

# AG-168V FXS gateway User Manual

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## 1. AG-168V gateway Appearance Introduction

- AG-168V gateway Front Illustration (Refer to Fig 1.1):



Fig 1.1 AG-168V gateway Illustration

- AG-168V gateway panel illustration (Refer to Fig 1.2):

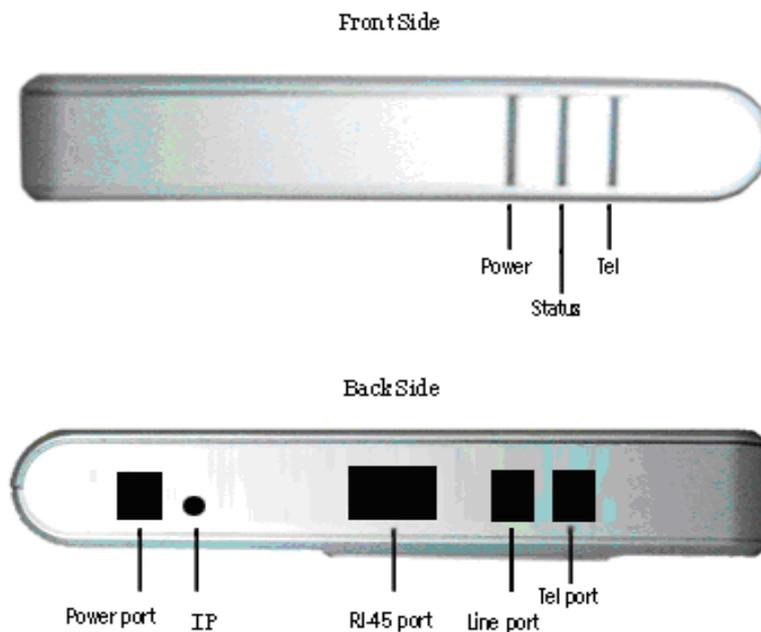


Fig 1.2 AG-168V panel illustration

## 1.1 Indicator light and function

**Power:** Indicate power on when alight.

**Status:** blinking when making a call.

**Tel:** blinking when registering, go out when registered

**Line port:** connect to PSTN line.

**Tel port:** connected with handset.

**LAN port:** connect to network.

**IP button:** enter setting mode (please refer to **chapter 3.1**)

## 2. Features

### 2.1 Hardware

- Main chip—PA1688LQ 50MHz
- Data Memory—16MB SDRAM
- Program Memory—16 MB Flash memory
- FXS Port—1 FXS Port for Tel
- Line Port —1 Line port for PSTN
- Ethernet Jack—1 X10 jack
- AC/DC adapter—Output 12V DC, 450mA

### 2.2 Software

- DHCP support for LAN or Cable modem
- PPPoE support for ADSL or Cable modem
- Set Gateway by HTTP web browser (IE6.0) or Telnet
- Upgrade by FTP
- Support major G.7XX; GSM 610; iLBC audio Codec
- VAD (Voice Active Detect)
- CNG (Comfort noise generation)
- Dynamic voice jitter buffer
- G.168/165 compliant 16ms echo cancellation
- Tone generation and Local DTMF re-generation according with ITU-T
- E.164 dial plan and customized dial rules
- 100 entries for quick dial
- 80 entries each for missed calls, answered calls and dialed calls
- Voice prompt
- Hotline
- Support adjustable user password and super password

### 2.3 Standard and Protocol

#### **AG-168V gateway supports following standard and protocol:**

- IEEE 802.3 /802.3 u 10 Base T / 100Base TX
- Major G.7XX; GSM610 iLBC audio Codec
- IAX2 (Inter-Asterisk-eXchange V2)
- TCP/IP: Internet transfer and control protocol
- RTP: Real-time Transport Protocol
- RTCP□Real-time Control Protocol
- VAD/CNG save bandwidth
- DHCP□Dynamic Host Configuration Protocol
- PPPoE□PPP Protocol over Ethernet

- DNS □ Domain Name Server
- Telnet □ Internet's remote login protocol
- FTP □ File Transfer protocol
- HTTP □ Hyper Text Transfer protocol

## **2.4 Operating requirements**

- Operation temperature: 0 to 40° C (32° to 104° F)
- Storage temperature: -30° to 65° C (-22° to 149° F)
- Humidity: 10 to 90% no dew

## **2.5 Electric requirements**

- Voltage: 9V~24V
- Power adapter: output DC 12V/450mA
- Network interface: 1 X RJ-45 Ethernet Connectors

## **2.6 Size**

153 X 124 X 27 mm (L x W x H)

## **2.7 Installation**

- 1 □ Connect handset to base: insert handset cord into handset cord jack at the left side of the base.
- 2 □ Connect AG-168V gateway to Internet: plug the RJ-45 Ethernet cable into the Ethernet Jack. Plug the other end of the cable into HUB.
- 3 □ Power on AG-168V gateway: plug the power cord adapter into the Power Jack. Then plug the other end of the power cord adapter into the appropriate wall outlet.

### 3. Configuration

Four different ways can be used to configure AG-168V Gateway: phone keypad pre-configuration, web browser, Telnet commands and PalmTool configuration tool on computer.

#### 3.1 Phone Keypad Pre-configuration

Using the keyboard of the normal phone connecting to AG-168V FXS port and the “IP key”, which can preset and enter into “Setting mode” , operation as below:

Operation	Function
IP	1 press IP and pick up the handset connected to the FXS port of AG-168V, voice prompt “Local IP”
1234+X+ IP	2 with handset of FXS port 's phone hung, press default password, then input the number of X + “ IP” button in order to set different network connection X valued 0 = static IP; 1 = DHCP ; 2 = PPPoE; 3= modem
1234+ IP	3 with handset of FXS port 's phone hung, press default password, and press “ IP” button, enter “setting mode”
1234+xxx.xxx.xxx.xxx + IP	4 with handset of FXS port 's phone hung, press default password, then input the IP address xxx.xxx.xxx.xxx, press “IP ” button . Using the “ * ” button instead of “.”

### 3.1.2 Keypad setup Step-by-Step:

For example, you want to set AG-168V 's IP to static IP "192.168.1.100", you can:

Step 1. **Change IP type to static: pick up the handset**→you can see the status light alight→ dial "**12340**"→the Tel light blinking now→press "**IP**" button for 10 seconds→Power and Tel alight→then reboot the device.

Step 2. **Set the static IP of the gateway:** pick up the handset→you can see power and status light alight→ dial "**1234**"→the Tel light blinking now→dial "**192\*168\*1\*100**"→press "IP" button for 10 seconds→Power and Tel lights alight→then reboot the device.

## 3.2 Configured by WEB

Double click  icon to open the IE browser. Input the IP address of the gateway into address bar ( Address  ), and then input password of the gateway into the following page. Default password 1234 is ordinary password and super password is 12345678. With Debug set 0[disable], please input super password; while Debug is not set as 0[disable], please input ordinary password. Then click  button. The following configured page will pop up. Refer to Fig 3.1 please.

Network Settings			
iptype	<input type="text" value="static"/>	ppp id	<input type="text"/>
local ip	<input type="text" value="192.168.1.100"/>	subnet mask	<input type="text" value="255.255.255.0"/>
dns	<input type="text" value="202.106.46.151"/>	dns2	<input type="text" value="202.96.128.68"/>
		ppp pin	<input type="text"/>
		router ip	<input type="text" value="192.168.1.254"/>
		mac	<input type="text" value="00-09-45-0a-45-2e"/>
Audio Settings			
codec1	<input type="text" value="g729"/>	codec2	<input type="text" value="g711a"/>
codec4	<input type="text" value="gsm"/>	codec5	<input type="text" value="null"/>
codec3	<input type="text" value="g711u"/>	codec6	<input type="text" value="null"/>
vad	<input checked="" type="checkbox"/>	agc	<input type="checkbox"/>
audio frames	<input type="text" value="2"/>	g.723.1 high rate	<input checked="" type="checkbox"/>
jitter size	<input type="text" value="0"/>	ilbc payload	<input type="text" value="0"/>
dual mode	<input type="text" value="pstn first"/>	handset in(0-15)	<input type="text" value="15"/>
		handset out(0-31)	<input type="text" value="20"/>
		dual mode prefix	<input type="text" value="30"/>
Dial Plan Settings			
use dialplan	<input type="text" value="disable"/>	dial number	<input type="text" value="16900"/>
idd code	<input type="text" value="86"/>	ddd code	<input type="text" value="10"/>
inner line	<input type="text" value="disable"/>	idd prefix	<input type="text" value="00"/>
forward number	<input type="text" value="95963"/>	inner line prefix	<input type="text" value="0"/>
fwd always	<input type="checkbox"/>	call waiting	<input type="checkbox"/>
use digitmap	<input type="checkbox"/>	fwd poweroff	<input type="checkbox"/>
		fwd noanswer	<input type="checkbox"/>
		answer	<input type="text" value="30"/>
IAX2 Protocol Settings			
service addr	<input type="text" value="203.93.9.57"/>	register ttl	<input type="text" value="60"/>
phone number	<input type="text" value="272727"/>	account	<input type="text"/>
local port	<input type="text" value="5060"/>	pin	<input type="text"/>
super password	<input type="text" value="12345678"/>	dtmf	<input type="text" value="inband audio"/>
		tos	<input type="text" value="0"/>
		debug	<input type="text" value="output all"/>
Other Settings			
password	<input type="text" value="1234"/>	upgrade type	<input type="text" value="disable"/>
sntp ip	<input type="text" value="255.255.255.255"/>	upgrade addr	<input type="text"/>
timezone	<input type="text" value="(GMT+08:00)Beijing,Hong Kong,Urumqi"/>		
<input type="button" value="Save Settings"/>		<input type="button" value="Address Book"/>	
<input type="button" value="Upgrade Firmware"/>			

Fig 3.1 Http Setting

### 3.2.1 Network Setting

network settings					
iptype	<input type="text" value="static"/>	ppp id	<input type="text" value="test1"/>	ppp pin	<input type="text" value="test1"/>
local ip	<input type="text" value="192.168.1.100"/>	subnet mask	<input type="text" value="255.255.255.0"/>	router ip	<input type="text" value="192.168.1.254"/>
dns	<input type="text" value="202.106.196.115"/>	dns2	<input type="text" value="202.96.128.68"/>	mac	<input type="text" value="00-09-45-63-17-d8"/>

Fig 3.2 Network Setting

- **IPtype:** Set how AG-168V gateway gets relevant network parameters by selecting corresponding item from drop down list.
  - **static IP:** Select this item to authorize users set IP address, subnet mask and router IP address of AG-168V gateway manually.
  - **dhcp:** Select this item to enable DHCP mode. With this system, your LAN or router automatically assigns all the required network parameters to any device connected to it when the device log on. AG-168V gateway is shipped from the factory with DHCP on. So, if your LAN or router is configured to use DHCP addressing, the gateway's LAN parameters will automatically be configured as soon as it is connected to the LAN or router and powered up.
  - **PPPoE** □ Those ADSL and Cable Modem users please select this item for it is a protocol especially designed for them. With this system, ADSL ISP automatically assigns all the required IP parameters to any device connected to it when the device log on.
  - **modem** □ If the AG-168V gateway used with modem, please select this item to get relevant network parameters auto. Then please fill ID and pin into ppp id and ppp pin fields.
- **ppp id:** With **PPPoE** or **modem** selected in **IPtype** drop down list, please enter the user name here.
- **ppp pin:** With **PPPoE** or **modem** selected in **IPtype** drop down list, please enter the password here.
- **local IP:** With **static IP** selected in **IPtype** drop down list, please enter IP address of AG-168V gateway here.
- **subnet mask:** With **static IP** selected in **IPtype** drop down list, please enter subnet mask of AG-168V gateway here.
- **router IP:** With **static IP** selected in **IPtype** drop down list, please enter router IP address of AG-168V gateway here.

- **dns:** With **static IP** selected in **IPtype** drop down list, please enter IP address of DNS server here.
- **dns 2:** With **static IP** selected in **IPtype** drop down list, please enter IP address of backup DNS server here.
- **mac:** MAC address is the physical address supplied by the Ethernet NIC. AG-168V Gateway is shipped from the factory with a unique algorithm MAC address printed on the back of the base.

### 3.2.2 Audio Setting

Audio Settings					
codec1	<input type="text" value="g729"/>	codec2	<input type="text" value="g711a"/>	codec3	<input type="text" value="g711u"/>
codec4	<input type="text" value="gsm"/>	codec5	<input type="text" value="null"/>	codec6	<input type="text" value="null"/>
vad	<input checked="" type="checkbox"/>	agc	<input type="checkbox"/>	aec	<input checked="" type="checkbox"/>
audio frames	<input type="text" value="2"/>	g.723.1 high rate	<input checked="" type="checkbox"/>	ilbc payload	<input type="text" value="98"/>
jitter size	<input type="text" value="0"/>	handset in (0-15)	<input type="text" value="15"/>	handset out (0-31)	<input type="text" value="20"/>
dual mode	<input type="text" value="pstn first"/>	dual mode prefix	<input type="text" value="30"/>		

Fig 3.3 Audio Setting

- **codec1:** Set the priority 1 of the audio compression algorithm. The options are g729□g7231□g711u□g711a , gsm and iLBC.
- **codec2:** Set the priority 2 of the audio compression algorithm. The options are g729□g7231□g711u□g711a , gsm and iLBC.
- **codec3:** Set the priority 3 of the audio compression algorithm. The options are g729□g7231□g711u□g711a , gsm and iLBC.
- **codec4:** Set the priority 4 of the audio compression algorithm. The options are g729□g7231□g711u□g711a , gsm and iLBC.
- **codec5:** Set the priority 5 of the audio compression algorithm. The options are g729□g7231□g711u□g711a , gsm and iLBC.
- **codec5:** Set the priority 6 of the audio compression algorithm. The options are g729□g7231□g711u□g711a , gsm and iLBC.
- **vad:** Enable/disable VAD (voice activity detection).
- **agc:** Enable/disable AGC.
- **aec:** Enable/disable AEC.
- **g.723.1 high rate:** enable/disable g.723.1 high rate. G.723.1 high rate is

6.3kbps, low rate is 5.3kbps.

- **audio frame:** Set audio frames in RTP package. Minimum is 1 and maximum is 8.
- **jitter size :** Set buffer size of RTP package. The value range is 0-32.
- **ilbc payload :** Set the payload type of RTP package when ILBC codec selected to DTMF delay. The value range is 96-255.
- **handset in:** Drag the slider to adjust the volume of handset input. Drag it to the left to reduce the volume; while drag it to the right to increase the volume.
- **Dual mode:** Set this item to enable or disable the PSTN line.
  - **Disable:** With this item selected, PSTN line is disabled.
  - **PSTN First** This item selected, AG168V FXS gateway will choose PSTN calling first.
  - **IP First** This item selected, AG168V FXS gateway will choose IP calling first.
- **Dual modes prefix:** When IP first is set in the dual modes setting, setting switches to PSTN prefix such as 9.

### 3.2.3 Dial plan Setting

Dial Plan Settings					
use dialplan	disable ▾	dial number		ddd code	10
idd code	86	idd prefix	00	ddd prefix	0
inner line	disable ▾	inner line prefix	0	call waiting	<input type="checkbox"/>
forward number	82378801	fwd poweroff	<input type="checkbox"/>	fwd noanswer	<input type="checkbox"/>
fwd always	<input type="checkbox"/>	fwd busy	<input type="checkbox"/>	answer	30
use digitmap	<input checked="" type="checkbox"/>				

Fig 3.4 Dial Plan Setting

- **use dialplan:** Set whether use dial plan or use dial number by selecting the corresponding item in drop down list.
  - **disable:** Do not use dial plan or dial number by selecting this item.
  - **enable:** Use dial plan by selecting this item.
  - **dialnum:** Use dial number by selecting this item. With this item selected, please enter the dial prefix into **dial number** field.
  - **prefix:** Use specially service by selecting this item.
  - **Hotline:** Use Hotline function by selecting this item. With this item selected, please enter the hotline number into **dial number** field.
- **dial number:** With **dialnum** selected in **use dialplan** drop down list, please enter the dial prefix into this field according to requirement of log in server. For example, with eTalk card used, enter 00 here.
- **ddd code:** With **enable** or **dialnum** selected in **use dialplan** drop down list, set area code according to E.164 dial rule. For example, Beijing 10; Shanghai 21.
- **idd code:** With **enable** or **dialnum** selected in **use dialplan** drop down list, set country code according to E.164 dial rule. For example, China 86; U.S.A .1.
- **idd prefix:** With **enable** or **dialnum** selected in **use dialplan** drop down list, set international call prefix according to E.164 dial rule, such as 00.
- **ddd prefix:** With **enable** or **dialnum** selected in **use dialplan** drop down list, set long distance call prefix according to E.164 dial rule, such as 0.

---

 **Note** With **dialnum** selected in use **dialplan** drop down list, you can also set **dddcodes**, **iddcodes**, **iddprefix** and **dddprefix** according to requirement of system.

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- **innerline:** Enable/disable multi-settings by selecting corresponding items from dropdown list. AG-168V Gateway allows saving 5 settings totally.
  - **disable:** Disable multi-settings by selecting this item, then the

Gateway will call out using current setting.

- **enable:** Use designated system to place calls by selecting this item.
- **innerlineprefix:** With enable selected in innerline dropdown list, please fill the prefix number pick up to inner line, such as 0.
- **Use digitmap:** Enable/disable digit map by checking/unchecking the box.
- **Call waiting:** Enable/disable call waiting by checking/unchecking the box.
- **forward number:** Enter receiving forwarded calls phone number into this field; If the AG-168V gateway used with modem, with **modem** item selected in **IPtype** list box, and then fill ISP number into this field.
- **fwd poweroff:** Forward calls if power off by checking this box. Please enter receiving forwarded calls phone number into **fwd number** field.
- **fwd noanswer:** Forward calls without replying by checking this box. Please enter receiving forwarded calls phone number into **fwd number** field.
- **fwd always:** Forward all calls by checking this box. Please enter receiving forwarded calls phone number into **fwd number** field.
- **fwd busy:** Forward calls if busy by checking this box. Please enter receiving forwarded calls phone number into **fwd number** field.
- **answer:** Enter a number from 0 through 60 to set the entries of the seconds before the phone answer the call auto or forward the calls.

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 **Note** please refer to [FAQ](#) for more information of dial plan

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### 3.2.4 IAX2 Protocol Settings

IAX2 Protocol Settings					
service addr	<input type="text" value="203.93.9.57"/>	register ttl	<input type="text" value="60"/>		
phone number	<input type="text" value="82378808"/>	account	<input type="text"/>	pin	<input type="text"/>
local port	<input type="text" value="1720"/>	dtmf	<input type="text" value="outband signal"/>	tos	<input type="text" value="0"/>
super password	<input type="text" value="12345678"/>	debug	<input type="text" value="output"/>		

Fig 3.5 IAX2 Protocol Settings

- **service addr:** Please set the URI (domain name/IP address : service port) of the asterisk server into “service addr”. When the default service port 4569 is used, “: service port” can be omitted.
- **register ttl :** IP phone will send a keep-alive registration message to the asterisk server every “register ttl” seconds. The minimum value is 10, maximum value is 65535. Default is 60.
- **phone number:** The local phone number or username of this phone, usually is allocated by system.
- **account:** With the asterisk server which requires authentication, please put the username/account into this field.
- **pin:** With the asterisk server which requires authentication, please put the password into this field.
- **local port:** The local UDP port registered with the asterisk server to accept incoming handshaking messages. The default port number is 4569.
- **dtmf:** Set DTMF signal sending way by selecting inband audio, outband audio from list box.
- **tos:** Set the TOS field of the IP header of the RTP packets. The bigger this value is 0, the higher priority the packet is .
- **super password:** Set the super password of the Gateway.(Default super password is 12345678).
- **debug:** Set the debug level of the Gateway.
  - **disable:** Disable output the debug message by selecting this item.
  - **output:** Output the operation information to the window, such as register, input by selecting this item.
  - **output all:** Output all debug information and data in test window by selecting this item.

- **remote debug:** Save the debug information in SDRAM of AG-168V gateway by selecting this item.
- **no check:** Disable checking firmware tags when upgrading. This is not suggested, because it will increase the risk of upgrading the wrong firmware into the gateway.

### 3.2.5 Other settings:

Other Settings			
password	<input type="text" value="1234"/>	upgrade type	<input type="text" value="disable"/>
sntp ip	<input type="text" value="0.0.0.0"/>	use daylight	<input type="checkbox"/>
timezone	<input type="text" value="(GMT+08:00)Beijing, Hong Kong, Urumqi"/>		
<input type="button" value="Save Settings"/>		<input type="button" value="Address Book"/>	<input type="button" value="Upgrade Firmware"/>

Fig 3.6 Other Setting Page

- **password:** Set the password of the gateway. (Default password is 1234).
- **upgradetype:** Set the auto-upgrade type of the gateway.
  - **disable** : Disable auto-upgrade .
  - **all**: AG-168V will find matching firmware binary file and configuration file of the hardware type only at the FTP server specify by upgradeaddr item .
  - **mac**: AG-168V gateway will find matching firmware binary file and configuration file of the MAC address only at the FTP server specify by upgradeaddr item .
  - **ppp id**: AG-168V gateway will find matching firmware binary file and configuration file of the ppp id only at the FTP server specify by upgradeaddr item .
  - **account**: AG-168V gateway will find matching firmware binary file and configuration file of the account only at the FTP server specify by upgradeaddr item .
  - **phonenumber**: AG-168V gateway will find matching firmware binary file and configuration file of the phone only at the FTP server specify by upgradeaddr item .
- **upgrade addr:** Put IP address or domain name obtained by ISP of FTP server supplying upgrade program into this field.
- **sntp IP:** Fill IP address of time server here. When network without Internet connect, Fill special IP address 255.255.255.255.
- **use daylight:** Enable/disable daylight.
- **timezone:** Select correct time zone in list box.

When debug set as 0[disable], if input ordinary password (default one is 1234), then following page will pop up after clicking . And only those parameters can be modified.

Network Settings					
ip type	static	ppp id		ppp pin	
local ip	192.168.1.100	subnet mask	255.255.255.0	router ip	192.168.1.254
dns	202.106.46.151	dns2	202.96.128.68	mac	00-09-45-0a-45-2e
Audio Settings					
codec1	g729	codec2	g711a	codec3	g711a
codec4	gsm	codec5	null	codec6	null
vad	<input checked="" type="checkbox"/>	age	<input type="checkbox"/>	sec	<input checked="" type="checkbox"/>
audio frames	2	g.723.1 high rate	<input checked="" type="checkbox"/>	ilbc payload	98
jitter size	0	handset in(0-15)	15	handset out(0-31)	20
dual mode	pstn first	dual mode prefix	30		
Dial Plan Settings					
use dialplan	enable	dial number	16900	ddd code	10
idd code	86	idd prefix	00	ddd prefix	0
inner line	enable	inner line prefix	0	call waiting	<input checked="" type="checkbox"/>
forward number	95963	_fwd poweroff	<input type="checkbox"/>	_fwd noanswer	<input checked="" type="checkbox"/>
_fwd always	<input checked="" type="checkbox"/>	_fwd busy	<input type="checkbox"/>	_answer	30
use digitmap	<input type="checkbox"/>				
Other Settings					
password	1234	upgrade type	disable	upgrade addr	
snmp ip	255.255.255.255	use daylight	<input type="checkbox"/>		
timezone	(GMT+08:00)Beijing, Hong Kong, Urumqi				
Save Settings		Address Book		Upgrade Firmware	

Fig 3.7 Setting Page using ordinary pin with Debug set as 0 [disable]

- **Save Settings** : Click this button to save the configuration and the gateway will reboot. Once the gateway reboots successfully, the new configuration is effective.

**Note** After entering set page, if **save settings** button is not clicked within 10 minutes, then when you click it again, the index page asking for pin will pop up again. Then please input the password again to enter the set page and then click **save settings** button to confirm the modification.

- **Address Book**: Click this button to open the speed dial settings page. Please refer to Fig 3.8. In this page, you can set and save the speed dial number by typing the name into the Name field and then entering the corresponding number following the name. For example, input Jack in **Name** field following 001, and then input 5989426454 into **Phone number** field. Then Jack's number 5989426454 is saved in phone book. Then please click **Save/Back** button. In normal state, you can use speed dial to call numbers saved in phone book.

Phone Book					
No.	Name	Phone Number	No.	Name	Phone Number
001	Jack	5989426454	002	Allen	192.168.1.56
003			004		
005			006		
007			008		
009			010		

Fig 3.8 Phone Book Illustration

- **Upgrade Firmware:** Click this button to update the program, the ring and the digit map of AG-168V gateway.

Firmware File Name:	<input type="text"/>	浏览...	Update Firmware
Digitmap File Name:	<input type="text"/>	浏览...	Update Digitmap
Ring File Name:	<input type="text"/>	浏览...	Update Ring

Fig 3.9 Upgrade firmware Illustration

### 3.3 Configured by PalmTool

PalmTool is a tool designed especially to configure and upgrade the AG-168V gateway. On a PC double click  icon to open the PalmTool. The index page of PalmTool will popup.

Input the IP address of the phone into **Local IP** field (such as 192.168.1.100), and then click “Phone Settings” button.

Use PalmTool to set the AG-168V gateway, please set debug as output or output all firstly, otherwise PalmTool cannot connect AG-168V gateway. The parameters of PalmTool is same as the parameters in HTTP, so please refer to HTTP set chapter to learn how to set AG-168V gateway.

### 3.4 Telnet Configuration

- On the PC choose **Start>Run**, and then type **telnet 192.168.1.100** into **Run** field in popuping Run dialog. Or input **telnet 192.168.1.100** in the DOS window. Then the following information will be displayed.

---

```
PA168X V1.43 settings
Password :
```

---

Then please type password. With debug is set as 0[disable], if type ordinary password (default one is 1234), after Return, you will see□

---

```
Password : ****
P:\>
```

---

If you type super password, then you will see:

---

```
Password : *****
P:\>
```

---

Above information indicates that AG-168V gateway is under setting mode, and then you can set the AG-168V gateway by using the telnet commands.

### 3.4.1 AG-168V Telnet Commands Explanation

#### AG-168V Telnet Commands

Command	Function
?	Supply command name and parameters
get	Display basic parameters of AG-168V gateway
set	Set parameters of AG-168V gateway
store	Save current settings to designated position
load	Load designated settings to current position
exit	Exit from the setting mode without saving the configuration
write	Exit with saving all configurations and restart AG-168V
ping	Ping other net parameter
ftp	The gateway connects to FTP server and then get the files

#### Detail description of AG-168V Telnet commands

➤ **Command ?**

**Syntax description:** No optional parameter

**Usage:** Type command name and parameters following P:\> . Be used as the keyword to supply keyword and parameters of the relevant commands.

**Relevant usage:** None

**Detailed description:**

List help of all commands

For example:

---

```
P:\>?
set
get      list settings
store x  store current to xth settings
load x   load xth settings to current
exit
write    save settings
```

---

➤ **Command get**

**Syntax description:** No optional parameter of keywords

**Usage:** Display basic parameters of AG-168V gateway

**Relevant usage:** None

**Detailed description:**

**get** Display basic running parameters of the AG-168V gateway.

Input ordinary password without debug being set as 0[disable], or input super password with debug set as 0[disable], then following parameters of AG-168V gateway will be displayed:

---

**PA168X V1.43 settings**

Password: \*\*\*\*\*

P:\>get

\*\*\*\*\*Network Settings\*\*\*\*\*

IPtype 0[static]

IP 192.168.1.100 subnetmask 255.255.255.0 router 192.168.1.254

dns 202.106.196.152 dns 2202.106.196.115 mac 00-09-45-65-a3-e6

\*\*\*\*\*Audio Settings\*\*\*\*\*

codec1 0[g729] codec2 1[g7231] codec3 2[g711u]

codec4 3[g711a] codec5 6[null] codec6 6[null]

vad 1[enable] agc 0[disable] aec 1[enable]

audioframes 2 6.3k 1[enable] ilbcpayload 98

jittersize 0 handsetin 7 handsetout 20

dualmode 1[pstn first] dualmodeprefix 30

\*\*\*\*\*Dial Plan Settings\*\*\*\*\*

dialplan 1[enable] dddcode 10

iddcode 86 iddprefix 00 dddprefix 0

innerline 1[enable] innerlineprefix 0 callwaiting 1[disable]

fwdnumber 82378009 fwdpoweroff 1[enable]

fwdalways 1[enable] fwdbusy 1[enable] fwdnoanswer 1[enable]

answer 30 digitmap 1[enable]

\*\*\*\*\*Protocol Settings\*\*\*\*\*

serviceaddr 203.93.9.57 registerttl 60

phonenummer 82378808 account [empty] pin [empty]

localport 1720 dtmf 1[outband signal] tos 0

\*\*\*\*\*Other Settings\*\*\*\*\*

superpassword 12345678 debug 1[output]

password 1234 upgradetype 0[disable]

upgradeaddr [empty]

sntpIP 0.0.0.0 daylight 0[disable]

timezone 55[(GMT+08:00)Beijing,Hong Kong,Urumqi]

---

Input ordinary password with debug set as 0[disable], following information will be seen:

---

**PA168X V1.43 settings**

Password:\*\*\*\*

P:\>get

## \*\*\*\*\*Network Settings\*\*\*\*\*

**IPtype 0[static]****IP 192.168.1.100 subnetmask 255.255.255.0 router 192.168.1.254  
dns 202.106.46.151 dns2 202.96.128.68 mac 00-0d-ea-00-00-03**

## \*\*\*\*\*Audio Settings\*\*\*\*\*

**codec1 0[g729] codec2 1[g7231] codec3 2[g711u]  
codec4 3[g711a] codec5 6[null] codec6 6[null]  
vad 1[enable] agc 0[disable] aec 1[enable]  
audioframes 2 6.3k 1[enable] ilbcpayload 98  
jittersize 0 handsetin 7 handsetout 20  
dualmode 1[pstn first] dualmodeprefix 30**

## \*\*\*\*\*Dial Plan Settings\*\*\*\*\*

**dialplan 1[enable] dddcode 10  
iddcode 86 iddprefix 00 dddprefix 0  
innerline 1[enable] innerlineprefix 0 callwaiting 1[disable]  
fwdnumber 82378009 fwdpoweroff 1[enable]  
fwdalways 1[enable] fwdbusy 1[enable] fwdnoanswer 1[enable]  
answer 30 digitmap 1[enable]**

## \*\*\*\*\*Other Settings\*\*\*\*\*

**password 1234 upgradetype 0[disable]  
upgradeaddr [empty]  
snmpIP 0.0.0.0 daylight 0[disable]  
timezone 55[(GMT+08:00)Beijing,Hong Kong,Urumqi]**

---

**➤ Command set****Syntax description: set keywords value****Usage:** Used to configure password and other running parameters of AG-168V gateway.**Detailed description:****set IPtype X**

Set how AG-168V gateway gets relevant network parameters. X ranged from 0 through 3: 0: authorize users set IP address, subnet mask and router IP address of AG-168V gateway manually; 1: use DHCP mode. With this system, your LAN or router automatically assigns all the required network parameters to any device connected to it when the device log on. AG-168V gateway is shipped from the factory with DHCP on. So, if your LAN or router is configured to use DHCP addressing, the AG-168V gateway's LAN parameters will automatically be configured as soon as it is connected to the LAN or router and powered up; 2: use PPPoE mode. Those ADSL and Cable Modem users please select this item for it is a protocol especially designed for them. With this system, ADSL ISP automatically assigns all the required IP parameters to any device connected to it when the device log on; 3: use modem mode. Those who use AG-168V

gateway with modem, please set the value as 3.

**set pppid XXX**

With **IPtype** set as **2**, use this command to set ADSL ID; with **IPtype** set as **3**, use this command to set Modem ID.

**set ppppin XXX**

With **IPtype** set as **2**, use this command to set ADSL pin; with **IPtype** set as **3**, use this command to set Modem pin.

**set IP XXX.XXX.XXX.XXX**

With **IPtype** set as **0**, use this command to set IP address of AG-168V gateway.

**set subnetmask XXX.XXX.XXX.XXX**

With **IPtype** set as **0**, use this command to set subnet mask of AG-168V gateway.

**set router XXX.XXX.XXX.XXX**

With **IPtype** set as **0**, use this command to set router IP of network with AG-168V gateway.

**set dns XXX.XXX.XXX.XXX**

With **IPtype** set as **0**, use this command to set IP address of DNS server.

**set dns2 XXX.XXX.XXX.XXX**

With **IPtype** set as **0**, use this command to set IP of backup DNS server.

**set mac XX-XX-XX-XX-XX-XX**

Set MAC address of the AG-168V gateway. Parameter xx-xx-xx-xx-xx-xx must be an HEX number.

---

**set codec1 X**

Set the priority 1 of the audio compression algorithm. X is range from 0 through 4: 0: g729; 1:g7231; 2: g711u; 3: g711a; 4: gsm.

**set codec2 X**

Set the priority 2 of the audio compression algorithm. X is range from 0 through 4: 0: g729; 1:g7231; 2: g711u; 3: g711a; 4: gsm.

**set codec3 X**

Set the priority 3 of the audio compression algorithm. X is range from 0 through 4: 0: g729; 1:g7231; 2: g711u; 3: g711a; 4: gsm.

**set codec4 X**

Set the priority 4 of the audio compression algorithm. X is range from 0 through 4: 0: g729; 1:g7231; 2: g711u; 3: g711a; 4: gsm.

**set codec5 X**

Set the priority 5 of the audio compression algorithm. X is range from 0 through 4: 0: g729; 1:g7231; 2: g711u; 3: g711a; 4: gsm.

**set codec6 X**

Set the priority 6 of the audio compression algorithm. X is range from 0 through 4: 0: g729; 1:g7231; 2: g711u; 3: g711a; 4: gsm.

**set vad X**

Enable/disable VAD. X is ranged from 0 through 1: 0: disable VAD; 1: enable VAD.

**set agc X**

Enable/disable AGC. X is ranged from 0 through 1: 0: disable AGC; 1: enable AGC.

**set aec X**

Enable/disable AEC. X is ranged from 0 through 1: 0: disable AEC; 1: disable AEC.

**set audioframes X**

Set audio frames in RTP package. X is Arabic numerals between 0 and 7.

**set 6.3k X**

With G.7231, set AG-168V gateway to use 6.3K rate or not. X is ranged from 0 through 1: 0: use 6.3K rate; 1: use 5.3K rate.

**set jittersize X**

Set buffer size of RTP package. X is range from 0-32.

**set ilbcpayload X**

Set the payload type of RTP package when ILBC codec selected to DTMF delay. X is range from 96-255.

**set handsetin X**

Set initial volume of handset. X is ranged from 0 through 15.

**set handsetout X**

Set initial volume of handout. X is ranged from 0 through 31.

**set dualmode X**

Set to enable or disable the PSTN line. X ranges from 0 through 2. 0: do not use PSTN line; 1: use PSTN line first. 2: use IP side call first.

**set dual modes prefix XX**

When IP first is set in the dual modes setting, setting switches to PSTN prefix XX ranges from 0 through 99.

---

**set dialplan X**

Enable/disable dial plan and dial number. Parameter X ranged from 0 through 4: 0: disable dial plan; 1: enable dial plan; 2: use dial number; 3: use 179XX service.;4: use hotline function.

**set dialnumber XX**

When **set dialplan** value set as 2, please use this command to set dial number. For example, with eTalk card used, please set it as 00. When **set dialplan** value set as 4, please use this command to set hotline number.

**set dddcode XX**

Set the area code when **set dialplan** value set as 1 or 2. For example, the area code of Beijing is 10; the area code of Shanghai is 21, and

the area code of Chengdu is 28, etc. Parameter xxx must be an Arabic numeral and no longer than 3 characters.

**set iddcode XXX**

Set the country code when **set dialplan** value set as 1 or 2. For example, the country code of China is 86; the country code of USA is 1, etc. Parameter xxxx must be an Arabic numeral and no longer than 4 characters.

**set iddprefix XX**

Set IDD service prefix number when **set dialplan** value set as 1 or 2. For example, IDD service prefix number of china is 00; IDD service prefix number of USA is 1, etc. Parameter xxx must be an Arabic numeral and no longer than 3 characters.

**set dddprefix XX**

Set DDD service prefix number when **set dialplan** value set as 1 or 2. For example, DDD service prefix number of china is 0; DDD service prefix number of USA is 1, etc. Parameter xxx must be an Arabic numeral and no longer than 3 characters.

**set innerline X**

Set use innerline call or not. X ranged from 0 through 1: 0: disable; 1: enable innerline call.

**set innerlinepreifx X**

With **innerline** set as 1[enable] , please set the prefix to pick up inner line, such as 0.

**set callwait X**

Set whether to use call wait. X ranged from 0 to 1: 0: do not use call wait; 1: use call wait.

**set fwdnumber XXXXXX**

Set receiving forwarded calls phone number. XXXX must be an Arabic numeral and no longer than 16 characters

**set fwdalways X**

Enable/disable forward all calls. X is ranged from 0 through 1. 0: do not forward all calls; 1: forward all calls.

**set fwdbusy X**

Enable/disable forward calls if busy. X is ranged from 0 through 1. 0: do not forward calls if busy; 1: forward call if busy.

**set fwdnoanswer X**

Enable/disable forward calls without replying. X is ranged from 0 through 1. 0: do not forward calls without replying; 1: forward call without replying.

**set answer X**

Set the ring seconds before the phone answers the call auto or forward the calls. X is ranged from 0 through 60.

**set digitmap X**

Set whether to use digitmap. X ranged from 0 to 1: 0: do not use

digitmap; 1: use digitmap.

---

**set serviceaddr XXXX**

Set IP address or domain name of asterisk server.

**set registerttl X**

Set register TTL. X is range from 10 through 65535 Sec. Default value is 60 Sec.

**set phonenumber XXXXXXXX**

Set a local ID of AG-168V gateway. Value xxxxx must be an Arabic numeral and no longer than 16 characters.

**set account XXXXXX**

Set the account; Value xxxxxx must be an Arabic numeral and no longer than 32 characters.

**set pin XXXXXXXXXXXX**

Set the account; Value xxxxxx must be an Arabic numeral and no longer than 32 characters.

**set localport XXXX**

Set the local port. Value XXXX default is 4569.

**set dtmf X**

Set DTMF relay type. X is ranged form 0 through 1: 0: Inband audio  
1: outband audio.

**set tos X**

Set TOS segment of IP head package in RTP digital follow. X is range from 0 through 224.

---

**set superpassword XXXX**

Set super password of the AG-168V gateway. XXX must be ASCII characters.

**set debug X**

Set open debugging message output grade for special tool. X is ranged from 0 through 5: 0: close debugging output; 1: output the operation information to the window; 2: output all the bug information and data in test window; 3: save the bug information into SDRAM; 4: disable checks the mark.

**set password XXXX**

Set password of the AG-168V gateway. XXX must be ASCII characters.

**set upgradetype X**

Set auto-upgrade matching type X is range from 0 through 5  
0-----disable  
1-----all  
2----- mac  
3-----ppp id; 4----- account;  
5----- phone number

**set upgradeaddr XXX.XXX.XXX.XXX**

Set IP address or domain name of FTP server supplying upgraded program of AG-168V gateway.

**set snntpIP XXX.XXX.XXX.XXX**

Set IP address of time server.

**set daylight X**

Set use daylight or not. X ranged from 0 through 1: 0: do not use daylight; 1: use daylight.

**set timezone XX**

Set time zone.

➤ **Command store**

**Syntax descriPtion:** no keyword. Parameter ranged from 0 through 4.

**Usage:** Save the current settings to the designated position.

**Relevant Usage:** store 1

➤ **Command load**

**Syntax descriPtion:** no keyword. Parameter ranged from 0 through 4.

**Usage:** Load the designated settings to the current position.

**Relevant Usage:** load 1

➤ **Command exit**

**Syntax descriPtion:** no keyword and parameter

**Usage:** Exit from Telnet command window without saving the configuration.

**Relevant usage:** None

➤ **Command write**

**Syntax descriPtion:** No keyword and parameter

**Usage:** Save the configuration and restart the AG-168V gateway.

➤ **Command ping**

**Syntax descriPtion:** ping IP address

**Usage:** ping IP address of other NAT device

**Relevant usage:** In telnet window, input ping xx.xxx.xx.xx□an IP address□ and return, then the result will be displayed. If the address is effective, “ping OK” will be seen; if the address is ineffective, nothing will be seen. Fox example:

---

```
P:\>ping 203.93.9.57
```

```
P:\>
```

```
ping OK
P:\>ping 27.56.120.56
P:\>
```

---

 **Note** Usually, the echo time of ping command is no more than 1 second. So if the result is not displayed in 5 seconds, ping command is fail.

---

➤ **Command ftp**

**Syntax description: ftp value**

**Usage:** the system connects to the FTP server auto to get the corresponding file and deal with it.

**Relevant usage: ftp X**

X ranged from 0 through 2:

X-0: Connect to FTP Server to get the file of updating program and save it to the SDRAM of the phone. Then the file can be read by PalmTool. This operation aims at testing.

X-1: Connect to FTP Server to get the file of updating program and update program Flash. This operation aims at updating program.

X-2: Connect to FTP Server to get the file of updating dial rules and update program Flash. This operation aims at updating dial rule.

---

 **Note** When you use ftp 0 and ftp 1 commands, if the file get from FTP server is too large or the net speed is too slow, then the process will not be seen in telnet window. Please be patient. Using ftp command in telnet to get file spends almost same minutes as getting file using phone. So if nothing is displayed after too long time, it means that ftp is fail.

---

 **Note** All the Telnet commands of AG-168V gateway should be written in low case and the password is case sensitive.

---

## 4. Upgrade AG-168V gateway

### 4.1 Use IE browse to upgrade the AG-168V gateway

Step 1: Fill the AG-168V gateway in the IE browse (press the  IP  button and pick up the handset to obtain the gateway's IP)

Step 2: Use super password to access the AG-168V setting page and choose the **debug** caption to the item except "no output".

Step 3: Click **Upgrade firmware**, select the correct program on the firmware file blank and click **upgrade** to perform upgrade.

### 4.2 Use the PalmTool to upgrade the AG-168V gateway

1) Set IP address

press the  IP  button and pick up the handset to obtain the gateway's IP, and fill this IP in the IP address blank of palmtool

2) Choose the updating file

the updating file is .bin file , press upgrading the program , there come out a new window ,and choose the corresponding updating file and confirm it.

3) End of Upgrading.

During upgrading, the Palmtool shows the information of " Updating ... please wait until the update led stops flashing ". Then the Tel light will keep on blinking. The updating will need some time, after update successfully; AG-168V gateway will reboot automatic.

## 5. Usage of the gateway

### 5.1 Receiving calls

No matter what calls from IP or PSTN, the phone connecting to AG-168V FXS port will ring. You can pick up the handset or the speaker of the normal phone to receive the call

### 5.2 Call when Dual mode disabled

- **Call with phone number:**
  1. Dial with handset: pickup the handset, dial after dial tone
  2. Dial with speaker: press speaker, dial after dial tone
  3. Redial: press redial and call the last number
- **Call with IP address:**

If not registered in gatekeeper and gateway disabled, dial with the IP address:

  1. pickup the handset, input IP address after dial tone, press # to send numbers
  2. Press speaker, input IP address after dial tone, press # to send numbers

---

 **Notice:** Dial with IP address, using “\*” instead of “.”

---

- **Call with GATEWAY**

If registered in Gatekeeper □ dial the number.  
Pick up the handset or Press speaker, dial the number after the dial tone and then press □ to send the number.

### 5.2 Call when PSTN first Dual mode enabled

- **Call PSTN number**

When PSTN first set, the way of dial is the same as normal PSTN phone.
- **Call VoIP number**

Press the cradle or the flash key of the normal phone enable AG-168 to be in voIP state from pstn first mode. Dial after the dial tone. Refer to “**Call when Dual mode disabled**” chapter

### 5.3 Call when IP first Dual mode enabled

- **Call VoIP number**

When IP first was set, pick up the phone and dial as “**Call when Dual mode disabled**” chapter

- **Call PSTN phone**

Predial the prefix number in the “dual mode prefix”, AG-168V will change to PSTN line, call after the dial tone.

#### **5.4 Emergency Call**

When AG-168V is power off or the network is down, the Normal phone would connect with the PSTN LINE, work as the “LIFELINE” and call emergency number.

## **6. Reset AG-168V to factory default**

AG-168V has its default factory setting, Changing the firmware version or setting frequently may make the AG-168V in a chaos status, In this case, you can restore the AG-168V to its factory default through the following procedure.

- Power up (Power light is on)
- Wait until initialization is complete (Status light goes out)
- Pick up phone (not connected tone is heard)
- Dial 1234 (Power and Status light are lit, Tel light is blinking)
- Push and hold IP button on rear for 10 seconds (Power and Tel light are lit)
- Push flash key once.
- Dial #5\*5.

Tel light will blink for a while and then the Statue light will lit for a while. And then the Gateway will reboot automatically

## 7. FAQ

### Q1 How can I obtain the AG-168V's IP?

A: press IP and pick up the handset connected to the FXS port of AG-168V, then you can hear AG-168V's IP from the handset.

---

### Q2 Why I can't see the complete setting page when access the AG-168V by IE?

A: Pls. access the AG-168V through super password. You can't see the complete setting page through normal user password when the "debug" option is set to disable.

---

### Q3 How to use the PalmTool to upgrade the AG-168V gateway?

1) Set IP address

press the IP button and pick up the handset to obtain the gateway's IP, and fill this IP in the IP address blank of PalmTool

2) Choose the updating file

The updating file is .bin file , press upgrading the program , there come out a new window ,and choose the corresponding updating file and confirm it.

3) End of Upgrading.

During upgrading, the Palmtool shows the information of " Updating ... please wait until the update led stops flashing ". Then the Tel light will keep on blinking. The updating will need some time, after update successfully; AG-168V gateway will reboot automatic.

---

### Q4 Why the Palmtool shows "can't connect to palm1" message box?

A: there are several reasons that palmtool shows "can't connect to palm1" when user try to use palmtool to configure the gateway.

1. AG-168V was not connected to the computer.
  2. The IP address you have filled in the Palmtool is not the IP address of your gateway.
  3. The "debug" option is set to "disable". You can change it to output through IE.
  4. Your computer and your gateway are in the difference subnet. Please change the setting of your computer or the gateway to let them in the same network.
-

**Q5 How to update the protocol for the AG-168V?**

A: Please refer to **chapter 4**

---

**Q6 What should I do if I can't access my gateway?**

A: you can try the following method:

- 1). Reset the device to factory default. Please ref 2) if this can't help
- 2) Upgrade AG-168V firmware in safe mode:

Step 1: Enter safe mode: power off→press and hold the IP button and then power on→release the IP after 10 seconds→Power and Tel light are lit. Then the AG-168V is in the safe mode and have a static IP 192.168.1.100 now.

Step2: use palmtree to upgrade the firmware (refer to **Q3**)

---

 **Notice:** You can only use PalmTool to upgrade firmware in safe mode status.

---

**Q7 Why is the local IP 0.0.0.0?**

A:If the AG-168V “**IPtype**” is set to “DHCP” and your network doesn't support DHCP function.The AG-168V will shows “0.0.0.0”. Pls. Check your network in this case.

---

**Q8 Why is the local IP 255.255.255.255?**

A: Probably AG-168V gateway fails to get IP address if you choose the “IPtype” to PPPOE, you can set your AG-168V's “**IPtype**” to “static” or “DHCP” through keypad(please refer to **chapter 3.1**). or reset to the factory default.

---

**Q9 How to reset the AG-168V to the factory default?**

- Power up (Power light is on)
- Wait until initialization is complete (Status light goes out)
- Pick up phone (not connected tone is heard)
- Dial 1234 (Power and Status light are lit, Tel light is blinking)
- Push and hold IP button on rear for 10 seconds (Power and Tel light are lit)
- Push flash key once.
- Dial #5\*5.

Tel light will blink for a while and then the Statue light will lit for a while. And then the Gateway will reboot automatically

---

**Q10 How to use the fast dial-up function?**

A: Use Palmtree or IE to enter into the setting page, find the address book, fill the name and the full number in the right blank. For example: fill "Jack" in the blank after 001, input 56489237 in the blank of phone number, then , Jack's number of 56489237 will be saved in the first position . After setting all of the number, press save button, then return to the handset connected to the gateway. press **#001#** after the dial tone, then the gateway will dial 56489237 automatically.

---

**Q11 Why does the other side feel my voice is very weak?**

A: Pls. adjust the input volume larger, but pls. note the maximum is 15.

---

**Q12 Why do AT320/AT323 and AG-168V gateway disconnect while calling each other, but it rings?**

A: Pls. check if the phone and gateway is using the same CODEC .

---

**Q13 What is Dial Plan used for? How to configure it?**

A: Dial plan is used to convert the number dialed to the number actually sent based on "dial number", "ddd prefix", "idd prefix", "ddd code", "idd code" these parameters. Parameter "use dial plan" contains 5 options:

1. "disable"

Number sent is the same as number dialed.

2. "enable"

If the number dialed is prefixed by "idd prefix", the number sent will be the rest part of the number dialed dropping off the "idd prefix".

Otherwise, if the number dialed is prefixed by "ddd prefix", the number sent will be "idd code"+ the rest part of the number dialed dropping off the "ddd prefix".

Otherwise, the number sent will be "idd code"+ "ddd code"+ the number dialed.

For example: set "ddd code"= 10, "idd code"=86, "idd prefix"=00, "ddd prefix"=0.

If the number dialed is 00-1-4089821818, the number sent will be 1-4089821818.

If the number dialed is 021-82378008, the number sent will be 8621-82378008.

If the number dialed is 82378008, the number sent will be 861082378008.

3. "dial number"

Convert the number dialed to a new number according to "enable" dial plan, then prefix "dial number" to this new number. This new number is the number

sent.

4. "prefix"

Effective only when "dial number" is not empty. This serves for those calling cards.

The number sent is just "dial number". During the call connection, program will automatically send out a number made up with ["account"+ "pin"+ number converted by "enable"dial plan + '#'].

5. "hotline"

The number sent is "dial number". Whenever the handset is lifted up, this number will be automatically dialed out.

---

**Q14 What is "inner line"?**

A: Parameters "inner line" and "inner line prefix" help to distinguish whether the number dialed is an inner line number. "inner line" contains 3 options:

1. "disable"

No distinction among numbers. The number sent is the number converted according to parameter "use dial plan".

2. "enable"

If the number dialed is prefixed by "inner line prefix", the number sent is just the number dialed because this number is an inner line number. Otherwise, the number sent is the number converted according to parameter "use dial plan".

3. "omit prefix"

The only difference between 2 "enable" is that if the number dialed is prefixed by "inner line prefix", the number sent is the number dialed dropping off this prefix.

---

**Q15 How to speed the register time?**

A: Before registration, Gateway will first visit FTP server and check if the server has got new firmware or settings to upgrade, then it will visit the time server on the Internet to get current date and time. If the FTP server's address is a domain name, program will visit DNS to resolve this domain name into IP address. Besides, if local IP address is allocated by DHCP, we will check if the allocated IP address conflicts with other devices. All these work will cost some time to complete, which causes the delay of registration. To speed it up, try the following two methods:

1. set "upgrade type" to "disable", then gateway will not check new upgrades from the FTP server.

2. set "snmp IP" to "255.255.255.255" then gateway will not visit timer server to

get date and time. If one must know the current date and time, please set "sntp IP" to the IP address of a local time server which has fast access.

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**Q16 How to set TOS field?**

A: The 8-bit TOS field specifies how the datagram should be handled and is broken down into five subfields: Let's assume that bit 0 is the most-important-bit and bit 7 is the least-important-bit.

Bit 0-2: Three PRECEDENCE bits specify datagram precedence, with values ranging from 0 (normal precedence) through 7 (network control), allowing senders to indicate the importance of each datagram.

Bit 3: Also called D bit. When set, the D bit requests low delay.

Bit 4: Also called T bit. When set, the T bit requests high throughput.

Bit 5: Also called R bit. When set, the R bit requests high reliability.

Bit 6-7: Unused

TOS is just a hint to the routing algorithm that helps it choose among various paths to a destination. An internet does not guarantee the type of transport requested.

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*Reserves the right to make changes in technical and product specification  
without prior notice.*

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