DWG2000 Series
GSM/CDMA/WCDMA VoIP Gateway
User Manual

Revision Records

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Contents

DWG2000 Series 1

GSM/CDMA/WCDMA VoIP Gateway 1

User Manual 1

Revision Records 2

1 Product Description 6

1.1 Overview 6

1.2 Application Scenario 6

1.3 Product Appearance 6

1.4 Functions and Features 8

1.4.1 Protocols Supported 8

1.4.2 System Function 8

1.4.3 Industrial Standards Supported 9

2 Quick Installation 10

2.1 Attentions before Installation 10

2.2 Installation Procedures 10

2.3 Network Connection 10

3 Basic Operation 11

3.1 Feature Codes 11

3.2 Basic Operation 11

3.2.1 Check IP address 11

3.2.2 Restore factory setting via IVR 11

3.2.3 Restore default IP and password 11

3.2.4 Restore factory setting 12

3.3 Local Maintenance through Console Port 12

4 Configurations on Web Interface 13

4.1 How to Access Web System 13

4.2 Introduction to Web System 14

4.3 Configuration Wizard 15

4.4 System Information 15

4.5 Statistics 16

4.5.1 TCP/UDP 16

4.5.2 RTP 16
4.5.3 SIP Call History 16
4.5.4 IP to GSM Call History 17
4.5.5 CDR Report 17
4.5.6 Lock BCCH Report 17
4.5.7 Current Call Status 18
4.5.8 GSM Event 18
4.6 Network Configuration 18
4.6.1 Working Mode of Network 18
4.6.2 Types of Optional IP Address 18
4.6.3 How to Configure Network Parameters 19
4.6.4 ARP 20
4.6.5 VPN Parameter 20
4.7 Security Center 21
4.7.1 Access Rules 21
4.8 Mobile Configuration 22
4.8.1 Basic Configuration 22
4.8.2 Mobile Configuration 24
4.8.3 Phone Number Config 24
4.8.4 PIN Management 25
4.8.5 IMEI 25
4.8.6 Carrier 26
4.8.7 BCCH 26
4.8.8 Call Forwarding 28
4.8.9 Call Waiting 29
4.8.10 SIM Mode 29
4.8.11 Cloud Server 30
4.9 SMS and USSD 31
4.9.1 SMSC 31
4.9.2 SMS Send Overview 31
4.9.3 SMS Send Limit Settings 32
4.9.4 Send SMS 32
4.9.5 SMS Outbox 33
4.9.6 SMS Inbox 33
4.9.7 USSD 34
4.9.8 Email 34
4.10 Routing Configuration 34
4.10.1 Routing Parameter 34
4.10.2 IP → Tel Routing 35
4.10.3 Tel → IP Routing 36

4.11 Manipulation Configuration 36
4.11.1 Configuration Procedures for Manipulating IP –> Tel Destination Numbers 36
4.12 Operation 38
4.12.1 Configuration Procedures for IP -> Tel Operation 38
4.12.2 Configuration Procedures for Tel -> IP Operation 39
4.13 Port Group Configuration 40
4.14 IP Trunk Configuration 40
4.14.1 IP Trunk 40
4.14.2 Configuration of IP Trunk Group 41
4.15 System Configuration 42
4.16 Human Behavior 42
4.16.1 Overview 42
4.16.2 Basic Configuration 42
4.16.3 Balance Check 43
4.16.4 Billing Settings 44
4.16.5 Exception Event Handing 44
4.16.6 Auto Generation 44
4.17 Tools 45
4.17.1 Firmware Upload 45
4.17.2 Provision 45
Configuration on DWG2000 47
4.17.3 Filelog Download 47
4.17.4 Management Parameter 48
4.17.5 Config Backup 48
4.17.6 Config Restore 48
4.17.7 IVR Voice Prompt Upload 49
4.17.8 Ping Test 49
4.17.9 Tracert Test 49
4.17.10 Network Capture 49
4.17.11 Username & Password 50
4.17.12 Factory Reset 50
4.17.13 Auto Restart and Manually Restart 50

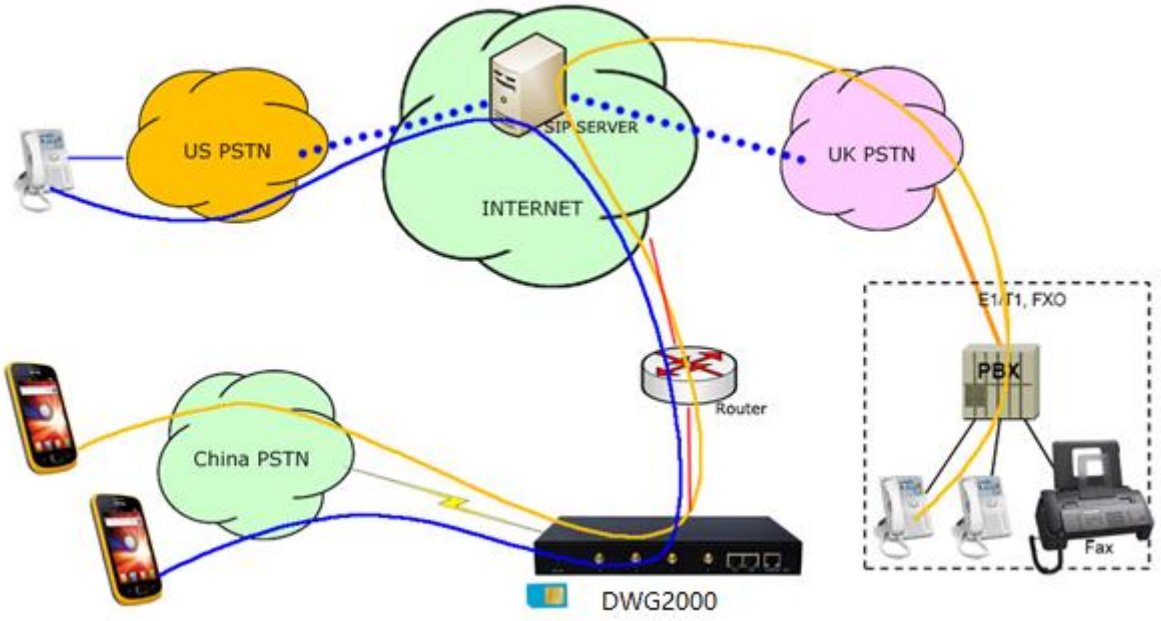
1 Product Description

1.1 Overview

The DWG2000 gateway is multi-functional VoIP gateway based on IP and mobile network (GSM/CDMA/WCDMA), which provides flexible network configuration, powerful features, and good voice quality. With a cost-effective solution, the gateways works is very applicable to carriers, enterprise, SOHO as well as residential users.

1.2 Application Scenario

The DWG2000 GSM VoIP gateway provides high-quality and cost-effective VoIP solution. Its application scenario is shown as follows:



1.3 Product Appearance

The appearance of DWG2000E shows as follow

Figure 1-3-1 Front view of DWG2000E-8G/8C

Table 1-3-1 Description of Front view

	Indicators	Description
	RUN	On: Starting Off: Abnormal Blinking every 0.5s: Normal status
	PWR	On: Power on Off: Power off
	Signal	Signal strength indicators with green color
	Channel	Use/Unuse indicator with Red color, ON is used, Off is unused
	SIM Slots	SIM card slot

Figure 1-3-2 Rear view of DWG2000E-8G/8C

Table 1-3-2 Description of Rear view

	Interface	Description

	Power Connector	 Power connector of DC power. Input: DC12V
	Antenna	Mark as digits 0 to 7
	Network	FE0 and FE1, its default IP address **192.168.11.1**
	Console	RS232 standard, **band rate 115200bps**
	RST	Reset button to restore default IP and password or restore factory setting. ◆ Restore IP and Password: **hold RST button 3~5 seconds, RUN LED being ON during this time** ◆ Restore factory setting**: Hold RST button 7 seconds, RUN LED being blink**

1.4 Functions and Features

1.4.1 Protocols Supported

- Standard SIP
- Simple Traversal of UDP over NATs (STUN)
- Point-to-point Protocol over Ethernet (PPPoE)
- Hypertext Transfer Protocol (HTTP)
- Dynamic Host Configuration Protocol (DHCP)
- Domain Name System (DNS)
- ITU-T G.711α-Law/μ-Law, G.723.1, G.729AB

1.4.2 System Function

- PLC: Packet Loss Concealment
- VAD: Voice Activity Detection
- CNG: Comfort Noise Generation
- Local/Remote SIM Card Working Mode
- Adjustable Gain of Port
- DTMF Adjustment
- Balance Check
- Lock/Unlock SIM/UIM
- Rejection of Mobile Number Display
- Sending/Receiving SMS
- Customized IVR Recording
- White and Black Lists
- One Number Access

- Open API for Bulk SMS
- Support USSD
- Echo Cancellation (with ITU-T G.168/165 standard)
- Automatic Negotiation Network
- Hotline
- BCCH Management\

1.4.3 Industrial Standards Supported

- Stationary Use Environment: EN 300 019: Class 3.1
- Storage Environment: EN 300 019: Class 1.2
- Transportation Environment: EN 300 019: Class 2.3
- Acoustic Noise: EN 300 753
- CE EMC Directive 2004/108/EC
- EN55022: 2006+A1:2007
- EN61000-3-2: 2006
- EN61000-3-3: 1995+A1: 2001+A2: 2005
- EN55024: 1998+A1: 2001+A2: 2003
- Certifications: FCC, CE

2 Quick Installation

2.1 Attentions before Installation

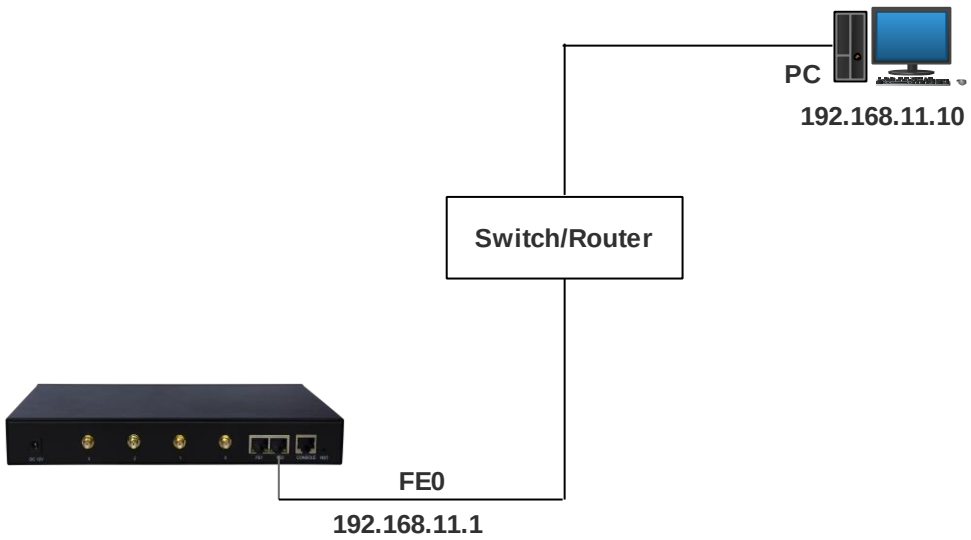
Please pay attention to the following before you install DWG2000EFG include:

- DC/AC power should be grounded well to ensure reliability and stability；
- Network interface should be standard RJ45 with 10Mbps or 100Mbps interfaces；
- GSM channels work properly and antennas should be well connected.

2.2 Installation Procedures

- Connect antennas to the DWG2000EFG device;
- Connect the power wire to the DWG2000EFG device;
- Connect network cable to the DWG2000EFG device;
- Insert SIM cards to SIM slots.

2.3 Network Connection



Note: DWG2000EFG has two Ethernet ports (namely FE0 and FE1). The device can work normally when either of the ports is connected to PC. The IP address of DWG2000EFG must be at the same network segment with that of PC.

3 Basic Operation

3.1 Feature Codes

Users can do some basic system setting via dialing feature codes through a telephone.

The DWG2000 has a built-in IVR navigator for local maintenance. In each step, if you hear an IVR message of "setting succeeds", it means you have finished this step successfully. However, if you hear "setting fails", please check and redo that step.

Code	Corresponding Function
150	Dial *150*1 to set the IP address of the gateway as static IP address; dial *150*2 to set the IP address as DHCP IP address
152	Dial *152*192*168*1*10# to set the IP address of the DWG2000 device as 192.168.1.10. (192.168.1.10 is just an example)
156	Dial *156*192*168*1*1# to set the default gateway of the network as 192.168.1.1. (192.168.1.1 is just an example)
153	Dial *153*255*255*0*0*# to set the netmask of the network as 255.255.0.0 (255.255.0.0 is just an example)
*158#	Dial *158 to inquiry IP address of the device
*111#	Dial *111# to restart the device

3.2 Basic Operation

3.2.1 Check IP address

Use a mobile phone to call a SIM card number of the DWG2000 device, then the device will answer and play a voice prompt of 'dial the extension number'. Press *158# on mobile phone, then the device will report its local IP address automatically.

3.2.2 Restore factory setting via IVR

Use a mobile phone to call a SIM card number of the DWG2000 device, the device will answer and play a voice prompt of 'dial the extension number'. Press *166*000000# on the mobile phone, then you will hear 'setting succeeds', then the factory setting of the gateway will be restored.

3.2.3 Restore default IP and password

Press RST button for about 3 seconds, then the device will be rebooted and the IP address, username and password will be restored to factory default.

3.2.4 Restore factory setting

Press RST button for about 7 seconds, then gateway will be rebooted and restored to factory setting.

3.3 Local Maintenance through Console Port

To ensure easy maintenance, the DWG2000 device provides a standard RS232 console port, which has a Baud rate of 115200bps. Users can log in the device to carry out maintenance-related configurations through the console port.

➢ **Example: Log in DWG2000 via Console Port**

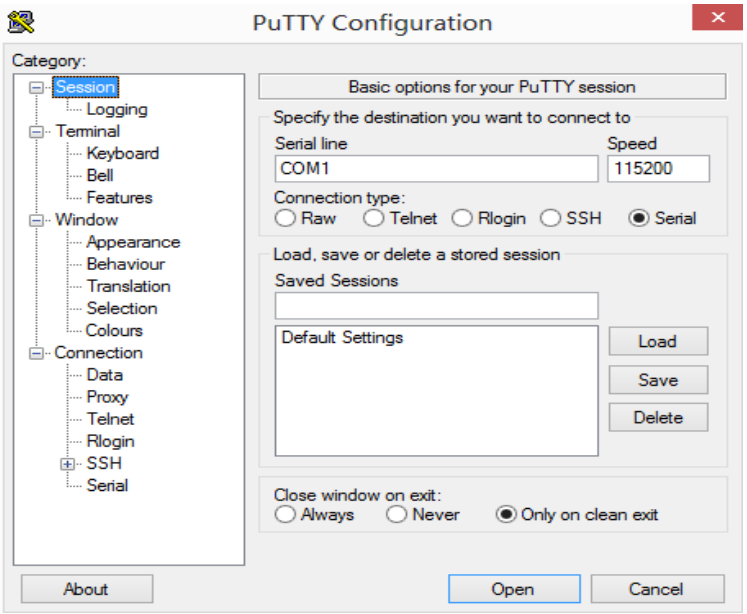
Step 1: Prepare a serial cable as follows (standard RS232, 115200bps);

Step 2: Connect the F port of the serial cable with the COM port of PC. If the PC does not have a COM port, please use a USB-to-COM converting tool to connect the serial cable with the PC.

Step 3: Connect the M port of the serial cable with the console port of the DWG2000 device.

Step 4: Conduct configurations on login software.

Herein we take the PuTTY sofeware as an example. Detailed configurations are as follows:



After finishing the above configurations, click the **Open** button to enter the maintenance interface of the

console port. The username and password are the same with those of the web interface of DWG2000

Commands for configuring the IP address of DWG2000:

(In the following example, IP address of DWG2000 needs to be configured as 172.30.66.100, and netmask is 255.255.0.0)

> enable
enable# configure
config# interface ethernet
config-if-br-lan# ip address 172.30.66.100 255.255.0.0
config-if-br-lan# exit
config# ip default-gateway 172.30.0.1

Commands for inquiring the IP address of DWG2000

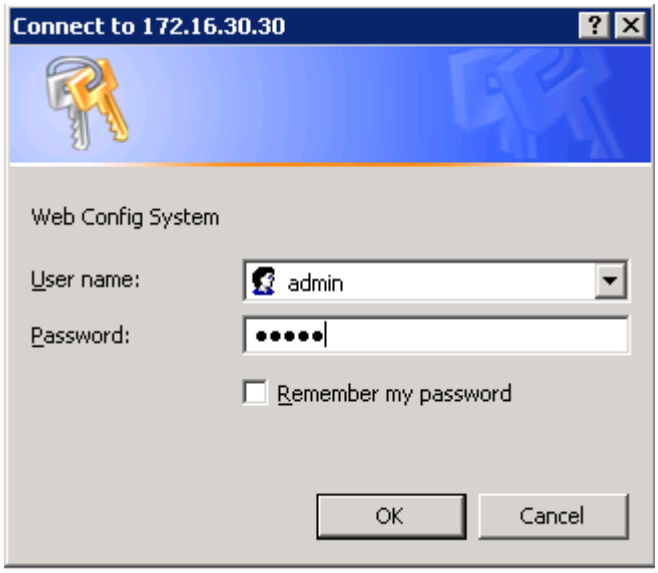
> enable
enable#show interface

4 Configurations on Web Interface

The DWG2000 gateway is embedded a Web management system to facilitate users to configure related parameters via the HTTP protocol. Users are recommended to access the Web system with Google Chrome or Firefox Browser.

4.1 How to Access Web System

Step 1. Open a web browser and enter the IP address of the DWG2000 gateway (the default IP is 192.168.11.1). Then a login GUI will be displayed. If the IP address has been changed, please enter the new IP address.

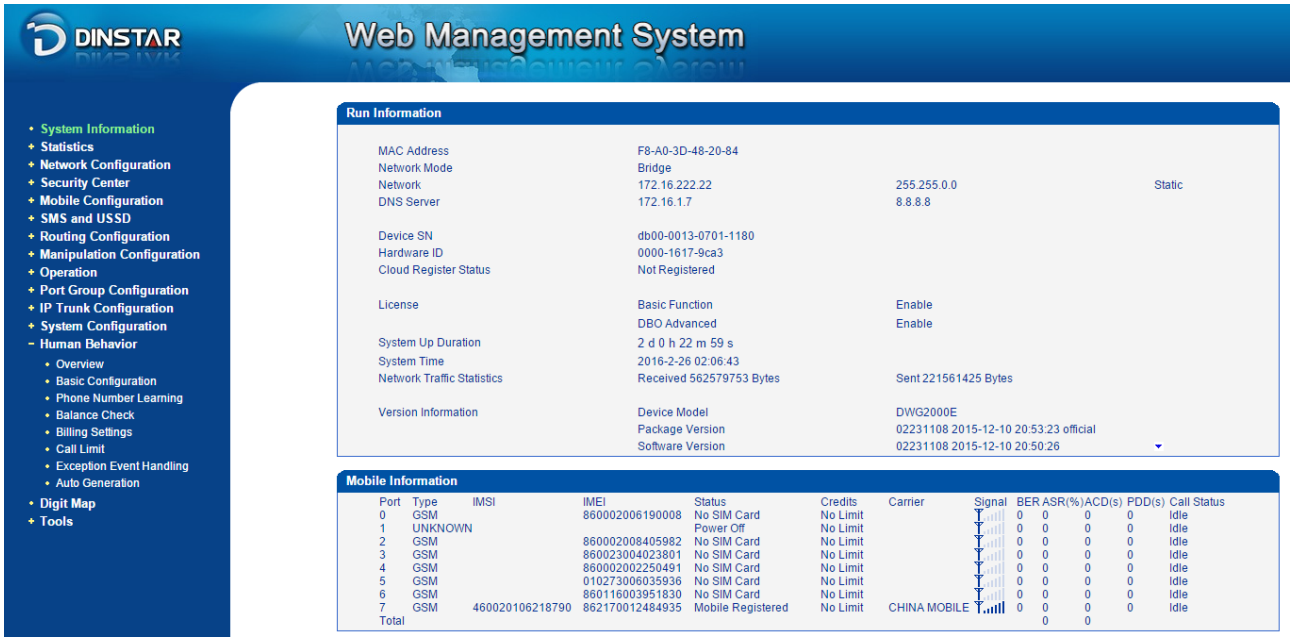


Step 2. Enter username and password and then click **OK** in the login GUI. Both the default username and password are ‘admin’.

It’s strongly recommended to change the default password to a new one for system security consideration.

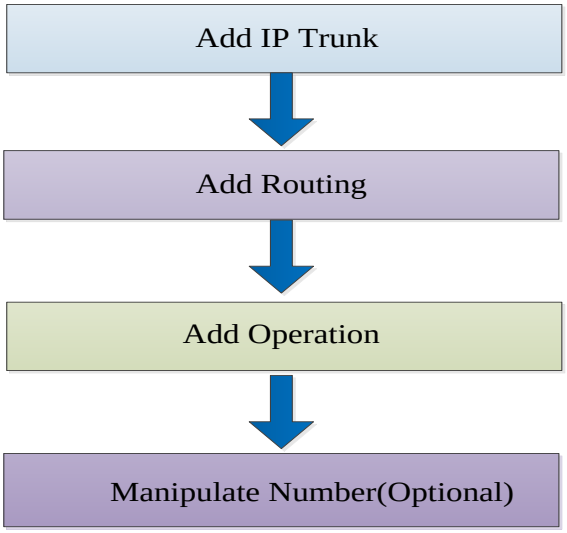
4.2 Introduction to Web System

The web management system of the DWG2000 gateway consists of the navigation tree and detailed configuration interfaces.



4.3 Configuration Wizard

To ensure a call can be connected, you should do configurations according to the following wizard.



4.4 System Information

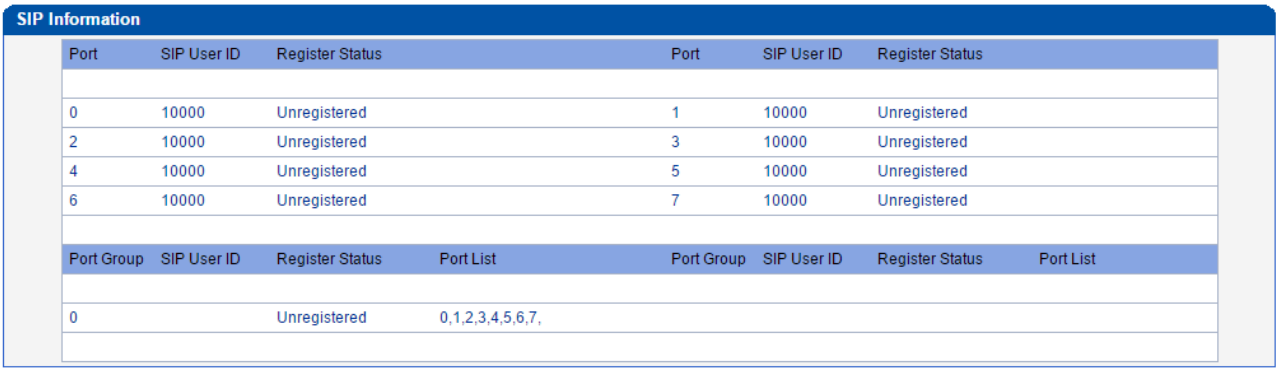
Click **System Information** in the navigation tree, and you can see basic information of the gateway, including running information, mobile information and SIP information.

Run Information

MAC Address	F8-A0-3D-48-20-84		
Network Mode	Bridge		
Network	172.16.222.22	255.255.0.0	Static
DNS Server	172.16.1.7	8.8.8.8	
Device SN	db00-0013-0701-1180		
Hardware ID	0000-1617-9ca3		
Cloud Register Status	Not Registered		
License	Basic Function	Enable	
	DBO Advanced	Enable	
System Up Duration	2 d 0 h 23 m 39 s		
System Time	2016-2-26 02:07:23		
Network Traffic Statistics	Received 562579753 Bytes	Sent 221561425 Bytes	
Version Information	Device Model	DWG2000E	
	Package Version	02231108 2015-12-10 20:53:23 official	
	Software Version	02231108 2015-12-10 20:50:26	

Mobile Information

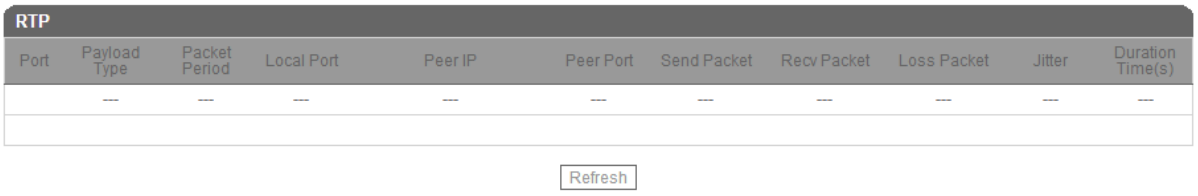
Port	Type	IMSI	IMEI	Status	Credits	Carrier	Signal	BER	ASR(%)	ACD(s)	PDD(s)	Call Status
0	GSM		860002006190008	No SIM Card	No Limit			0	0	0	0	Idle
1	UNKNOWN			Power Off	No Limit			0	0	0	0	Idle
2	GSM		860002008405982	No SIM Card	No Limit			0	0	0	0	Idle
3	GSM		860023004023801	No SIM Card	No Limit			0	0	0	0	Idle
4	GSM		860002002250491	No SIM Card	No Limit			0	0	0	0	Idle
5	GSM		010273006035936	No SIM Card	No Limit			0	0	0	0	Idle
6	GSM		860116003951830	No SIM Card	No Limit			0	0	0	0	Idle
7	GSM	460020106218790	862170012484935	Mobile Registered	No Limit	CHINA MOBILE		0	0	0	0	Idle
Total									0	0		



4.5 Statistics

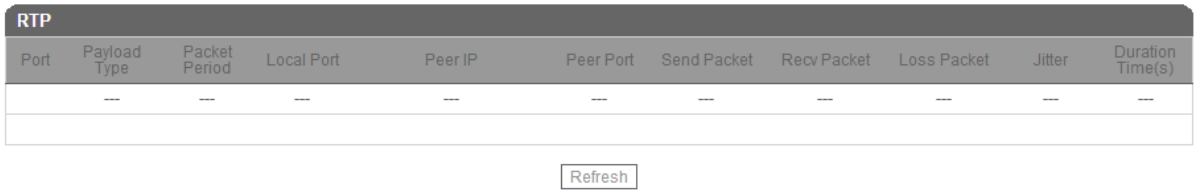
4.5.1 TCP/UDP

On the **Statistic → TCP/UDP** interface, the number of the sent packages over TCP/UDP and the number of the received packages over TCP/UDP are displayed. If you click the **Refresh** button and the numbers change, it means the communication is normal.



4.5.2 RTP

On the **Statistic →RTP** interface, the data packages related to RTP (Real-time Transport Protocol) are displayed. The packages can be refreshed automatically or manually. If data are shown, it means a call is ongoing.



4.5.3 SIP Call History

On the **Statistic →SIP Call History** interface, the number of incoming calls and the number of outgoing calls through the ports of the DWG2000 gateway will be displayed.

SIP Call History

Port	Incoming Received	Incoming Connected	Incoming Answered	Incoming Failed	Outgoing Attempted	Outgoing Connected	Outgoing Answered	Outgoing Failed
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0

Refresh

4.5.4 IP to GSM Call History

On the **Statistic → IP to GSM Call History** interface, history of IP → GSM calls is displayed.

IP to GSM Call History

Port	Call	Duration	Answered	Call Failed Caused by SIP				Call Failed Caused by GSM				OTHER
				Canceled	Timeout	Not Allowed	Negotiation failed	Busy	NO ANSWER	NO DIALTONE	NO CARRIER	
0	0	0:0	0	0	0	0	0	0	0	0	0	0
1	0	0:0	0	0	0	0	0	0	0	0	0	0
2	0	0:0	0	0	0	0	0	0	0	0	0	0
3	0	0:0	0	0	0	0	0	0	0	0	0	0
4	0	0:0	0	0	0	0	0	0	0	0	0	0
5	0	0:0	0	0	0	0	0	0	0	0	0	0
6	0	0:0	0	0	0	0	0	0	0	0	0	0
7	0	0:0	0	0	0	0	0	0	0	0	0	0

Refresh Clear

4.5.5 CDR Report

On the **Statistic → CDR Report** interface, details of all calls through the ports of the DWG2000 gateway are displayed. The CDR function can be enabled on the following interface.

CDR Report

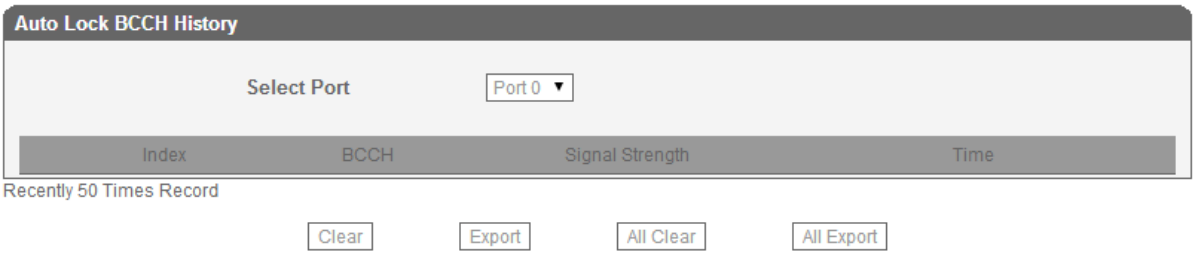
Enable CDR No Yes
Save CDR No Yes save
Start Date : 2015 Year 11 Month 9 Day
Select Port All
Call Direction ALL
End Date : 2015 Year 11 Month 9 Day
Source
Destination
Min Duration s
Max Duration s
Rtp Loss Rate % to %
CDR Export Export
Refresh
Delete the CDRs in this Report

Port	Start Date	Answer Date	Call Direction	Source	SourceIP	Destination	Hang Side	Reason	Duration(s)	Codec	Rtp Send	Rtp recv	Rtp loss Rate	jitter(s)

Total: 0 entries 50 entries/page 1/0 page

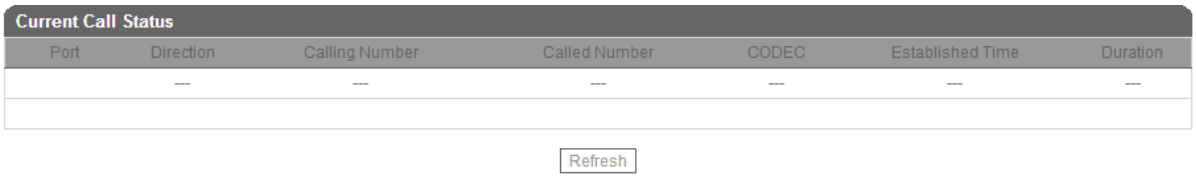
4.5.6 Lock BCCH Report

On the **Statistics → Lock BCCH Report** interface, historic changes of BCCH frequencies are shown.



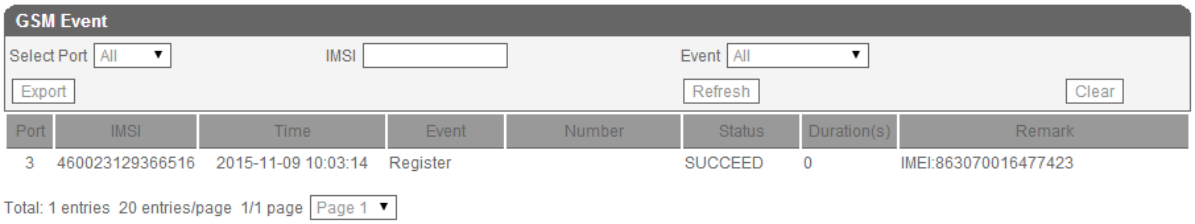
4.5.7 Current Call Status

On the **Statistics → Current Call Status** interface, status and detail of the current call are shown.



4.5.8 GSM Event

On the **Statistics → GSM Event** interface, the historic events such as register of any GSM port of the DWG2000 gateway can be queried.



4.6 Network Configuration

4.6.1 Working Mode of Network

DWG2000 works in the bridge mode. Under the bridge mode, the IP address of FE0 is the same with that of FE1.

4.6.2 Types of Optional IP Address

There are three kinds of IP addresses for selection for the network ports, including Static IP address, DHCP IP address and PPPOE IP address.

DHCP: Obtain IP address automatically.

DWG2000 is regarded as a DHCP client, which sends a broadcast request and looks for a DHCP server to answer. Then the DHCP server automatically assigns an IP address to a computer from a defined range of numbers configured for a given network. DHCP IP address herein refers dynamic IP address which is automatically assigned.

Static IP Address:

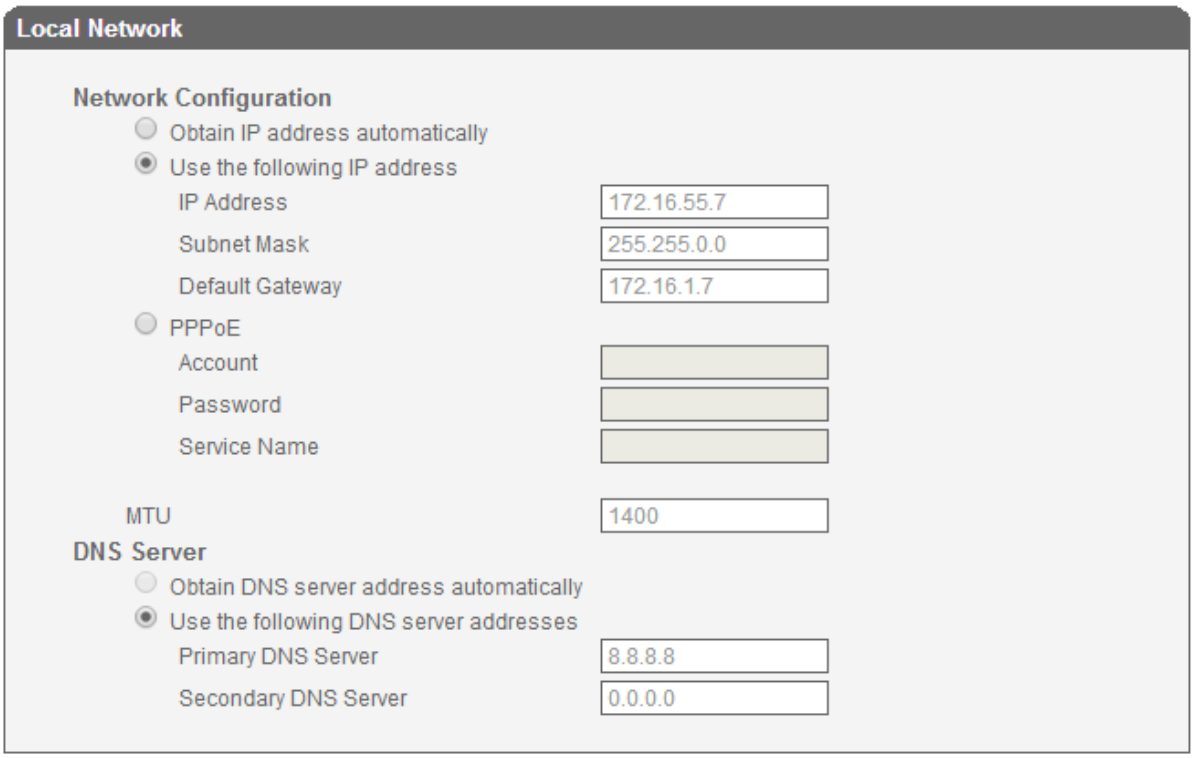
Static IP address is a static IP address which is assigned by Internet Service Provider (ISP) and remains associated with a single computer over an extended period of time. This differs from a dynamic IP address**,** which is assigned *ad hoc* at the start of each session, normally changing from one session to the next.

PPPoE:

PPPoE is an acronym for point-to-point protocol over Ethernet, which relies on two widely accepted standards: PPP and Ethernet. PPPoE is a specification for connecting the users on an Ethernet to the Internet through a common broadband medium, such as a single DSL line, wireless device or cable modem. All the users over the Ethernet share a common connection, so the Ethernet principles supporting multiple users in a LAN combine with the principles of PPP, which apply to serial connections. PPPOE IP address refers to IP address assigned through the PPPoE mode.

4.6.3 How to Configure Network Parameters

Click Network Configuration → Local Network on the navigation tree, and you will see the following interface.



If you choose static IP address, you need to fill in the following information:

- IP Address: the IP address of the DWG2000 device;
- Subnet Mask: the subnet mask of the router connected the DWG2000 device;
- Default Gateway: the IP address of the router connected the DWG2000 device.

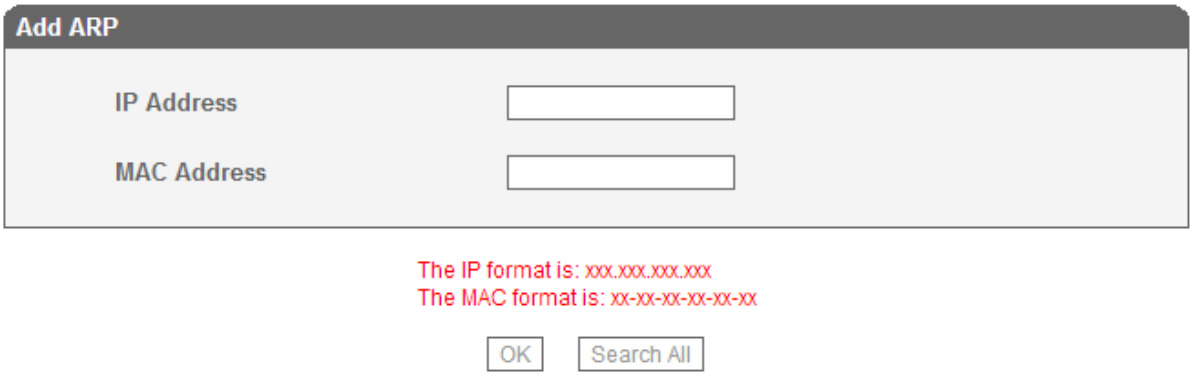
If you choose PPPoE, you need to fill in the account, password and service name, which are provided by telecom operator.

If you choose ‘Obtain IP address automatically’, you do not need to fill in any information.

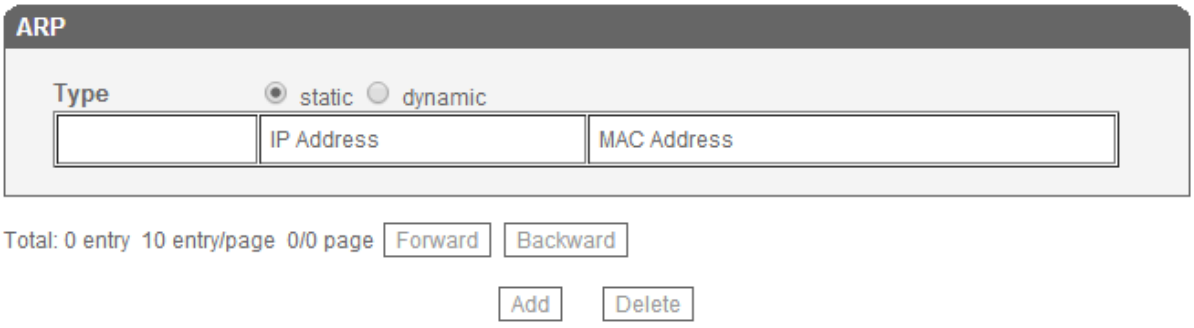
4.6.4 ARP

The ARP (Address Resolution Protocol) function is mainly used to query or add the mapping relationship between an IP address and a MAC address. There are static ARP mapping and dynamic ARP mapping.
As routers work, the DWG2000 gateway can automatically search those devices at the same network segment. In case that you don't want to use this automatic mapping, please use the static ARP mapping.

Interface for adding ARP mapping is as followings:

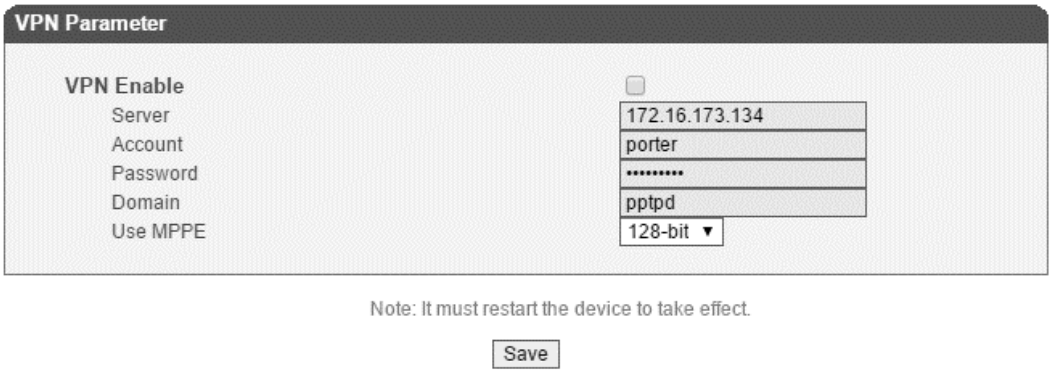


Click **Search All**, and the interface for querying ARP mapping is displayed:



4.6.5 VPN Parameter

Click **Network Configuration → VPN Parameter**, and you can see the following interface.



Parameters	Description
Server	The IP address or domain name of VPN Server (support PPTP only)
Account	The account provided by VPN server or VPN provider
Password	The authentication password provided by VPN provider
Domain	It is a VPN setting which can be null
Use MPPE	The parameter is used for encryption. It supports 40/128 bit and must match with VPN server

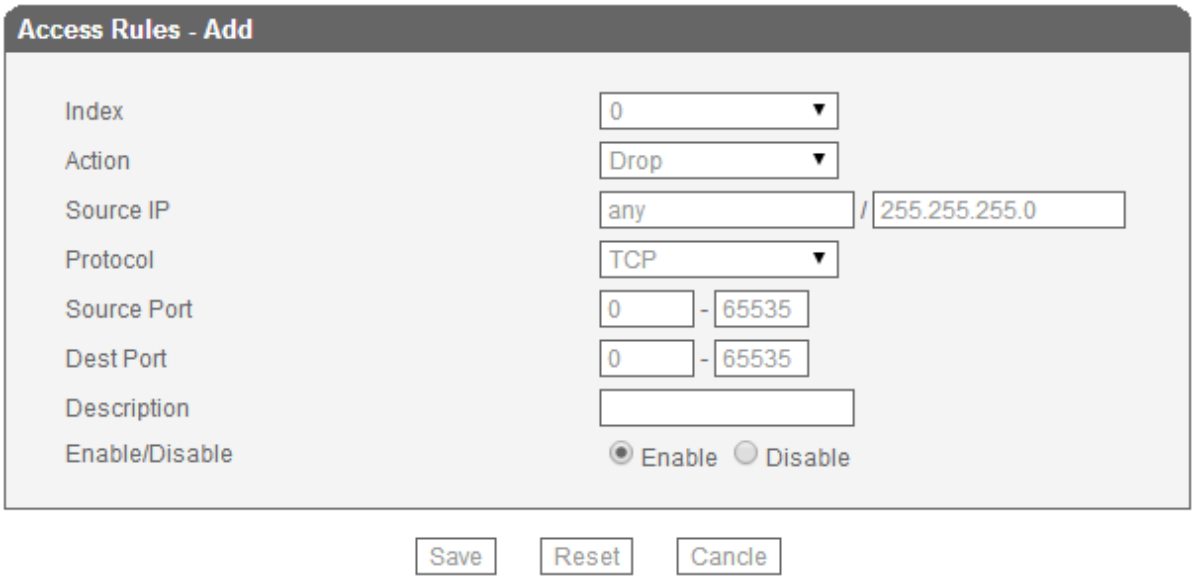
Note: VPN connecting status can be checked on the **System Information** interface.

4.7 Security Center

4.7.1 Access Rules

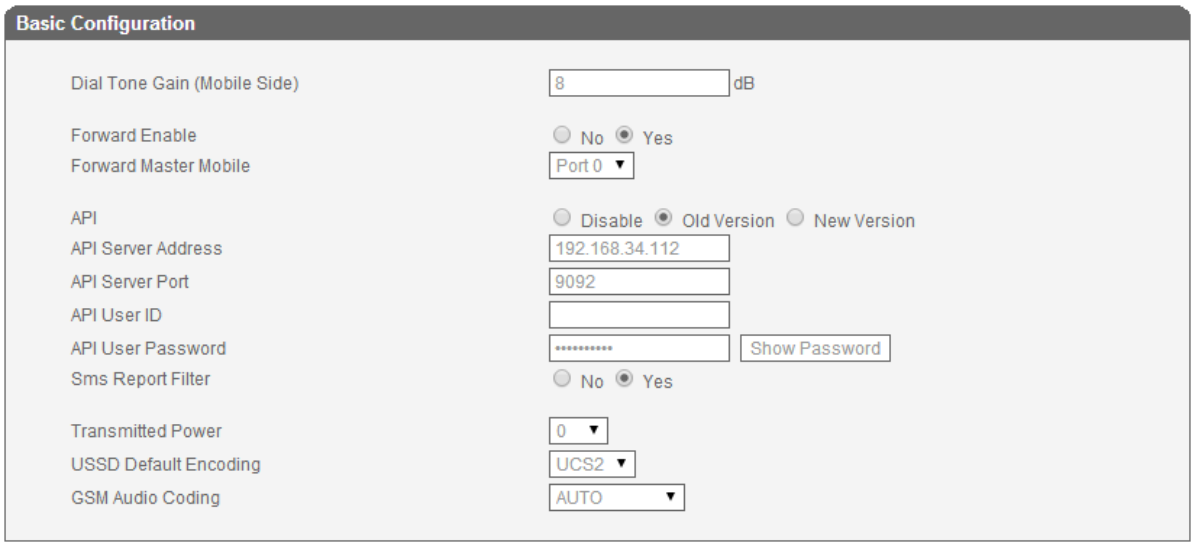
On the **Access Rules** interface, click **Add**, and you can set rules to accept or reject the calls from a specific port, the login of other people via Web or Telnet, or PIN packages.

TCP: accept or reject the login of other people via Web or Telnet;
UDP: accept or reject the calls from a specific port;
ICMP: accept or reject PIN packages.
All: accept or reject all the abovementioned items.



4.8 Mobile Configuration

4.8.1 Basic Configuration



Introduction to API

The API protocol is used for external applications (for instance: SMS Server) to control the sending and receiving of SMS/USSD on the gateway.

To enable the API function of the DWG2000 gateway, the IP address, port, user ID and password of SMS Sever must be correctly configured, and the TCP Intercept function of the SMS Server must be enabled. Once the connection between the gateway and TCP is established, the gateway will send user ID and password to the SMS Server, and then the SMS Server will send back a message which indicates successful authentication.

The API Server Address, API Server Port, User ID and API User Password on the above interface of DWG2000 must be the same with the IP Address, Port, Auth ID and Password on the setting interface of SMS Server.

Introduction to GSM Audio Coding

There are eight formats for GSM Audio Coding, including Auto, FR, HR, EFR, AMR_FR, AMR_HR, FR and EFR, EFR and FR.

Auto: it means GSM Audio Coding is automatic.

FR (Full Rate): the first digital speech coding speech standard used in the GSM digital mobile phone system. The bit rate of the codec is 13 kbit/s, or 1.625 bits/audio sample (often padded out to 33 bytes/20 ms or 13.2 kbit/s).

HR (Half Rate): the bit rate of the codec is 6.5 kbit/s. It requires half the bandwidth of the Full Rate codec and network capacity for voice traffic is doubled, at the expense of audio quality. It is recommended to use this codec when the battery is low as it may consume up to 30% less energy.

EFR (Enhanced Full Rate): is a speech coding standard that was developed in order to improve the quite poor quality of Full Rate codec. Working at 12.2 kbit/s, the EFR provides good quality in any noise conditions. The EFR is compatible with the highest AMR mode (both are ACELP). Although the EFR helps to improve call quality, this codec has higher computational complexity, which in a mobile device can potentially result in an increase in energy consumption as high as 5% compared to 'old' FR codec.

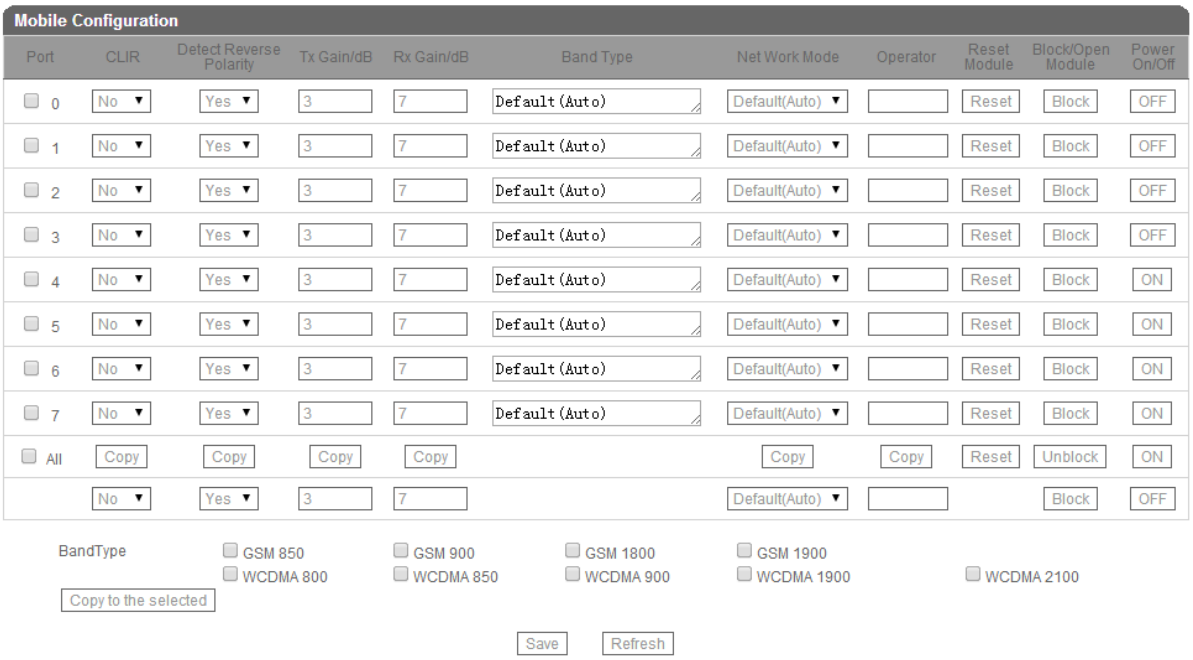
AMR (Adaptive Multi-Rate): is an audio compression format optimized for speech coding. AMR speech codec consists of a multi-rate narrowband speech codec that encodes narrowband (200–3400 Hz) signals at variable bit rates ranging from 4.75 to 12.2 kbit/s with toll quality speech starting at 7.4 kbit/s.

There are two modes for the AMR codec in the DWG2000:

AMR_FR: the AMR codec in a full rate channel (FR)
AMR_HR: the AMR codec in a half rate channel (HR).

FR and EFR: GSM Audio Coding supports both FR and EFR, but FR is prior to EFR.
EFR and FR: GSM Audio Coding supports both EFR and FR, but EFR is prior to FR.\

4.8.2 Mobile Configuration

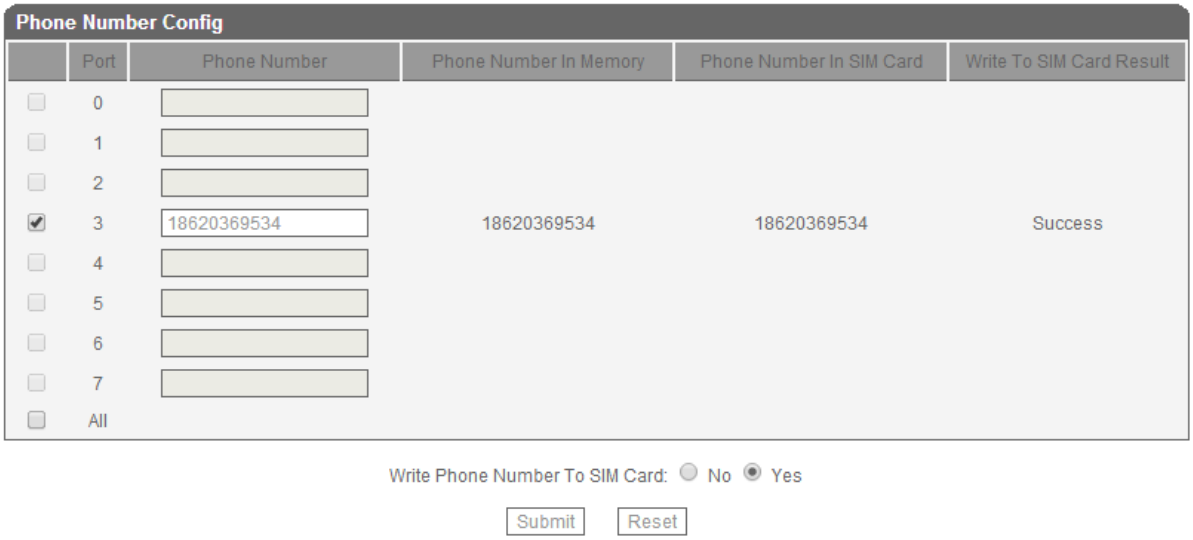


Parameter	Description
CLIR	Calling Line Identification Restriction: If the CLIR function is enabled, the phone number of the caller will not be displayed on the called phone.
Detect Reverse Polarity	If the function is enabled, the caller will learn whether the called person has got through the phone.
Tx Gain	Gain of voice sent
Rx Gain	Gain of voice received
Network Mode	Select 2G or 3G
Reset Module	Click **Reset**, and the corresponding module will be reset.
Block/Open Module	Click **Block** or **Unblock**, the corresponding module will turn to the opposite status.
Power On/Off	Click **On** or **Off**, the power of the corresponding module will turn to the opposite status.
Band Type	Choose from GSM850, GSM900, GSM1800, GSM1900, WCDMA800, WCDMA 850, WCDMA900, WCDMA1900, and WCDMA2100

4.8.3 Phone Number Config

On the **Phone Number Config** interface, you can write a phone number into a specific memory card and SIM Card, and thus the phone number can be called in case that this SIM card has been pulled out and inserted into another port.

Select **Yes** on the right of 'Write Phone Number to SIM Card', enter a phone number and click **Submit**.

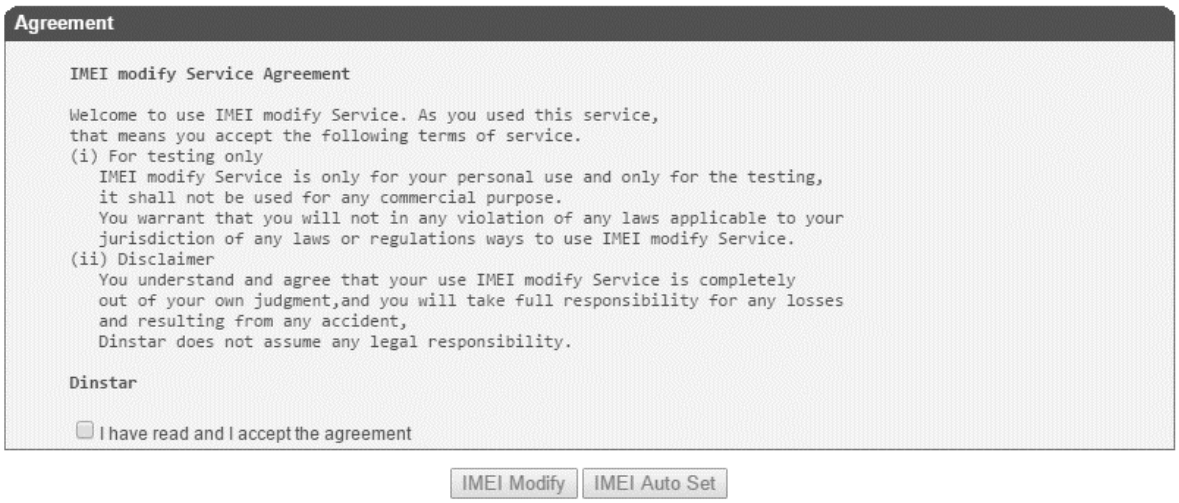


4.8.4 PIN Management

PIN code is a combination of numbers used as an additional password to access the SIM card of the selected port.

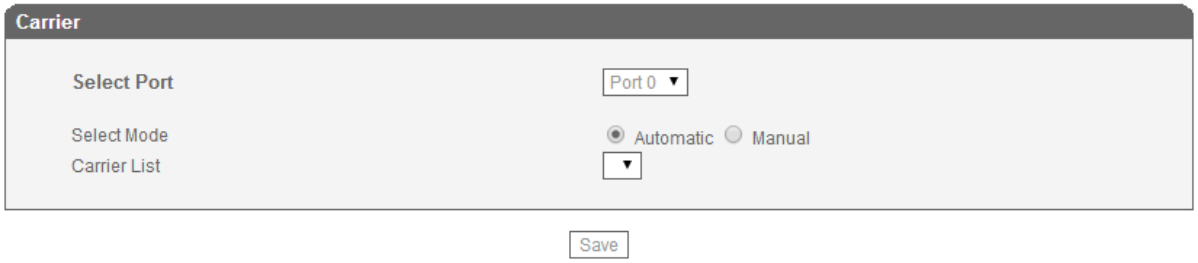
On the following interface, you can set a PIN code for the SIM card of the selected port.

4.8.5 IMEI



4.8.6 Carrier

On the **Mobile Configuration → Carrier** interface, if **Automatic** is selected, the DWG2000 device will automatically identify the carrier which the inserted SIM card belongs to. If **Manual** is selected, you need to choose a carrier in the drop-down box.



4.8.7 BCCH

BCCH (Broadcast Control Channel): BCCH is a logical broadcast channel used by the base station in a GSM/WCDMA network to send information about the identity of the network. The information is used by a mobile station to get access to the network. Information includes the Mobile Network Code (MNC), the Location Area Code (LAC) and a list of frequencies used by the neighboring cells.

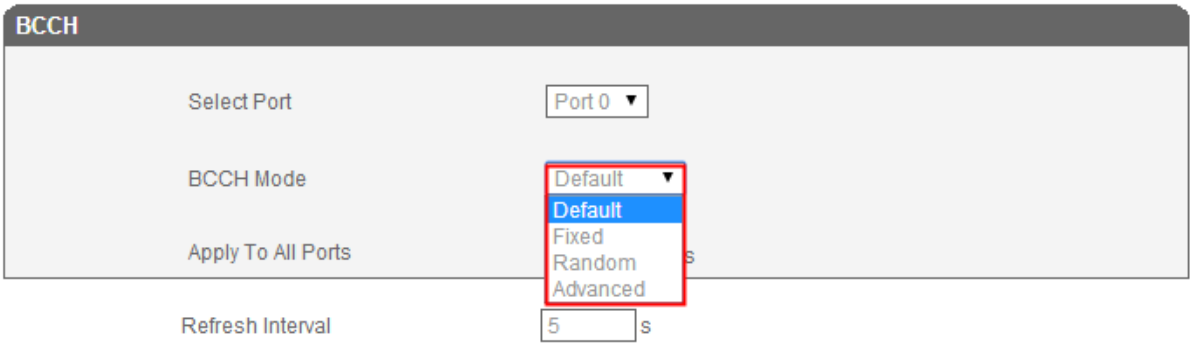
Configuration Procedures for BCCH:

Step 1. In the navigation tree on the left, click **Mobile Configuration → BCCH**.

Step 2. Drag the scroll bar on the bottom of the interface, and you will see Detail buttons.

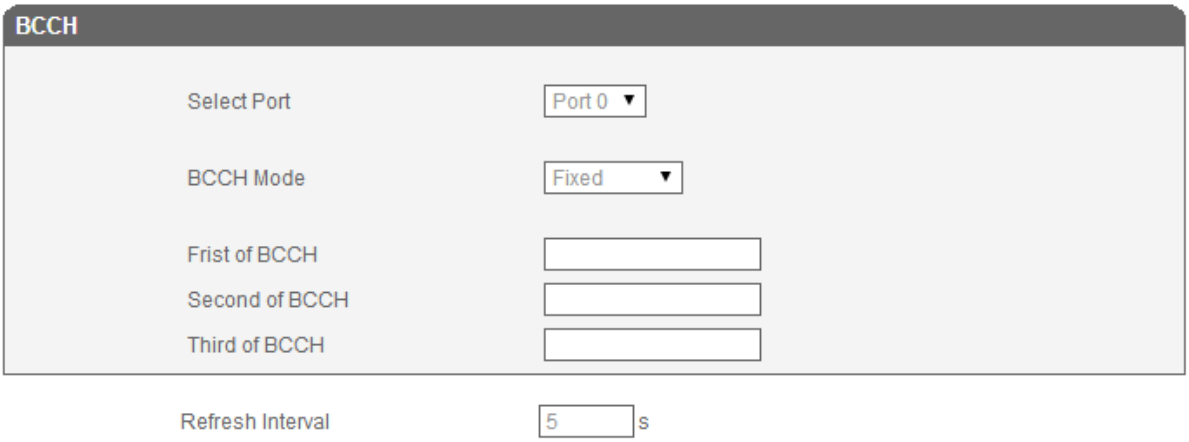
Step 3. Click the Detail button of a specific port, and you will see the following interface.

Step 4. Click the drag-down box on the right of **BCCH Mode**, and select a mode.

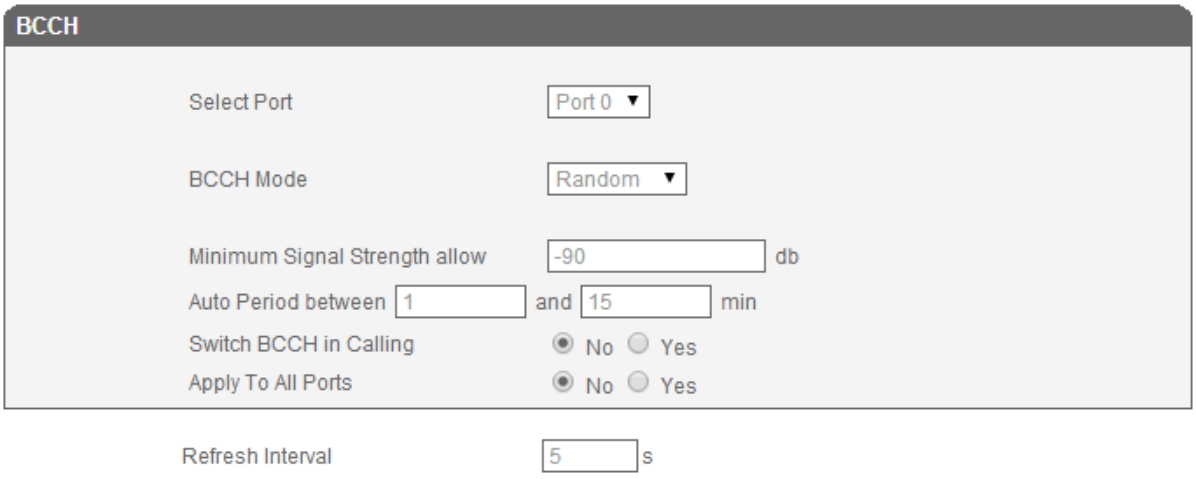


Default: All frequencies will be automatically matched with the gateway.

Fixed: You are required to set three fixed frequencies, and the frequencies will be matched with the gateway permanently.

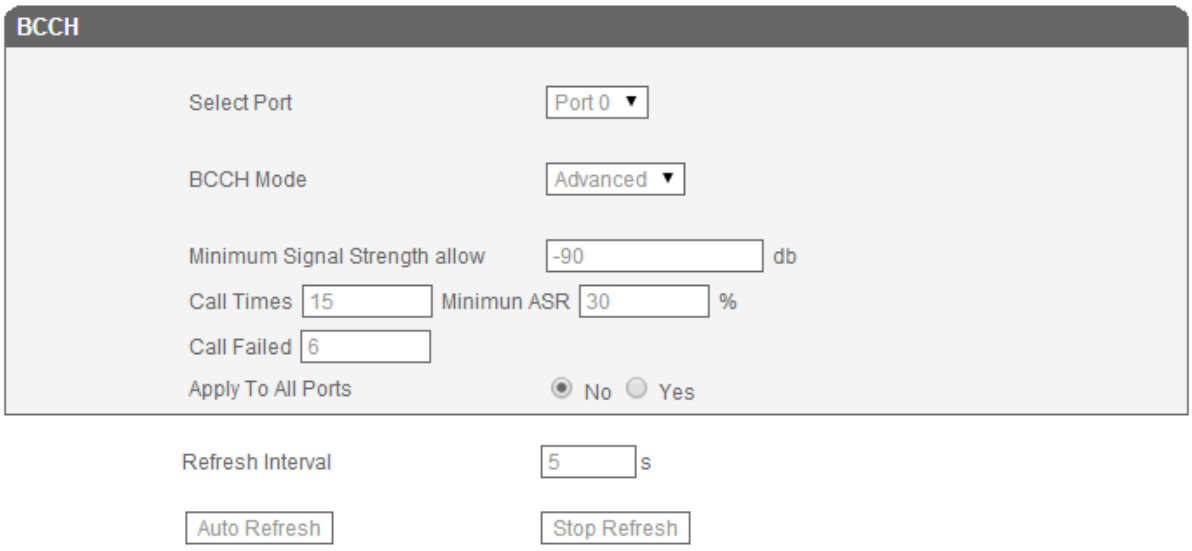


Random: you are required to set some conditions, including minimum signal strength, the period for automatic frequency switch, and whether to switch frequency during calling.



Advanced: you are required to set some conditions, including minimum signal strength, minimum answer-

seizure ratio(ASR), number of calls and number of failed calls.



Note: When the actual number of failed calls reaches the set number, frequencies will be switched or when the actual answer-seizure ratio is less than the minimum answer-seizure ratio, frequencies will be switched.

Step 5. Click the Save button, and a prompt message indicating successful setting will pop up.

Step 6. In the navigation tree, click **Mobile Configuration → BCCH**. You will see the following figure on the upper interface. If there are some frequencies that are not useful, you can set them on the BCCH Blacklist, and then those frequencies cannot be used by the mobile station.

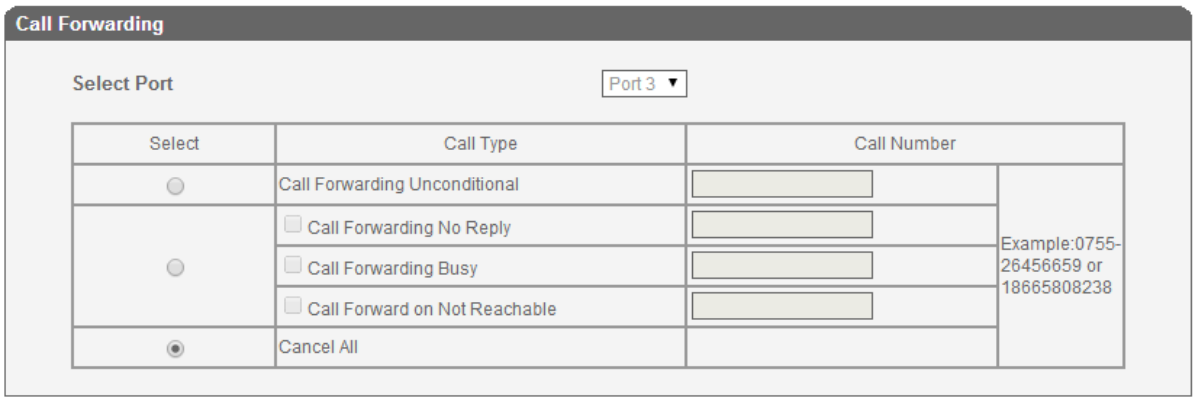
Note: The BCCH Blacklist only works at random mode and advanced mode.

Step 7. On the **Mobile Configuration → BCCH** interface, you can also set a refresh interval. For example, if you set refresh interval as 5 seconds, frequencies will be refreshed every 5 seconds.

Step 8. Click the Save button on the interface.

4.8.8 Call Forwarding

Calls can be forwarded unconditionally or under certain conditions.



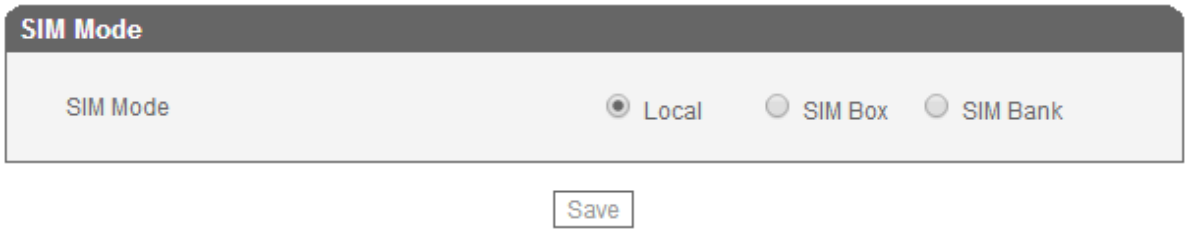
Parameter	Explanation
Call Unconditional	Calls will be forwarded unconditionally
Call Forwarding No Reply	If there is no reply from the called number, calls will be forwarded.
Call Forwarding Busy	If the called number is busy, calls will be forwarded.
Call Forward on Not Reachable	If the called number is not reachable (for example, the called phone is power off), calls will be forwarded.
Cancel All	Calls will not be forwarded.
Call Number	The number where calls will be forwarded.

4.8.9 Call Waiting

On the **Mobile Configuration →Call Waiting** interface, the call waiting function can be disabled or enabled.

4.8.10 SIM Mode

There are three SIM modes, including Local SIM, SIM Box and SIM Bank.



Item	Description
Local	Local SIM is the most common mode used by many of users.
SIM Box	SIM Box is a small box where SIM cards can be placed. It's ideal for users who want to change SIM cards frequently.
SIM Bank	SIM Bank is also used to accommodate SIM cards. It is managed by SIM server, and can be at different LAN with the gateway.

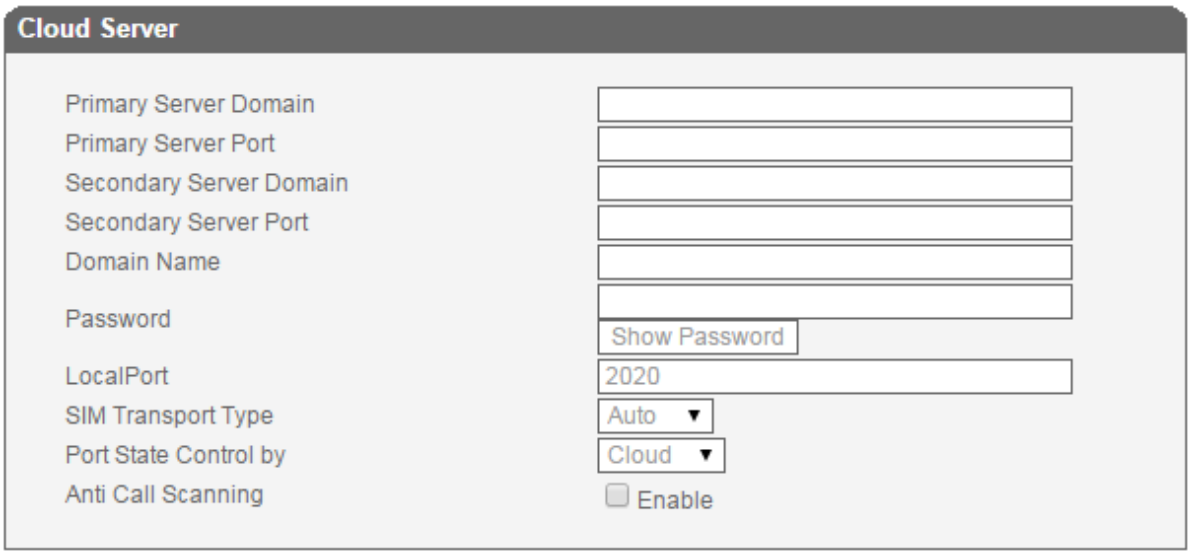
What's the difference between SIM Box and SIM Bank?

Both SIM Box and SIM Bank are used to accommodate SIM cards. SIM box works with local network, and it must be at the same LAN with the gateway. It does not the function of switching cards automatically.

Compared to SIM Box, SIM Bank is most powerful and provides flexible SIM management rules such as SIM Rotation, SIM switching and anti-block policy. It is an important component of SIM server solution. With SIM Bank, GSM gateways can be deployed in different locations and countries so that the users are able to supervise all SIMs in one place.

4.8.11 Cloud Server

Users need to configure the cloud server when the gateway works with SIM Bank or centralized management is required for the gateway.



Item	Description
Primary Server Domain	The domain name of IP address of the primary Cloud server
Primary Server Port	The port of the primary Cloud server

Secondary Server Domain	The domain name of IP address of the secondary Cloud server. It can be null.
Secondary Server Port	The port of the secondary Cloud server. It can be null.
Domain Name	The name of the sub-domain used by the gateway under the Could server.
Password	The password of the sub-domain used by the gateway under the Could server.
Local Port	The port of the gateway connected to the Cloud server.
SIM Transport Type	The transmission type of phone numbers of the SIM card.
Port State Control By	The port state is controlled by cloud or the gateway.
Anti Call Scanning	This function must be enabled when the whitelist/blacklist function of the SIM card is enabled.

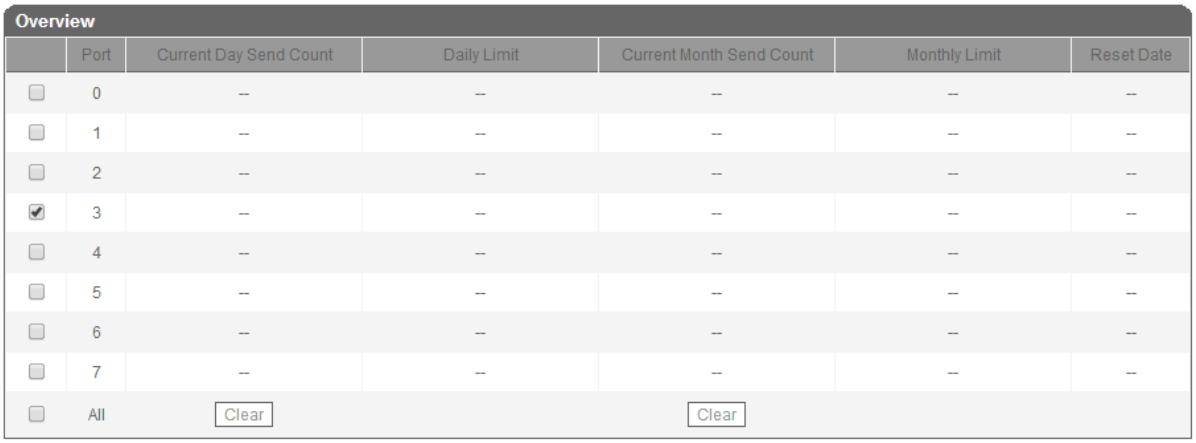
4.9 SMS and USSD

4.9.1 SMSC

SMS messages are sent to the destination number via the SMSC. Generally, the SMSC number can be automatically detected by the gateway. This configurable option is used in a situation that the SMSC number can not detected. When such case happens, please contact with mobile service provider to identify the SMSC number and then add SMSC number in the following interface.

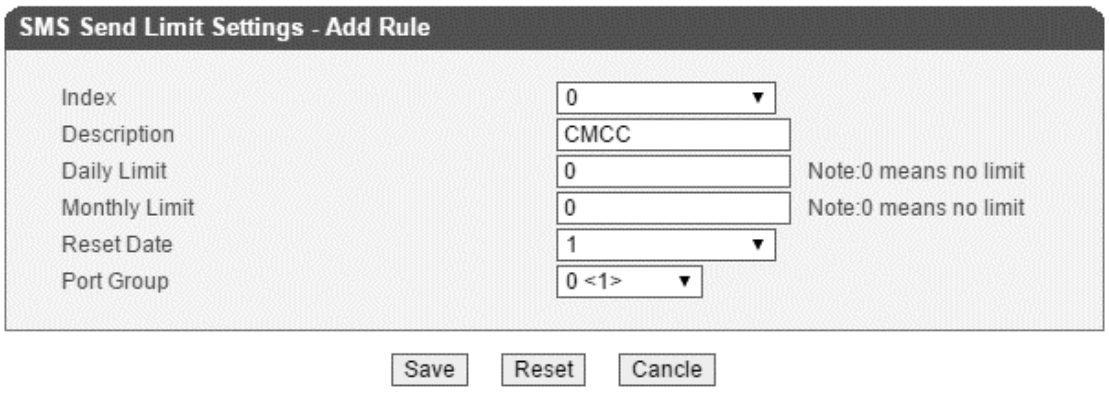
4.9.2 SMS Send Overview

On the **SMS Send Overview** interface, you can see the number of SMS messages that have been sent via the ports of the gateway, as well as the daily limit and monthly limit of SMS messages that can be sent through the ports of the gateway.



4.9.3 SMS Send Limit Settings

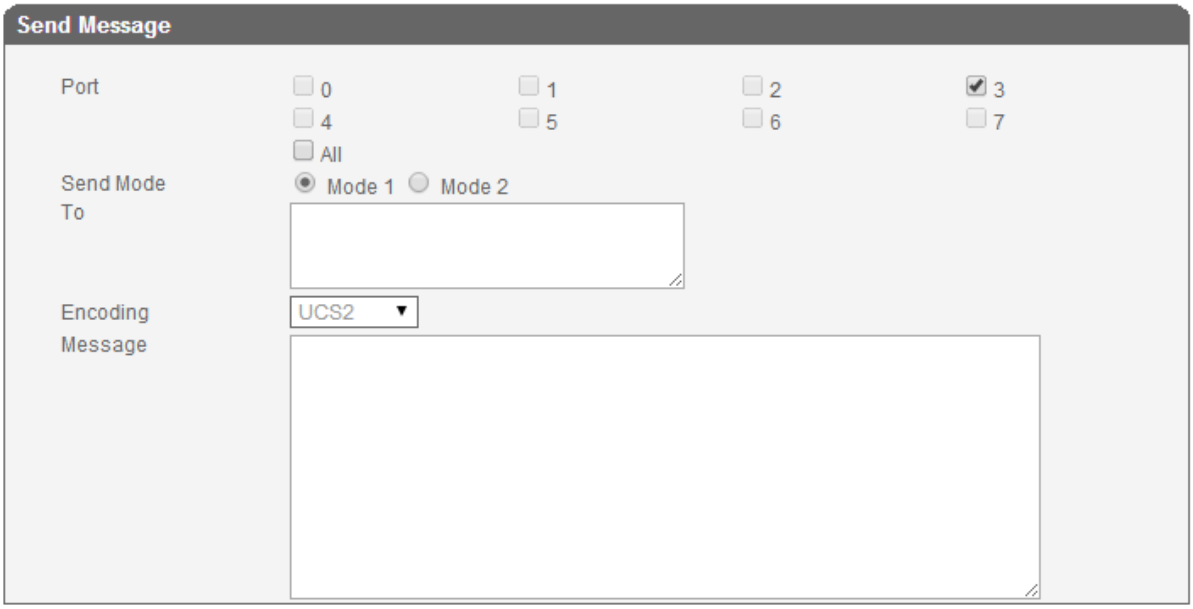
On the **SMS Limit Settings** interface, click **Add**, and you can see the following interface.



Notes: 1.The SMS Send from WEB will be limited.
2.Please enable NTP.

4.9.4 Send SMS

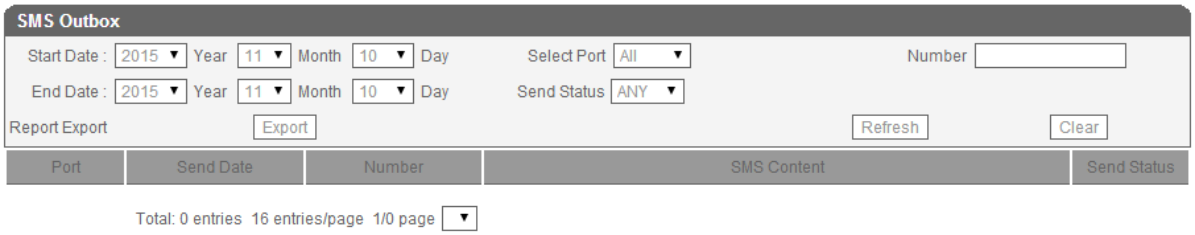
The DWG2000 can be used to send messages and receive massages.



Parameter	Explanation
Port	The port through which SMS messages are sent
To	The number(s) where the SMS message will be sent.
UCS2	UCS2: Support English and Chinese GSM 7bit: Support English only
Message	The content of the message

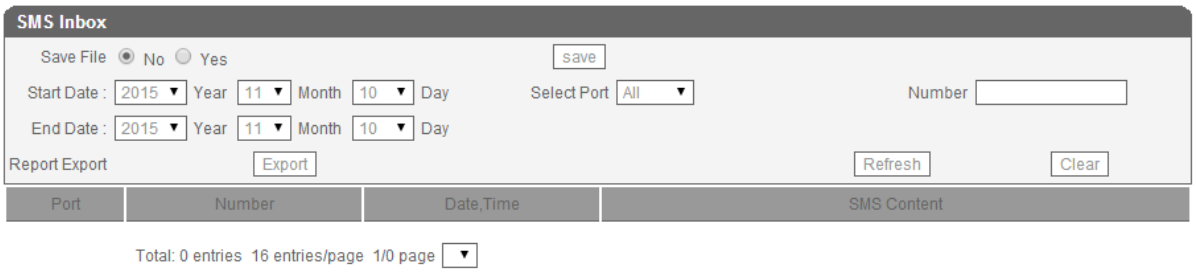
4.9.5 SMS Outbox

On the **SMS Outbox** interface, you can see the detailed information of each SMS message that has been sent, and can export the messages.



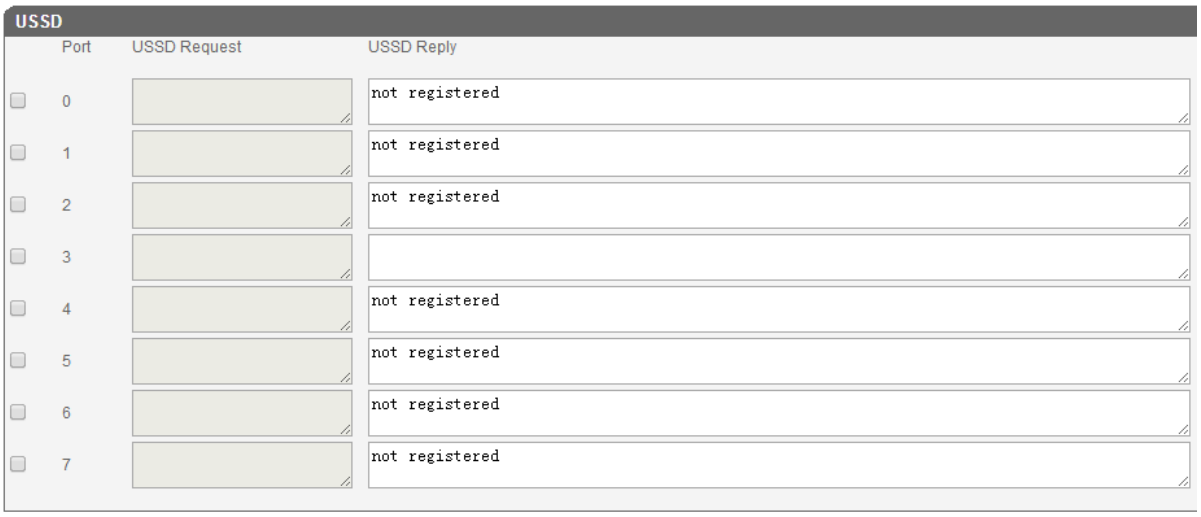
4.9.6 SMS Inbox

On the **SMS Inbox** interface, you can see the detailed information of each SMS message that has been received, and can export the messages.



4.9.7 USSD

USSD (Unstructured Supplementary Service Data): is a service which is provided by a telecom operator and allows GSM/WCDMA mobile phones to interact with the telecom operator's computers. USSD messages travel over GSM/WCDMA signaling channels and are used to query information and trigger services. Unlike similar services (SMS and MMS), which are stored and forwarded, USSD is session-based. It establishes a real-time session between mobile phones and telecom operators' computers or other devices.



4.9.8 Email

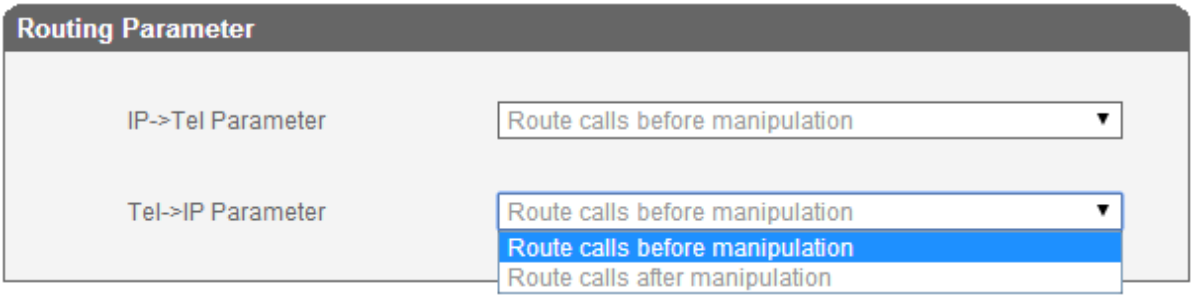
4.10 Routing Configuration

4.10.1 Routing Parameter

Click Routing Configuration →Routing Parameter, and you can see the following interface:

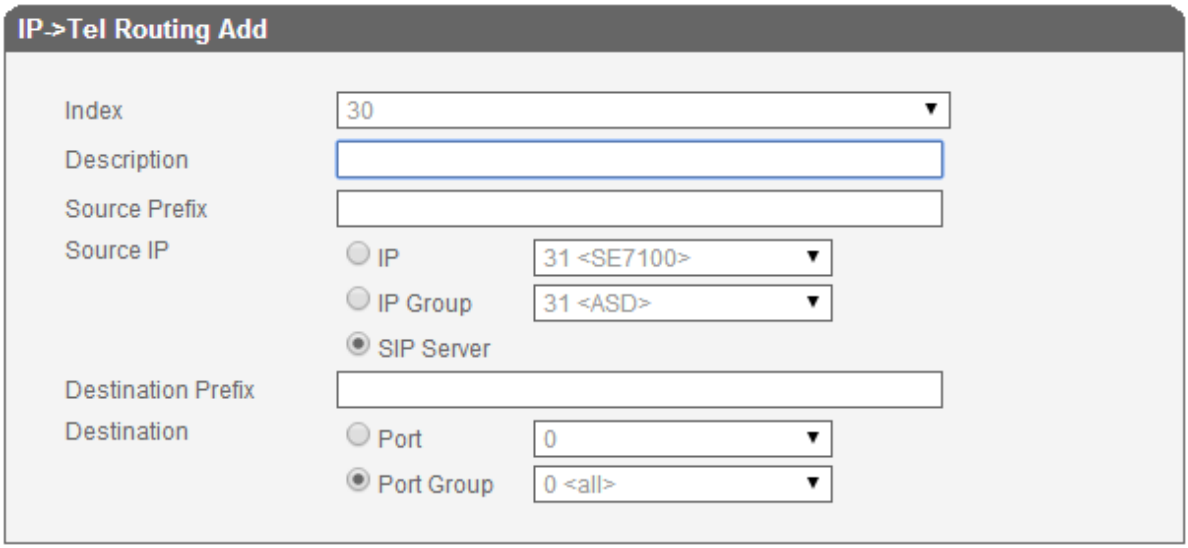
Route calls before manipulation: the call will be routed before number manipulation;

Route calls before manipulation: the call will be routed after number manipulation.



4.10.2 IP → Tel Routing

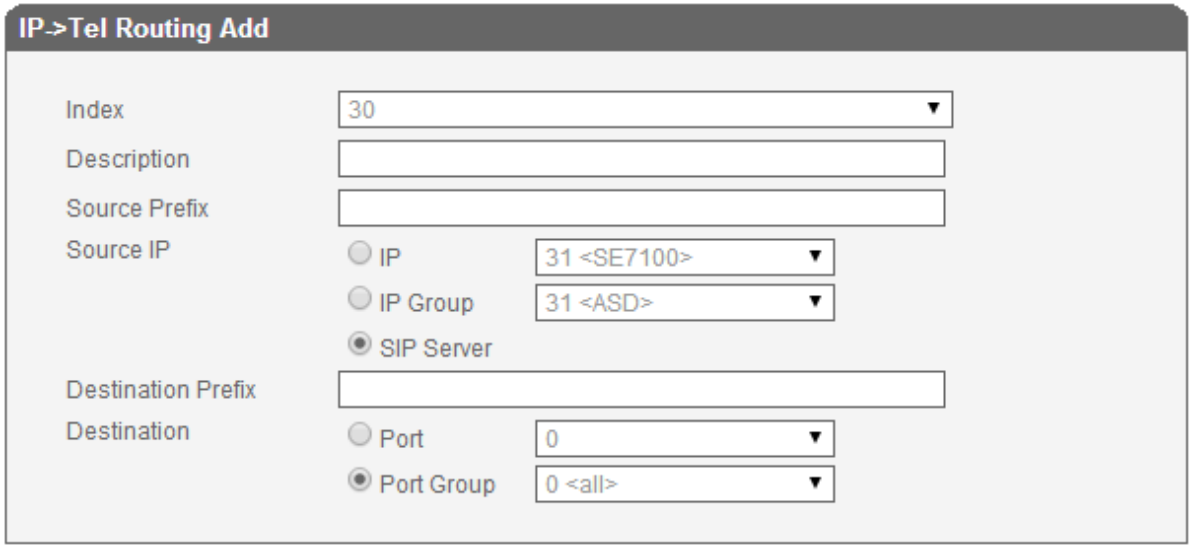
On the **IP → Tel Routing** interface, click **Add** to add an IP → Tel routing.



Parameter	Description
Index	The index of the routing
Description	You can enter any description you want
Source Prefix	The prefix of the source number; when it's found that the source number includes the prefix, this routing will be selected.
Source IP	The IP , IP Group or SIP Server linked to the routing
Destination Prefix	The prefix of the destination number; when it's found that the destination number includes the prefix, this routing will be selected.
Source IP	The IP, IP group or SIP server where the source number comes from
Destination	The port or port group linked to this routing.

4.10.3 Tel → IP Routing

On the **Tel→ IP Routing** interface, click **Add** to add an Tel → IP routing.

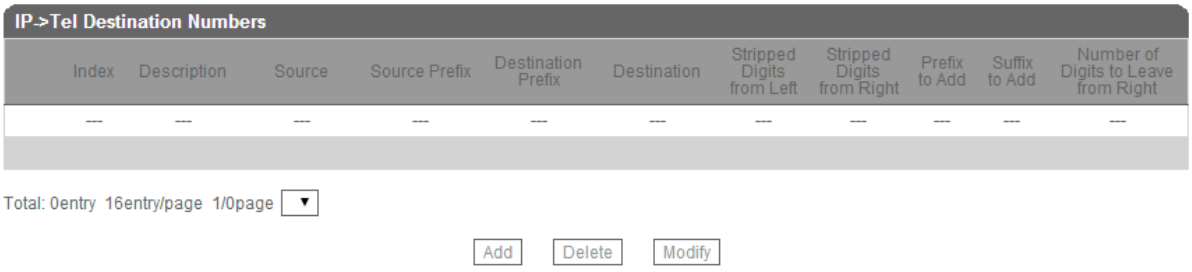


4.11 Manipulation Configuration

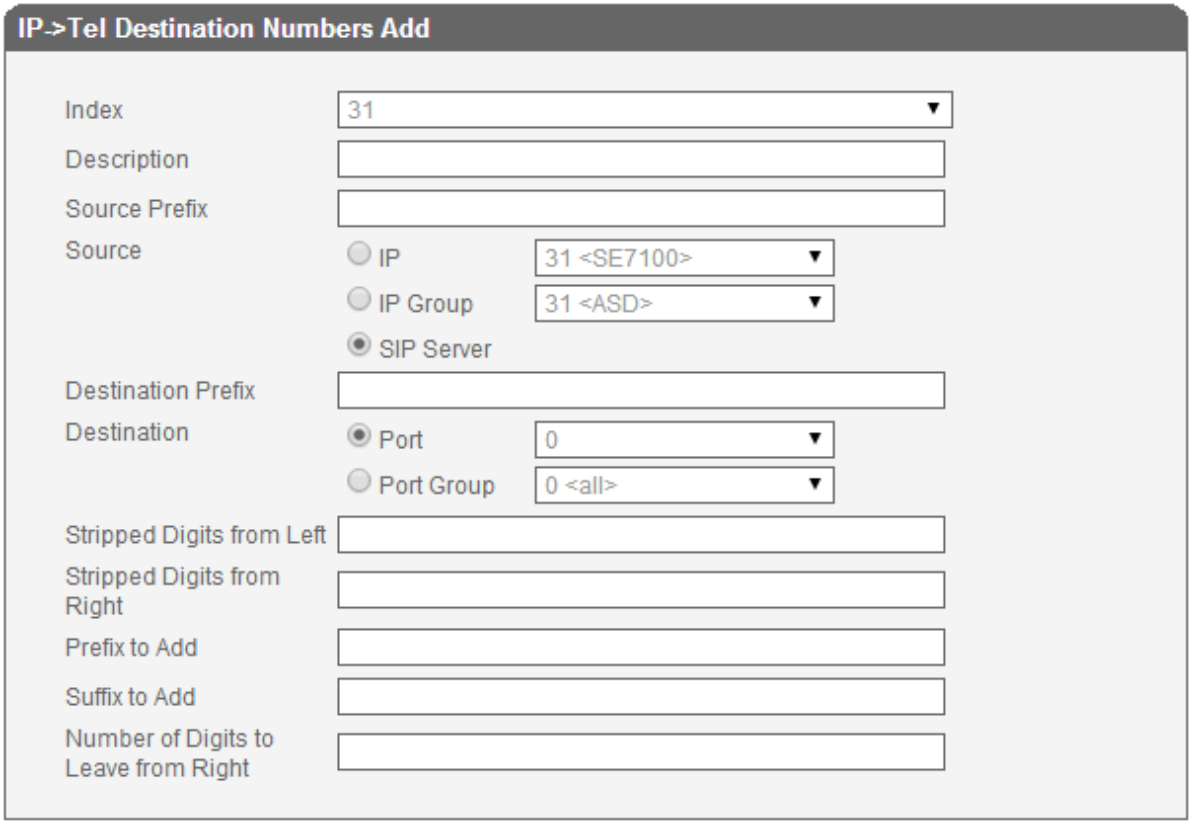
Number manipulation refers to the change of the destination number during the IP→ Tel calling process, the change of the source number during the Tel→ IP calling process, or the change of the destination number during the Tel→ IP calling process.

4.11.1 Configuration Procedures for Manipulating IP –> Tel Destination Numbers

Step 1. In the navigation tree of Web Management System, click **Manipulation Configuration → IP –> Tel Destination Numbers**, and the following interface will be displayed.



Step 2. Click **Add**, and the following interface will be displayed.



Parameter	Explanation
Index	You can choose any one from 0 – 31, but an index cannot be used repeatedly.
Description	You can enter any description you want.
Source Prefix	The prefix of the source number
Source	The source IP in the Operation → IP – Tel Operation interface
Destination Prefix	The prefix of the destination number
Stripped Digits from Left	The number of digits which are lessened from the left of the destination number
Stripped Digits from Right	The number of digits which are lessened from the right of the destination number
Prefix to Add	The prefix added to the destination number after its digits are lessened.
Suffix to Add	The suffix added to the destination number after its digits are lessened
Number of Digits to Leave from Right	The number of the retained digits which. are counted from the right of the destination number

Note: You can only configure some of the parameters according to your needs.

Parameters (Source Prefix, Source IP, Source IP Trunk and Destination Prefix) are the triggering conditions for number manipulation, while the remaining parameters (Stripped Digits from Left or From Right ,

Prefix/Suffix to Add and Number of Digits to Leave from Right) are the rules to change numbers.

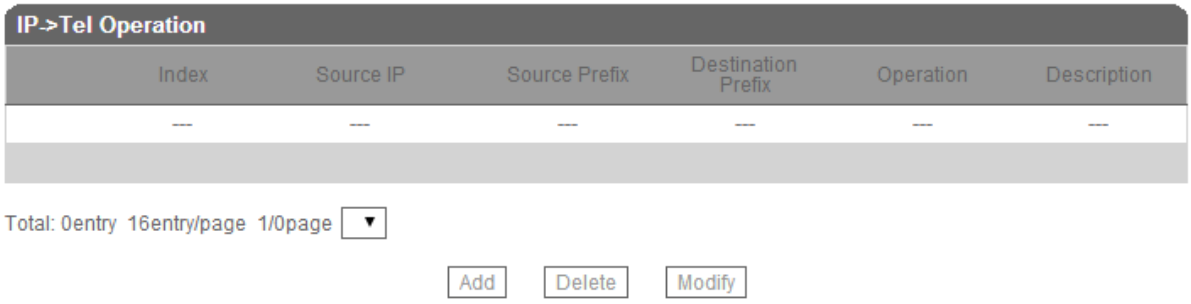
Step 3. Click **OK**

4.12 Operation

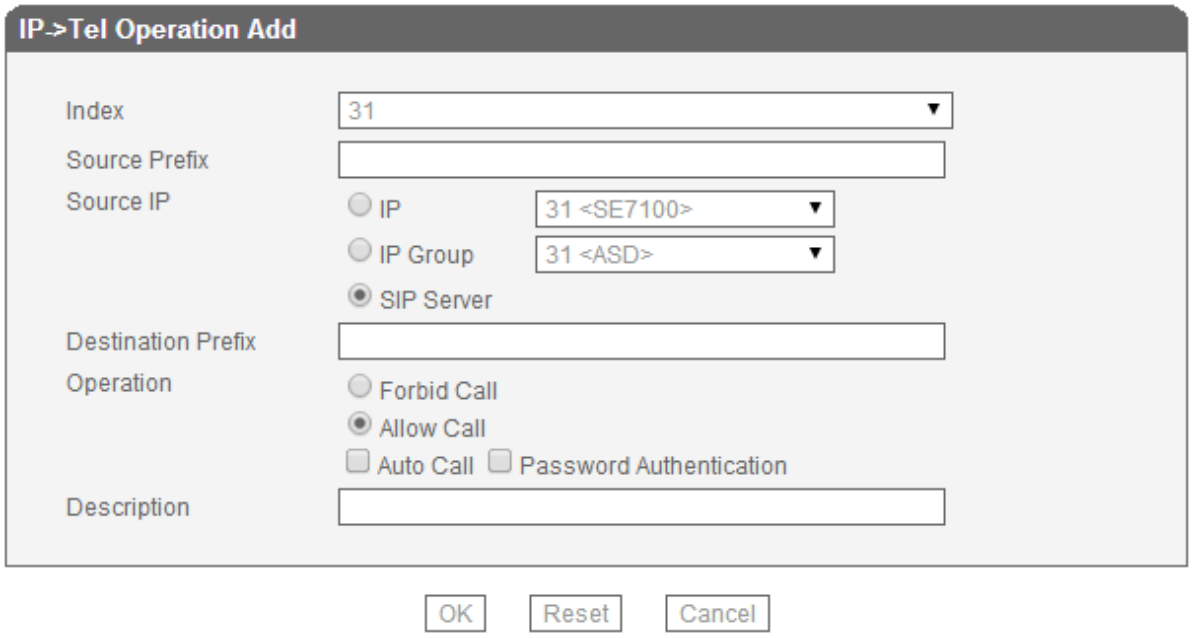
The Operation function is used to control outgoing calls and incoming calls. It can determine whether a call is allowed or forbidden.

4.12.1 Configuration Procedures for IP -> Tel Operation

Step 1. In the navigation, click **Operation → IP->Tel Operation**, and the following interface will be displayed.



Step 2. Click **Add** to configure the following parameters.



Parameter	Explanation
Index	The index of the operation

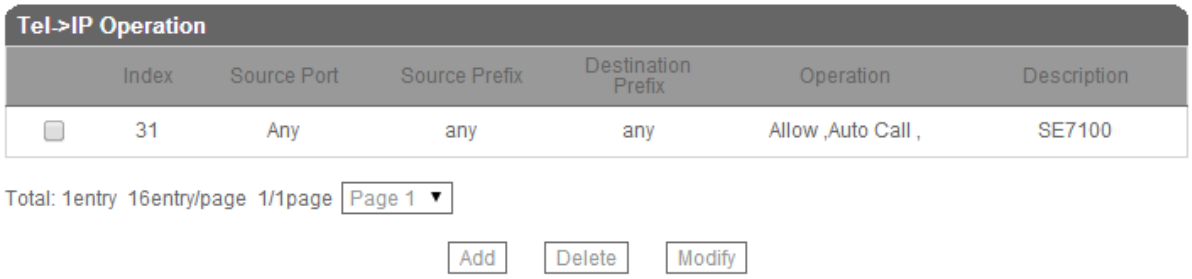
Source Prefix	The prefix of the source number. When a source number includes this prefix, the operation will be executed.
Source IP	The IP, IP Group or SIP Server linked to the operation.
Destination Prefix	The prefix of the destination number. When a destination number includes this prefix, the operation will be executed.
Operation	Operation includes Forbid Call, Allow Call, Auto Call and Password Authentication. For example, if source prefix is set as 200, the source number is 2009966, Allow Call and Auto Call are selected, the outgoing call of 2009966 will be dialed by the DWG2000 automatically.
Description	Enter any description that you want.

Note: If Auto Call is selected, IP -> Tel call will be dialed by the DWG2000 automatically.

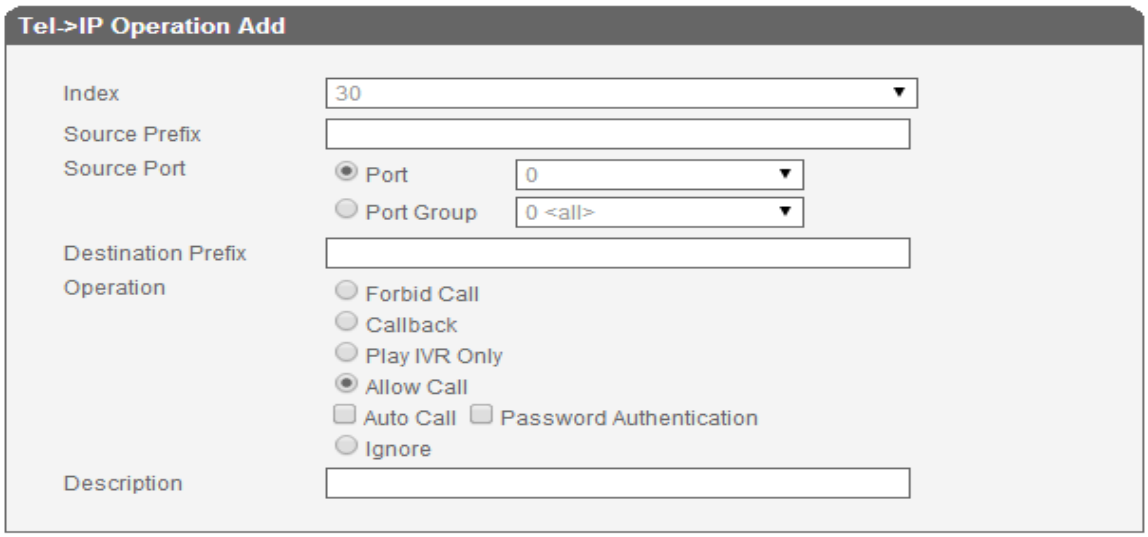
Step 3. Click **OK**.

4.12.2 Configuration Procedures for Tel -> IP Operation

Step 1. In the navigation, click **Operation → Tel -> IP Operation**, and the following interface will be displayed.



Step 2. Click **Add** to configure the following parameters.



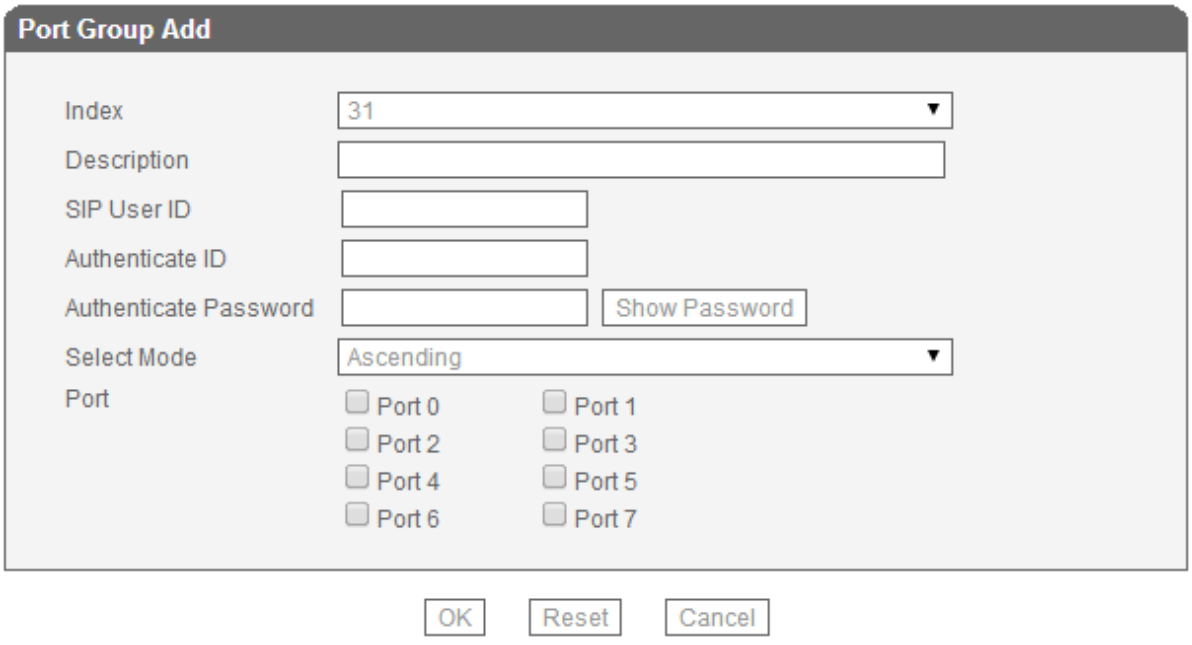
Parameter	Explanation
Index	The index of the operation
Source Prefix	The prefix of the source number. When a source number includes this prefix, the operation will be executed.
Source Port	A port or port group linked to the operation.
Destination Prefix	The prefix of the destination number. When a destination number includes this prefix, the operation will be executed.
Operation	Operation includes Forbid Call, Callback, Play IVR Only, Allow Call, Auto Call and Password Authentication.
Description	Enter any description that you want.

Step 3. Click **OK**.

4.13 Port Group Configuration

On the **Port Group** interface, you can include several ports into a group, which can be used in routings, operations and IP trunks.

Click Add, and the following interface will be displayed.

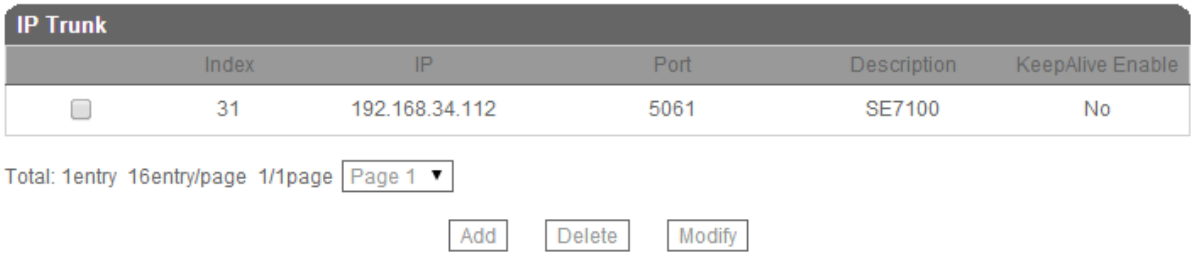


4.14 IP Trunk Configuration

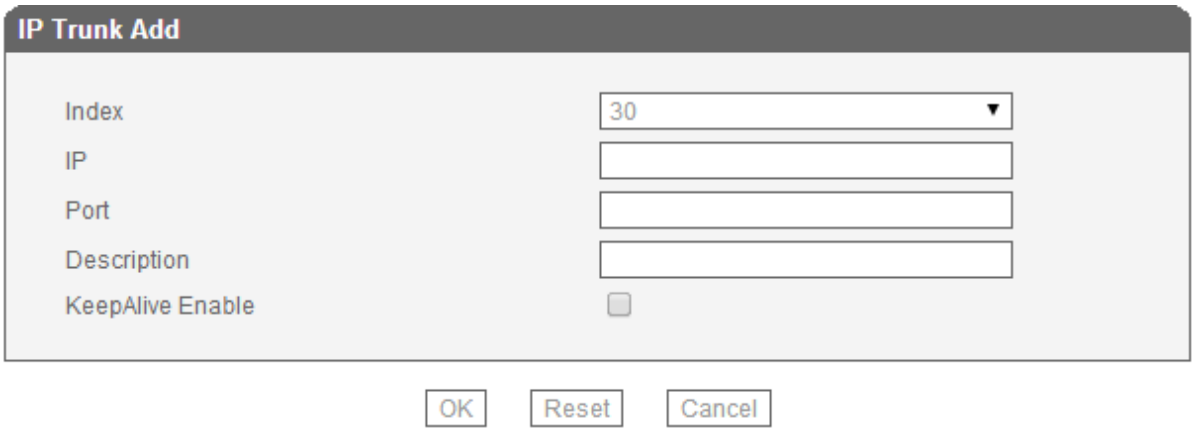
4.14.1 IP Trunk

Step 1. In the navigation tree, click **IP Trunk Configuration → IP Trunk**, and the following interface will

be displayed.



Step 2. Click the **Add** button to configure IP Trunk.



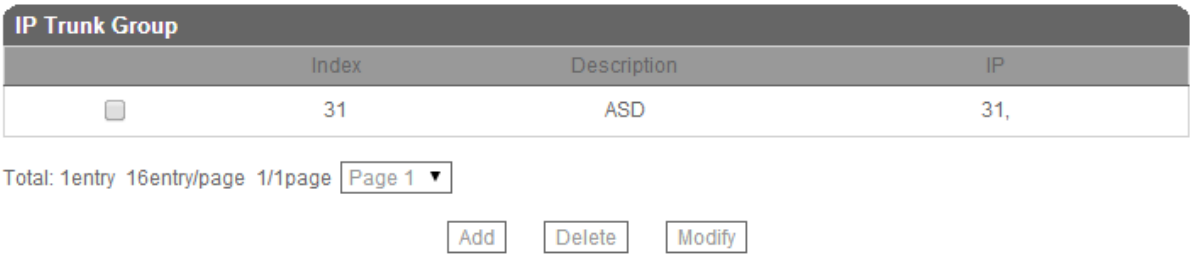
Parameter	Explanation
Index	You can choose any one from 0 – 31, but indexes of different IP trunk cannot be the same.
IP	The IP address of the device (for example: DAG) connected to the DWG2000.
Port	The port of the device (for example: DAG), through which the DWG2000 is connected to the device.
Description	You can enter any description you want.
KeepAlive Enable	If KeepAlive is enabled, the DWG2000 will examine whether the IP trunk is available or not.

Step 3. Click **OK** on the interface.

Step 4. If you need to delete or modify the IP trunk, click the ☐ on the left of the IP Trunk, and then click **Delete** or **Modify**.

4.14.2 Configuration of IP Trunk Group

Step 1. In the navigation tree of Web Management System, click **IP Trunk Configuration → IP Trunk Group**, and the following interface will be displayed.



Step 2. Click ☐ on the left of the IP trunks which you intend to include into the IP trunk group. (You need to select more than one IP trunks)

Step 3. Click **OK** on the interface.

Step 4. If you need to delete or modify the IP trunk group, click the ☐ on the left of the IP Trunk, and then click **Delete** or **Modify**.

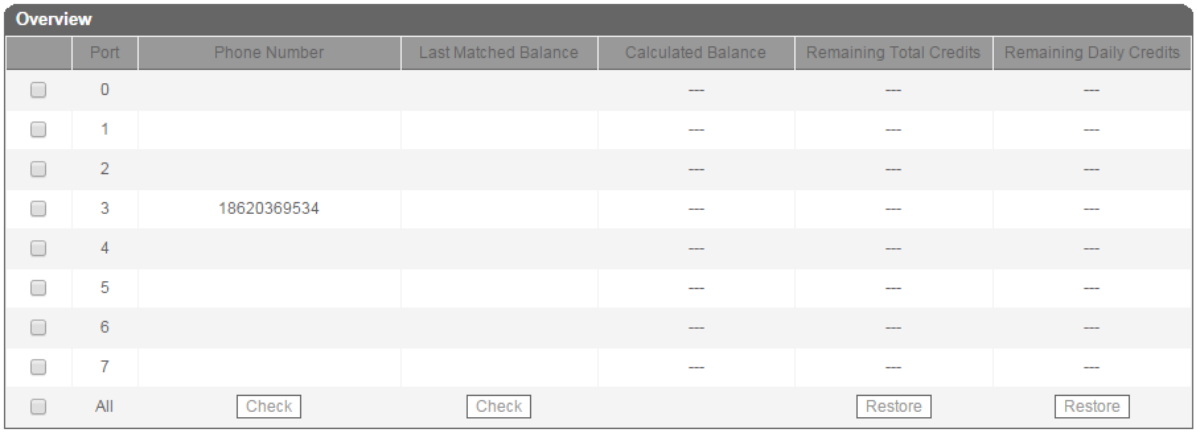
4.15 System Configuration

System configurations include service parameter, media parameter, SIP parameter, port parameter and DBO parameter.

4.16 Human Behavior

4.16.1 Overview

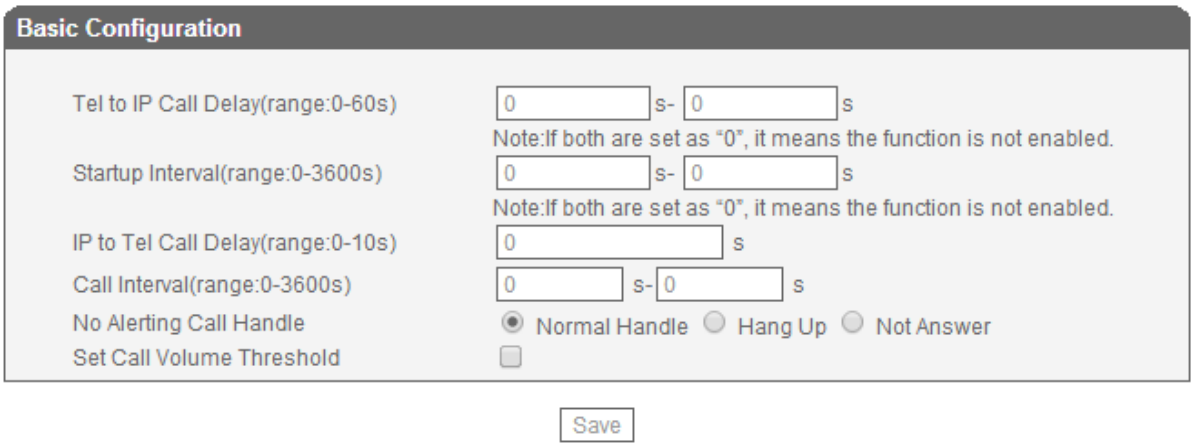
On the **Overview** interview, you can see the number, last matched balance (the balance that is assigned last time), calculated balance (the remaining balance), remaining total credits and remaining daily credits of a SIM card.



4.16.2 Basic Configuration

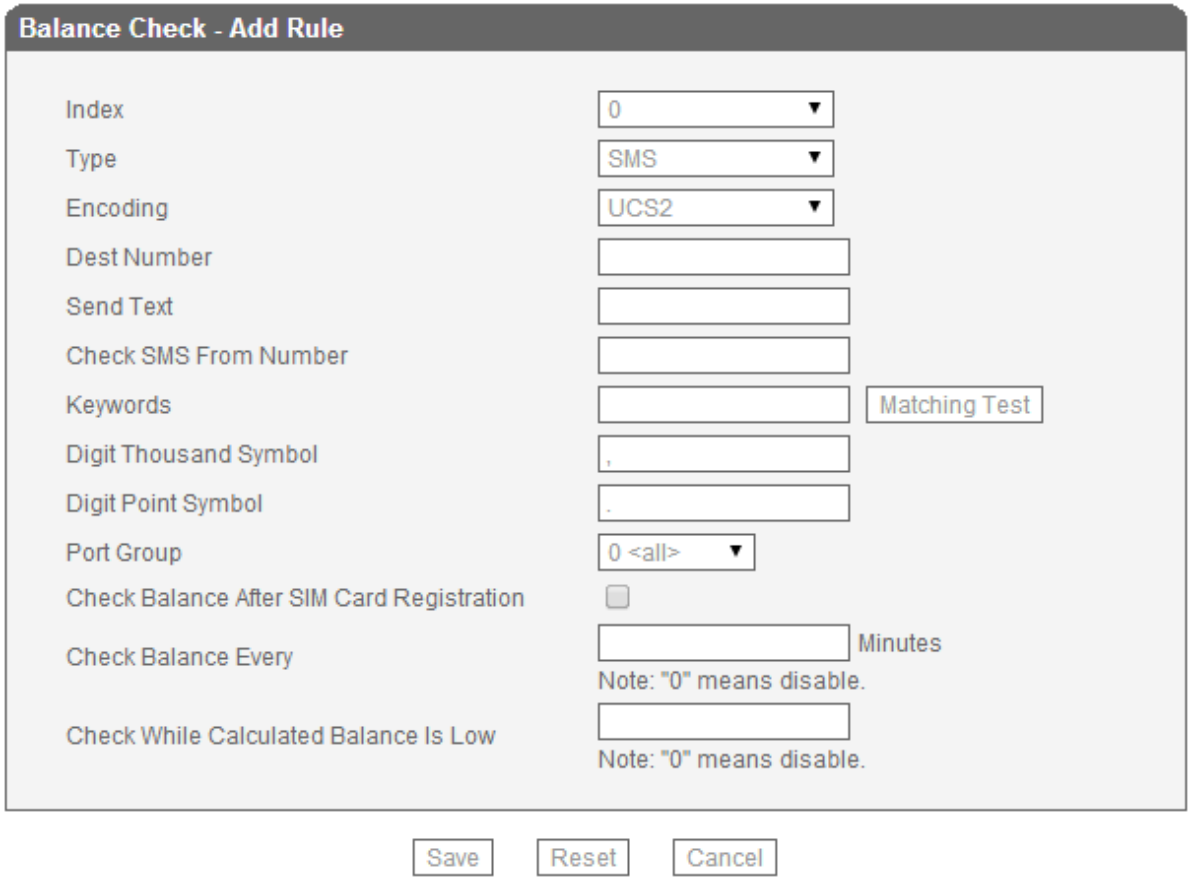
On the **Basic Configuration** interface, you can set how long an IP →Tel call or a Tel→IP call will be delayed, as well as call interval.

The ‘set call volume threshold function’ is mainly used for anti blocked (such as some operators launched special call testing for the detection of the VoIP equipment, call volume may is mute or great noise) .

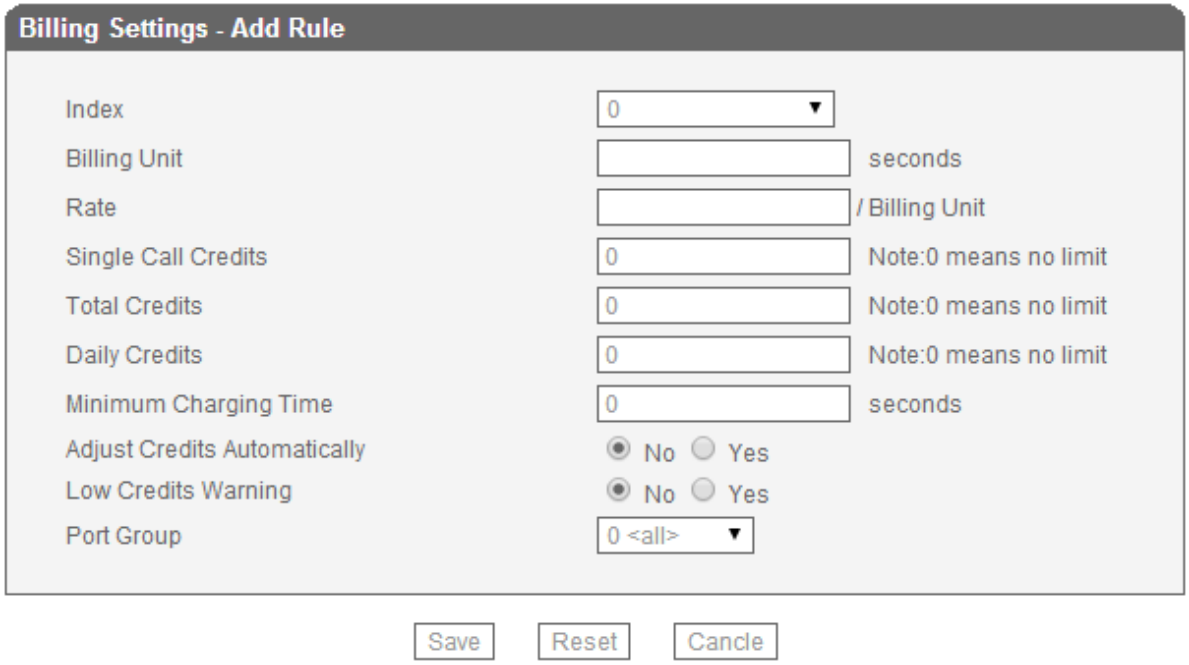


4.16.3 Balance Check

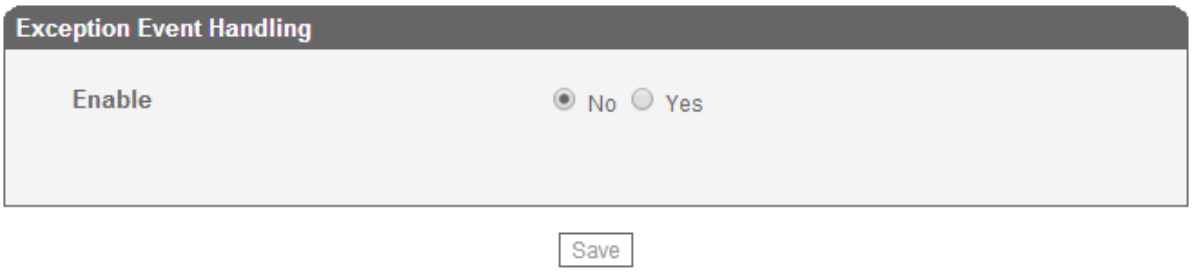
On the **Balance Check** interface, you can check the balance of a SIM card.



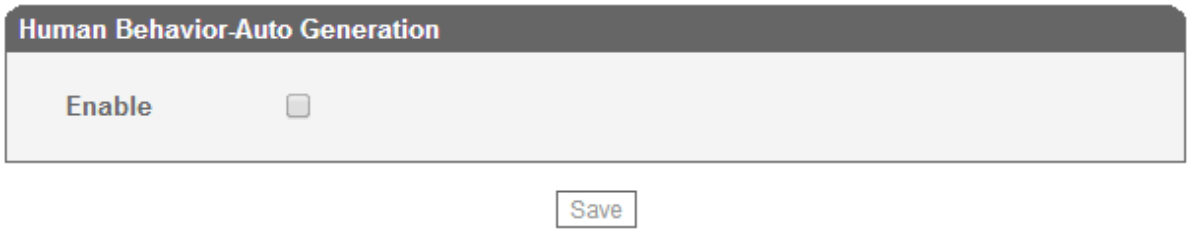
4.16.4 Billing Settings



4.16.5 Exception Event Handing



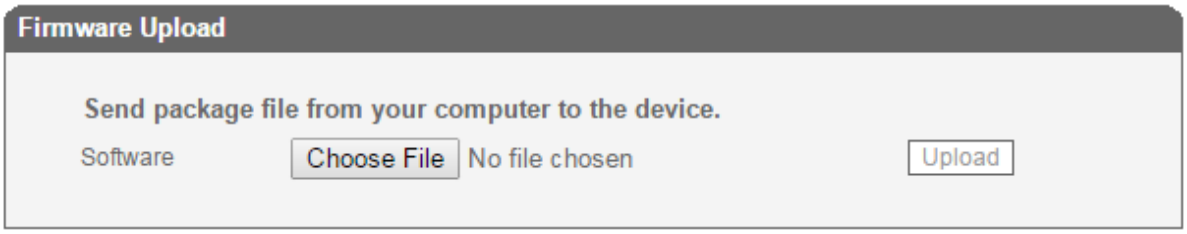
4.16.6 Auto Generation



4.17 Tools

4.17.1 Firmware Upload

On the **Tools → Firmware Upload**, you can upload a firmware to upgrade the DWG2000. But you need to restart the DWG2000 device for the change to take effect.



4.17.2 Provision

On the **Tools → Provision** interface, you can carry out some configurations to make the DWG2000 automatically upgrade with the latest firmware stored on a http server, ftp server or a ftp server.

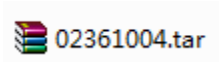
The following is an example where ftp server is taken as an example to show how to do the configurations.

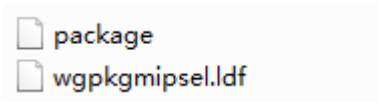
Configuration on FTP Server

Assume that the URL of the FTP server is //172.16.77.200.

Step 1. Open the ftp server, create a file folder under the following path: ftp://172.16.77.200/home, and then name the file folder as "36" (36 is the product ID of DWG2000).

Step 2. Ask the technical support to provide the following compression package, which contains two files (the "package" file and the "wgpkgmipsel.ldf" file).





Step 3. Open the "package" file, and copy the following words in the red box.

```
<?xml version="1.0" encoding="utf-8"?>
<provision version="1.0">
    <product id="23">
        <package ver="02231101" rely="02230701" buildtime="2015-02-28 21:42:21" name="wgpkgarmuc.ldf" type="official">
            <param name="boxapp.ldf" value="boxapp.ldf" ver="02231101" md5="e439491906f9e828594627e084627a07"/>
            <param name="box_fpga.ldf" value="box_fpga.ldf" ver="02231101" md5="216281e5fd6cd51314ddc1f2f3eff30c"/>
            <param name="config_default" value="config_default" ver="02231101" md5="003277db1a560cba91ced91e5a2861fc"/>
            <param name="drv" value="drv" ver="02231101" md5="e964b11dc47d784796280e653a68c5c8"/>
            <param name="dwg_db" value="dwg_db" ver="02231101" md5="7b3bbd811d4c7666220502d63bbdc4de"/>
            <param name="firmware" value="firmware" ver="02231101" md5="375767695cfd403e86ae05e7475c5a81"/>
            <param name="libsqlite3.gz" value="libsqlite3.gz" ver="02231101" md5="0466cbd4dc8f8bee48744dc9b0dbf3bf"/>
            <param name="net_hook.ko" value="net_hook.ko" ver="02231101" md5="021bad0a9467acf7c04d6e5c1ff560c1"/>
            <param name="pthtimer.ko" value="pthtimer.ko" ver="02231101" md5="f7bd8b29f571520b05dfa095b36a1d69"/>
            <param name="startapp" value="startapp" ver="02231101" md5="eb14ecef50eae97021b2d8e92caf8fd6"/>
            <param name="summary" value="summary" ver="02231101" md5="712db9f900250a8eca27be97afcb5ac4"/>
            <param name="udhcpc.script" value="udhcpc.script" ver="02231101" md5="9018a604c49edefee2c9edf9dea9a0d2"/>
            <param name="udpmux.ko" value="udpmux.ko" ver="02231101" md5="6409f2a3011cbe4df4298c78bd4d36a1"/>
            <param name="upgrade" value="upgrade" ver="02231101" md5="8d225d00bb9c24232164f933bee89810"/>
            <param name="usctp_daemon.gz" value="usctp_daemon.gz" ver="02231101" md5="4546f5d89ad0d53f2abd4f0d61fdcdb0"/>
            <param name="userboardapp.ldf" value="userboardapp.ldf" ver="02231101" md5="e89ef1134559f1bc426b40b0c29d2a76"/>
            <param name="userboardapp_v5.ldf" value="userboardapp_v5.ldf" ver="02231101" md5="01739aae44421b54a444bfe99976cfd3"/>
            <param name="userboardapp_v6.ldf" value="userboardapp_v6.ldf" ver="02231101" md5="5b357b3d079c7608f2606fdbc4dde7c6"/>
            <param name="userboard_fpga.ldf" value="userboard_fpga.ldf" ver="02231101" md5="3f360b9576443b17dc82d5477c8045b6"/>
            <param name="web" value="web" ver="02231101" md5="8ff13fb970728bc7d4fe3fb081b55ac1"/>
        </package>
    </product>
</provision>
```

Note: If more contents or less contents are copied, the configuration will fail.

The contents that are copied will be used later in the newly-created “default” file.

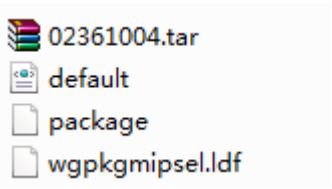
Step 4. Create a file in the “xml” format, and name the file as “default.xml”.

Step 5. Write the following contents on the “default.xml” file.

```
<?xml version="1.0" encoding="UTF-8"?>
- <provision version="1.0">
  - <product force="true" url="ftp://172.16.77.200/home/36" snfilter="" id="36">
      <package type="official" name="wgpkgmipsel.ldf" buildtime="2015-04-20 18:54:57" rely="" ver="02361004"/>
    </product>
</provision>
```

Note: The url is ftp://172.16.77.200/home/36 and product id is 36 in the above file.

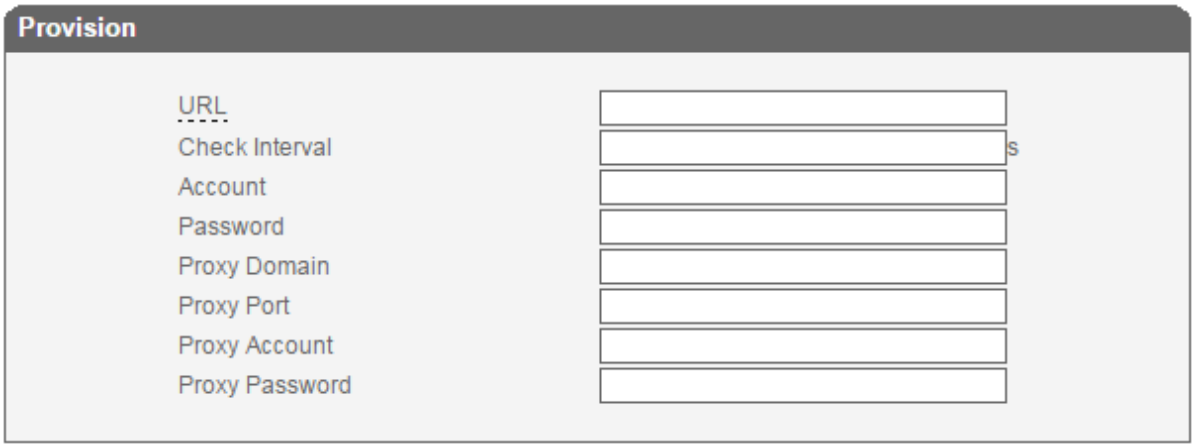
Step 6. Put the following files in the “36” folder. (Except the “default” file, other files are provided by DINSTAR.)



Configuration on DWG2000

Step 1. Log into the Web Management System of the DWG2000.

Step 2. On the navigation tree on the left, click **Tools → Provision**, and the following interface will be displayed.



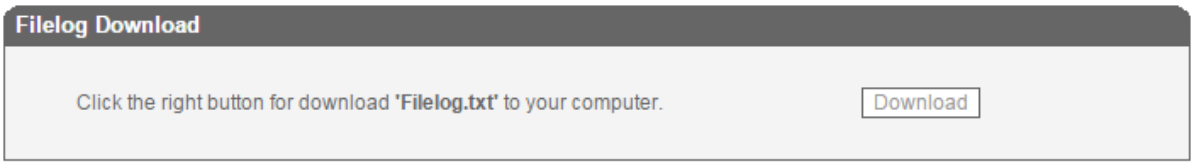
Parameter	Explanation
URL	The URL of the ftp server, for example, ftp://172.16.77.200/home
Check Interval:	The interval to check where there is a new firmware in the ftp://172.16.77.200/home
Account	The login name of the ftp server
Password	The login password of the ftp server

Proxy Domain, Proxy Port, Proxy Account and Proxy Password are optional to be configured.

Step 3. Click the **Save** button.

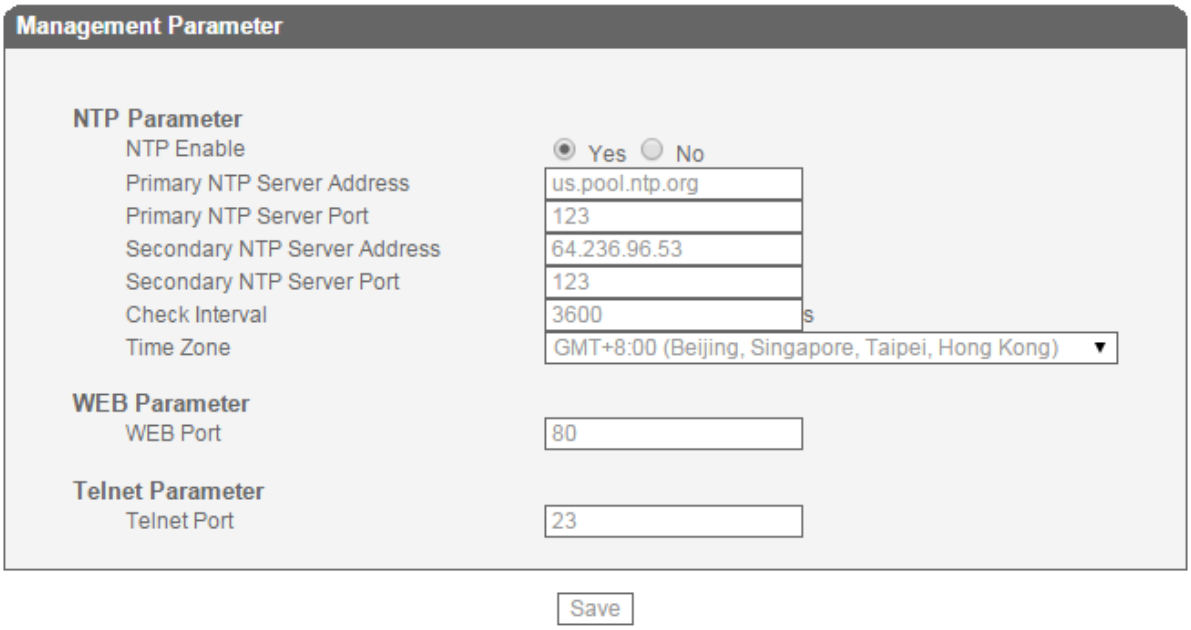
4.17.3 Filelog Download

The filelog which indicates the details of the operations carried out on the DWG2000 device can be downloaded on the **Tools → Filelog Download**.



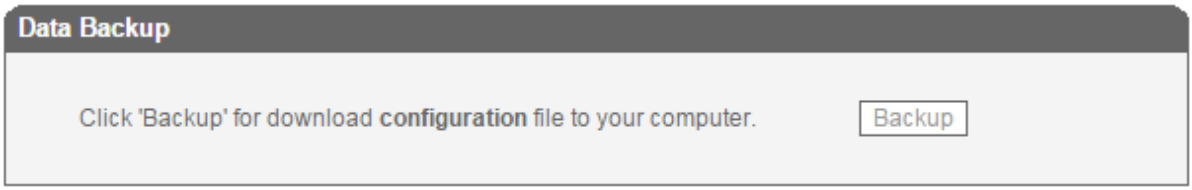
4.17.4 Management Parameter

On the **Tools → Management Parameter** interface, the NTP (Network Time Protocol) can be enabled. If the function is enabled, the DWG2000 can automatically adjust the real time according to the NTP address and its time zone



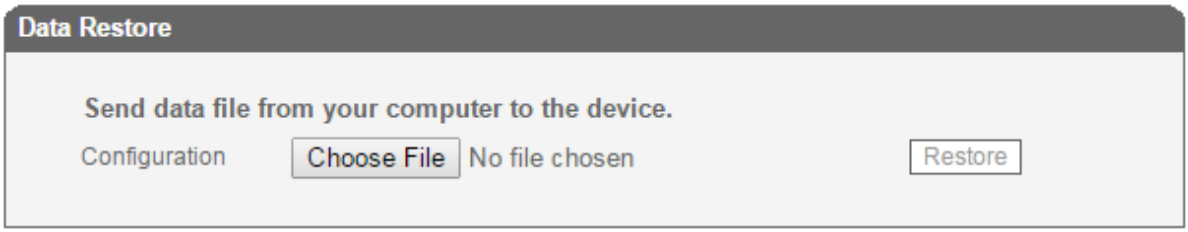
4.17.5 Config Backup

On the **Tools → Config Backup** interface, you can download data as a back for the DWG2000 device.



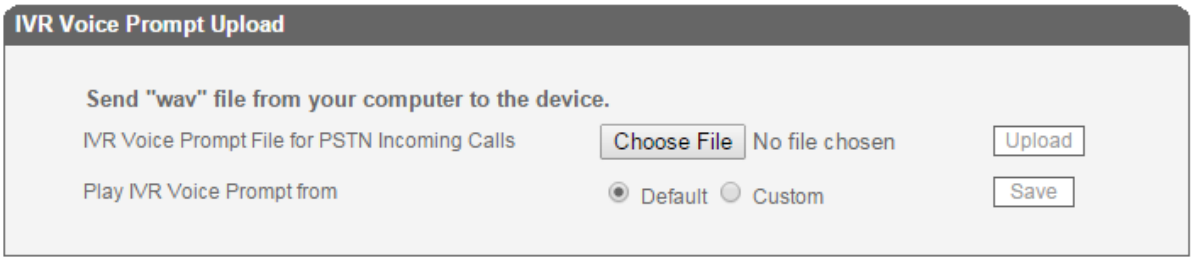
4.17.6 Config Restore

On the **Tools → Config Restore** interface, you can upload a file to restore the data of the DWG2000 device.



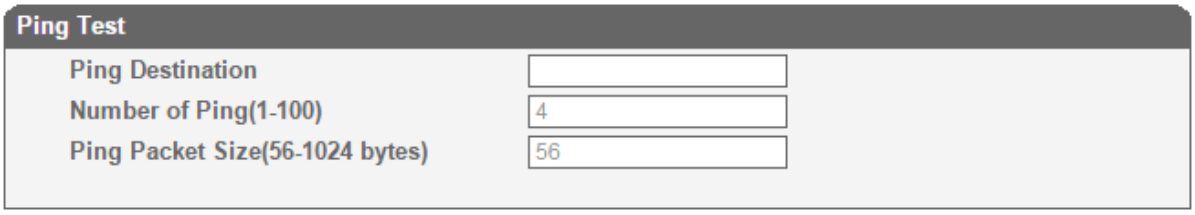
4.17.7 IVR Voice Prompt Upload

On the **Tools → IVR Voice Prompt Upload** interface, you can upload an IVR prompt or set a default IVR prompt for PSTN incoming calls.



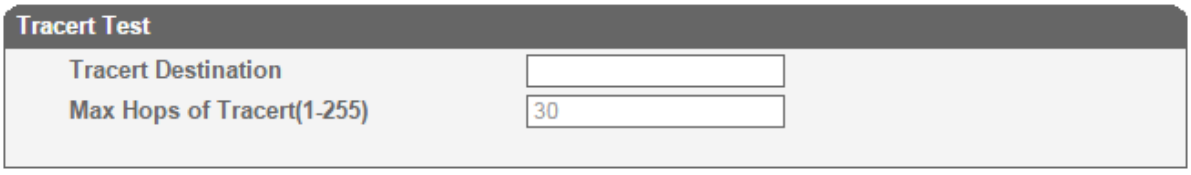
4.17.8 Ping Test

On the **Tools → Ping Test** interface, you can use Ping to check whether the network is working or not.



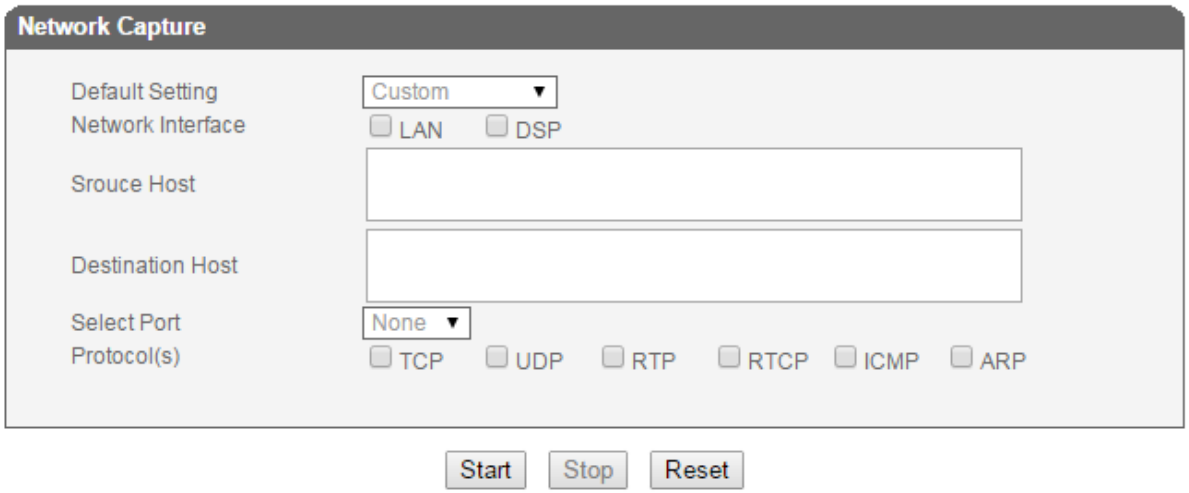
4.17.9 Tracert Test

On the **Tools →Tracert Test** interface, you can check the routes of the tracert destination.



4.17.10 Network Capture

On the **Tools →Network Capture** interface, you can capture data packages of the available network ports.

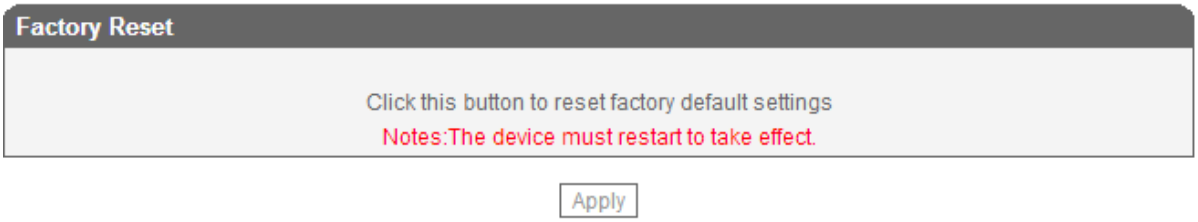


4.17.11 Username & Password

If you want to change the username or password of the DWG2000 device, click Tools → Username & Password. You are required to enter old username and password before inputting new username and password.

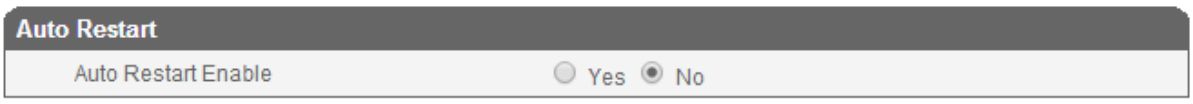
4.17.12 Factory Reset

On the **Tools → Factory Reset** interface, click **Apply**, and the DWG2000 device will be reset the factory settings.



4.17.13 Auto Restart and Manually Restart

On the **Tools → Auto Restart** interface, you can choose enable or disable Auto Restart.



On the **Tools → Restart** interface, you can manually restart the DWG2000 device.