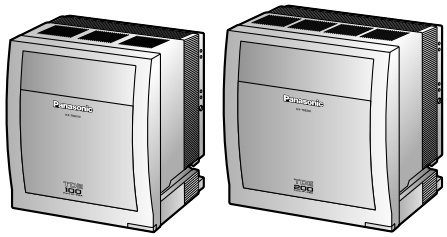
Panasonic Telephone Systems

Panasonic KX-TDE100
KX-TDE200



Getting Started for Virtual IP Cards

Pure IP-PBX

Panasonic KX-TDE100, KXTDE100, TDE100, KX-TDE200, KXTDE200, TDE200

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-TDE100/KX-TDE200: PMMPR Software File Version 2.0100 or later

Table of Contents

Section 1
Before Installation

1.1 Safety Notices

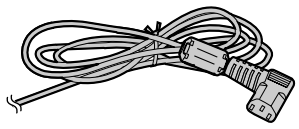
Please observe the safety notices in this manual in order to avoid danger to users or other people, and prevent damage to property.
The notices are classified as follows, according to the severity of injury or damage:

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

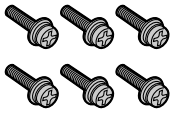
Check the package contents.

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

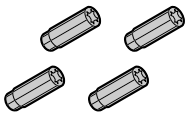


AC Cord[*1] × 1

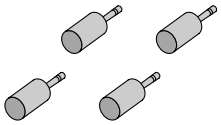
Screw A
× 3 (KX-TDE100)
× 4 (KX-TDE200)



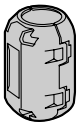
Screw B (Black)
× 2 (KX-TDE100)
× 6 (KX-TDE200)



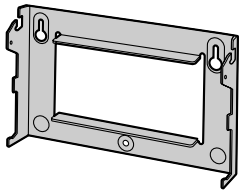
Anchor Plug
× 3 (KX-TDE100)
× 4 (KX-TDE200)



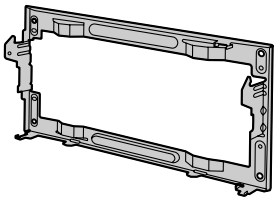
Mini Plug (for pager and music source) × 4



Ferrite Core (for the IPCMPR card) × 2



for KX-TDE100



for KX-TDE200

SD Memory Card × 1

Metal Bracket × 1

[*1] The type of the AC cord may vary depending on the country/area of use.
The KX-TDE100BX/KX-TDE200BX is supplied with 2 types of AC cord. Please use whichever is appropriate for the country/area.
In Canada, there is no ferrite core attached to the AC cord.

Note

In this manual, the suffix of each model number (e.g., KX-TDE100**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.

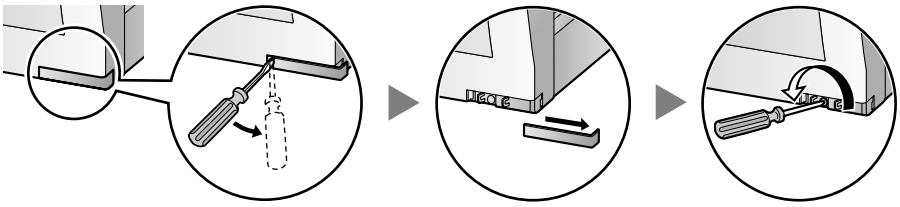
[*1] The cables should be 10BASE-T/100BASE-TX CAT 5 (Category 5) or higher cables.

Section 2
Installation

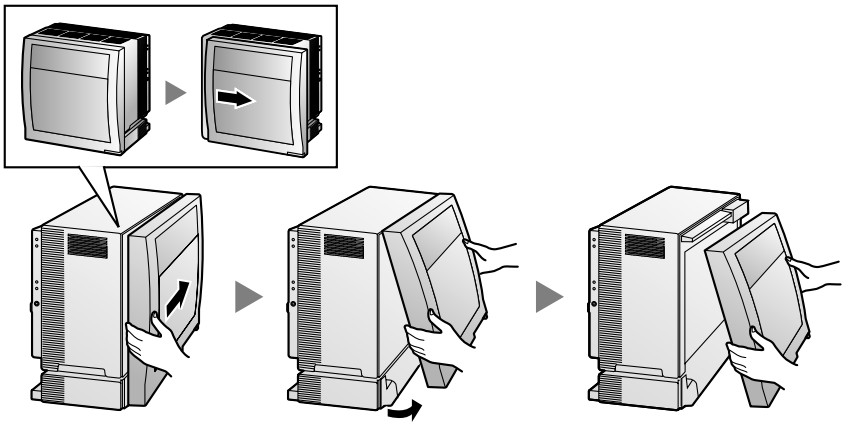
2.1 Opening/Closing the Front Cover

Opening the Front Cover

1. Insert a flathead screwdriver into the opening (on the left of the screw cover) and unlatch the screw cover. Turn the screw anticlockwise to loosen.

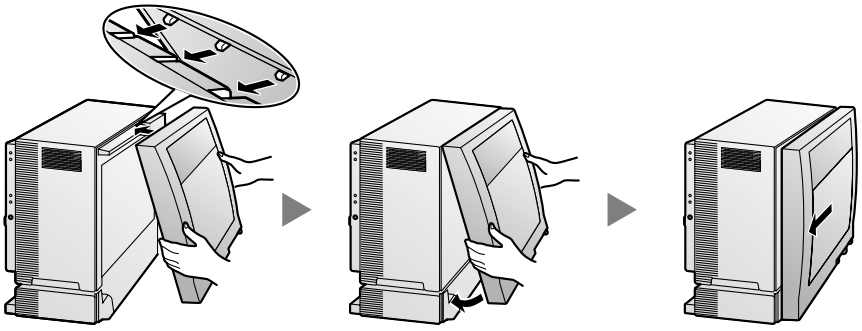


2. Slide the front cover to the right until it stops, then lift the front cover.

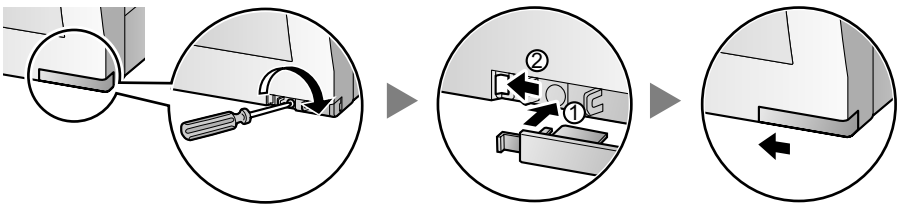


Closing the Front Cover

1. Hook the front cover onto the shelf (line up the protrusions on the cover with the receptacles on the shelf), then slide the front cover to the left until it locks.



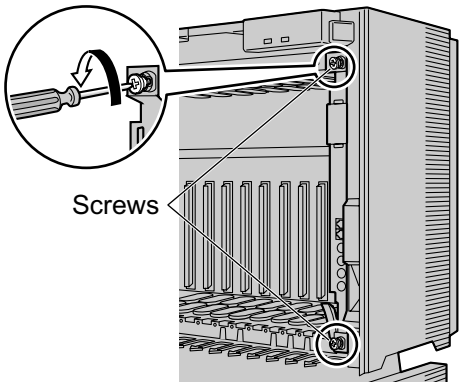
2. Turn the screw clockwise to tighten, then secure the screw cover.



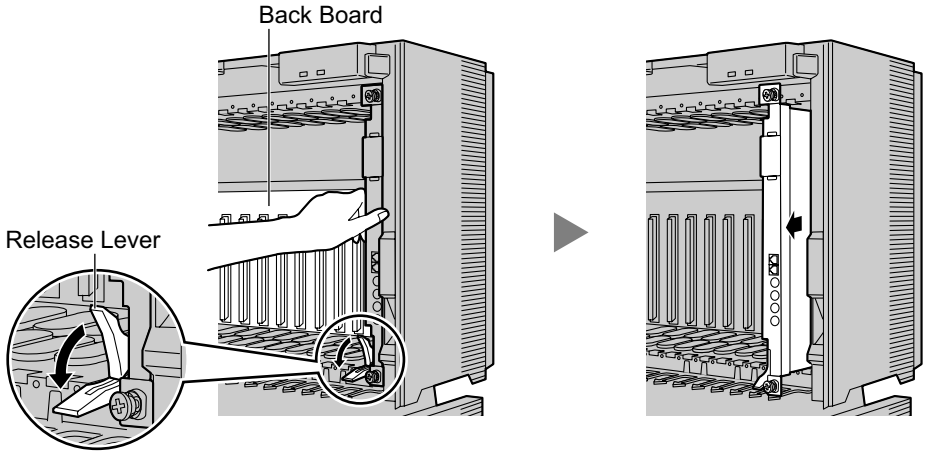
2.2 Installing the DSP16/DSP64 Card

Removing the IPCMPR Card from the PBX

1. Turn the 2 screws anticlockwise to loosen them.



2. Pull the release lever in the direction of the arrow to disconnect the card from the back board. Pull the card from the shelf to remove it.

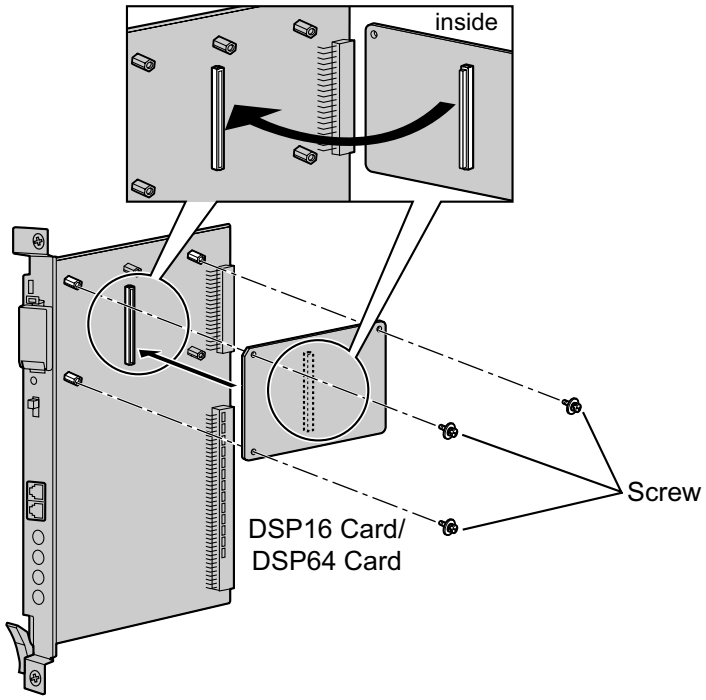


Installing the DSP16/DSP64 Card

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

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 DSP16 or DSP64 cards are not enough for the desired configuration, refer to "4.1.3 Installing Additional Activation Keys".

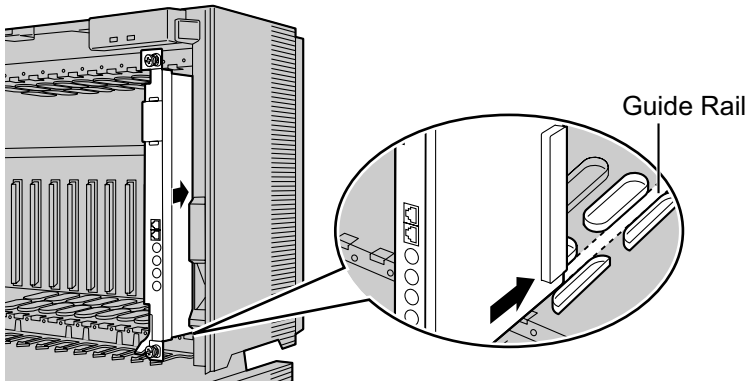
Installing the IPCMPR Card in the PBX

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

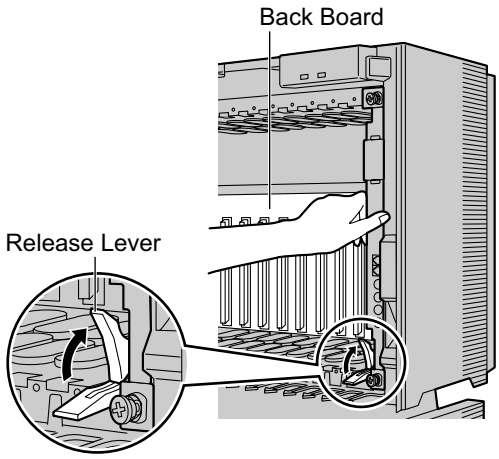
Note

The illustrations of the PBX shown in the installation procedure are based on the KX-TDE200.

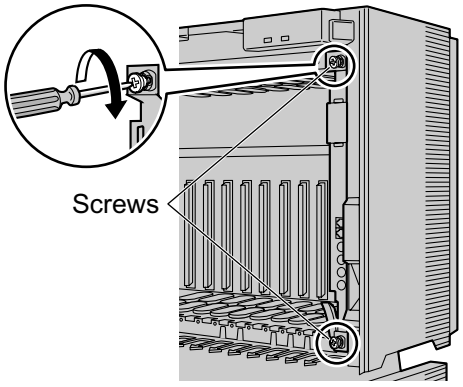
1. Insert the card along the guide rails.



2. Holding the card as shown below, push the release lever in the direction of the arrow so that the card engages securely with the connector on the back board.



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



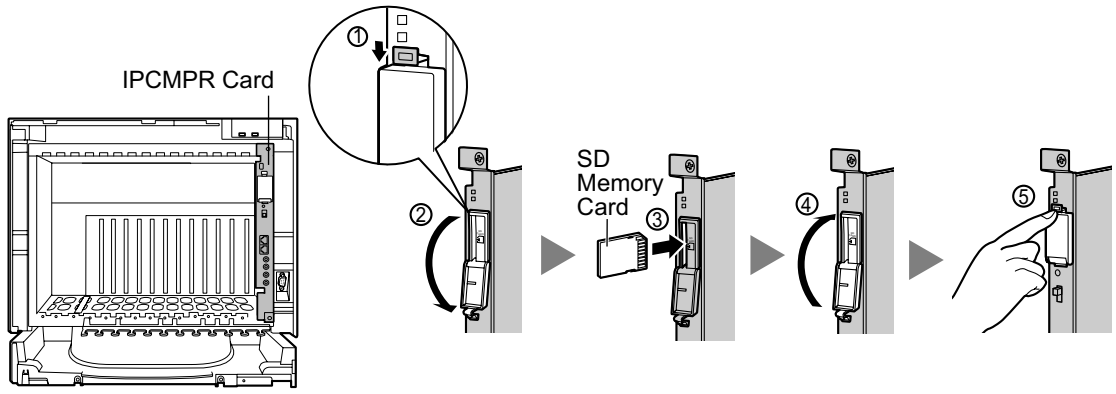
Note

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

2.3 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-TDE200



CAUTION

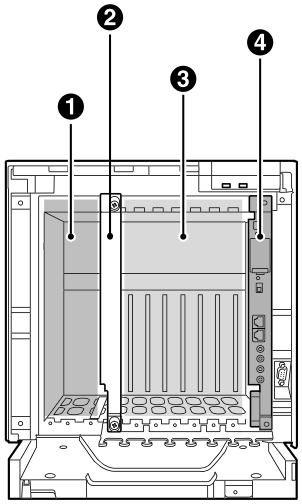
Do not remove the SD Memory Card while power is supplied to the PBX. Doing so may cause the PBX to fail to start when you try to restart the system.

2.4 Installing the Power Supply Unit

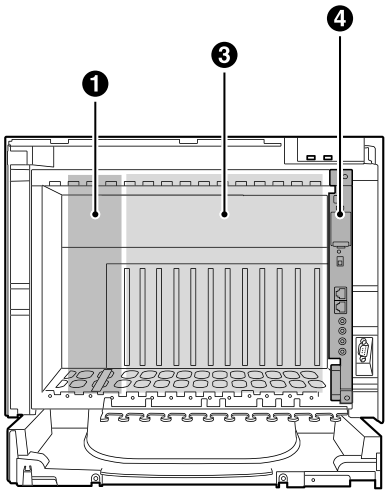
Slot Position

Install the power supply unit (PSU) into the PSU slot.

KX-TDE100



KX-TDE200



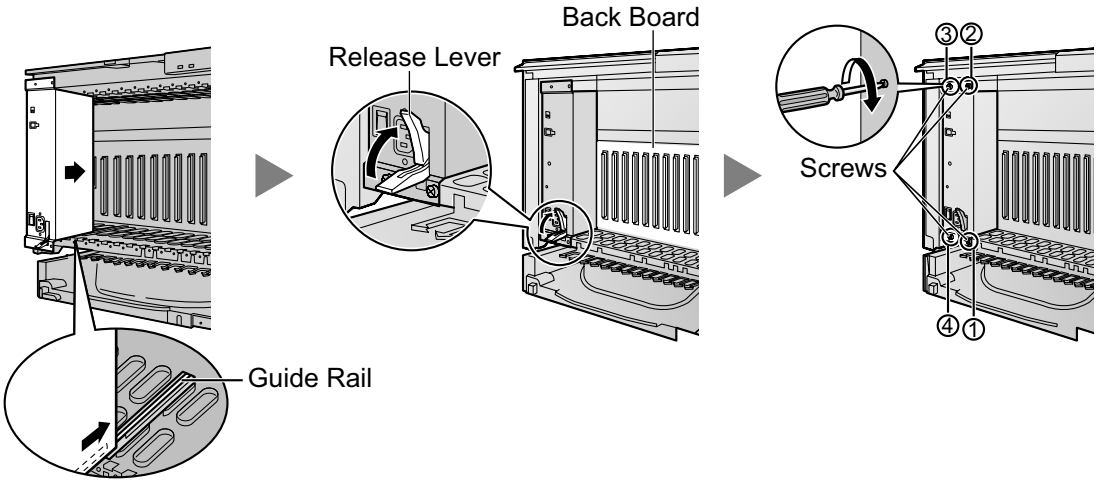
❶ **PSU Slot**
❷ **Null Slot**
❸ **Free Slots**
❹ **IPCMPR Card**

CAUTION

To protect the back board from static electricity, do not touch parts on the back board in the main unit, and PSU. To discharge static electricity, touch ground or wear an earthing strap.

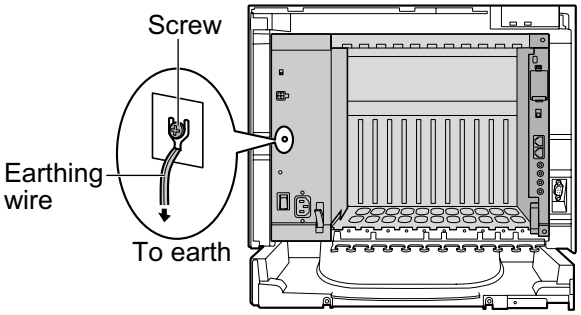
Installing the Power Supply Unit

1. Insert the PSU along the guide rails.
2. Push the release lever in the direction of the arrow, so that the PSU engages securely with the connector on the back board.
3. Turn the 4 screws clockwise, in the order indicated by the numbers 1 to 4, to fix the PSU.



2.5 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 mm^2 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.

2.6 Connecting to the LAN

2.6.1 Connecting the IPCMPR Card to the LAN

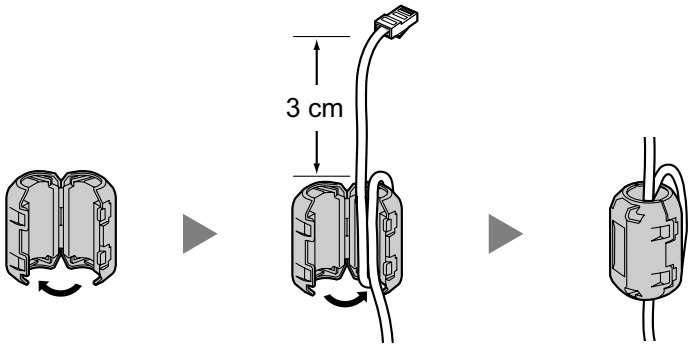
Refer to the following procedure to connect the IPCMPR card to the LAN.
When the IPCMPR card is connected to the LAN for the first time, you must assign IP addressing information to the card. Refer to "4.1 Programming the PBX" for instructions.

Note

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

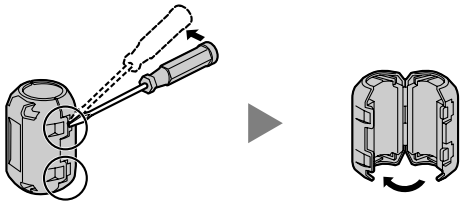
Attaching a ferrite core to the cable

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.



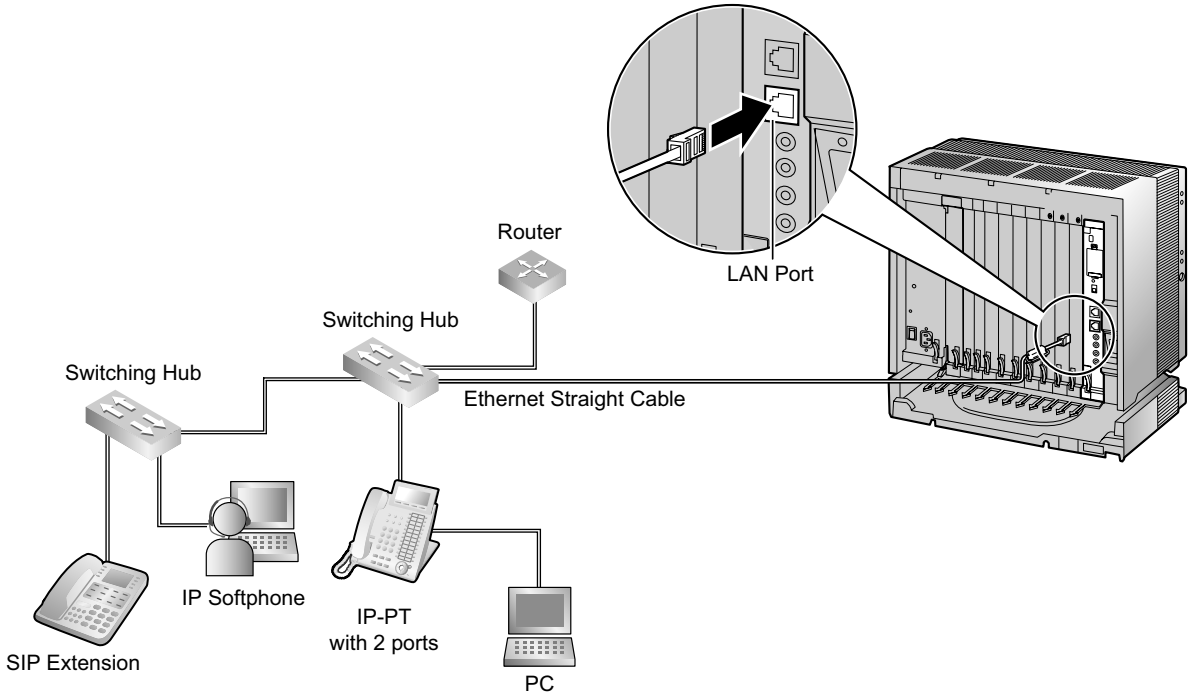
Note

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.



2.6.2 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

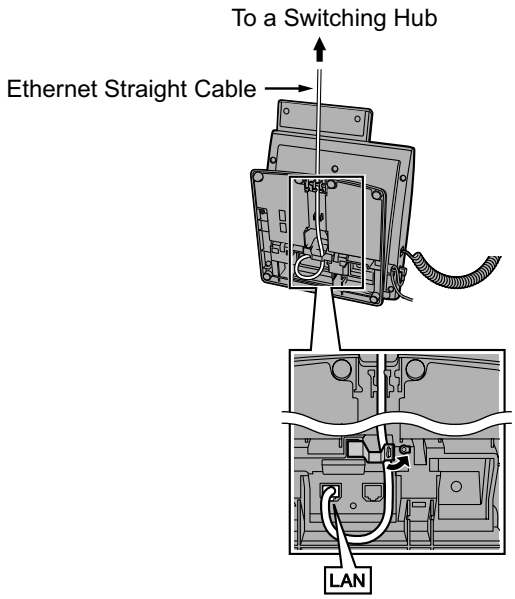
When connecting an IP telephone to the LAN, connect it to a switching hub.

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



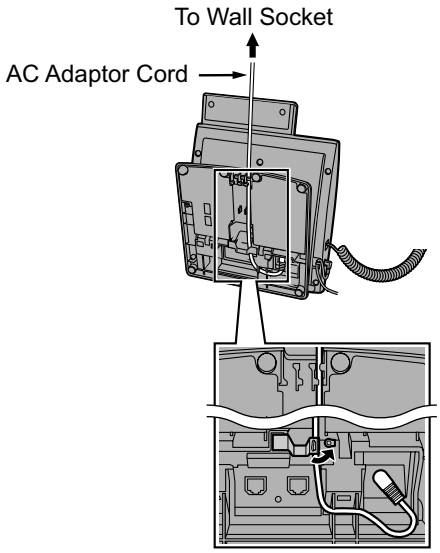
Connecting an AC Adaptor to an IP Telephone

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



2.6.2 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 will be 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.
- Use only the AC power cord included with the PBX for the PSU.

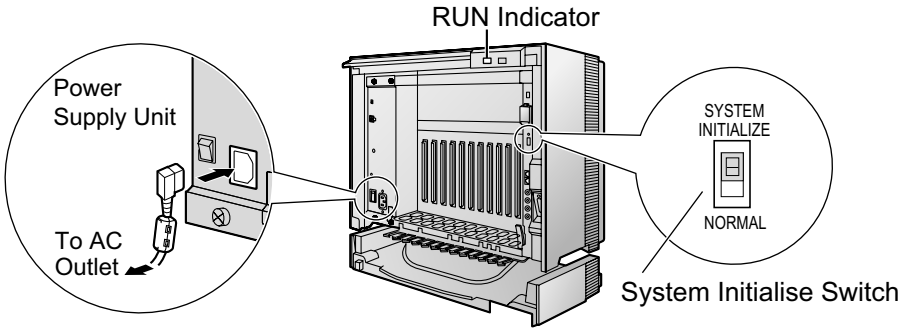
Notice

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".

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



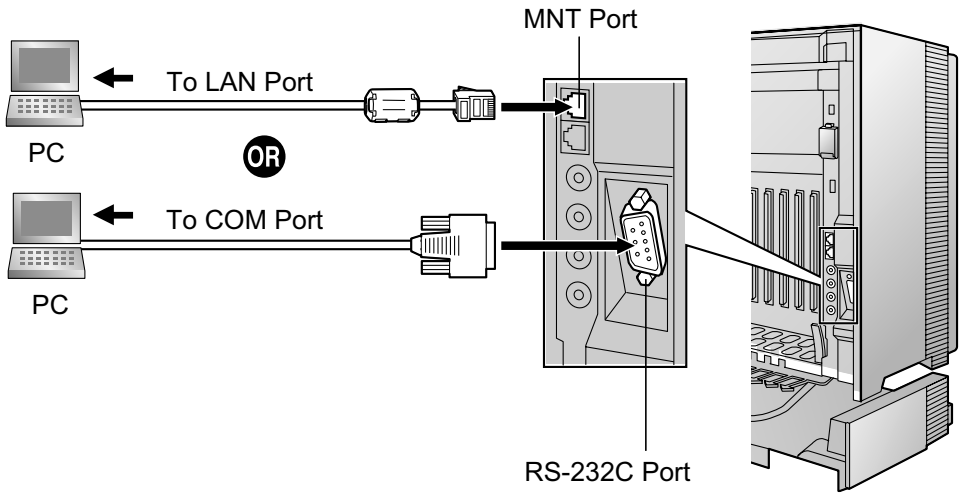
2. Plug the AC power cord into the PBX and an AC outlet, and turn on the PBX. The RUN indicator will flash.
3. While the RUN indicator is flashing, slide the System Initialise Switch back to the "NORMAL" position. Depending on the configuration, initialisation takes about 1 min to 3 min. If successfully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



Pin Assignments

LAN (RJ45 Cable)

LAN Port (PC)	MNT Port (PBX)
Pin No.	Pin No.
1	1
2	2
3	3
6	6

RS-232C (Cross Cable)

COM Port	RS-232C Port
Pin No.	Pin No.
2	2
3	3
4	4
5	5
6	6
7	7
8	8

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.

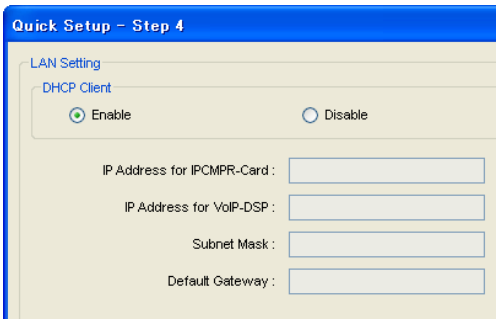
1. Connect the PC to the PBX with an Ethernet straight cable or RS-232C cross cable.
2. Start the Maintenance Console from the Start menu.
3. "Information before programming" appears.
   a. Carefully read this important additional information, which includes updates to this and other manuals.
   b. Click **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-TDE100/200** 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:

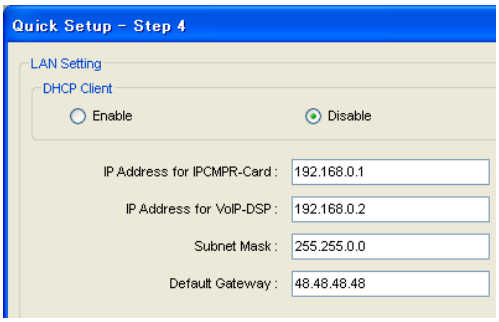


a. Select **Enable** for the **DHCP Client** setting.
b. Click **Apply**.

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:



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 DSP16 or DSP64 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**.

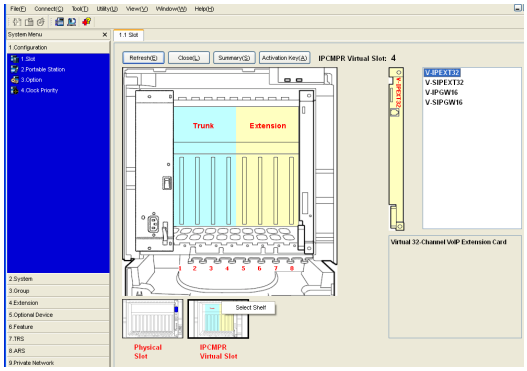
10. Follow the instructions of the Quick Setup wizard in Quick Setup.
The system menu appears.

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



1. **a.** Under **Configuration**, click **Slot**.
   b. Move the mouse pointer over the white PBX image of **IPCMPR Virtual Slot** at the bottom of the screen.
   c. Click **Select Shelf**.

2. **a.** Click on the name of the desired card to install in the list. An image of the card will be displayed.
   b. 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.

3. Click **Yes** to confirm.

4.1.3 Installing Additional Activation Keys

If the preinstalled activation keys on the DSP16 or DSP64 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-NCS4102	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-NCS4104	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-NCS4201	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-NCS4204	4 IP Softphone/IP PT	Provides the activation key number and registration ID to download the activation key that enables the use of 4 IP-PTs/IP softphones.
KX-NCS4208	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-NCS4216	16 IP Softphone/IP PT	Provides the activation key number and registration ID to download the activation key that enables the use of 16 IP-PTs/IP softphones.
KX-NCS4501	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-NCS4504	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-NCS4508	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-NCS4516	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-NCS4701	1 SIP Extension	Provides the activation key number and registration ID to download the activation key that enables the use of 1 SIP Extension.

Model No.	Activation Key Type	Description
KX-NCS4704	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-NCS4708	8 SIP Extension	Provides the activation key number and registration ID to download the activation key that enables the use of 8 SIP Extensions.
KX-NCS4716	16 SIP Extension	Provides the activation key number and registration ID to download the activation key that enables the use of 16 SIP Extensions.

Installing the Activation Key File in the SD Memory Card

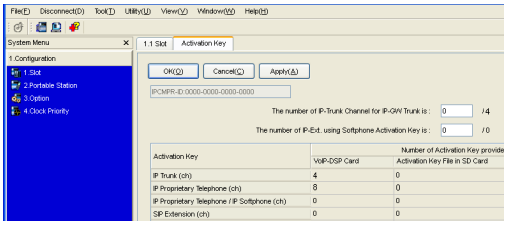
1. Start the Maintenance Console from the Start menu.
2. From the **Utility** menu, select **File Transfer PC to PBX (SD Card)**.
   A dialogue box will be displayed.
3. Select the file to upload.
   A window showing the upload progress will be displayed.
   While transferring files to the SD memory 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**.

CAUTION

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 provided IP Trunk channels to be used for H.323 trunks. By default, all of the provided IP Trunk channels will be used for SIP trunks. Similarly, you can programme how many IP-PTs can be used through the 8-Channel IP Softphone/IP Proprietary Telephone activation key. By default, only IP softphones can be used through the 8-Channel 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 Channel for IP-GW Trunk is** box, type the number of IP Trunk channels to be used for H.323 trunks.
   b. In the **The number of IP-Ext. using Softphone Channel 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 Channel 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 Programming the Virtual 16-Channel VoIP Gateway Card

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

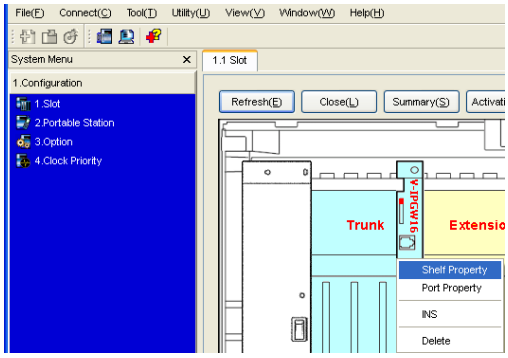
PBX code method	The caller dials the unique PBX code of the PBX to which the called party is connected, in addition to the destination number.
Extension number method	The caller dials only the destination number of the called party to call through PBXs at different locations (hence there are fewer digits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

Note

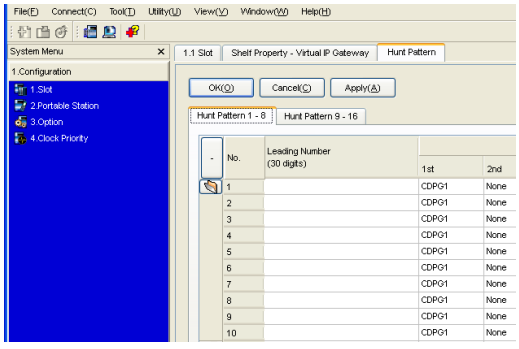
For a detailed explanation about each method, refer to "1.30 Networking Features" in the Feature Guide.

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 white PBX image of **IPCMPR Virtual Slot** at the bottom 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.

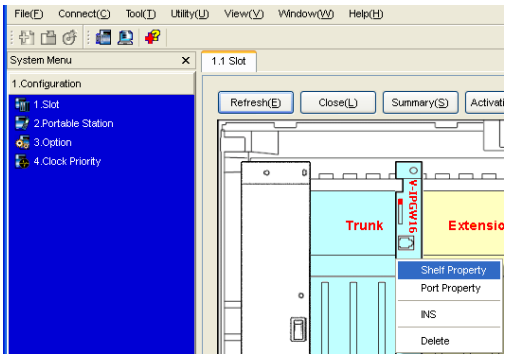
   When using the extension number method:
   In the **Leading Number** box, type the local extension starting digit.
   b. Click **OK** to return to the Shelf Property screen.

Note

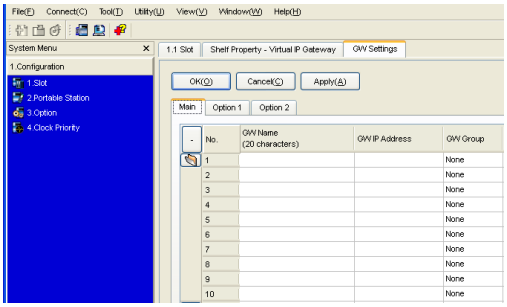
For more details about hunt pattern assignment, refer to "3.13 [1-1] Slot—Shelf Property - Virtual IP Gateway—Hunt Pattern" in the PC Programming Manual.

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 addresses[*1]. 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 white PBX image of **IPCMPR Virtual Slot** at the bottom 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**.



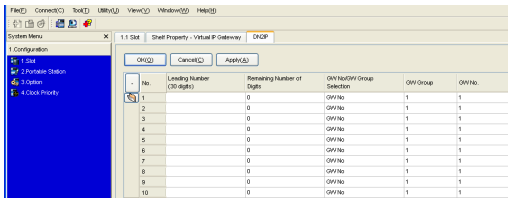
2. In the **Main** tab, do the following to configure the gateway entry for the remote PBX:
   a. In the **GW Name** box, type a unique identifier of the destination in the VoIP network.
   b. In the **GW IP Address** box, type the IP address of the destination gateway device.
   c. In the **GW Group** 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.

[*1] 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.



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**.

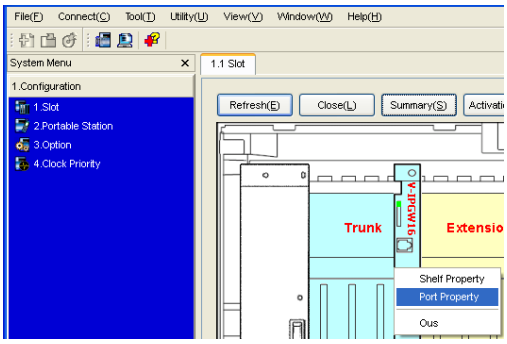
Note

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.

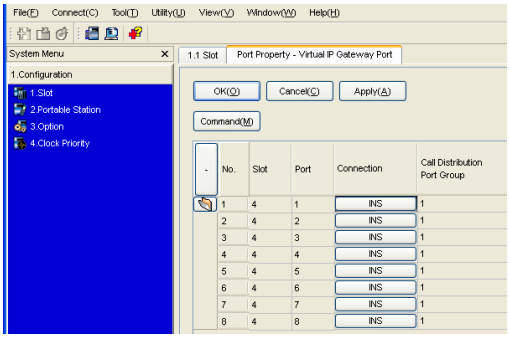
4.2.3 Programming the Network Settings

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



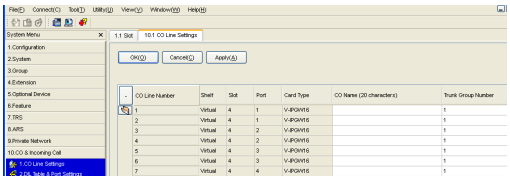
1. **a.** Under **Configuration**, click **Slot**.
   b. Move the mouse pointer over the white PBX image of **IPCMPR Virtual Slot** at the bottom of the screen.
   c. Click **Select Shelf**.
   d. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.
   e. Click **Port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



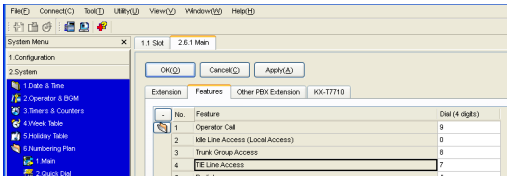
Confirm that all ports are in service (**INS**).

Note

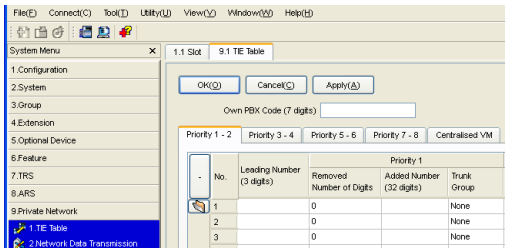
When a V-IPGW16 card is installed, 8 ports (1–8) are available. When two V-IPGW16 cards are installed, 16 ports (1–16) are available.



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.

a. From the system menu, click **Private Network**.

b. Click **TIE Table**.

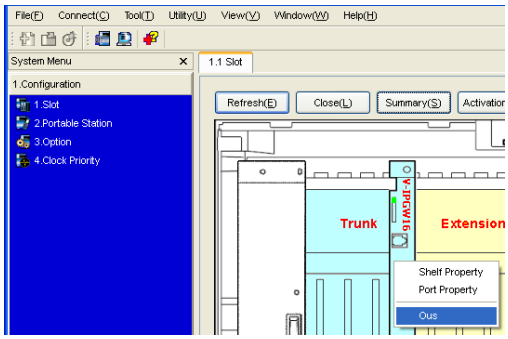
c. In the **Own PBX Code** box, type the PBX code of the local PBX in the network.

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**.

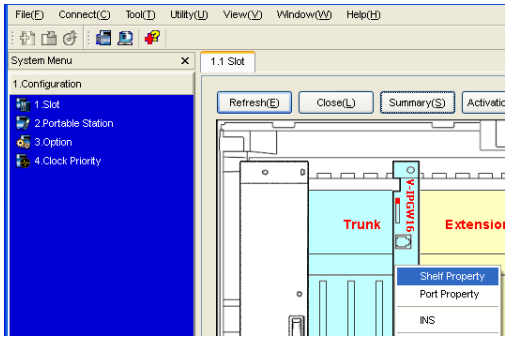
c. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.

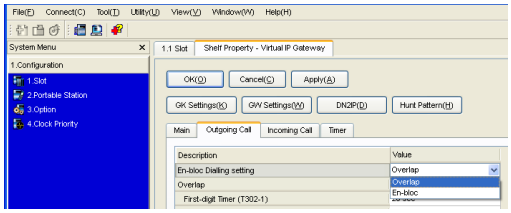
d. Click **Ous**.
You will see a confirmation message.

e. Click **Yes**.

f. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.

g. Click **Shelf Property**.



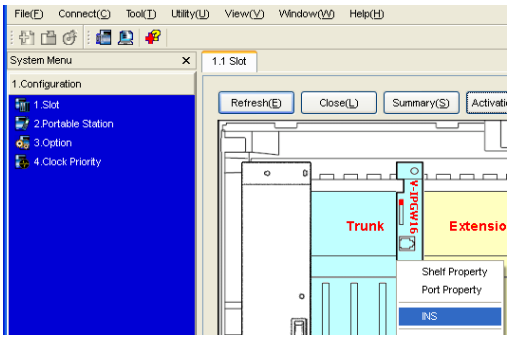


6.

a. Click the **Outgoing Call** tab.

b. Select the preferred **En-bloc Dialling setting** (**Overlap** (default) or **En-bloc**[*1]).

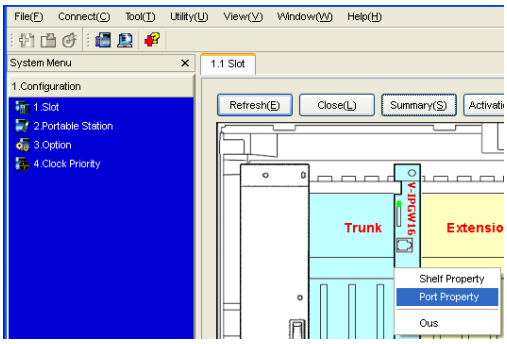
c. Click **OK**.



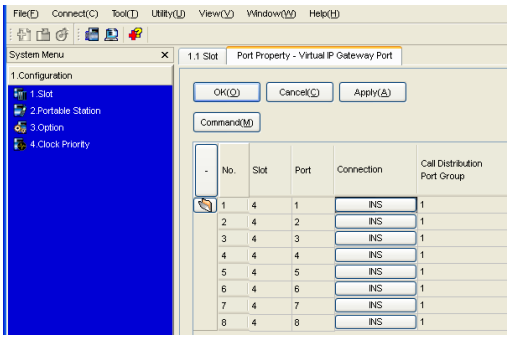
7. **a.** Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.
   b. Click **INS**.

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

Programming for the Extension Number Method



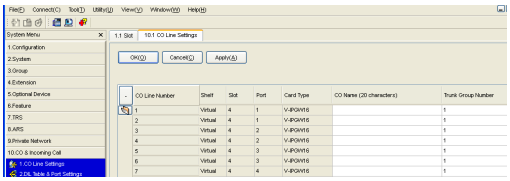
1. **a.** Under **Configuration**, click **Slot**.
   b. Move the mouse pointer over the white PBX image of **IPCMPR Virtual Slot** at the bottom of the screen.
   c. Click **Select Shelf**.
   d. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.
   e. Click **Port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



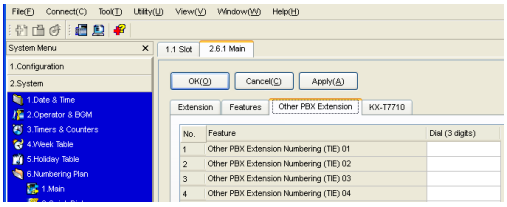
Confirm that all ports are in service (**INS**).

Note

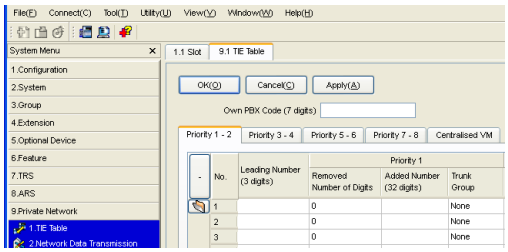
When a V-IPGW16 card is installed, 8 ports (1–8) are available. When two V-IPGW16 cards are installed, 16 ports (1–16) are available.



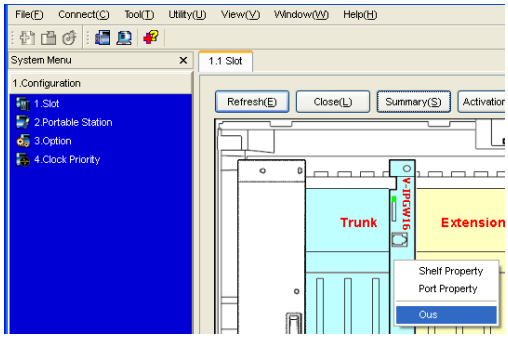
2. **a.** From the system menu, click **CO & Incoming Call**.
   b. Click **CO Line Settings**.
   c. Type the **CO Name** and assign an unused **Trunk Group Number** to be used for all IP trunks.
   d. Click **OK**.



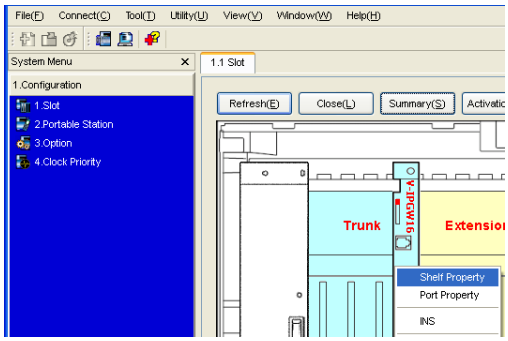
3. **a.** From the system menu, click **System**.
   b. Click **Numbering Plan**.
   c. Click **Main**.
   d. Click the **Other PBX Extension** tab.
   e. In the **Other PBX Extension Numbering (TIE)** box, type a starting digit of destination extension.
   f. Click **OK**.

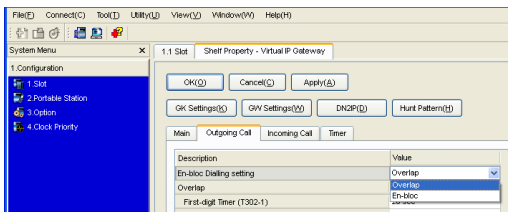


4. **a.** From the system menu, click **Private Network**.
   b. Click **TIE Table**.
   c. In the **Leading Number** box, type the starting digit of destination extension.
   d. Click **OK**.

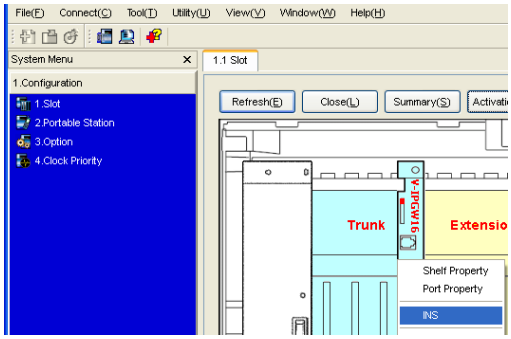


5. **a.** From the system menu, click **Configuration**.
   b. Click **Slot**.
   c. Move the mouse pointer over the installed V-IPGW16 card to display the menu of options.
   d. Click **Ous**.
   You will see a confirmation message.
   e. Click **Yes**.
   f. Move the mouse pointer over the installed 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 Dialling setting** (**Overlap** (default) or **En-bloc**[*1]).
   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.

4.3 Programming the Virtual Extension Card and IP Telephones

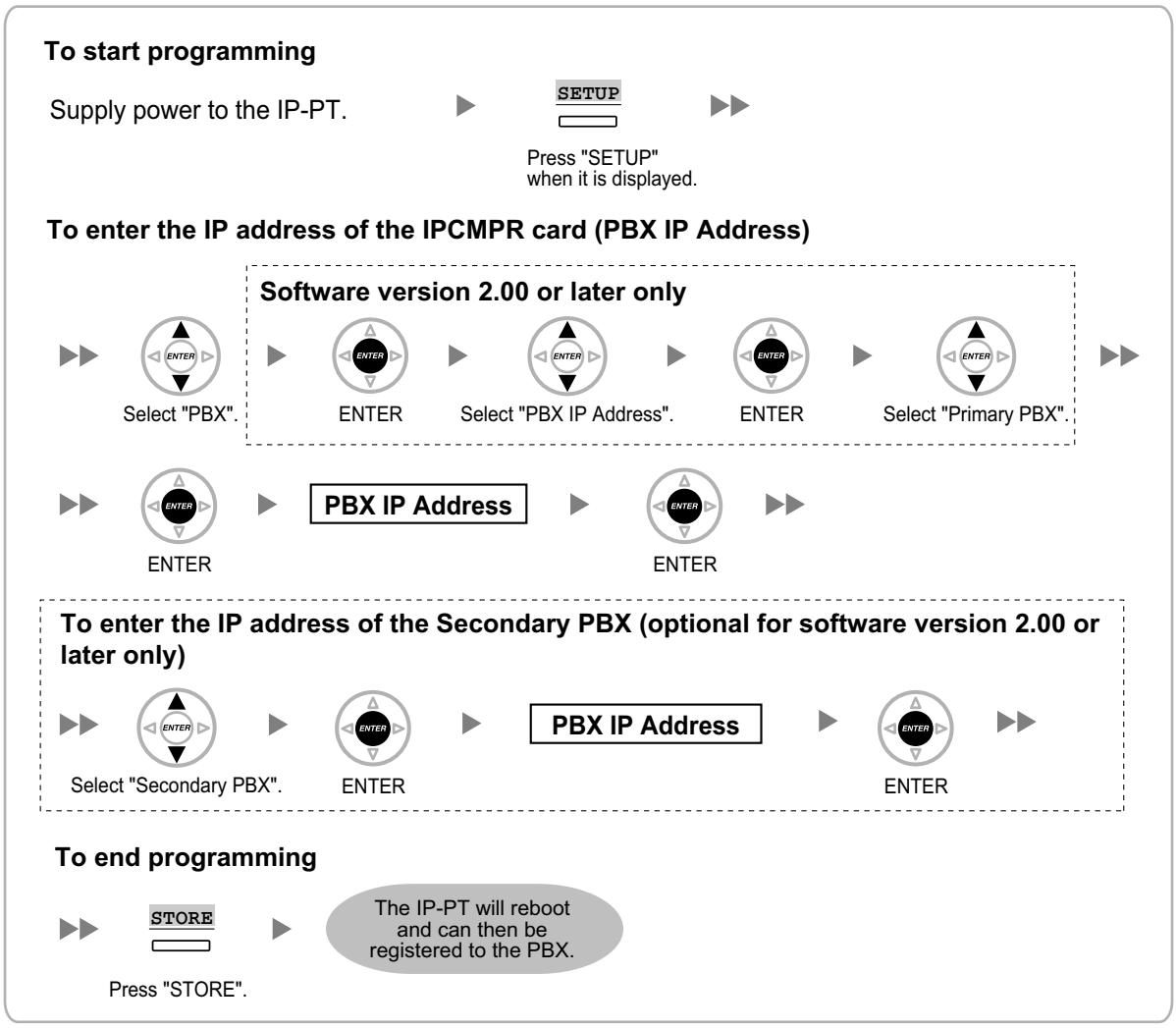
4.3.1 Assigning the IP Addressing Information

The IP address of an IP telephone, the subnet mask address, the default gateway address, and the IP address of the IPCMPR card (PBX IP address) must be assigned to the IP telephone before it can be used on the network. These IP addressing information can be assigned in the following ways;

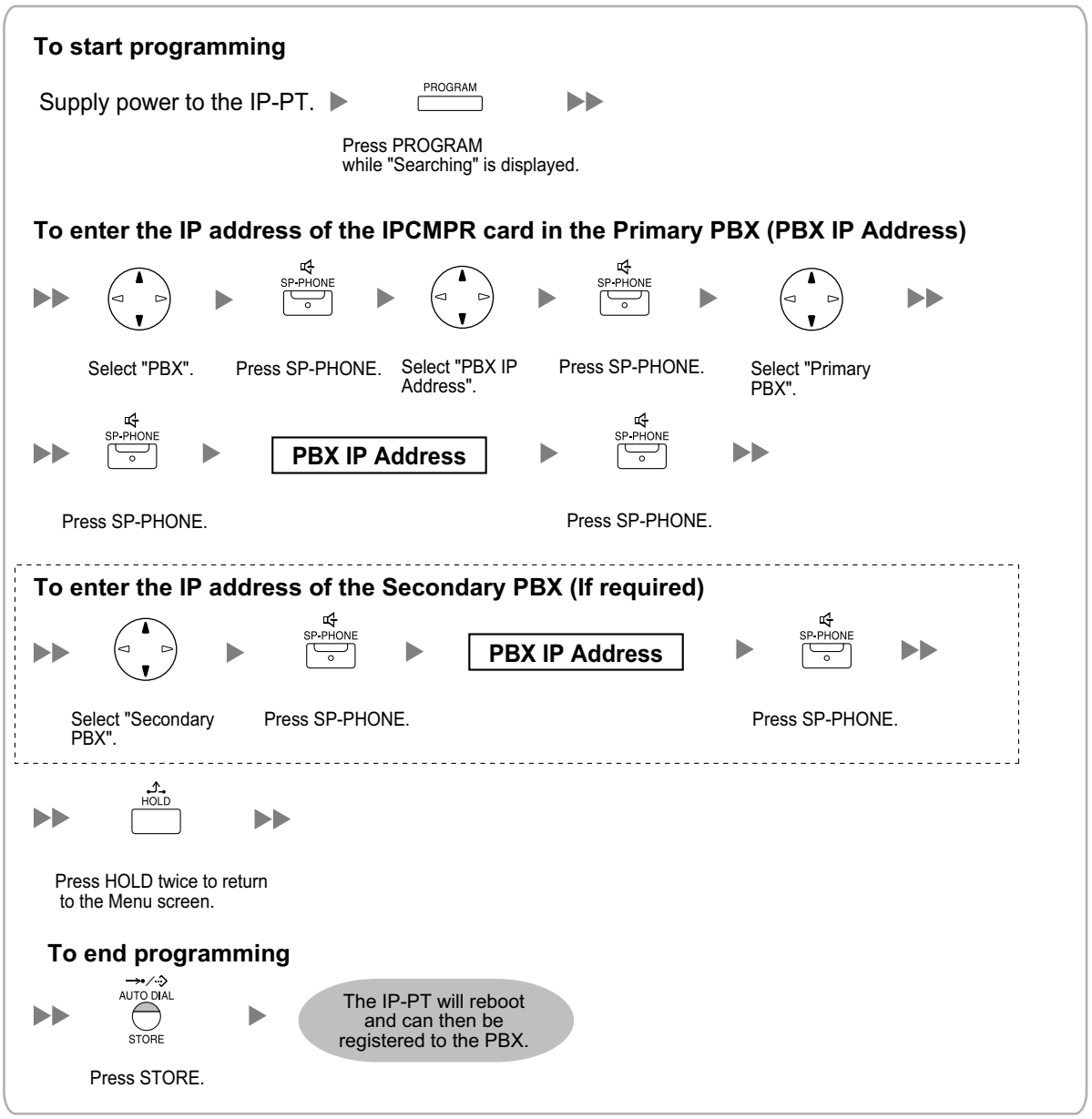
For IP-PTs

1. **Using a DHCP server when the IP-PT is on the same LAN with the PBX**
   The DHCP server automatically assigns the IP address of the IP-PT, the subnet mask address, and the default gateway address to the IP-PT.
   The PBX IP address can also 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".
2. **Using a DHCP server when the IP-PT is on the remote office LAN**
   While the DHCP server automatically assigns the IP address of the IP-PT, the subnet mask address, and the default gateway address to the IP-PT, only the PBX IP address must be assigned manually. Follow the procedure below to assign the PBX IP address.

KX-NT300 series (except KX-NT321)



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.

KX-NT265 (Software version 2.00 or later only)

To start programming

Supply power to the IP-PT. ▶ PROG. PROGRAM ▶▶

Press PROGRAM while "Searching" is displayed.

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

▶▶ VOL VOLUME ▶ SP-PHONE ▶ **PBX IP Address** ▶ SP-PHONE ▶ HOLD ▶▶

Press VOLUME to select "PBX".

Press SP-PHONE twice.

Press SP-PHONE.

Press HOLD to return to the Menu screen.

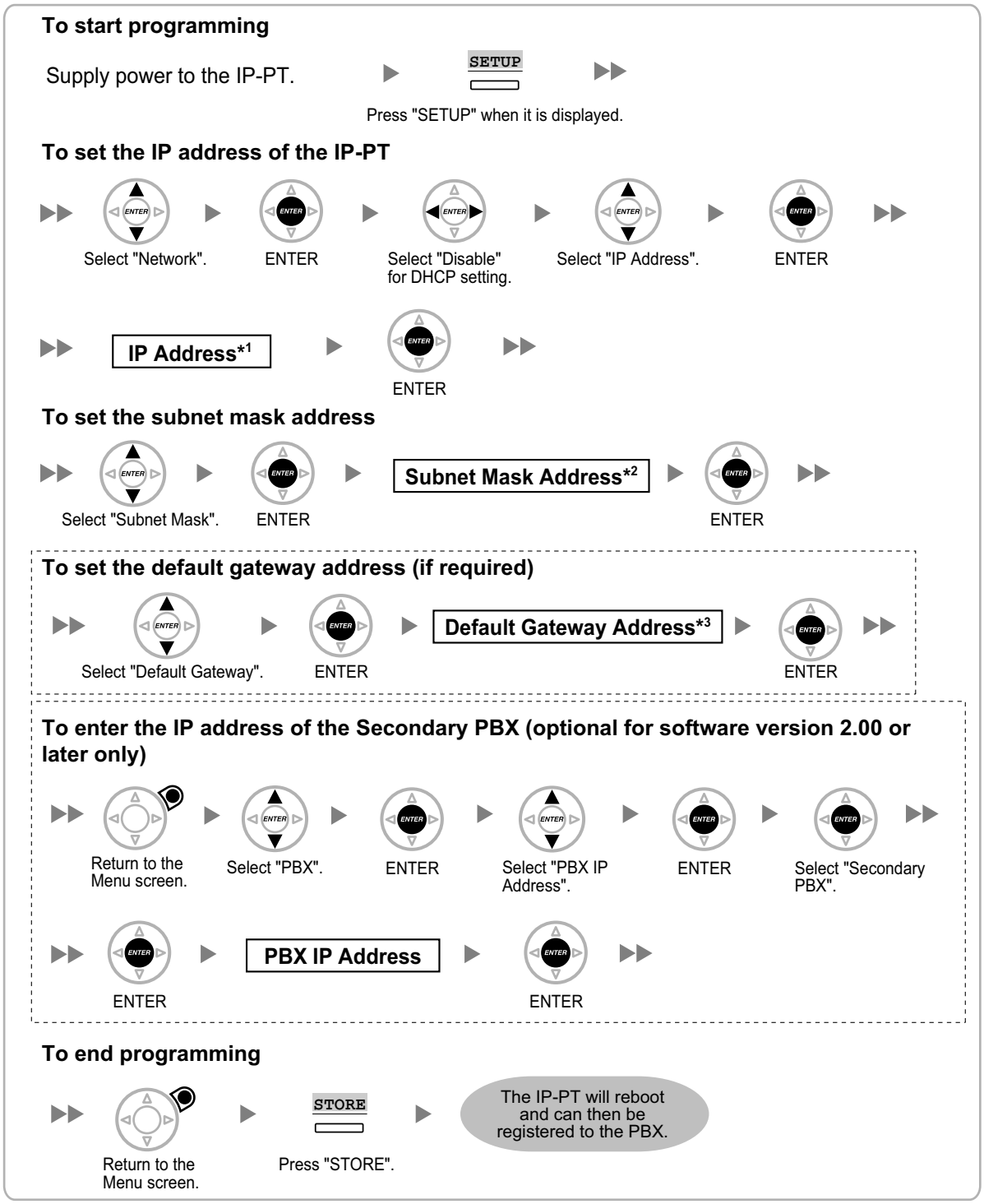
To end programming

▶▶ AUTO DIAL STORE ▶ The IP-PT will reboot and can then be registered to the PBX.

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)

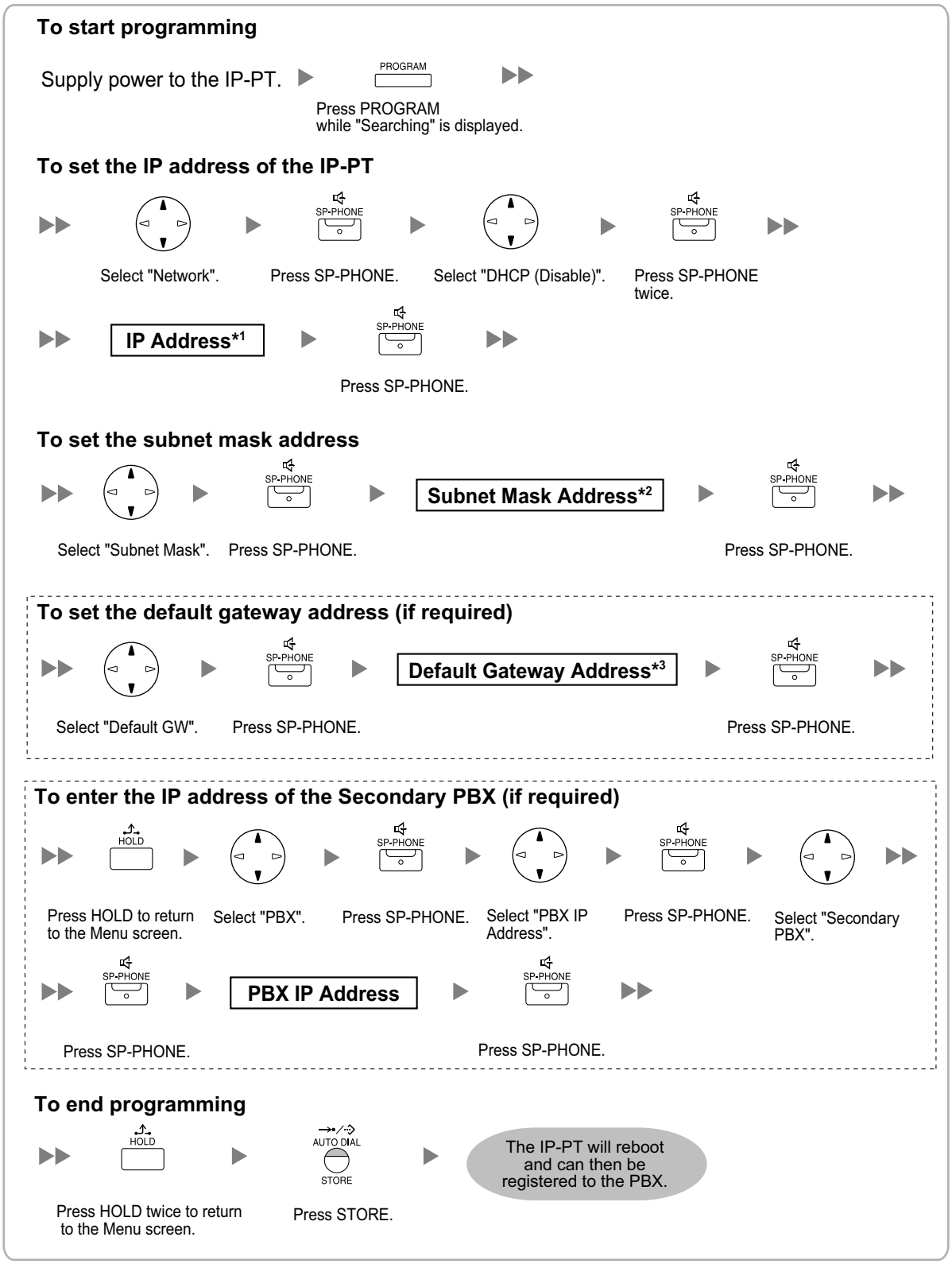


*1 Valid IP address range: "1.0.0.0" to "223.255.255.255"

*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"

KX-NT321

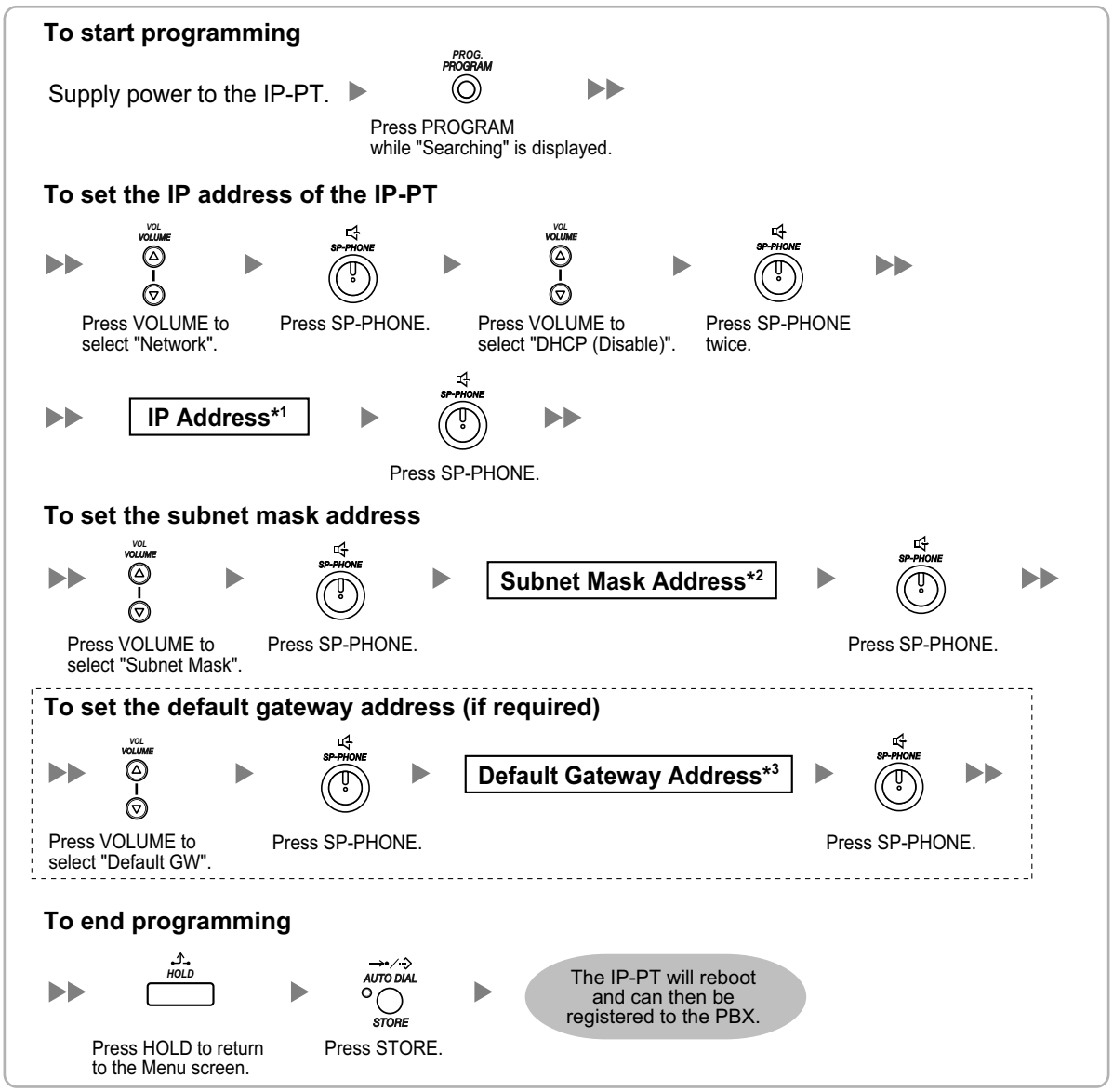


*1 Valid IP address range: "1.0.0.0" to "223.255.255.255"
*2 Valid subnet mask address range: "0–255.0–255.0–255.0–255" (except 0.0.0.0 and 255.255.255.255)
*3 Valid IP address range: "1.0.0.0" to "223.255.255.255"

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. 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)

To start programming

Supply power to the IP-PT. ▶ SETUP ▶▶

Press "SETUP" when it is displayed.

To set the IP address of the IP-PT

▶▶ ENTER (Select "Network".) ▶ ENTER ▶ ENTER (Select "Disable" for DHCP setting.) ▶ ENTER (Select "IP Address".) ▶ ENTER ▶▶

▶▶ **IP Address*1** ▶ ENTER ▶▶

ENTER

To set the subnet mask address

▶▶ ENTER (Select "Subnet Mask".) ▶ ENTER ▶ **Subnet Mask Address*2** ▶ ENTER ▶▶

ENTER

To set the default gateway address

▶▶ ENTER (Select "Default Gateway".) ▶ ENTER ▶ **Default Gateway Address*3** ▶ ENTER ▶▶

ENTER

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

▶▶ Return to the Menu screen. ▶ ENTER (Select "PBX".)

Software version 2.00 or later only

▶ ENTER ▶ ENTER (Select "PBX IP Address".) ▶ ENTER ▶ ENTER (Select "Primary PBX".) ▶▶

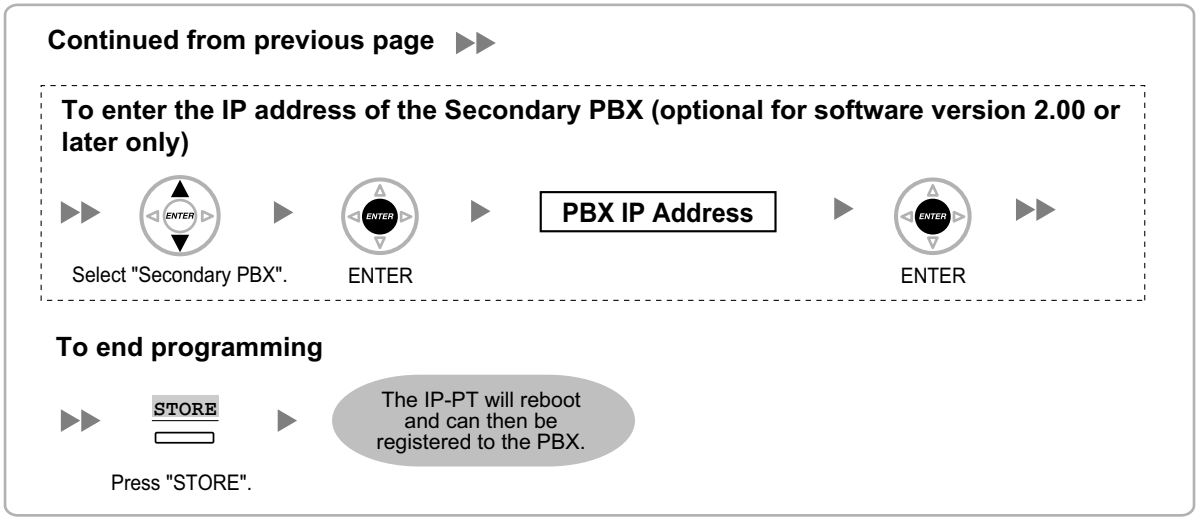
▶▶ ENTER ▶ **PBX IP Address** ▶ ENTER ▶▶

ENTER

ENTER

▶▶ **Continued on next page**

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"

KX-NT321

To start programming

Supply power to the IP-PT. ▶ PROGRAM ▶▶

Press PROGRAM while "Searching" is displayed.

To set the IP address of the IP-PT

▶▶ ◁▷ ▶ SP-PHONE ▶ ◁▷ ▶ SP-PHONE ▶▶

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

▶▶ **IP Address*1** ▶ SP-PHONE ▶▶

Press SP-PHONE.

To set the subnet mask address

▶▶ ◁▷ ▶ SP-PHONE ▶ **Subnet Mask Address*2** ▶ SP-PHONE ▶▶

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

To set the default gateway address

▶▶ ◁▷ ▶ SP-PHONE ▶ **Default Gateway Address*3** ▶ SP-PHONE ▶▶

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)

▶▶ HOLD ▶ ◁▷ ▶ SP-PHONE ▶ ◁▷ ▶ SP-PHONE ▶ ◁▷ ▶▶

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

▶▶ SP-PHONE ▶ **PBX IP Address** ▶ SP-PHONE ▶▶

Press SP-PHONE. Press SP-PHONE.

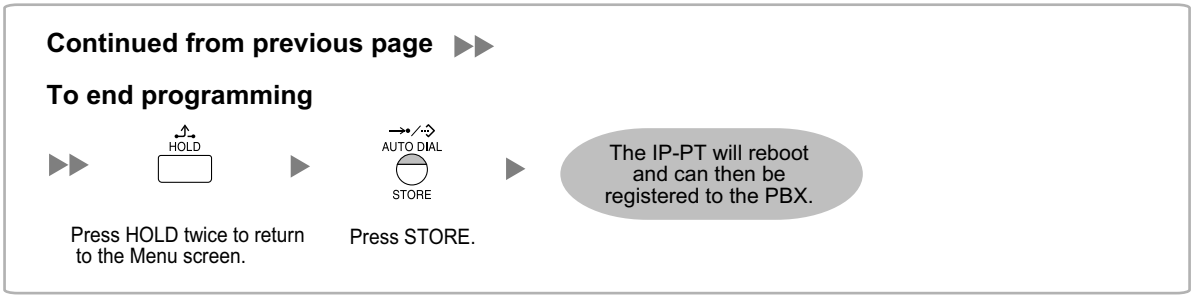
To enter the IP address of the Secondary PBX (if required)

▶▶ ◁▷ ▶ SP-PHONE ▶ **PBX IP Address** ▶ SP-PHONE ▶▶

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

▶▶ **Continued on next page**

KX-NT321

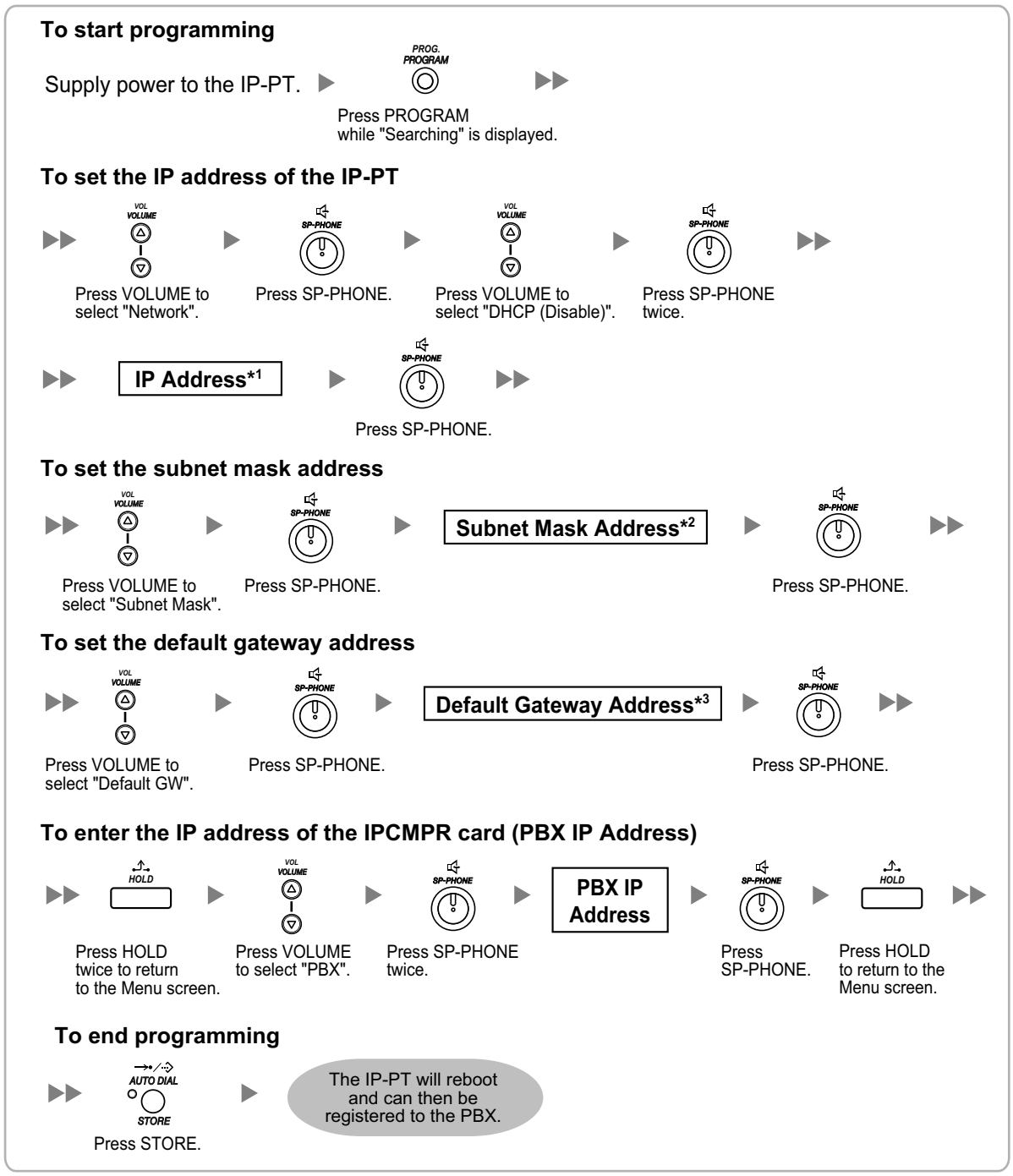


*1 Valid IP address range: "1.0.0.0" to "223.255.255.255"
*2 Valid subnet mask address range: "0–255.0–255.0–255.0–255" (except 0.0.0.0 and 255.255.255.255)
*3 Valid IP address range: "1.0.0.0" to "223.255.255.255"

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)



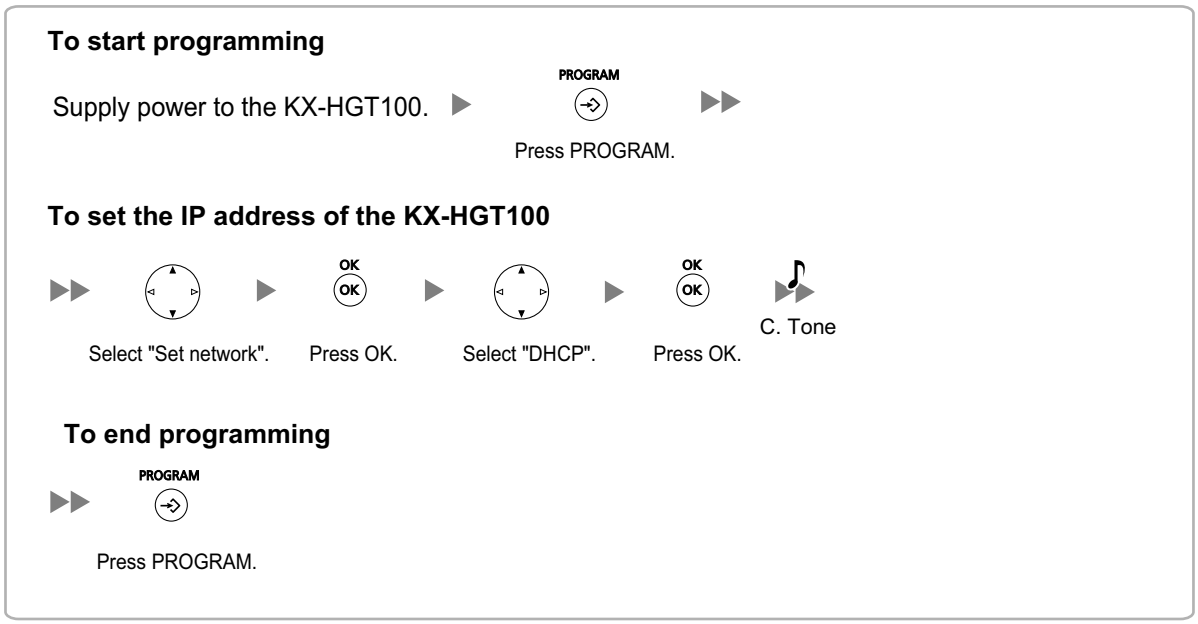
*1 Valid IP address range: "1.0.0.0" to "223.255.255.255"
*2 Valid subnet mask address range: "0–255.0–255.0–255.0–255" (except 0.0.0.0 and 255.255.255.255)
*3 Valid IP address range: "1.0.0.0" to "223.255.255.255"

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.

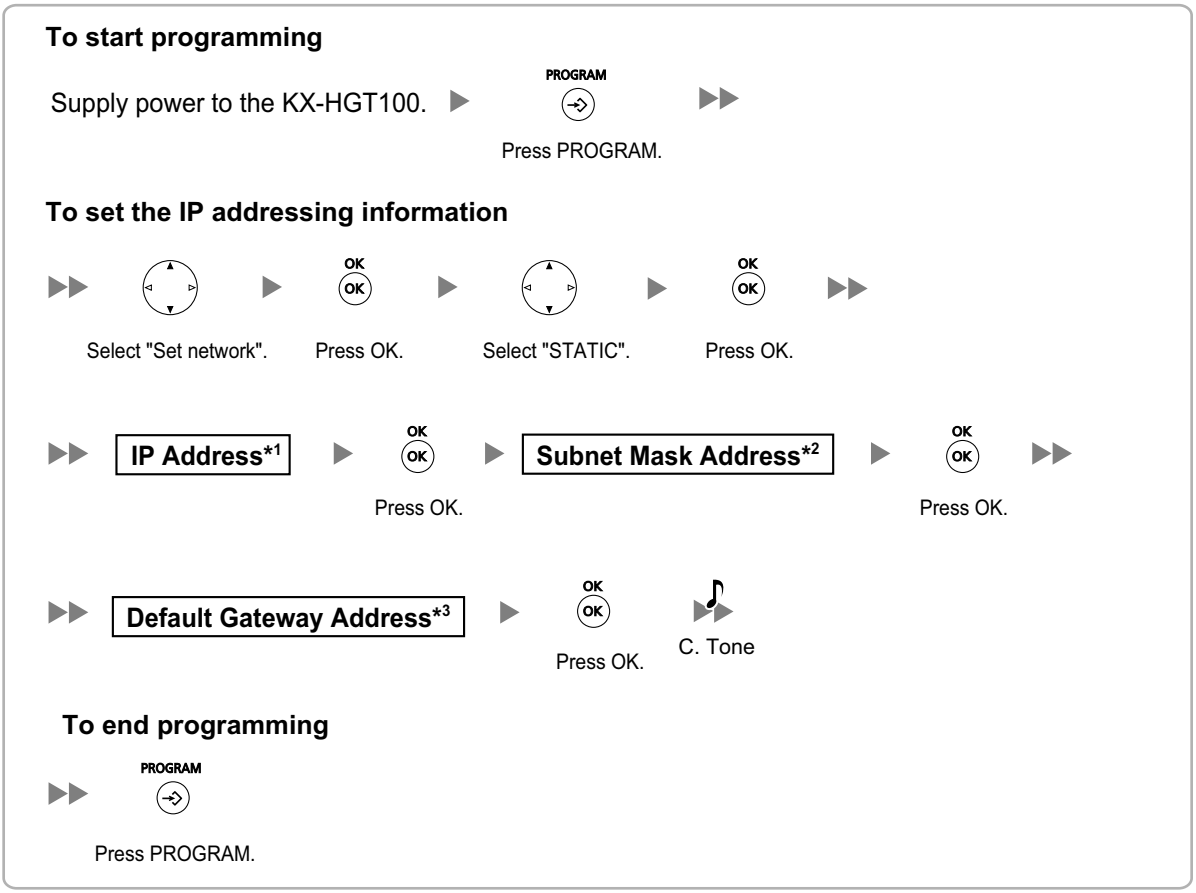
For KX-HGT100 SIP Telephones

1. **Using a DHCP server to automate the assignment of IP addressing information**
   The DHCP server automatically assigns the IP address of the KX-HGT100, the subnet mask address, and the default gateway address to the KX-HGT100.
   The PBX IP address can be assigned to the KX-HGT100 through Web Programming. For details, refer to "4.3.2 Registering IP Telephones".
   Follow the procedure below to assign IP addressing information automatically.



2. **Not using a DHCP server when assigning IP addressing information**
   The IP address of the KX-HGT100, the subnet mask address, and the default gateway address must be assigned manually.
   The PBX IP address can be assigned to the KX-HGT100 through Web Programming. For details, refer to "4.3.2 Registering IP Telephones".

Follow the procedure below to assign IP addressing information manually.



*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"

For SIP Extensions (except KX-HGT100)

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.

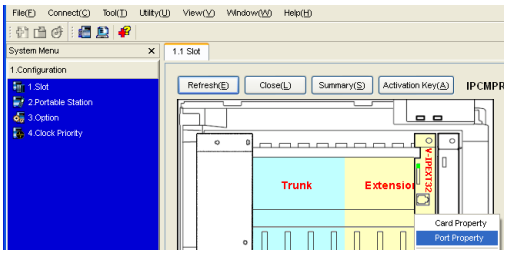
Note

- 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.

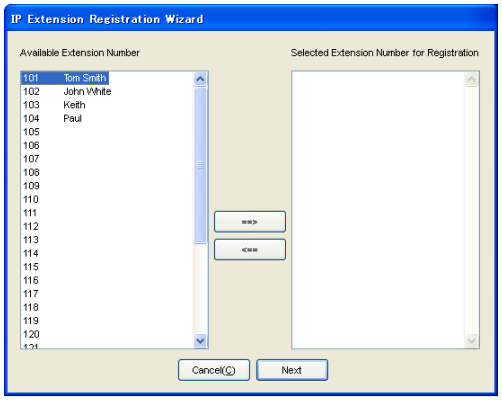
4.3.2 Registering IP Telephones

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 white PBX image of **IPCMPR Virtual Slot** at the bottom 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 and names are displayed on the left.



3. **a.** Highlight numbers and names 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 name, and index number for programming.

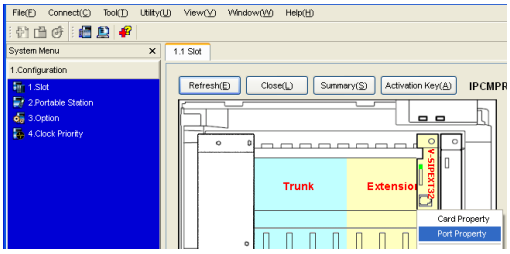
   Note

   - 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 15 minutes after this operation is done. The IP address of the IPCMPR card will then be assigned automatically.

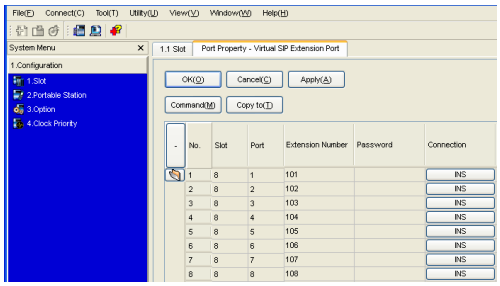
   c. If the registration is still in progress, the dialogue box will show "Registration Executing".
   If the registration is successful, the dialogue box will show "Registration Succeed". Click **Close**.

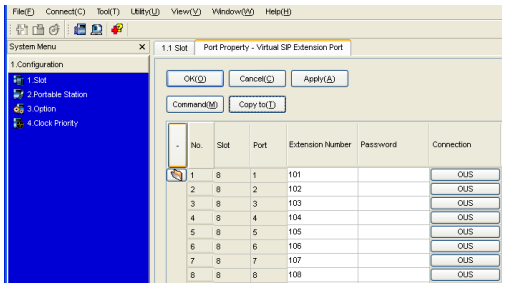
Once the IP-PT is successfully registered, the status of the IP-PT will update to show "Registered".

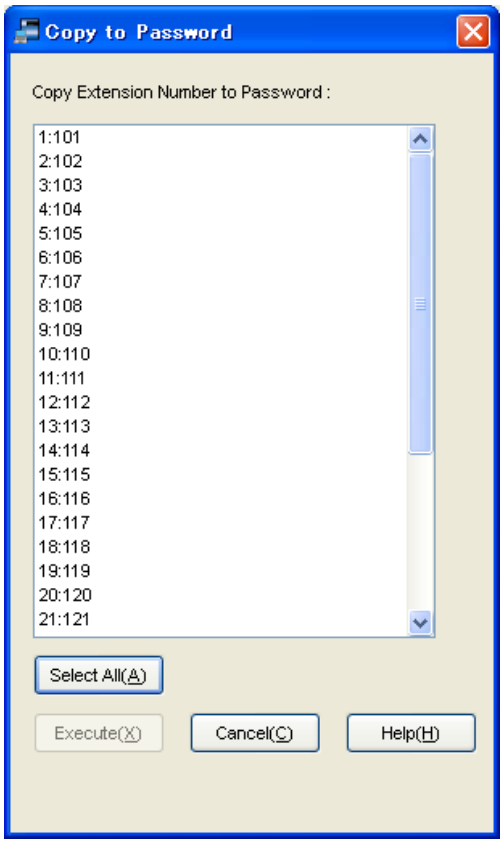
Registration of SIP Extensions



1. **a.** Under **Configuration**, click **Slot**.
   b. Move the mouse pointer over the white PBX image of **IPCMPR Virtual Slot** at the bottom 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 "3.59 [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. Programme the SIP Extension you wish to register.

[For SIP Extensions (except KX-HGT100)]

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).

[For KX-HGT100 SIP Telephones]
It is necessary to programme the KX-HGT100 through Web Programming to register to the PBX.
Follow the procedures below to prepare your PC for Web Programming and programme the KX-HGT100.

Preparing the PC

System Requirements

- Microsoft® Internet Explorer® 6.0 or later

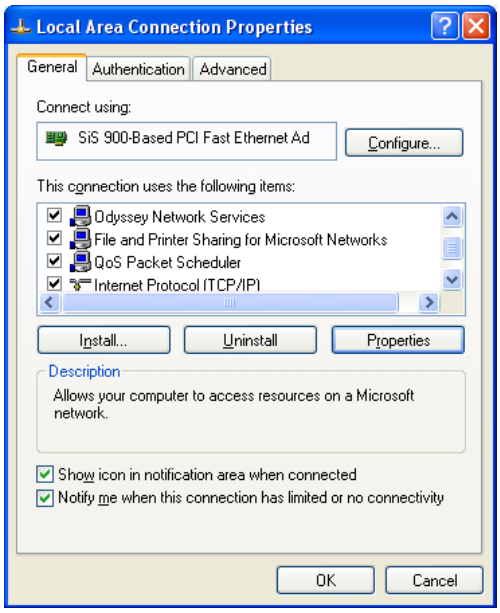
Trademarks

- Microsoft, Windows, and Internet Explorer are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- All other trademarks identified herein are the property of their respective owners.

Note

The procedures vary depending on the operating system of the PC.
This example is based on the Windows® XP operating system.

1. Open **Control Panel** from the **Start** menu.

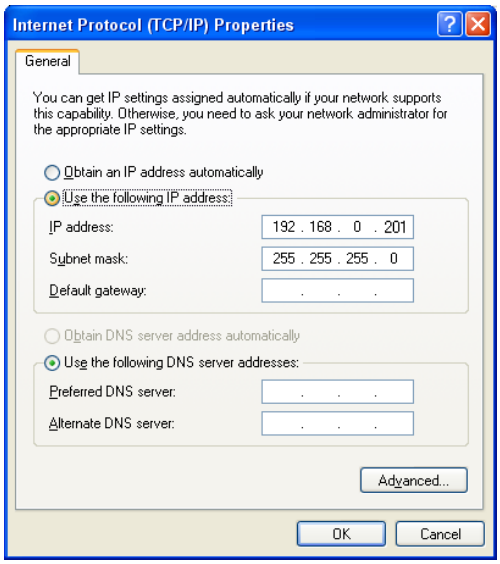


2. **a.** Double-click **Network Connections**.
   b. Double-click **Local Area Connection**.
   c. Click **Properties**.
   d. Confirm that **Internet Protocol (TCP/IP)** is listed.

   Note

   If **Internet Protocol (TCP/IP)** is not listed, you must install TCP/IP. For details about installation, refer to the documentation for Windows XP.

3. Select **Internet Protocol (TCP/IP)** and click **Properties**.

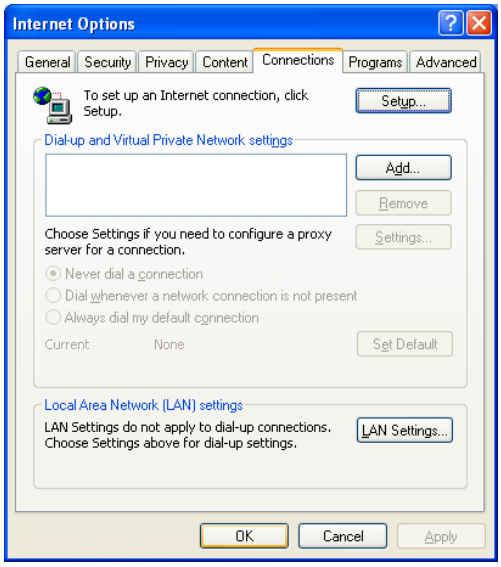


4. **a.** Select **Use the following IP address:**.
   b. In the **IP address** box, type **192.168.0.201**.
   This is an example entry. Type an IP address different from that assigned to the KX-HGT100 in "4.3.1 Assigning the IP Addressing Information".
   c. In the **Subnet mask** box, type **255.255.255.0**.
   d. Click **OK**.

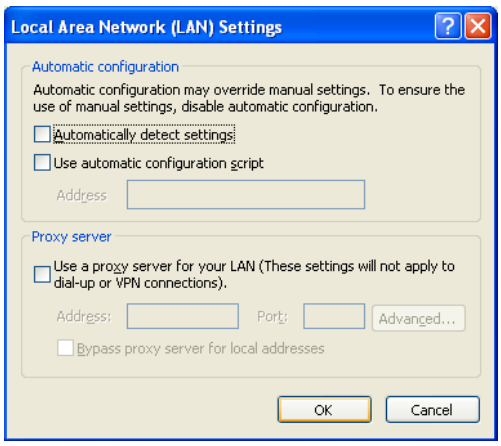
   Note

   To obtain an IP address automatically, select **Obtain an IP address automatically**.

5. **a.** Start Internet Explorer from the **Start** menu.
   b. Click **Internet Options** from the **Tools** menu.



6. **a.** Click the **Connections** tab.
   b. Select **Never dial a connection** if necessary.
   c. Click **LAN Settings**.



7. **When Not Using a Proxy Server**

   Note

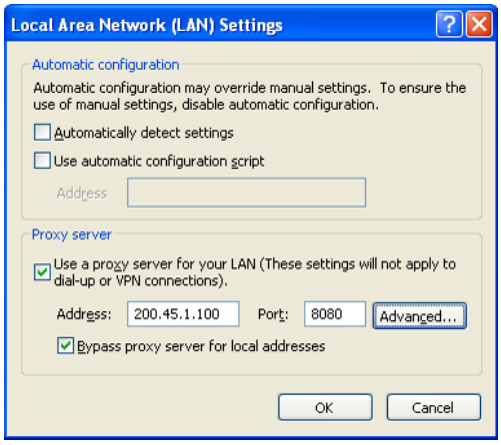
   If you will use a proxy server, see **When Using a Proxy Server**.

   a. Clear all check boxes.
   b. Click **OK**.

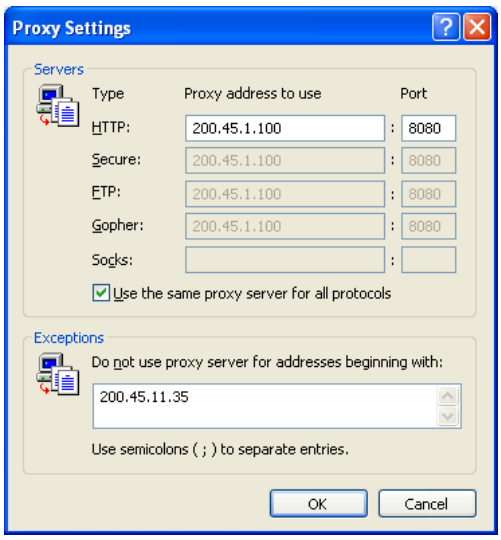
   Your PC is now ready for programming through direct access to the KX-HGT100.

When Using a Proxy Server

If the network has a proxy server installed, you must apply the appropriate proxy settings to your PC. In this case, follow the steps below instead of step 7 above:



7. **a.** Check all boxes for **Proxy server**.
   b. Click **Advanced**.

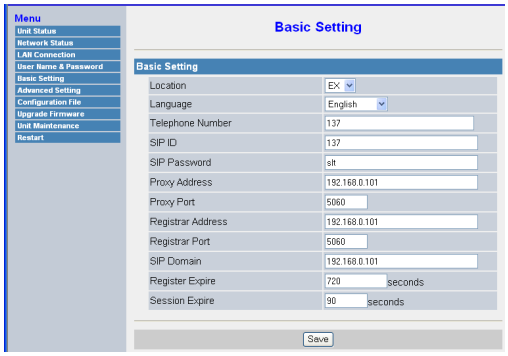


8. **a.** Under **Do not use proxy server for addresses beginning with:**, type the IP address of the LAN port of the card.
   b. Click **OK**.

Your PC is now ready for programming the KX-HGT100 through an IP network.

Programming the KX-HGT100

1. Start Internet Explorer from the **Start** menu.
2. **a.** Enter the IP address of the KX-HGT100 in the address box.
   b. Press the Enter key.
3. The log-in screen will appear.
   a. In the **User name** box, type the user name (default: **KX-HGT100**).
   b. In the **Password** box, type the password (default: **kx-hgt100**).
   c. Click **OK**.



4. The top page will appear.
   a. Click **Basic Setting**.
   b. In the **Telephone Number** and **SIP ID** boxes, type the extension number.
   c. In the **SIP Password** box, type the password.
   d. In the **Proxy Address**, **Registrar Address**, and **SIP Domain** boxes, type the IP address of the IPCMPR card.
   e. Click **Save**.
   f. Click **Return to top page**.

5. **a.** Click **Restart**.
   b. Click **Restart now** for changes to take effect. The KX-HGT100 will be restarted.
   If the authentication information of the KX-HGT100 and the PBX match, the registration is successful.

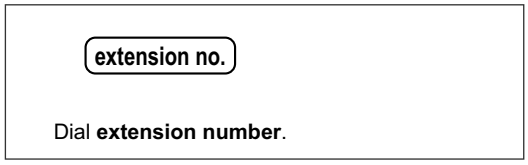
Section 5

Confirming the Connection

5.1 Making and Receiving Calls

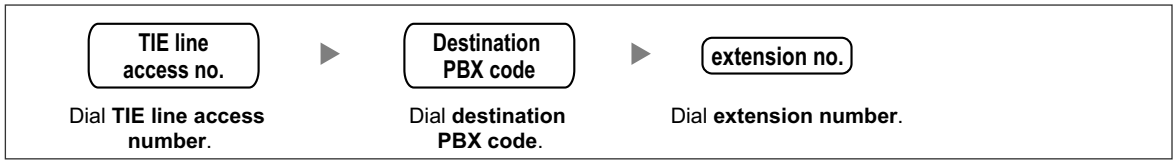
Making Calls

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

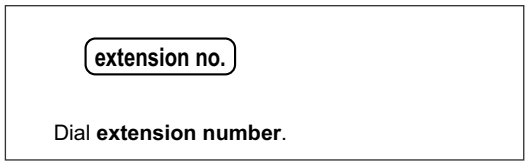


You can also call an extension of another PBX through the VoIP network.

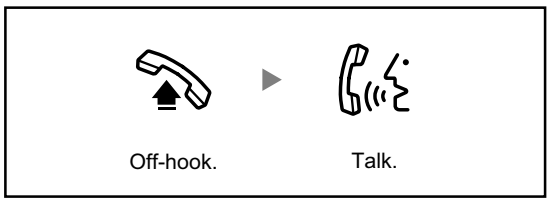
When using the PBX code method



When using the extension number method



Receiving Calls



CE

The KX-TDE100UK/KX-TDE200UK, the KX-TDE100NE/KX-TDE200NE, the KX-TDE100GR/KX-TDE200GR, and the KX-TDE100CE/KX-TDE200CE 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.
Declarations of Conformity for the relevant Panasonic products described in this manual are available for download by visiting:

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