

IP870

Operation Manual

Voice Communication for Free

DSG Technology, Inc.

www.dsgtechnology.com

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Understanding Your IP870

Congratulations! You have selected the world's most future-proof Internet Telephony product.

IP870 is an innovative and standards compliant **Voice over Internet Protocol (VoIP)** solution for corporations and individuals. IP870 allows various connection modes such as IP870-to-IP870, IP870-to-IPStar, IP870-to-InterStar, IP870-to-InterPhone and IP870-to-Phone via Internet or other TCP/IP networks.

You start saving big budgets by owning an IP870 today! Better yet, thanks to DSG's **JustDialIt** technology, your receiver end does not need another IP870 to enjoy this advanced VoIP technology. Your long-distance and international call charges will disappear with this extraordinary device. It is the first Ethernet phone device that offers full duplex, supreme quality and low latency voice conversation via Internet/Intranet at extra-low charges.

A Brief Overview

In the past, real-time voice information is sent over the Public Switched Telephone Network (PSTN). With the Circuit-switched technology, every call takes up a dedicated bandwidth. End-to-end calls are established on the basis of a sequence of dialed digits, and the PSTN dedicates a physical path between callers. Although the telephone equipment establishes the call path at the beginning of the call, the path may change between calls, but not during any specific call.

In comparison with a PSTN, an Internet Protocol (IP) network has a packet-switched architecture. Devices transmit data in packets, and the path from end to end can vary within an established session. In addition to data, packets also contain addressing information, which routing devices used to send information to its destination. Routing devices maintain tables which instruct them how to direct packets. As networking environments change, routing devices are updated with dynamic protocols.

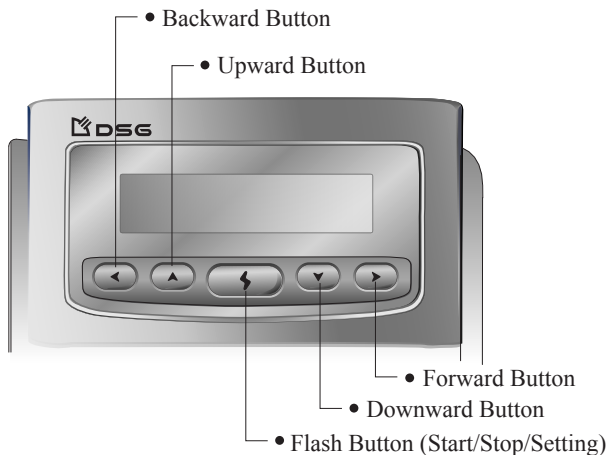
Traditionally, the PSTN was the only network supporting voice communication. With an IP870, voice traffic can be sent over IP-based packet-switched networks!

No Computer Needed

IP870 possesses its own processor and network interface; it works intelligently! Simply enter the Internet access information into your IP870, then you are ready to talk as long as you wish via Internet. All of the communication cost will be eliminated except a local Internet connection charge.

User - Friendly Interface

With a back-lit LCD display and five buttons, IP870 is extremely easy to use and to configure. Smart setup program makes your IP870 ready to go in three minutes. You can clearly monitor all the system status from the LCD panel.



Main Features

IP870 is an amazing electronic device being made. In addition to Device-to-Device Mode, the unparalleled IP870-to-Phone Mode greatly enhance the capability of voice communication by using Internet or TCP/IP networks. IP870 users can save significantly on long-distance and international call charges with these features.

Device-to-Device Mode

If the party you wish to call is equipped with an IP870 or other DSG VoIP devices like IPStar, InterStar, InterPhone or IP770, you may enter the Device ID directly and talk to the remote device owner instantly.

Every DSG VoIP Device has a unique ID number. Make sure that your receiving user is already online, simply dial the ID number of the receiving device and you will be automatically connected. Or you may use IP Phone Book to call the receiving party with user-defined codes.



Device-to-Phone Mode

With great interoperability, IP870 is capable of connecting to other Internet Telephony products like *IP2000 Gateways**. With an active *Internet Telephony Service Provider** (ITSP) account or Device ID Account, you can call all the covered areas with ultra low rates. In this mode, the receiver end does not need an IP870.



Note: An Internet Telephony Gateway is a gate between Internet and PSTN (Public Switched Telephone Network). The Internet Telephony Gateway enables callers using Internet to talk to regular phone users without traditional telecommunication services.

Note: To use Device-to-Phone Mode, callers must apply an active ITSP account number from DSG compatible ITSPs. Please check www.dsgtechnology.com and refer to **Chapter 6 How to Get an ITSP Account** for further information.

Free Online Upgrade

The design of IP870 is extremely flexible. More and more selections and options will be added into your IP870 via the online upgrade function. You are guaranteed to enjoy the latest Internet Telephony technologies at no cost.

Installing Your IP870

Connecting IP870 is as simple as connecting a regular telephone.

Package Contents

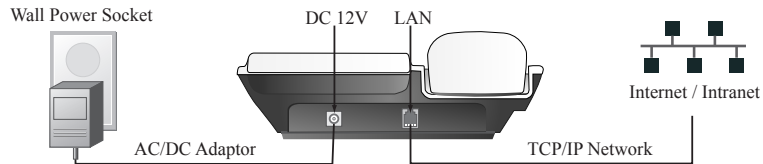
In your IP870 package, you will find:

- An IP870
- A quick start guide
- A warranty card
- A 12V/1A DC power adapter
- An RJ-45 network cable



Installing Your IP870

As shown in the following graph, connecting IP870 is as simple as connecting a telephone.



To install the IP870

1. Plug one end of the network cable in the Ethernet hub.
2. Plug the other end of the network cable in the RJ45 jack labeled LAN on your IP870.
3. Plug power adapter into an electrical outlet.
4. Plug the DC adapter connector into IP870 power socket labeled DC 12V.

After turning the power on, you will see IP870 's LCD screen shows:



After the system checking process, you will see IP870 's LCD screen shows:



You can pick up your telephone handset at this stage. If you hear a ready tone that means you have successfully completed the installation.

Note: If you see the "@" symbol flashing that means your IP870 has not successfully connected to the Internet. Please refer to **Chapter 3 IP870 Configuration Mode**.

Basic Requirements to Use IP870

Please check the following list in order to make an Internet call through your IP870.


- An active Internet connection
 - If you have a static IP
 - ✓ Your Internet IP address
 - ✓ Your Gateway IP address
 - ✓ Subnet Mask of your Internet environment
 - If you are a PPPoE client
 - ✓ User name
 - ✓ Password

- An 110/230V electrical outlet

IP870 Configuration Mode

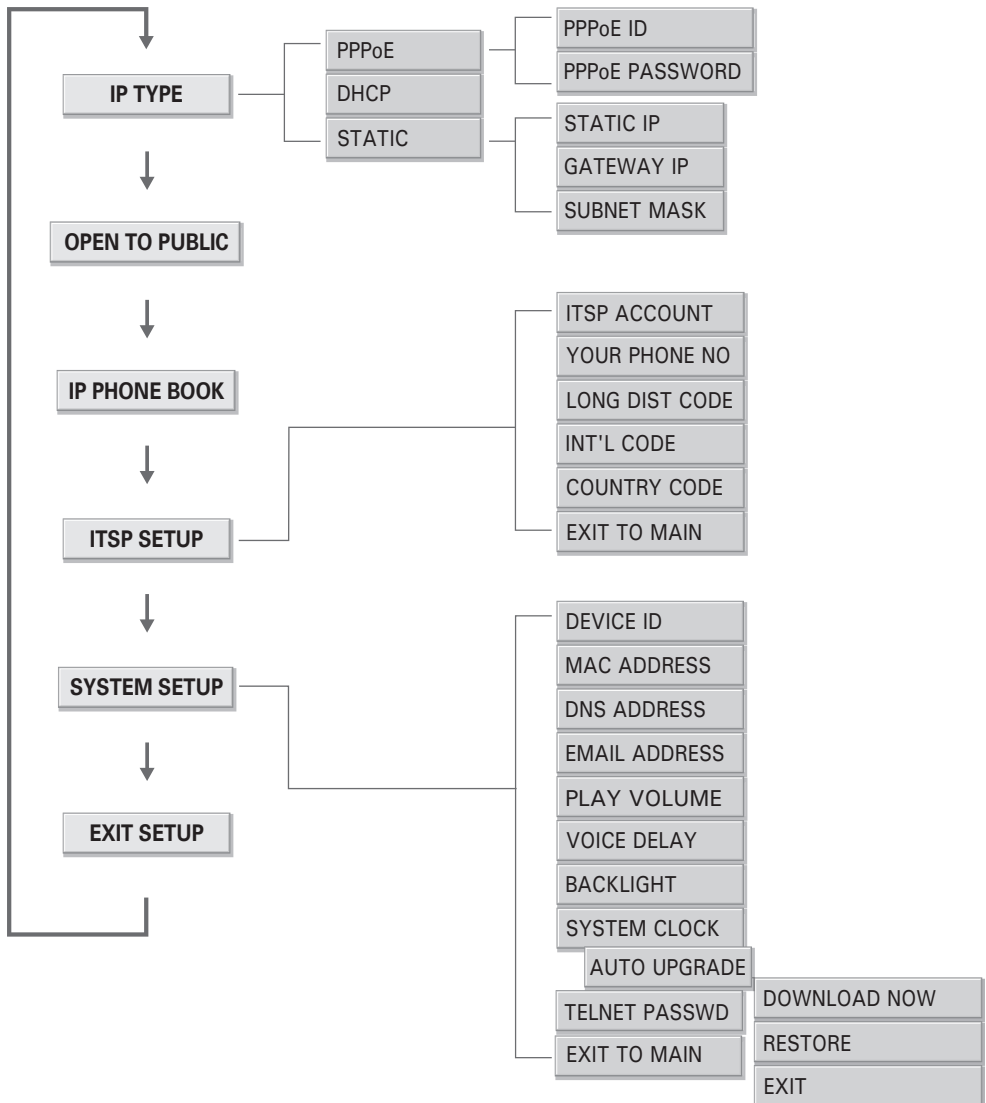
With our smart configuration program, your IP870 is ready to use in three minutes!

Entering Configuration Mode

Press and hold IP870  for 2 seconds. IP870 will switch to Configuration Mode and display **IP TYPE**:



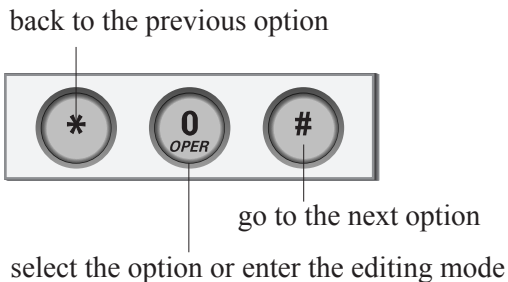
Structure of Configuration Mode



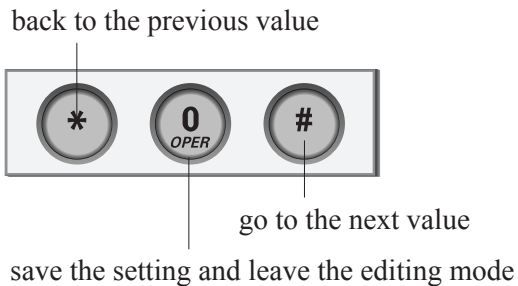
Using Phone Keypad to Configure IP870

To configure your IP870, use the keypad on IP870 to scroll the menu and to input the necessary information as below:

Browsing the Menu



Selecting Between Fixed Values



Editing the Data of an Option



* backspace and
delete the character

add a space

Key	Characters
[1]	1 ~ ! # \$ % ^ & * () _ □ + ! : " < > ? - = ; ' / -
[2]	2 a b c A B C
[3]	3 d e f D E F
[4]	4 g h i G H I
[5]	5 j k l J K L
[6]	6 m n o M N O
[7]	7 p q r s P Q R S
[8]	8 t u v T U V
[9]	9 w x y z W X Y Z
[0]	0 . , @
[*]	*
[#]	#

Tips: Performing hook-flash (momentarily depressing the hook-switch) will save the current setting and escape to upper menu level.

Using Buttons to Configure IP870

The functions of five buttons on IP870 are described as following:

Browsing the Menu
















- go to the next option
- select the option or enter the editing mode
- back to the previous option

Basic Setup (Device-to-Device / Device-to-Phone Mode)

Before you start using your IP870, you need to subscribe an Internet access line from your local ISP. It could be ADSL, Cable Modem or Leased Line. You will be given the following information: (1) Available IP address (2) Gateway IP address (3) Subnet mask.











Some DSL ISPs provide PPPoE connections with end users. If you use dial-up DSL and obtain a dynamic IP address automatically from your DSL ISP, you will be given (1) User Name (2) Password.

If you can obtain a static IP address from your ISP, setup your Internet access as below.

1. Press and hold  button for 2 seconds and the LCD screen will show **IP TYPE**. Pick up the handset and press  to edit this option.
2. Press  till the LCD screen displays **STATIC**. Press  to save.
3. Press  and the LCD screen will show **STATIC IP**. Press  to edit this option. Use the keypad to input one of the IP address. Press  to save.
4. Press  and the LCD screen will show **GATEWAY IP**. Press  to edit this option. Input the gateway IP address with your keypad. Please check your ISP or network administrator for this information. Press  to save.
5. Press  and the LCD screen will show **SUBNET MASK**. Press  to edit this option. Input your subnet mask with your keypad. Please check with your ISP or network manager for this information. Press  to save and exit.







If you are a PPPoE client and obtain a dynamic IP address from your DSL ISP, setup your Internet access as below.


1. Press and hold  button for 2 seconds and the LCD screen will show **IP TYPE**. Pick up the handset and press  to edit this option.
2. Press  till the LCD screen displays **PPPoE**. Press  to save.
3. Press  and the LCD screen will show **PPPoE ID**. Press  to edit this option. Refer to the above character conversion chart and use the keypad to input your User ID. Press  to save.
4. Press  and the LCD screen will show **PPPoE PASSWORD**. Press  to edit this option. Input your password from your keypad. Press  to save and exit.




If your network has a DHCP server assigning an IP address automatically when you log in, setup your Internet access as below.

1. Press and hold  button for 2 seconds and the LCD screen will show **IP TYPE**. Pick up the handset and press  to edit this option.
2. Press  till the LCD screen displays **DHCP**. Press  to save and exit.



Tips: If you connect to the Internet with a dynamic IP address using PPPoE or DHCP, you could check what your IP address is by pressing  button when on-hook. Your IP address will show on the LCD screen. You can use this IP address to Telnet your IP870.

■ ITSP Setup (Device-to-Phone Mode)

Tips: If you use PPPoE for connecting to the Internet, you could shutdown the Internet connection by pressing and holding  button for 2 seconds when off-hook. You will see the steady @ sign on the LCD screen turn to be a flashing @ sign. To retrieve the Internet connection, repeat the above procedure.

Note: If your network is in NAT environment, you will be able to use IP870 with pseudo or private IP addresses after performing the port mappings. Please refer to Chapter 7 How to Setup IP870 in NAT Environment.

ITSP Setup (Device-to-Phone Mode)

The Device-to-Phone Mode allows your IP870 to connect to a compatible gateway, such as DSG IP2000, so that the receiving party is able to receive an Internet phone call with a regular phone. To use the Device-to-Phone Mode, you may use the default account* or you need to get a valid ITSP account* and enter all of required information in ITSP Setup section.



Note: The default account is the 6-digit Device ID preset in your device when you purchase the IP870. You may ask your retailer or dealer to credit the Device ID so you can use it instantly.

Note: Please check www.dsgtechnology.com and refer to Chapter 6 How to Get an ITSP Account for further information about applying an active ITSP account number from DSG compatible Internet Telephony Service Providers (ITSP).

Press  on **ITSP SETUP** to enter the Sub-menu.



ITSP Account ID (Required for Device-to-Phone Mode)

If you use the 6-digit Device ID Number as your account of credit, you don't have to input anything in this item.

1. With **ITSP ACCOUNT** displayed, press  to edit.
2. Use the keypad on IP870 to input the account number obtained from your ITSP.
3. Press  to save and exit edit mode.





Your Phone Number (Optional)

1. With **YOUR PHONE NO** displayed, press  to edit.
2. Use the keypad on IP870 to input your phone number.
3. Press  to save and exit edit mode.





Long-distance Code (Required for Device-to-Phone Mode)

1. With **LONG DIST CODE** displayed, press  to edit.
2. Use the keypad on IP870 to input the code for making a domestic long-distance phone call. For instance, the long-distance code in USA is **1**.
3. Press  to save and exit edit mode.





International Code (Required for Device-to-Phone Mode)

1. With **INT'L CODE** displayed, press  to edit.
2. Use the keypad on IP870 to input the code for making an international phone call. For instance, the international code in USA is **011**.
3. Press  to save and exit edit mode.



Country Code (Required for Device-to-Phone Mode)

1. With **COUNTRY CODE** displayed, press  to edit.
2. Use the keypad on IP870 to input the country code. For example, the country code of USA is **1**.
3. Press  to save and exit edit mode.




Exit to Main Menu

Press  on **EXIT TO MAIN** to leave **ITSP SETUP** section.



System Setup

This section consists of all settings for your IP870 device. You can adjust these settings to maximize the performance of IP870. Press  on **SYSTEM SETUP** to enter the sub-menus.



Device ID (Non-editable)

Every IP870 has its own unique six-digit ID. When using the Device-to-Device Mode, you can talk to another online IP870 by simply entering the six-digit ID with a leading [*] key. This is a non-editable field.



MAC Address (Non-editable)

MAC address is a unique serial number burned into the device. It is the physical address to identify a device on network. This is a non-editable field.





DNS Address

IP870 comes with a default DNS Address 168.95.1.1. If your ISP requires subscribers using specific DNS. If yes, edit the DNS assigned by your ISP.





E-mail Address (Optional)

1. With **E-MAIL ADDRESS** displayed, press  to edit.
2. Use the keypad on IP870 to input your e-mail address.
3. Press  to save and exit edit mode.





Play Volume

1. With **PLAY VOLUME** displayed, press  to edit.
2. Use the keypad or buttons on IP870 to input the level of play volume. The valid range is from 1 to 9. The default setting is 5.
3. Press  to save and exit edit mode.





Voice Delay

1. With **VOICE DELAY** displayed, press  to edit.
2. Voice delay is the variation of delayed data experienced during the packet routing and switching over the Internet. Occasionally, the Internet traffic flow is not stable, you can adjust the value to **HIGH** in order to obtain a better voice quality. Use the buttons on IP870 to select the setting from **Low**, **Medium** or **High**. The default setting is Low.
3. Press  to save and exit edit mode.





Backlight

1. With **BACKLIGHT** displayed, press  to edit.
2. The LCD screen is always lit if this parameter is set to **On** or turn it off by switching this parameter to **Off**. If this parameter is set to **Automatic**, the LCD screen light is on whenever the user picks up the phone or when there is an incoming call. Use the keypad on your phone or buttons on IP870 to select from these three options. The default is set on **Automatic**.
3. Press  to save and exit edit mode.



System Clock

1. With **SYSTEM CLOCK** displayed, press  to edit.
2. Use the keypad on your phone or buttons on IP870 to input the time. IP870 uses the 24-hour setting. The valid range is from 00:00:00 to 23:59:59.
3. Press  to save and exit edit mode.



Auto-Upgrade

This function allows you to download new version of software through Internet to your IP870. Please refer to **Chapter 5 Upgrading Your IP870**.




Telnet Password

This function allows you to change the password when using Telnet to enter the configuration mode of IP870. The default setting is **0000**. Please refer to **Chapter 7 How to Setup IP870 in NAT Environment**.





Exit to Main Menu

Press  to leave **System Setup** sub-menu.




Open to Public (Optional)







1. With **OPEN TO PUBLIC** displayed, press  to edit.
2. This option allows you to be visible or invisible from remote parties on the Internet. In either **ON** or **OFF** mode, you can initiate Internet phone calls. In **OFF** mode, you will not be reached by your Device ID. However you could still be reached by IP address. Use the keypad or buttons on IP870 to select the setting. The default setting is **ON**.
3. Press  to save and exit edit mode.



Note: In **OFF** mode, you won't see the @ sign shown on the LCD even though you are connected to the Internet. In **ON** mode, you can see a steady @ sign shown on the LCD screen.

Tips: You can switch to the other mode by pressing and holding  button for 2 seconds when off-hook, without the need of entering the configuration mode. You can judge your current mode by the appearance of @ sign. The temporary switch does not change the settings on IP870.

Edit Your IP Phone Book

1. Press and hold  button for 2 seconds and the LCD screen will show
 □ **IP TYPE**.
2. Use the buttons on the IP870 to scroll the menu.
3. Press the  on the IP870 when you scroll to **IP PHONE BOOK**.
4. Pick up your phone and press  key to input or edit the Phone Book entries.
5. Key in the name for the entry using the character converter chart stated prior in this chapter. Press the  on your IP870 to save.
6. Key in the IP address and press the  on your IP870 to save.
7. Press the buttons on IP870 to scroll to another entry.
8. Repeat steps 4 to 7 to input more IP Phone Book entries. You can save up to 10 entries.
9. You can scroll to **EXIT TO MAIN** and press  to exit to main menu.

Tips: *Performing hook-flash (momentarily depressing the hook-switch) will save the current setting and escape to upper menu level.*

□

Making Internet Calls

With DSG JustDialIT Technology, operating IP870 is like using a regular phone!

If you have finished the configuration in Chapter 3, then you are set to go with your newly programmed IP870.

For Internet users: There are two modes available to make an Internet phone call with your IP870.

- Device-to-Device Mode
- Device-to-Phone Mode

For Intranet (TCP/IP Networks) users: By setting the correct IP Address, Gateway IP and Subnet Mask, you can use the Device-to-Device Mode as an Internet application.

Making a Device-to-Device Call

1. Check to see that the party you wish to call is equipped with an IP870 or other DSG VoIP devices like InterStar, InterPhone, IPStar or IP770.
2. Make sure that you and your receiving party have the device connected to the Internet*.
3. Pick up the handset and you will hear a ready tone*.
4. There are 3 possible ways for you to call the receiving party:
 - a) **Dial the Device ID number of the remote IP870.**

Every IP870 has a unique six-digit ID number found at the bottom of the device. For example, if the receiving IP870 is 555888, then you dial ***555888** and followed by a **#** key to speed up the connecting process.
 - b) **Dial the IP Address directly*.**

For example: if the IP address of the receiving IP870 is 200.111.66.8, then you enter **200*111*66*8** and followed by a **#** key to speed up the connecting process.
 - c) **Dial the entry number in your IP Phone Book.**

There are 10 available entries in your IP Phone Book numbered from 00 to 09. For example: if you program the 2nd entry of your IP Phone Book as 200.111.66.8, by dialing **2#** and followed by a **0** key to confirm, you will be connected to the IP870 with the IP address 200.111.66.8. (For usage instructions, refer to the end of this chapter)
5. Hold the handset and wait for the connection. You will hear a ringback tone indicating that the remote IP870 is ringing. Otherwise, you will hear a busy tone if the remote IP870 user is on the phone. You can see the status shown on the screen of your IP870.
6. Once the connection is complete, you can enjoy your conversation with your party as long as you wish!

Note: A still "@" symbol on your LCD screen indicates that you are successfully connected to the Internet. Otherwise, the "@" symbol will keep flashing.

Note: For devices like IPStar or IP770 not able to obtain a fixed IP address, you may not be able to call the remote device by dialing its IP address.

Note: *Ready Tone* is the audio signal to indicate that IP870 is ready for dialing or receiving an Internet call.

Note: *The a) method* is not available for closed Intranet users.

Making a Device-to-Phone Call

IP870 is a state-of-the-art Internet Phone device with great interoperability! It allows you to connect to a compatible gateway, such as *DSG IP2000 Internet Telephony Gateway**. In this mode, the receiving party can answer an Internet phone call with just a regular phone. To use Device-to-Phone Mode, you need to obtain a valid Device ID Account or *ITSP account** been set in **ITSP Setup** section.

1. Make sure that your IP870 is setup properly and you have correctly entered all the information needed in the **ITSP SETUP** section.
2. Check to see if your IP870 have successfully connected to the Internet, which is indicated by a still "@" symbol on the screen.
3. Pick up the handset and you will hear a ready tone.
4. You may dial any long-distance or international telephone numbers as you normally would from your touch-tone phone.
 - For Domestic Long-Distance Calls**
 - [Long-distance code] + [Area code] + [Telephone number]
 - For International Calls**
 - [International code] + [Country code] + [Area code] + [Telephone number]
5. Hold the handset and wait for the connection. You should be able to hear a faster progress tone to indicate that your call is in the connecting process.
6. You may hangup the phone and wait for ringing, or just hold the handset. You can clearly monitor all the online status on your IP870's LCD screen.
7. Once your receiving end picks up the phone, you may enjoy talking as long as you wish!







Note: *An Internet Telephony Gateway is a gate between Internet and PSTN (Public Switched Telephone Network). The Internet Telephony Gateway enables callers using Internet to talk to regular phone users without an IP870.*

Note: *Please check www.dsgtechnology.com and refer to **Chapter 6 How to Get an ITSP Account** for further information about applying an active ITSP account number from DSG compatible Internet Telephony Service Providers (ITSP).*



How to Use Your IP Phone Book

There are two ways to use your IP Phone Book: A) Search and B) Speed Dial

A) Search

1. Pick up your handset.
2. Press the  key on your keypad or the  on your IP870.
3. You will see the IP Phone Book entries starting at '00'. Use the keypad ( or ) or buttons on IP870 to scroll the entries.
4. After you have selected an entry number, press  key on keypad or press the  on your IP870 to confirm.
5. You will be connected to the remote IP870 with the IP address listed on that specific entry.
6. Hold the handset to wait for connection. You will hear a faster progress tone to indicate that your call is in the connecting process. You will hear a ring back tone indicating that your remote IP870 is ringing. Otherwise, you will hear a busy tone if your remote IP870 user is on the phone. You can see the status shown on the screen of your IP870.
7. Once your remote IP870 user picks up the receiver, you may begin your conversation.

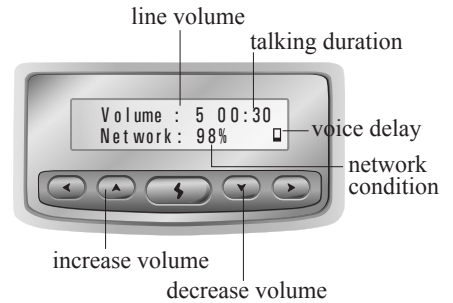
B) Speed Dial

1. Pick up your telephone handset.
2. Enter the IP Phone Book entry number you wish to call and followed by a  key to view the name and address of that entry.
3. Press  on the keypad to confirm. You can see the status shown on the screen of your IP870.
4. Once your remote IP870 user picks up the receiver, you may begin your conversation.



Monitoring the Status of IP870

During Talking

During an Internet call, the LCD screen of IP870 will show:



Volume Control

If the volume of your IP870 is too loud and you hear some background noise, you can adjust the volume by pressing  or  to get the desired voice quality.


During Internet Connecting Process

Your IP870's LCD screen will display the status during the Internet connecting process. A still "@" symbol indicates that you are successfully connected to the Internet.



To End an Internet Call

If you wish to end your call, you may:

- Simply hang up the phone or
- Perform a hook-flash or
- Press the  button on your IP870 to end a call

Upgrading Your IP870

Now with our online upgrade feature, your IP870 ensures you to enjoy the latest Internet Telephony technologies without any charge!



Upgrade Notification

You can upgrade your IP870 whenever a new software version becomes available. Whenever your IP870 is connected to the Internet Service Provider (ISP), DSG will notify you by displaying the message **UPGRADE AVAILABLE** on your IP870 LCD screen. Upgrades will enhance the performance and add more features to your IP870. With such a convenient feature, you are guaranteed to have the most updated IP870!

***Note:** Before the upgrading or restoring process, make sure that your IP870 has successfully connected to the Internet.*

To upgrade your IP870 with the newest software version, follow the instructions below. The upgrade process will only take about three to ten minutes depending on the Internet traffic.

1. Press IP870  button for two seconds to enter the **Configuration Mode**.


2. Use the keypad ( and ) or buttons on the IP870 to scroll the main menu.



3. Press the  button when you see **SYSTEM SETUP**.



4. Scroll the menu to **AUTO-UPGRADE** and press the  button.

5. Press the  button when you see **DOWNLOAD NOW** to start the upgrading process.



6. IP870 will proceed to connect the DSG Download Server and the screen will show the progress of the downloading process.









7. Press any button to restart your IP870. If the new software version is downloaded successfully, IP870 will reboot itself automatically.



Restoring Original Version

IP870 has a powerful auto-recovery capability! If there is any error that occurs during the downloading process or other unexpected conditions, IP870 will automatically restore the default software version.

When you upgrade your IP870 to the new software version, IP870 will automatically store the original version as a backup. If for any reason, you wish to discard your new version and restore the old version, you may follow the steps below:

1. Press IP870  button for two seconds to enter the **Configuration Mode**.
2. Use the keypad ( and ) or buttons on the IP870 to scroll the main menu.
3. Press the  button when you see **SYSTEM SETUP**.
4. Scroll the menu to **AUTO-UPGRADE** and press the  button.
5. Press the  button when you see **RESTORE** to start the restoring process.



How to Get an ITSP Account (Device-to-Phone Mode)

IP870 is an intelligent VoIP telephone that provides Device-to-Phone capability! An IP870 is all you need for huge savings on long-distance or international calls!

The DSG Internet Telephony Network is an integrated telephony system based on Internet environment that provides various services such as Phone-to-Phone, Device-to-Phone and Device-to-Device. The Device-to-Phone Modes allow your IP870 to connect to a compatible gateway, such as DSG IP2000, so that the receiving party is able to receive or make an Internet phone call with a regular phone. In order to use IP870-to-Phone Mode, you have to get a valid Internet Telephony Service Provider (ITSP) account and enter the required information* into your IP870.

Note: *Before you use Device-to-Phone Mode, make sure that you have entered all related information needed in the **ITSP SETUP** section. Please refer to **Chapter 3 IP870 Configuration Mode** for details.*

There are two ways to get an account:

- You already have a pre-programmed Device ID account when you purchase your IP870, and you may ask the dealer or retail store to add a value to your account or
- You may apply for a new prepaid ITSP Account from your dealer or retail store and enter the account number into your IP870.

Check the web site www.dsgtechnology.com. periodically or send a mail to sales@dsg.com.tw to get the information about compatible ITSP list and other Internet Telephony services*. The DSG web site will show you how to apply for a valid account from our ITSP partners. You may also get the new information such as calling rates on your IP870 LCD screen dynamically when you make an Internet call.

***Note:** DSG is a system provider of Internet Telephony solutions and does not provide any telephony services. DSG will take no responsibility for using these services.*

Checking Your Account Balance

IP870 has a built-in account balance function. You may check your account balance in the comfort of your own home!

To check the Device ID account balance, follow the steps below:

□

1. Pick up the handset and dial + [99] +
2. The balance of the account will be shown on the LCD screen.



To check an ITSP Account balance, follow the steps below:


1. Hold up your handset and dial * + [88] + #
2. The ITSP account balance will be shown on the LCD screen.



How to Setup IP870 in NAT Environment

The IP870 supports NAT (Network Address Translation). You can connect IP870 behind a firewall, NAT router or IP sharing equipment or software for better enhancement of network security and the utilization of Internet access. You can assign pseudo or private IP addresses on IP870 and perform port mappings allowing your IP870 to communicate with remote IP870 or DSG VoIP devices over the Internet.

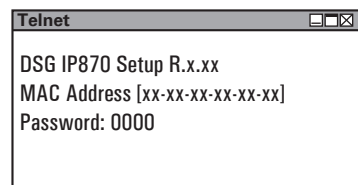
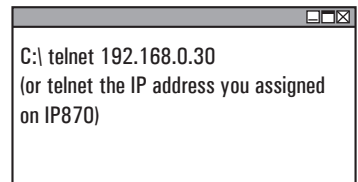
Setup Your IP870

1. Assign specific IP sharing/NAT equipment as the gateway for IP870 and other nodes.
2. Prepare a set of IP address for IP870.
 - 1) Available Pseudo IP Address
 - 2) Gateway IP Address
 - 3) Subnet Mask
3. Press and hold  button for 2 seconds to enter the configuration mode. Refer to *Chapter 3 IP870 Configuration* to edit the above IP information on IP870.
4. Prepare a computer on the LAN to Telnet IP870. Make sure the computer's TCP/IP setting is in the same subnet as the above IP870.



Telnet Your IP870

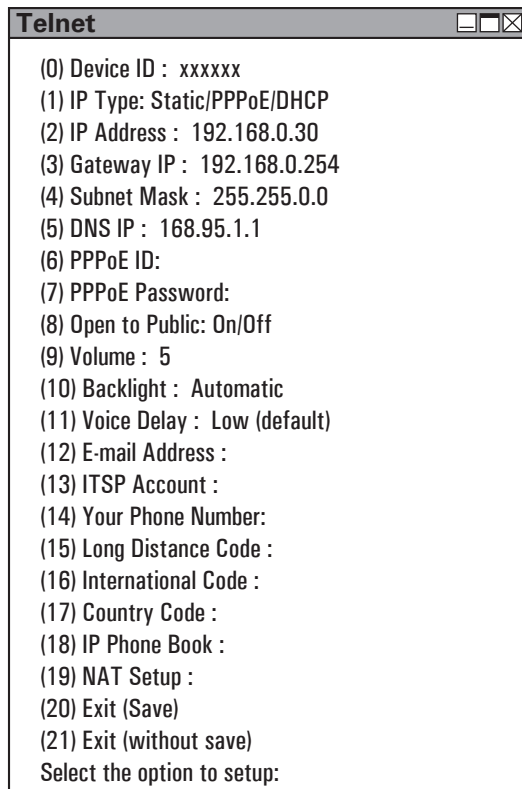
1. From your computer, run Telnet program for connecting to IP870 by its default IP address **192.168.0.30** or the IP address you have assigned.
2. After connecting to IP870, the prompt will display the current software version, MAC address and password. The default Telnet password is **0000**. Input the default password or your specified password, if any, and press Enter to continue.



You can change Telnet password from IP870 setting item. Please refer to **Chapter 3 IP870 Configuration Mode**.

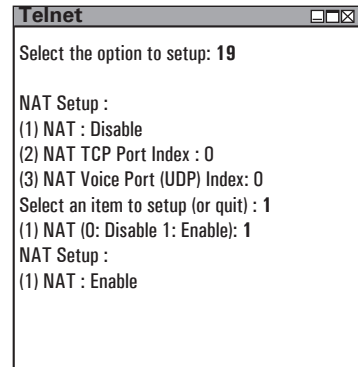
Telnet Setting Items

You can see setting items as below displayed on the Telnet window. For most setting items, you can configure directly from your IP870. You only need to Telnet your IP870 to enable its NAT function when your IP870 is in NAT environment. i.e. you assign a private IP address to IP870.



Enable NAT Function

1. At the prompt displays **Select the option to setup:** , type **19** and press Enter to edit (**19**) **NAT Setup.**
2. At the prompt displays **Select an item to setup (or quit):** , type **1** and press Enter to edit.
3. At **(1) NAT (0: Disable 1: Enable):** , type **1** to enable NAT function then press Enter.

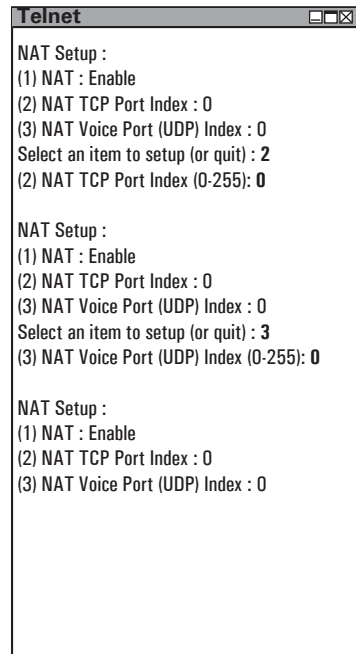


```
Telnet
Select the option to setup: 19

NAT Setup :
(1) NAT : Disable
(2) NAT TCP Port Index : 0
(3) NAT Voice Port (UDP) Index : 0
Select an item to setup (or quit) : 1
(1) NAT (0: Disable 1: Enable): 1
NAT Setup :
(1) NAT : Enable
```

Assign TCP & UDP Port Index

1. At the prompt displays **Select an item to setup (or quit):** , type **2** and press Enter to assign a specific TCP port.
2. At **(2) NAT TCP Port Index (0-255):** , type **0** to assign the first TCP port index to IP870 then press Enter.
3. At the prompt displays **Select an item to setup (or quit):** , type **3** and press Enter to assign a specific UDP port.
4. At **(3) NAT Voice Port (UDP) Index (0-255):** , type **0** to assign the first UDP port index to IP870 then press Enter.
5. You can install up to 256 units of IP870 in LAN under NAT Environment. After Telnet the specific IP870, repeat the above procedures and assign the specific TCP and UDP ports index from 0-255 separately.



```
Telnet
NAT Setup :
(1) NAT : Enable
(2) NAT TCP Port Index : 0
(3) NAT Voice Port (UDP) Index : 0
Select an item to setup (or quit) : 2
(2) NAT TCP Port Index (0-255): 0

NAT Setup :
(1) NAT : Enable
(2) NAT TCP Port Index : 0
(3) NAT Voice Port (UDP) Index : 0
Select an item to setup (or quit) : 3
(3) NAT Voice Port (UDP) Index (0-255): 0

NAT Setup :
(1) NAT : Enable
(2) NAT TCP Port Index : 0
(3) NAT Voice Port (UDP) Index : 0
```

Exit Telnet

1. At the prompt displays **Select an item to setup (or quit):** , type **quit** and press Enter to leave **(19) NAT Setup.**
2. At the prompt displays **Select an option to setup:** , type **20** and press Enter to save and exit Telnet.

Port Mapping

After you set the NAT Port Index to IP870, refer to the **NAT Port Index Converter** blow, write down the TCP and UDP port numbers and its correspondent IP address in order to perform the port mapping on your IP Sharing equipment or NAT router. To know how to perform port mapping, consult with your vendor of IP Sharing equipment or NAT router.

NAT Port Index Converter

NAT TCP Port Index	0	1	2	3	-----	255
NAT Voice Port (UDP) Index	0	1	2	3	-----	255
TCP Port Number	1801	1802	1803	1804	-----	2056
UDP Port Number	1102	1103	1104	1105	-----	1357

Telephone Features

IP870 integrates VoIP and telephone functions all together giving you a more complete communication solution.

IP870 combines VoIP and telephone functions in a stand-alone phone set. In addition to VoIP functions, you can enjoy many regular phone features brought by IP870.

Volume

To increase or decrease the volume of your handset, press the up or down Volume button. The volume adjustment will change the volume for the currently active voice.

Redial

You can redial the last outside number by pressing the Redial button. To redial, lift the handset and press the Redial button. This function is not available when placing Internet calls.

Speaker

You can place or answer calls with the handset or using the Speaker button. Press the Speaker button for hands-free conversation.

Mute

You can mute the handset or speakerphone when in a call. This will prevent the remote party from hearing what you are saying to other people.

Flash

You can generate a flash hook on the outside line by pressing the Flash button. To toggle between calls waiting, you can also press the Flash button.

Speed Dial

You can program up to 12 entries of speed dial for placing calls to regular phone numbers.

1. Press the Program button.
2. Press the Memory button.
3. Input the entry number from 1 to 12.
4. Input the phone number you would like to edit for speed dialing.
5. Press the Program button again to save.
6. Repeat Step 1 to 5 to edit more entries.

When using Speed Dials to place calls, follow the steps below.

1. Lift the handset and press the Memory button.
2. Press the entry number of speed dial from 1 to 12.

Appendix A. Technical Specifications

Dimensions	200 mm x 195 mm x 70 mm
Weight	Approximately 1,600 g
Power Input	DC12V 1A
Temperature	0-50°C (32°F~122°F)
Humidity	10% to 90% non-condensing
Internal RAM	2Mbytes
Flash Memory	1Mbytes
LCD Display	16 x 2 with backlight
Voice Compression	G.723.1 compliant
Network Interface	10BaseT, RJ45
Network Protocol	TCP/IP , PPPoE, DHCP, NAT

Appendix B. Troubleshooting

Problems Making an IP870-to-IP870 Call

- **You attempted to make an IP870-to-IP870 call but it didn't work.**
Use our quick start guide, check that both IP870s are configured properly. During the process of making an IP870-to-IP870 call, you can check for an online symbol "@" on the LCD screen of your IP870 to confirm your status. When one of the IP870 users dials to the receiving IP870, you can clearly monitor the connecting process on the LCD screen. If you have made several attempts by device ID and have failed, then try using the IP Phone Book option with user-defined codes! (Refer to **Chapter 4 How To Use Your IP Phone Book**).
- **No clue on finding your IP870's six-digit ID.**
Every IP870 has a unique six-digit device ID number and it can be found at the bottom of your IP870 device. You can also find this six-digit ID number in the configuration mode **SYSTEM SETUP/DEVICE ID**. If you are still having trouble finding this ID number, please refer to Chapter 3 for more information.
- **You entered the IP870's six-digit ID and the screen showed "Ready for Dial".**
You probably left out a leading * key before the six-digit ID number. For example, if you want to make an IP870-to-IP870 call to a friend with an IP870 ID 001234, enter *001234# in the 'Ready to Dial' mode to complete your call.
- **You entered your receiving IP870's six-digit ID number and the screen showed "Party Off Line".**
Before you make an IP870-to-IP870 call, check to see that you have entered the correct six-digit ID number of the receiving IP870. At the same time, you may check to see if the remote IP870 you wish to connect is online by simply entering the IP Address. If your receiving party is not online, then you can try again later.


Problems Making an IP870-to-Phone Call

- **You entered the designated phone number and the screen showed "Ready for Dial".**
You should check if the ITSP account number is entered correctly. If you need further information on ITSP account, please refer to Chapter 6 for help.
- **You entered the designated phone number and the screen showed "No Service".**
It is important that you input the correct country code, long-distance code, and international code when making an IP870-to-Phone call since your IP870 uses these information to analyze the phone number you dialed. Another possible reason for "No Service" could be that the number you dialed is out of the service area. To obtain the detailed information on all the available countries, please refer to our web site www.dsgtechnology.com.
- **You entered the designated phone number and the screen showed "Wrong Account".**
When the screen shows "Wrong Account", it's either you have entered an invalid ITSP account, or there is no balance remaining in your ITSP account. To renew, update, or re-activate your ITSP account, contact your local distributor or visit our web site at www.dsgtechnology.com.
- **You entered the designated phone number and the screen showed "Server Busy".**
When the screen shows "Server Busy", it means that all lines are busy and temporarily unavailable. You can try calling later.

Problems during an Internet Call

- **During the call, you experienced a slight delay in your conversation.**

This is an expected Internet phone situation. The degree of voice delay depends on the Internet traffic and the routing path. IP870's Dynamic Jitter Buffer Control algorithm will optimize the delay time automatically in the first ten seconds of your call.
- **During your call, you have difficulty hearing the other party.**

On your IP870's LCD screen, you will see the network percentage indicator to identify if the Internet traffic is congested. You can wait to see if the traffic subsides indicated by the percentages or press the  button to end your call or try calling later.
- **During the call, the other party's voice seems slow or delays seriously (more than three seconds).**

It is a matter of the bandwidth between your IP870 and the ISP. It could be that the bandwidth is not enough to support a regular Internet call. At this point, you may end your call and place another call to see if the voice quality improves. If the voice quality remains unsteady, then set the Voice Delay in the Configuration Mode to High and try calling again.
- **If there are still other problems other than the ones stated above.**

We recommend that you use other ISPs to ensure the best Internet connection quality.



Corporate Headquarters
7F, 222, Cheng Teh Road, Sec.4
Taipei, Taiwan
Tel: 886 2 88615558
Fax: 886 2 88615557
E-mail: sales@dsg.com.tw
<http://www.dsg.com.tw>

DSG Technology USA
20265 Valley Blvd., #N
Walnut, CA 91789
Tel: 1 909 5958908
Fax: 1 909 5955508
E-mail: sales@dsgtechnology.com
<http://www.dsgtechnology.com>

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