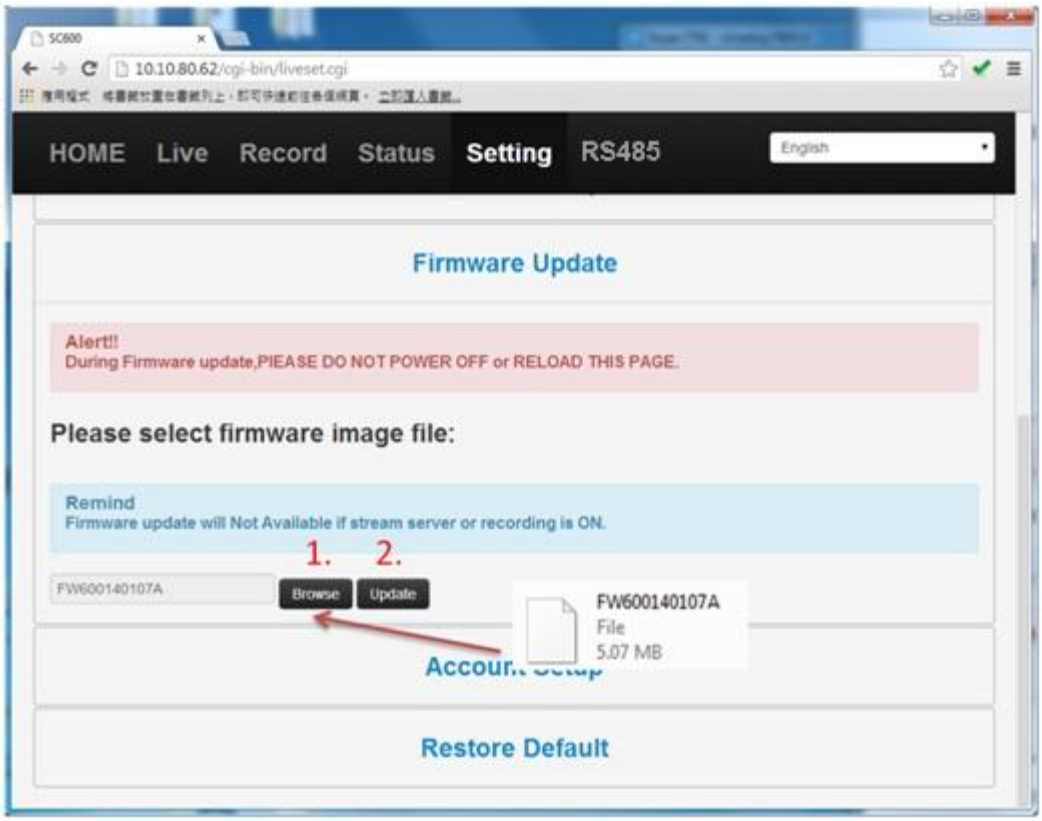
1. Click Record button on the menu bar.
2. Start Record.
3. Click the picture of USB to see recording files in the USB storage.



(Pic 23.)

If there is no USB Storage plugged-in, the screen shown above is displayed.

10. Firmware Update

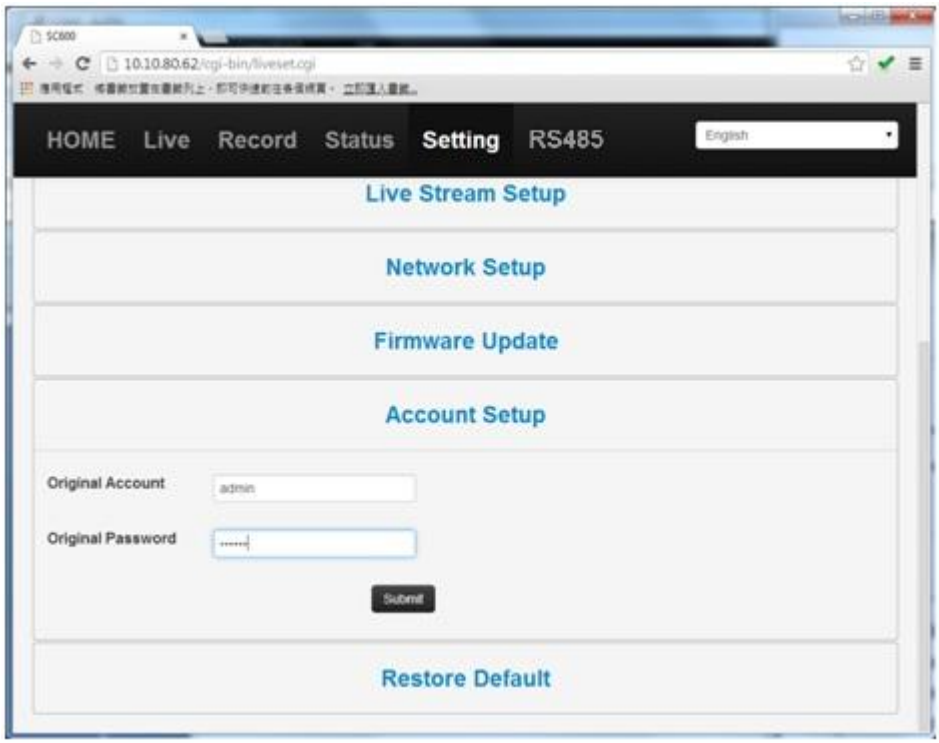


(Pic 24.)

1. Click Browse Button to find the newest Spark-E II firmware in your computer.
2. Update the Pack A and wait for the message "update successful".
3. Then update the Pack B and wait for the message "Please reboot".
4. After the firmware update is successful, **reboot the Spark-E II.**

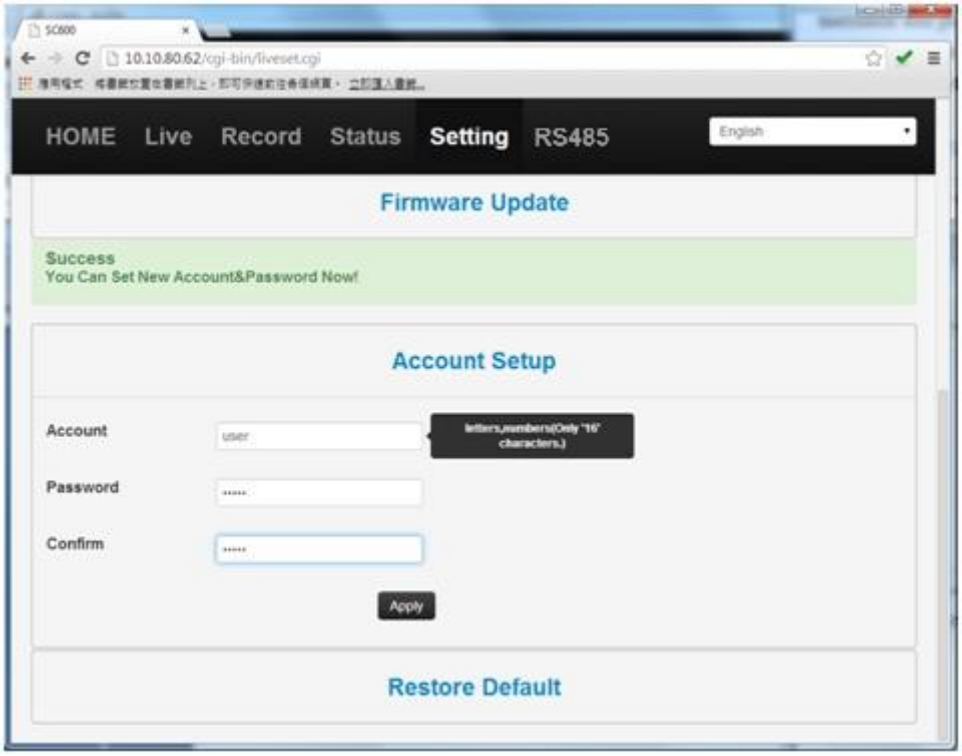
(Tips: If there is no "**update successful**" message, it is not allowed to update another pack or reboot machine)

11. Account Setup



(Pic 25.)

Before setting a new username and password, user has to input the “original” username and password. If user never changes the account, user just types the **default** username and password. If user changed before, user has to type the last username and password setting to pass the verification.

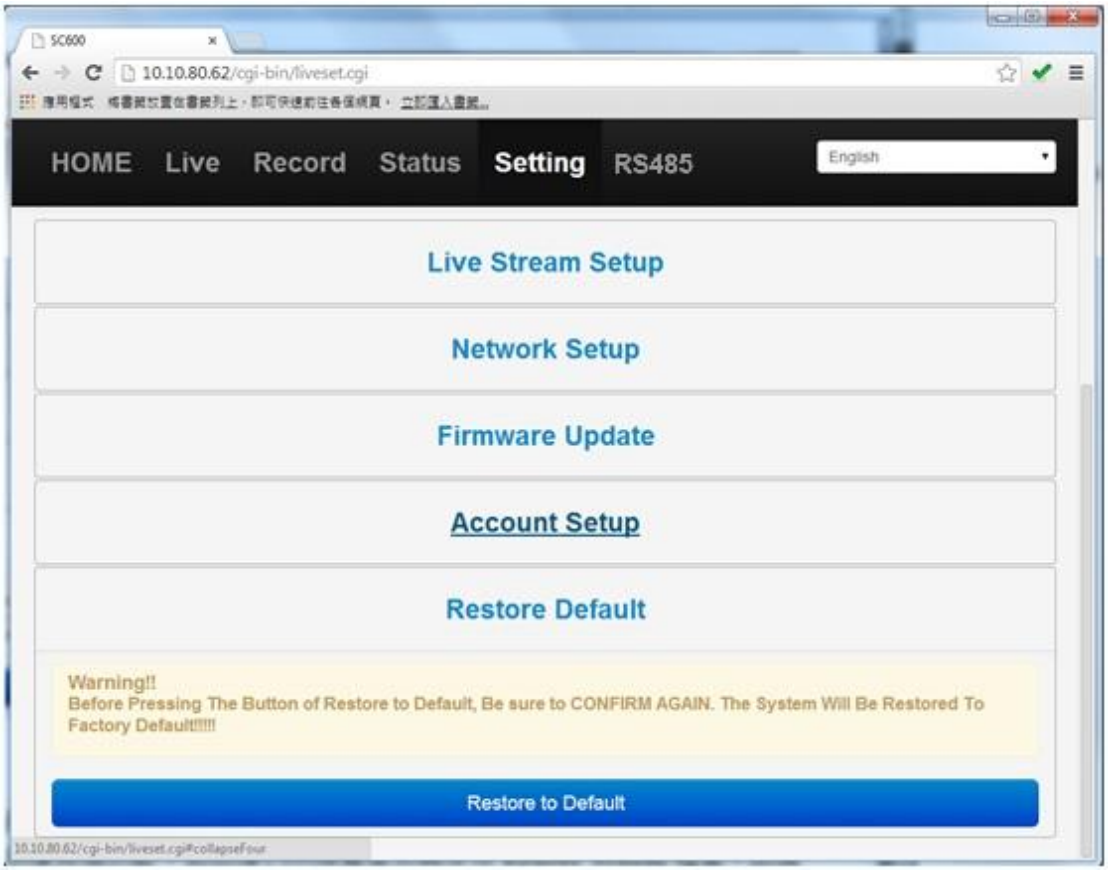


(Pic 26.)

Reset a newer username and password. Then apply change.

- **If newer account information was forgotten, use a USB disk to do restoring.**
- **USB disk must be FAT32 format.**

12. Reset to Default

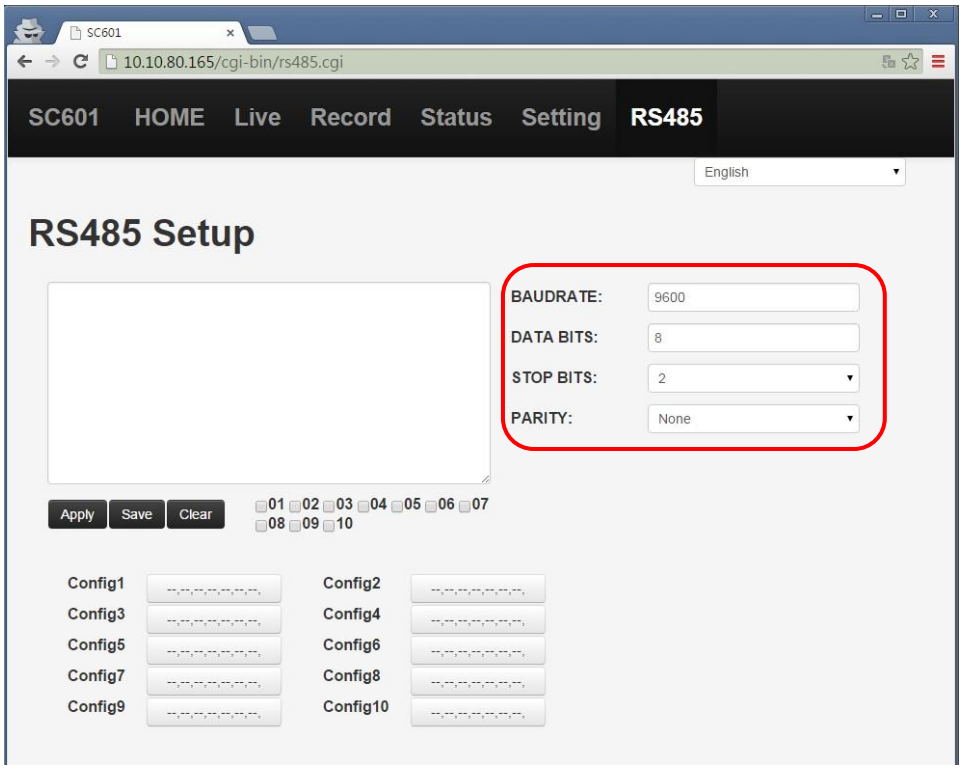


(Pic 27.)

If the system is broken or reboot fails, the "Restore to Default" function can help it reset to the Factory Default. If the function is also not working, user can try to use the File of “Restore System” to restore the system by USB disk.

13.RS485

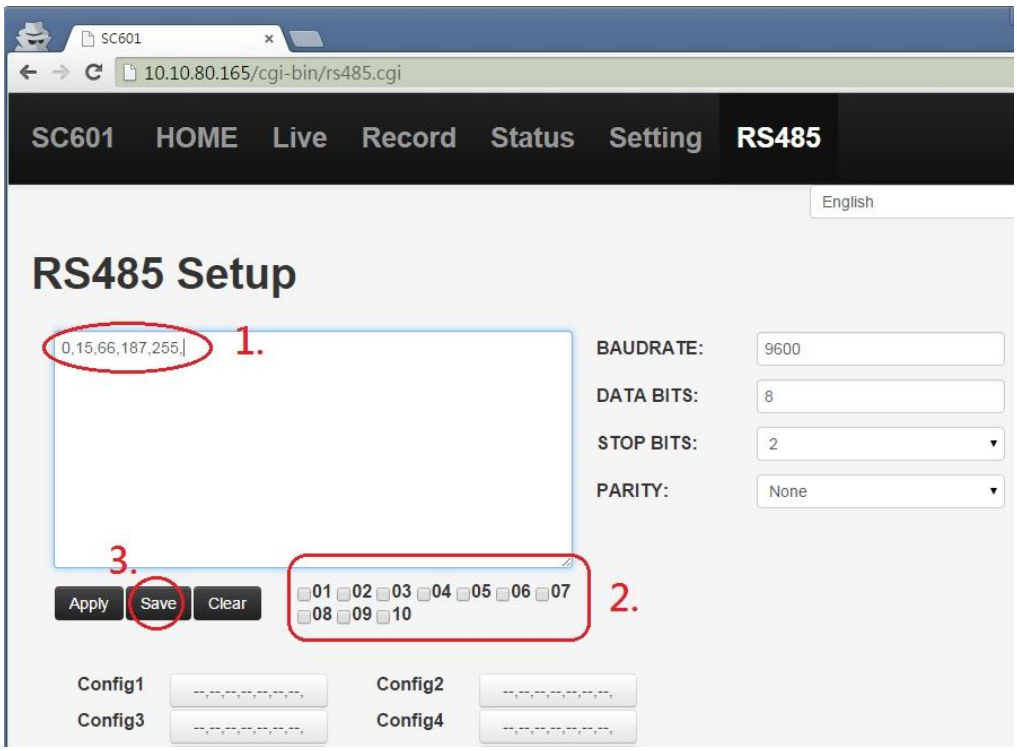
I. Configure Serial Lines



Configure BAUDRATE, DATA BIT,STOP BITS and PARITY to correspond with serial lines.

The BAUDRATE can be set as following values: **50, 75, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, 19200, 38400, 115200**

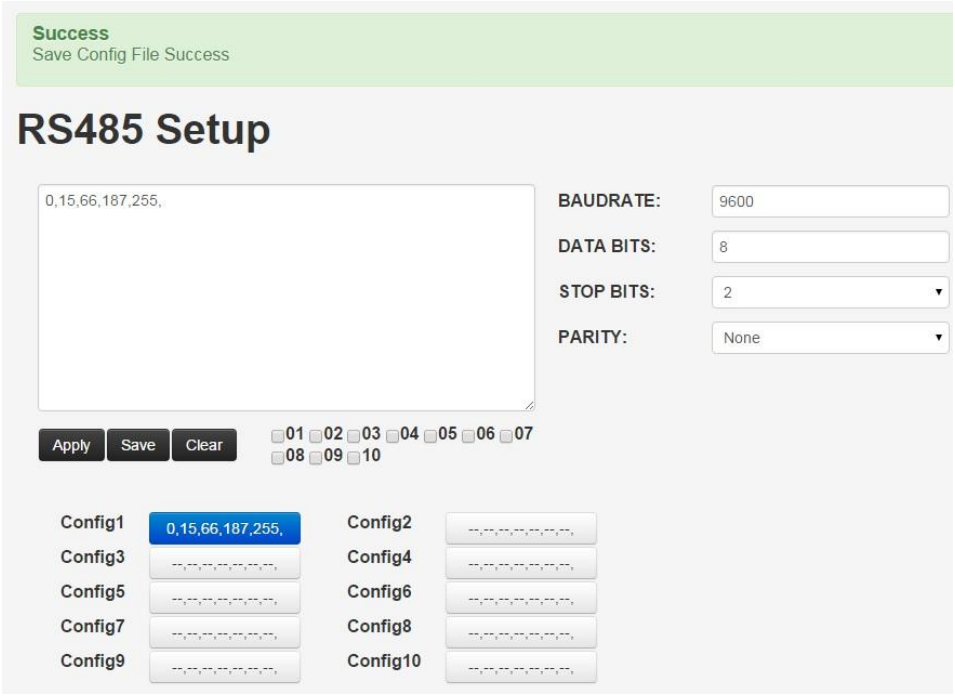
II. Save Configuration Files



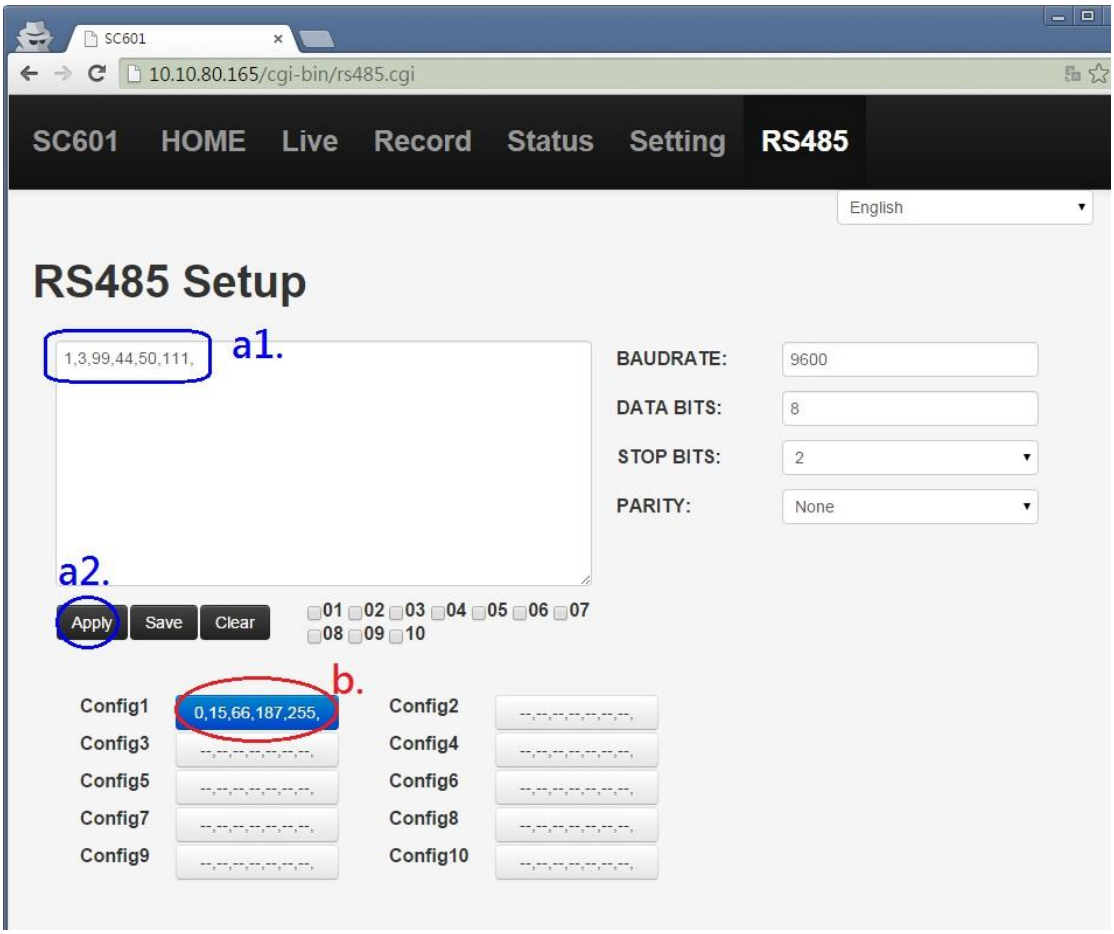
1. Input Parametres.

NOTE: Each parameter must be within the range of **0~255** and separated by Commas (,).

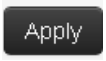
2. Choose which columns you want to save.
3. Click Save to save. If saving is successful, this screen appears.



III. Apply Parameters



method a:

1. Input Parameters.
2. Click 

method b:

If you already saved the configuration files, you can click the blue button.(ex. 

)

Appendix

1.Video Tuning

a. Value: 0 to 255

b. O means Video Tuning is available during streaming and recording.

	Brightness	Contrast	Hue	Saturation	Sharpness
HDMI	O	O	O	O	X
DVI	O	O	O	O	X
DVI_A	O	O	O	O	X
CVBS	O	O	O	O	O
S-VIDEO	O	O	O	O	O
YPbPr	O	O	O	O	X
SDI	X	X	X	X	X

2. Encoder setup

a. H.264 Encode	Up to Level 4.0
b. Audio Stereo	1. Stereo 2. Mono
c. Stereo Bitrate	Up to 384 kbps
d. Mono Bitrate	Up to 192 kbps
e. Video Bitrate	Record Only: Up to 16000 Kbps. Stream Only: Up to 12000 Kbps. Stream On + Recording: Up to 6000 Kbps. (Over 6000 Kbps Will not be Smooth!!)
f. Video Rate Mode	1. VBR (Variable Bit Rate) 2. CBR (Constant Bit Rate)
g. Analog Audio	i. HDMI 1. No 2. RCA 3. External RCA
	ii. DVI 1. No 2. RCA 3. External RCA
	iii. DVI_A 1. RCA 2. External RCA
	iv. CVBS 1. RCA 2. External RCA
	v. S-VIDEO 1. RCA 2. External RCA
	vi. YPbPr 1. RCA 2. External RCA
	vii. SDI 1. No 2. RCA 3. External RCA

3. LED Displays

Source	Flash Red Light (HDMI): Booting Green Light: Signal Locked (Green/Red: S-Video, Green: CVBS) Red Light: No Signal Input
Record	Green Light: Video Recording
Streaming	Green Light: Video Streaming