

SIP Cam

User Manual

Ver 1.0

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Chap 1. System requirements

Hardware

PC with Pentium III or above
RAM 256MB or above
Sound Card
Free hard disk space 100M or above

Network

Leased-line、xDSL or CABLE Modem
Upload speed 128 Kbps or more, 512 Kbps is recommended.
PS: For floating IP user, a Dynamic Domain Name Service (DDNS) is required. Please refer to Appendix B for your reference.

Software requirements

Window XP service pack 2 or above.
Internet Explorer 6.0 SP1 or above.

Chap 2. Package Contents

Chap 3. Overview : SIP Cam function

Tips : SIP Cam = Session Initiated Protocol Camera

PIR = Passive Infra Red

GPIO = General Purpose Input/Output

The main application of SIP Camera (it will be called as the device hereafter) is used in the surveillance scope. It has built-in camera and a SIP phone.
It can be used to monitoring (guard safe in house), and the SIP phone can be used as emergency call as a bidirectional telephone conversation.
There are 3 detection methods, they are : motion detect , PIR and GPIO (external sensor).
(you can use GPIO to connect to the other safety guard, such as door alarm system).

The device can be connected to network with wired or wireless connection. With wireless connection, it supports IEEE 802.11 b/g. The wireless model makes the network usage more convenient without the hassle of cable installation.

If something unusual happens, for example, motion detection or IR detect a man and cause event trigger, you can set notice to the guardian by Alarm Sound, telephone (SIP phone), email, FTP, etc.

Chap 4. SIP Cam appearance and connections

4-1 SIP Cam appearance and connections

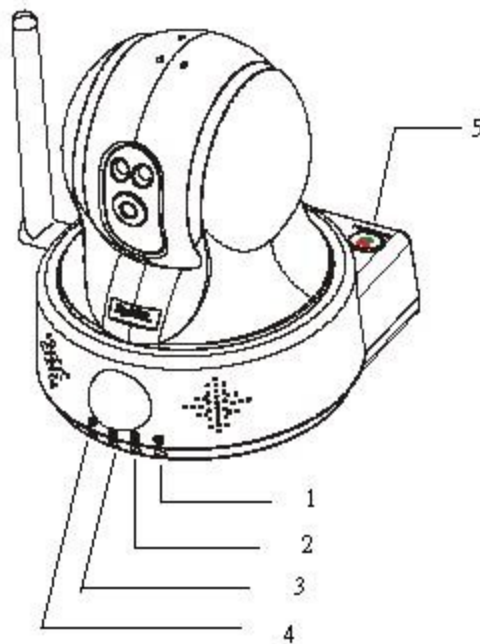


Figure 4-1

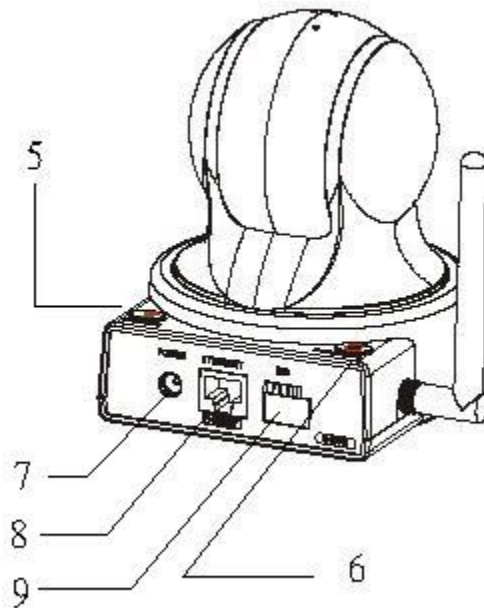


Figure 4-2

LED 1 : Power LED (Green)

LED 2 : Hardware Malfunction LED (Red)

LED 3 : Network LED (Green)

LED 4 : Monitor/Motion LED (Green)

button in position 5 : Dial / Hang up (phone call)

button in position 6 : lens parking

7 : power adaptor

8 : ethernet cable line

9 : GPIO

4-2 LED Status

The device has 4 LEDs to indicate the status of the system.

| Name | Display Status | System Status | Remark |
|--------------------------------------|----------------|---|---|
| Power LED (Green) | OFF | Power Off | |
| | ON | Power On | |
| | BLINKING | System Booting/Reseting | |
| Hardware Malfunction LED (Red) | OFF | Hardware is workable | |
| | ON | Hardware is malfunction | |
| Network LED (Green) | OFF | System is not accessible | |
| | ON | System is accessible | DHCP client gets the IP address or static IP is assigned. |
| Monitor/Motion LED (Green) | OFF | Motion Detection is disabled/No monitoring through Web or SIP | |
| | ON | Motion Detection is Enabled or SIP Phone connected | |
| | BLINKING | Under Web monitoring or SIP monitoring | |

4-3 Buttons in rear part of the device

See Figure 4-2, button in position 5 : phone call, press once to dial phone or pick up the phone, press it again to hang up. button in position 6 : lens parking, press this button, the camera lens will go to the parking position. (lens down).

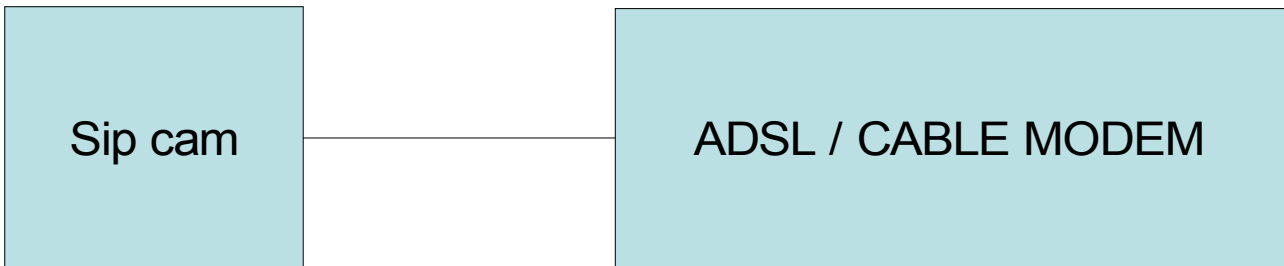
Chap 5. Installation

5-1 Hardware Installation

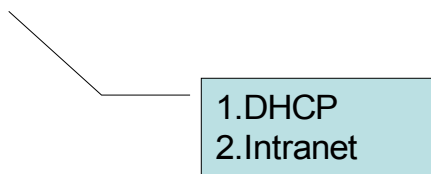
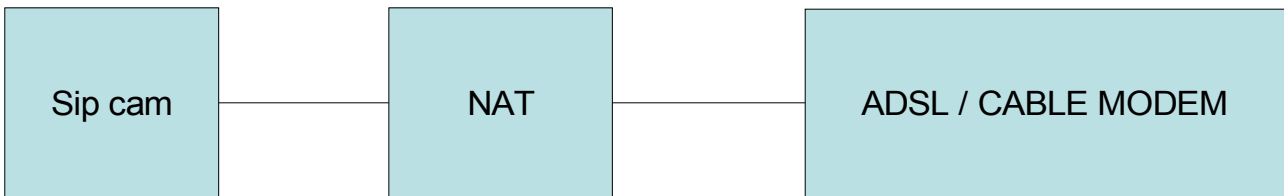
Set up according to your network scenario.

5-1-1. Wired Network

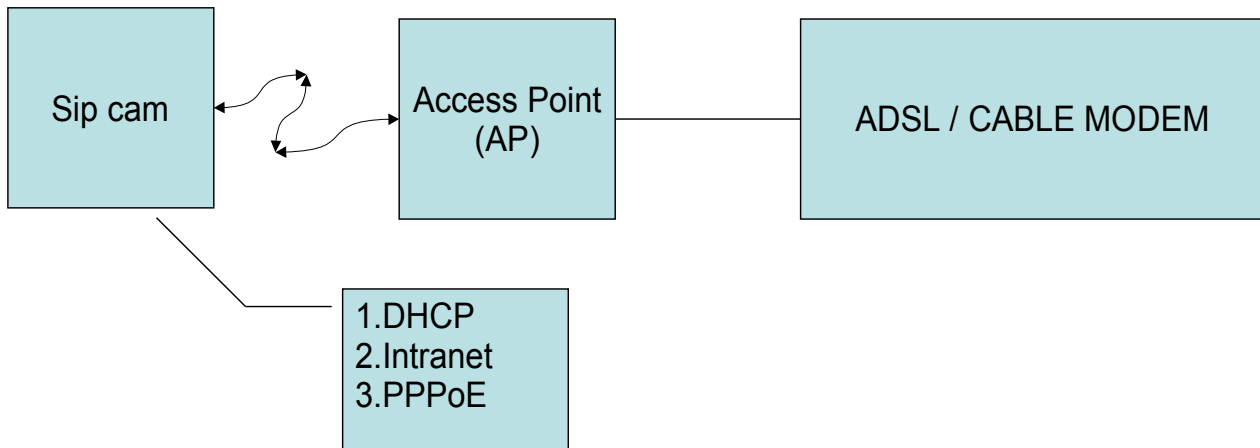
A. Connect with ADSL / Cable Modem directly



B. Connect with ADSL / Cable Modem through NAT



5-1-2. Wireless Network



5-2 Network

*Tips : DHCP : Dynamic Host Configuration Protocol.

Menu : Network / Network

If local network has a DHCP server, DHCP server can dynamically give the device one floating(Non-fixed) IP address, you can ask MIS administrator to acquire the detail.

When using DHCP mode, please set DHCP Status to "ON"; When using Fixed IP mode, set DHCP Status to "OFF" and fill the fields in the fixed IP mode, including IP Address, Subnet Mask, Gateway, Primary DNS, and Secondary DNS.

Press "Apply" button to submit and complete the process.

5-3 Wireless Installation

*Tips : WPS = Wi-Fi Protected Setup.

First thing you have to do is to find out the configuration of your wireless AP. There are two methods of connecting the device to the AP. One is WPS method, the other is traditional method (without WPS). The WPS method has two profiles: One is push button method, the other is PIN code method. If your AP supports WPS push button method, it's quickest method to setup. The traditional process (without WPS) is most complicated process. See the following setup process for these 3 methods:

| Traditional process (without WPS) | Wi-Fi Protected Setup: PIN code method | Wi-Fi Protected Setup: push button method |
|-----------------------------------|--|--|
| 1. Power on AP | 1. Power on AP/registrat | 1. Power on AP |
| 2. Access AP | 2. Power on SIP Cam. Network name generated automatically and broadcast to SIP Cam | 2. Power on SIP Cam. Network name generated automatically and broadcast to SIP Cam |
| 3. Set network name (SSID) | | |
| 4. Activate security | 3. Access registrar | 3. Push button on AP |
| 5. Set passphrase (see note1) | 4. Enter PIN | 4. Within 2 minutes, push button on SIP Cam. (On back of SIP Cam, the pinhole labeled WPS) |
| 6. Power on SIP Cam | | |
| 7. Select network name (SSID) | | |
| 8. Enter passphrase | | |

If your AP doesn't support WPS, a traditional process is used. Assign one security protocol. For example, after power on AP and access AP, assign WPA-PSK(TKIP) in Encryption method of wireless AP. Assign a 8~63 ASCII characters as preshared key. Save and reboot it. Then on the web site of the device, go to Network / Wireless; choose Enable to "On"; fetch the value in ESSID field in wireless AP, and copy to ESSID field of the device. Unplug the wired ethernet cable line, use search tool (for example, V750WConfig.exe) to search the device, if you cannot find the device, go back to check the wireless settings again.

(note1) passphrase : A passphrase is a sequence of words used to control access to a computer system, program or data. A passphrase is similar to a password in usage, but is generally longer for added security. Passphrases are often used to control both access to, and operation of, cryptographic programs and systems. Passphrases are particularly applicable to systems that use the passphrase as an encryption key.

Menu : Network / Wireless

Chap 6. Surveillance Setting

6-1 Time Setting (Time Zone)

***Tips : NTP : Network Time Protocol.**

OSD : On Screen Display.

Menu : Maintenance / System / Time

You can get SIP Cam Time Zone from NTP Server or Local Computer time. When you choose NTP Server, type in NTP Server name or use default NTP Server name : ntp.nasa.gov ; you can just get SIP Cam Time Zone from local computer time by click “Local Computer time” button. Time will be saved in the device, and will be showed upon OSD if OSD require time to be showed.

We use "ntp.nasa.gov" as default NTP server.

You can get more information from <http://www.ntp.org/>

6-2 Surveillance Setting (Event Triggers,PIR/Motion detection,GPIO)

Please refer to the following paragraphs in Web_User_Manual_English_vXXX.pdf.

Menu : Surveillance / Event Trigger

Menu : Surveillance / Event Schedule

6-3 Notification (Email, FTP)

Please refer to the following paragraphs in Web_User_Manual_English_vXXX.pdf.

Menu : Surveillance / Event Trigger

Menu : Surveillance / Notification / Email

Menu : Surveillance / Notification / FTP

Chap 7. Call Setup

7-1 Preparation

Phone numbers must be registered to SIP Server before they can talk to each other. Now the sip phone numbers are restricted to English alphabets and digits only. Ask SIP Server manager to acquire the detail.

Now we have to download a program for softphone. We choose “linphone” as softphone.

Go to <http://www.linphone.org/index.php/eng/download> to download, for windows installer.(circle in Figure 7-1, then choose linphone-win32-0.4.1-setup.exe).

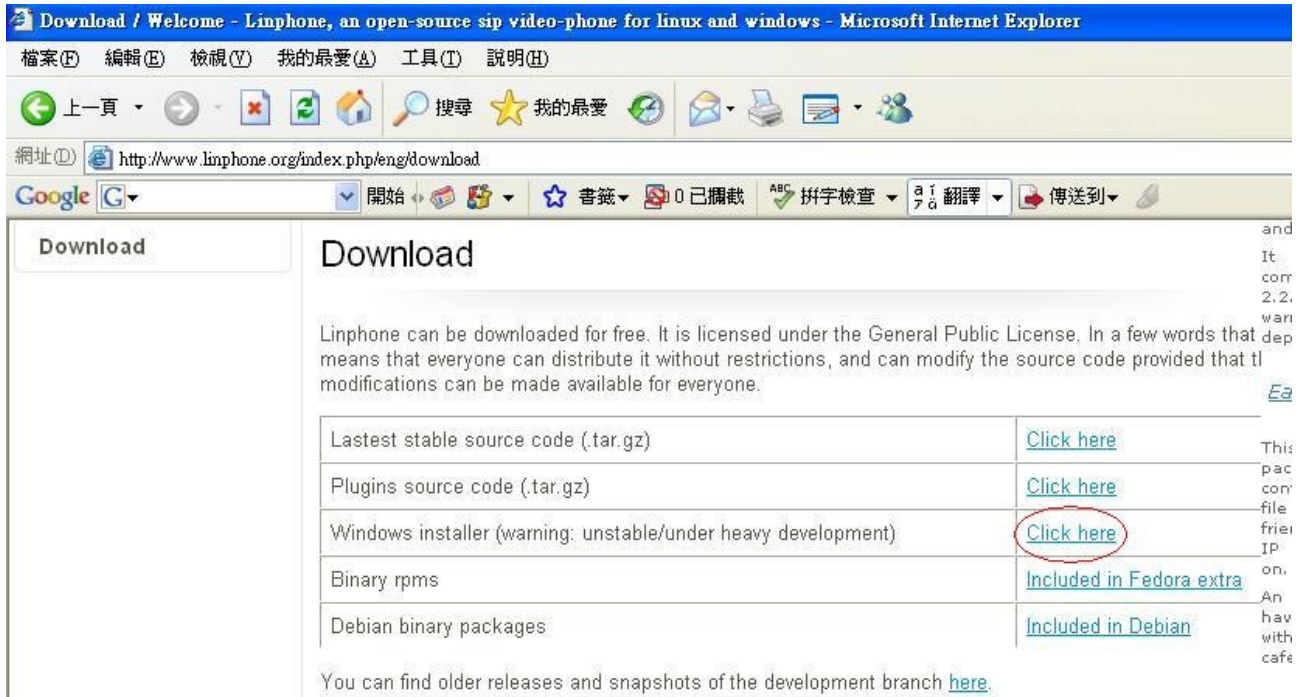


Figure 7-1

install linphone-win32-0.4.1-setup.exe . Other versions may be unstable.

After successfully installed, execute the program, the program looks like Figure 7-2.



Figure 7-2

Click Tools / Settings, there are four tab setting pages,

a. Network settings

Choose your network settings according to your network scenario. Enter in the text box your NAT/Firewall address if you choose “Use supplied firewall address”; Enter in the text box your STUN server address if you choose “Use stun server to discover firewall automatically”. Or you can choose “I’m not behind a firewall, connect directly”.

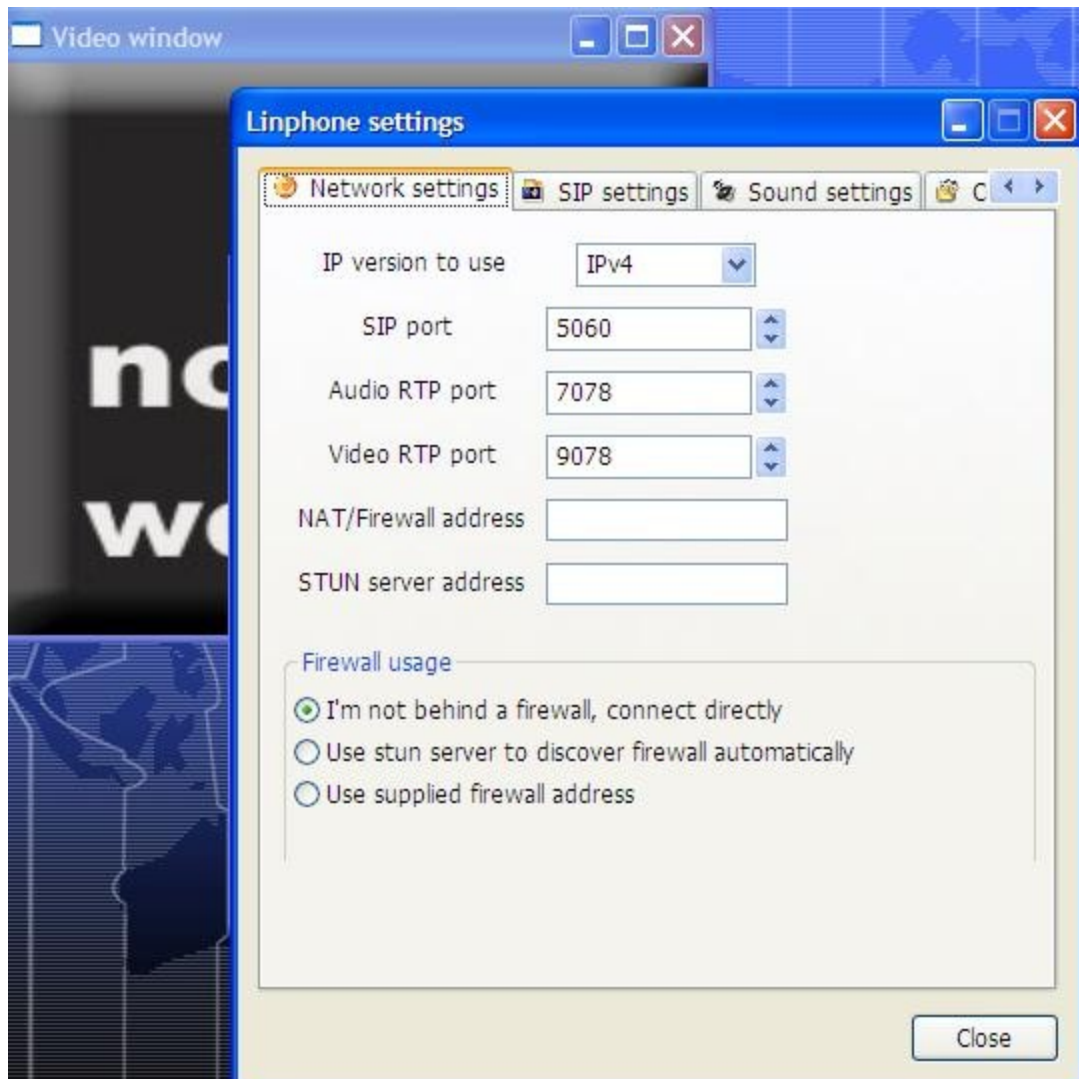


Figure 7-3

b. SIP settings

You can pay no attention to the “Username” and “Your sip address” text box. (1 in Figure 7-4). Press “Add proxy” button (2 in Figure 7-4), enter proxy server in the text box (1 in Figure 7-5), (here we entered sip:192.168.66.65), enter your softphone SIP phone number address in the text box (2 in Figure 7-5), (here we entered 202@192.168.66.65). Choose “Register” to “yes”. Other parameters use default values, press “OK” button.

For example, we want to make a call from softphone (SIP phone number : 202@192.168.66.65) to the device (SIP phone number : 201@192.168.66.65). Input as in Figure 7-5.

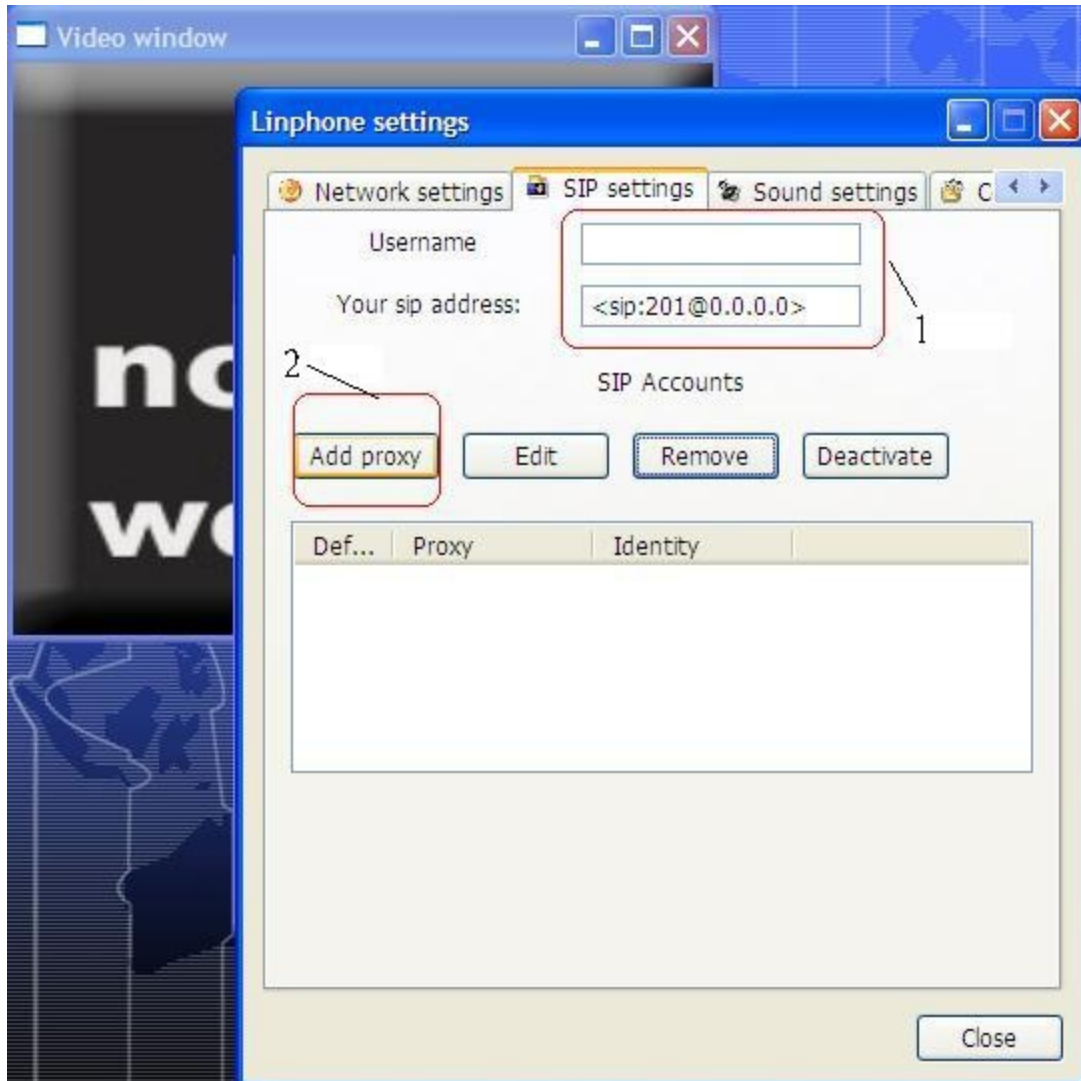


Figure 7-4

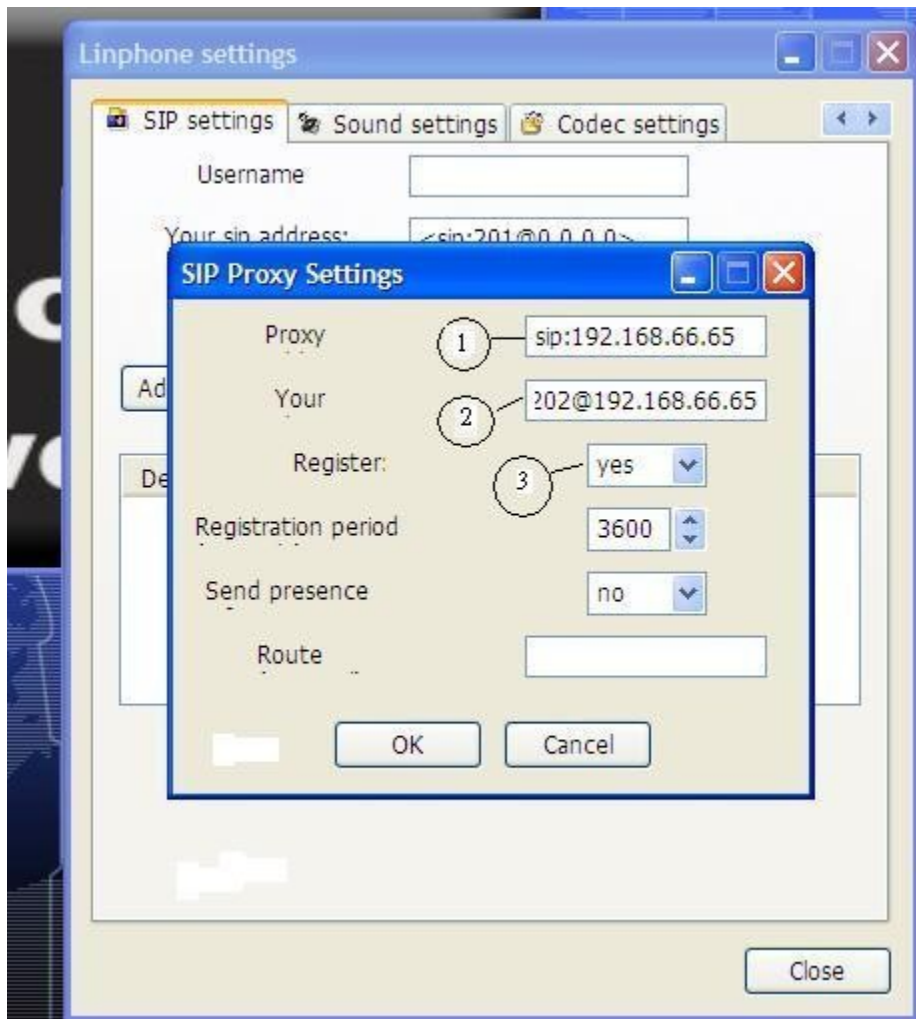


Figure 7-5

c. Sound settings

Check the checkbox “enable echo canceler”.

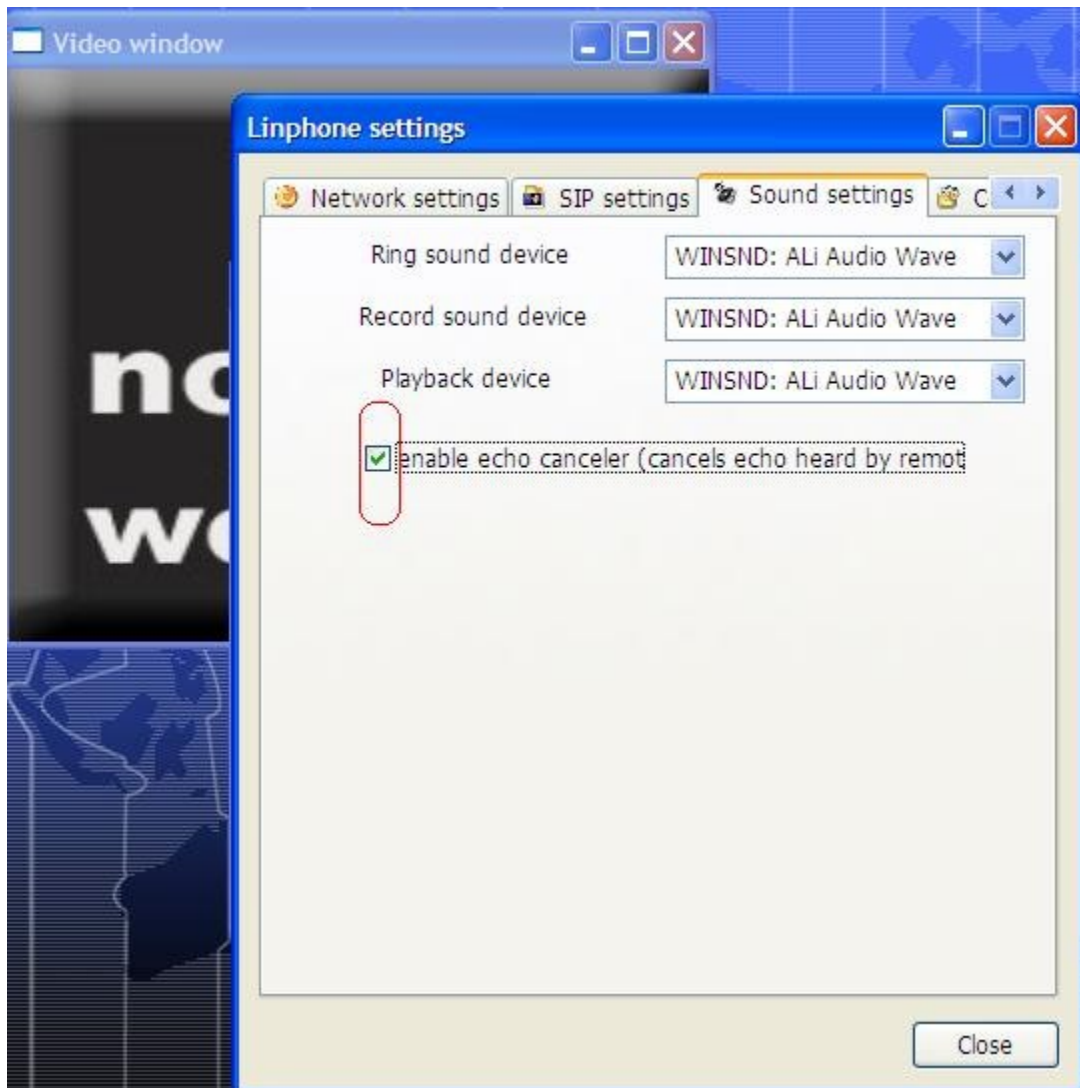


Figure 7-6

d. Codec settings

You can do nothing here.

e. Finally, press “Close” button to finish the setting process. (circle in Figure 7-7).

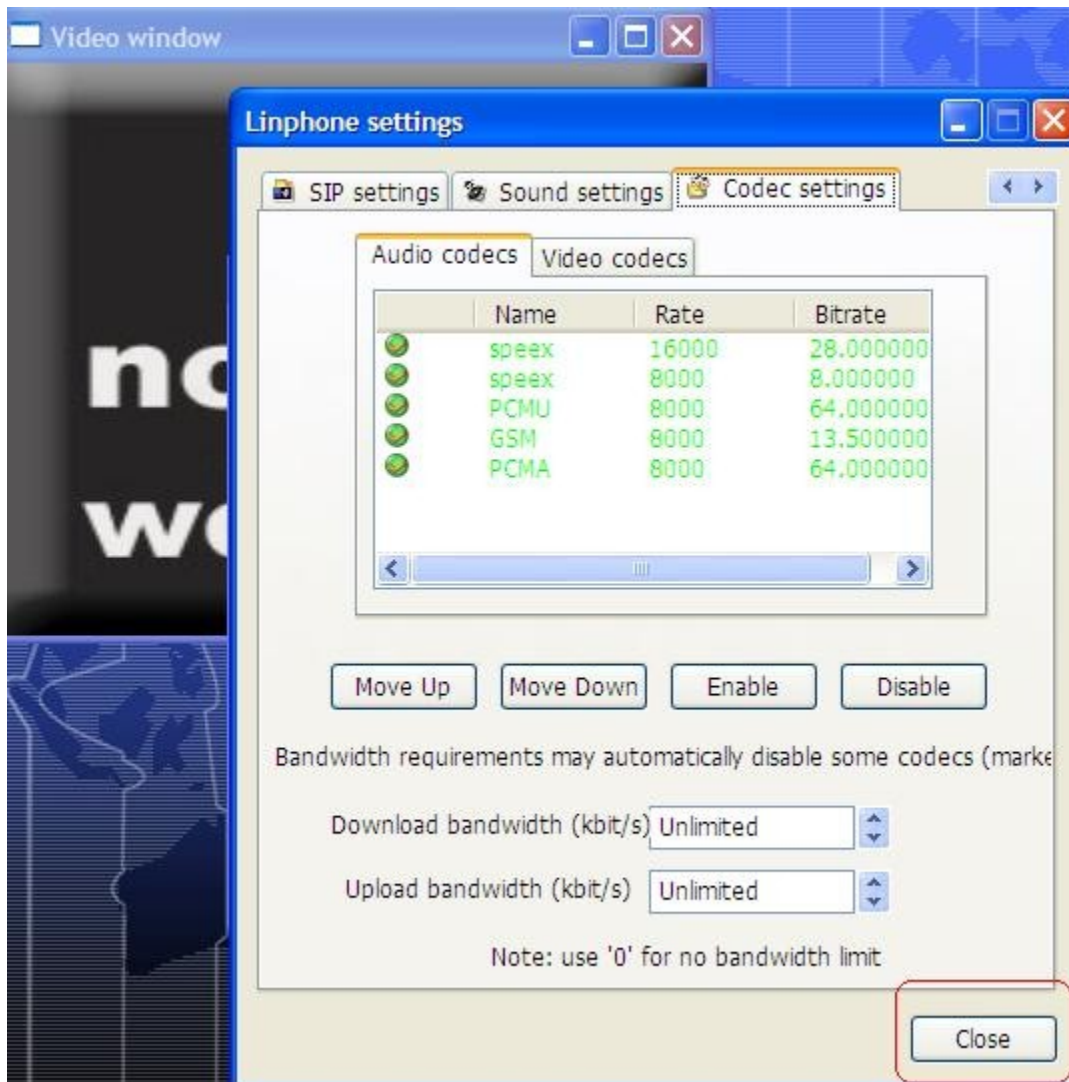


Figure 7-7

7-2 Making a call from softphone to the device

After registration to SIP Server, you can test a call from softphone to the device in the LAN. For example, a SIP Proxy server created as 192.168.66.65; we want to set the SIP phone number of the device and softphone to 201@192.168.66.65 and 202@192.168.66.65 respectively.

- (a). Set the SIP phone number of the device to 201@192.168.66.65

Menu : Phone / SIP

SIP Proxy : 192.168.66.65

Username : 201

Password : 201 (or anything else)

SIP Network Type : choose one of these according to your network scenario.

Press "Apply" button to submit and complete the process.

(b). Set the SIP phone number of the softphone to 202@192.168.66.65

Menu : Phone / Outgoing Call

Phone Number : 202

Call Mode : Video Phone

Press “Apply” button to submit and complete the process.

(c). Reboot

Menu : Maintenance / Configuration / Restart Reset

To finish the above (a), (b) process, you have to reboot the device. Click “Restart” button to reboot the device.

(d). Log Out

Menu : Log Out

Before you can use the softphone to talk to the people in the device side, you have to log out.

(e). Final step

For example, we want to make a call from softphone (SIP phone number : 202@192.168.66.65) to the device (SIP phone number : 201@192.168.66.65). As you have finished all steps in Chapter 7-1, the only thing you have to do here is enter the SIP phone number you want to call (text box 3 in Figure 7-7), choose “Voice & Video” in 4 (Figure 7-8) if you want a call with voice & video simultaneously, after that, press “Start!” button in the linphone panel. A ring tone should be heard on the SIP Cam side, after about 5 seconds and ring tone changed from “DU-----DU-----”(longer time gap between two "DU" sound) to “DU—DU—DU”(shorter time gap between two "DU" sound), press PIN code designated in the Phone / Incoming call, after that, phone should be connected, so image on the device side will appear, (through the camera lens) , you can talk with the man on the device side (if any), check the quality of the voice and the video. After test is done, you can press “stop” button in the linphone panel to end the phone.

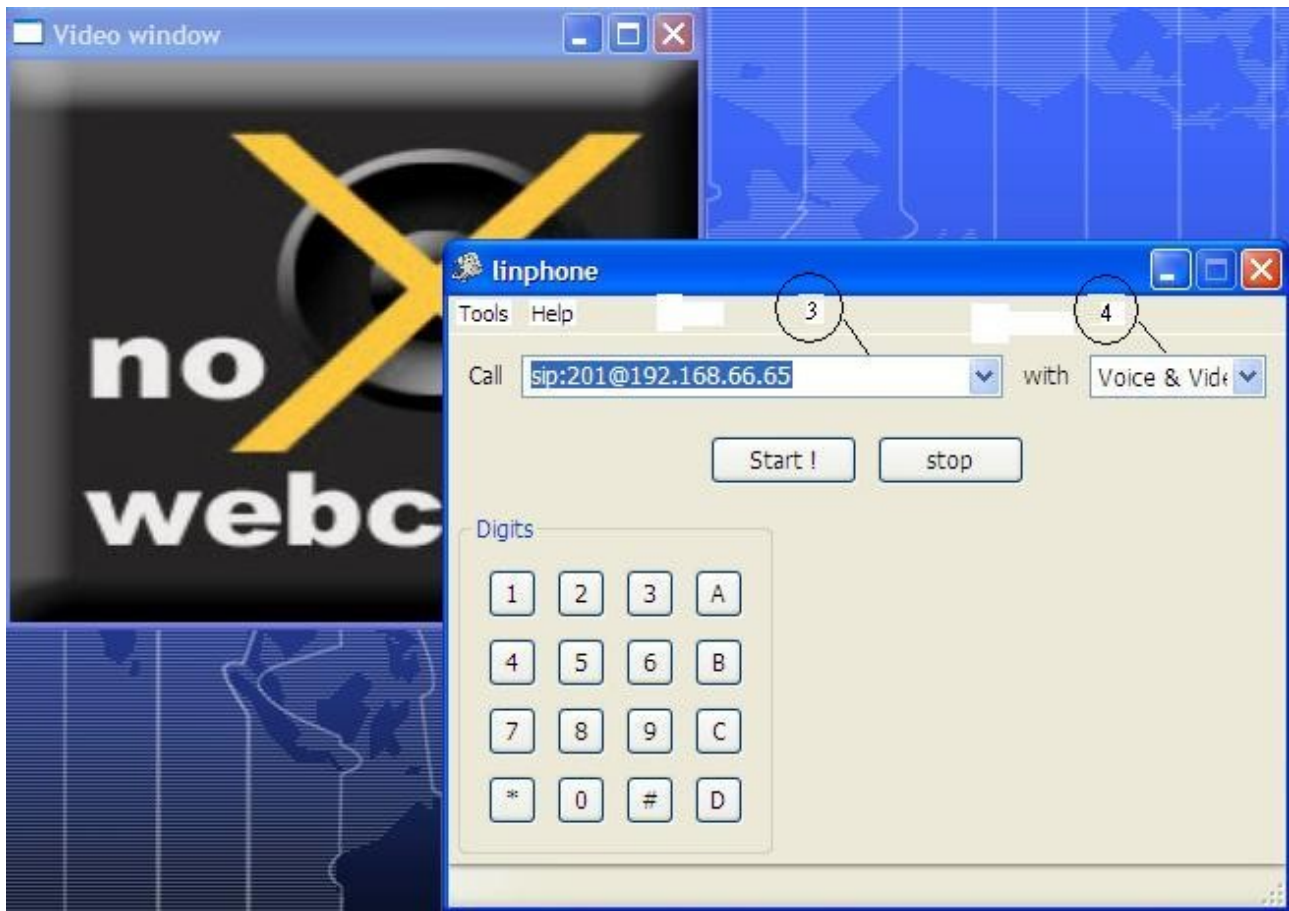


Figure 7-8

7-3 Making a call from the device to softphone

After registration to SIP Server, you can test a call from SIP Cam to softphone in the LAN. For example, a SIP Proxy server created as 192.168.66.65; we want to set the SIP phone number of the device and softphone to 201@192.168.66.65 and 202@192.168.66.65 respectively.

(a). Set the SIP phone number of the device to 201@192.168.66.65

Menu : Phone / SIP

SIP Proxy : 192.168.66.65

Username : 201

Password : 201 (or anything else)

SIP Network Type : choose one of these according to your network scenario.

Press “Apply” button to submit and complete the process.

(b). Set the SIP phone number of the softphone to 202@192.168.66.65

Menu : Phone / Call / Outgoing Call

Phone Number : 202

Call Mode : Video Phone

Press “Apply” button to submit and complete the process.

(c). Reboot

Menu : Maintenance / Configuration / (Restart / Reset)

To finish the above (a), (b) process, you have to reboot the device. Choose “Reboot” function to reboot the device.

(d). Log Out

Menu : Log Out

Before you can use the device to talk to the people in the softphone side, you have to log out.

(e). Final step

Press the “Phone Call” button (position 5 in Figure 4-2) to dial to softphone (PC/NB). A ring tone should send out from speaker of PC/NB on the softphone side.

After the man in the softphone side press the “Start!” button in the linphone panel (1 in Figure 7-9), phone is connected, so he can see the images (through the camera lens) and can talk with the people on the device side (if any), check the quality of the voice and the video. After test is done, press “stop” button in the linphone panel to end the phone.



Figure 7-9

7-4 Incoming Call Restriction

You can restrict the incoming call to the device by the following way :

Menu : Phone / Incoming Call

Turn Restriction to “ON”, and fill in the phone number that can be accepted to the device. A maximum of 16 phone numbers can be set. Don't forget to check the enable checkbox on that column.

Chap 8. Advanced Setting

8-1 Web Setting

Please refer to Web_User_Manual_English_vXXX.pdf.

8-2 User Management (for Administrator only)

Menu : System Setting / Administrator

The default administrator account name is “admin”, the default administrator password is “admin”; You can change both administrator's account name and administrator's password here. Note: To avoid mistype, you have to type new password 2 times.

Press “Apply” button to submit and complete the process.

8-3 Upgrade

a. Web Upgrade (Firmware Upgrade)

You can upgrade firmware through web. Please refer to the following paragraphs in Web_User_Manual_English_vXXX.pdf.

Menu : Maintenance / Configuration / Upgrade

b. Provision

The device supports auto provision. Auto provision is an automatically sync configuration tool. When system boot on, if you provides provision server IP address then the device will use HTTP connect to provision server to get configuration back to sync its settings. So it is the simplest upgrade method on the condition that you've provide provision server IP address and Internet network is ready.

According to the provision file, the device can download firmware individually after finish doing auto provision. If it finds firmware version is not the same with the embedded one then it will download from provision server IP address and do firmware upgrade automatically. Auto Firmware Upgrade supports FTP protocols to fetch firmware file. Please refer to the following paragraphs in Web_User_Manual_English_vXXX.pdf.

Menu : Maintenance / Auto Provision

8-4 Device Reboot (Restart / Reset)

Please refer to the following paragraphs in Web_User_Manual_English_vXXX.pdf.

Menu : Maintenance / Configuration / (Restart / Reset)

Appendix A. SIP Cam Hardware Specification

Power: DC 5V, 2A

Camera: VGA CMOS sensor

lighting LED: 18000mcd (min)

Ethernet: 10/100M

Wireless LAN: 802.11 b/g

I/O: 2 input; 1 output

PIR: detection range 6 meter

Pan/Tilt range:

Pan: -150 ~ +150 degree

Tilt: -30 ~ 90 degree

Operation environment:

Temperature: 5~45 degree,

Humidity: 10~85 %

Appendix B. SIP Cam Specification

| | | |
|-----------------------|-----------------------|---------------------|
| | Video Compression | MPEG4 |
| | Audio Compression | G.711 alaw and ulaw |
| | Resolution | QVGA/QCIF |
| | Frame rate | 30 fps (maximum) |
| Power Supply | AC-DC switching power | 5V DC |
| Operating Environment | Temperature | 0~40°C |

Appendix C. DTMF tone controls

The device only supports 2 DTMF event tones:

1. RBT (Ring Back Tone) when under dialing process.
2. BT(Busy Tone) when remote party is busy or disconnect the phone.

The device supports the ability to detect DTMF keypad tone.

1. No guarantee of always detection correctly of keypad tone.
2. No guarantee of always no false detection.
3. Sample rate 8k
4. Minimal detection interval 400
5. Minimal off interval 240
6. Power Percent 19660
7. Minimal power level -45

| Function | Action | DTMF Command |
|----------|----------|--------------|
| Zoom | Zoom In | 1 |
| | Zoom Out | 7 |
| Pan/Tilt | Up | 2 |
| | Left | 4 |
| | Right | 6 |
| | Down | 8 |

| | | |
|-----------------|------------------------|---------|
| | Move to Home | 5 |
| | Upmost | *20 |
| | Up with step counts | *2[1-8] |
| | Leftmost | *40 |
| | Left with step counts | *4[1-9] |
| | Rightmost | *60 |
| | Right with step counts | *6[1-9] |
| | Nethermost | *80 |
| | Down with step counts | *8[1-8] |
| | Preset Register | *7[1-4] |
| | Move to Preset | *9[1-4] |
| Camera | High intensity LED ON | *11 |
| | High intensity LED OFF | *10 |
| | Microphone volume Up | *1# |
| | Microphone volume Down | *7# |
| | Speaker volume Up | *3# |
| | Speaker volume Down | *9# |
| External Output | ON | *31 |
| | OFF | *30 |

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

IMPORTANT NOTE: To comply with the FCC RF exposure compliance requirements, no change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device. The antenna used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC INFORMATION

•The Federal Communication Commission Radio Frequency Interference

Statement includes the following paragraph:

•The equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency

energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communication.

However, there is no grantee that interference will not occur in a particular installation. If this equipment dose cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on , the user is encouraged to try to correct the interference by one or more of the following measures:

--Reorient or relocate the receiving antenna.

--Increase the separation between the equipment and receiver.

--Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

--Consult the dealer or an experienced radio/TV technician for help.

The user should not modify or change this equipment without written approval

form Apexx Technology Corp. Modification could void authority to use this equipment.