

Panasonic®



Programming Item List

Hybrid IP-PBX

Model No. **KX-HTS824**
KX-HTS32

Thank you for purchasing this Panasonic product.
Please read this manual carefully before using this product and save this manual for future use.
In particular, be sure to read "1.1 For Your Safety, page 8" before using this product.

KX-HTS Series: PJMPR Software File Version 001.40000 or later

Manuals and supporting information are provided on the Panasonic Web site at
<http://www.panasonic.net/pcc/support/pbx>

Introduction

About this Programming Item List

The Programming Item List is designed to serve as a system programming reference for the Panasonic Hybrid IP-PBX. It explains how to program this PBX using Web Maintenance Console.

The Programming Item List is divided into the following sections:

Section 1, Overview

Provides an overview of programming the PBX

Section 2, Programming Items

Serves as a reference for programming items when using Web Maintenance Console to program the PBX.

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Notice

- During a long programming session, it is highly recommended that you periodically save the system data to the internal storage. If the PBX undergoes a sudden power failure or if the system is reset for some reason, all the system data in the RAM will be lost. However, if system data has been saved to the internal storage, it can be easily reloaded.
- To save the system data to the internal storage, press the "Save & Logout" button in the top right corner of the screen before resetting the PBX or turning off the power.
After the data is changed, if you close the browser without pressing the "Save & Logout" button in the top right corner of the screen, the data may not be saved. Make sure to press the "Save & Logout" button before exiting the configuration.

List of Abbreviations

Refer to List of Abbreviations in the Feature Manual.

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Section 1

Overview

This section provides an overview of programming the PBX.

1.1 For Your Safety

To prevent personal injury and/or damage to property, be sure to observe the following safety precautions. **The following symbols classify and describe the level of hazard and injury caused when this unit is operated or handled improperly.**



This notice means that misuse could result in death or serious injury.



This notice means that misuse could result in injury or damage to property.

The following types of symbols are used to classify and describe the type of instructions to be observed.



This symbol is used to alert users to a specific operating procedure that must not be performed.



This symbol is used to alert users to a specific operating procedure that must be followed in order to operate the unit safely.

**WARNING**

- Unplug the PBX from the AC outlet if it emits smoke, an abnormal smell or makes unusual noise. These conditions can cause fire or electric shock. Confirm that the smoke has stopped and contact an authorized Panasonic Factory Service Center.

**CAUTION**

- **To the Administrator or Installer regarding account passwords**
 1. Please provide all system passwords to the customer.
 2. To avoid unauthorized access and possible abuse of the PBX, keep the passwords secret, and inform the customer of the importance of the passwords, and the possible dangers if they become known to others.
 3. The PBX has no passwords set initially. For security, select an installer password as soon as the PBX system is installed at the site.
 4. Change the passwords periodically.
 5. It is strongly recommended that passwords of 10 numbers or characters be used for maximum protection against unauthorized access.
- There is a risk that fraudulent telephone calls will be made if a third party discovers a personal identification number (PIN) (verification code PIN or extension PIN) of the PBX. The cost of such calls will be billed to the owner/renter of the PBX. To protect the PBX from this kind of fraudulent use, we strongly recommend:
 - a. Keeping PINs secret.
 - b. Selecting complex, random PINs that cannot be easily guessed.
 - c. Changing PINs frequently.

1.2 Input Rules

This chapter describes rules regarding input in detail.

1.2.1 Valid characters

Describes characters that can be input.

An input character check is implemented through Javascript when using Web Maintenance Console, and errors are displayed in a dialog box when invalid characters are input.

Valid characters are shown in the following:

ASCII code
0x08, 0x0D, 0x20, 0x21-0x7E

Character
Numbers <0–9>
Letters <a–z, A–Z>
Others <! " # \$ % & ' () * + , - . / : ; < = > ? @ [\] ^ _ ` { } ~>
<SP> (Space)

1.2.2 Input character restrictions

A set of character restrictions is defined as follows:

Input Type	Valid characters	Usage
Dial1	Numbers <0–9> Others <# *>	Dial for trunk.
Dial3	Numbers <0–9> Others <# * N (N=2–9) X (0–9) Z (Z=1–9)>	Dial for outbound.
Dial4	Numbers <0–9> Others <# * N (N=2–9) X (0–9, # * {# and * work as a wild card.}) x>	Dial for dialing table.
Unsigned Number	Numbers <0–9> Others < . > However, decimal points are omitted.	Used for input of numerical values using [0–9] with a clearly defined range. (Usage is separate from "Text Numeric") The range is not by the number of digits but indicated by the actual numerical range that can be input (for port numbers, "1-65535").
Text	No input restrictions.	
Text Numeric	Numbers <0–9>	Used for the input of digits [0–9] as a character string for floating extension numbers, etc. (Usage is separate from "Unsigned Number") Indicated by a range, such as from 3 digits in length, etc.

Input Type	Valid characters	Usage
Text Email	Numbers <0–9> Letters <a–z, A–Z> Others <- _ . * ! # \$ % & ' * + / = ? ^ ` { } ~ @ >	Characters valid for e-mail text
Text LCD	Valid characters and the valid number of characters used are in compliance with the LCD display specifications. No input restrictions.	Character strings displayed in LCD
Text LCDHDV	Valid characters and the valid number of characters used are in compliance with the LCD of HDV series display specifications. For more information about input characters, refer to 5.1 Input Characters (TextLCDHDV).	Character strings displayed in LCD of HDV series.
Text1	Numbers <0–9> Letters <a–z, A–Z>	Character strings consisting of alphanumeric characters only
Text3	Numbers <0–9> Letters <a–z, A–Z> Others < - . > Input error conditions The following conditions are invalid for input according to the RFC rules <ul style="list-style-type: none"> • A hyphen at the beginning of input characters will be invalid • A hyphen at the end of input characters will be invalid • A hyphen input before or after a dot will be invalid • Continuous input of dots will be invalid 	Domain Name, FQDN
Text5	Numbers <0–9> Letters <a–z, A–Z> Others <! " # \$ % & ' () * + , - . / : = @ [\] ^ _ ` { } ~ > <SP> (Space)	All ASCII characters excluding < < > ; > < < > ; > cannot be used in conf file of Asterisk.
Text Router	Numbers <0–9> Letters <a–z, A–Z> Others < except " < > % \ ^ [] ` + \$, = ' # & : <\t> (tab) >	Acceptable characters for a router
Text Router2	Numbers <0–9> Letters <a–z, A–Z> Others < except " < > % \ ^ [] ` + \$, = ' # & : <\t> (tab) { } <SP> (Space) >	Acceptable characters for a router
Text Router3	Numbers <0–9> Letters <a–z, A–Z> Others < except " < > % \ ^ [] ` + \$, = ' # & : <\t> (tab) { } <SP> (Space) . >	Acceptable characters for a router
Text Router Pwd	Numbers <0–9> Letters <a–z, A–Z> Others < except " < > % \ ` >	Acceptable characters for a router

1.2.2 Input character restrictions

Input Type	Valid characters	Usage
Text Router Pwd2	Numbers <0–9> Letters <a–z, A–Z> Others < except " \ % ` { } ~ # \$ <SP> (Space) <lt> (tab) >	Acceptable characters for a router
Text Router Pwd3	Numbers <0–9> Letters <a–z, A–Z> Others < except " \ % ` { } ~ <SP> (Space) >	Acceptable characters for a router
Text Router SSID	Numbers <0–9> Letters <a–z, A–Z> Others < ! " # \$ % & ' () * + , - . / : ; < = > ? @ [\] ^ _ ` { } ~ ><SP> (Space) <ul style="list-style-type: none"> • A space at the beginning of input characters will be invalid • A space at the end of input characters will be invalid 	Acceptable characters for a router
Text ASCII	All ASCII characters Numbers <0–9> Letters <a–z, A–Z> Others < ! " # \$ % & ' () * + , - . / : ; < = > @ [\] ^ _ ` { } ~ > <SP> (Space)	There are no setting items currently used.
Text HEX	Numbers <0–9> Letters <a–f, A–F>	WEP Key
IP Address	Numbers <0–9> Others < . > ^ Remarks Values of 1, 01 and 001, or 10 and 010 are recognized as the same value and are saved without the leading 0s. Input error conditions <ol style="list-style-type: none"> 1. Input of class E: When the upper 4 Bits of the first octet is 1111, it will be treated as an error. Error example: 240.0.0.0, 255.0.0.0 2. Input of class D: When the upper 4 Bits of the first octet is 1110, it will be treated as an error. Error example: 224.0.0.0, 239.0.0.0 3. Input of local loop back address: Input of 127.0.0.1 will be treated as an error. 	

Input Type	Valid characters	Usage
Subnet Mask	Numbers <0–9> Others < . > * ¹ Remarks Prefix description such as "/24" will not be accepted. Input error conditions For the first to fourth octet, only the following values are accepted. All others will be treated as errors. 255(0xFF), 254(0xFE), 252(0xFC), 248(0xF8), 240(0xF0), 224(0xE0), 192(0xC0), 128(0x80), 0(0x00)	
Subnet Mask2	Numbers <0–9> Others < . > * ¹ Remarks Prefix description such as "/24" will not be accepted. "0.0.0.0" cannot be set.	
Subnet Mask3	Numbers <0–9> Others < . > * ¹ Remarks Prefix description such as "/24" will not be accepted. The following values cannot be set: <ul style="list-style-type: none"> • 0.0.0.0 • 255.255.255.255 	
Subnet Mask4	Numbers <0–9> Others < . > * ¹ Remarks Prefix description such as "/24" will not be accepted. For the first to fourth octet, only the following values are accepted: 0 (0x00)–255 (0xFF)	
MAC Address	Numbers <0–9> Letters <a–f, A–F> Others < : > Remarks Only the following input is accepted, with each "x" being a number or letter as described above. xx:xx:xx:xx:xx:xx (17 characters in total) Input error conditions Input of broadcast/multicast addresses will be treated as an error. : When Bit 0 of the first octet is 1, it will be treated as an error. Error example: 01:00:00:00:00:00	
MAC Address2	Numbers <0–9> Letters <a–f, A–F> Others < : > Remarks Only the following input is accepted, with each "x" being a number or letter as described above. xx:xx:xx:xx:xx:xx (17 characters in total)	

¹ Only valid when it is required to divide into octets.

1.3 PC Programming

1.3.1 Starting Web Maintenance Console

System programming, diagnosis and administration can be performed with a PC using Web Maintenance Console. Web Maintenance Console is accessed through a Web browser running on a networked PC. This section describes how to set up and access Web Maintenance Console.

System Requirements

Required Operating System

Supported versions of Windows® will be periodically updated by the web browser provider. Refer to your browser's support page.

Supported Browsers for use with Web Maintenance Console

- Windows Internet Explorer 11
- Mozilla® Firefox® version 46 or later
- Google Chrome v51 or later

Always apply the latest updates to your Web browser software. For details, refer to your Web browser's documentation. Only the browsers and browser versions listed above are supported for use with Web Maintenance Console.

Browser Setting Requirements

The following functions must be enabled in the Web browser's settings to use Web Maintenance Console:

- JavaScript
- The ability to download files
- The display of animations
- The display of images

For details regarding the above settings, refer to your Web browser's documentation.

1.4 Easy Setup Wizard

Description

In the Easy Setup Wizard, you will configure the mandatory settings required for the PBX. When you login to Web Maintenance Console for a PBX that is in its initialized, factory default state, the Easy Setup Wizard for that PBX will launch automatically.

Screen Name	Setting item	Description	Input Type	Note
Welcome to Panasonic KX-HTS	WebMC Language	Selects the language to be used in Web Maintenance Console. Follow the on-screen instructions to set the language as necessary.	Select	
	Area Code	Selects the area code to be set in your country/area. Follow the on-screen instructions to set the area code.	Select	
	Password Setting	Input the Installer Password (4-16 characters, [A–Z, a–z, 0–9]) and input it in the Re-enter column for confirmation.	Text1	"1234" cannot be set as the Password.
1.Date & Time	Time Zone	Selects the Time Zone.	Select	
	Local Time	Selects the time setting.	Select	
	Daylight Saving	Selects the Daylight Saving Mode.	Radio	
2.Numbering	Idle Line Access (Local Access)	Specifies the idle trunk access setting method.	Radio	
	Extension Number	Specifies how extension numbers are assigned.	Radio	
3.Incoming Call	DIL / Doorphone	Selects destinations for all ports and all time modes for DIL / Doorphone.	Select	
4.Dialling Plan	International Access Code	Selects the international access code.	Radio	
	International Access Code Other (6 digits)	When selecting "Other" in the above setting, set an international access code of 6 digits or less.	Text Numeric	
	Local Area Code (6 digits)	Specifies the local area code.	Text Numeric	

1.4 Easy Setup Wizard

Screen Name	Setting item	Description	Input Type	Note
5.IP	IP Address for LAN Port—IP Address	Specifies the IP address for the LAN port.	IP Address	
	IP Address for LAN Port—Subnet Mask	Displays the Subnet Mask for the LAN port.	-	
	Use Built-in DHCP Server of KX-HTS	Enables the built-in DHCP server.	Checkbox	
	Use Built-in DHCP Server of KX-HTS—Starting IP address	Specifies the start of the IP address range. The built-in DHCP server provides an IP address within this specified range.	IP Address	
	Use Built-in DHCP Server of KX-HTS—Ending IP address	Specifies the end of the IP address range. The built-in DHCP server provides an IP address within this specified range.	IP Address	
	IP Address of SIP Extension in existing router	Enables the IP address of SIP Extension in the existing router.	Checkbox	
	IP Address of SIP Extension in existing router—IP Address	Specifies the IP address of SIP Extension in the existing router.	IP Address	

Section 2

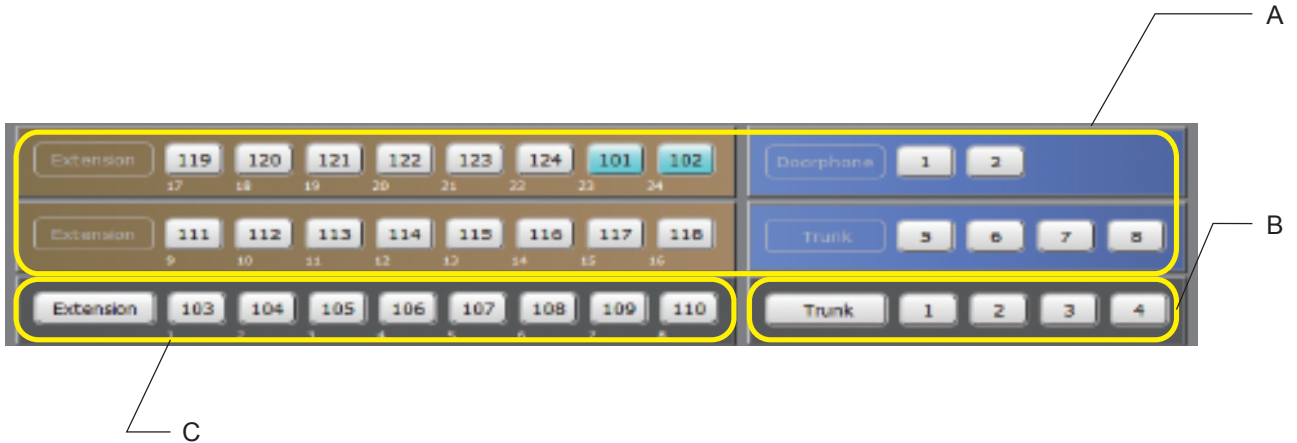
PBX Configuration

This section provides setting items for programming the PBX.

2.1 Login

2.1.1 PBX Configuration

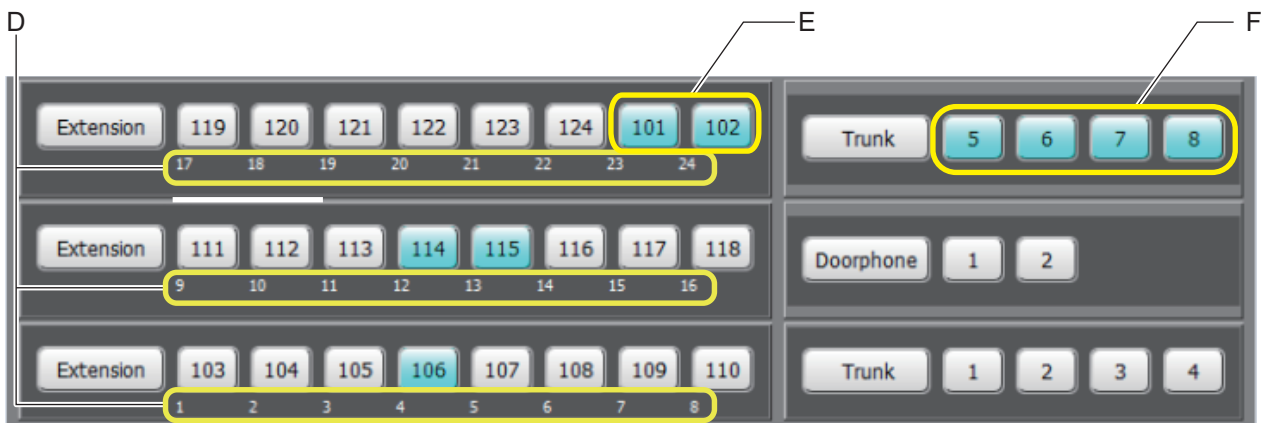
Setting screen (Default)



- A Uninstalled Slot
- B Trunk Slot (Pre-installed)
- C Extension Slot (Pre-installed)

Setting screen (Operation example)

When a card is inserted to a vacant slot, the insertion is reflected on the display of the screen. When an SIP extension or a SIP trunk is assigned, each button becomes light blue. (E), (F)



- D Port number
- E SIP extensions are active
- F SIP trunks are active

2.1.2 Extension

Name	Description
Extension	Opens the Extension port setting screen. 2.3.1 PBX Configuration—[2-1] Extension—Port
Extension number	Opens the Extension number setting screen.

2.1.3 Trunk

Name	Description
Trunk	Opens the Trunk port setting screen. 2.4.1 PBX Configuration—[3-1] Trunk—Port
Trunk number	Opens the Trunk number setting screen.

2.1.4 Doorphone

Name	Description
Doorphone	Opens the Doorphone port setting screen. 2.3.5 PBX Configuration—[2-5] Extension—Doorphone
Doorphone number	Opens the Doorphone port setting screen. 2.3.5 PBX Configuration—[2-5] Extension—Doorphone

2.2 PBX Configuration—[1] System

2.2.1 PBX Configuration—[1-1] System—Date & Time

Description

The date and time of the PBX can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
1.Date & Time—Date & Time	Time Setting	Indicates the current date and time. Values can be entered by selecting the parameter you want to change the new value.	Select	
	Automatic Time Adjustment	Selects the Automatic Time Adjustment target.	Radio	If you select Caller ID, confirm with your carrier whether timestamps are included with Caller ID information received from the network.
	SNTP Server IP Address	Sets the IP address of the SNTP server for the Automatic Time Adjustment destination.	IP Address	This setting is displayed only when Automatic Time Adjustment is set to "SNTP".
	Time Zone	Sets the time zone of the PBX.	Select	
1.Date & Time—Daylight Saving	Daylight Saving	Check the "Setting" and selects the available summer time from the setting list. Specifies each summer time periods.	Check / Select	There will be a time correction at 2:00AM on the set day.

2.2.2 PBX Configuration—[1-2] System—MOH

Description

Sound files on the programmer's PC can be installed to the PBX for use as Music on Hold (MOH).

Screen / Tab	Setting item	Description	Input Type	Note
2.MOH	Music on Hold	Selects a sound source for Music on Hold.	Radio	
	Upload Music File	Sound files on the programmer's PC can be installed to each PBX for use as Music on Hold (MOH).	-	<ul style="list-style-type: none"> Only WAV files can be installed, and file names must not exceed 62 characters in length (including the file extension ".wav"). Only use ASCII characters in file names. Files must not be larger than 40 MB on the PC.
	Sound on Transfer	Shows a sound which is heard during transferring to a destination.	-	
	Sound on DISA	Selects a sound which is heard by a caller using DISA when calling to dialing destinations such as an extension or trunk, etc. after DISA answers.	Radio	

2.2.3 PBX Configuration—[1-3] System—Week Table

Description

A specific time mode (Day, Lunch or Night) can be selected for operation depending on the time of day. The time mode can be switched either automatically or manually.

Select the desired switching mode.

Screen / Tub	Setting item	Description	Input Type	Note
3.Week Table	Time Service Switching Mode	Selects the exchange mode (Automatic/Manual) for time service.	Radio	
	Current Mode	Selects a current time service mode.	Select	
	Time Table	Check and selects the available time service from the setting list. Specifies each time table for starting time service.	Check / Select	<p>It is possible to set by each time service.</p> <ul style="list-style-type: none"> Day Lunch Night

2.2.4 PBX Configuration—[1-4] System—Numbering Plan

Description

Details of the extension numbering schemes, trunk line / trunk group access number, feature access numbers and Redial numbers can be programmed here.

Specify the feature number.

Screen / Tab	Setting item	Description	Input Type	Note
4.Numbering Plan – Main	Extension Numbering Scheme	The leading numbers and the number of additional digits of the extension numbers for a maximum of 6 different extension numbering schemes can be programmed. <ul style="list-style-type: none"> • Dial (1 digit) + Additional Dial 	Text Numeric / Select	
	Call Park	Specifies the Call Park number.	Text Numeric	
	Trunk Line / Trunk Group	Specifies the outgoing trunk call feature number, by Trunk Line or Trunk Group. Additional digits "0" and trunk number are used to make a trunk call using a certain trunk. Additional digits "#" and trunk group number are used to make a trunk call using an idle trunk from a certain trunk group.	Text Numeric	
	Idle Line Access (Local Access)	Specifies the feature number used to make a trunk call by Idle Line Access (selects an idle trunk automatically).	Text Numeric	
	Feature	Displays one digit to be used for feature number operations.	-	
	Redial	Specifies one digit to be used for redial operations.	Text Numeric	

Screen / Tab	Setting item	Description	Input Type	Note
4.Numbering Plan — Features	Setting by Extension —*77	Shows a feature number of Extension Dial Lock Set / Cancel	-	
	Setting by Extension —*710	Shows a feature number of FWD/DND Set / Cancel: Call from CO & Extension	-	
	Setting by Extension —*799	Shows a feature number of Extension PIN Set / Cancel	-	
	Setting by Manager Extension —*36	Shows a feature number of OGM Record / Clear / Playback	-	
	Setting by Manager Extension —*55	Shows a feature number of Door Open	-	
	Setting by Manager Extension —*780	Shows a feature number of Time Service (Day / Lunch / Night) Switch	-	
	Setting by Manager Extension —*#	Shows a feature number of System Setting	-	
	Call by Extension —**	Shows a feature number of System Speed Dialing	-	
	Call by Extension —*33	Shows a feature number of Paging	-	
	Call by Extension —*40	Shows a feature number of Group Call Pickup	-	
	Call by Extension —*41	Shows a feature number of Directed Call Pickup	-	
Call by Extension —*47	Shows a feature number of Walking COS / Account Code	-		
4.Numbering Plan — Quick Dial	Dial (2 digits)	Specifies Quick Dial by 1 or 2 digits.	Dial1	Do not use the numbers already specified in "Dial" for the Main tabs. Do not use the "*" at the first digit.
	Phone Number (32 digits)	Specifies the number to be actually dialed by Quick Dial specified in the above.	Dial1	
	Additional Dial	Specifies additional dialing for Quick Dial.	Select	

2.2.5 PBX Configuration—[1-5] System—Timers

Screen / Tab	Setting item	Description	Input Type	Note
4.Numbering Plan— Dialing Plan	Trunk Dialing Plan (32 digits)	Specifies the trunk dialing plan.	Dial4	

2.2.5 PBX Configuration—[1-5] System—Timers

Description

Various system-timers can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
5.Timers	Dial—Inter-digit (s)	Specifies the length of time within which subsequent digits must be dialed before the PBX sends a busy tone.	Select	
	Recall—Hold Recall (s)	Specifies the length of time until the holding extension receives a Hold Recall ring or alarm tone when a held call remains unretrieved.	Select	
	Recall—Disconnect after Recall (x60s)	Specifies the length of time for Transfer Recall and Call Park Recall. (Hold Recall is not applied)	Select	
	Limited Call Time—CO-CO Duration Time (x60s)	Specifies the length of time that a trunk-to-trunk call can be maintained before being disconnected.	Select	
	Limited Call Time—Extension-CO/ Extension Duration Time (x60s)	Specifies the length of time that an extension-to-trunk / extension-to-extension call can be maintained before being disconnected.	Select	

2.2.6 PBX Configuration—[1-6] System—System Options

Description

Various system settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
6.System Options— Feature	Trunk Access Priority	It can be assigned a priority for Idle Line Access. When making a trunk call by Idle Line Access, the PBX will search trunk for an idle trunk according to the priority assigned here.	Radio	
	Reserved concurrent trunk call	Selects the trunk number to prioritize for concurrent trunk call reservation.	Select	
	Reserved concurrent G.729 call	Selects the assignment number for the number of concurrent G.729 calls.	Select	
	Forced Assignment to SIP Extension Port	Setting to change forcibly from an analog port to an SIP port.	Radio	
	Ring Tone Pattern — Trunk	Selects the pattern of the ring tone for receiving a trunk call.	Radio	
	Ring Tone Pattern — Extension/ Doorphone	Selects the pattern of the ring tone for receiving an extension call.	Radio	
6.System Options— Audio Gain	Sending Source	Selects the sending source for audio gain.	Select	
	Receiving Source — Analog SLT	Selects the audio gain for analog SLTs.	Select	
	Receiving Source — SIP Extension	Selects the audio gain for SIP extensions.	Select	
	Receiving Source — Doorphone	Selects the audio gain for doorphones.	Select	
	Receiving Source — Analog Trunk	Selects the audio gain for analog trunks.	Select	
	Receiving Source — SIP Trunk	Selects the audio gain for SIP trunks.	Select	
	Receiving Source — DISA	Selects the audio gain for DISA.	Select	
	Receiving Source — Conference	Selects the audio gain for conferences.	Select	
	Receiving Source — Voice Mail	Selects the audio gain for voice mail.	Select	

2.2.6 PBX Configuration—[1-6] System—System Options

Screen / Tab	Setting item	Description	Input Type	Note
	Receiving Source —[Reserve]	Reserved.	Select	
6.System Options— DSP	DSP for VM / DISA —IP Side - Gain1 (Network to PBX)	Selects the gain for the IP side (Network to PBX).	Select	
	DSP for VM / DISA —IP Side - Gain2 (PBX to Network)	Selects the gain for the IP side (PBX to Network).	Select	
	DSP for VM / DISA —PCM Side - Gain1 (PBX to Network)	Selects the gain for the PCM side (PBX to Network).	Select	
	DSP for VM / DISA —PCM Side - Gain2 (Network to PBX)	Selects the gain for the PCM side (Network to PBX).	Select	
	DSP for VM / DISA —PCM Side - Echo Canceller Type	Selects the echo canceller type for the PCM side.	Select	
	DSP for VM / DISA —PCM Side - Echo Canceller NLP	Selects the echo canceller NLP for the PCM side.	Select	
	DSP for VM / DISA —PCM Side - Echo Canceller Window Size	Selects the echo canceller window size for the PCM side.	Select	
	DSP for Conference—IP Side - Gain1 (Network to PBX)	Selects the gain for the IP side (Network to PBX).	Select	
	DSP for Conference—IP Side - Gain2 (PBX to Network)	Selects the gain for the IP side (PBX to Network).	Select	
	DSP for Conference—PCM Side - Gain1 (PBX to Network)	Selects the gain for the PCM side (PBX to Network).	Select	
	DSP for Conference—PCM Side - Gain2 (Network to PBX)	Selects the gain for the PCM side (Network to PBX).	Select	

Screen / Tab	Setting item	Description	Input Type	Note
	DSP for Conference—PCM Side - Echo Canceller Type	Selects the echo canceller type for the PCM side.	Select	
	DSP for Conference—PCM Side - Echo Canceller NLP	Selects the echo canceller NLP for the PCM side.	Select	
	DSP for Conference—PCM Side - Echo Canceller Window Size	Selects the echo canceller window size for the PCM side.	Select	
6.System Options— [Reserved]	Reserved 1-10	Reserved	Radio	

2.2.7 PBX Configuration—[1-7] System—CDR

Description

CDR (Call Detail Record) is automatically recorded detailed information for each.

Screen / Tab	Setting item	Description	Input Type	Note
7.CDR	CDR Recording	Enables CDR Recording	Radio	
	Save CDR to PC	Saves recorded CDR to a PC. Click the Save button to initiate saving.	-	

2.3 PBX Configuration—[2] Extension

2.3.1 PBX Configuration—[2-1] Extension—Port

Description

Settings can be made for each extension port. Click the "Edit" button located next to the extension number to enable editing of the setting values.

Screen / Tab	Setting item	Description	Input Type	Note
1.Port—Main	Extension Number	Specifies the extension number of the extension.	Text Numeric	
	Edit Button	Clicking this button enables the editing of settings for the extension number.	-	
	Extension Name	Specifies the name of the extension.	TextLCDHD V	
	Attribution	Sets the port to SIP or Analog.	Select	
	FAX Connection	Enables the fax connection.	Radio	
	Manager	Sets the manager authority for the port extension.	Radio	
	TRS Level (COS)	Specifies the Toll Restriction (TRS) level for making calls in each time service mode, speed dial, and dial lock.	Radio	
	Remote Dial Lock	Remote outgoing call restriction.	Radio	
	Call Forward to CO	Enables the forwarding of calls to trunks.	Radio	
	Trunk Call Block	Sets the trunk connection restriction to trunks (CO1 to CO8) from the port extension.	Radio	
	Call from DISA	Enables the reception of calls from DISA.	Radio	
	Call Pickup Deny	Specifies whether calls can be picked up by other extensions.	Radio	Allow: Allows other extension users to pick up calls to your extension Deny: Prevents other extension users from picking up calls to your extension

Screen / Tab	Setting item	Description	Input Type	Note
	Walking COS	Allows the Walking COS feature to be used from a remote location (inside the PBX, or outside the PBX using DISA). <ul style="list-style-type: none"> • by Other Extension • by DISA 	Radio	
	Voice Mail	Sets the number of the Voice Mail recording and the recording time for a voice mail. <ul style="list-style-type: none"> • Recording Number • Recording Time (s) 	Unsigned Number	
	CLIP	Specifies the number used as the CLIP number for SIP carrier -1 or SIP carrier - 2.	Text Numeric	
1.Port—Analog Extension	Extension Number	Specifies the extension number of the extension.	Text Numeric	
	Edit Button	Clicking this button enables the editing of settings for the extension number.	-	
	Caller ID Signal Send	Enables the extension to send Caller ID information.	Radio	
1.Port—SIP Extension	Extension Number	Specifies the extension number of the extension.	Text Numeric	
	Edit Button	Clicking this button enables the editing of settings for the extension number.	-	
	SIP Registration Status	Indicates the SIP extension registration status.	-	
	SIP User Name	Specifies the SIP user name of the SIP extension.	Text3	
	Registration Password	Specifies the password used for registering a SIP Extension to the PBX.	Text3	
	Current IP Address	Indicates the current IP address of the SIP Extension (reference only).	-	

2.3.1 PBX Configuration—[2-1] Extension—Port

Screen / Tab	Setting item	Description	Input Type	Note
	Current MAC Address	Indicates the current MAC address of the SIP Extension (reference only).	-	
	Phone Location	Specifies the type of extension connected to the port.	Radio	Local: The extension is located on the same network as the PBX (standard configuration). Remote/Remote(G.729): The extension is accessing the PBX remotely (up to 8 extensions).
	Alive Check	Enables the alive-check feature.	Select	
	Alive Check - Interval	Selects the interval of the alive-check feature.	Select	
	Packet Sampling Time (ms)	Specifies the time interval between measurements (samples) of sound data during a conversation. The smaller this number, the higher the quality of the transmitted sound.	Select	
	DTMF	Selects the DTMF of a SIP extension.	Select	
	Video Support	Enables the video support feature.	Radio	
	Call Limit	Selects the concurrent call session number.	Select	

2.3.2 PBX Configuration—[2-2] Extension—Phone

Description

Settings can be made for each telephone. Click the "Edit" button located on the side of an item to enable editing of the setting values.

Screen / Tab	Setting item	Description	Input Type	Note
2.Phone	Extension Number	Specifies the extension number of the extension.	Select	Only the Installer level account can change this setting.
	Web User Account – ID	Specifies an Extension user ID (Extension number)	Text5	
	Web User Account – Password	Indicates an extension user password as "*****". Click an "Edit" button, and specified a password.	Text1	
	PIN	Specifies the user's extension PIN.	Text Numeric	
	Contact – Phone (Home)	Specifies the user's home telephone phone number.	Dial1	
	Contact – Phone (Mobile1)	Specifies the user's mobile telephone phone number.	Dial1	
	Contact – Phone (Mobile2)	Specifies the user's mobile telephone phone number.	Dial1	
	Contact – Email Address	Specifies the user's e-mail address.	Text Email	
	FWD/DND – FWD/DND Type	Specifies the FWD/DND type of incoming calls.	Select	
	FWD/DND – Destination Number	Specifies the FWD/DND destination.	Radio Dial1	When select the "Other" radio button to set another destination within 32 digits.
	FWD/DND – FWD No Answer Time	Specifies the length of time that an incoming call rings at the extension before the call is forwarded.	Select	It is possible to set by each time service. <ul style="list-style-type: none"> • Day • Lunch • Night
	FWD/DND – Transferred call no answer option	Selects the action to take when a call is transferred because there was no answer.	Select	

2.3.3 PBX Configuration—[2-3] Extension—Flexible Buttons

Screen / Tab	Setting item	Description	Input Type	Note
	Voice Mail – Send Email when Message is left	Specifies the notification to a subscriber when a new message is recorded in his or her mailbox by e-mail.	Radio	When selecting "Enable", send Voice Mail recording notice email to "Contact – Email Address"
	Voice Mail – Delete Message after Email	To specify if a sent voice message is deleted from the Voice Message system after it is sent by e-mail, select "Enable" for Delete After Send (Voice File).	Radio	If voice message files are set to be deleted after they are sent by e-mail, be aware that a deleted file cannot be recovered in the event that the e-mail is not sent successfully.
	Call Waiting	Specifies whether to receive call waiting notifications for calls from a trunk, an extension, doorphone calls, and calls via an incoming call distribution group.	Radio	
	Extension Dial Lock (Local)	Specifies the extension lock or unlock. The pre-programmed TRS level will be applied to the extension when "Lock" is selected.	Select	

2.3.3 PBX Configuration—[2-3] Extension—Flexible Buttons

Description

Each flexible button can be customized to allow one-touch access to a certain feature.

Screen / Tab	Setting item	Description	Input Type	Note
3.Flexible Buttons	Extension Number	Specifies the extension number of the extension.	Select	Only the Installer level account can change this setting.
	Telephone	Indicates the type of telephone and the key information.	-	
	Flexible Buttons – Key Location	Indicates the location number of flexible buttons.	-	
	Flexible Buttons – Type	Specifies the feature to be assigned to the flexible button.	Select	
	Flexible Buttons – CO Line Number/ Extension Number/ Dial	Specifies the number to be dialed.	Select / Text Numeric	

Screen / Tab	Setting item	Description	Input Type	Note
	Flexible Buttons – Key Name	Specifies the name of each flexible button.	TextLCDHD V	
	DSS Buttons (Require DSS Console) – Key Location	Indicates the location number of flexible buttons.	-	
	DSS Buttons (Require DSS Console) – Type	Specifies the feature to be assigned to the flexible button.	Select	
	DSS Buttons (Require DSS Console) – CO Line Number/ Extension Number/ Dial	Specifies the number to be dialed.	Select / Text Numeric	
	DSS Buttons (Require DSS Console) – Key Name	Specifies the name of each flexible button.	TextLCDHD V	

2.3.4 PBX Configuration—[2-4] Extension—Extension Group

Description

Extension group settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
4.Extension Group	Group Number	Selects the floating extension number of the extension group that you want to display. The information relating to the selected group is shown below.	Select	
4.Extension Group – Group Setting	Group Number	Specifies the floating extension number of the extension group.	Text Numeric	
	Group Name	Specifies the extension group name.	Text LCD	
	Distribution Method	Selects the distribution method of the extension group.	Select	
	FWD – FWD Type	Selects the FWD type of the extension group.	Select	
	FWD – Destination Number	Specifies the destination number of the extension group.	Dial1	

2.3.5 PBX Configuration—[2-5] Extension—Doorphone

Screen / Tab	Setting item	Description	Input Type	Note
	FWD—FWD No Answer Time	Selects the length of time that an incoming call rings at the extension before the call is forwarded.	Select	It is possible to set by each time service. • Day • Lunch • Night
	FWD—Transferred call no answer option	Selects the action to take when a call is transferred because there was no answer.	Select	
	Paging Type	Selects the paging type of the extension group.	Select	
4.Extension Group—Extension of Member	Extension No. Setting	Edits the member of the extension group.	-	
	Extension of Member	In the edit dialog, you can select up to 24 extension numbers that have been added to the extension group.	Select	

2.3.5 PBX Configuration—[2-5] Extension—Doorphone

Description

Doorphone settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
5.Doorphone	Extension Number of Doorphone	Specifies the extension number of the doorphone 1 or 2.	Text Numeric	
	Name	Specifies the name of the doorphone 1 or 2.	Text LCD	
	Doorphone Call Destination	Selects the call destination from the doorphone 1 or 2.	Select	It is possible to set by each time service. • Day • Lunch • Night
	Doorphone Ring Duration	Selects the ring duration from the doorphone.	Select	
	Door Open Duration	Selects the length of time that a door is unlocked.	Select	

2.3.6 PBX Configuration—[2-6] Extension—Analog SLT Property

Description

Analog SLT property settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
6.Analog SLT Property	SLT Off Hook Time	Selects the SLT off hook time.	Select	
	SLT Flash Detection	Selects the SLT flash detection.	Select	
	Flash Timing - Min.	Selects the minimum flash timing.	Select	
	Flash Timing - Range	Selects the range of flash timing.	Select	
	Ring Tone Pattern Option	Selects the ring tone pattern option.	Select	

2.3.7 PBX Configuration—[2-7] Extension—SIP Extension Property

Description

SIP extension property settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
7.SIP Extension Property	Domain for SIP Extension	Specifies the domain for SIP extension.	Text3	If this setting is blank, the system automatically adds the LAN's IP address to the domain.
	IP Address of SIP Extension in existing router	Specifies the IP address and subnet mask of the SIP extension in the existing router.	IP Address Subnet Mask	
	DSP—IP Side - Gain1 (Network to PBX)	Selects the gain of the IP side (Network to PBX).	Select	
	DSP—IP Side - Gain2 (PBX to Network)	Selects the gain of the IP side (PBX to Network).	Select	
	DSP—PCM Side - Gain1 (PBX to Network)	Selects the gain of the PCM side (PBX to Network).	Select	
	DSP—PCM Side - Gain2 (Network to PBX)	Selects the gain of the PCM side (Network to PBX).	Select	
	DSP—PCM Side - Echo Canceller Type	Selects the echo canceller type of the PCM side.	Select	

2.3.7 PBX Configuration—[2-7] Extension—SIP Extension Property

Screen / Tab	Setting item	Description	Input Type	Note
	DSP—PCM Side - Echo Canceller NLP	Selects the echo canceller NLP of the PCM side.	Select	
	DSP—PCM Side - Echo Canceller Window Size	Selects the echo canceller window size of the PCM side.	Select	
	SIP Extension & SIP Trunk Common—Voice (RTP) UDP Port No. (Server)	Specifies the port number for voice (RTP) UDP.	Unsigned Number	
	SIP Extension & SIP Trunk Common—SIP Port Number	Specifies the SIP port number.	Unsigned Number	
	SIP Extension & SIP Trunk Common—Jitter Buffer Type for Voice	Selects the jitter buffer type for voice.	Select	
	SIP Extension & SIP Trunk Common—Jitter Buffer Delay Min. for Voice	Selects the minimum jitter buffer delay for voice.	Select	
	SIP Extension & SIP Trunk Common—Jitter Buffer Delay Max. for Voice	Selects the maximum jitter buffer delay for voice.	Select	
	SIP Extension & SIP Trunk Common—Jitter Buffer Delay Init. for Voice	Selects the initial jitter buffer delay for voice.	Select	
	SIP Extension & SIP Trunk Common—Jitter Buffer Type for Data	Selects the jitter buffer type for data.	Select	
	SIP Extension & SIP Trunk Common—Jitter Buffer Delay Min. for Data	Selects the minimum jitter buffer delay for data.	Select	

Screen / Tab	Setting item	Description	Input Type	Note
	SIP Extension & SIP Trunk Common—Jitter Buffer Delay Max. for Data	Selects the maximum jitter buffer delay for data.	Select	
	SIP Extension & SIP Trunk Common—Jitter Buffer Delay Init. for Data	Selects the initial jitter buffer delay for data.	Select	
	SIP Extension & SIP Trunk Common—NAT Traversal	Selects the NAT traversal.	Radio	
	SIP Extension & SIP Trunk Common—NAT - Fixed Global IP Address	Specifies the fixed global IP address.	IP Address	
	SIP Extension & SIP Trunk Common—NAT - STUN Server	Specifies the STUN server.	Text3	
	SIP Extension & SIP Trunk Common—NAT - Host Name	Specifies the host name.	Text3	
	SIP Extension & SIP Trunk Common—NAT - STUN/DDNS Refresh Interval	Selects the refresh interval for STUN/DDNS.	Select	
	SIP Extension & SIP Trunk Common—RTP Inactive Timer	Selects whether to perform silence monitoring during a call. If there are no RTP packets sent or received during the pre-programmed time, the call will be disconnected.	Select	RTP silence detection does not apply to video calls on P2P.

2.4 PBX Configuration—[3] Trunk

2.4.1 PBX Configuration—[3-1] Trunk—Port

Description

Settings can be made for each trunk port. Click the "Edit" button located next to the trunk number to enable editing of the setting values.

Screen / Tab	Setting item	Description	Input Type	Note
1.Port-Main	Attribution	Selects the attributes of a trunk port.	Select	
	Trunk Group	Specifies the trunk group number to which the trunk belongs.	Select	
1.Port-Analog - Basic	Dialing Mode	Selects the type of signal used to dial out to the analog trunk.	Radio	
	Caller ID Detection	Enables the PBX to detect a Caller ID signal from the analog trunk.	Radio	
	Caller ID Detection Pattern	Selects the type of Caller ID signaling provided by the telephone company.	Radio	
	Reverse Detection	Selects the type of trunk call for which the reverse signal from the telephone company is detected.	Radio	
1.Port-Analog - CPC Detection	CPC Signal Detection Time Outgoing	Specifies the length of time required by the PBX to detect a CPC signal on outgoing trunk calls before disconnecting the line.	Select	
	CPC Signal Detection Time Incoming	Specifies the length of time required by the PBX to detect a CPC signal on incoming trunk calls before disconnecting the line.	Select	
1.Port-Analog - DISA	DISA Tone Detection - Silence	Enables the disconnection of a DISA-originated trunk-to-trunk call by silence detection.	Radio	
	DISA Tone Detection - Continuous	Enables the disconnection of a DISA-originated trunk-to-trunk call by continuous signal detection.	Radio	
	DISA Tone Detection - Cyclic	Enables the disconnection of a DISA-originated trunk-to-trunk call by cyclic signal detection.	Radio	

Screen / Tab	Setting item	Description	Input Type	Note
1.Port-Analog - Dialing	Pulse Speed	Selects the speed at which pulse dials are sent to the analog trunk.	Select	
	DTMF Width	Selects the length of the DTMF tone sent to the analog trunk.	Select	
	Disconnect Time	Specifies the length of time after a trunk is disconnected, during which the PBX cannot seize the line.	Select	
1.Port-Analog - Caller ID	Caller ID(FSK) - Carrier Detection	Enables the PBX to detect the carrier when receiving Caller ID.	Radio	
	Caller ID(FSK) - END Detection	Selects the method used to detect the end of Caller ID information.	Radio	
	Caller ID(FSK) - Header Examination	Enables the PBX to check the header of received Caller ID information.	Radio	
	Caller ID(FSK) - Detection Start Timer	Specifies the length of time that the PBX waits before attempting to detect Caller ID information, after receiving a call. To enable this setting, Caller ID Detection Pattern should be set to FSK.	Select	
	Caller ID(FSK) - Detection Timer	Specifies the total time required by the PBX to detect Caller ID information.	Select	
	Caller ID(DTMF) - Start Code 1	Selects the DTMF code used to detect the beginning of a Caller ID series.	Select	
	Caller ID(DTMF) - Start Code 2	Selects the DTMF code used to detect the beginning of a Caller ID series.	Select	
	Caller ID(DTMF) - Information Start Code	Selects the DTMF code used to detect the beginning of the information segment of a Caller ID series.	Select	
	Caller ID(DTMF) - End Code	Selects the DTMF code used to detect the end of a Caller ID series.	Select	
Caller ID Header[03]	Selects the type of the 3rd header in a Caller ID signal.	Radio		

2.4.2 PBX Configuration—[3-2] Trunk—DIL

Screen / Tab	Setting item	Description	Input Type	Note
1.Port-Analog - Collect Call Reject (for Brazil)	Mode	Enables the PBX to automatically reject collect calls. This setting is only for users in Brazil.	Radio	
	Wait Time	Selects the length of time that the PBX waits before sending a flash signal to reject a collect call. This setting is only for users in Brazil.	Select	
	Flashing Time	Selects the length of the flash signal that the PBX sends to reject a collect call. This setting is only for users in Brazil.	Select	

2.4.2 PBX Configuration—[3-2] Trunk—DIL

Description

DIL settings can be programmed for the trunk.

Screen / Tab	Setting item	Description	Input Type	Note
2.DIL	Day	Specifies the DIL destination in the "Day" mode of time service.	Select	
	Lunch	Specifies the DIL destination in the "Lunch" mode of time service.	Select	
	Night	Specifies the DIL destination in the "Night" mode of time service.	Select	

2.4.3 PBX Configuration—[3-3] Trunk—DDI

Description

DDI settings can be programmed for the trunk.

Screen / Tab	Setting item	Description	Input Type	Note
3.DDI	Dialing Plan - DDI	Selects the suitability of a DDI incoming call.	Select	
	Dialing Plan - Remove Digit	Specifies the number of leading digits to be removed from the incoming called number for DDI distribution.	Select	
	Dialing Plan - Additional Dial	Specifies the number to be added to the incoming called number in the place of the removed digits for DDI distribution.	Dial1	

Screen / Tab	Setting item	Description	Input Type	Note
	DDI Table - DDI Number	Specifies the DDI number.	Dial1	
	DDI Table - Name	Specifies the name for the DDI number.	Text LCD	
	DDI Table - Destination - Day	Specifies the DDI destination in the "Day" mode of time service.	Select	
	DDI Table - Destination - Lunch	Specifies the DDI destination in the "Lunch" mode of time service.	Select	
	DDI Table - Destination - Night	Specifies the DDI destination in the "Night" mode of time service.	Select	

2.4.4 PBX Configuration—[3-4] Trunk—Caller ID Modify & Block

Description

Settings can be made for modifying and blocking Caller ID.

Screen / Tab	Setting item	Description	Input Type	Note
4.Caller ID Modify & Block	Incoming Call Block when No Caller ID	When there is no Caller ID, refuse incoming call.	Radio	
	Caller ID Modify Table - Area Code (6 digits)	Specifies the leading number (area code) to look for in the incoming caller's number.	Text Numeric	
	Caller ID Modify Table - Removed Number of Digits	Specifies the number of digits to be removed from the beginning of the incoming caller's number.	Select	
	Caller ID Modify Table - Added Number (4 digits)	Specifies the number to be added to the incoming caller's number in the place of the removed digits.	Dial1	
	Caller ID Modify by Length of Digits - Minimum Caller ID Digits	Selects minimum number of caller ID digits.	Select	The value of National must be smaller than that of International.
	Caller ID Modify by Length of Digits - Added Number (6 digits)	Specifies the added number.	Dial1	
	Analog Trunk	Enables Caller ID Modify by Length of Digits for the analog trunk.	Radio	

2.4.5 PBX Configuration—[3-5] Trunk—DISA

Screen / Tab	Setting item	Description	Input Type	Note
	SIP Trunk	Enables Caller ID Modify by Length of Digits for the SIP trunk.	Radio	

2.4.5 PBX Configuration—[3-5] Trunk—DISA

Description

DISA settings can be programmed for the trunk.

Screen / Tab	Setting item	Description	Input Type	Note
5.DISAS-Message	Floating Extension Number	Specifies the floating extension number of the OGM.	Text Numeric	
	Name	Specifies the name of the OGM.	Text5	
	1 Digit AA Destination (Extension Number) - Dial0	Specifies the destination for each DISA Automated Attendant (AA) number.	Select	
	1 Digit AA Destination (Extension Number) - Dial1	Specifies the destination for each DISA Automated Attendant (AA) number.	Select	
	1 Digit AA Destination (Extension Number) - Dial2	Specifies the destination for each DISA Automated Attendant (AA) number.	Select	
	1 Digit AA Destination (Extension Number) - Dial3	Specifies the destination for each DISA Automated Attendant (AA) number.	Select	
	1 Digit AA Destination (Extension Number) - Dial4	Specifies the destination for each DISA Automated Attendant (AA) number.	Select	
	1 Digit AA Destination (Extension Number) - Dial5	Specifies the destination for each DISA Automated Attendant (AA) number.	Select	
	1 Digit AA Destination (Extension Number) - Dial6	Specifies the destination for each DISA Automated Attendant (AA) number.	Select	
	1 Digit AA Destination (Extension Number) - Dial7	Specifies the destination for each DISA Automated Attendant (AA) number.	Select	

Screen / Tab	Setting item	Description	Input Type	Note
	1 Digit AA Destination (Extension Number) - Dial8	Specifies the destination for each DISA Automated Attendant (AA) number.	Select	
	1 Digit AA Destination (Extension Number) - Dial9	Specifies the destination for each DISA Automated Attendant (AA) number.	Select	
	No Dial Destination	Selects another destination when there is no dialing after DISA answers.	Select	
	FAX Extension	Specifies the extension number to which to transfer a call when a fax signal is detected.	Select	
	Busy Mode -Mode	Selects an operation Mode when the incoming call destination through DISA is Busy.	Select	
	Busy Mode - OGM	Selects voice guidance for when the operation Mode is OGM in case a line is busy.	Select	This setting can be selected if OGM is selected for the Busy Mode setting.
5.DISASystem	Timer - Delayed Answer Timer (s)	Specifies the length of time that the caller hears a ringback tone before hearing an OGM.	Select	
	Timer - Mute & OGM Start Timer after answering (s)	Specifies the length of time until the caller hears an OGM after reaching the DISA line.	Select	
	Timer - No Dial Intercept Timer (s)	Specifies the length of time after the OGM finishes playing in which the caller must begin dialing before the call is redirected to the operator.	Select	
	Timer - 2nd Dial Timer for AA (s)	Specifies the length of time in which the caller must dial the second digit before the DISA AA Service activates.	Select	
	DISA Cyclic Tone - DISA Cyclic Tone Detection	Selects the DISA cyclic tone detection type.	Select	

2.4.6 PBX Configuration—[3-6] Trunk—Analog CO Property

Screen / Tab	Setting item	Description	Input Type	Note
	DISA Cyclic Tone - Tone on Maximum Time (ms)	Selects the tone-on maximum time.	Select	This setting can be selected if DISA Cyclic Tone is selected for the Option.
	DISA Cyclic Tone - Tone off Maximum Time (ms)	Selects the tone-off maximum time.	Select	This setting can be selected if DISA Cyclic Tone is selected for the Option.
	DISA Cyclic Tone - Repeating Times of ON/OFF for Detection	Selects the number of times of tone on/off to determine detection.	Select	This setting can be selected if DISA Cyclic Tone is selected for the Option.

2.4.6 PBX Configuration—[3-6] Trunk—Analog CO Property

Description

Analog CO property settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
6.Analog CO Property	Caller ID Waiting to Receive	Specifies the length of time that the PBX waits to receive Caller ID from an analog trunk.	Select	
	Outgoing Guard Time	Specifies the length of time after a trunk is disconnected, during which the PBX cannot seize the line.	Select	
	First Dial Timer (CO)	Specifies the minimum time that the PBX waits after seizing a trunk, before sending the dialed digits to the telephone company.	Select	
	Bell Detection - Bell Start Detection Timer	Specifies the minimum length of a bell signal that can be recognized by the PBX as the bell signal sent from the telephone company, before the PBX detects an arriving call.	Select	
	Bell Detection - Bell Off Detection Timer	Specifies the duration of the bell off detection timer.	Select	
	Pulse / DTMF Dial - DTMF Inter-digit Pause	Specifies the length of the DTMF inter-digit pause.	Select	

Screen / Tab	Setting item	Description	Input Type	Note
	Pulse / DTMF Dial - Pulse Inter-digit Pause	Specifies the length of the pulse inter-digit pause.	Select	
	Low Speed Pulse Dial - Pulse % Break	Specifies the % break for a low speed pulse dial.	Select	
	Low Speed Pulse Dial - Break Width	Specifies the maximum length of the break signal in a low speed pulse dial.	Select	This feature is available when Other is selected in Pulse % Break.
	Low Speed Pulse Dial - Make Width	Specifies the minimum length of the make signal in a low speed pulse dial.	Select	This feature is available when Other is selected in Pulse % Break.
	High Speed Pulse Dial - Pulse % Break	Specifies the % break for a high speed pulse dial.	Select	
	High Speed Pulse Dial - Break Width	Specifies the maximum length of the break signal in a high speed pulse dial.	Select	This feature is available when Other is selected in Pulse % Break.
	High Speed Pulse Dial - Make Width	Specifies the minimum length of the make signal in a high speed pulse dial.	Select	This feature is available when Other is selected in Pulse % Break.
	High Speed Pulse Dial - Pulse Type	Selects the type of pulse dial transmission appropriate to your area.	Radio	

2.4.7 PBX Configuration—[3-7] Trunk—SIP Trunk Property

Description

SIP trunk property settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
7.SIP Trunk Property—Common	DNS SRV Record Resolve Ability	Specifies whether to request that the DNS server translates domain names into IP addresses using the DNS SRV record.	Radio	
	Register - Register Sending Interval (s)	Specifies the maximum length of interval time after which the PBX sends the REGISTER message.	Unsigned Number	
	Register - Register Resending Interval (s)	Specifies the interval time for resending the REGISTER message.	Unsigned Number	

2.4.7 PBX Configuration—[3-7] Trunk—SIP Trunk Property

Screen / Tab	Setting item	Description	Input Type	Note
	RTCP Sending Interval (s)	Selects the RTCP sending interval.	Select	
7.SIP Trunk Property— SIP Carrier-1 / SIP Carrier-2	Provider Name (20 characters)	Specifies the name of the SIP provider.	Text5	
	SIP Server Name (100 characters)	Specifies the domain name of the SIP proxy server.	Text5	
	SIP Server IP Address	Specifies the IP address of the SIP proxy server.	IP Address	
	SIP Server Port Number	Specifies the port number of the SIP proxy server.	Unsigned Number	
	SIP Service Domain (100 characters)	Specifies the domain name provided by the SIP provider.	Text3	
	Subscriber Number	Specifies the number used as the CLIP number.	Dial1	
	Account - User Name (64 characters)	Specifies the user name (SIP Account) provided by the SIP provider.	Text5	
	Account - Authentication ID (64 characters)	Specifies the authentication ID required for registration with the SIP server.	Text5	
	Account - Authentication Password (32 characters)	Specifies the authentication password used for registration with the SIP provider.	Text5	
	Register - Register Ability	Specifies whether to send the REGISTER message to the SIP server.	Radio	
	Calling Party - Header Type	Specifies the header of the SIP message in which the caller information is stored.	Radio	If a value other than From Header is selected, Host Name settings must be configured.
	Calling Party - Host name	Specifies the host name of the calling party.	Text3	
	Voice - IP Codec Priority 1st	Specifies the priority of the codecs to be used. None is only available for 2nd and 3rd priorities.	Radio	
	Voice - IP Codec Priority 2nd	Specifies the priority of the codecs to be used. None is only available for 2nd and 3rd priorities.	Radio	

Screen / Tab	Setting item	Description	Input Type	Note
	Voice - IP Codec Priority 3rd	Specifies the priority of the codecs to be used. None is only available for 2nd and 3rd priorities.	Radio	
	Voice - Packet Sampling Time	Specifies the time interval between measurements (samples) of sound data during a conversation.	Select	
	Voice - DTMF	Specifies the method to transport DTMF tones.	Radio	
	Voice - Payload Type (DTMF)	Specifies the payload type of RFC2833 for DTMF tones.	Select	
	Session - Session Timer Ability	Enables the PBX to periodically refresh SIP sessions by sending repeated requests.	Radio	
	Session - Session Expire Timer (s)	Specifies the length of time that the PBX waits before terminating SIP sessions when no reply to the repeated requests is received.	Unsigned Number	
	Session - Session Incoming Refresher Request	Specifies the type of method used for establishing the session interval.	Radio	
	DSP - IP Side - Gain1 (Network to PBX)	Selects the gain of the IP side (Network to PBX).	Select	
	DSP - IP Side - Gain2 (PBX to Network)	Selects the gain of the IP side (PBX to Network).	Select	
	DSP - PCM Side - Gain1 (PBX to Network)	Selects the gain of the PCM side (PBX to Network).	Select	
	DSP - PCM Side - Gain2 (Network to PBX)	Selects the gain of the PCM side (Network to PBX).	Select	
	DSP - PCM Side - Echo Canceller Type	Selects the echo canceller type of the PCM side.	Select	
	DSP - PCM Side - Echo Canceller NLP	Selects the echo canceller NLP of the PCM side.	Select	

2.4.7 PBX Configuration—[3-7] Trunk—SIP Trunk Property

Screen / Tab	Setting item	Description	Input Type	Note
	DSP - PCM Side - Echo Canceller Window Size	Selects the echo canceller window size of the PCM side.	Select	
	Option - ITSP Port Check	Enables the ITSP port check feature.	Radio	
	Option - Alive Check	Enables the alive-check feature.	Radio	
	Option - Alive Check - Interval	Selects the interval of the alive-check feature.	Select	

2.5 PBX Configuration—[4] TRS/ARS

2.5.1 PBX Configuration—[4-1] TRS/ARS—Leading Digits

Description

The leading digits for TRS/ARS can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
1.Lleading Digits	Leading Digits	Sets an outgoing call restriction dial/ARS outgoing call dial.	Dial3	
	TRS Level (COS) 1	Selects Acceptance/Non-acceptance of outgoing calls for each Leading Digit at TRS level 1.	Select	
	TRS Level (COS) 2	Selects Acceptance/Non-acceptance of outgoing calls for each Leading Digit at TRS level 2.	Select	
	TRS Level (COS) 3	Selects Acceptance/Non-acceptance of outgoing calls for each Leading Digit at TRS level 3.	Select	
	TRS Level (COS) 4	Selects Acceptance/Non-acceptance of outgoing calls for each Leading Digit at TRS level 4.	Select	
	TRS Level (COS) 5	Selects Acceptance/Non-acceptance of outgoing calls for each Leading Digit at TRS level 5.	Select	
	ARS Carrier Priority-1	Selects which ARS carrier is used for phone numbers that are permitted to make outgoing calls through the TRS feature.	Select	
	ARS Carrier Priority-2	Selects which ARS carrier is used for phone numbers that are permitted to make outgoing calls through the TRS feature.	Select	
	ARS Carrier Priority-3	Selects which ARS carrier is used for phone numbers that are permitted to make outgoing calls through the TRS feature.	Select	

2.5.2 PBX Configuration—[4-2] TRS/ARS—ARS Carrier

Description

The carrier settings for ARS can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
2.ARS Carrier	Carrier Name	Specifies the carrier name.	Text5	
	Dial Modification - Remove	Specifies the number of leading digits to remove from the user-dialed number.	Select	
	Dial Modification - Add	It is possible for each carrier to set an additional dial for a phone number.	Dial1	
	Trunk Group	It is possible for each carrier to set a trunk group to be used for a phone number.	Select	

2.5.3 PBX Configuration—[4-3] TRS/ARS—Account Code

Description

The account code settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
3.Account Code	Account Code	Specifies the feature number used to enter an Account Code.	Text Numeric	
	TRS Level (COS) - Standard Dial	Selects the TRS level for ordinary dialing.	Select	
	TRS Level (COS) - Speed Dial	Selects the TRS level when using speed dialing.	Select	

2.5.4 PBX Configuration—[4-4] TRS/ARS—Emergency Dial

Description

The emergency dial settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
4.Emergency Dial	Emergency Number	Specifies the numbers used for making emergency calls.	Dial1	

2.5.5 PBX Configuration—[4-5] TRS/ARS—Options

Description

The other settings for TRS/ARS can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
5.Options	TRS Check for Dial * #	Enables a TRS/Barring check for the user-dialed "*" and "#".	Radio	
	Dial Digits Limitation after Answering	Specifies a limit to be placed on the number of digits which can be dialed after an extension user receives a trunk call.	Select	

2.6 PBX Configuration—[5] System Speed Dialing

Description

The System Speed Dialing settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	
1.System Speed Dialing	Name (20 characters)	Specifies a name for the System Speed Dialing number.	TextLCDHD V	
	CO Line Access Number + Telephone Number (32 digits)	Specifies the telephone number (including the Trunk Access number) or feature number assigned to the System Speed Dialing number.	Dial1	
	CLI Destination	Specifies the CLI destination (extension) to which incoming calls from the programmed telephone number are routed.	Select	

2.7 PBX Configuration—[6] Conference

Description

The conference call settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
1.Meet Me	Conference1 - Conference Room Extension Number	Assigns a floating extension number for conference call room 1.	Text Numeric	
	Conference1 - Name	Sets a name for conference call room 1.	Text LCD	
	Conference1 - Access Code	Sets an access code to enter conference call room 1.	Text Numeric	
	Conference2 - Conference Room Extension Number	Assigns a floating extension number for conference call room 2.	Text Numeric	
	Conference2 - Name	Sets a name for conference call room 2.	Text LCD	
	Conference2 - Access Code	Sets an access code to enter conference call room 2.	Text Numeric	
	Conference3 - Conference Room Extension Number	Assigns a floating extension number for conference call room 3.	Text Numeric	
	Conference3 - Name	Sets a name for conference call room 3.	Text LCD	
	Conference3 - Access Code	Sets an access code to enter conference call room 3.	Text Numeric	

2.8 PBX Configuration—[7] Voice Mail

Description

The voice mail settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
1.Voice Mail	Voice Mail Extension Number	Specifies the extension number for voice mail.	Text Numeric	
	Prompt Language	Selects the prompt language.	Select	
	Option Prompt	Selects how to set an option prompt. (Select from Built-in Prompt or Upload from PC)	Radio	
	Select from Built-in Prompt—Option Prompt Language	Selects the prompt language from the built-in option prompt.	Select	
	Upload from PC—Option Prompt Language	Selects the prompt language of the option prompt file to upload.	Select	
	Upload from PC—Upload Option Prompt	Click the "Browse" button and select the option prompt file to upload. Click the "Upload" button and start uploading to the PBX.	-	

Section 3

Network Configuration

This section provides setting items for programming the network.

3.1 Network Configuration

You can view and set the basic LAN/WAN settings.

Screen / Tab	Setting item	Description	Input Type	Note
LAN1 Information	IP Address	Indicates the IP address of the mother board (reference only).	-	
	Subnet Mask	Indicates the network mask address of the mother board (reference only).	-	
	MAC Address	Indicates the MAC address of the mother board (reference only).	-	
LAN2/WAN2 Setting & Information	LAN2/WAN2 Port *)	LAN/WAN port exchange	Radio	
	Port Mirroring	LAN/WAN Port Mirroring setting	Select	To enable the port mirroring, set LAN2/WAN2 Port to LAN2.
	IP Address	LAN2 or WAN2 IP Address	-	
	Subnet Mask	LAN2 or WAN2 Subnet Mask	-	
	MAC Address	LAN2 or WAN2 MAC address	-	
WAN1 Information	IP Address	WAN1 IP Address	-	
	Subnet Mask	WAN1 Subnet Mask	-	
	MAC Address	WAN1 MAC Address	-	

3.2 Network Configuration—[3] WAN

3.2.1 Network Configuration—[3-1] WAN—WAN Setting

Screen / Tab	Setting item	Description	Input Type	Note
1.WAN Setting	WAN Setting - WAN Name	Provides information of WAN Name configured.	-	
	WAN Setting - WAN Channel	Provides information of layer-2 WAN channel configured.	-	
	WAN Setting - Type	Provides information about type of WAN such as PPPoE or DHCP Client or Fix IP.	-	
	WAN Setting - Default WAN	This option allows the user to configure a default route in system. The chosen WAN will be user for default route.	Radio	
	Modify Button	Clicking this button allows you to modify the WAN settings.	-	
1.WAN Setting - WAN	WAN TYPE	WAN TYPE	Select	
	WAN connection Name	WAN connection Name	Text (excluding < > ;)	
	IP address,by your ISP	To specify the IP Address of the PBX's WAN link.	IP Address	This feature is available when Fix IP is selected in WAN Type.
	Subnet Mask	To specify the Subnet Mask of the PBX's WAN link.	Subnet Mask3	This feature is available when Fix IP is selected in WAN Type.
	ISP Gateway Address	To specify the Gateway address of the PBX's WAN.	IP Address	This feature is available when Fix IP is selected in WAN Type.
	User Name	To ensure a username for PPPoE session used for authentication.	Text Router2	This feature is available when PPPoE is selected in WAN Type.
	Password	To ensure a password for PPPoE session used for authentication.	Text Router Pwd2	This feature is available when PPPoE is selected in WAN Type.

3.2.1 Network Configuration—[3-1] WAN—WAN Setting

Screen / Tab	Setting item	Description	Input Type	Note
	Please retype your password	To enter the same password again to reconfirm.	Text Router Pwd2	This feature is available when PPPoE is selected in WAN Type.
	Service Name	PPP Service Name (optional)	Text Router2	This feature is available when PPPoE is selected in WAN Type.
	Access Concentrator Name	PPP Access concentrator Name (optional)	Text Router2	This feature is available when PPPoE is selected in WAN Type.
	Relay LAN site PPPoE session	This feature allows to enable/disable a PPPoE relay session.	Check	This feature is available when PPPoE is selected in WAN Type.
	MTU:(1400-1500)	To enter the maximum transfer unit size of PPPoE frames.	Unsigned Number	This feature is available when PPPoE is selected in WAN Type.
	PPP Option	Choose the option form the drop down list. The available options are, Auto Connect, Dial-On-Demand and Manual Connect	Select	This feature is available when PPPoE is selected in WAN Type.
	Maximum Idle Time	To enter the maximum idle time.	Text Numeric	This feature is available when Dial-On-demand(DoD) is selected in PPP Option. Available values: 0 - 99999
	Static DNS	This option allows the user to configure primary/ secondary DNS servers of this WAN connection.	Check	When this feature is set to ON, the address of the DNS server received from PPPoE server is not available.
	Primary DNS Server	Specifies the primary DNS server for the WAN.	IP Address	This feature is available when ON is selected in Static DNS. If the address of the primary DNS server is received from PPPoE sever before specifying, it is displayed as default.

Screen / Tab	Setting item	Description	Input Type	Note
	Secondary DNS Server	Specifies the secondary DNS server for the WAN.	IP Address	This feature is available when ON is selected in Static DNS. If the address of the secondary DNS server is received from PPPoE sever before specifying, it is displayed as default. If only the address of the primary DNS server is received from PPPoE sever before specifying, it is displayed as default.
	Option—SIP QoS-DSCP	Selects the SIP QoS-DSCP.	Select	<ul style="list-style-type: none"> DSCP value is specified according to the value set for each protocol of the WAN port of KX-HTS series. In case of using an existing LAN, consult your network administrator. In case of using a SIP trunk, consult your SIP service provider. For DSCP value settings for KX-HDV series, KX-NTV series and general-purpose SIP phones connected to the same network, refer to the corresponding manuals.
	Option—RTP QoS-DSCP	Selects the RTP QoS-DSCP.	Select	
	Option—Video QoS-DSCP	Selects the video QoS-DSCP.	Select	
	Option—Others QoS-DSCP	Selects the Others QoS-DSCP.	Select	
	Option—Bandwidth Limitation for Others	Specifies whether to enable the bandwidth limitation.	Select	

3.2.2 Network Configuration—[3-2] WAN—WAN Status

The WAN status can be confirmed.

Screen / Tab	Setting item	Description	Input Type	Note
2.WAN Status	No.	WAN Number	-	
	WAN Channel	For the currently configured WAN interface, this gives the layer-2 WAN channel information.	-	
	Connection Type	The type of connection mode in which the PBX's is configured.	-	
	Status	Displays the connection status of the WAN.	-	Connecting...: <ul style="list-style-type: none"> – IP address is not received when Connection Type is DHCP Client. – Connecting to PPP rink when Connection Type is PPPoE. Connected: <ul style="list-style-type: none"> – IP address is received when Connection Type is DHCP Client. – Connection Type is Fix IP – Connected to PPP rink when Connection Type is PPPoE. Disconnecting: <ul style="list-style-type: none"> – Released the current lease when Connection Type is DHCP Client. – Disconnected to PPP rink when Connection Type is PPPoE.

Screen / Tab	Setting item	Description	Input Type	Note
	IP	Displays the IP address in use.	-	Unconfigured: <ul style="list-style-type: none"> – IP address is not received when Connection Type is DHCP Client. – IP address is not received when Connection Type is PPPoE.
	Netmask	Displays the netmask in use.	-	Unconfigured: <ul style="list-style-type: none"> – IP address is not received when Connection Type is DHCP Client. – IP address is not received when Connection Type is PPPoE.
	Connection Name	Displays the configured connection name.	-	
	Gateway Information	Provides information about the gateway.	-	
	DNS Information	Provides information about the primary and secondary DNS.	-	DNS chosen in the Default WAN is priority for display.

3.2.3 Network Configuration—[3-4] WAN—DDNS

The DDNS settings for the WAN can be programmed. In order to reflect the menu setup, you must set "Enable DDNS Support" to Enable.

Screen / Tab	Setting item	Description	Input Type	Note
4.DDNS	Enable DDNS Support	Check box to enable DDNS support in the PBX.	Check	
	WAN Interface	WAN Interface name from the dropdown for DDNS resolution. The DDNS agent running in the PBX keeps track of changes in IP address of chosen WAN and informs DNS service provider.	Select	
	DDNS Server	DDNS Server Select	Radio	
	Host Name	Host name registered with DDNS Service provider. This is part of FQDN used for accessing the host.	Text Router3	
	User Name	Registered user name with DDNS service provider.	Text Router3	
	Password	Registered password with DDNS service provider.	Text Router Pwd3	

3.3 Network Configuration—[4] LAN

3.3.1 Network Configuration—[4-2] LAN—LAN Settings

The LAN settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
2.LAN Settings	IP Address	Used to enter the LAN interface IP Address of the PBX.	IP Address	
	Subnet Mask	To enter the LAN Subnet Mask of the PBX.	Subnet Mask3	
	MAC Address	MAC Address of LAN bridge device. It can be overridden by specifying the user supplied MAC address here.	MAC Address	
	DHCP Mode	To choose the mode of DHCP in the PBX's. The options available are: Disable, Server and Relay Agent.	Select	
	DHCP Server - IP Pool Starting Address	DHCPv4 pool start IPv4 address.	IP Address	
	DHCP Server - IP Pool Ending Address	DHCPv4 pool end IPv4 address.	IP Address	
	DHCP Server - Lease Time	Select from a dropdown of allowed values.	Select	
	DHCP Relay - DHCP Server IP	Specifies the IP address for the DHCP server for DHCP Relay.	IP Address	If DHCP Mode is set to Relay Agent, this item is displayed.
2.LAN Settings - IP Address Reservation	Click Here	Clicking this link displays the IP reservation screen.	-	
2.LAN Settings - IP Reservation	HOST NAME	Host Computer name.	Text Router2	
	IP ADDRESS	IP Address to be statistically reserved for this host identified by MAC address.	IP Address	
	MAC ADDRESS	MAC address of Host computer for which static IP reservation is needed.	MAC Address2	

3.3.2 Network Configuration—[4-3] LAN—DHCP Client List

Screen / Tab	Setting item	Description	Input Type	Note
	ENABLE	To enable this static IP reservation entry.	Check	
	Add Button	Clicking this button allows you to add the IP reservation settings.	-	
	Delete Button	Clicking this button allows you to delete the IP reservation settings.	-	
	Modify Button	Clicking this button allows you to modify the IP reservation settings.	-	
2.LAN Settings - Reserved IP Configuration Modification	Modify MAC IP SETTING - Host name	Specifies the host name.	Text Router2	
	Modify MAC IP SETTING - Reserved IP	Specifies the reserved IP address.	IP Address	
	Modify MAC IP SETTING - MAC Address	Specifies the MAC address.	MAC Address2	
	Modify MAC IP SETTING - Enable	Enables the reserved IP.	Check	

3.3.2 Network Configuration—[4-3] LAN—DHCP Client List

You can view the DHCP client list.

Screen / Tab	Setting item	Description	Input Type	Note
3.DHCP Client List	Host Name	Host Computer Name (display up to 16 characters). If DHCPv4 client does not send the host name, it will show Unknown.	-	
	MAC Address	Displays MAC Address of DHCPv4 Client machine.	-	
	IP Address	Displays IP Address allocated through DHCPv4 to the client machine.	-	
	Remaining Lease	Provides information on remaining DHCPv4 lease duration in seconds.	-	

3.4 Network Configuration—[5] Route

3.4.1 Network Configuration—[5-1] Route—Static Routing

The static routing settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
1.Static Routing	Destination IP	To enter the destination IP Address of a routing entry.	IP Address	
	Subnet Mask	To enter the Subnet Mask of a routing entry.	Subnet Mask2	
	Gateway	To enter the Gateway address of a routing entry.	IP Address	This feature is not available when WAN set PPPoE is selected in interface.
	interface	To enter outgoing interface name for this route. It can be selected from a dropdown	Select	

3.5 Network Configuration—[6] Wireless

3.5.1 Network Configuration—[6-1] Wireless—Radio Settings

The wireless radio settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
1.Radio Settings - WLAN Radio Settings	Common Settings - WLAN Radio Enable	Enable / Disable of WLAN Radio in the PBX.	Check	
	Common Settings - WLAN Radio Status	WLAN Radio's physical status - UP or DOWN.	-	
	Common Settings - Frequency Band	Frequency Band for WLAN	-	
	Common Settings - Auto Channel Select Enable	To enable automatic channel selection support.	Check	
	Common Settings - Channel No.	Channel No. to be used in WLAN AP. When Auto Channel Select is enabled, this option cannot be used.	Select	
	Common Settings - Operational Mode	Operational Mode of WLAN	Select	
	Common Settings - Auto Rate Fallback Enable	For enabling Automatic Rate Fallback support in WLAN AP.	Check	
	802.11n Settings - Channel Bandwidth	Channel Bandwidth - 20 or 40 MHz.	Select	
	802.11n Settings - Extension Channel	Extension channel position - Above Control Channel or Below Control Channel.	Select	
	802.11n Settings - 20/40 MHz Co-Existence Enable	20 MHz and 40 MHz frequencies to co-exist.	Check	
	802.11n Settings - Guard Interval	Guard interval between channels.	Select	
	Configure Advanced Radio Settings - Advanced Radio Settings Button	Clicking this button allows you to modify the Advanced Radio Settings. For normal operation of WLAN AP functionality, changing the values in Advanced Settings is not recommended.	-	

Screen / Tab	Setting item	Description	Input Type	Note
1.Radio Settings - WLAN Advanced Radio Settings	WLAN General Config - Preamble	Preamble Type.	Select	
	WLAN General Config - Beacon Interval	Beacon interval in milliseconds.	Unsigned Number	
	WLAN General Config - DTIM Interval	Delivery Traffic Indicator Message (DTIM) interval in number of beacons.	Unsigned Number	
	WLAN General Config - Power Level	Power level at which WLAN AP should operate.	Select	
	WLAN General Config - RTS Threshold	Request to Send in Bytes.	Unsigned Number	
	WLAN General Config - Static Rate in Mbit/s	Static Rate for WLAN AP in Mbps.	Select	If the user changes any of the following settings, this setting will be reset: <ul style="list-style-type: none"> Operational Mode Channel Bandwidth Guard Interval
	802.11n Settings - Length of MPDU aggregation	Length of MPDU aggregation in bytes.	Select	
	802.11n Settings - STBC	Space Time Block Coding	Select	

3.5.2 Network Configuration—[6-2] Wireless—Main AP Settings

The main AP settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
2.Main AP Settings - WLAN Main Settings	AP Name	Name of Access Point - unique identifier.	-	
	SSID	Service Set Identifier - public name of WLAN or Network.	-	
	Type	Type (AP)	-	
	Security	Type of Security.	-	
	Encryption	Type of Encryption.	-	
	Authentication	Type of Authentication.	-	
	Mode	Operation Mode.	-	
	Status	Status of AP - UP or DOWN.	-	

3.5.3 Network Configuration—[6-3] Wireless—Security Settings

Screen / Tab	Setting item	Description	Input Type	Note
	Modify Button	Clicking this button allows you to modify a WLAN AP configuration.	-	
2.Main AP Settings - WLAN AP Configuration Settings	SSID	Service Set Identifier of AP.	Text Router SSID	
	AP Name	AP Name - Unique Identifier within the PBX.	Text Router2	
	Maximum Client Limit	Indicates the maximum number of stations that can connect to the corresponding AP.	Unsigned Number	
	Enable Hidden SSID Mode	Whether to hide SSID in beacon frames.	Check	
	AP Isolation	Enables or disables the AP Isolation feature.	Select	

3.5.3 Network Configuration—[6-3] Wireless—Security Settings

The wireless security settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
3.Security Settings - WLAN Security Settings	AP name	Displays the AP name.	Label	To change this setting, refer to 3.5.2 Network Configuration—[6-2] Wireless—Main AP Settings.
	SSID	Displays the SSID.	Label	To change this setting, refer to 3.5.2 Network Configuration—[6-2] Wireless—Main AP Settings.
	Security Selection - Security	Selects the Security.	Select	
	Security Selection - Authentication Type	Selects the authentication type.	Select	This feature is available when the following settings are specified: <ul style="list-style-type: none"> • Security: Basic and Encryption Type:WEP • Security: Except for Basic
	Security Selection - Encryption Type	Selects the encryption type.	Select	

Screen / Tab	Setting item	Description	Input Type	Note
	WEP Key Settings - Key Index	Selects the key index.	Select	This feature is available when WEP is selected in Encryption Type.
	WEP Key Settings - Encryption Level	Selects the encryption level.	Select	This feature is available when WEP is selected in Encryption Type. If you change the this feature setting, the WEP Key 1 - 4 will be reset to default.
	WEP Key Settings - WEP Key Type	Selects the WEP key type.	Select	This feature is available when WEP is selected in Encryption Type. If you change the this feature setting, the WEP Key 1 - 4 will be reset to default.
	WEP Key Settings - WEP Key 1 ¹	Specifies the WEP key 1.	Text ASCII Text HEX	This feature is available when WEP is selected in Encryption Type.
	WEP Key Settings - WEP Key 2 ¹	Specifies the WEP key 2.	Text ASCII Text HEX	This feature is available when WEP is selected in Encryption Type.
	WEP Key Settings - WEP Key 3 ¹	Specifies the WEP key 3.	Text ASCII Text HEX	This feature is available when WEP is selected in Encryption Type.
	WEP Key Settings - WEP Key 4 ¹	Specifies the WEP key 4.	Text ASCII Text HEX	This feature is available when WEP is selected in Encryption Type.
	WPA/WPA2 Settings - Re-Key Interval	Specifies the re-key interval.	Unsigned Number	This feature is not available when Basic is selected in Security.
	Personal Settings - Use PSK	Specifies whether to use pre-shared keys.	Check	This feature is available when Personal is selected in Authentication Type.
	Personal Settings - Pre-Shared Key (64 digits)	Specifies the pre-shared key.	Text HEX	This feature is available when Personal is selected in Authentication Type.

3.5.4 Network Configuration—[6-5] Wireless—Wireless LAN Setup Settings

Screen / Tab	Setting item	Description	Input Type	Note
	Personal Settings - Passphrase	Specifies the passphrase (8-63 characters).	Text ASCII	This feature is available when Personal is selected in Authentication Type.
	Personal Settings - Display/Hide Passphrase/PSK Button	Switches either display or hide the PSK and Passphrase.	-	This feature is available when Personal is selected in Authentication Type.
	Management Frame Protection - Management Frame Protection	Selects the management frame protection.	Select	This feature is available when WPA2 is selected in Security.

*1 For security, change these keys the first time that you program the PBX.

3.5.4 Network Configuration—[6-5] Wireless—Wireless LAN Setup Settings

The Wireless LAN Setup settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
5. Wireless LAN Setup Settings	AP name	AP Name as shown in Read Only info.	-	
	SSID	SSID as shown in Read Only info.	-	
	Reset Wireless LAN Setup Configuration - Wireless LAN Setup Enable	Enabling of Wireless LAN Setup.	Check	When this feature setting changes to OFF, Internal Registrar Support is set to OFF. When this feature setting changes to ON, Internal Registrar Support is set to ON.
	Reset Wireless LAN Setup Configuration - Internal Registrar Support	Internal Registrar Support.	-	This feature is set to ON, when Wireless LAN Setup Enable is set to ON. This feature is set to OFF, when Wireless LAN Setup Enable is set to OFF.
	Reset Wireless LAN Setup Configuration - Wireless LAN Setup State Configured	Specifies whether to enable Wireless LAN Setup.	-	

Screen / Tab	Setting item	Description	Input Type	Note
	Push Button Configuration (PBC) Method	Click "start PBC", then start PBC on the device you want to connect to the router within two minutes.	-	

3.5.5 Network Configuration—[6-6] Wireless—MAC Filter

The wireless MAC filter settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
6.MAC Filter - WLAN MAC Control	AP name	Displays the AP name.	-	
	Access Control List Mode(ACL Mode)	Types of Access Control	Radio	
	MAC Address	To enter the MAC address to be used in the MAC filter.	MAC Address2	This feature is not available, when Disable is selected in Access Control List Mode(ACL Mode).
	Remove	Remove the selected MAC address for control.	Check	

3.5.6 Network Configuration—[6-7] Wireless—Device Association

You can view a list of devices associated with the WLAN.

Screen / Tab	Setting item	Description	Input Type	Note
6.Device Association - WLAN Device Association List	SSID	Service Set Identifier.	-	
	Max. Signal Level@antenna [dBm]	Indicates the maximum signal level.	-	
	MAC Address	MAC address of the associated station.	-	
	IP Address	IP address of the associated station.	-	
	RSSI [dBm]	Displays the RSSI level of the device that is connected to the Wireless LAN.	-	
	RX Rate [Mbit/s]	Displays the RX Rate of the device that is connected to the Wireless LAN.	-	
	TX Rate [Mbit/s]	Displays the TX Rate of the device that is connected to the Wireless LAN.	-	

3.6 Network Configuration—[7] Firewall

3.6.1 Network Configuration—[7-1] Firewall—Firewall Setting

Description

The firewall settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
1.Firewall Setting	Firewall Setting	It allows for the enabling or disabling of the firewall in the PBX's.	Radio	

3.6.2 Network Configuration—[7-2] Firewall—Packet Filtering

Description

The packet filtering settings for the firewall can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
2.Packet Filtering - Packet Filtering	Add Button	Clicking this button adds a packet filtering rule.	-	
	Enable Packet Filter	To enable or disable the Packet Filter feature of the PBX. To Enable, select the check box.	Check	
	Source IP	Filter IP Address range of the local machine under the PBX.	-	Indicates "*" when ALL is selected in the Source IP Type.
	Source Port	Filter Port number range of the local machine under the PBX.	-	Indicates "*" when Source Port is blank.
	Destination IP	IP address of the destination.	-	Indicates "*" when ALL is selected in the Destination IP Type.
	Destination Port	Port address of the destination.	-	Indicates "*" when Destination Port is blank.
	Protocol	To select the protocol. The options available are TCP, UDP, ICMP, AH, ESP and ALL.	-	
	Ingress Interface	Input interface of the packet.	-	
	Egress Interface	Output interface of the packet.	-	
	Source MAC Address	Source MAC Address of the packet originating host.	-	

Screen / Tab	Setting item	Description	Input Type	Note
	Enable	To enable/disable the particular packet filtering rule.	Check	
	Modify Button	Clicking this button allows you to modify a packet filtering rule.	-	
2.Packet Filtering - Add a packet filtering rule	Protocol	To select the protocol. The options available are TCP, UDP, ICMP, AH, ESP and ALL.	Select	
	Source IP Type	The source IP can be ALL, SINGLE or SUBNET, involving a range of IP addresses.	Select	
	Source IP Address	To specify the source IP address.	IP Address	This feature is available when SINGLE or SUBNET is selected in the Source IP Type.
	Source Netmask	To specify a netmask for the source IP address.	Subnet Mask4	This feature is available when SUBNET is selected in the Source IP Type.
	Source Port	To specify the range of the source port. Valid for protocols TCP or UDP only.	Unsigned Number	
	Destination IP Type	The destination IP can be ALL, SINGLE or SUBNET, involving a range of IP addresses.	Select	
	Destination IP Address	To specify the destination IP address.	IP Address	This feature is available when SINGLE or SUBNET is selected in the Destination IP Type.
	Destination Netmask	To specify a netmask for the destination IP address.	Subnet Mask4	This feature is available when SUBNET is selected in the Destination IP Type.
	Destination Port	To specify the range of the destination port. Valid for protocols TCP or UDP only.	Unsigned Number	

3.6.2 Network Configuration—[7-2] Firewall—Packet Filtering

Screen / Tab	Setting item	Description	Input Type	Note
	Ingress Interface	To specify the input interface of the packet from dropdown options. (e.g. WAN1).	Select	
	Egress Interface	To specify the output interface of the packet from dropdown options. (e.g. WAN2).	Select	
	Source MAC Address	This is the source host's MAC address.	MAC Address2	
	Enable	To enable/disable the particular packet filtering rule.	Check	
2.Packet Filtering - Modify packet filtering rule	Protocol	To select the protocol. The options available are TCP, UDP, ICMP, AH, ESP and ALL.	Select	
	Source IP Type	The source IP can be ALL, SINGLE or SUBNET, involving a range of IP addresses.	Select	
	Source IP Address	To specify the source IP address.	IP Address	This feature is available when SINGLE or SUBNET is selected in the Source IP Type.
	Source Netmask	To specify a netmask for the source IP address.	Subnet Mask4	This feature is available when SUBNET is selected in the Source IP Type.
	Source Port	To specify the range of the source port. Valid for protocols TCP or UDP only.	Unsigned Number	
	Destination IP Type	The destination IP can be ALL, SINGLE or SUBNET, involving a range of IP addresses.	Select	
	Destination IP Address	To specify the destination IP address.	IP Address	This feature is available when SINGLE or SUBNET is selected in the Destination IP Type.

Screen / Tab	Setting item	Description	Input Type	Note
	Destination Netmask	To specify a netmask for the destination IP address.	Subnet Mask4	This feature is available when SUBNET is selected in the Destination IP Type.
	Destination Port	To specify the range of the destination port. Valid for protocols TCP or UDP only.	Unsigned Number	
	Ingress Interface	To specify the input interface of the packet from dropdown options. (e.g. WAN1).	Select	
	Egress Interface	To specify the output interface of the packet from dropdown options. (e.g. WAN2).	Select	
	Source MAC Address	This is the source host's MAC address.	MAC Address2	
	Enable	To enable/disable the particular packet filtering rule.	Check	

3.6.3 Network Configuration—[7-3] Firewall—Application Server Settings

Description

The application server settings for the firewall can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
3.Application Server Settings	Https Web Server - Port	Web Server settings: The Port Number	Unsigned Number	
	Http Web Server - Port	Telnet Server settings: The Port Number	-	

3.7 Network Configuration—[8] NAT

3.7.1 Network Configuration—[8-1] NAT—NAT Settings

Description

The NAT settings can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
1.NAT Settings	NAT Settings	Used to Enable or Disable the Network Address Translation feature.	Radio	

3.7.2 Network Configuration—[8-2] NAT—Virtual Server

Description

The virtual server settings for NAT can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
2.Virtual Server - Virtual Server	Add Button	Clicking this button adds a virtual server configuration.	-	
	Application Name	Configured Application Name for Virtual Server rule.	-	
	Private IP	Private IP address of Virtual Server rule.	-	
	Remote IP	Remote IP address of Virtual Server rule.	-	
	Private Start Port	Private Port starting range.	-	
	Private End Port	Private Port ending range. For a single port the start and end are both the same	-	
	Protocol	Virtual Server protocol - TCP or UDP or Both i.e. TCP/UDP.	-	
	Public Start Port	Public Port starting range.	-	
	Public End Port	Public Port ending range. For a single port the start and end are both the same	-	
	Enable	To enable the specified entry of the virtual server.	-	
	WAN Interface	WAN interface on which the Virtual Server rule is configured.	-	

Screen / Tab	Setting item	Description	Input Type	Note
	Modify Button	Clicking this button allows you to modify a virtual server configuration.	-	
2.Virtual Server - Configure Virtual Server	Application Name - Custom application	Custom application	Text	Up to 40 characters.
	Protocol	Specify Virtual Server protocol - TCP or UDP or Both i.e. TCP/UDP.	Select	
	Private IP	Specify Private IP address of Virtual Server rule.	IP Address	If a character that can not be used is entered, this feature is set to 255.255.255.255.
	Remote IP	Specify Remote IP address of Virtual Server rule.	IP Address	If 255.255.255.255 is entered, this feature is set to 0.0.0.0.
	Public Port Range	Specify Public Port range.	Unsigned Number	
	Private Port Range	Specify Private Port range. For a single port, the start and end are both the same.	Unsigned Number	This feature is changed in conjunction with Public Port Range setting.
	Enable	To enable the specified entry of the virtual server, select the check box.	Check	
	WAN Interface	Specify WAN interface on which the Virtual Server rule is configured.	Select	

3.7.3 Network Configuration—[8-3] NAT—DMZ

Description

The DMZ settings for NAT can be programmed.

Screen / Tab	Setting item	Description	Input Type	Note
3.DMZ	Enable	To enable or disable the DMZ setting of the PBX. Select the check box to enable.	Check	
	IP Address of Virtual DMZ Host	To enter IP Address of the DMZ host.	IP Address	

3.8 Network Configuration—[10] Port Status

Description

This menu displays the link status for each port.

Screen / Tab	Setting item	Description	Input Type	Note
1.Port Status	Physical Link Status - WAN1	Displays the WAN Port 1 physical link status, up or down.	-	
	Physical Link Status - WAN2	Displays the WAN Port 2 physical link status, up or down.	-	
	Physical Link Status - Wireless	Displays the wireless physical link status, up or down.	-	
	Physical Link Status - LAN1	Displays the LAN port 1 physical link status, up or down.	-	
	Physical Link Status - LAN2	Displays the LAN port 2 physical link status, up or down.	-	

Section 4

Maintenance

This section provides setting items for programming maintenance.

4.1 Maintenance

Description

Indicates various version informations and system informations.

Screen / Tab	Setting item	Description	Input Type	Note
Maintenance —Version Information	Main Unit Version	Indicates a main unit software version of KX-HTS series.	-	
	Bootloader Version	Indicates a bootloader version of KX-HTS series.	-	
	Router Version	Indicates KX-HTS series built-in router version.	-	
	WAVE300 Version	Indicates WAVE300 version supported by KX-HTS series.	-	
Maintenance —System Information	MPR-ID	Indicates an MPR-ID of KX-HTS series.	-	
	Main Unit Region	Indicates a region of KX-HTS series.	-	
	System Up Time	Indicates an accumulated time since KX-HTS series has been started.	-	

4.2 Maintenance—[1] Management

Description

Opens or closes the port for the NW external (WAN) connection through Web Maintenance Console
Implement a registration for login level and a user account.

4.2.1 Maintenance—[1-1] Management—Web Programming

Screen / Tab	Setting item	Description	Input Type	Note
1.Web Programming	Remote Web Maintenance	Sets acceptance or non-acceptance for remote access	Radio	Login level able to do Remote access is the "Installer" level.
	Web Maintenance Password for Local Access	Click "Edit" and displays the Web Maintenance Password for the Local Access dialog box.	-	
	Web Maintenance Password for Remote Access	Click "Edit" and displays the Web Maintenance Password for the Remote Access dialog box.	-	
	System PIN for Manager	Click "Edit" and displays the System PIN for the Manager dialog box.	-	
	Web Auto Logout Duration	No operation timeout (minutes)	Unsigned Number	

4.3 Maintenance—[2] System Control

Description

This section serves as reference operating instructions for the System Control menu of the Maintenance screen when programming using Web Maintenance Console.

4.3.1 Maintenance—[2-1] System Control—Firmware Transfer to PBX

Screen / Tab	Setting item	Description	Input Type	Note
1.Firmware Transfer to PBX	Transfer from	In Location of program files, specify the location of the system data from the Radio button.	Radio	
	Transfer from Local PC—File Name	Click Browse and specify the location of the updated program files stored on the PC logged in to Web Maintenance Console.	-	
	Transfer from USB Memory—File Name	If a USB memory device is inserted into the PBX, the contents of the following directory on the device will be checked for updated files.	Select	

4.3.2 Maintenance—[2-2] System Control—Firmware Update

Screen / Tab	Setting item	Description	Input Type	Note
2.Firmware Update	Update File—Program	Indicates a Program type.	-	
	Update File—File Name	Indicates a File name.	-	
	Update File—Version	Indicates a Firmware version.	-	
	Update File—Delete	Click "Delete" button, and delete indicated firmware file.	-	
	Update Target—Target	Check the target to update firmware file, and click "Execute".	Check	
	Update Target—Type	Indicates the type of update firmware file.	-	
	Update Target—Port	Indicates a Port number Specifies the HDV firmware update port number.	-	
	Update Target—Current Version	Indicates a Current firmware version.	-	

4.3.3 Maintenance—[2-3] System Control—System Data Backup & Restore

Screen / Tab	Setting item	Description	Input Type	Note
3.System Data Backup & Restore—System Data Backup	Backup to	Select the device to backup destination.	Radio	
3.System Data Backup & Restore—System Data Restore	Restore from	Transfer source of a file to be used to restore.	Radio	
	Restore from Local PC—File Name	Indicates the filename to restore from a Local PC. Click "Browse" and select the restore file, and click "Execute".	-	
	Restore from USB Memory—File Name	Select the filename to restore from a USB, and click "Execute".	Select	

4.3.4 Maintenance—[2-4] System Control—System Reset

Screen / Tab	Setting item	Description	Input Type	Note
4.System Reset	System Reset	Reset button When programming changes or other changes to PBX settings require a system reset, this command allows a reset to be performed remotely from Web Maintenance Console. When the system is reset, any settings not saved to the System Memory are lost. A backup should be performed before the reset to ensure no data is lost. However, a backup should not be performed if settings or data have recently been imported into the system, because performing a backup would overwrite the imported data with the current PBX settings.	-	

4.4 Maintenance—[3] Utility

Description

This section serves as reference for operating instructions for the Utility menu on the Maintenance screen of Web Maintenance Console.

4.4.1 Maintenance—[3-1] Utility—USB

Screen / Tab	Setting item	Description	Input Type	Note
1.USB	Capacity	Capacity (Byte) (Separated by comma for each 3 digits)	-	
	Used	Usage capacity (Byte) (Separated by comma for each 3 digits)	-	
	Available	Free space (Byte) (Separated by comma for each 3 digits)	-	

4.4.2 Maintenance—[3-2] Utility—System Log

Screen / Tab	Setting item	Description	Input Type	Note
2.System Log	Log Type	Log type	Radio	
	Option – Syslog (debug)	Specifies whether to output Syslog (debug).	Check	
	Option – "astlog" Debug Level	Selects the "astlog" debug level.	Select	
	Option – Analog Caller ID Log	Specifies whether to output Caller ID logs for analog trunks.	Check	
	Log	Log display	-	
	Save Log	<ol style="list-style-type: none"> 1. Select Save. The Save dialog box will be displayed. 2. Enter a file name. 3. Click Save. 		
	Clear Log	To clear the event log <ol style="list-style-type: none"> 1. Select Clear. 		

4.4.3 Maintenance—[3-3] Utility—Email Notification

Screen / Tab	Setting item	Description	Input Type	Note
3.Email Notification— Email Notification	System Alarm— Filtering Setting— Major	For Filtering Setting, select the check boxes to specify whether to receive e-mails when there is a Major alarm, a Minor alarm, or both.	Check	
	System Alarm— Filtering Setting— Minor	Same as above	Check	
	System Alarm— Email Address 1	Specify one or two e-mail addresses that will receive system alarm alert messages.	Text Email	
	System Alarm— Email Address 2	Same as above	Text Email	
	System Alarm— Subject	In Subject enter the text that will be used for the subject header of e-mails that are sent.	Text5	
	Voice Mail— Subject	Voice mail subject	Text5	
	Send Test Email— Email Address	Send a test e-mail to confirm that e-mail sending settings are correctly configured.	Text Email	
	Send Test Email— Subject	In Subject, enter text to be used as the subject line of the e-mail sent.	Text5	
3.Email Notification— SMTP	Mail Sender Information Name	Specifies the name to be used as the sender of the e-mails from the PBX.	Text5	
	Mail Address	Specifies the sending e-mail address for messages sent from the PBX. This address, for example, could be set as the e-mail address of an administrator.	Text Email	
	SMTP Server for Relay—SMTP Server Address	SMTP Server Address	Radio	
	SMTP Server for Relay—IP Address	Specifies the IP address of the SMTP server to be used to send e-mails.	IP Address	

Screen / Tab	Setting item	Description	Input Type	Note
	SMTP Server for Relay—Name	Specifies the host name of the SMTP server to be used to send e-mails.	Text Router	
	SMTP Server for Relay—SMTP Server Port Number	Specifies the port number of the SMTP server to be used to send e-mails.	Unsigned Number	
	SMTP Server for Relay—SMTP Over TLS	Specifies whether the SMTP server uses Transport Layer Security.	Radio	
	SMTP Authentication—SMTP Authentication	Specifies whether authentication on the SMTP server is enabled.	Radio	
	SMTP Authentication—User Name	Specifies the user name required to access the SMTP server.	Text Router	
	SMTP Authentication—Password	Specifies the password required to access the SMTP server.	Text1	

4.4.3 Maintenance—[3-3] Utility—Email Notification

Section 5

Appendix

5.1 Input Characters (TextLCDHDV)

Description

The input type of TextLCDHDV characters as below:

SP	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
p	q	r	s	t	u	v	w	x	y	z	{		}	~	i
¢	£	¤	¥	¦	§	¨	©	ª	«	¬	-	®	¯	°	±
²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿	À	Á
Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï	Ð	Ñ
Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß	à	á
â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï	ð	ñ
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Υ	Ω	ι	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν
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ο	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	ϊ	ϋ	ό	ύ	ώ
Ë	Ђ	Ѓ	Є	Ѕ	І	Ї	Ј	Љ	Њ	Ћ	Ќ	Ў	Ѓ	А	Б
В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П	Р	С
Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я	а	б
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т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я	ё	ђ
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