# Panasonic

# 4-Channel VoIP Gateway Card Programming Guide

# Model No. KX-TDA3480



Thank you for purchasing the Panasonic 4-Channel VoIP Gateway Card, KX-TDA3480. Please read this manual carefully before using this product and save this manual for future use.

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# Section 1

# **IP-GW4 Maintenance Utility**

Programming of the VoIP Gateway Card is carried out through a web programming utility called the IP-GW4 Maintenance Utility. This section provides the start-up procedure for the IP-GW4 Maintenance Utility.

# 1.1 Starting the IP-GW4 Maintenance Utility

There are two different log-in levels to the IP-GW4 Maintenance Utility, a web programming utility for the VoIP Gateway Card: Administrator level and Installer level. These levels provide different programming options.

For full discussions of Administrator-level programming and Installer-level programming, refer to "2 Administrator Functions" and "3 Installer Functions", respectively.

#### **System Requirements**

• The IP-GW4 Maintenance Utility requires Microsoft® Internet Explorer 5.0 or above.

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- 1. Run Internet Explorer from the Start menu.
- In the Address box of Internet Explorer, type http://192.168.1.200.
   192.168.1.200 is the default IP address of the VoIP Gateway Card.

🗿 IP	-GW4	Maint	enance Ut	ility - I	Microsoft Internet Explorer
<u>F</u> ile	<u>E</u> dit	<u>V</u> iew	F <u>a</u> vorites	<u>T</u> ools	Help
A <u>d</u> dre	ss	http://:	192.168.1.20	)0	

- **3.** Press the ENTER key on the keyboard.
- 4. In the Username box, type the user name.
  - Default Administrator-level user name: Administrator
  - Default Installer-level user name: Installer
- 5. In the **Password** box, type the password.
  - Default Administrator-level password: Administrator
  - Default Installer-level password: Installer

P-GW4 Maintenance Utility - Microsoft Internet Explorer				
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>I</u> ools <u>H</u> elp				
Address 🙆 http://192.168.1.200				
Panasonic Enter Username and Password, and click the LOGIN button.				
Username Administrator				
Password •••••				

6. Click LOGIN.

To clear your entry, click CLEAR.

#### <u>Notes</u>

- If another user is already logged in, you will be rejected.
- For readability of the text on the screen, it is recommended that you adjust the text size of your browser to below medium.
- If you finish a programming session without logging out from the card (e.g., quitting Internet Explorer, or returning to the log-in screen with the "Back" button of Internet Explorer), you cannot log in again for the period of time specified by the parameter **Programming Auto Disconnect Time** (default: 10 min). For the log-out procedure and **Programming Auto Disconnect Time** setting, refer to "2.5.2 Log Out"/"3.4.2 Log Out" and "2.3.2 Maintenance Settings", respectively.

1.1 Starting the IP-GW4 Maintenance Utility

# Section 2

# **Administrator Functions**

This section provides operating instructions for the IP-GW4 Maintenance Utility when logged in as the Administrator.

# 2.1 Main Menu for the Administrator

The IP-GW4 Maintenance Utility provides the following menu to a user logged in as the Administrator.

IP-GW4 Maintenance Utility - Microsoft Internet Explorer         Eile       Edit       View       Favorites       Tools       Help         Address       Image: Tools       Help       Tools       Help         MENU       MENU       Tools       Help       Tools       Help
MENU
1. Programming
<u>1.1 Network Settings, General</u>
<u>1.2 H.323 Detailed Settings</u>
1.3 Voice Communication Detailed Settings
<u>1.4 VoIP Gateway/IP-PBX Interface Settings</u>
<u>1.5 Hunt Pattern (for Incoming Calls)</u>
1.6 DN2IP (Dialed Number to IP Address Translation)
1.7 Initialization
2. Maintenance
2.1 Change RUN/STOP status
2.2 Maintenance Settings
2.3 Diagnosis
2.4 Log Information (of interest to engineers only)
3. Data Management
3.1 Upload of Configuration data (PC -> VoIP Gateway)
<u>3.2 Download of Configuration data (VoIP Gateway -&gt; PC)</u>
<u>3.3 Upload of DN2IP data (PC -&gt; VoIP Gateway)</u>
<u>3.4 Download of DN2IP data (VoIP Gateway -&gt; PC)</u>
REBOOT
LOGOUT

# Programming

Menu		Section Reference	
1.1	Network Settings, General	2.2.1 Network Parameters	
1.2	H.323 Detailed Settings	2.2.2 H.323 Parameters	
1.3	Voice Communication Detailed Settings	2.2.3 Voice Communication Parameters	
1.4	VoIP Gateway/IP-PBX Interface Settings	2.2.4 VoIP Gateway/IP-PBX Interface Parameters	
1.5	Hunt Pattern (for Incoming Calls)	2.2.5 Hunt Pattern Parameters	
1.6	DN2IP (Dialed Number to IP Address Translation)	2.2.6 Address Translation Table—GW Entry 2.2.7 Address Translation Table—DN2IP Entry	
1.7	Initialization	2.2.8 Initialisation	

# Maintenance

Men	u	Section Reference
2.1	Change RUN/STOP status	2.3.1 Status Control
2.2	Maintenance Settings	2.3.2 Maintenance Settings
2.3	Diagnosis	2.3.3 Diagnosis
2.4	Log Information	2.3.4 Log Information

# Data Management

Menu		Section Reference	
3.1	Upload of Configuration data (PC -> VoIP Gateway)	2.4.1 Upload of Configuration Data	
3.2	Download of Configuration data (VoIP Gateway -> PC)	2.4.2 Download of Configuration Data	
3.3	Upload of DN2IP data (PC -> VoIP Gateway)	2.4.3 Upload of Address Translation Table	
3.4	Download of DN2IP data (VoIP Gateway -> PC)	2.4.4 Download of Address Translation Table	

# Others

Menu	Section Reference
REBOOT	2.5.1 Reboot
LOGOUT	2.5.2 Log Out

# 2.2 Programming

# 2.2.1 Network Parameters

1. Click 1.1 Network Settings, General in the main menu.

IP-GW4 Maintenance Utility - Microsoft Internet Explorer				
File Edit View Favorites Tools Help				
Address 🙆 http://192.168.1.200/ad_network.html				
OK ALL CLEAR MENU LOGOUT				
1. Programming 1.1 Network Settings, General				
1.1 Petwork Schalles, General				
Current IP Address	192.168.1.200			
Current Subnet Mask	255.255.255.0			
Current Default Gateway	0.0.0.0			
1.1.1 IP Address Settings				
#IP Address	192,168,1,200			
# Subnet Mask	255.255.255.0			
# Default Gateway	0.0.0			
# Default Gateway 0.0.0.0				
1.1.2 DHCP Settings				
# DHCP Server	○ Use ⊙ Don't use			
# DHCP Server Port No.	67			
# DHCP Client Port No.	68			
# DHCP Lease Time (min) 0-1440min (of interest to engineers only) 1440				
1.1.3 HTTP Port No. Settings				
# HTTP Port No.	80			
1 1 4 Others				
Host Name(of interest to engineers only)	VoIP31248f			
# LAN Disconnect Threshold Time (s)				
n 1971 i Disconnect functione fillic (5)				

# indicates setting must be done in the STOP status, and must be followed by a REBOOT.

Current IP Address, Current Subnet Mask, and Current Default Gateway show the current IP address settings of the VoIP Gateway Card.

2. Assign each parameter referring to the descriptions below.

At any time during the session, you can:

- Click ALL CLEAR to reset all parameters to the default values.
- Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").
- 3. Click OK.

You will see a confirmation screen.

#### <u>Note</u>

If your entry contains an invalid value, you will see an error screen. Click **OK** and try again with correct values.

4. Confirm your entry and click OK.

To return to the previous screen, click CANCEL.

## **Parameter Descriptions**

The parameters indicated with "#" must be changed while the card is in the "STOP" status (see "2.3.1 Status Control"). The changes must be followed by a reboot to become effective (see "2.5.1 Reboot").

#### **IP Address Settings**

Parameter & Description	Default	Value Range
<b># IP Address</b> Specifies the IP address of the card. For more information, consult your network administrator.	192.168.1.200	<ul> <li>The following addresses are invalid:</li> <li>Class D addresses</li> <li>Class E addresses</li> <li>Loopback addresses</li> <li>Addresses with host number all 0s or 1s</li> </ul>
<b># Subnet Mask</b> Specifies the subnet mask address of the card. For more information, consult your network administrator.	255.255.255.0	Any address is valid.
<b># Default Gateway</b> Specifies the default gateway IP address of the card. For more information, consult your network administrator.	0.0.0.0	Same as the parameter " <b>IP Address</b> ", except that the address 0.0.0.0. is allowed.

#### **DHCP Settings**

Parameter & Description	Default	Value Range
<b># DHCP Server</b> Specifies the use of a DHCP server. For details, refer to "Detailed Explanations".	Don't use	Use, Don't use
# DHCP Server Port No. Specifies the port number for DHCP communications by the DHCP server. Generally, there is no need to change the default value.	67	1 to 65535
<b># DHCP Lease Time (min) 1-1440 min</b> This parameter is provided for engineer use only.	1440	0 (disable), 1 to 1440
<ul> <li># DHCP Client Port No.</li> <li>Specifies the port number for DHCP communications by the card (the DHCP client).</li> <li>Generally, there is no need to change the default value.</li> </ul>	68	1 to 65535

#### **HTTP Port Number Settings**

Parameter & Description	Default	Value Range
# HTTP Port No.	80	1 to 65535
Specifies the port number for HTTP communications by the card.		
Generally, there is no need to change the default value.		

#### Others

Parameter & Description	Default	Value Range
Host Name This parameter is provided for engineer use only.	VoIP + lower 3 bytes of the MAC address	Max. 255 characters
LAN Disconnect Threshold Time (s)	5	1 to 10
Specifies the time (in seconds) until disconnection from the LAN is recognised.		
For example, even if a LAN cable is disconnected during a call, reconnecting the cable within this time period maintains the call.		

### **Detailed Explanations**

#### **DHCP Server**

When using the DHCP feature, the IP address settings of the card (IP address, subnet mask, and default gateway) will be assigned by a DHCP server.

However, keep in mind that the maintenance of the card is performed through a web browser from a PC; hence you must know the IP address of the card. Therefore, it is necessary to set up the DHCP server to assign a static IP address to the card from a pool of IP addresses that is defined in advance. For more information about DHCP server settings, consult your network administrator.

In addition, it is also necessary to specify the values for the parameters of "**IP Address Settings**" as they will be assigned by the DHCP server.

# 2.2.2 H.323 Parameters

1. Click 1.2 H.323 Detailed Settings in the main menu.

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dress 🕘 http://192.168.1.200/ad_h323.html	
1. Programming 1.2 H.323 Detailed Settings	
1.2.1 Port No. Settings	
# H.225 Port No.	1720
# H.245 Port No.	1721
# RAS Port No.	1719
# RTP/RTCP Port No.	5004
1.2.2 Voice CODEC Settings	1st G.729A 🗸
* Voice CODEC Priority	Int   0.723 × •     2nd   None     3rd   None     4th   None
1.2.3 Gatekeeper Settings	
# Gatekeeper	🔾 Use 💿 Don't use
* Primary Gatekeeper IP Address	192.168.1.2
* Primary Gatekeeper Port No.	1719
* Secondary Gatekeeper IP Address	192.168.1.3
* Secondary Gatekeeper Port No.	1719
* Gatekeeper Connection Checking Interval (min) 0-1440min	1440
* Call Signaling Model	💿 Direct 🔾 Routed (via Gatekeeper)
1.2.4 Others	
1.2.4 Others	💿 Use 🔘 Don't use

2. Assign each parameter referring to the descriptions below.

At any time during the session, you can:

- Click ALL CLEAR to reset all parameters to the default values.
- Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").
- 3. Click OK.

You will see a confirmation screen.

#### <u>Note</u>

If your entry contains an invalid value, you will see an error screen. Click  ${\bf OK}$  and try again with correct values.

4. Confirm your entry and click OK.

To return to the previous screen, click CANCEL.

### **Parameter Descriptions**

The parameters indicated with "#" must be changed while the VoIP Gateway Card is in the "STOP" status (see "2.3.1 Status Control"). The changes must be followed by a reboot to become effective (see "2.5.1 Reboot").

The parameters indicated with "\*" must be changed while the card is in the "STOP" status (see "2.3.1 Status Control"). The changes do not have to be followed by a reboot to become effective.

#### **Port Number Settings**

Parameter & Description	Default	Value Range
<ul> <li># H.225 Port No.</li> <li>Specifies the port number for the H.225 protocol (call control) in an H.323 protocol suite.</li> <li>Generally, there is no need to change the default value.</li> </ul>	1720	1 to 65535
<ul> <li># H.245 Port No.</li> <li>Specifies the port number for the H.245 protocol (negotiation of channel usage and capabilities) in an H.323 protocol suite. Four consecutive ports, starting with the specified port, will be used (by default, 1721 to 1724).</li> <li>Generally, there is no need to change the default value.</li> </ul>	1721	1 to 65532
<ul> <li># RAS Port No.</li> <li>Specifies the port number for the H.225 protocol (RAS) in an H.323 protocol suite.</li> <li>Generally, there is no need to change the default value.</li> </ul>	1719	1 to 65535
<b># RTP/RTCP Port No.</b> Specifies the port number for RTP/RTCP. Eight consecutive ports, starting with the specified port, will be used (by default, 5004 to 5011). Generally, there is no need to change the default value.	5004	1 to 65528

## Voice CODEC Settings

Parameter & Description	Default	Value Range
<ul> <li>* Voice CODEC Priority 1st–4th</li> <li>Specifies the type of CODEC for voice communications.</li> <li>Choose the appropriate CODEC for the network environment (e.g., bandwidth, CODEC conditions of the remote terminal). When using multiple CODECs, set them in an appropriate priority order.</li> <li>Prior to establishing a call, a negotiation takes place over the network and the CODEC to be used will be decided depending on the setting of this parameter.</li> <li>For details about relations between bandwidth and CODEC, refer to "Detailed Explanations" in "2.2.3 Voice Communication Parameters".</li> </ul>	1st: G.729A 2nd: No default 3rd: No default 4th: No default	G.723.1, G.729A, G.711Mu, G.711A

### **Gatekeeper Settings**

Parameter & Description	Default	Value Range
* Gatekeeper Specifies the use of a gatekeeper. For details, refer to "Detailed Explanations".	Don't use	Use, Don't use
* Primary Gatekeeper IP Address Specifies the IP address of the primary gatekeeper.	192.168.1.3	<ul> <li>The following addresses are invalid:</li> <li>Class D addresses</li> <li>Class E addresses</li> <li>Loopback addresses</li> </ul>
* Primary Gatekeeper Port No. Specifies the port number of the primary gatekeeper.	1719	1 to 65535
* Secondary Gatekeeper IP Address Specifies the IP address of the secondary gatekeeper. Set this parameter when setting up a secondary gatekeeper as a redundant backup system.	192.168.1.4	<ul> <li>The following addresses are invalid:</li> <li>Class D addresses</li> <li>Class E addresses</li> <li>Loopback addresses</li> </ul>
* Secondary Gatekeeper Port No. Specifies the port number of the secondary gatekeeper. Set this parameter when setting up a secondary gatekeeper as a redundant backup system.	1719	1 to 65535

Parameter & Description	Default	Value Range
<ul> <li>* Gatekeeper Connection Checking Interval (min) 0-1440min</li> </ul>	10	0 (disable), 1 to 1440
Specifies the time (in minutes) between periodic checks of connection to the gatekeeper.		
When the primary gatekeeper fails, these checks can detect the failure. In this case, the connection automatically switches to the secondary gatekeeper if it is available, so that the network remains functional.		
<ul> <li>* Call Signaling Model</li> <li>Specifies whether to carry out a call control (H.225) process directly between the cards or through a gatekeeper.</li> <li>Direct call control is typically preferred because it involves less network load.</li> </ul>	Direct	Direct, Routed (via Gatekeeper)

#### Others

Parameter & Description	Default	Value Range
<b># Fast Connect</b> Specifies the use of the Fast Connect feature. Using Fast Connect simplifies the communication	Use	Use, Don't use
process so that calls can be established quickly. Generally, there is no need to change the default value.		

## **Detailed Explanations**

#### Gatekeeper

The following are the general functions of a gatekeeper:

- Dialled number-to-IP address translation
- Authentication
- Bandwidth control

It is possible to employ a VoIP network without the use of a gatekeeper, because the card is equipped with internal address translation capabilities. However, should the network contain dozens of cards, maintenance of address translation tables in individual cards can become a strain.

A gatekeeper is useful in this case, because with the gatekeeper it is possible to consolidate the maintenance. (However, you still need to programme each card on the network with its own address translation information. For details, refer to "2.2.6 Address Translation Table—GW Entry" and "2.2.7 Address Translation Table—DN2IP Entry".) For more information about gatekeeper functions, consult the documentation of the gatekeeper.

When using a gatekeeper, make sure to choose a compatible model. For more information about gatekeeper compatibility with the card, consult a certified dealer.

# 2.2.3 Voice Communication Parameters

1. Click 1.3 Voice Communication Detailed Settings in the main menu.

916 Edit yow Fachts Lok jeb   Addres @ http://t2.108.1.20/ad_sourd.html   0K ALL CLEAR   MENU LOGOUT   1.3 Voce Communication Detailed Settings   1.3.1 QoS Field Settings   0 ToS Normal   0 DSCP   0 BSCP   1.3.2 Jitter buffer Settings   0 TH/G 729A. Inter Buffer Minimum (ms)   10 ×   0 T1/G 729A. Inter Buffer Minimum (ms)   10 ×   0 T1/G 729A. Inter Buffer Minimum (ms)   10 ×   0 T1/G 729A. Inter Buffer Minimum (ms)   10 ×   0 T1/G 729A. Inter Buffer Minimum (ms)   10 ×   0 T1/G 729A. Inter Buffer Minimum (ms)   10 ×   0 T1/G 729A. Inter Buffer Adjustment Interval (v) 1-5s   5   0 723.1 Inter Buffer Minimum (ms)   12 Juffer Buffer Adjustment Interval (v) 1-5s   5   0 723.1 Inter Buffer Minimum (ms)   13.2 ODEC Frame Settings   0 723.1 Inter Buffer Minimum (ms)   13.3 OODEC Frame Settings   0 723.1 Inter Buffer Minimum (ms)   20 ×   13.3 OODEC Frame Settings   0 723.1 Packet Sending Interval (ms)   20 ×   13.3 OODEC Frame Settings   0 723.1 Inter Buffer Minimum (ms)   20 ×   13.3 OODEC Frame Settings   0 723.1 Packet Sending Interval (ms)   20 ×   13.3 CODEC Frame Settings   0 723.1 Inter Buffer Minimum (ms)   20 ×   13.4 Others   Echo Canceller	🗿 IP-GW4 Maintenance Utility - Microsoft Internet Explorer	
OK       ALLCLEAR       MENU       LOGOUT         1. Programming 1.3 Voice Communication Detailed Settings         1.3.1 QoS Field Settings         O ToS       Priority 0         O ToS       Normal • Monetary Cost • Reliability • Throughput • Delay         • DSCP       Image: Communication Detailed Settings         1.3.2 Jitter buffer Settings       G711/G 729A Jitter Buffer Minimum (ms)       10 ×         G711/G 729A Jitter Buffer Mammum (ms)       400 ×       G711/G 729A Jitter Buffer Mammum (ms)       10 ×         G711/G 729A Jitter Buffer Adjustment Interval (s) 1-5s       5       Image: Communication (ms)       10 ×         G723.1 Jitter Buffer Adjustment Interval (s) 1-5s       5       Image: Communication (ms)       1200 ×         G723.1 Jitter Buffer Adjustment Interval (s) 1-5s       5       Image: Communication (ms)       1200 ×         G723.1 Jitter Buffer Adjustment Interval (s) 1-5s       5       Image: Communication (ms)       130 ×         G723.1 Jitter Buffer Adjustment Interval (ms)       30 ×       G723.1 Jitter Buffer Adjustment Interval (s) 1-5s       5         1.3 CODEC Frame Settings       G723.1 Packet Sending Interval (ms)       20 ×       1.34 Others       1.34 Others         Echo Canceler       O Use • Don't use       G723.1 VAD (Voice Activity Detection)       O Use • Don't use       G723.1 Rate </td <td><u>File Edit View Favorites Tools H</u>elp</td> <td></td>	<u>File Edit View Favorites Tools H</u> elp	
1. Programming         1.3 Voice Communication Detailed Settings         1.3 Loois Field Settings         ○ ToS       Priority 0         ○ BSCP       ○         ○ HEX       ○         1.3.2 Jitter buffer Settings       0         G711/G729A Jitter Buffer Minimum (ms)       10 ×         G711/G729A Jitter Buffer Maximum (ms)       10 ×         G711/G729A Jitter Buffer Maximum (ms)       10 ×         G711/G729A Jitter Buffer Adjustment Interval (e) 1-5s       5         G723 1 Jitter Buffer Adjustment Interval (e) 1-5s       5         G723 1 Jitter Buffer Adjustment Interval (e) 1-5s       5         G723 1 Jitter Buffer Adjustment Interval (e) 1-5s       5         1.3.2 ODEC Frame Settings       30 ×         G723 1 Jitter Buffer Adjustment Interval (e) 1-5s       5         1.3.3 CODEC Frame Settings       30 ×         G723 1 Jitter Buffer Adjustment Interval (fms)       30 ×         G723 1 Jitter Buffer Adjustment Interval (fms)       20 ×         1.3.3 CODEC Frame Settings       30 ×         G723 1 Jitter Buffer Adjustment Interval (ms)       20 ×         1.3.4 Others       Ethc Canceller       0 Use ○ Don't use         G723 1 Tacket Sending Interval (ms)       20 ×         G723 1 Tacket       5 35Kbps ○	Address 🕘 http://192.168.1.200/ad_sound.html	
1.3 Voice Communication Detailed Settings         1.3.1 QoS Field Settings         ○ ToS       Priority 0         ○ DSCP       ○         ○ HEX       ○         1.3.2 Jitter Buffer Settings       ○         G.711/G 729A Jitter Buffer Maximum (ms)       10 ×         G.711/G 729A Jitter Buffer Maximum (ms)       400 ×         G.711/G 729A Jitter Buffer Maximum (ms)       10 ×         G.711/G 729A Jitter Buffer Adjustment Interval (p) 1-5s       5         G.723 1 Jitter Buffer Maximum (ms)       30 ×         G.723 1 Jitter Buffer Maximum (ms)       30 ×         G.723 1 Jitter Buffer Adjustment Interval (p) 1-5s       5         G.723 1 Jitter Buffer Adjustment Interval (p) 1-5s       5         G.723 1 Jitter Buffer Adjustment Interval (p) 1-5s       5         G.723 1 Jitter Buffer Adjustment Interval (p) 1-5s       5         G.723 1 Jitter Buffer Adjustment Interval (p) 1-5s       5         1.33 CODEC Frame Settings       G.723 1 Packet Sending Interval (ms)         G.723 1 Jitter Buffer Adjustment Interval (p) 20 ×       20 ×         G.723 1 Packet Sending Interval (ms)       20 ×         G.723 1 Packet Sending Interval (ms)       20 ×         G.723 1 Packet Sending Interval (ms)       20 ×         G.711 Packet Sending Interval (ms)	OK ALL CLEAR MENU LOGOUT	
1.3.1 QoS Field Settings         ○ ToS       ○ Normal ○ Monetary Cost ○ Reliability ○ Throughput ○ Delay         ○ DSCP       ○         ● HEX       ○         1.3.2 Juter buffer Settings       G711/G729A Juter Buffer Minimum (ms)       10 ×         G711/G729A Juter Buffer Maximum (ms)       10 ×       G711/G729A Juter Buffer Maximum (ms)         G711/G729A Juter Buffer Default Value (ms)       10 ×       G711/G729A Juter Buffer Adjustment Interval (§) 1-5s         G723 1 Juter Buffer Maximum (ms)       30 ×       G723 1 Juter Buffer Maximum (ms)       1200 ×         G723 1 Juter Buffer Default Value (ms)       30 ×       G723 1 Juter Buffer Adjustment Interval (§) 1-5s       5         G723 1 Juter Buffer Adjustment Interval (§) 1-5s       5       5       1.33 CODEC Frame Settings       5         G723 1 Juter Buffer Adjustment Interval (§) 1-5s       5       5       1.33 CODEC Frame Settings       30 ×         G723 1 Juter Buffer Adjustment Interval (§) 1-5s       5       5       1.33 CODEC Frame Settings       30 ×         G723 1 Juter Buffer Adjustment Interval (§) 1-5s       5       5       1.33 CODEC Frame Settings       30 ×         G723 1 Juter Buffer Adjustment Interval (ms)       20 ×       1.34 Others       Eho Canciller       0 Use ○ Don't use         G723 1 VAD (Voice Activity Detection )       0	1. Programming	
○ ToS       Priority 0         ○ Normal ○ Monetary Cost ○ Reliability ○ Throughput ○ Delay         ○ DSCP         ○ HEX         3.2 Litter buffer Settings         G711/G 729A Jitter Buffer Minimum (ms)         10 ×         G711/G 729A Jitter Buffer Maximum (ms)         400 ∨         G711/G 729A Jitter Buffer Maximum (ms)         400 ∨         G711/G 729A Jitter Buffer Maximum (ms)         400 ∨         G711/G 729A Jitter Euffer Defauk Value (ms)         10 ×         G711/G 729A Jitter Buffer Minimum (ms)         30 ×         G723.1 Jitter Buffer Minimum (ms)         30 ×         G723.1 Jitter Buffer Adjustment Interval (s) 1-5s         5         13.3 CODEC Frame Settings         G723.1 Jitter Buffer Adjustment Interval (s) 1-5s         5         13.3 CODEC Frame Settings         G723.1 Jatter Buffer Maximum (ms)         20 ×         13.3 CODEC Frame Settings         G723.1 Packet Sending Interval (ms)         20 ×         13.4 Others         Echo Canceller         G723.1 VAD (Voice Activity Detection)         0 Use ○ Don't use         G723.1 Rate         0 TME Detection	1.3 Voice Communication Detailed Settings	
○ 105       ○ Normal ○ Monetary Cost ○ Reliability ○ Throughput ○ Delay         ○ DSCP       □         ○ HEX       □         1.3.2 Litter buffer Settings       □         G.711/G 729A Jitter Buffer Minimum (ms)       10 ∨         G.711/G 729A Jitter Buffer Maximum (ms)       10 ∨         G.711/G 729A Jitter Buffer Default Value (ms)       10 ∨         G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s       5         1.33 CODEC Frame Settings       30 ∨         G.723.1 Jitter Buffer Adjustment Interval (ms)       30 ∨         G.723.1 Packet Sending Interval (ms)       20 ∨         G.724 Packet Sending Interval (ms)       20 ∨         G.725 Packet Sending Interval (ms)       20 ∨         G.721 Packet Sending Interval (ms)       20 ∨         G.721 VAD (Voice Activity Detection)       0 Use ○ Don't use         G.723 I Xate       5 3Kbps ○ 6 3Kbps         DTMF Detection       Use ○ Don't use         F	1.3.1 QoS Field Settings	
○ Normal ○ Monetary Cost ○ Reliability ○ Throughput ○ Delay         ○ DSCP         ○ HEX         ○ ILSZ         ○ HEX         3.2 Jitter buffer Settings         G711/G729A Jitter Buffer Mainmum (ms)         10 ×         G711/G729A Jitter Buffer Mainmum (ms)         400 ×         G711/G729A Jitter Buffer Mainmum (ms)         10 ×         G711/G729A Jitter Buffer Adjustment Interval (s) 1-5s         5         G723 1 Jitter Buffer Mainmum (ms)         30 ×         G723 1 Jitter Buffer Mainmum (ms)         30 ×         G723 1 Jitter Buffer Adjustment Interval (s) 1-5s         5         1.33 CODEC Frame Settings         G723 1 Date E Sending Interval (ms)         30 ×         G723 1 Packet Sending Interval (ms)         20 ×         1.33 CODEC Frame Settings         G723 1 Packet Sending Interval (ms)         20 ×         1.34 Others         Echo Canceller         G 723 1 VAD (Voice Activity Detection )         G 723 1 Rate         DTMF Detection         PTMF Detection         © Use ○ Don't use         FAX Signal Detection         FAX High Reliable Method (Original) </td <td>O THC</td> <td>Priority 0</td>	O THC	Priority 0
○ HEX         1.3.2 Jitter buffer Settings         G.711/G.729A Jitter Buffer Minimum (ms)         10 v         G.711/G.729A Jitter Buffer Maximum (ms)         400 v         G.711/G.729A Jitter Buffer Default Value (ms)         10 v         G.711/G.729A Jitter Buffer Adjustment Interval (s) 1-5s         5         G.723.1 Jitter Buffer Minimum (ms)         30 v         G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s         5         G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s         5         1.3.3 CODEC Frame Settings         G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s         5         1.3.3 CODEC Frame Settings         G.723.1 Packet Sending Interval (ms)         30 v         G.723.1 Packet Sending Interval (ms)         20 v         1.3.4 Others         Echo Canceller         6.711 Packet Sending Interval (ms)         20 v         1.3.4 Others         Echo Canceller         6.723.1 Rate         0 Use O Don't use         PTMF Detection         0 Use O Don't use         FAX High Reliable Method (Original)	0 105	💿 Normal 🕥 Monetary Cost 🔿 Reliability 🔿 Throughput 🔿 Delay
1.3.2 Jitter buffer Settings         G.711/G.729A Jitter Buffer Minimum (ms)         10 ×         G.711/G.729A Jitter Buffer Maximum (ms)         400 ×         G.711/G.729A Jitter Buffer Default Value (ms)         10 ×         G.711/G.729A Jitter Buffer Minimum (ms)         G.721.1 Jitter Buffer Adjustment Interval (s) 1-5s         G.723.1 Jitter Buffer Minimum (ms)         30 ×         G.723.1 Jitter Buffer Maximum (ms)         1200 ×         G.723.1 Jitter Buffer Default value (ms)         30 ×         G.723.1 Jitter Buffer Default value (ms)         30 ×         G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s         5         1.3.3 CODEC Frame Settings         G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s         5         1.3.3 CODEC Frame Settings         G.723.1 Packet Sending Interval (ms)         20 ×         G.711 Packet Sending Interval (ms)         20 ×         1.3.4 Others         Echo Canceller       0 Use ○ Don't use         G.723.1 VAD (Voice Activity Detection)       ○ Use ○ Don't use         G.723.1 Rate       ○ 5 3Kbps ○ 6.3 Kbps         DTMF Detection       ○ Use ○ Don't use         FAX Kignal Detecti	O DSCP	
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G.711/G.729A Jitter Buffer Minimum (ms)       10 ×         G.711/G.729A Jitter Buffer Maximum (ms)       400 ×         G.711/G.729A Jitter Buffer Default Value (ms)       10 ×         G.711/G.729A Jitter Buffer Default Value (ms)       10 ×         G.711/G.729A Jitter Buffer Adjustment Interval (s) 1-5s       5         G.723.1 Jitter Buffer Minimum (ms)       30 ×         G.723.1 Jitter Buffer Maximum (ms)       1200 ×         G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s       5         G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s       5         I.3.3 CODEC Frame Settings       30 ×         G.723.1 Jacket Sending Interval (ms)       30 ×         G.723.1 Packet Sending Interval (ms)       20 ×         G.711 Packet Sending Interval (ms)       20 ×         G.711 Packet Sending Interval (ms)       20 ×         G.723.1 VAD (Voice Activity Detection )       0 Use ○ Don't use         G.723.1 Kate       5 3Kbps ○ 6 3Kbps         DTMF Detection       0 Use ○ Don't use         FAX Signal Detection       0 Use ○ Don't use         FAX High Reliable Method (Original)       0 Use ○ Don't	1.2.) Titter huffer Settings	
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G.711/G.729A Jitter Buffer Adjustment Interval (s) 1-5s       5         G.723.1 Jitter Buffer Minimum (ms)       30 ×         G.723.1 Jitter Buffer Maximum (ms)       1200 ×         G.723.1 Jitter Buffer Default value (ms)       30 ×         G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s       5         G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s       5         I.3.3 CODEC Frame Settings       30 ×         G.723.1 Packet Sending Interval (ms)       30 ×         G.723.1 Packet Sending Interval (ms)       20 ×         G.723.1 Packet Sending Interval (ms)       20 ×         G.721 Packet Sending Interval (ms)       20 ×         I.3.4 Others       20 ×         Echo Canceller       0 Use On't use         G.723.1 VAD (Voice Activity Detection )       0 Use On't use         G.723.1 Rate       5 3Kbps © 6.3Kbps         DTMF Detection       0 Use © Don't use         FAX Signal Detection       0 Use © Don't use         FAX Signal Detection       0 Use © Don't use		
G.723.1 Jitter Buffer Minimum (ms)       30 ▼         G.723.1 Jitter Buffer Maximum (ms)       1200 ▼         G.723.1 Jitter Buffer Maximum (ms)       30 ▼         G.723.1 Jitter Buffer Default value (ms)       30 ▼         G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s       5         1.3.3 CODEC Frame Settings       30 ▼         G.723.1 Packet Sending Interval (ms)       30 ▼         G.729.4 Packet Sending Interval (ms)       20 ▼         G.711 Packet Sending Interval (ms)       20 ▼         G.711 Packet Sending Interval (ms)       20 ▼         I.3.4 Others       20 ▼         Echo Canceller       0 Use ○ Don't use         G.723.1 Rate       0 Stkbps ○ 6 3Kbps         DTMF Detection       ○ Use ○ Don't use         FAX Signal Detection       ○ Use ○ Don't use         FAX High Reliable Method (Original)       ○ Use ○ Don't use		
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G.723.1 Jitter Buffer Default value (ms)       30 ×         G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s       5         1.3.3 CODEC Frame Settings       30 ×         G.723.1 Packet Sending Interval (ms)       30 ×         G.723.1 Packet Sending Interval (ms)       30 ×         G.729A Packet Sending Interval (ms)       20 ×         G.711 Packet Sending Interval (ms)       20 ×         I.3.4 Others       20 ×         Echo Canceller       • Use • Don't use         G.723.1 VAD (Voice Activity Detection )       • Use • Don't use         G.723.1 Rate       • Use • Don't use         DTMF Detection       • Use • Don't use         FAX Signal Detection       • Use • Don't use         FAX High Reliable Method (Original)       • Use • Don't use	G.723.1 Jitter Buffer Minimum (ms)	30 💌
G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s       5         1.33 CODEC Frame Settings       30 ×         G.723.1 Packet Sending Interval (ms)       30 ×         G.729A Packet Sending Interval (ms)       20 ×         G.711 Packet Sending Interval (ms)       20 ×         G.711 Packet Sending Interval (ms)       20 ×         I.3.4 Others       20 ×         Echo Canceller       • Use • Don't use         G.723.1 VAD (Voice Activity Detection)       • Use • Don't use         G.723.1 Rate       • 5.3Kbps • 6.3Kbps         DTMF Detection       • Use • Don't use         FAX Signal Detection       • Use • Don't use         FAX High Reliable Method (Original)       • Use • Don't use	G.723.1 Jitter Buffer Maximum (ms)	1200 💌
1.3.3 CODEC Frame Settings         G.723.1 Packet Sending Interval (ms)         G.729A Packet Sending Interval (ms)         G.711 Packet Sending Interval (ms)         G.711 Packet Sending Interval (ms)         20 ~         1.3.4 Others         Echo Canceller         G.723.1 VAD (Voice Activity Detection )         G.723.1 VAD (Voice Activity Detection )         G.723.1 Rate         DTMF Detection         FAX Signal Detection         G.Use ○ Don't use         FAX Signal Detection         FAX High Reliable Method (Original)	G.723.1 Jitter Buffer Default value (ms)	30 💌
G.723.1 Packet Sending Interval (ms)       30 ×         G.729A Packet Sending Interval (ms)       20 ×         G.711 Packet Sending Interval (ms)       20 ×         1.3.4 Others       20 ×         Echo Canceller       • Use • Don't use         G.723.1 VAD (Voice Activity Detection )       • Use • Don't use         G.723.1 Rate       • 5.3Kbps • 6.3Kbps         DTMF Detection       • Use • Don't use         FAX Signal Detection       • Use • Don't use	G.723.1 Jitter Buffer Adjustment Interval (s) 1-5s	5
G.723.1 Packet Sending Interval (ms)       30 ×         G.729A Packet Sending Interval (ms)       20 ×         G.711 Packet Sending Interval (ms)       20 ×         1.3.4 Others       20 ×         Echo Canceller       • Use • Don't use         G.723.1 VAD (Voice Activity Detection )       • Use • Don't use         G.723.1 Rate       • 5.3Kbps • 6.3Kbps         DTMF Detection       • Use • Don't use         FAX Signal Detection       • Use • Don't use		No.
G.729A Packet Sending Interval (ms)       20 ×         G.711 Packet Sending Interval (ms)       20 ×         1.34 Others       20 ×         Echo Canceller       • Use • Don't use         G.723.1 VAD (Voice Activity Detection)       • Use • Don't use         G.723.1 Rate       • 5.3Kbps • 6.3Kbps         DTMF Detection       • Use • Don't use         FAX Signal Detection       • Use • Don't use		
G.711 Packet Sending Interval (ms)       20 ×         1.3.4 Others       Echo Canceller       • Use • Don't use         G.723.1 VAD (Voice Activity Detection )       • Use • Don't use         G.723.1 Rate       • 5.3Kbps • 6.3Kbps         DTMF Detection       • Use • Don't use         FAX Signal Detection       • Use • Don't use         FAX High Reliable Method (Original)       • Use • Don't use	a second a second se	
1.3.4 Others         Echo Canceller       O Use O Don't use         G.723.1 VAD (Voice Activity Detection )       O Use O Don't use         G.723.1 Rate       O 5.3Kbps O 6.3Kbps         DTMF Detection       O Use O Don't use         FAX Signal Detection       O Use O Don't use         FAX High Reliable Method (Original)       O Use O Don't use		
Echo Canceller       O Use O Don't use         G.723.1 VAD (Voice Activity Detection )       O Use O Don't use         G.723.1 Rate       O 5.3Kbps O 6.3Kbps         DTMF Detection       O Use O Don't use         FAX Signal Detection       O Use O Don't use         FAX High Reliable Method (Original)       O Use O Don't use	G.711 Packet Sending Interval (ms)	20 👻
G.723.1 VAD (Voice Activity Detection )       O Use O Don't use         G.723.1 Rate       O 5.3Kbps O 6.3Kbps         DTMF Detection       O Use O Don't use         FAX Signal Detection       O Use O Don't use         FAX High Reliable Method (Original)       O Use O Don't use	1.3.4 Others	
G.723.1 Rate       O 5.3Kbps O 6.3Kbps         DTMF Detection       O Use O Don't use         FAX Signal Detection       O Use O Don't use         FAX High Reliable Method (Original)       O Use O Don't use	Echo Canceller	💿 Use 🔘 Don't use
DTMF Detection       O Use O Don't use         FAX Signal Detection       O Use O Don't use         FAX High Reliable Method (Original)       O Use O Don't use		💿 Use 🔘 Don't use
FAX Signal Detection     • Use • Don't use       FAX High Reliable Method (Original)     • Use • Don't use	G.723.1 Rate	○ 5.3Kbps ⊙ 6.3Kbps
FAX Signal Detection     • Use • Don't use       FAX High Reliable Method (Original)     • Use • Don't use	DTME Detection	O The O Don't use
FAX High Reliable Method (Original) O Use • Don't use		
DTMF Detection Level (dB) -20-0dB -18	FAX High Reliable Method (Original)	⊙ Use ⊙ Don't use
	DTMF Detection Level (dB) -20-0dB	-18

2. Assign each parameter referring to the descriptions below.

At any time during the session, you can:

- Click ALL CLEAR to reset all parameters to the default values.
- Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").
- 3. Click OK.

You will see a confirmation screen.

#### <u>Note</u>

If your entry contains an invalid value, you will see an error screen. Click  ${\bf OK}$  and try again with correct values.

4. Confirm your entry and click OK.

To return to the previous screen, click CANCEL.

### **Parameter Descriptions**

#### **QoS Field Settings**

The parameters below are used to set the ToS (Type of Service) field in the header of IP packets to control QoS of VoIP communications.

For more information about QoS, refer to "A1.4 QoS (Quality of Service)" of the VoIP Gateway Card Getting Started. For the actual setting values, consult your network administrator.

Parameter & Description	Default	Value Range
ToS	Priority: 0	0 to 7
Specifies the value in the ToS field by a generic term. For details, refer to "Detailed Explanations".	Normal	Normal, Monetary Cost, Reliability, Throughput, Delay
<b>DSCP</b> Specifies the value in the ToS field by a DSCP for DiffServ.	0	0 to 63
<b>HEX</b> Specifies the value in the ToS field by a hexadecimal number.	00	00 to FF

#### **Jitter Buffer Settings**

When voice signals are packetised and transmitted, individual packets can take different paths through the network and arrive at the destination at varied timings. This is referred to as "jitter", and it can cause degradation in speech quality. To compensate for jitter problems, the "jitter buffer" accumulates the packets temporarily for processing.

The parameters below are used to adjust the size of the jitter buffer; however, in general, there is no need to change the default values.

Parameter	Default	Value Range
G.711/G.729A Jitter Buffer Minimum (ms)	10	10 × n (n = 1–40)
G.711/G.729A Jitter Buffer Maximum (ms)	400	10 × n (n = 1–40)
G.711/G.729A Jitter Buffer Default Value (ms)	10	10 × n (n = 1–40)
G.711/G.729A Jitter Buffer Adjustment Interval (s) 1-5s	5	1 to 5
G.723.1 Jitter Buffer Minimum (ms)	30	30 × n (n = 1−40)
G.723.1 Jitter Buffer Maximum (ms)	1200	30 × n (n = 1–40)
G.723.1 Jitter Buffer Default value (ms)	30	30 × n (n = 1−40)

Parameter	Default	Value Range
G.723.1 Jitter Buffer Adjustment Interval (s) 1- 5s	5	1 to 5

#### **CODEC Frame Settings**

The parameters below are used to set the interval between packet transmissions for each type of CODEC. It is recommended that all VoIP Gateway Cards in a VoIP network have the same settings for these parameters.

For details, refer to "Detailed Explanations".

Parameter	Default	Value Range
G.723.1 Packet Sending Interval (ms)	30	30 × n (n = 1−3)
G.729A Packet Sending Interval (ms)	20	10 × n (n = 2–4)
G.711 Packet Sending Interval (ms)	20	10 × n (n = 2–4)

#### Others

Parameter & Description	Default	Value Range
Echo Canceller	Use	Use,
Specifies the use of the echo cancellation feature (G.168).		Don't use
Echo is the audible duplication of a caller's voice on the return path; when echo exists, the caller hears his or her own voice after some delay. The echo canceller eliminates this echo.		
G.723.1 VAD (Voice Activity Detection)	Use	Use,
Specifies the use of the VAD feature (G.723.1).		Don't use
The VAD conserves bandwidth by detecting silent periods during a call and suppressing the packets of silence from being sent to the network.		
Note		
To use this feature, both the local and remote cards must have this parameter set to "Use".		
G.723.1 Rate	6.3K	5.3K,
Specifies the rate of the G.723.1 CODEC.		6.3K
DTMF Detection	Use	Use,
Specifies the use of the DTMF detection feature.		Don't use
DTMF detection enables end-to-end DTMF relay over the network.		
For details, refer to "Detailed Explanations".		

#### 2.2 Programming

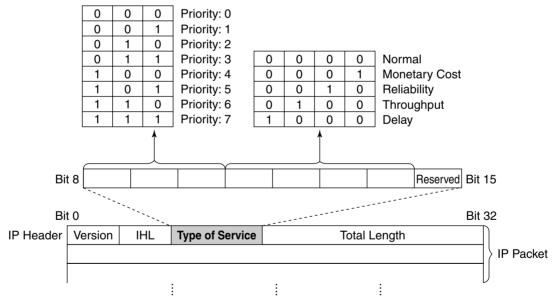
Parameter & Description	Default	Value Range
FAX Signal Detection	Don't use	Use, Don't use
Specifies the use of the fax signal detection feature.		Dontuse
Fax signal detection enables end-to-end fax signal relay over the network.		
For details, refer to "Detailed Explanations".		
FAX High Reliable Method (Original)	Don't use	Use,
Specifies the use of the packet multiplexing feature during fax communications.		Don't use
For details, refer to "Detailed Explanations".		
DTMF Detection Level (dB) -20-0dB	-20	-20 to 0
Specifies the level (in decibels) of DTMF detection.		
Generally, there is no need to change the default value.		

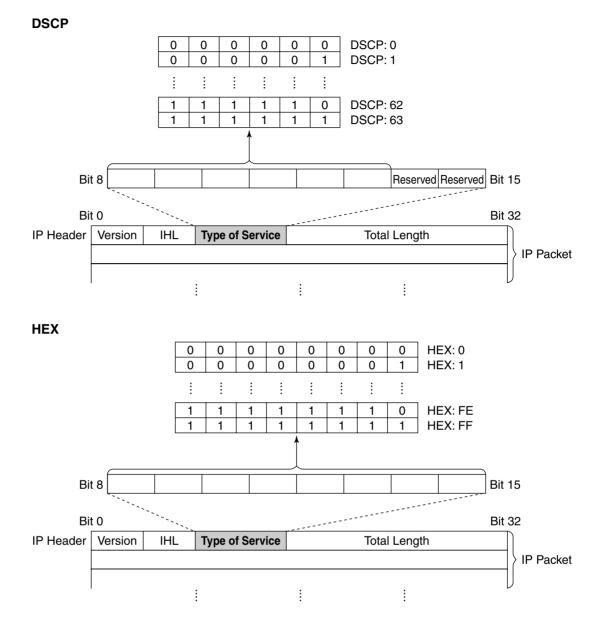
# **Detailed Explanations**

#### **QoS Field Settings**

The following diagrams show the bit values of the ToS field in the IP header in relation to the setting values for the parameters under **QoS Field Settings**:

#### ToS





#### **CODEC Frame Settings**

The amount of required bandwidth depends on the type of CODEC and the selected packet sending interval. The tables below show the amount of bandwidth required for one VoIP channel in each case:

Required Bandwidth for	voice Communication via LAN

CODEC		Packet Sending Interval				
CODEC	20 ms	30 ms	40 ms	60 ms	90 ms	
G.711	87.2 kbps	79.5 kbps	75.6 kbps	—	—	
G.729A	31.2 kbps	23.5 kbps	19.6 kbps	—	—	
G.723.1 5.3 k	—	20.8 kbps	—	13.1 kbps	10.5 kbps	
G.723.1 6.3 k	_	21.9 kbps	—	14.1 kbps	11.6 kbps	

CODEC	Packet Sending Interval				
CODEC	20 ms	30 ms	40 ms	60 ms	90 ms
G.711	84 kbps	77.3 kbps	74 kbps	—	—
G.729A	28 kbps	21 kbps	18 kbps	—	—
G.723.1 5.3 k	—	18.7 kbps	—	12 kbps	9.8 kbps
G.723.1 6.3 k	—	19.7 kbps	—	13.1 kbps	10.8 kbps

#### Required Bandwidth for Voice Communication via WAN (PPP: Point-to-Point Protocol)

When assessing your bandwidth requirements, keep in mind that the longer the packet sending interval, the smaller the amount of required bandwidth, and vice versa.

However, also consider that the shorter the packet sending interval, the clearer the expected speech quality, because delays in packet transmissions will be small. When the packet sending interval is long, delays are more likely to occur, resulting in overall degradation in speech quality with more pauses and loss in voice communications.

Therefore, it is recommended that you select the shortest packet sending interval that network bandwidth can accommodate.

#### **DTMF Detection**

A VoIP network does not guarantee accurate end-to-end transmission of DTMF signals because the DTMF signals are coded/decoded during VoIP communications, in the same way as voice signals. In addition, packets can get lost during transmission.

To compensate for this problem, it is possible to enable DTMF detection for the VoIP Gateway Card to carry out accurate end-to-end DTMF relay over the network. Upon detecting DTMF signals from the PBX, the card encodes the signals and then sends them to the destination, instead of as voice signals. Then at the destination, the card regenerates the DTMF signals from the received encoded signals, and then sends them to the PBX.

Note that when this feature is enabled, the sending of packets is delayed by approximately 30 ms. Therefore, it is recommended that you disable this feature unless DTMF detection is necessary.

#### **FAX Signal Detection**

When sending fax signals using a CODEC other than G.711, the signals cannot be received accurately at the destination because they are coded/decoded over the VoIP network, in the same way as voice signals.

To compensate for this problem, it is possible to enable fax detection for the card. Upon detecting fax signals (CED tones) from the PBX, the card automatically switches the CODEC to G.711 to communicate with the card at the destination. With the G.711 CODEC, it is possible to assure error-free fax communications to a certain extent.

To further assure fax communications, it is strongly recommended that the communicating fax machines be equipped with the ECM (Error Correction Model) feature, an automatic error correction feature. When, for example, the receiving fax machine detects errors in transmission, it can have the sending fax machine resend the relevant data.

When using the fax detection feature, the communicating cards must share the same value (either "G.711Mu" or "G.711A") for the parameter "Voice CODEC Priority" (see "Voice CODEC Settings" in "2.2.2 H.323 Parameters").

#### FAX High Reliable Method

If ECM-capable fax machines are not available, it is necessary to use the "**FAX High Reliable Method**" (a proprietary feature of the card). This feature is used to multiplex the packets when sending them over the network for protection against packet loss. Hence it is possible to achieve reliable fax communications without using ECM-capable fax machines.

However, keep in mind that this feature does not entirely guarantee error-free fax communications. Also, more bandwidth is required for one VoIP channel when using this feature. The tables below show the amount of bandwidth required for one VoIP channel when this feature is in use and not in use:

#### **Required Bandwidth for Fax Communication via LAN**

FAX High Reliable Method	G.711 Packet Sending Interval			
FAX HIGH HEHADE MELHOU	20 ms	30 ms	40 ms	
Don't Use	87.2 kbps	79.5 kbps	75.6 kbps	
Use	224.8 kbps	213.9 kbps	208.4 kbps	

#### Required Bandwidth for Fax Communication via WAN (PPP: Point-to-Point Protocol)

FAX High Reliable Method	G.711 Packet Sending Interval			
FAX HIGH HEIIADIE MELIIOU	20 ms	30 ms	40 ms	
Don't Use	84 kbps	77.3 kbps	74 kbps	
Use	221.6 kbps 211.7 kbps 206.8		206.8 kbps	

#### <u>Notes</u>

- Fax communications cannot take place between the KX-TDA3480 and KX-TDA0480 VoIP Gateway Cards.
- Fax communications in the Super G3 mode are not guaranteed.

# 2.2.4 VoIP Gateway/IP-PBX Interface Parameters

1. Click 1.4 VoIP Gateway/IP-PBX Interface Settings in the main menu.

🗿 IP-GW4 Maintenance Utility - Microsoft Internet Explorer	
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp	
Address 🕘 http://192.168.1.200/ad_line.html	
OK ALL CLEAR MENU LOGOUT	
1. Programming	
1.4 VoIP Gateway/IP-PBX Interface Settings	
1.4.1 Dialing Settings	
* First Digit Time (s) 5-30s	20
* Inter-Digit Time (s) 1-10s	5
* Digit End Code	# ~
1.4.2 Others	
Network CODEC of IP-PBX (of interest to engineers only)	🔘 G711 Mu-Law 💿 G711 A-Law
* indicates setting must be done in the STOP status, and is not follo	wed by a REBOOT.

2. Assign each parameter referring to the descriptions below.

At any time during the session, you can:

- Click ALL CLEAR to reset all parameters to the default values.
- Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").
- 3. Click OK.

You will see a confirmation screen.

#### <u>Note</u>

If your entry contains an invalid value, you will see an error screen. Click **OK** and try again with correct values.

4. Confirm your entry and click **OK**.

To return to the previous screen, click CANCEL.

### **Parameter Descriptions**

The parameters indicated with "\*" must be changed while the VoIP Gateway Card is in the "STOP" status (see "2.3.1 Status Control"). The changes do not have to be followed by a reboot to become effective.

#### **Dialling Settings**

Parameter & Description	Default	Value Range
* First Digit Time (s) 5-30s	20	5 to 30
Specifies the length of time (in seconds) within which the first digit of a dial number must be dialled after seizing a VoIP gateway trunk.		
Generally, there is no need to change the default value.		

Parameter & Description	Default	Value Range
* Inter-Digit Time (s) 1-10s	5	1 to 10
Specifies the length of time (in seconds) within which subsequent digits of a dial number must be dialled.		
Generally, there is no need to change the default value.		
* Digit End Code	#	0 to 9, #, *
Specifies the delimiter code to be used to signal the end of a dial number.		
Generally, there is no need to change the default value.		

#### Others

Parameter & Description	Default	Value Range
Network CODEC of IP-PBX	Not applicable	G.711 Mu-Law,
The value of this parameter is set automatically as appropriate to the setting of the PBX.		G.711 A-Law
There is no need to change the value.		

# 2.2.5 Hunt Pattern Parameters

1. Click 1.5 Hunt Pattern (for Incoming Calls) in the main menu.

🗿 IP-GW4 Maintenance Utility - Microsoft I	nternet Explorer		
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp			
Address a http://192.168.1.200/ad_hunt_pattern.h	tml		
OK ALL CLEAR MENU LO 1. Programming 1. 5 Hunt Pattern (for Incoming Calls)	GOUT		
1.5.1 Hunt Group			
* Port1	Port2		
Hunt Group Hunt group 1	Hunt group 1 💌		
1.5.2 Hunt Pattern Entry Hunt Pattern No. (1-16) Receive Leading Number Hunt Group (Priority1) Hunt Group (Priority2)	1 V - V		
* indicates setting must be done in the STC	P status, and is not followed by a REI	300T.	
ENTRY			
Sort Option			
Hunt Pattern No. 🛛 🖌 Ascending	Order 👻		
SORT			
Hunt Pattern No.	Receive Leading Number	Hunt Group	DELETE

2. Assign each parameter referring to the descriptions below.

At any time during the session, you can:

- Click ALL CLEAR to reset all parameters to the default values.
- Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- Sort the hunt patterns in the table at the bottom of the screen:
  - a. Click the desired sort key and sort order from the Sort Option lists.
  - **b.** Click **SORT**.
- Delete the desired hunt pattern from the table at the bottom of the screen:
  - a. Select the appropriate check box for the hunt pattern you want to delete.
  - **b.** Click **DELETE**.
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").
- 3. Click ENTRY.

A maximum of 16 hunt patterns can be created.

4. Click OK.

You will see a confirmation screen.

#### Note

If your entry contains an invalid value, you will see an error screen. Click **OK** and try again with correct values.

 Confirm your entry and click OK. To return to the previous screen, click CANCEL.

### **Parameter Descriptions**

The parameters indicated with "\*" must be changed while the VoIP Gateway Card is in the "STOP" status (see "2.3.1 Status Control"). The changes do not have to be followed by a reboot to become effective.

#### **Hunt Group**

The parameters below are used to assign VoIP gateway ports 1 and 2 to the hunt groups. For details, refer to "Detailed Explanations".

Parameter	Default	Value Range
* Port 1	Hunt Group 1	Hunt Group 1, Hunt Group 2
* Port 2	Hunt Group 1	Hunt Group 1, Hunt Group 2

#### Hunt Pattern Entry

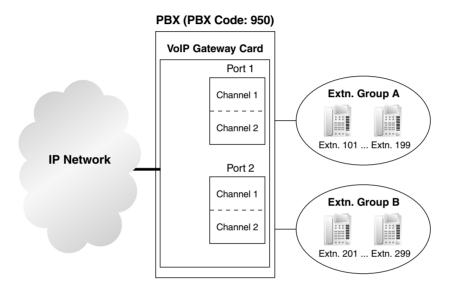
The parameters below are used to create hunt patterns. For details, refer to "Detailed Explanations".

Parameter & Description	Default	Value Range
<ul> <li>* Hunt Pattern No.</li> <li>Specifies the number for the hunt pattern to be created.</li> <li>When changing the current settings of an existing hunt pattern, first delete the hunt pattern and then re-create with new values.</li> </ul>	No default	1 to 16
<ul> <li>* Receive Leading Number</li> <li>Specifies the leading digits in received numbers by which to determine the hunt group to direct incoming calls.</li> <li>For example, to direct incoming calls with numbers starting with "9", specify the number "9" in this parameter. Likewise, to direct incoming calls with numbers starting with "1", specify the number "1".</li> <li>However, if you want to direct incoming calls with numbers starting with "950" and "951" to separate hunt groups, it is necessary to make two hunt patterns with respective numbers, "950" and "951".</li> </ul>	No default	Max. 30 digits
* Hunt Group (Priority1) Specifies the hunt group to which incoming calls are directed first.	1	1, 2

Parameter & Description	Default	Value Range
* Hunt Group (Priority2)	-	1, 2, -
Specifies the hunt group to which incoming calls are directed when the VoIP gateway port assigned to "Hunt Group (Priority1)" is busy.		

### **Detailed Explanations**

The card and the PBX are connected with two VoIP gateway ports, each of which has two communications channels, in much the same way as an ISDN BRI port.



Hunt pattern programming determines the VoIP gateway ports through which to route incoming calls, depending on the received numbers. The following examples provide two different methods of hunt pattern programming.

#### Example 1

The following configuration is used to dedicate two VoIP gateway ports (four channels) to route incoming calls to both extension groups A and B.

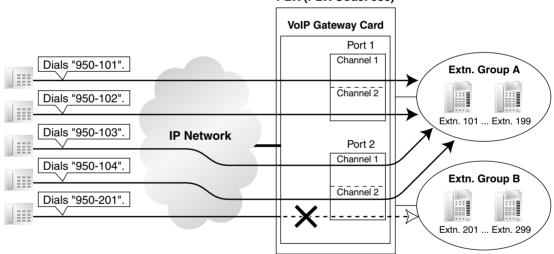
When there are four incoming calls to extension group A in this configuration, no call can be routed to extension group B.

#### **Hunt Group**

	Port 1	Port 2
Hunt Group	Hunt Group 1	Hunt Group 1

#### **Hunt Pattern Entry**

Hunt Pattern No.	1
Receive Leading Number	9
Hunt Group (Priority1)	1
Hunt Group (Priority2)	-



#### PBX (PBX Code: 950)

#### Example 2

The following configuration is used to dedicate a single VoIP gateway port (2 channels) to individual extension groups. Specifically, with this configuration, calls to extension group A are routed through the port 1, and calls to extension group B are routed through the port 2. This configuration rejects the third call to extension group A, while reserving the other port (the other two channels) through which to route calls to extension group B.

#### **Hunt Group**

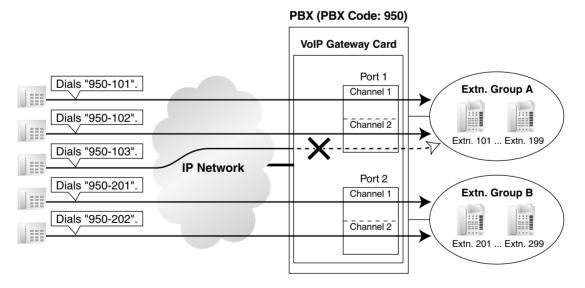
	Port 1	Port 2
Hunt Group	Hunt Group 1	Hunt Group 2

#### Hunt Pattern Entry—1

Hunt Pattern No.	1
Receive Leading Number	9501
Hunt Group (Priority1)	1
Hunt Group (Priority2)	-

#### Hunt Pattern Entry—2

Hunt Pattern No.	2
Receive Leading Number	9502
Hunt Group (Priority1)	2
Hunt Group (Priority2)	-



It is possible to programme the PBX to allocate a single VoIP gateway port to individual extension groups A and B for making outgoing calls. With this programming, each extension group A and B can have a port for its exclusive use.

- The VoIP gateway port the extension group A uses to make outgoing calls: port 1
- The VoIP gateway port the extension group B uses to make outgoing calls: port 2

# 2.2.6 Address Translation Table—GW Entry

1. Click 1.6 DN2IP (Dialed Number to IP Address Translation) in the main menu.

🗿 IP-GW4 Maintenance Utility - Microsoft Internet Explorer
<u>File Edit View Favorites Iools H</u> elp
Address 🕘 http://192.168.1.200/ad_phone_no_menu.html
1. Programming 1.6 DN2IP (Dialed Number to IP Address Translation)
<u>1.6.1 GW Entry</u>
1.6.2 DN2IP Entry
(Note) If the Gatekeeper is used, this DN2IP function dosen't work. Refer to 1.2.3 Gatekeeper Settings.
MENU LOGOUT

2. Click 1.6.1 GW Entry.

P-GW4 Maintenance Utility - Micros	oft Internet Explorer			
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp				
Address 🕘 http://192.168.1.200/ad_register_	gw.html			
OK MENU PREVIOUS	LOGOUT			
1. Programming 1.6 DN2IP (Dialed Number to IP Ad-	dress Translation)			
1.6.1 GW Entry				
	0			
* Comment				
IP Address				
Group No.	0			
* indicates setting must be done in the	STOP status, and is not fo	llowed by a REBOOT.		
ENTRY				
Sort Option				
GW No. 👻 Ascending Order 👻				
SORT				
GW No. Con	nnent	IP Address	Group No.	DELETE

**3.** Assign each parameter referring to the descriptions below.

At any time during the session, you can:

- Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- Click **PREVIOUS** to return to the previous screen.
- Sort the gateway entries in the table at the bottom of the screen:
  - a. Click the desired sort key and sort order from the Sort Option lists.
  - b. Click SORT.

- Delete the desired gateway entry from the table at the bottom of the screen:
  - **a.** Select the appropriate check box for the gateway entry you want to delete.

#### <u>Note</u>

If the gateway entry is registered to a DN2IP entry (see "2.2.7 Address Translation Table—DN2IP Entry"), no check box will be shown for the gateway entry.

- **b.** Click **DELETE**.
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").

#### 4. Click ENTRY.

A maximum of 512 gateway entries can be created.

#### 5. Click OK.

You will see a confirmation screen.

#### <u>Note</u>

If your entry contains an invalid value, you will see an error screen. Click **OK** and try again with correct values.

6. Confirm your entry and click OK.

To return to the previous screen, click CANCEL.

### **Parameter Descriptions**

The parameters indicated with "\*" must be changed while the VoIP Gateway Card is in the "STOP" status (see "2.3.1 Status Control"). The changes do not have to be followed by a reboot to become effective.

#### **GW Entry**

The parameters below are used to create gateway entries for both local and remote cards on the network, as a preliminary step to programming the address translation table (DN2IP).

For a programming example, refer to "3.2.5 Programming the Address Translation Table" of the VoIP Gateway Card Getting Started.

#### <u>Note</u>

If you are using a gatekeeper, create the gateway entry only for the local card.

Parameter & Description	Default	Value Range
* GW No.	0	0 to 511
Specifies the number for the gateway entry to be created.		
When changing the current settings of an existing gateway entry, first delete the gateway entry and then re-create with new values.		
* <b>Comment</b> Specifies the comment for the gateway entry.	-	Max. 16 characters

Parameter & Description	Default	Value Range
* <b>IP Address</b> Specifies the IP address of the card.	No default	<ul> <li>The following addresses are invalid:</li> <li>Class D addresses</li> <li>Class E addresses</li> <li>Loopback addresses</li> </ul>
* Group No. There is no need to change the default value.	0	0 (belong to no group), 1 to 256

# 2.2.7 Address Translation Table—DN2IP Entry

1. Click 1.6 DN2IP (Dialed Number to IP Address Translation) in the main menu.

🗿 IP-GW4 Maintenance Utility - Microsoft Internet Explorer
<u> Eile E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp
Address 🕘 http://192.168.1.200/ad_phone_no_menu.html
1. Programming 1.6 DN2IP (Dialed Number to IP Address Translation)
1.6.1 GW Entry
1.6.2 DN2IP Entry
(Note) If the Gatekeeper is used, this DN2IP function dosen't work. Refer to 1.2.3 Gatekeeper Settings.
MENU LOGOUT

2. Click 1.6.2 DN2IP Entry.

IP-GW4 Maintenance Utility - Micr	osoft Internet Explorer						
<u>File Edit View Favorites Tools H</u> el	p					1	
Address 🛃 http://192.168.1.200/ad_registe	r_phoneno.html					💌 🔁 (	
OK MENU PREVIOUS	LOGOUT						
1. Programming 1.6 DN2IP (Dialed Number to IP A	ddress Translation)						
1.6.2 DN2IP Entry							
Leading Number							
* Remaining Number of Digits	0						
GW No/Group No. Selection	💿 GW 🔘 Group						
GW No/Group No.	0						
* indicates setting must be done in the STOP status, and is not followed by a REBOOT.							
Sort Option							
Leading Number As	cending Order 🔽						
DN2IP Table No. Leading	Number Remainin	g Number of Digits	Group No.	GW No.	Comment	DELETE	

3. Assign each parameter referring to the descriptions below.

At any time during the session, you can:

- Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- Click **PREVIOUS** to return to the previous screen.
  - Sort the address translation entries in the table at the bottom of the screen:
    - a. Click the desired sort key and sort order from the Sort Option lists.
    - **b.** Click **SORT**.
- Delete the desired address translation entry from the table at the bottom of the screen:
  - **a.** Select the appropriate check box for the address translation entry you want to delete.
  - b. Click DELETE.
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").

4. Click ENTRY.

A maximum of 512 address translation entries can be created.

5. Click OK.

You will see a confirmation screen.

#### <u>Note</u>

If your entry contains an invalid value, you will see an error screen. Click **OK** and try again with correct values.

6. Confirm your entry and click OK.

To return to the previous screen, click CANCEL.

### **Parameter Descriptions**

The parameters indicated with "\*" must be changed while the VoIP Gateway Card is in the "STOP" status (see "2.3.1 Status Control"). The changes do not have to be followed by a reboot to become effective.

#### **DN2IP Entry**

The parameters below are used to create DN2IP entries based on the gateway entries created previously (see "2.2.6 Address Translation Table—GW Entry"). The DN2IP entries associate dialled numbers and IP address of the card; therefore, a caller can reach the destination by dialling the number without knowing the card's IP address.

For a programming example, refer to "3.2.5 Programming the Address Translation Table" of the VoIP Gateway Card Getting Started.

#### <u>Note</u>

If you are using a gatekeeper, create the DN2IP entries only for the local card. In this case, you can create up to four DN2IP entries per card.

Note that if you are not using a gatekeeper, there is no maximum number of DN2IP entries.

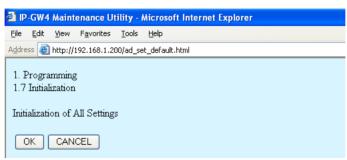
Parameter & Description	Default	Value Range
* Leading Number	No default	Max. 30 digits
Specifies the leading digits in dialled numbers by which to associate calls with the appropriate destination card.		
For example, to associate calls with dialled numbers "950-xxxx" and "951-xxxx" with separate cards, it is necessary to make two DN2IP entries with respective numbers, "950" and "951".		
* Remaining Number of Digits	0	0 to 29
Specifies the number of digits to be dialled following the leading number to access the destination.		
For example, if the dialled numbers are either "950- xxxx" or "951-xxxx" and the numbers "950" and "951" are specified for the parameter " <b>Leading Number</b> " respectively, specify the number "4" in this parameter.		
* GW No/Group No. Selection	GW	GW,
There is no need to change the default value.		Group

#### 2.2 Programming

Parameter & Description	Default	Value Range
* <b>GW No/Group No.</b> Specifies the number of a gateway entry created for	GW No.: 0, Group No.: 1	GW No.: 0 to 511, Group No.: 1 to 256
the destination card.		

# 2.2.8 Initialisation

1. Click 1.7 Initialization in the main menu.



2. Click OK to initialise all parameters to the default values.

To abort initialisation, click **CANCEL**. You will be taken back to the main menu (see "2.1 Main Menu for the Administrator").

🕘 IP	-GW4	Maint	enance Ut	ility - I	Microsoft Internet Explorer		
File	<u>E</u> dit	⊻iew	F <u>a</u> vorites	<u>T</u> ools	Help		
A <u>d</u> dre	ss ど	http://:	192.168.1.20	)0/ad_se	et_default_complete.html		
All settings have been initialized !							
М	ENU	J					

Initialisation has to be followed by a reboot to make the default values effective for the parameters indicated with "#" (e.g., IP address of the VoIP Gateway Card). If not followed by a reboot, the current setting values will remain effective instead.

- 3. Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- 4. Refer to "2.5.1 Reboot" and finish the reboot.

#### <u>Note</u>

If you have forgotten the IP address or log-in password of the VoIP Gateway Card, follow the procedure detailed in "C1 Initialising the VoIP Gateway Card" of the VoIP Gateway Card Getting Started to return all settings to the factory default.

# 2.3 Maintenance

## 2.3.1 Status Control

1. Click 2.1 Change RUN/STOP status in the main menu.

🕘 IP	-GW4	Maint	enance Ut	ility -	Microsof	ft Internet	Explore	ſ		
Eile	Edit	⊻iew	F <u>a</u> vorites	<u>T</u> ools	Help					
Addre	ss 🙋	http://	192.168.1.20	)0/state	_chg.html					
	2. Maintenance 2.1 Change RUN/STOP status									
Cu	rrent I	RUN/:	STOP Sta	tus			RUN			
Sta	tus afl	ter cha	anging				O RUI	N 📀	STOP	
For	rced I	Discon	nect when	execu	ting STC	P	🔲 Yes			
	<mark>)K</mark>	MEN		OUT	]					

Current RUN/STOP Status shows the current status of the VoIP Gateway Card.

2. Click RUN or STOP for Status after changing.

If you want to forcibly change the status from "RUN" to "STOP" while there are ongoing calls, click the **Yes** check box for **Forced Disconnect when executing STOP**. This will allow you to place the card in the "STOP" status even when there are ongoing calls.

At any time during the session, you can:

- Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- Click **LOGOUT** to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").
- 3. Click OK.

You will see a confirmation screen.

4. Click OK.

You will see a result screen.

#### <u>Note</u>

If the operation is not successful, you will see an error screen. Click **OK** to return to the previous screen, and then try again.

5. Click OK.

You will be taken back to the Change RUN/STOP status screen.

# 2.3.2 Maintenance Settings

1. Click 2.2 Maintenance Settings in the main menu.

IP-GW4 Maintenance Utility - Microsoft Internet Explorer		
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp		
Address 🕘 http://192.168.1.200/ad_maintenance.html		
OK ALL CLEAR MENU LOGOUT		
2. Maintenance		
2.2 Maintenance Settings		
2.2.1 Username/Password Settings		
Username for Administrator	Administrator	
Password		
Password (Confirmation)		
2.2.2 Programming Auto Disconnect Time Settings		
Programming Auto Disconnect Time (min) 1-30min	10	
2.2.3 Periodic Diagnosis Time Interval Settings		
* Periodic Diagnosis Time Interval (min) 0-1440min	10	
2.2.4 Program Version		
Program Version	Page-0: 0.0.0.55	
riogram version	rage-0. 0.0.0.00	
* indicates setting must be done in the STOP status, and is no	t followed by a REBOOT.	

**2.** Assign each parameter referring to the descriptions below.

At any time during the session, you can:

- Click ALL CLEAR to reset all parameters to the default values.
- Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").
- 3. Click OK.

You will see a confirmation screen.

### <u>Note</u>

If your entry contains an invalid value, you will see an error screen. Click  ${\rm OK}$  and try again with correct values.

4. Confirm your entry and click **OK**.

To return to the previous screen, click CANCEL.

# **Parameter Descriptions**

The parameters indicated with "\*" must be changed while the VoIP Gateway Card is in the "STOP" status (see "2.3.1 Status Control"). The changes do not have to be followed by a reboot to become effective.

### **Username/Password Settings**

Parameter & Description	Default	Value Range	
Username for Administrator	Administrator	Max. 16 characters	
Administrator-level log-in user name.			

#### 2.3 Maintenance

Parameter & Description	Default	Value Range
Password	Administrator	Max. 16 characters
Administrator-level log-in password.		
Password (Confirmation)	No default	Max. 16 characters
Confirmation of the administrator-level log-in password.		

## Programming Auto Disconnect Time Settings

Parameter & Description	Default	Value Range
Programming Auto Disconnect Time (min) 1- 30min	10	1 to 30
Specifies the time (in minutes) until programming is automatically terminated.		
If the specified period of time passes with no programming input, programming will automatically be terminated. This prevents problems caused by continuation of log-in status in cases such as being unable to log out due to the sudden failure of a PC.		

### Periodic Diagnosis Time Interval Settings

Parameter & Description	Default	Value Range
<ul> <li>* Periodic Diagnosis Time Interval (min) 0- 1440min</li> </ul>	10	0 (no periodic diagnosis),
Specifies the time (in minutes) between periodic self- diagnoses to test operation as described in "2.3.3 Diagnosis".		1 to 1440
If failures are detected during the self-diagnosis, the card will alert the PBX.		

### **Program Version**

Parameter	Default	Value Range
Program Version	Display only	

# 2.3.3 Diagnosis

This function is used to carry out the self-diagnostic programme manually. If failures are detected, there is a potential for trouble with the operation of the VoIP Gateway Card.

1. Click 2.3 Diagnosis in the main menu.

P-GW4 Maintenance Utility - Microsoft Internet Explorer						
<u>File Edit View Favorites Tools H</u> elp						
Address 🕘 http://192.168.1.200/ad_diagnose.html						
2. Maintenance						
2.3 Diagnosis						
TANTT D. 1 PD .						
LAIN Loop Back Test						
H.323 Dummy Call Test						
LAN Loop Back Test H.323 Dummy Call Test						

2. Click **DIAGNOSIS** to carry out the self-diagnostic programme.

🕘 IP	-GW4	Maint	enance Ut	tility - I	hicrosoft Internet	Explorer		
Eile	<u>E</u> dit	⊻iew	F <u>a</u> vorites	<u>T</u> ools	Help			
A <u>d</u> dre	ss 🙋	http://:	192.168.1.2	00/ad_dia	gnose.html			
	2. Maintenance 2.3 Diagnosis							
LA	N Lo	op Ba	ck Test		OK			
<b>H</b> .3	H.323 Dummy Call Test OK							

- **3.** Do one of the following:
  - Click **DIAGNOSIS** to carry out the self-diagnostic programme again.
  - Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
  - Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").

# 2.3.4 Log Information

The function to collect log information is provided for engineer use only. However, in the case that a need should arise, this section provides the procedure for collecting the log information.

1. Click 2.4 Log Information in the main menu.

le <u>E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools	Help
dress 🧃 http://192.168.1.200/ad_log	_option.html
. Maintenance	
.4 Log Information (of interest to	engineers only)
Sort by Time/Date	💿 Ascending Order 🔘 Descending Order
Log Target	🗹 Error Log 🗹 Call Log 📃 Protocol Log
Error Log Filter	🗹 Information 🔽 Minor Error 🔽 Major Error
	H.225.0 H.245 RAS DPRAM LAPD QSIG Others
Protocol Log Filter	
Protocol Log Filter Number of Log items	100
	100 OMM-DD-YYYY ODD-MM-YYYY

2. Click OK.

Log information is displayed.

P-GW4 Maintenance Utility - Microsoft Internet Explorer							
<u>File Edit Vi</u> ew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp							
Address 🕘 http://192.168.1.200/ad_log_info.html							
2. Maintenance 2.4 Log Information (of interest to engineers only)							
Date Time Type Explanation							
Download (All) Download (Displayed portion only)							
UPDATE LOG SETTING MENU LOGOUT							

3. Click Download (All) to download the log information.

# 2.4 Data Management

It is strongly recommended that you download the configuration data and the address translation table (DN2IP) data from the VoIP Gateway Card for backup and archive purposes. The following sections provide the procedures for downloading and uploading.

# 2.4.1 Upload of Configuration Data

Before uploading the data, place the card in the "STOP" status (see "2.3.1 Status Control").

1. Click 3.1 Upload of Configuration data (PC -> VoIP Gateway) in the main menu.

🕘 IP	GW4	Maint	enance Ut	ility - I	hicros	oft Inter	net Explorer		
Eile	<u>E</u> dit	⊻iew	F <u>a</u> vorites	Tools	Help				
A <u>d</u> dre	ss 🙋	http://1	192.168.1.20	)0/ad_da	ita_uplo	ad.html			
3.1	Uploa		Configurati	on data	a (PC	-> VoIP	Gateway)		
Ente	er uplo	ad file	e name						
							Browse	)	
Ify	ou are	sure,	click UPL	,OAD.					
	UF	PLOAE	)(PC->Voll	⊃ Gate\	vay)				
M	ENU		GOUT						

2. Click Browse and choose a file to upload.

At any time during the session, you can:

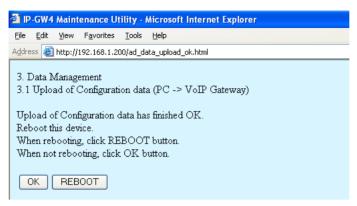
- Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").

#### 3. Click UPLOAD(PC->VoIP Gateway).

The upload operation starts.

#### Notes

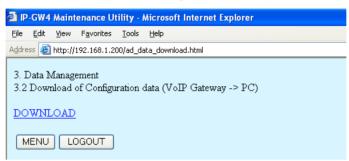
- If the upload operation is executed while the card is in the "RUN" status, you will see an error screen. Click **Change RUN/STOP status Screen** and place the card in the "STOP" status (see "2.3.1 Status Control"), and then upload the data again.
- If the operation is not successful for other reasons, you will see another error screen. Click OK to return to the previous screen, and then upload the data again.



- 4. Do one of the following:
  - Click **REBOOT** to make the changes effective now. You will see a confirmation screen. Refer to "2.5.1 Reboot" and finish the reboot.
  - Click **OK** to return to the previous screen without rebooting.
     However, remember to reboot the card at the end of the programming session to make changes effective.

# 2.4.2 Download of Configuration Data

1. Click 3.2 Download of Configuration data (VoIP Gateway -> PC) in the main menu.



2. Click DOWNLOAD.

At any time during the session, you can:

- Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").
- 3. Specify the file name and the folder in which to save the file.

# 2.4.3 Upload of Address Translation Table

Before uploading the data, place the card in the "STOP" status (see "2.3.1 Status Control").

1. Click 3.3 Upload of DN2IP data (PC -> VoIP Gateway) in the main menu.

🚰 IP-GW4 Maintenance Utility - Microsoft Internet Explorer						
Eile Edit View Favorites Iools Help						
Address 🕘 http://192.168.1.200/ad_routing_data_upload.html						
3. Data Management 3.3 Upload of DN2IP data (PC -> VoIP Gateway) Enter upload file name						
Browse						
If you are sure, click UPLOAD.						
MENU LOGOUT						

2. Click **Browse** and choose a file to upload.

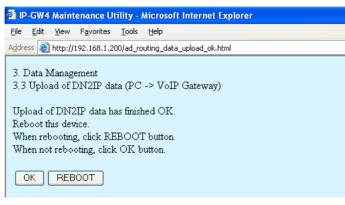
At any time during the session, you can:

- Click **MENU** to return to the main menu (see "2.1 Main Menu for the Administrator").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").
- 3. Click UPLOAD(PC->VoIP Gateway).

The upload operation starts.

#### <u>Notes</u>

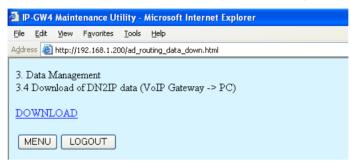
- If the upload operation is executed while the card is in the "RUN" status, you will see an error screen. Click **Change RUN/STOP status Screen** and place the card in the "STOP" status (see "2.3.1 Status Control"), and then upload the data again.
- If the operation is not successful for other reasons, you will see another error screen. Click **OK** to return to the previous screen, and then upload the data again.



- 4. Do one of the following:
  - Click **REBOOT** to make the changes effective now. You will see a confirmation screen. Refer to "2.5.1 Reboot" and finish the reboot.
  - Click **OK** to return to the previous screen without rebooting.
     However, remember to reboot the card at the end of the programming session to make changes effective.

# 2.4.4 Download of Address Translation Table

1. Click 3.4 Download of DN2IP data (VoIP Gateway -> PC) in the main menu.



#### 2. Click DOWNLOAD.

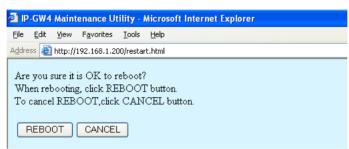
At any time during the session, you can:

- Click MENU to return to the main menu (see "2.1 Main Menu for the Administrator").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "2.5.2 Log Out").
- 3. Specify the file name and the folder in which to save the file.

# 2.5 Others

# 2.5.1 Reboot

1. Click **REBOOT** in the main menu.



#### 2. Click REBOOT.

To return to the main menu, click CANCEL (see "2.1 Main Menu for the Administrator").

#### <u>Note</u>

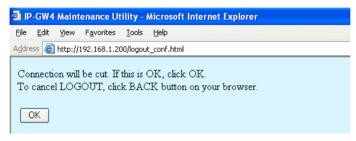
If the reboot operation is not successful, you will see an error page.

IP-GW4 Maintenance Utility - Microsoft Internet Explorer							
<u>F</u> ile <u>E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp							
Address 🗃 http://192.168.1.200/state.html							
Rebooted successfully.							
RUN/STOP Status : RUN							
To program again, login again.							
LOGIN Screen							

To continue programming, click LOGIN Screen and log in again.
 You will see the log-in screen (see "1.1 Starting the IP-GW4 Maintenance Utility").

# 2.5.2 Log Out

1. Click LOGOUT in the main menu.



2. Click OK to log out.

# Section 3

# **Installer Functions**

This section provides operating instructions for the IP-GW4 Maintenance Utility when logged in as the Installer.

# 3.1 Main Menu for the Installer

The IP-GW4 Maintenance Utility provides the following menu to a user logged in as the Installer.

P-GW4 Maintenance Utility - Microsoft Internet Explorer						
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp						
Address 🚳 http://192.168.1.200/in_menu.html						
MENU						
1. Maintenance						
<u>1.1 Change RUN/STOP status</u>						
<u>1.2 Maintenance Settings</u>						
2. Data Management						
2.1 Upload of Firmware data (PC -> VoIP Gateway)						
2.2 Handling of Firmware Page						
REBOOT						
LOGOUT						

## Maintenance

Menu	Section Reference		
1.1 Change RUN/STOP status	3.2.1 Status Control		
1.2 Maintenance Settings	3.2.2 Maintenance Settings		

## **Data Management**

Men	IU	Section Reference
2.1 Upload of Firmware data (PC -> VoIP Gateway)		3.3.1 Upload of Firmware Data
2.2	Handling of Firmware Page	3.3.2 Handling of Firmware Page

## **Others**

Menu	Section Reference	
REBOOT	3.4.1 Reboot	
LOGOUT	3.4.2 Log Out	

# 3.2 Maintenance

# 3.2.1 Status Control

1. Click 1.1 Change RUN/STOP status in the main menu.

			enance Ut			ft Inter	net	Explorer			
Eile	Edit	<u>V</u> iew	F <u>a</u> vorites	<u>T</u> ools	Help						
Addre	ess 👸	http://:	192.168.1.20	00/state	_chg.html						
	1. Maintenance 1.1 Change RUN/STOP status										
Cu	rrent ]	RUN/S	STOP Sta	tus				STOP			
Sta	atus af	ter cha	anging					💿 RUN 🤇	STO	Р	
Fo	rced I	Discon	nect when	execu	ting ST(	OP		🗌 Yes			
	<mark>ok</mark> (	MEN		OUT	]						

Current RUN/STOP Status shows the current status of the VoIP Gateway Card.

#### 2. Click RUN or STOP for Status after changing.

If you want to forcibly change the status from "RUN" to "STOP" while there are ongoing calls, click the **Yes** check box for **Forced Disconnect when executing STOP**. This will allow you to place the card in the "STOP" status even when there are ongoing calls.

At any time during the session, you can:

- Click MENU to return to the main menu (see "3.1 Main Menu for the Installer").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "3.4.2 Log Out").
- 3. Click OK.

You will see a confirmation screen.

4. Click OK.

You will see a result screen.

#### <u>Note</u>

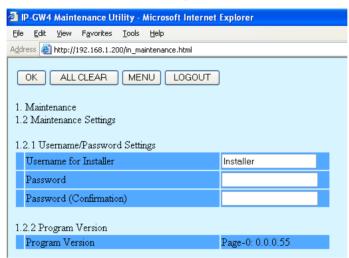
If the operation is not successful, you will see an error screen. Click **OK** to return to the previous screen, and then try again.

5. Click OK.

You will be taken back to the Change RUN/STOP status screen.

# 3.2.2 Maintenance Settings

1. Click 1.2 Maintenance Settings in the main menu.



**2.** Assign each parameter referring to the descriptions below.

At any time during the session, you can:

- Click ALL CLEAR to reset all parameters to the default values.
- Click MENU to return to the main menu (see "3.1 Main Menu for the Installer").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "3.4.2 Log Out").
- 3. Click OK.

You will see a confirmation screen.

#### <u>Note</u>

If your entry contains an invalid value, you will see an error screen. Click **OK** and try again with correct values.

4. Confirm your entry and click OK.

To return to the previous screen, click CANCEL.

### **Parameter Descriptions**

#### **Username/Password Settings**

Parameter & Description	Default	Value Range	
Username for Installer	Installer	Max. 16 characters	
Installer-level log-in user name.			
Password	Installer	Max. 16 characters	
Installer-level log-in password.			
Password (Confirmation)	No default	Max. 16 characters	
Confirmation of the installer-level log-in password.			

### **Program Version**

Parameter	Default	Value Range	
Program Version	Display only		

# 3.3 Data Management

The upload and update operations of the firmware data are closely related. First follow the procedure as described in "3.3.1 Upload of Firmware Data" to upload new firmware data to the VoIP Gateway Card, and then go on to "3.3.2 Handling of Firmware Page" to update the card with the newly uploaded firmware data.

# 3.3.1 Upload of Firmware Data

Before uploading the data, place the card in the "STOP" status (see "3.2.1 Status Control").

1. Click 2.1 Upload of Firmware data (PC -> VoIP Gateway) in the main menu.

P-GW4 Maintenance Utility - Microsoft Internet Explorer							
<u>File Edit View Favorites Tools H</u> elp							
Address 🕘 http://192.168.1.200/firm_down.html							
2. Data Management 2. 1 Upload of Firmware data (PC -> VoIP Gateway)							
(Step-1) Upload to the temporary buffer.							
Enter upload file name.							
Browse							
If you are sure, click UPLOAD.							
UPLOAD(PC->VoIP Gateway)							
MENU							

- **2.** Do the following to upload the firmware data to the temporary buffer in the VoIP Gateway Card:
  - a. Click Browse and choose a file to upload.

At any time during the session, you can:

- Click MENU to return to the main menu (see "3.1 Main Menu for the Installer").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "3.4.2 Log Out").
- b. Click UPLOAD(PC->VoIP Gateway).

The upload operation starts.

#### <u>Note</u>

If the upload operation is executed while the card is in the "RUN" status, you will see an error screen. Click **Change RUN/STOP status Screen** and place the card in the "STOP" status (see "3.2.1 Status Control"), and then upload the data again.

🖹 IP-GW4 N	aintenance	Utility - N	Aicrosoft Internet Explorer			
<u>Eile E</u> dit <u>V</u>	/jew F <u>a</u> voril	es <u>T</u> ools	Help			
Address 🙆 hi	tp://192.168	1.200/firm_u	pdate.html			
2. Data Ma 2.1 Upload Upload of I	l of Firmwa	,	C -> VoIP Gateway) shed OK.			
(Step-2) C Select Page			nware data in temporary buffer to Pa	ge-0 or Page-1		
Firmware :	Status		Page-0: Main Operation Mode Page-1: OLD			
Startup Pa	ge		Page-0			
Select Pag	Select Page 📀 Page-0 💿 Page-1					
If you are s To cancel t			button on your browser.			

**Firmware Status** shows the current firmware status of page 0 and page 1, and **Startup Page** shows the current active page on startup. For details about these parameters, refer to "3.3.2 Handling of Firmware Page".

- 3. Do the following to update the desired page with the uploaded firmware data:
  - **a.** Click the option for the page whose current firmware status is not "Main Operation Mode" for **Select Page**.
  - **b.** Click **OK**.

You will see a confirmation screen.

c. Click OK.

2 IP-GW4 Maintenance Utility - Microsoft Internet Explorer
Ejle Edit Yew Favorites Iools Help
Address 🗃 http://192.168.1.200/firm_update_complete.html
2. Data Management 2. 1 Upload of Firmware data (PC -> VoIP Gateway)
Copy of Firmware data has finished OK.
(Step-3) Startup with the uploaded Firmware data for confirmation.
If you want to startup with the uploaded Firmware for confirmation, click REBOOT button.
(Note) With this REBOOT, the uploaded Firmware is used only for confirmation. After you confirm there is no problem after this REBOOT, be sure to set the NEW Page as "Main Operation Mode" in 2.2 Handling of Firmwea Page.
REBOOT CANCEL

- 4. Do one of the following:
  - Click **REBOOT** to start up the VoIP Gateway Card with the updated page and confirm that the upload operation has been carried out successfully.

You will see a reboot confirmation screen. Refer to "3.4.1 Reboot" and finish the reboot.

#### <u>Note</u>

After the reboot, the card starts up with the updated page temporarily so that you can confirm the result of the upload operation. If you reboot again, the card does not start up with the updated page, but starts up with the page whose current firmware status is "Main Operation Mode".

- Click **CANCEL** to return to the **Upload of Firmware data (PC -> VoIP Gateway)** screen without starting up the card with the updated page.
- 5. Switch the firmware status of the updated page from "NEW" to "Main Operation Mode".

After the previous step (with or without a reboot), the firmware status of the updated page is still "NEW". To set the updated page as the active page on startup, you must change its firmware status to "Main Operation Mode". For instructions, refer to "3.3.2 Handling of Firmware Page".

The following is a sample image of the screen in which you can set the active page on startup:

IP-GW4 Maintenance Utility - Microsoft Int	ernet Explorer	
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp		
Address 🗃 http://192.168.1.200/firm_state_chg.html		
2. Data Management 2.2 Handling of Firmware Page Please operate page-related functions.		
Program Version	Page-0:1.000 Page-1:1.050	
Firmware Status	Page-0: Main Operation Mode Page-1: NEW	
Startup Page	Page-1	
Operation	🔿 Empty 💿 Main Operation Mode	
Select Page	○ Page-0 ⊙ Page-1	

# 3.3.2 Handling of Firmware Page

1. Click 2.2 Handling of Firmware Page in the main menu.

ile <u>E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>F</u>	<u>H</u> elp	
dress 🧃 http://192.168.1.200/firm_sta	te_chg.html	
2. Data Management		
2.2 Handling of Firmware Page		
Please operate page-related functi	ons.	
Program Version	Page-0: <mark>1.000</mark> Page-1: <b>1.050</b>	
Firmware Status	Page-0: Main Operation Mode Page-1: NEW	
Startup Page	Page-1	
A 2	🔿 Empty 💿 Main Operation Mode	
Operation		

For details about the parameters on this screen, refer to the descriptions below.

2. Click Main Operation Mode for Operation to set the desired page as the active page on startup.

At any time during the session, you can:

- Click MENU to return to the main menu (see "3.1 Main Menu for the Installer").
- Click LOGOUT to log out from the IP-GW4 Maintenance Utility (see "3.4.2 Log Out").

#### <u>Note</u>

Do not click **Empty**, as it is an option provided for engineer use only.

- **3.** Click the option for the page in the "NEW" status for **Select Page** to specify it as the target page of the operation.
- 4. Click OK.

You will see a confirmation screen.

**5.** Click **OK**.

You will see a result screen.

Click OK.
 You will be taken back to the Handling of Firmware Page screen.

## **Parameter Descriptions**

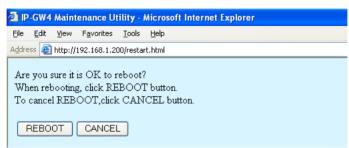
Parameter & Description	Default	Value Range
Program Version	Display only	
Indicates the current version of the two firmware data in the VoIP Gateway Card: page 0 and page 1.		

Parameter & Description	Default	Value Range	
Firmware Status	Display only		
Indicates the current firmware status of page 0 and page 1. There are three kinds of status indication:			
<ul> <li>Main Operation Mode: Active firmware data on startup under normal operation.</li> </ul>			
• OLD: Firmware data uploaded to the card before the firmware data in the "Main Operation Mode" status was uploaded.			
<ul> <li>NEW: Firmware data uploaded to the card after the firmware data in the "Main Operation Mode" status was uploaded.</li> </ul>			
Note			
The status indications "OLD" and "NEW" are irrelevant to the version of the firmware data.			
Startup Page	Display only		
Indicates the active page on startup. Generally, the startup page is the firmware data whose status is "Main Operation Mode".			
The exception is when the card undergoes a reboot after a firmware data upload operation; in this case, the card starts up with the page in the "NEW" status. This is for the purposes of confirming the result of the upload operation. If you reboot again, the card starts up with the page in the "Main Operation Mode" status.			
To set the updated page as the active page on startup, you must change its firmware status to "Main Operation Mode".			
Operation	Empty,	Not applicable	
Specifies whether to set the page (selected with the parameter " <b>Select Page</b> ") as the active page on startup ("Main Operation Mode"), or delete the page ("Empty").	Main Operation Mode		
"Empty" is an option provided for engineer use only.			
Select Page Specifies the target page of the operation selected with the parameter "Operation".	Page-0, Page-1	Not applicable	

# 3.4 Others

# 3.4.1 Reboot

1. Click **REBOOT** in the main menu.



#### 2. Click REBOOT.

To return to the main menu, click CANCEL (see "3.1 Main Menu for the Installer").

#### <u>Note</u>

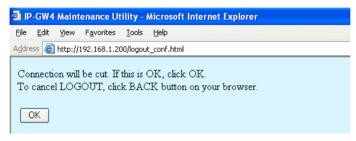
If the reboot operation is not successful, you will see an error page.

🕘 IP	GW4	Maint	enance Ut	ility - i	Micros	ft Internet Explore	I.	
Eile	<u>E</u> dit	⊻iew	F <u>a</u> vorites	<u>T</u> ools	Help			
Address 🗃 http://192.168.1.200/state.html								
Reb	ootec	l succe	essfully.					
RU	N/ST	'OP Si	tatus :	RU	Ш			
To program again, login again.								
LO	GIN :	Screen	l.					

To continue programming, click LOGIN Screen and log in again.
 You will see the log-in screen (see "1.1 Starting the IP-GW4 Maintenance Utility").

# 3.4.2 Log Out

1. Click LOGOUT in the main menu.



2. Click OK to log out.

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