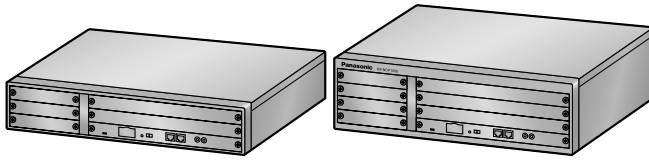


Panasonic

Getting Started

Pure IP-PBX



Model No. **KX-NCP500**
KX-NCP1000

Thank you for purchasing a Panasonic Pure IP-PBX.
Please read this manual carefully before using this product and save this manual for future use.

KX-NCP500/KX-NCP1000: PBMPR Software File Version 1.0000 or later

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Section 1

Before Installation

1.1 Safety Notices

Please observe the safety notices in this manual in order to avoid danger to users or other people, and prevent damage to property.

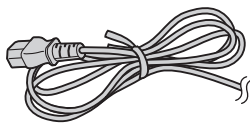
The notices are classified as follows, according to the severity of injury or damage:

WARNING	This notice means that misuse could result in death or serious injury.
CAUTION	This notice means that misuse could result in injury or damage to property.

1.2 Unpacking

Check the package contents.

- Main Unit × 1
- CD-ROM (including manuals, etc.) × 1



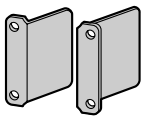
AC Cord*1 × 1



Screw A × 6



Screw B × 4



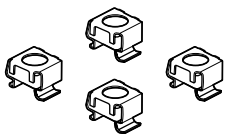
19-inch Rack Attachment Bracket × 2



Ferrite Core (for the IPCMPR card) × 2



SD Memory Card × 1



Gauge Nut × 4

*1 The type of the AC cord may vary depending on the country/area of use.
The KX-NCP500BX/KX-NCP1000BX is supplied with 2 types of AC cord. Please use whichever is appropriate for the country/area.

Note

In this manual, the suffix of each model number (e.g., KX-NCP500**NE**) is omitted unless necessary.

Necessary items (not supplied):

- Ethernet straight cables*1 for the LAN and PC connections.
- RJ45 connectors for the LAN and PC connections by Ethernet straight cables.
- An RS-232C cross cable for PC connection.

- Switching hubs and routers for VoIP network configuration.
- *1 The cables should be 10BASE-T/100BASE-TX CAT 5 (Category 5) or higher cables.

1.2 Unpacking

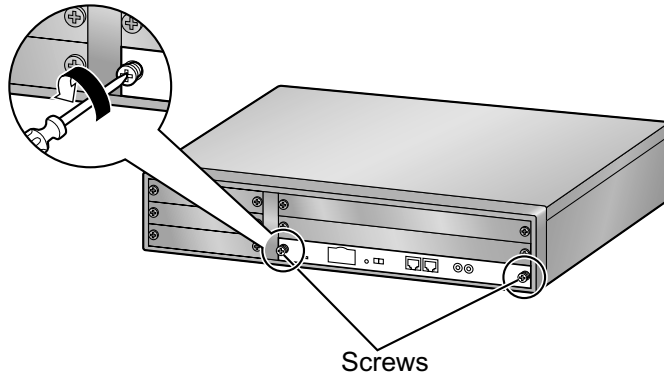
Section 2

Installation

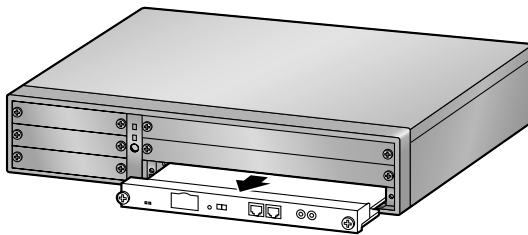
2.1 Installing the DSP Card

Removing the IPCMPR Card from the PBX

1. Turn the 2 screws anticlockwise to loosen them.



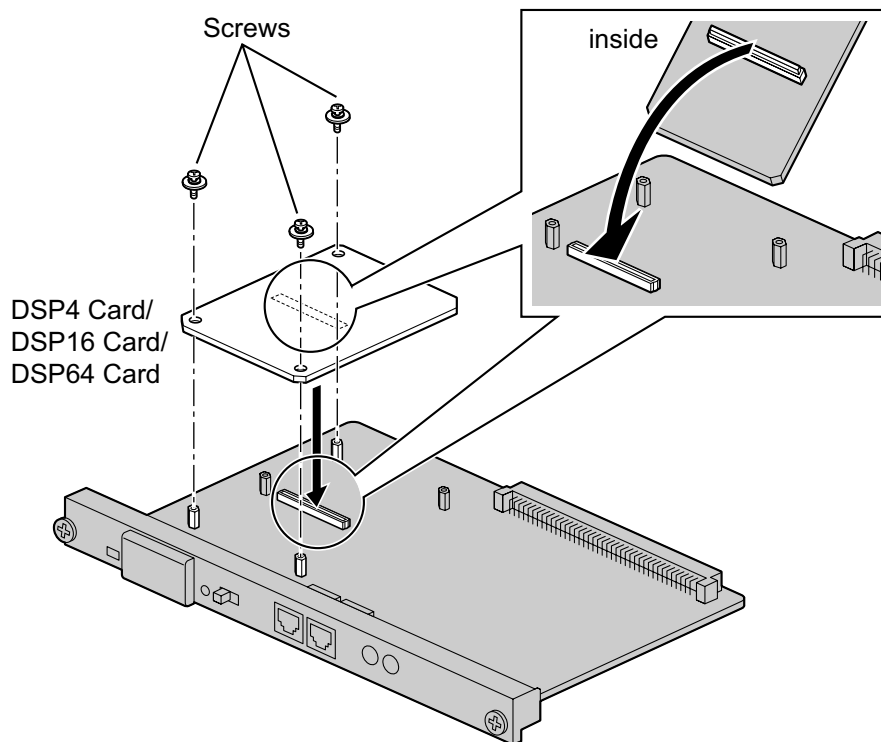
2. Pull the card from the cabinet to remove it.



Installing the DSP Card

Depending on the number and the type of IP trunks and IP telephones you wish to use, required activation keys are determined, and one of the DSP4, DSP16, or DSP64 card is selected to be installed.

- DSP4: 4-channel DSP (Digital Signal Processor) card with a 4-Channel IP Trunk activation key and an 8-Channel IP Proprietary Telephone activation key preinstalled. Compliant with ITU-T G.729A and G.711 CODEC methods. To be mounted on the IPCMPR card.
- DSP16: 16-channel DSP (Digital Signal Processor) card with a 4-Channel IP Trunk activation key and an 8-Channel IP Proprietary Telephone activation key preinstalled. Compliant with ITU-T G.729A and G.711 CODEC methods. To be mounted on the IPCMPR card.
- DSP64: 64-channel DSP (Digital Signal Processor) card with four 4-Channel IP Trunk activation keys and four 8-Channel IP Proprietary Telephone activation keys preinstalled. Compliant with ITU-T G.729A and G.711 CODEC methods. To be mounted on the IPCMPR card.



Note

If the preinstalled activation keys on the DSP card are not enough for the desired configuration, refer to "4.1.3 Installing Additional Activation Keys".

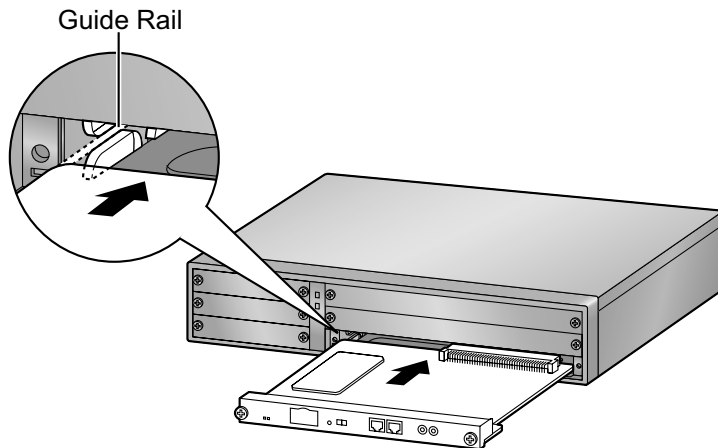
Installing the IPCMPR Card in the PBX

Install the IPCMPR card in the IPCMPR card slot of the PBX.

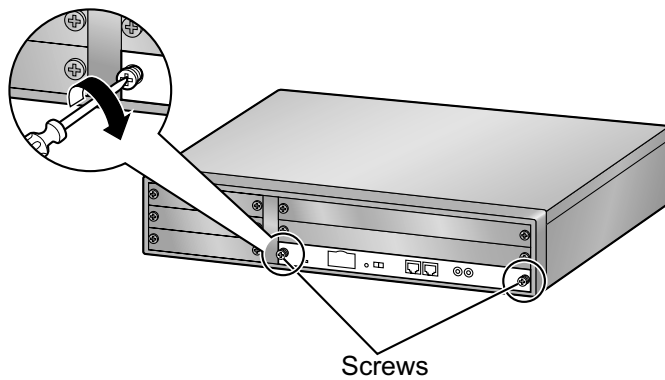
Note

The illustrations of the PBX shown in the installation procedure are based on the KX-NCP500.

1. Insert the card along the guide rails.



2. Turn the 2 screws clockwise to fix the card in place.



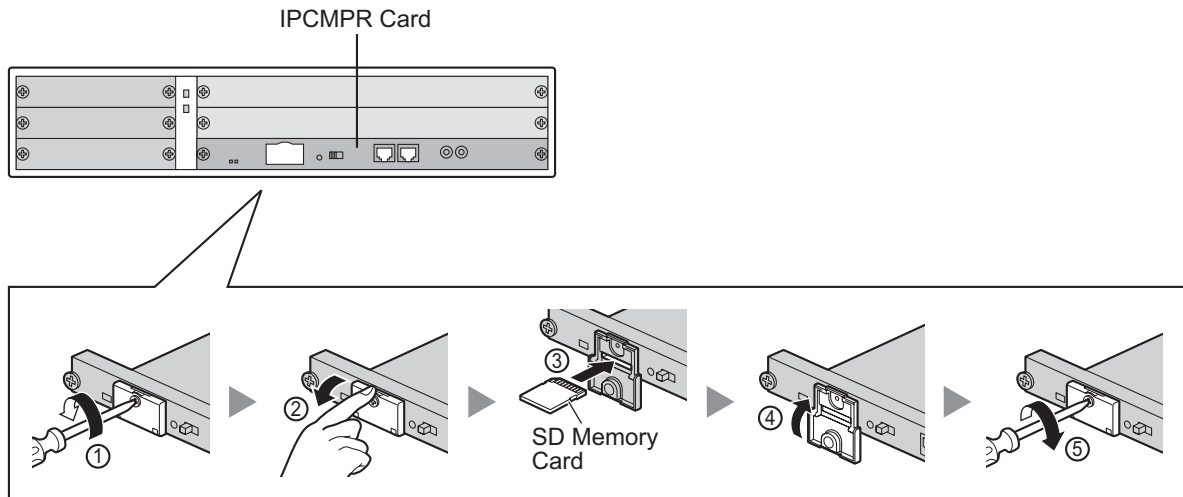
Note

Make sure the screws are tightened to earth the card securely.

2.2 Inserting the SD Memory Card to the IPCMPR Card

The SD Memory Card contains software for all the processes of the PBX and all the customer data. **The SD Memory Card must be inserted before startup.**

Example: KX-NCP500

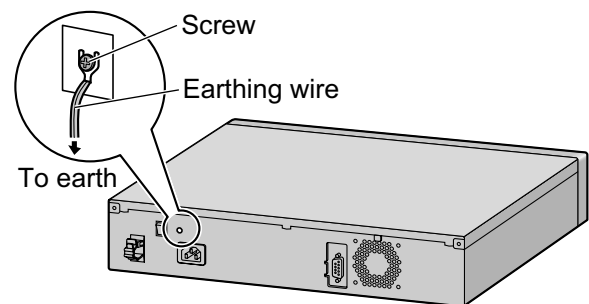


CAUTION

Do not remove the SD Memory Card while power is supplied to the PBX. Doing so may cause the PBX to fail to start when you try to restart the system.

2.3 Frame Earth Connection

1. Loosen the screw.
2. Insert an earthing wire (user-supplied).
3. Tighten the screw.
4. Connect the earthing wire to earth.



WARNING

- Connect the frame of the PBX to earth.
- Proper earthing (connection to earth) is very important to protect the PBX from the bad effects of external noise or to reduce the risk to the user of electrocution in the case of a lightning strike.

CAUTION

- For earthing wire, green-and-yellow insulation is required, and the cross-sectional area of the conductor must be more than 0.75 mm² or 18 AWG.
- The earthing wire of the AC cable has an effect against external noise and lightning strikes, but it may not be enough to protect the PBX. A permanent connection between earth and the earth terminal of the PBX must be made.

2.4 Connecting to the LAN

2.4.1 Connecting the IPCMPR Card to the LAN

Refer to the following procedure to connect the IPCMPR card to the LAN.

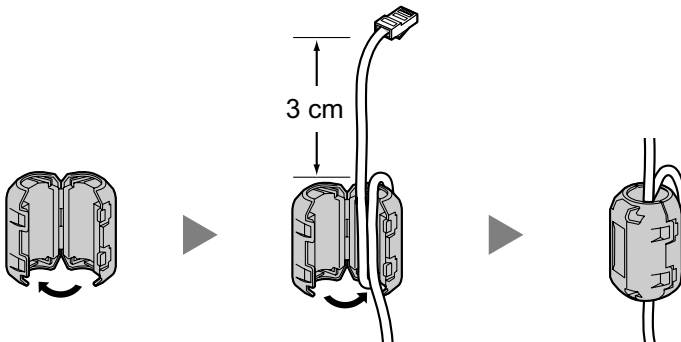
When the IPCMPR card is connected to the LAN for the first time, you must assign IP addressing information to the card. Refer to "4.1 Programming the PBX" for instructions.

Note

Make sure to set the port of the switching hub that connects to the IPCMPR card to operate under "Auto Negotiation" mode.

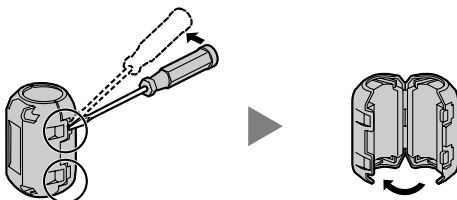
Attaching a ferrite core to the cable

1. Wrap the cable once around the ferrite core, leaving 3 cm between the ferrite core and the connector.
2. Close the case of the ferrite core.



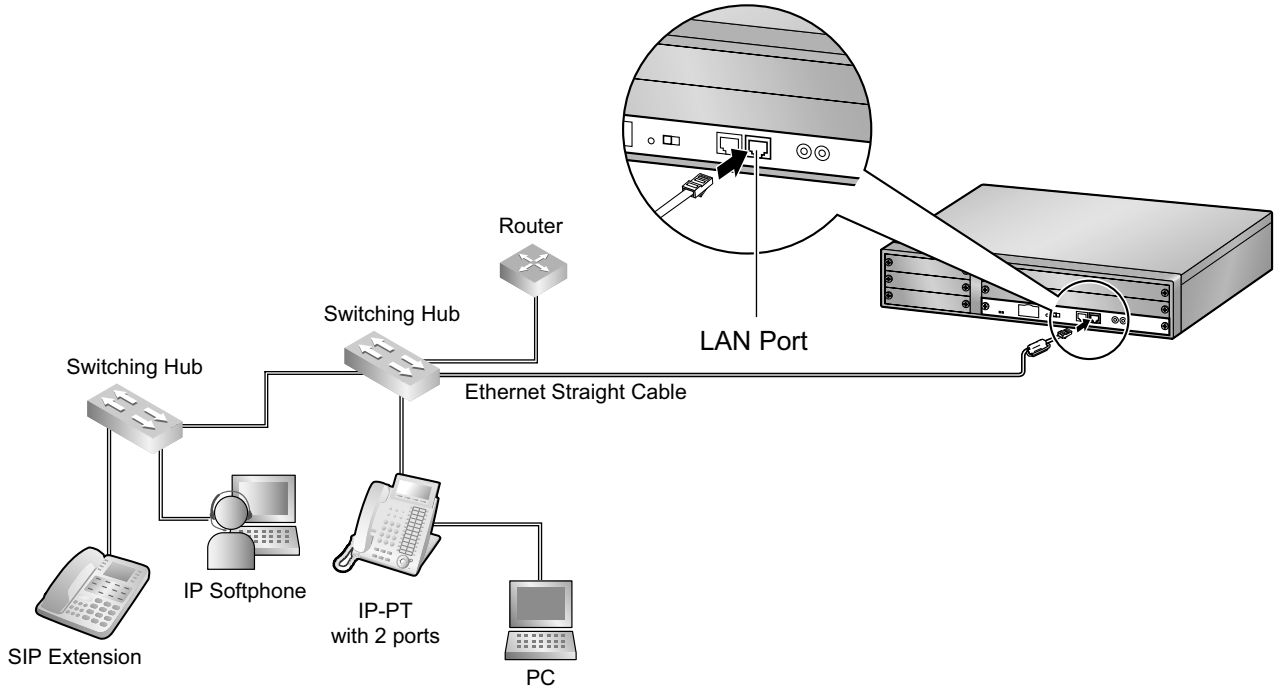
Note

If you need to open the ferrite core, use a flathead screwdriver to unlatch the case.



Connecting the IPCMPR card to a switching hub

1. Connect the cable to the LAN port of the IPCMPR card.
2. Connect the other end of the cable to the switching hub.



2.4.2 Connecting the IP Telephones to the LAN

When an IP telephone is connected to the LAN and power is supplied for the first time, you will be prompted to set network parameters. The network parameters must be set for the IP telephone before it can be used. Refer to "4.3 Programming the Virtual Extension Card and IP Telephones" for instructions.

Connecting an IP Telephone to a Switching Hub

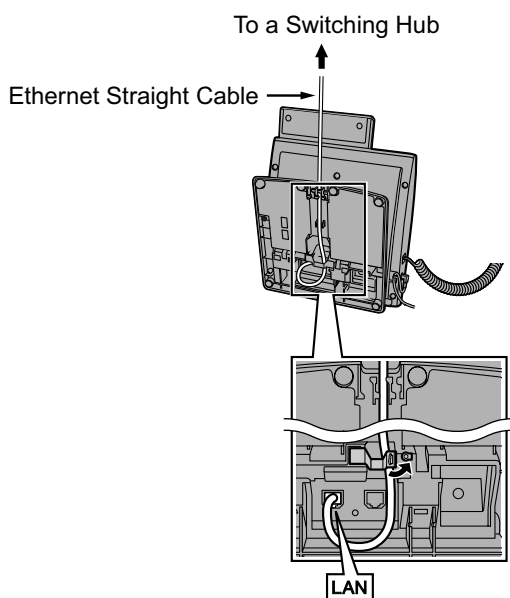
When connecting an IP telephone to the LAN, connect it to a switching hub.

Note

Since an IP softphone is installed and operates on a PC, the PC must be connected to the LAN to use the IP softphone on the network.

The diagram below is for connecting an IP-PT to a switching hub. For SIP Extensions, refer to the documentation of your SIP Extension.

Example: KX-NT346



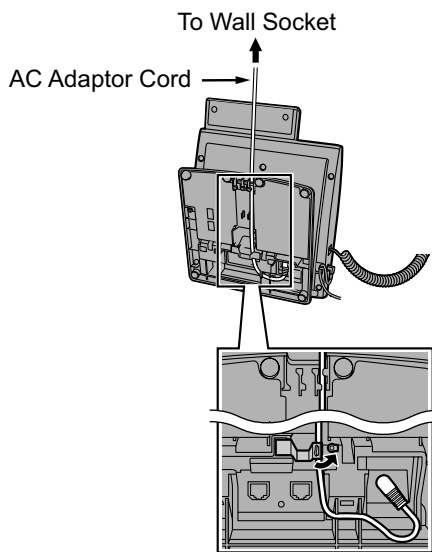
Connecting an AC Adaptor to an IP Telephone

IP-PTs and some SIP Extensions comply with the IEEE 802.3af Power-over-Ethernet (PoE) standard. If PoE is available on your network, these IP telephones can receive the necessary power supply from the network through the network cable. In this case, no AC adaptor is needed for the IP telephones. However, if PoE is not available, you will need to connect an AC adaptor to the IP telephone.

Note

Use only the specified type of AC adaptor for each IP telephone. For details, refer to the documentation of your IP telephone.

Example: KX-NT346



2.4.2 Connecting the IP Telephones to the LAN

Section 3

Before Programming

3.1 Starting the PBX

CAUTION

- Before touching the System Initialise Switch, discharge static electricity by touching ground or wearing an earthing strap.
- Once you have started the PBX and if you unplug the PBX, do not perform the following procedures to start the PBX again. Otherwise, your programmed data is cleared.
- The power supply cord is used as the main disconnect device. Ensure that the AC outlet is located near the equipment and is easily accessible.

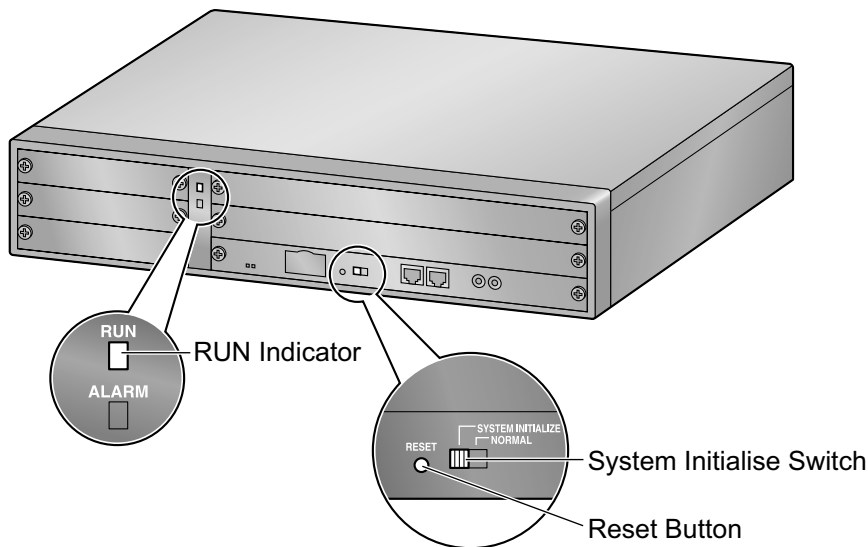
Notice

The SD Memory Card must be inserted in the SD Memory Card slot of the IPCMPR card before startup.

Note

- The PBX will continue to be powered even if the power switch is turned "OFF".
- Use only the AC power cord included with the PBX.

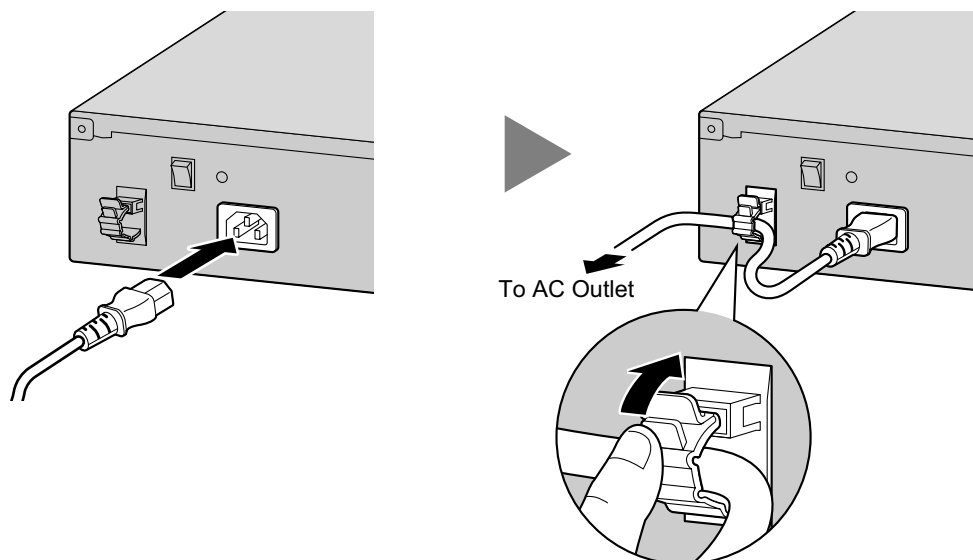
1. Slide the System Initialise Switch to the "SYSTEM INITIALIZE" position.



2. Plug the AC power cord into the PBX and pass the cord through the hook clip as indicated. Push the hook clip in the direction of the arrow until it clicks.

Note

For safety reasons, do not stretch or pinch the AC power cord.



3. Plug the other end of the cord into an AC outlet and turn on the PBX. The RUN indicator will flash.
4. While the RUN indicator is flashing, slide the System Initialise Switch back to the "NORMAL" position. Depending on the configuration, initialisation takes about 1 min to 3 min. If successfully executed, the RUN indicator will stop flashing and stay lit.

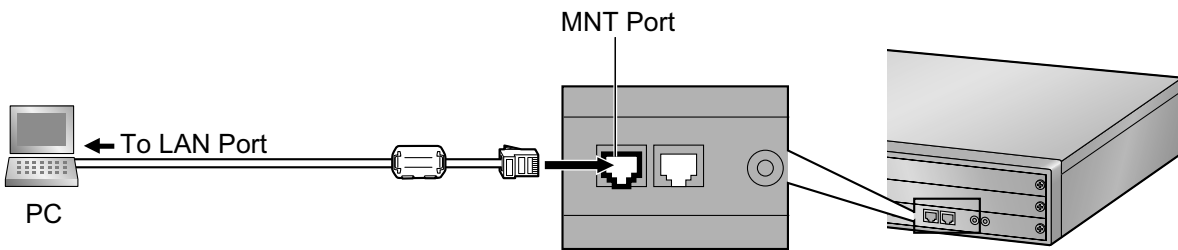
All data will be cleared and the PBX will be initialised to the default values.

3.2 Connecting the PC

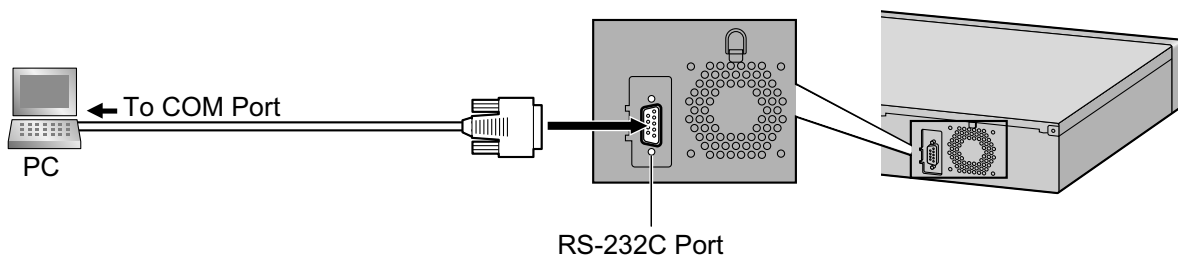
The Maintenance Console serves as an overall system programming tool for the PBX. The Maintenance Console's Quick Setup lets you easily configure the PBX to apply basic settings such as time and date. To programme the PBX, connect it to the PC via the MNT or RS-232C port.

PC Connection

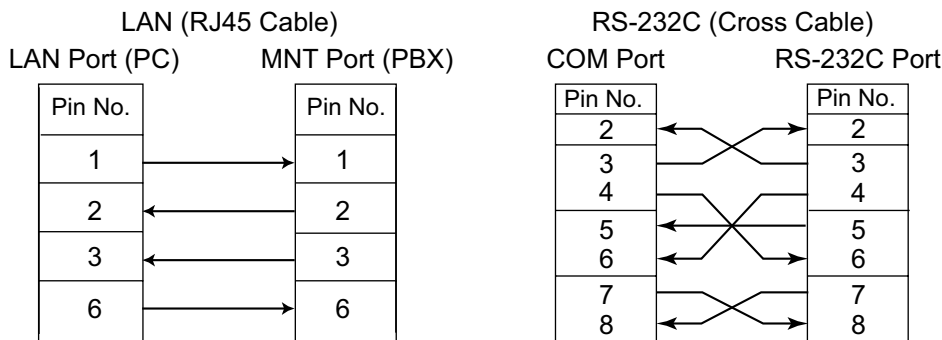
Via MNT Port



Via RS-232C Port



Pin Assignments



CAUTION

When connecting a PC to the PBX via the RS-232C port, it is necessary to keep the following in mind to protect the system:

1. Make sure that both connector cases (frame ground) of the RS-232C cross cable (shielded cable) are conductive. If they are not conductive, make sure that both connector cases of the cable are firmly connected.
2. If this is not possible, connect the frame of the PBX to the frame of the PC using an earthing wire in order to prevent difference in the electrical potentials.

Notice

When connecting a PC to the PBX via the MNT port, a fixed IP address must be assigned to the PC. For information about fixed IP addresses, ask your network administrator.

3.3 Installing the Maintenance Console

For the system requirements of the PC (e.g., operating system, hardware specifications), refer to "4.3.1 Installing and Starting the Maintenance Console" in the Installation Manual.

Note

- Make sure to install and use the latest version of the Maintenance Console.
 - The contents and design of the software are subject to change without notice.
 - Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.
1. Copy the setup file of the Maintenance Console to your PC.
 2. Double-click the setup file to run the installer.
 3. Follow the on-screen instructions provided by the installation wizard.

Section 4

Programming

4.1 Programming the PBX

4.1.1 Starting the Maintenance Console and Assigning the Basic Items (Quick Setup)

When you start the Maintenance Console with the Installer Level Programmer Code and connect to the PBX for the first time after initialisation (with the factory default setting), Quick Setup will launch automatically. During Quick Setup, you will set up the basic items. For details about the basic items, refer to "2.3.4 Quick Setup" in the Feature Guide.

1. Connect the PC to the PBX with an Ethernet straight cable or RS-232C cross cable.
2. Start the Maintenance Console from the Start menu.
3. "Information before programming" appears.
 - a. Carefully read this important additional information, which includes updates to this and other manuals.
 - b. Click **OK** to close this window.
4.
 - a. Enter the Installer Level Programmer Code (default: **INSTALLER**).
 - b. Click **OK**.
5. Click **Connect**.
6.
 - a. Select **KX-NCP500/1000** from **PBX Model**.
 - b. Select the **LAN** or **RS-232C** tab, depending on the type of PC connection with the PBX.
 - c. Specify the settings as required.

Note

When connecting to the PBX for the first time selecting **LAN**, the **IP Address** and **Port Number** must be set to **192.168.0.101** and **35300** respectively.

- d. Enter the system password for installer (default: **1234**).
 - e. Click **Connect**.
7. **When country/area data do not match:**
 - a. Click **OK** to replace the country/area data of the PBX. Replacement may take several minutes to complete.
 - b. Follow the procedure described in "Section 3 Before Programming" and restart the PBX.
 - c. Repeat step 5 to reconnect the Maintenance Console to the PBX.
8. Follow the instructions of the Quick Setup wizard for the basic items in Quick Setup—Step 1 to 3.
9. In Quick Setup—Step 4, the IP addressing information for the IPCMPR card can be assigned automatically through a DHCP server or entered manually.

When using a DHCP server:

Quick Setup – Step 4

LAN Setting

DHCP Client

Enable Disable

IP Address for IPCMPR-Card:

IP Address for VoIP-DSP:

Subnet Mask:

Default Gateway:

- a. Select **Enable** for the **DHCP Client** setting.
- b. Click **Apply**.

Note

The boxes will turn grey and the IP addresses will be assigned automatically after the PBX is reset.

When not using a DHCP server:

Quick Setup – Step 4

LAN Setting

DHCP Client

Enable Disable

IP Address for IPCMPR-Card:

IP Address for VoIP-DSP:

Subnet Mask:

Default Gateway:

- a. Select **Disable** for the **DHCP Client** setting.
- b. In the **IP Address for IPCMPR Card** box, type the IP address of the IPCMPR card.¹
- c. In the **IP Address for VoIP-DSP** box, type the IP address of the DSP card.²
- d. In the **Subnet Mask** box, type the subnet mask address of the network.³
- e. In the **Default Gateway** box, type the IP address of the default gateway.⁴
- f. Click **Apply**.

The system menu appears.

Notice

- Do not change the IP addresses of the IPCMPR and DSP cards once IP telephones are registered to the PBX using these IP addresses. The IP telephones will not operate properly if these IP addresses are changed.
- A DHCP server must be able to use a "client identifier" option specified by RFC 2131.
- The PBX will not start properly if the IP addresses cannot be assigned automatically by the DHCP server when DHCP Client is set to Enable. In this case, you need to consult your network administrator because the DHCP server on your network may not be running or a network failure may have occurred. If the DHCP server is not available, change the DHCP Client setting to Disable and set fixed IP addresses, then restart the PBX. To change the DHCP Client setting, connect the PC with an RS-232C cross cable or Ethernet straight cable. When connecting the PC with an Ethernet straight cable, make sure the PBX is disconnected from the LAN and then connect the PC with an Ethernet straight cable using 192.168.0.101 for the IP address of the IPCMPR card.

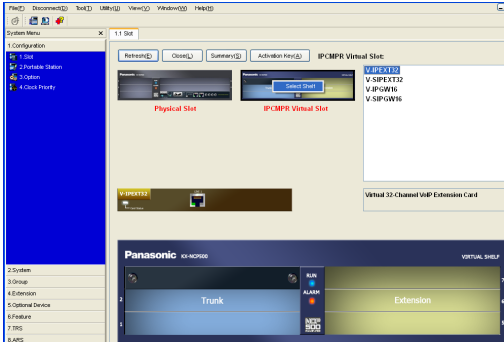
¹ Valid IP address range: "1.0.0.0" to "223.255.255.255"

² Valid IP address range: "1.0.0.0" to "223.255.255.255"

³ Valid subnet mask address range: "0–255.0–255.0–255.0–255" (except 0.0.0.0 and 255.255.255.255)

⁴ Valid IP address range: "1.0.0.0" to "223.255.255.255"

4.1.2 Installing the Virtual IP Cards to the PBX



- Under **Configuration**, click **Slot**.
 - Move the mouse pointer over the PBX image of **IPCMPR Virtual Slot** at the top of the screen.
 - Click **Select Shelf**.
- Click on the name of the desired card to install in the list. An image of the card will be displayed.
 - Click and drag the image of the card to the Extension or Trunk slot depending on the card type, and release it. The card will move into the slot space.
- Click **Yes** to confirm.

4.1.3 Installing Additional Activation Keys

If the preinstalled activation keys on the DSP cards are not enough for the desired configuration, it is necessary to obtain additional activation keys in the form of activation key files and install them in the SD Memory Card.

Activation Key Code and Key Management System

To obtain additional activation keys, you need to purchase the appropriate activation key codes and access the Key Management System. You can download the activation keys as an activation key file from the Key Management System. To download the activation keys, enter the MPR ID number shown on the IPCMPR card in the PBX, and activation key number and registration ID provided on each activation key code.

The following activation key codes are available to enable the use of IP trunks and IP telephones:

Model No.	Activation Key Type	Description
KX-NCS3102	2 IP Trunk	Provides the activation key number and registration ID to download the activation key that enables the use of 2 IP trunks.
KX-NCS3104	4 IP Trunk	Provides the activation key number and registration ID to download the activation key that enables the use of 4 IP trunks.
KX-NCS3201	1 IP Softphone/IP PT	Provides the activation key number and registration ID to download the activation key that enables the use of 1 IP-PT/IP softphone.
KX-NCS3208	8 IP Softphone/IP PT	Provides the activation key number and registration ID to download the activation key that enables the use of 8 IP-PTs/IP softphones.
KX-NCS3501	1 IP PT	Provides the activation key number and registration ID to download the activation key that enables the use of 1 IP-PT.
KX-NCS3504	4 IP PT	Provides the activation key number and registration ID to download the activation key that enables the use of 4 IP-PTs.
KX-NCS3508	8 IP PT	Provides the activation key number and registration ID to download the activation key that enables the use of 8 IP-PTs.
KX-NCS3516	16 IP PT	Provides the activation key number and registration ID to download the activation key that enables the use of 16 IP-PTs.
KX-NCS3701	1 SIP Extension	Provides the activation key number and registration ID to download the activation key that enables the use of 1 SIP Extension.
KX-NCS3704	4 SIP Extension	Provides the activation key number and registration ID to download the activation key that enables the use of 4 SIP Extensions.
KX-NCS3708	8 SIP Extension	Provides the activation key number and registration ID to download the activation key that enables the use of 8 SIP Extensions.

4.1.3 Installing Additional Activation Keys

Model No.	Activation Key Type	Description
KX-NCS3716	16 SIP Extension	Provides the activation key number and registration ID to download the activation key that enables the use of 16 SIP Extensions.
KX-NCS2101		Provides the activation key number and registration ID to download the activation key that enables the use of CA Basic for 1 user.
KX-NCS2105		Provides the activation key number and registration ID to download the activation key that enables the use of CA Basic for 5 users.
KX-NCS2110		Provides the activation key number and registration ID to download the activation key that enables the use of CA Basic for 10 users.
KX-NCS2201		Provides the activation key number and registration ID to download the activation key that enables the use of CA PRO for 1 user.
KX-NCS2205		Provides the activation key number and registration ID to download the activation key that enables the use of CA PRO for 5 users.
KX-NCS2210		Provides the activation key number and registration ID to download the activation key that enables the use of CA PRO for 10 users.
KX-NCS2301		Provides the activation key number and registration ID to download the activation key that enables the use of CA ACD Monitor for 1 ICD Supervisor.

Installing the Activation Key File in the SD Memory Card

1. Start the Maintenance Console from the Start menu.
2. From the **Utility** menu, select **File Transfer PC to PBX (SD Card)**.
A dialogue box will be displayed.
3. Select the file to upload.
A window showing the upload progress will be displayed.
While transferring files to the SD memory card, the PBX automatically renames them according to the header information.
A message will be displayed when the transfer is complete.
4. Click **OK**.
5. Under **Configuration**, click **Slot**.
6. Click **Activation Key**.
7. For IP trunk activation key file(s), click **Execute**.
A confirmation message will be displayed. Click **Yes**.

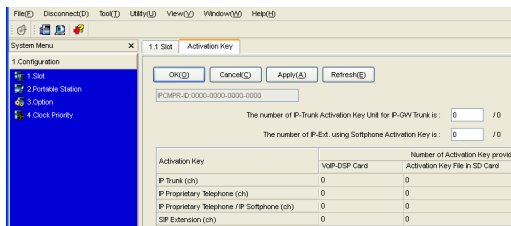
Notice

The activation key file can only be installed in the PBX with the MPR ID number entered when the activation key file was downloaded. The activation key file cannot be reissued unless the IPCMPR card crashes.

Configuration of the Activation Keys

Depending on your configuration, it may be necessary to programme the number of installed IP Trunk activation key(s) to be used for H.323 trunks. By default, all of the installed IP Trunk activation key(s) will be used for SIP trunks.

Similarly, you can programme how many IP-PT(s) can be used through the IP Softphone/IP Proprietary Telephone activation key. By default, only IP softphone(s) can be used through the IP Softphone/IP Proprietary Telephone activation key.



1.
 - a. Under **Configuration**, click **Slot**.
 - b. Click **Activation Key**.
2.
 - a. In the **The number of IP-Trunk Activation Key Unit for IP-GW Trunk is** box, type the number of IP Trunk activation keys to be used for H.323 trunks.
 - b. In the **The number of IP-Ext. using Softphone Activation Key is** box, type the number of IP-PT(s) to be used through the IP Softphone/IP Proprietary Telephone activation key.
3. Click **OK**.

Note

A confirmation message will be displayed if you have changed the number in the **The number of IP-Trunk Activation Key Unit for IP-GW Trunk is** box. When the message is displayed, click **Yes**.

Note

For a detailed explanation about activation keys, refer to "2.1 Information about the Activation Keys" in the Installation Manual.

4.2.1 Assigning the Hunt Pattern

4.2 Programming the Virtual 16-Channel VoIP Gateway Card

There are 2 methods to programme the V-IPGW16 card (Virtual 16-Channel VoIP Gateway Card) to establish VoIP communications between PBXs at different locations, as follows:

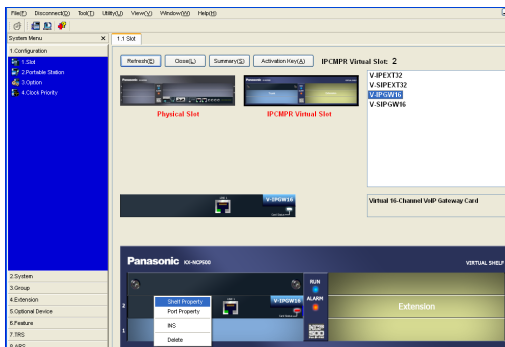
PBX code method	The caller dials the unique PBX code of the PBX to which the called party is connected, in addition to the destination number.
Extension number method	The caller dials only the destination number of the called party to call through PBXs at different locations (hence there are fewer digits to dial than with the PBX code method).

Note

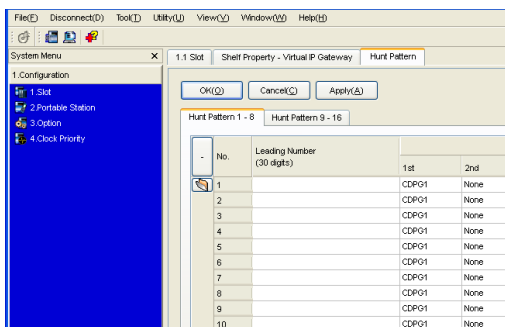
For a detailed explanation about each method, refer to "1.30 Networking Features" in the Feature Guide.

4.2.1 Assigning the Hunt Pattern

The hunt pattern determines how to route incoming calls through virtual IP trunks to the PBX. The procedure below demonstrates the process of programming the hunt pattern of the local PBX. After the hunt pattern at the local PBX has been fully assigned, repeat the procedure for the hunt pattern at the remote PBX with the appropriate setting values.



1.
 - a. Under **Configuration**, click **Slot**.
 - b. Move the mouse pointer over the PBX image of **IPCMRP Virtual Slot** at the top of the screen.
 - c. Click **Select Shelf**.
 - d. Move the mouse pointer over the installed V-IPGW16 card. A menu will be shown under the mouse pointer.
 - e. Click **Shelf Property**.
 - f. Click **Hunt Pattern**.



2.
 - a. **When using the PBX code method:**
In the **Leading Number** box, type the local PBX code and extension starting digit.

When using the extension number method:
In the **Leading Number** box, type the local extension starting digit.

- b. Click **OK** to return to the Shelf Property screen.

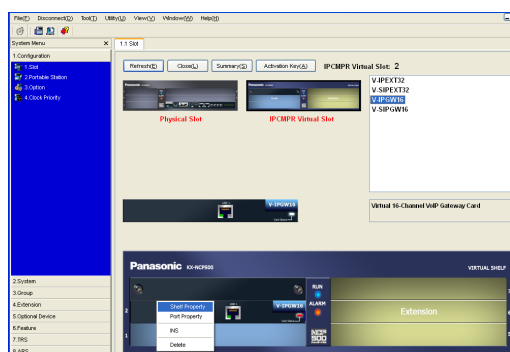
Note

For more details about hunt pattern assignment, refer to "3.13 [1-1] Slot—Shelf Property - Virtual IP Gateway—Hunt Pattern" in the PC Programming Manual.

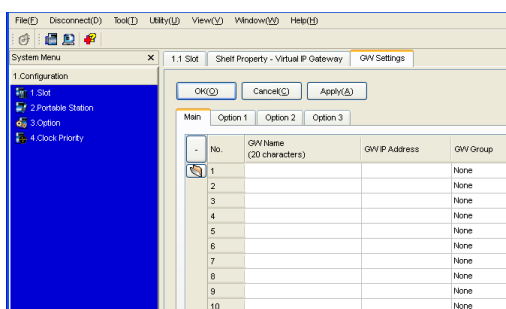
4.2.2 Programming the Address Translation Table

The function of an address translation table in a VoIP network is to provide 2-way translation of telephone numbers and IP addresses¹¹. Therefore, a caller can reach the destination by dialling the number without knowing the destination IP address.

The procedure below demonstrates the process of programming the address translation table at the local PBX. After the address translation table at the local PBX has been fully programmed, repeat the procedure for the address translation table at the remote PBX with the appropriate setting values.



1.
 - a. Under **Configuration**, click **Slot**.
 - b. Move the mouse pointer over the PBX image of **IPCMRP Virtual Slot** at the top of the screen.
 - c. Click **Select Shelf**.
 - d. Move the mouse pointer over the installed V-IPGW16 card. A menu will be shown under the mouse pointer.
 - e. Click **Shelf Property**.
 - f. Click **GW Settings**.



2. In the **Main** tab, do the following to configure the gateway entry for the remote PBX:
 - a. In the **GW Name** box, type a unique identifier of the destination in the VoIP network.
 - b. In the **GW IP Address** box, type the IP address of the destination gateway device.
 - c. In the **GW Group** box, select **None**.

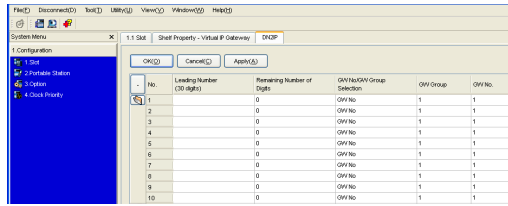
Note

Having the value **None** for **GW Group** means that the destination gateway device does not belong to any gateway group. Grouping is useful when installing multiple gateway devices at one location. For details, refer to "3.11 [1-1] Slot—Shelf Property - Virtual IP Gateway—GW Settings—
◆ GW Group" in the PC Programming Manual.

- d. Click **OK** to return to the Shelf Property screen.

¹¹ IP address-to-telephone number translation can also be handled by using an H.323 Gatekeeper device. To configure Gatekeeper devices, refer to the manufacturer's documentation. This manual focuses on the method using the V-IPGW16 card's internal address translation capabilities.

4.2.2 Programming the Address Translation Table



3.
 - a. Click **DN2IP**.
 - b. **When using the PBX code method:**
In the **Leading Number** box, type the remote PBX code and starting digit of destination extension.

When using the extension number method:
In the **Leading Number** box, type the remote PBX code and starting digit of destination extension.
 - c. In the **Remaining Number of Digits** box, type a number of digits to dial following the leading number.
 - d. In **GW No./GW Group Selection**, select **GW No..**
 - e. In the **GW No.** box, select **1** (the gateway entry for the destination gateway device at the remote PBX).
 - f. Click **OK**.

Note

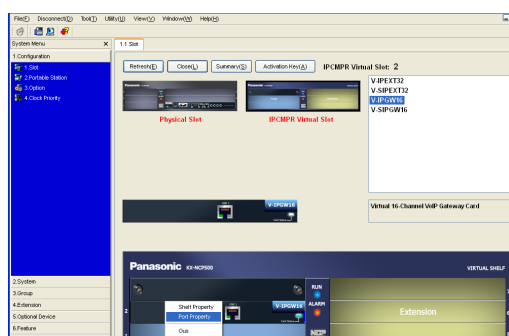
For more details about gateway settings, refer to "3.11 [1-1] Slot—Shelf Property - Virtual IP Gateway—GW Settings" in the PC Programming Manual.

4.2.3 Programming the Network Settings

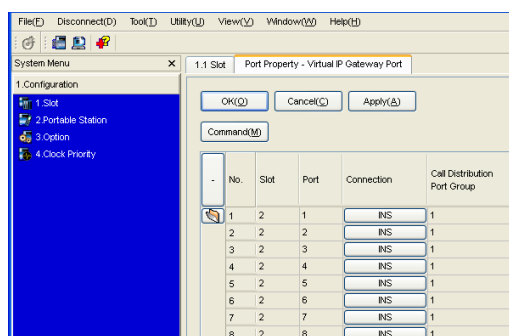
For successful operation of a VoIP network using the V-IPGW16 card, network settings for the PBX at each location must be programmed appropriately. For a detailed discussion of related features, refer to the Feature Guide.

This section details the procedure to programme the network settings for the local PBX. After the programming for the local PBX has been done, repeat the procedure for the remote PBX with the appropriate setting values. The following procedures describe the process of programming the network settings for each numbering method.

Programming for the PBX Code Method



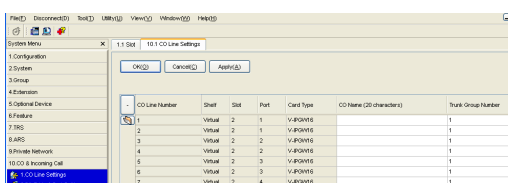
1.
 - a. Under **Configuration**, click **Slot**.
 - b. Move the mouse pointer over the PBX image of **IPCMRP Virtual Slot** at the top of the screen.
 - c. Click **Select Shelf**.
 - d. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.
 - e. Click **Port Property**.



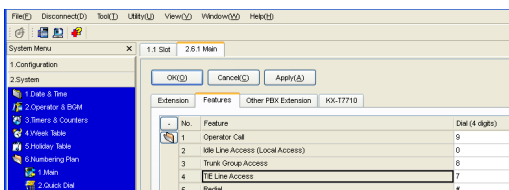
Confirm that all ports are in service (**INS**).

Note

When a V-IPGW16 card is installed, 8 ports (1–8) are available. When two V-IPGW16 cards are installed, 16 ports (1–16) are available.

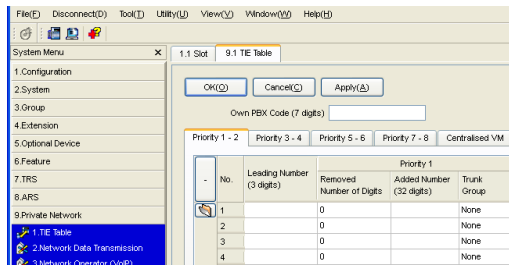


2.
 - a. From the system menu, click **CO & Incoming Call**.
 - b. Click **CO Line Settings**.
 - c. Type the **CO Name** and assign an unused **Trunk Group Number** to be used for all IP trunks.
 - d. Click **OK**.

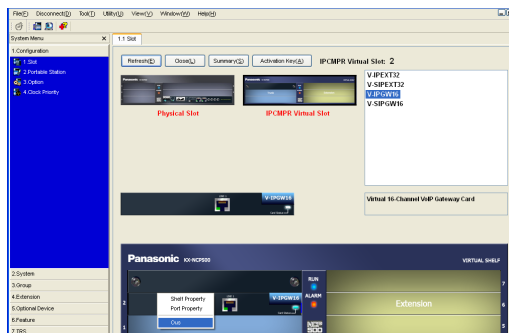


3.
 - a. From the system menu, click **System**.
 - b. Click **Numbering Plan**.
 - c. Click **Main**.
 - d. Click the **Features** tab.
 - e. In the **TIE Line Access** box, type the dialling number.
 - f. Click **OK**.

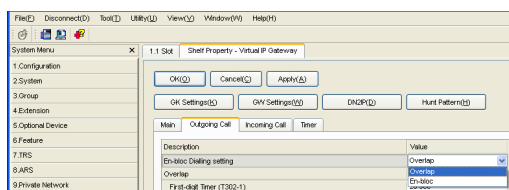
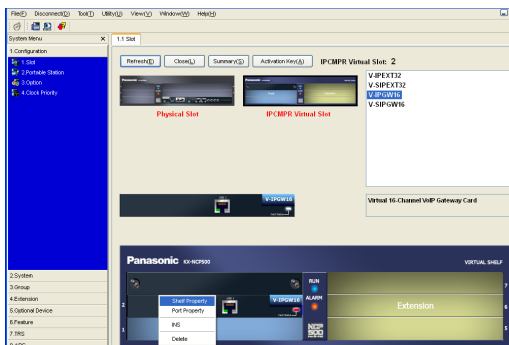
4.2.3 Programming the Network Settings



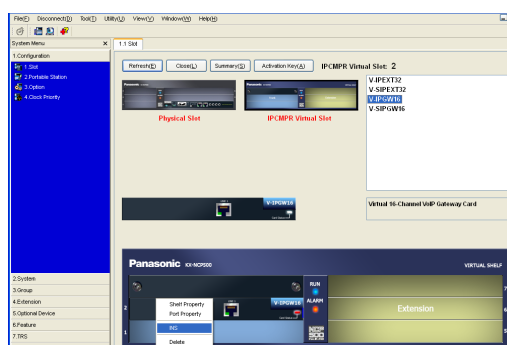
4.
 - a. From the system menu, click **Private Network**.
 - b. Click **TIE Table**.
 - c. In the **Own PBX Code** box, type the PBX code of the local PBX in the network.
 - d. In the first unused **Leading Number** box, type the PBX code of the remote PBX in the network.
 - e. In the corresponding **Trunk Group** list, select the number of the trunk group to be used when making calls.
 - f. Set the number modification pattern, if necessary.
 - g. Click **OK**.



5.
 - a. From the system menu, click **Configuration**.
 - b. Click **Slot**.
 - c. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.
 - d. Click **Out**.
You will see a confirmation message.
 - e. Click **Yes**.
 - f. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.
 - g. Click **Shelf Property**.



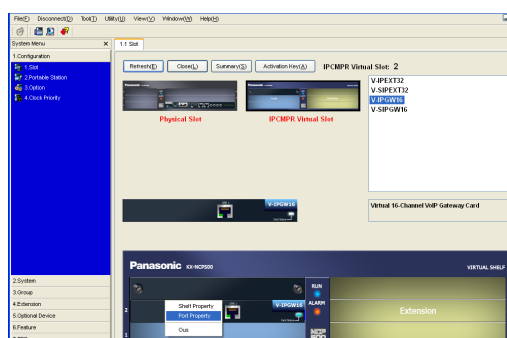
6.
 - a. Click the **Outgoing Call** tab.
 - b. Select the preferred **En-bloc Dialing** setting (**Overlap** (default) or **En-bloc¹⁾**.
 - c. Click **OK**.



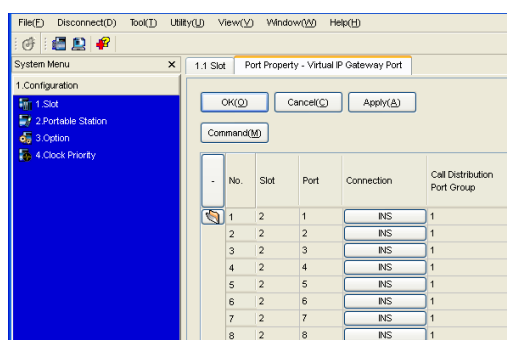
7.
 - a. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.
 - b. Click **INS**.

*1 When "En-bloc" is selected, you need to press "#" after dialling the phone number.

Programming for the Extension Number Method



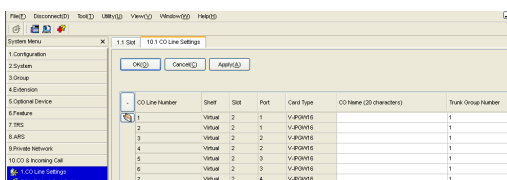
1.
 - a. Under **Configuration**, click **Slot**.
 - b. Move the mouse pointer over the PBX image of **IPCMRP Virtual Slot** at the top of the screen.
 - c. Click **Select Shelf**.
 - d. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.
 - e. Click **Port Property**.



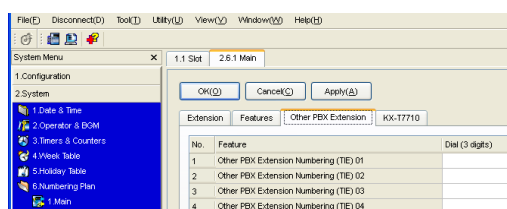
Confirm that all ports are in service (**INS**).

Note

When a V-IPGW16 card is installed, 8 ports (1–8) are available. When two V-IPGW16 cards are installed, 16 ports (1–16) are available.

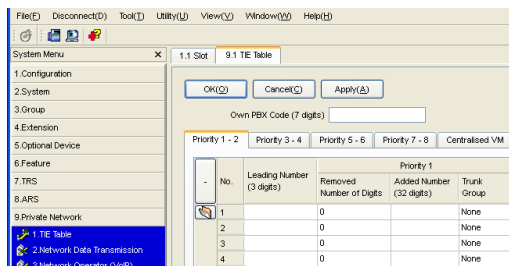


2.
 - a. From the system menu, click **CO & Incoming Call**.
 - b. Click **CO Line Settings**.
 - c. Type the **CO Name** and assign an unused **Trunk Group Number** to be used for all IP trunks.
 - d. Click **OK**.

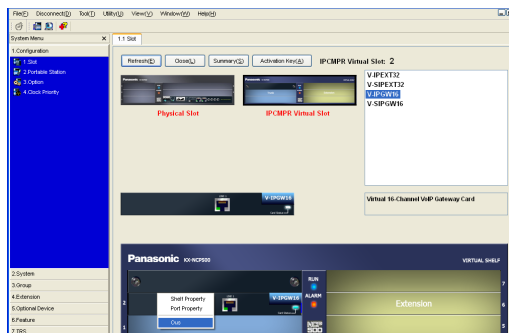


3.
 - a. From the system menu, click **System**.
 - b. Click **Numbering Plan**.
 - c. Click **Main**.
 - d. Click the **Other PBX Extension** tab.
 - e. In the **Other PBX Extension Numbering (TIE)** box, type a starting digit of destination extension.
 - f. Click **OK**.

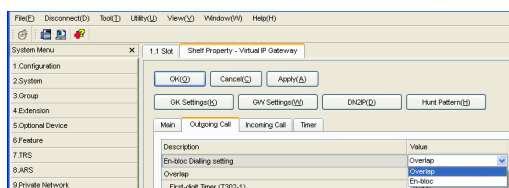
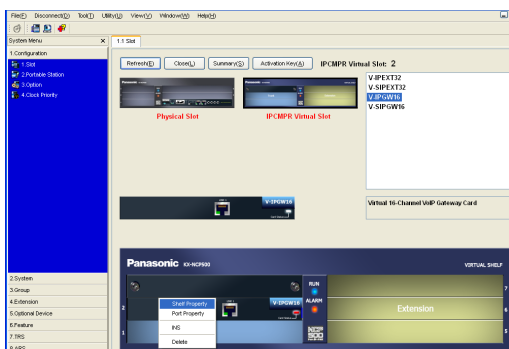
4.2.3 Programming the Network Settings



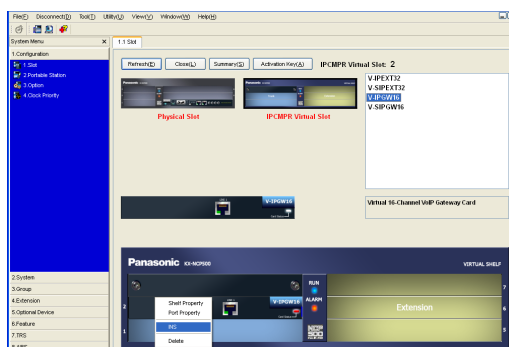
4.
 - a. From the system menu, click **Private Network**.
 - b. Click **TIE Table**.
 - c. In the **Leading Number** box, type the starting digit of destination extension.
 - d. Click **OK**.



5.
 - a. From the system menu, click **Configuration**.
 - b. Click **Slot**.
 - c. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.
 - d. Click **Out**.
You will see a confirmation message.
 - e. Click **Yes**.
 - f. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.
 - g. Click **Shelf Property**.



6.
 - a. Click the **Outgoing Call** tab.
 - b. Select the preferred **En-bloc Dialing setting (Overlap (default) or En-bloc¹⁾**.
 - c. Click **OK**.



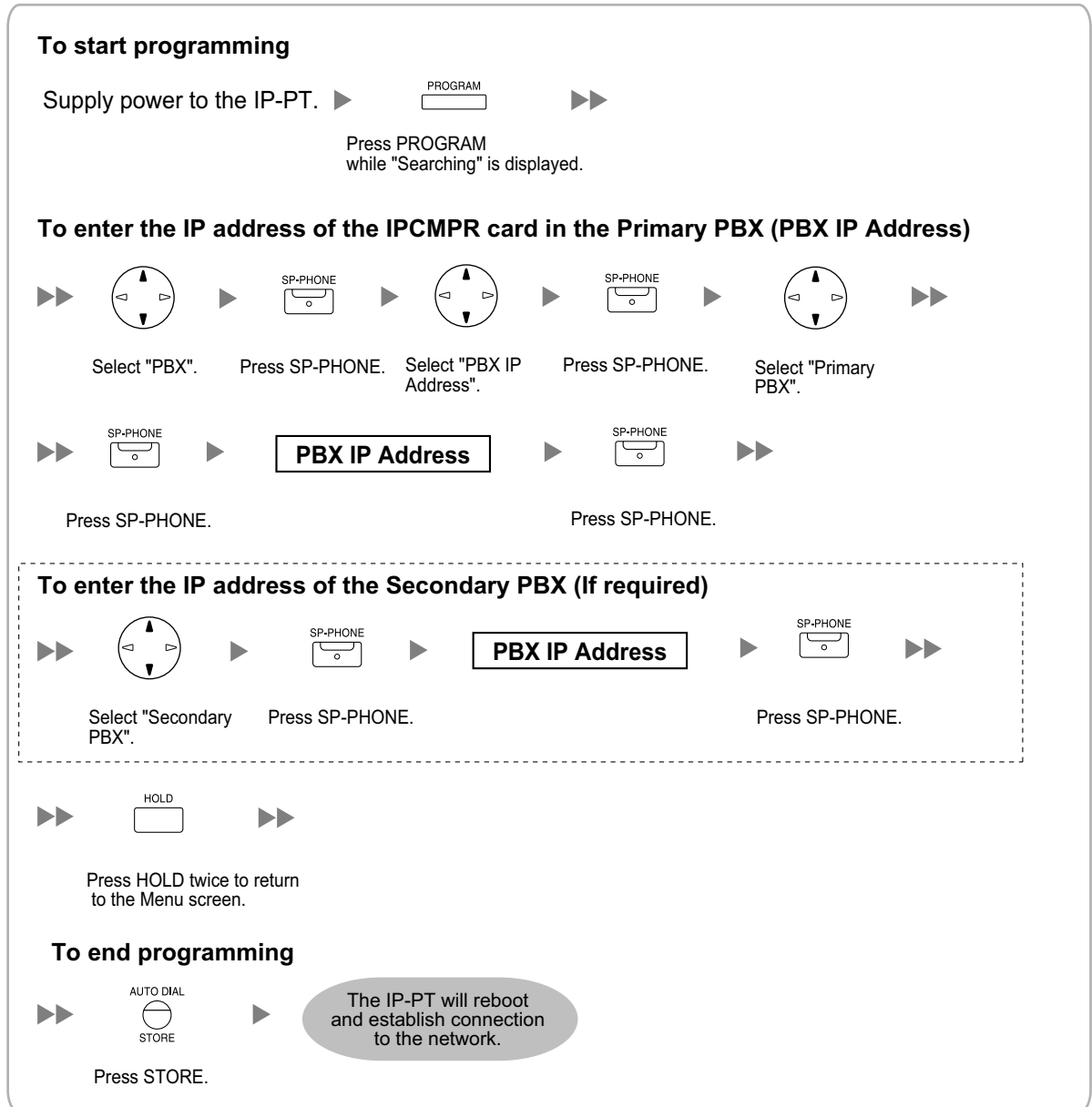
7.
 - a. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.
 - b. Click **INS**.

¹ When "En-bloc" is selected, you need to press "#" after dialling the phone number.

Note

For details about network parameter settings, refer to the relevant sections of the PC Programming Manual.

KX-NT321


**Note**

To confirm the connection to the secondary PBX after programming, (1) turn the IP-PT's power off, and (2) hold the STORE button and 2 key while turning the power on.

4.3.1 Assigning the IP Addressing Information

KX-NT265 (software version 2.00 or later only)


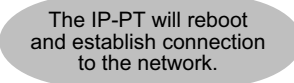
To start programming

Supply power to the IP-PT. ▶  ▶▶
Press PROGRAM while "Searching" is displayed.

To enter the IP address of the IPCMPR card (PBX IP Address)

▶▶  ▶  ▶ **PBX IP Address** ▶  ▶  ▶▶
Press VOLUME to select "PBX". Press SP-PHONE twice. Press SP-PHONE. Press HOLD to return to the Menu screen.

To end programming

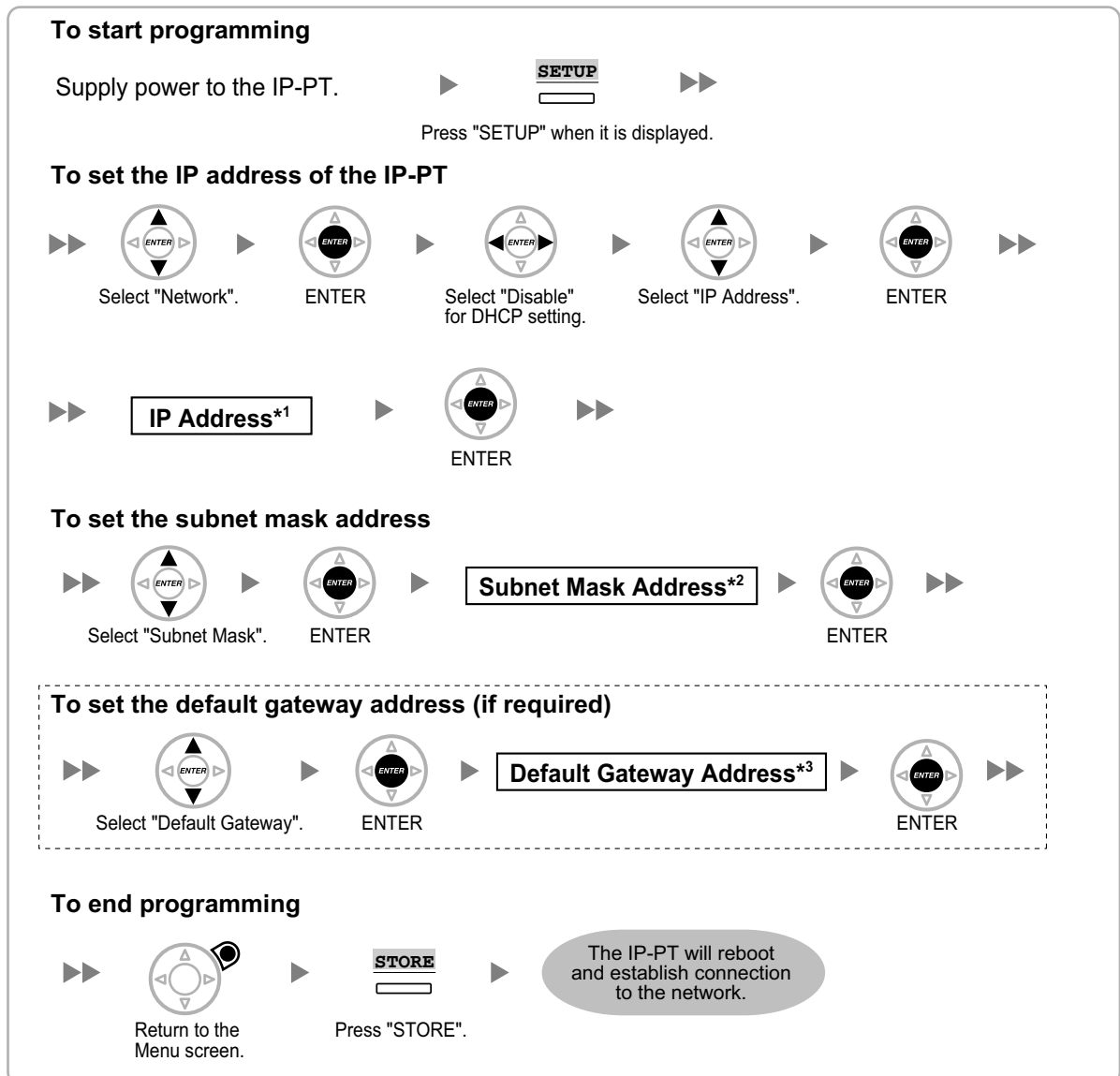
▶▶  ▶ 
Press STORE.

3. Not using a DHCP server when the IP-PT is on the same LAN with the PBX

Only the PBX IP address can be assigned automatically to the IP-PT in process of being registered to the PBX. For details about registering the IP-PT, refer to "4.3.2 Registering IP Telephones".

Follow the procedure below to assign the IP address of the IP-PT, the subnet mask address, and the default gateway address manually.

KX-NT300 series (except KX-NT321)



*1 Valid IP address range: "1.0.0.0" to "223.255.255.255"



*2 Valid subnet mask address range: "0-255.0-255.0-255.0-255" (except 0.0.0.0 and 255.255.255.255)

*3 Valid IP address range: "1.0.0.0" to "223.255.255.255"

4.3.1 Assigning the IP Addressing Information










KX-NT321

To start programming


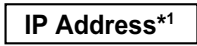



Supply power to the IP-PT.  

Press PROGRAM while "Searching" is displayed.

To set the IP address of the IP-PT






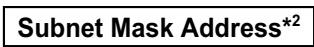



        

Select "Network". Press SP-PHONE. Select "DHCP (Disable)". Press SP-PHONE twice.






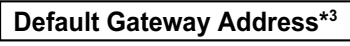



Press SP-PHONE.

To set the subnet mask address














Select "Subnet Mask". Press SP-PHONE. Press SP-PHONE.

To set the default gateway address (if required)








        

Select "Default GW". Press SP-PHONE. Press SP-PHONE.

To enter the IP address of the Secondary PBX (if required)






            

Press HOLD to return to the Menu screen. Select "PBX". Press SP-PHONE. Select "PBX IP Address". Press SP-PHONE. Select "Secondary PBX".

Press SP-PHONE. Press SP-PHONE.

To end programming

Press HOLD twice to return to the Menu screen. Press STORE.

The IP-PT will reboot and establish connection to the network.

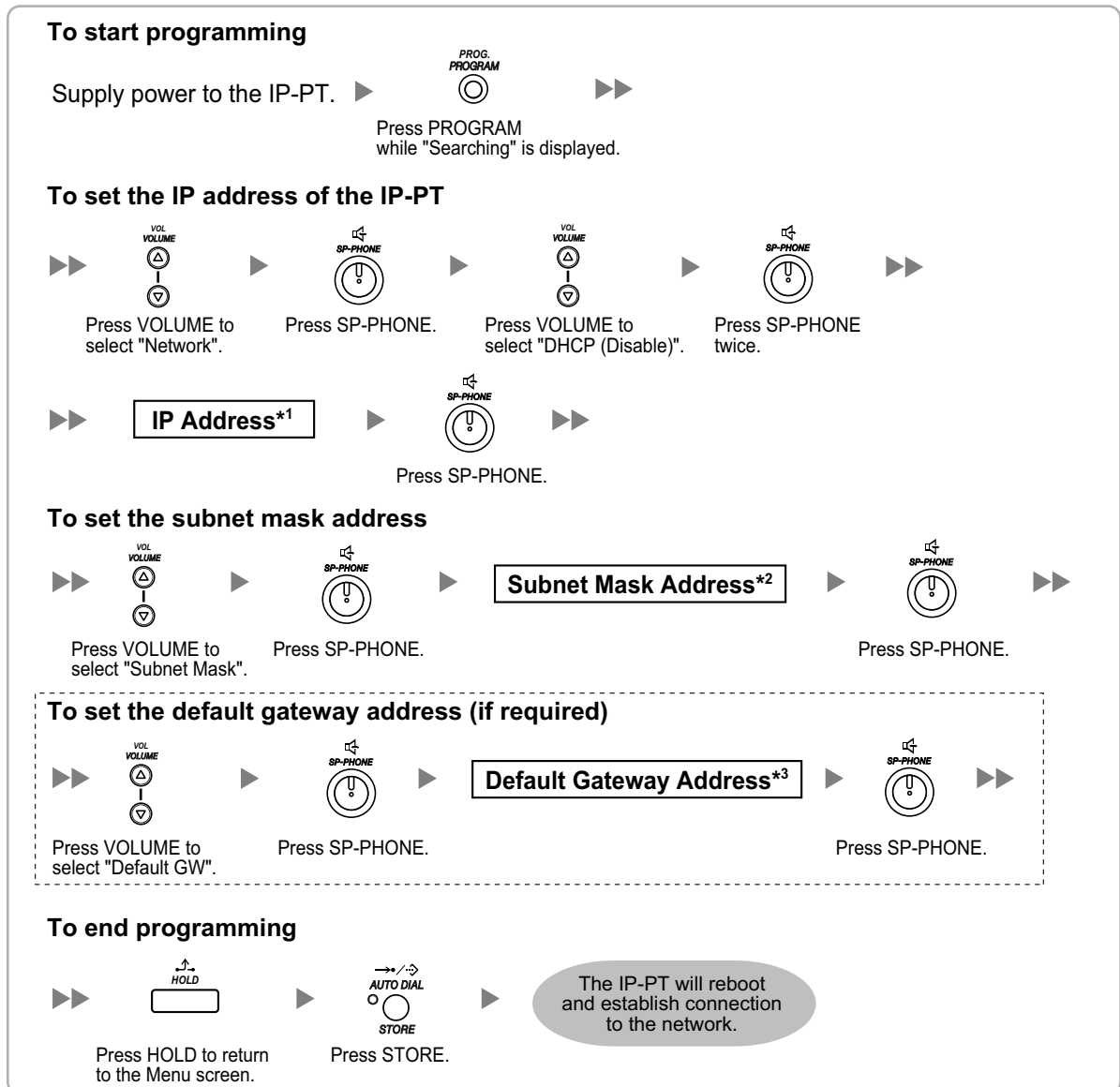
*1 Valid IP address range: "1.0.0.0" to "223.255.255.255"

*2 Valid subnet mask address range: "0-255.0-255.0-255.0-255" (except 0.0.0.0 and 255.255.255.255)

*3 Valid IP address range: "1.0.0.0" to "223.255.255.255"

Note

To confirm the connection to the secondary PBX after programming, (1) turn the IP-PT's power off, and (2) hold the STORE button and 2 key while turning the power on.

KX-NT265 (software version 2.00 or later only)

*1 Valid IP address range: "1.0.0.0" to "223.255.255.255"

*2 Valid subnet mask address range: "0-255.0-255.0-255.0-255" (except 0.0.0.0 and 255.255.255.255)

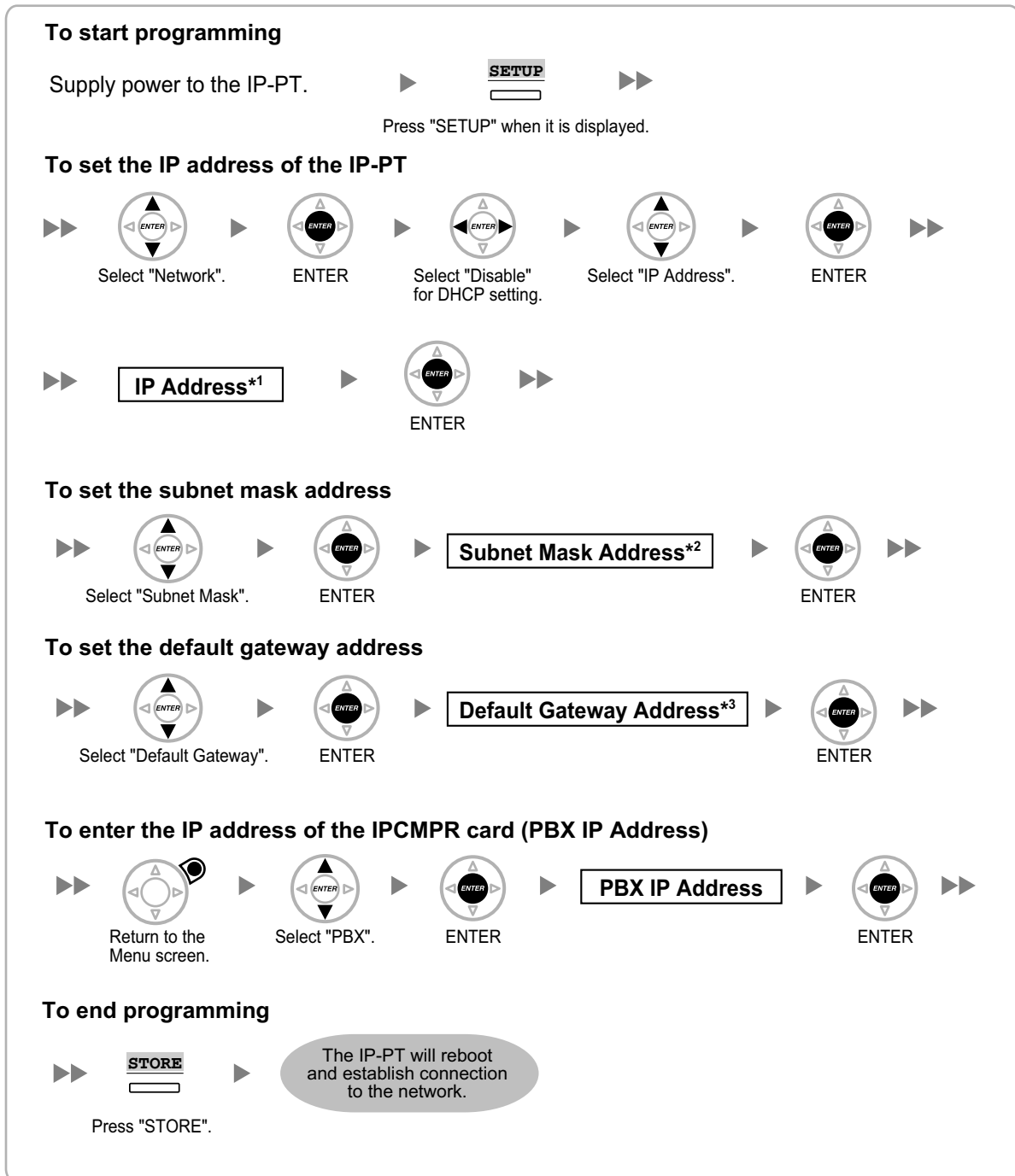
*3 Valid IP address range: "1.0.0.0" to "223.255.255.255"

4.3.1 Assigning the IP Addressing Information

4. Not using a DHCP server when the IP-PT is on the remote office LAN

All the IP addressing information must be assigned manually.
Follow the procedure below to assign the IP addressing information.

KX-NT300 series (except KX-NT321)





*1 Valid IP address range: "1.0.0.0" to "223.255.255.255"

*2 Valid subnet mask address range: "0-255.0-255.0-255" (except 0.0.0.0 and 255.255.255.255)


*3 Valid IP address range: "1.0.0.0" to "223.255.255.255"

KX-NT321

To start programming










Supply power to the IP-PT.  
 Press PROGRAM while "Searching" is displayed.

To set the IP address of the IP-PT






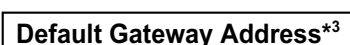



        
 Select "Network". Press SP-PHONE. Select "DHCP (Disable)". Press SP-PHONE twice.

    
 Press SP-PHONE.





















To set the subnet mask address

        
 Select "Subnet Mask". Press SP-PHONE. Press SP-PHONE.

To set the default gateway address

        
 Select "Default GW". Press SP-PHONE. Press SP-PHONE.

To enter the IP address of the IPCMPR card in the Primary PBX (PBX IP Address)

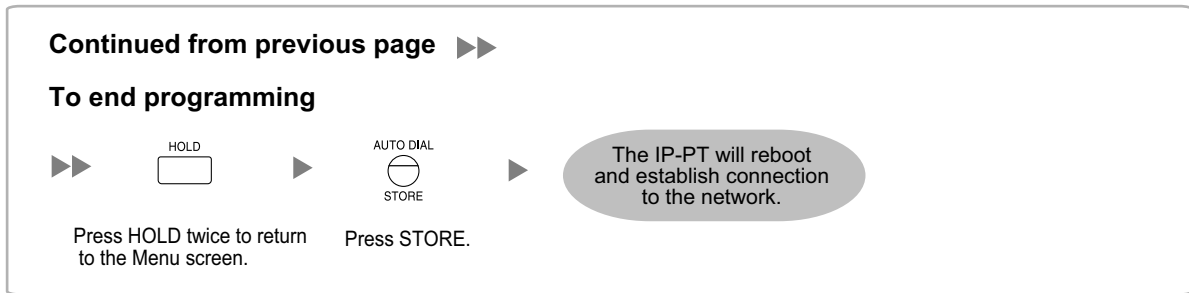
            
 Press HOLD to return to the Menu screen. Select "PBX". Press SP-PHONE. Select "PBX IP Address". Press SP-PHONE. Select "Primary PBX".
      
 Press SP-PHONE. Press SP-PHONE.

To enter the IP address of the Secondary PBX (If required)

        
 Select "Secondary PBX". Press SP-PHONE. Press SP-PHONE.

 **Continued on next page**

4.3.1 Assigning the IP Addressing Information



*1 Valid IP address range: "1.0.0.0" to "223.255.255.255"

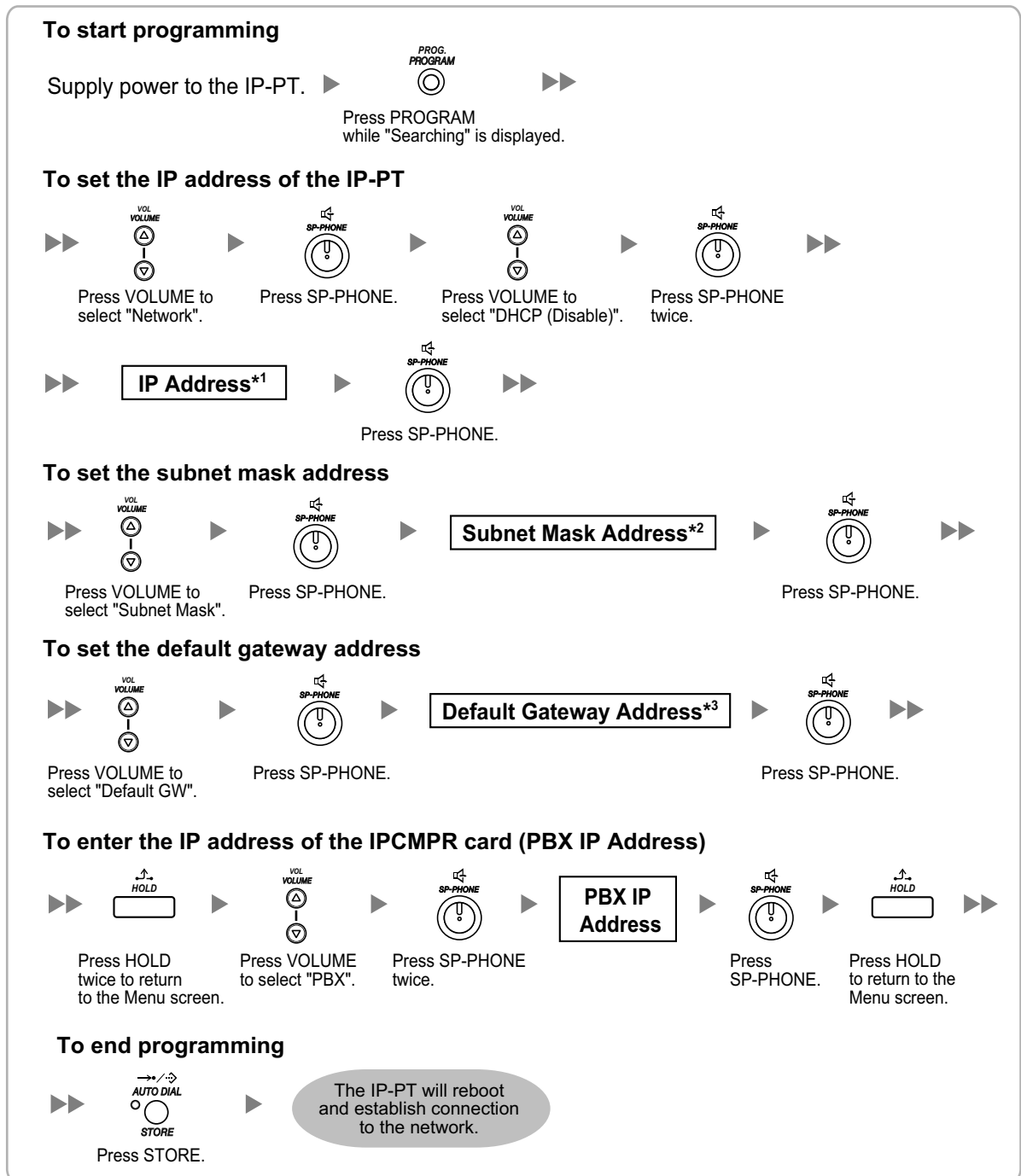
*2 Valid subnet mask address range: "0-255.0-255.0-255" (except 0.0.0.0 and 255.255.255.255)

*3 Valid IP address range: "1.0.0.0" to "223.255.255.255"

Note

To confirm the connection to the secondary PBX after programming, (1) turn the IP-PT's power off, and (2) hold the STORE button and **2** key while turning the power on.

KX-NT265 (software version 2.00 or later only)



*¹ Valid IP address range: "1.0.0.0" to "223.255.255.255"

*² Valid subnet mask address range: "0-255.0-255.0-255.0-255" (except 0.0.0.0 and 255.255.255.255)

*³ Valid IP address range: "1.0.0.0" to "223.255.255.255"

Note

- IP-PTs can only receive IP addressing information from a DHCP server on its own LAN. Therefore, when IP-PTs are located on several LANs, a DHCP server is required on each LAN.
- Since the default setting of the DHCP client function is enabled for IP-PTs, simply connect the IP-PTs to the LAN to use the DHCP server.

For SIP Extensions

1. Using a DHCP server to automate the assignment of IP addressing information

The IP address of the SIP Extension, the subnet mask address, and the default gateway address can be assigned to the SIP Extension automatically by the DHCP server.

The PBX IP address must be assigned manually on the SIP Extension side.

For instructions, refer to the documentation of the SIP Extension.

2. Not using a DHCP server when assigning IP addressing information

All the IP addressing information must be assigned manually.

For instructions, refer to the documentation of the SIP Extension.

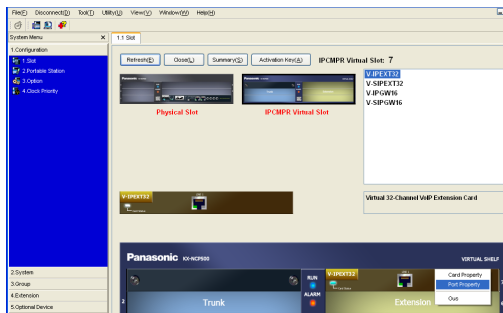
Note

- SIP Extensions can only receive IP addressing information from a DHCP server on its own LAN. Therefore, when SIP Extensions are located on several LANs, a DHCP server is required on each LAN.
- When the DHCP client function is enabled for SIP Extensions, simply connect the SIP Extensions to the LAN to use the DHCP server. For the DHCP client function setting, refer to the documentation of the SIP Extension.

4.3.2 Registering IP Telephones

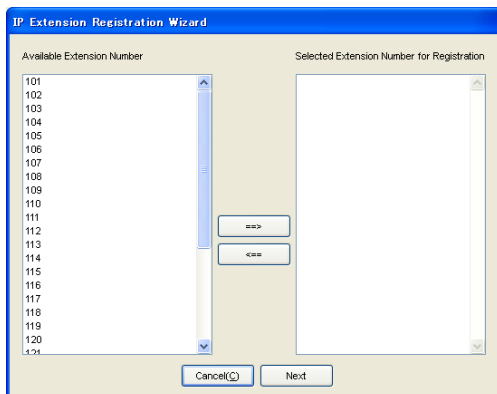
After the programming of the IPCMPR card and IP telephone is finished, the IP telephone must be registered to the PBX. This is done using the Maintenance Console.

Registration of IP-PTs



1.
 - a. Under **Configuration**, click **Slot**.
 - b. Move the mouse pointer over the PBX image of **IPCMPR Virtual Slot** at the top of the screen.
 - c. Click **Select Shelf**.
 - d. Move the mouse pointer over the V-IPEXT32 card (Virtual 32-Channel VoIP Extension Card). A menu will be shown under the mouse pointer.
 - e. Click **Port Property**.

2. Click **Registration**.
A dialogue box will appear. Non-registered (available) extension numbers are displayed on the left.



3.
 - a. Highlight numbers and click the right arrow to select them for registration.
 - b. Click **Next**. A screen will appear with information on the current IP-PT extension number and index number for programming.

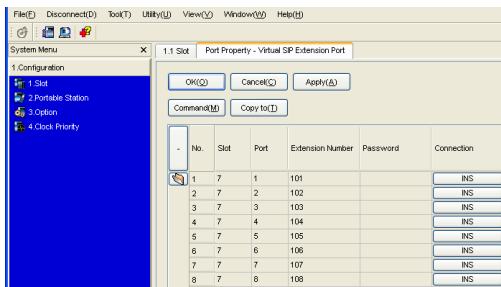
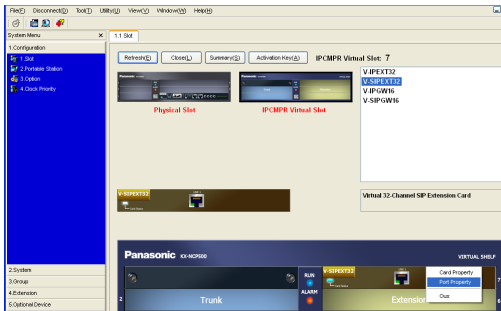
Note

- If the IP-PT has been connected to the LAN and power has been turned on, the IP address of the IPCMPR card will be assigned automatically.
- If not, connect the IP-PT to the LAN and turn the power on within 5 minutes after this operation is done. The IP address of the IPCMPR card will then be assigned automatically.

- c. Click **Next**.
 - If the registration is still in progress, the dialogue box will show "Waiting for IP-PT to register...". Click **OK**.
 - If the registration is successful, the dialogue box will show "Registration succeed". If there are more IP-PTs to be registered, click **Continue** to resume or **Cancel** to terminate the registration. If not, click **Close**.

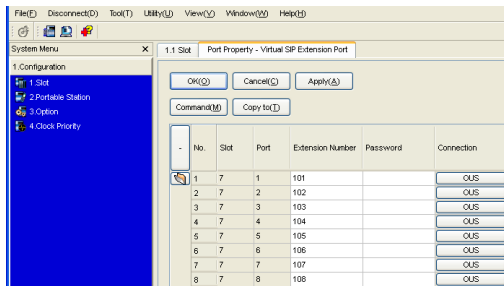
Once the IP-PT is successfully registered, the status of the IP-PT will update to show "Registered".

Registration of SIP Extensions



1.
 - a. Under **Configuration**, click **Slot**.
 - b. Move the mouse pointer over the PBX image of **IPCMRP Virtual Slot** at the top of the screen.
 - c. Click **Select Shelf**.
 - d. Move the mouse pointer over the V-SIPEXT32 card (Virtual 32-Channel SIP Extension Card). A menu will be shown under the mouse pointer.
 - e. Click **Port Property**.

2. Assign extension numbers to the SIP Extensions.
 - If the Automatic Extension Number Set for Extension Card feature is enabled, the extension numbers of SIP Extension are automatically assigned. To programme this feature, refer to "3.45 [1-3] Option—
 ◆ New Card Installation—Automatic Extension Number Set for Extension Card" in the PC Programming Manual.
 - If not, enter the extension number for each SIP Extension manually.

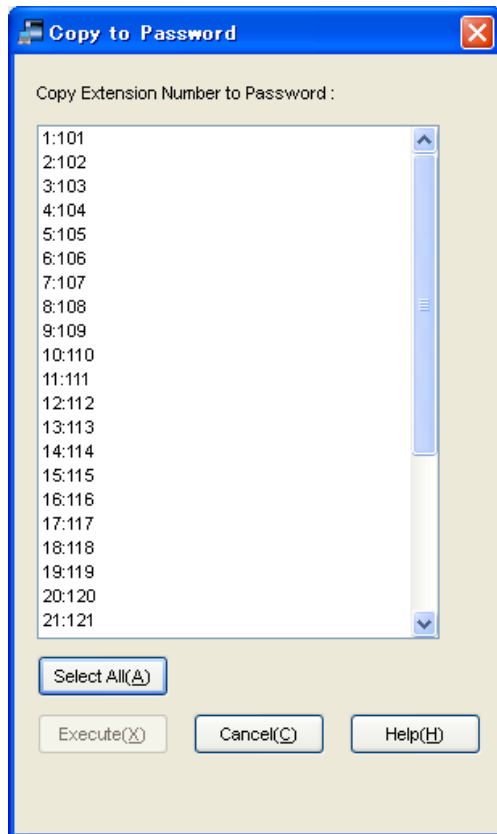


3. Set passwords for the SIP Extensions.
 - a. Click the cell in the **Connection** column for each SIP Extension you wish to register. The Command Connection screen appears.
 - b. Click **OUS**.
 - c. Enter a password in the Password box for each SIP Extension.
 - d. Click **Apply**.
 - e. Click the cell in the **Connection** column for each SIP Extension to which a password has been assigned. The Command Connection screen appears.
 - f. Click **INS**.
 - g. Click **OK**.

Note

Alternatively, it is possible to set an extension number as a password for each SIP Extension automatically.

- In order to set the password automatically, do the following in substitution for step c of the procedure above.
 - a. Click **Copy to**. A screen will appear with information on assigned extension numbers for SIP Extensions.
 - b. Click **Select All**.
 - c. Click **Execute** to copy each Extension Number to Password.
 - d. Click **Yes**.
 - e. Click **OK** to return to the Port Property screen.



4.3.2 Registering IP Telephones

4. Programme the SIP Extension you wish to register.
 - a. Set the IP address of the IPCMPR card, extension number, and password in the corresponding fields for your SIP Extension.
 - b. Send a request from the SIP Extension to the PBX for registration.
 - If the authentication information of the SIP Extension and the PBX match, the registration is successful.

Note

- When programming the SIP Extension, the names of the corresponding fields may differ depending on the type of SIP Extension you are using.
- For details about the actual operation of SIP Extensions, refer to the documentation of the SIP Extension.
- For certain SIP Extensions, you may need to set a Sign-in name, which should consist of the extension number and the IP address of the IPCMPR card (e.g., 350@192.168.0.101).

Section 5

Confirming the Connection

5.1 Making and Receiving Calls

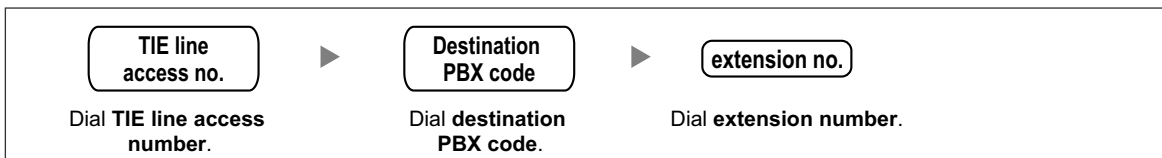
Making Calls

You can call another extension registered with the PBX by simply dialling the extension number.

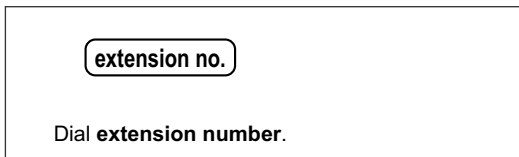


You can also call an extension of another PBX through the VoIP network.

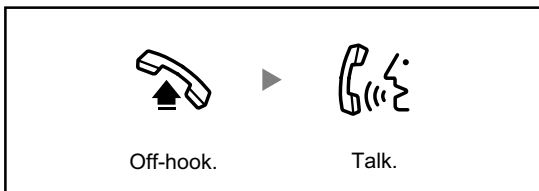
When using the PBX code method



When using the extension number method



Receiving Calls





The KX-NCP500UK/KX-NCP1000UK, the KX-NCP500NE/KX-NCP1000NE, the KX-NCP500GR/KX-NCP1000GR, and the KX-NCP500CE/KX-NCP1000CE are designed to interwork with the:

- Analogue Public Switched Telephone Network (PSTN) of European countries
- Pan-European Integrated Services Digital Network (ISDN) using ISDN basic rate access
- Pan-European Integrated Services Digital Network (ISDN) using ISDN primary rate access
- ONP 2048 kbit/s digital structured leased lines (D2048S)

Panasonic Communications Co., Ltd./Panasonic Communications Company (U.K.) Ltd. declares that this equipment is in compliance with the essential requirements and other relevant provisions of Radio & Telecommunications Terminal Equipment (R&TTE) Directive 1999/5/EC.

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<http://www.doc.panasonic.de>

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