OKI

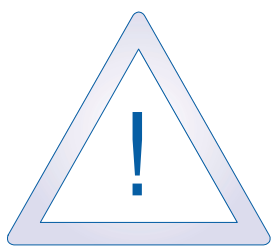
VoIP-TA

Oki Voice Over IP Telephony Adapter

Installation Guide

Version 1.2

Oki Electric Industry Co., Ltd.



Safety Warning!

This document contains information regarding the safe use of the Oki VoIP-TA unit. Carefully observe and comply with all safety precautions.

The VoIP-TA Internet Telephony Adapter and the Maintenance Console Software are products of Oki Electric Industry Co. Ltd.

Information in this document is subject to change without notice.

The contents of this document and the Maintenance Console Software have been prepared with the utmost care. However, if you notice an irregularity, please contact an authorized sales agent.

Oki Electric Industry Co. Ltd., assumes no responsibility with regard to consequences resulting from the use of the Maintenance Console Software and/or the contents and interpretation of the information contained in this manual.

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Contents

Important Safety Instructions

When handling or using the VoIP-TA unit, the following safety precautions should be observed to prevent injury and/or damage to the unit. Use of this equipment in a manner other than that specified in this and other VoIP-TA documents will void the product warranty and may result in damage, serious injury or death.

WARNING  **Incorrect use by neglecting the following instructions may cause fire, electric shock, unit failure, resulting in damage, serious injury or death.**

- Do not connect a commercial power supply circuit, analogue, digital (ISDN) or PBX digital telephone line to the LAN or PC port.
- Do not use with power supply voltages other than those specified.
- Do not insert or drop metal objects into any of the openings.
- Do not disassemble or modify this product in any way.
- Do not place any vases, cups, cosmetics, chemicals, pots or any other containers containing liquids or small metal objects, near the product. Spillages into the product may cause fire, electric shock or unit failure.
- Do not try to connect or disconnect the power plug with wet hands.
- Insert the power plug fully and securely into the power outlet. To avoid electric shock, do not use a plug that exposes the terminals when inserted.
- Avoid star connections as fire or overheating may result.
- Do not put heavy objects on the AC adapter cord or expose it to excessive heat.
- Do not pull the cord or allow it to overheat as it may be damaged and could cause fire or electric shock.
- If lightning strikes a neighboring area, stop operating the product by disconnecting the AC plug (by grasping the power plug, not the cord) from the power supply outlet.
- Always ground the product properly.

- Do not use AC adapters other than those specified or supplied.
- If liquid enters the unit, immediately disconnect the power plug (by grasping the power plug, not the cord) from the power outlet and contact an authorized sales agent or service provider. Continued use may result in fire or electric shock.
- If smoke or fumes are emitted from the unit, immediately disconnect the AC plug (by grasping the power plug, not the cord). When smoke emissions cease, contact a sales agent or service office for repair. Continued use may cause fire, electric shock or unit failure.
- Use only authorized sales agents or service offices for internal inspection or repair.

CAUTION  **Incorrect use by neglecting the following instructions may cause fire, electric shock, unit failure resulting in injury or damage.**

- Avoid oily, humid or dusty locations, such as on a kitchen table or near a humidifier.
- Do not place the unit on unstable or inclined surfaces as the unit may fall.
- Avoid locations exposed to direct sunlight or moisture as internal overheating may occur causing fire or unit failure.
- Wipe away with a dry cloth any water droplets that may be on the surface of the unit. Water intrusion may cause fire or unit failure.
- Do not cover up the vent holes of the VoIP-TA. If covered, internal overheating may result causing fire or unit failure.
- Do not unplug the AC power plug by pulling on the cord. Always grasp the plug portion when disconnecting the AC power plug.
- Disconnect the AC power cord and other connectors when moving the VoIP-TA.
- For safety, disconnect the AC plug from the power supply outlet (by grasping the power plug, not the cord) before starting maintenance.

Introduction

Welcome to the world of Oki Internet telephony…

The Oki voice over IP (Internet Protocol) telephony adapter, VoIP-TA, is a self-contained H.323 version 2 compliant communications device that allows organizations to route both voice and facsimile communications over any TCP/IP network.

The VoIP-TA is designed to provide a service that is virtually indistinguishable from that of conventional telephone and facsimile services.

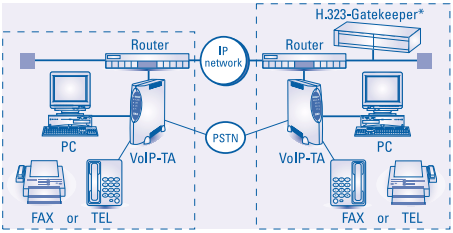
Use this guide to familiarize yourself with the VoIP-TA. Should you need to handle the equipment, pay special attention to the procedures and safety precautions contained in this guide.

1 Outline

The VoIP-TA

The VoIP-TA is a one-channel Internet telephony adapter that provides Internet telephony services conforming to industry standard H.323 version 2 specifications. It can be connected to a conventional analogue telephone or G3 facsimile machine.

Once installed, VoIP-TA units use the Internet Protocol (IP) network to bridge the distance between units at a fraction of the cost associated with conventional telephony methods.



* Gatekeeper is necessary when more than 100 IP addresses are to be used.

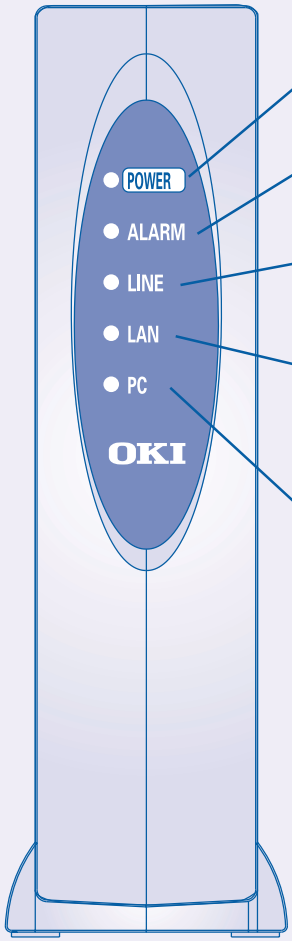
Features

- Compact size and one-channel Internet telephony adapter.
- Automatic telephone routing by specified telephone numbers.
- A PC connection port is provided however, the VoIP-TA cannot communicate with a PC connected to the PC port.
- Smooth and natural telephone calls by optimizing the voice buffer.
- Supports Dynamic Host Configuration Protocol (DHCP manual allocation) for local IP addresses.
- Conforms to the ITU-T recommended H.323 version 2 specifications.
- Supplies real-time Internet facsimile communication that conforms to the ITU-T recommended T.38.
- Uses high quality voice compression technology.
  Conforms to ITU-T G.729A (8 kbps), G.723.1 (5.3/6.3 kbps), and G.711 (μ-law/A-law). [Automatic selection or fixed]

Note The Public Switched Telephone Network (PSTN) is supported by VoIP-TA version 1.2 and later. The version number is clearly marked on the bottom of the unit.To avoid incorrect use contact your authorized sales agent or service office if in doubt.

Front Panel

LEDs



POWER Indicates power ON when lit.
Green lamp.

ALARM Indicates alarmed condition detected in unit when lit.
Red lamp (see table 1 page 4).

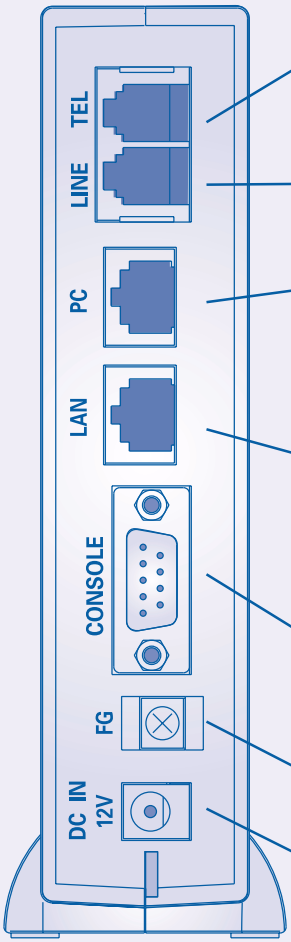
LINE Indicates PSTN line is used during operation when lit.
Green lamp.

LAN Indicates LAN link is established and operating normally when lit . When blinking, data is being sent.
Green lamp.

PC Indicates link is established and operating normally when lit. When blinking, data is being received.
Green lamp.

Back Panel

Connectors



TEL Connects a conventional analogue telephone or G3 facsimile machine. Dial signal: DTMF signaling only.

LINE Connects to an analogue public telephone line.

PC* Connects to a PC via a straight cable *(category 3 or higher)*. Not for Maintenance Console Software. Use category 5 for 100BASE-TX.

LAN* Connects to LAN via a cross cable *(category 3 or higher)*. Use a straight cable for HUB connection. Use category 5 for 100BASE-TX.

CONSOLE Connects to a PC *(serial port)* for data setup. Use an RS232C connector cable *(straight)*.

FG Terminal strip for frame ground.

DC IN 12V Connects an AC adapter.

* The communication performances of the LAN and PC ports are always the same and VoIP-TA conforms to the lower of the two. When either the PC or LAN port is 10 BASE-T, both ports are set to 10 BASE-T communication. If a PC is connected to the PC port during a call, the call may be interrupted for approximately one second. Please avoid such usage.

Table 1

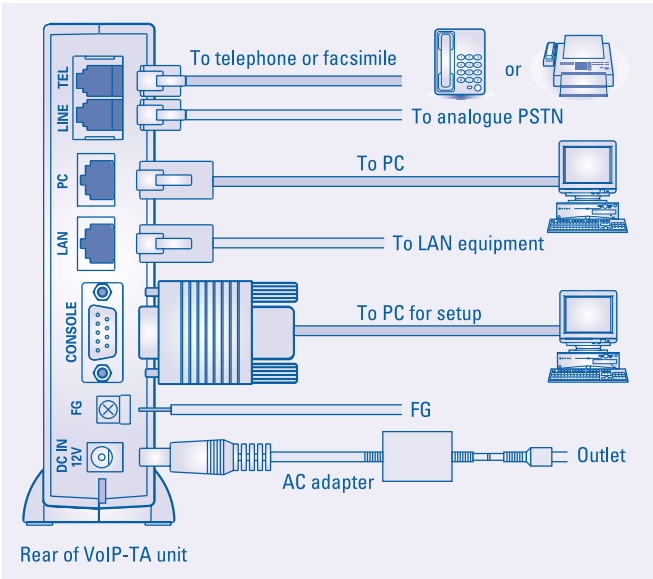
Mode	ALARM-LED	LINE-LED	Status
Initialization (1 sec. intervals)	Blinks	OFF	**With gatekeeper:** The system will wait for LAN link to be established while gatekeeper registers the VoIP-TA. **Without gatekeeper:** The system will wait for a LAN link to be established.
Operation	OFF	OFF	Standby
	OFF	ON	The telephone line is busy.
	OFF	Blinks (1 sec. intervals)	**When using both IP and PSTN:** The PSTN is on hold during VoIP calls. **When using IP network only:** The absent service is setting up.
	Blinks (0.5 sec. intervals)	OFF	The handset is off the hook and the howler tone has already stopped.
Setup	Blinks (0.2 sec. intervals)	Blinks (0.2 sec. intervals)	Normal operation is not available in the *Setup* mode.
Installation	Blinks (0.2 sec. intervals)	Blinks (1 sec. intervals)	Normal operation is not available in the *Install* mode. The LED lamp may blink irregularly during the program installation.

II Installation

Place the main unit in a vertical position as placing it horizontally could shorten the life of the unit.

Connections

The following illustration shows where equipment should be connected to the ports at the rear of the VoIP-TA unit.



Rear of VoIP-TA unit

Analogue telephone or G3 facsimile equipment

Connect an analogue telephone or G3 facsimile machine to the *TEL* connector of the VoIP-TA unit via a telephone cord.

To make facsimile connections, the other end terminal equipment should be compliant with the ITU-T T.38 standard.

Analogue PSTN

Connect an analogue PSTN line to the *LINE* port at the rear of the VoIP-TA unit via a telephone cord.

Personal computer *(PC)*

Connect a PC connector to the *PC* port at the back of the VoIP-TA unit using an unshielded twisted pair (UTP) straight cable *(categories 3 to 5)*. If both a PC and LAN are to use 100BASE-TX communications, use category 5 [max. 100m].

Note It is recommended that only one PC is connected to avoid voice deterioration.

LAN

Connect the LAN connector to the *LAN* port at the back of the VoIP-TA unit via a cross cable *(UTP categories 3 to 5)*. If connecting to a hub, use a straight cable.

If the LAN is connected by 100BASE-TX and the PC is connected by 100BASE-TX, or if the PC is not connected, use a category 5 cable [max. 100 m].

CONSOLE *(setting up the VoIP-TA with a PC)*

Connect the PC for setup on the VoIP-TA by using the serial cable RS-232C *(9 pin – 9 pin straight)* to the *CONSOLE* port.

FG *(grounding)*

After connecting the frame ground (FG) cable to the *FG* port at the back of the VoIP-TA unit, connect the other end to a ground terminal in the house or ground it separately.

Power source

Connect the supplied AC adapter to the *DC IN 12V* port at the back of the VoIP-TA unit. Connect the attached AC adapter to a power outlet.

Cautions

During installation

- All cables used to connect the equipment must be accessories of the equipment or suitable to fit the equipment.
- Make sure the AC power plug is disconnected from the power outlet when connecting the FG cable to the unit.
- When an exchange machine, such as PBX or EKTS is connected to the TEL port of VoIP-TA, the sound quality may deteriorate. Only one exchange machine should therefore be relayed between the VoIP-TA unit and telephones.
- Interference noise may occur during telephone calls in areas that receive strong radio waves, such as near a broadcasting station or CB radio transmission. If calls are affected in this way, consult your authorized sales agent or service office.
- Do not install the VoIP-TA unit near equipment that generates magnetism or radio waves such as TV sets, radios, radio machines, microwave ovens, or inverter-type fluorescent lamps, as this may cause the unit to malfunction.

During use

- Do not subject the unit to strong impact, such as dropping the unit.
- Do not force cables to connect or disconnect as this may result in faults. The connector and port should join with reasonable ease.
- When cleaning the exterior of the VoIP-TA, turn it off and disconnect the unit (by pulling the power plug, not the cord), wipe it with a water damp cloth and wipe it dry with a soft dry cloth. Do not use volatile thinner, alcohol or a silicon cleaner under any circumstances as it may result in damage, discoloration or deformation.

III Placing Calls

Via an IP Network

Placing and receiving calls with the VoIP-TA unit are usually quite simple and performed in the same way as conventional telephone networks. In some cases however, the phone numbers to be used, may differ slightly from the ones you used previously.

General Operation

Outgoing calls

Use a telephone that generates a Dual Tone Multiple Frequency (DTMF) signal. Pick up the handset and dial a remote party's telephone number.

Incoming call response

An incoming tone will be emitted from the telephone.

Disconnection

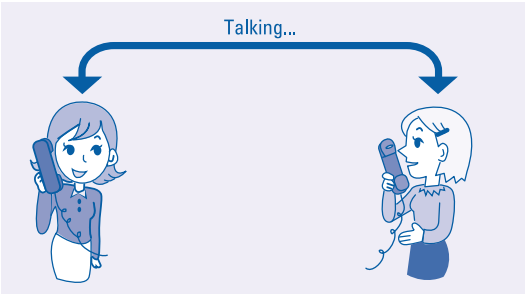
A telephone call can be disconnected by hanging up the handset onto the telephone receiver.

Services

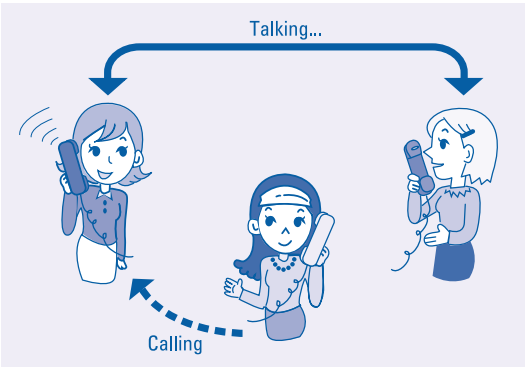
Third party incoming call during another call

You can respond to a third party's incoming call while you are on another call.

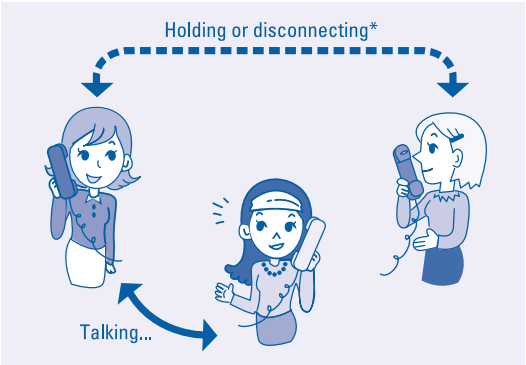
- A second party telephone call.



- If a third party calls, a notification tone is sent to your telephone.



- You may speak to a third party by hooking.

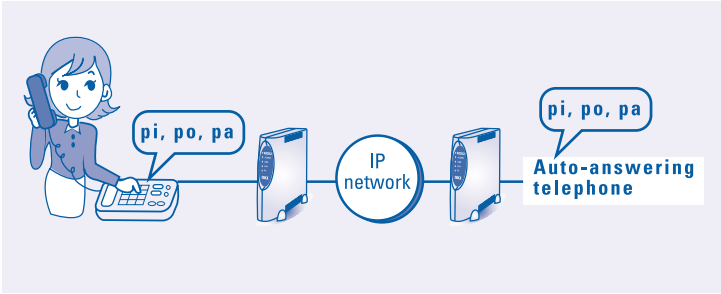


* The operation varies depending on the data settings. *See Details of Services page 13,*

End-to-end service using DTMF signaling

DTMF signaling can be used via the IP network for answering machines, etc. To use this service, *Facsimile transmission using the VoIP line,* must be turned off.

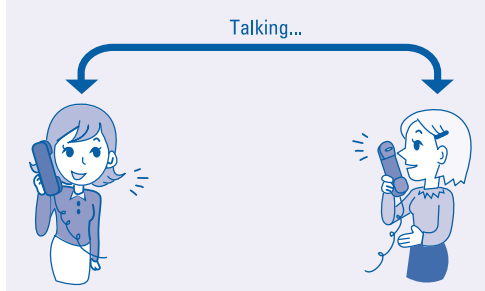
- Making a telephone call



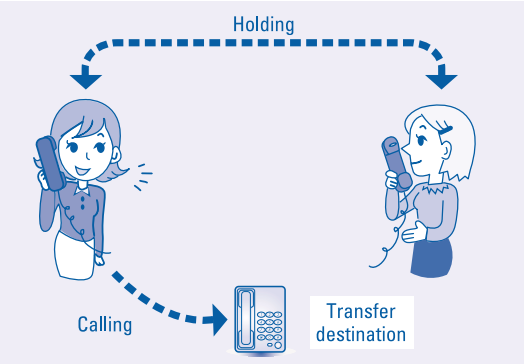
Call transfer during a telephone call

You can transfer a call during a telephone call. To use this service, *Use PSTN line* must be turned off.

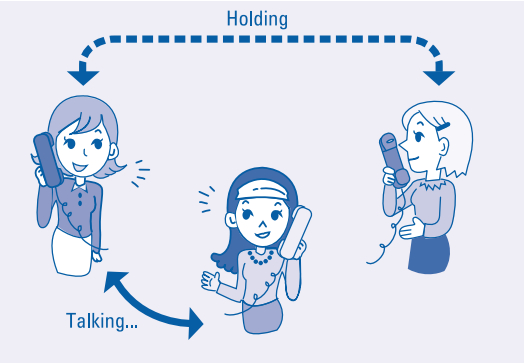
- During a telephone call



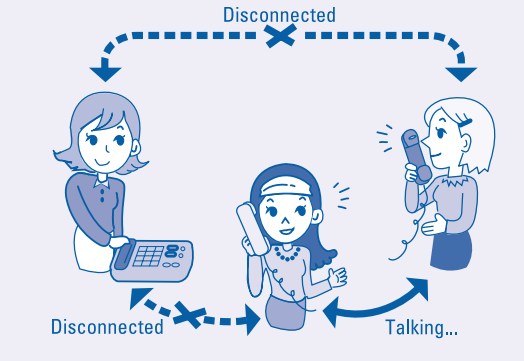
- Put the other party on hold by hooking, and dial a transfer destination number.



- You may then speak to the party at the transfer destination.



- When you hang up the handset again the call will be automatically transferred to the destination.



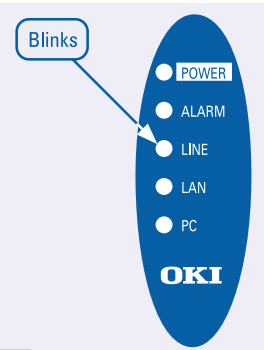
Absent service

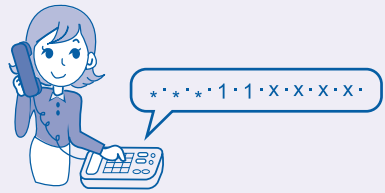
If the *absent service* is registered, an incoming call is transferred to a registered destination. The transferred call will not be transferred any further.

To use this service, *Use PSTN line* must be turned off.

How to register the absent service

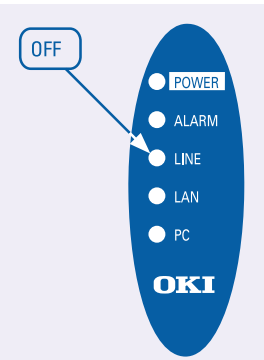
Pick up the handset, dial "***11" and the "destination number to be transferred" and hang up the handset. When the service is set, the *LINE-LED* lamp will blink.





How to cancel the absent service

Pick up the handset, dial "***12," and hang up the handset. When the service is cancelled, the *LINE-LED* lamp will go off.



Details of Services

There are two ways to use the VoIP-TA unit; using both a PSTN line and the IP network or using only the IP network. These services are determined by the data setup.

Using both a PSTN line and the IP network

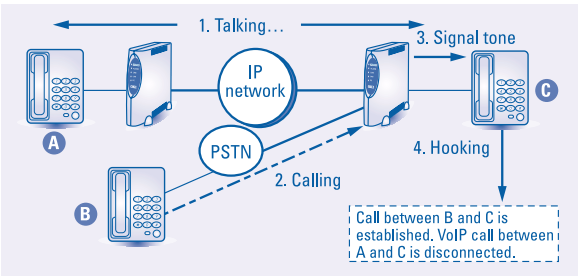
Line selection

The selection of a PSTN line or IP network is specified by the first digit of the phone number set by the Maintenance Console Software.

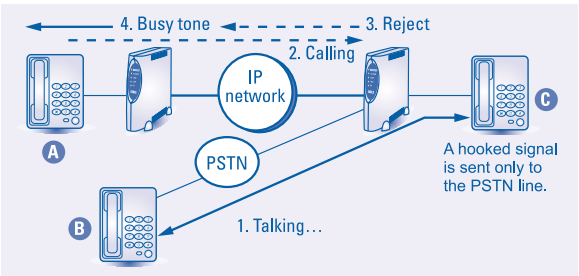
Third party incoming call during another call

For PSTN line receiving services using hookflash (hooking) from regional telephone service company

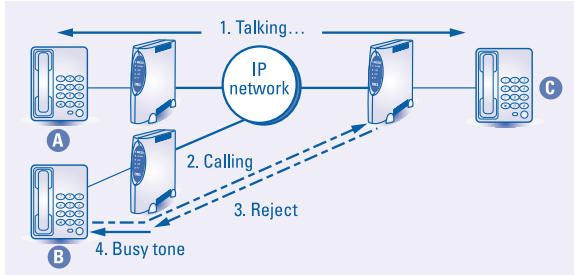
- Response to incoming calls from a PSTN line during a telephone call using the IP network.



- Response to an incoming call from the IP network during a telephone call using a PSTN line.

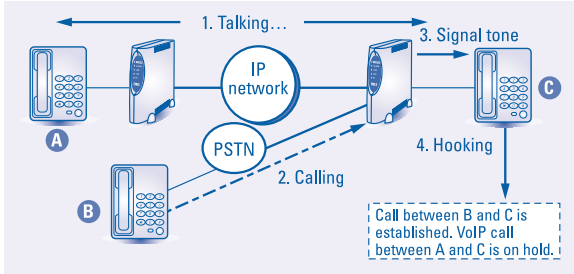


- Incoming operation from the IP network during a telephone call using the IP network.

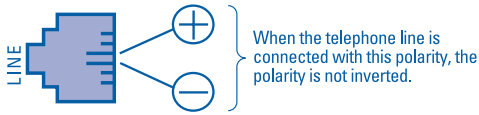


For PSTN line not receiving services using hookflash (hooking)

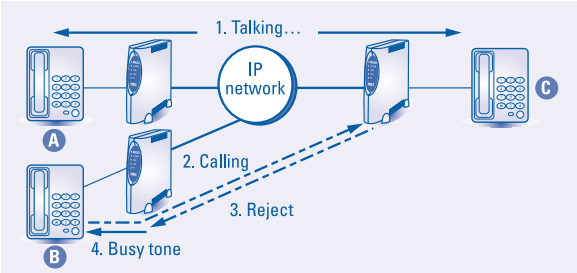
- Response to an incoming call from a PSTN line during a telephone call using the IP network.



- Response to an incoming call from the IP network during a telephone call using a PSTN line.



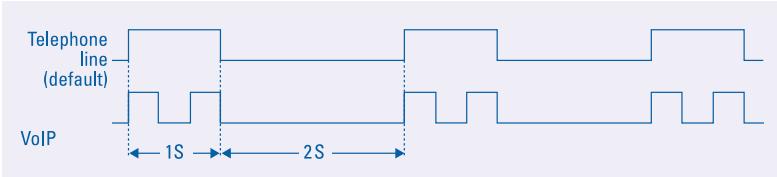
- Incoming operation from the IP network during a telephone call using the IP network.



Identification of incoming call

An incoming call can be identified by setting a ringing time from IP network and from a public telephone line separately.

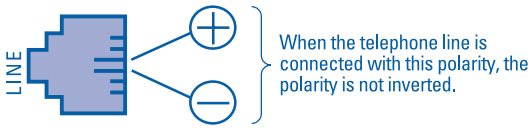
Example



Power failure switching

If a power failure occurs, the telephone is directly connected to a PSTN line.

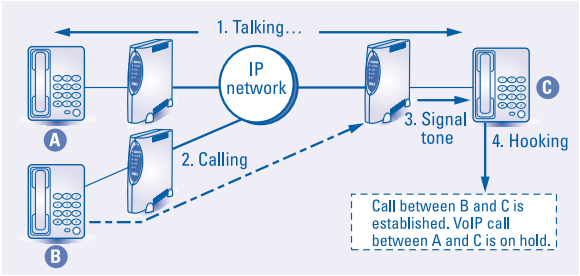
CAUTION **When supplying power to a telephone set during power failure, the polarity may be reversed depending on a line port connection mode.**



Using the IP network only

Third party incoming call during another call

- Incoming call during an existing telephone call.



Translating IP Address for VoIP

Without gatekeeper	Uses the built-in address table (max. number of registered addresses: 100).
With gatekeeper	Translates IP address with gatekeeper.

Setting IP Address

The initial value is not set at the shipment time. Set the IP address using the Maintenance Console Software or obtain it from the DHCP server.

When getting IP addresses from the DHCP server, the IP address should always be a fixed address and allocated manually.

IV Setup

The VoIP-TA is set up by using the Maintenance Console Software. The Maintenance Console Software, installed in a PC, is used to communicate with the VoIP-TA in remote mode via a LAN interface or in local mode via a RS232C interface. When connecting to the VoIP-TA using the remote mode via a LAN interface, all network settings such as the assignment of IP addresses must be already completed.

Maintenance Console Software Requirements

Description	Quantity
Maintenance Console Software setup disk (CD-ROM).	1
A PC for installing the Maintenance Console Software. • An operating system, such as Windows® 98, Windows® 95, or Windows NT® 4.0, must already be installed in the PC.* • The PC must be equipped with a S-VGA (Super Video Graphics Array).	1
A LAN cable (UTP, category 3 or 5) or a RS232C cable.	1

***Note** Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the U.S.A. and other countries.

Installing the Maintenance Console Software

Before installing the Maintenance Console Software in a PC, be sure to close and quit all software and programs running on the PC.

- Insert the CD-ROM into the PC's CD-ROM drive and execute the *Setup* file located on the disk (when reinstalling the software, be sure to uninstall the previously installed Maintenance Console Software first).
- Follow the prompts appearing on the screen and restart the PC when the installation has been completed. You may now use the Maintenance Console Software.

Maintenance Console Software Compatibility

The compatibility relationship between the VoIP-TA unit software and Maintenance Console Software versions is described in the table below.

VoIP-TA unit	Operation software	Maintenance Console Software version
V1.1	02.**	V1.0
V1.2	04.00	V1.2

Functions of the Maintenance Console Software

The functions of the Maintenance Console Software vary according to the mode in which the VoIP-TA unit has been set.

Mode	Function	Notes
Operation mode	Perform usual operation. Display the current setup conditions.	
Setup mode	Change the current setup conditions. Change a password.	For details on how to change the password, *see Chapter V, page 48.*
Installation mode	Update programs of VoIP-TA. Not normally used.	*See Chapter V,* page 47.

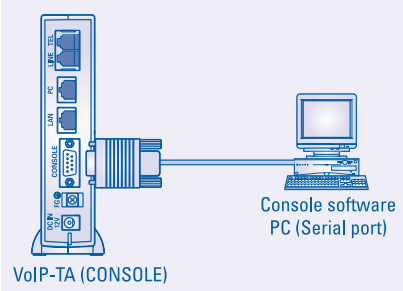
In addition to these functions, the Maintenance Console Software has status display and version display functions *(see Chapter V, page 44).*

Data Setup Procedure

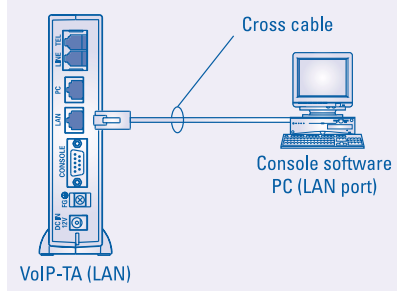
- Connect the PC (with the Maintenance Console Software installed) to the CONSOLE port of the VoIP-TA unit via a RS232C cable.

  Examples of connection of the Maintenance Console Software running on a PC are shown below:

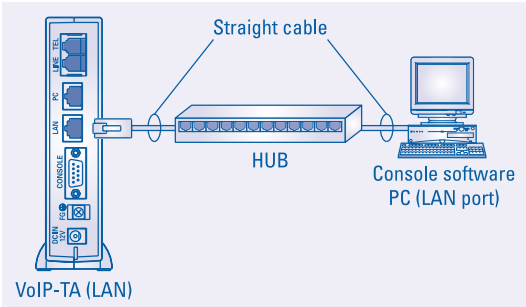
Connection via a RS232C cable



Direct connection via a LAN cable



Connection via a hub

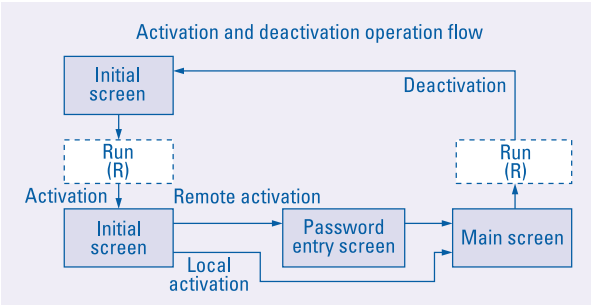


- Switch the VoIP-TA to *Setup* mode.
- Change the setup conditions.
- Switch the VoIP-TA to *Operation* mode.

Activating and Deactivating the Software's Functions

Start the Maintenance Console Software installed on the PC to set up the VoIP-TA.

Activating and deactivating operation flow

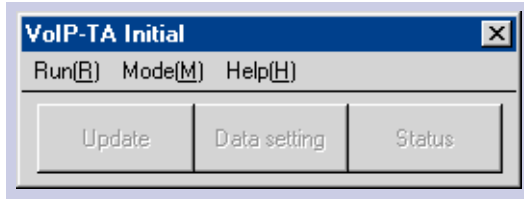


The procedure for activating the Maintenance Console Software for the VoIP-TA unit is described in step-by-step instructions starting with the software through to connection with the VoIP-TA unit's functions.

- Click on *Start* on the task bar, bring the cursor pointer on *Program*, and then click on *VoIP-TA console*.

- The *Initial* window will appear.

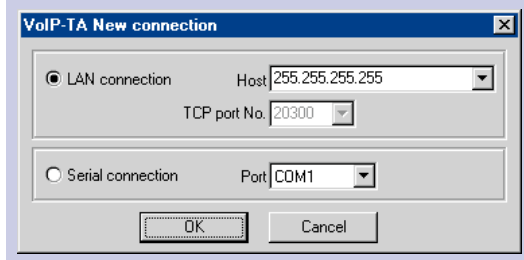
- Click on *Run (R)*on the menu bar.



- When the pull-down menu appears, select *Connect*.

- The *New connection* window will appear.

- Select a connection mode.



LAN connection:

Remote connection via a LAN interface.
Specify the IP address of the VoIP-TA in the *Host* entry area.

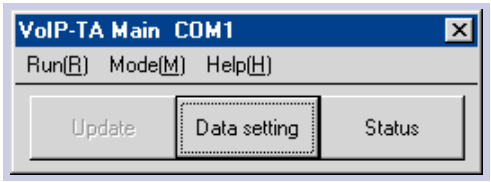
Serial connection:

Local and direct connection via a RS232C interface.
Specify the *COM* port for the PC to be connected to the VoIP-TA.
Start connection by clicking on the *OK* button.

- For the LAN connection, a password entry prompt will appear. Enter the password, and click on the *OK* button. The product has been shipped with "TA" set as the default password.

- When the connection settings are completed, the *Main* window is displayed.

  When the *Data setting* and *Status* buttons become active, the connection is established.



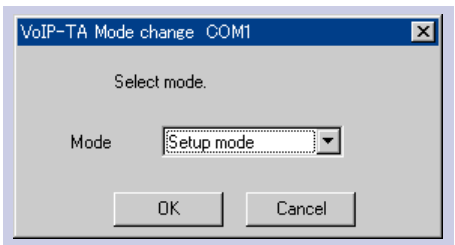
Changing Modes and Setup Conditions

The mode of VoIP-TA can be switched by using the Maintenance Console Software.

To change the current setup conditions, switch the VoIP-TA to the *setup mode* (it is not necessary to switch the VoIP-TA to the *setup mode* if you only want to display the setup conditions).

Changing to the *Setup mode*

- Click on *Mode (M)* on the menu bar of the *Main* window and select the *Change mode* on the pull-down menu.
- The *Mode change* prompt is displayed.
- Select the *Setup mode* on the *Mode* pull-down menu and click the *OK* button.

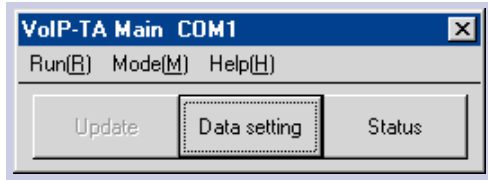


- Changing VoIP-TA to other modes is performed in the same way.

* The VoIP-TA mode will change although it may take a little time for the mode to be changed.

Changing setup conditions

- Once the setup mode has been changed, click the *Data setting* button on the *Main* window.

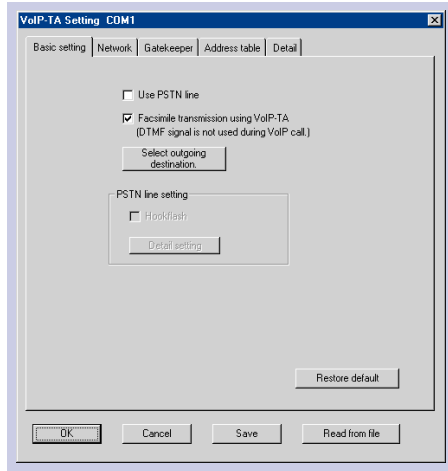


- The setup *(VoIP-TA setting)* window will appear.

  Click the tabs on the window to display the desired current status.

  Change the items displayed on the window, as necessary.

  A detailed explanation of each window is provided in Setup (*VoIP-TA setting*) window *(see page 24)*.



- Once the necessary changes have been made on the setup window, they can be set by clicking the *OK* button.

* The changed items can be saved on the PC as a file by clicking on the *Save* button *(see page 23)*.

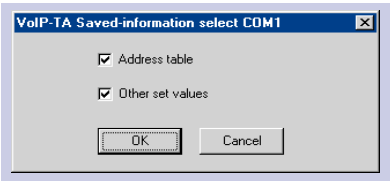
* The file containing the saved changes of the setup can be retrieved by clicking on the *Read from file* button *(see page 23)*.

- To set the VoIP-TA to the operation mode, click on *Mode (M)* on the menu bar of the main window and select Change mode in the pull-down menu. The *Mode change* window will be displayed. Select Operation mode on the pull-down menu and click the OK button. After the mode change the new setting will become effective.

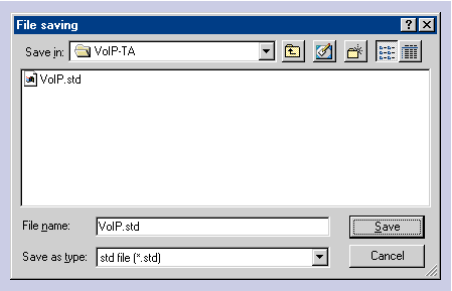
Saving all setup conditions in a file

The default setting is set to save all setup conditions within a file. This setting can be changed by clicking on the *Save* button on the setup window and displaying the *Saved-information select* window.

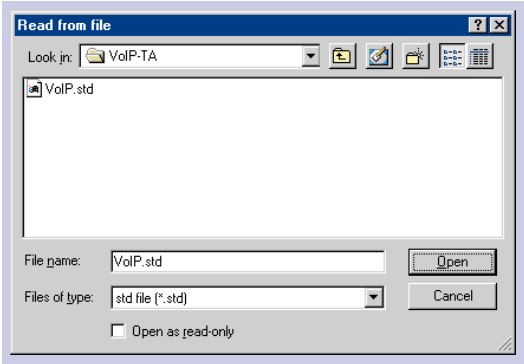
- Activate or deactivate the check mark for *Address table* or *Other set values* as required. If either or both items are unchecked then no record of that setting will be saved in a file.



- To save, click the *OK* button. The *File saving* window will be displayed. Specify a name for the file (in which the setup conditions are to be saved), by entering it in the space next to *File name*.



Reading information from the file



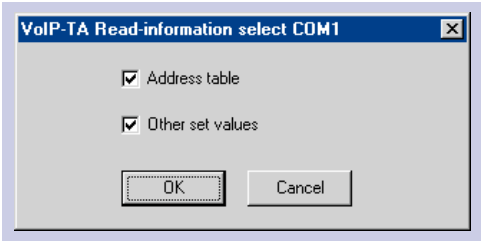
- To read information contained in the saved file, click on the *Read from file* button in the setup window. The *File selection* window will be displayed.

- Select the appropriate file, and click the *Open* button.

  The *Read-information select* window will be displayed.

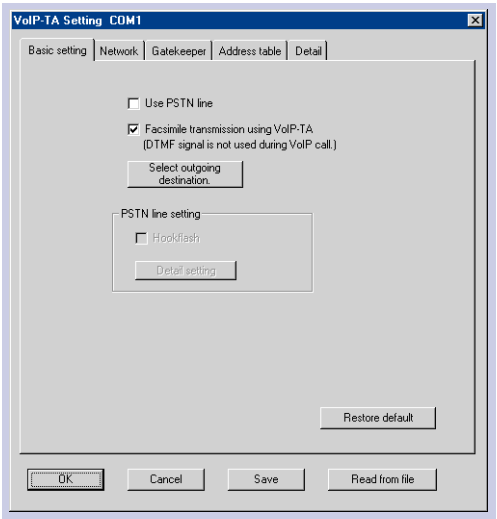
  The default setting reads all the setup conditions within a file. This setting can be changed by activating or deactivating the *Address table* or *Other set values* as required.

- When the settings have been made, click the *OK* button.



Setup *(VoIP-TA setting)* Window

Basic settings for the PSTN line

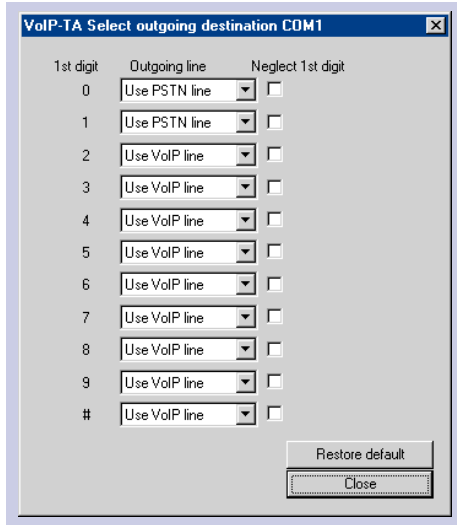


Item	Descriptions	Default
Use PSTN line	To connect VoIP-TA to a PSTN line, check this item.	Not used
Facsimile transmission using VoIP-TA	To use a facsimile, check this item (please note that when a facsimile is in use, the DTMF signaling end-to-end service via VoIP communication is not available.)	Used
Select outgoing destination	Available when *Use PSTN* line is selected. An outgoing line (PSTN or VoIP) can be selected by the outgoing destination number. Clicking this button displays the setup screen *(see Select outgoing destination below).*	
Hookflash	This setting is used only when services using Hookflash (hooking) is being provided by a regional telephone company.	None
Detail setting	Sets the telephone line details. The *PSTN line details* window is displayed when this button is clicked *(see Detailed setting for PSTN line page 29).*	

Default values, set at the time of product shipping, are displayed when the *Restore default* button is clicked.

Select outgoing destination

- Selecting an outgoing destination is available only when *Use PSTN line* is selected. If it is not selected, all outgoing calls are via the VoIP line, without neglecting the first digit of the phone number.



Item	Description	Default
Select outgoing destination	• Select *Use PSTN line, Use VoIP line* or *Unavailable to dial* the first digit of an outgoing destination telephone number. • Selection can also be made to *Neglect the first digit* or not to do so at the same time. • Select *Use PSTN line* to use the PSTN line for outgoing calls. • Selecting *Unavailable to dial* will not allow any outgoing calls. • Select *Use VoIP line* to use the VoIP line for outgoing calls. • When the selection is made to neglect the first digit, the first digit is not recognized as a part of the outgoing destination telephone number. • An asterisk (*) cannot be used as a part of an outgoing telephone number.	0 PSTN line 1 PSTN line 2 VoIP line 3 VoIP line 4 VoIP line 5 VoIP line 6 VoIP line 7 VoIP line 8 VoIP line 9 VoIP line # VoIP line *Neglect first digit* is not selected.

Default values, set at the time of product shipping, are displayed when the *Restore default* button is clicked.

Example

Software settings and resulting VoIP-TA operations for outgoing destinations are provided below as well as the information of outgoing destinations and the IP address table of the VoIP-TA:

1st digit	Outgoing destination	Neglect 1st digit
0	Use PSTN line	—
1	Use PSTN	—
2	Use PSTN	Selected
3	Use PSTN	Selected
4	Unavailable to dial	—
5	Unavailable to dial	—
6	Unavailable to dial	—
7	Use VoIP line	—
8	Use VoIP line	—
9	Use VoIP line	Selected
#	Use VoIPline	Selected

Dailing number	IP address
789	111.222.333.789
890	111.222.333.890
901	111.222.333.901
012	111.222.333.012
123	111.222.333.123
234	111.222.333.234
345	111.222.333.345
456	111.222.333.456
567	111.222.333.567
678	111.222.333.678

VoIP-TA will operate in the following way when the internal address table is used.

No. dialed	VoIP-TA operation
0123	*0* selects a line and all numbers dialed *0123* are sent to the PSTN line.
2345	*2* selects a line and all numbers dialed, excluding the first digit, *345* is sent to the PSTN line (dial *345* for the PSTN line).
4567	*4* selects a line, a busy tone will be heard.
6789	*6* selects a line, a busy tone will be heard.
789	*7* selects a line. The IP address table is referenced for all numbers dialed, *789* connects the call (IP address 111.222.333.789 is called on the VoIP line).
901	*9* selects a line. The IP address table is referenced for the numbers dialed, excluding the first digit, *01* connects the call. This number does not exist in the IP address table, a busy tone will be heard.
9901	*9* selects a line and the IP address table is referenced for the numbers dialed, excluding the first digit, *901* connects the call (IP address 111.222.333.901 is called on the VoIP line).
#567	*#* selects a line, and the IP address table is referenced for the numbers dialed, excluding the first digit, *567* connects the call (IP address 111.222.333.567 is called on the VoIP line).
#789	*#* selects a line. The IP address table is referenced for the numbers dialed, excluding the first digit, *789* connects the call (IP address 111.222.333.789 is called on the VoIP line). (Please note that this is the same as dialing *789*.)

When the gatekeeper is in use, the VoIP-TA operates in the following manner.

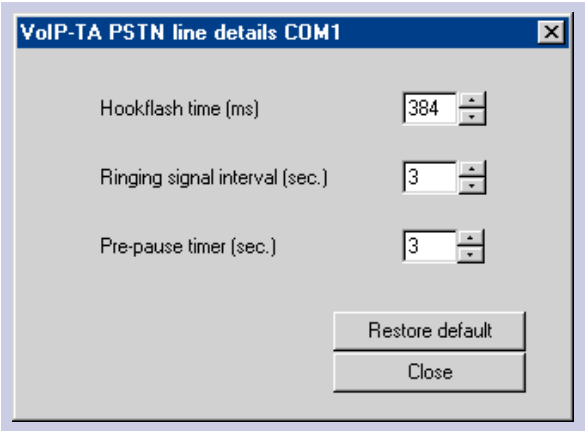
Number dialed	VoIP-TA operation
789	*7* selects a line, gatekeeper is referenced for the IP address with all numbers dialed and *789* connects the call.
901	*9* selects a line, gatekeeper is referenced for the IP address with the numbers dialed, excluding the first digit and *01* connects the call.
9901	*9* selects a line, gatekeeper is referenced for the IP address with the numbers dialed, excluding the first digit and *901* connects the call.
#567	*#* selects a line, gatekeeper is referenced for the IP address with the numbers dialed, excluding the first digit and *567* connects the call.
#789	*#* selects a line, gatekeeper is referenced for the IP address with the numbers dialed, excluding the first digit and *789* connects the call. (**Note** This is the same as dialing *789*.)

In the example above, when *#789* is dialed, it is the same as dialing *789*, which may lead to misdialing in some cases.

In order to totally separate the PSTN and VoIP lines, set the outgoing line data in the following manner.

- Set # to *Use VoIP line* with *Neglect first digit* selected.
- Set *0* to *Use PSTN line* with *Neglect first digit* selected.
- Set *1* to *Use PSTN line* without *Neglect first digit* selected.
- Set all others to *Unavailable to dial*.

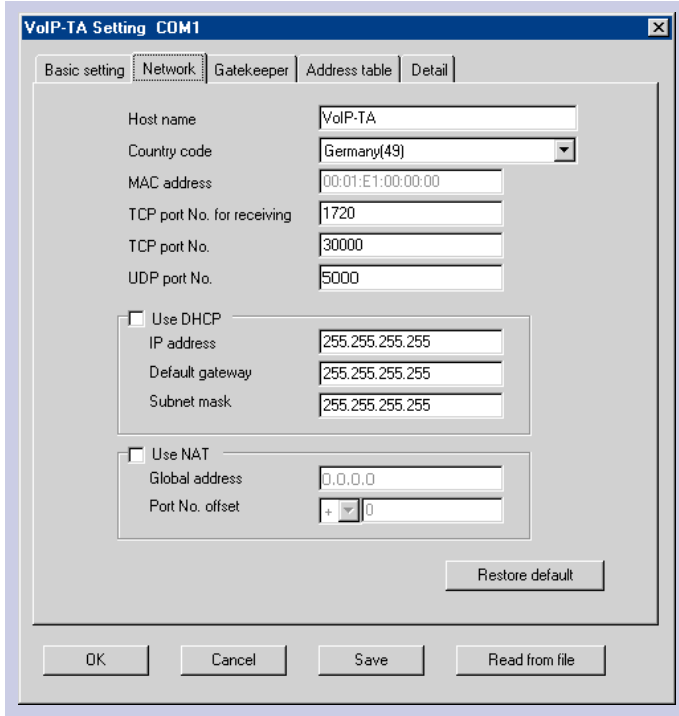
Detailed settings for the PSTN line



Item	Description	Default
Hookflash time	Used to specify the hookflash time for the PSTN line.	384 ms
Ringing signal interval	Used to specify the detecting time intervals between ringing signals.	3 sec.
Pre-pause timer timer	Used to specify the pause interval before generating a dialing signal.	3 sec.

Default values, set at the time of product shipping, are displayed when the *Restore default* button is clicked.

Network settings



Item	Descriptions	Default
Host name	Specifies the host name with 16 or fewer alphanumeric characters (single-byte). The specified host name is used as the individual name for VoIP-TA on the network.	VoIP-TA
Country code	No changes are necessary for this product version.	Germany (49)
MAC address	MAC address is displayed. No changes can be made from this window.	Specific address for each unit.
TCP port No. for receiving	Specifies the TCP port number for receiving. 1720 is normally used.	1720
TCP port No.	Specifies the TCP port number for communication. Entered values must be between 30000 (default) and 30099.	30000
UDP port No.	Specifies the UDP port number for communication.	4998
Use DHCP	Activate when the IP address is obtained from a DHCP server. Use the same IP address unless it has changed.	Not used.
IP address	Specifies the IP address of the VoIP-TA.	255.255.255.255
Default gateway	Specifies the default gateway.	255.255.255.255
Subnet mask	Specifies the IP address of the subnet mask.	255.255.255.255
Use NAT	For using the NAT/IP Masquerade translation function. Global address and port number offset are valid and effective only when this item has been checked.	Not used.
Global address	Specifies the global IP address translated from the local IP address when the NAT/IP Masquerade translation function is in use.	0.0.0.0
Port No. offset	Used when the port number translation is enabled with static IP Masquerade.	

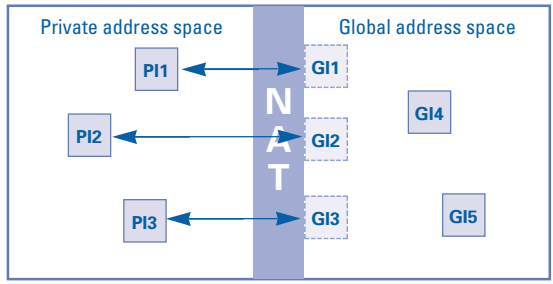
- Please assign an IP address, default gateway, and subnet mask.
- Default values, set at the time of product shipping, are displayed when the *Restore default* button is clicked.

Network Address Translation (NAT)

The VoIP-TA can also be used with networks that have the following three types of NAT (Network Address Translation) functions.

Static NAT

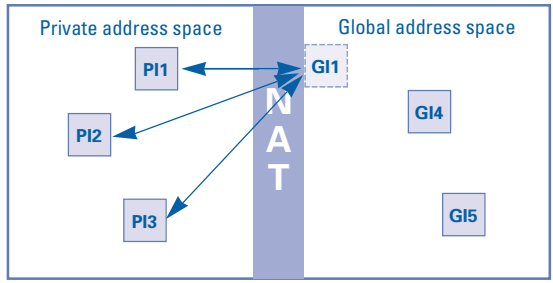
IP addresses are translated one to one, between the global address space and private address space, where the translation table can be set in a static manner.



PI: Private IP address. GI: Global IP address. Solid line squares represent existing terminals, where dotted line squares are virtual terminals visible only through the NAT function.

Static IP Masquerade (no port number translations)

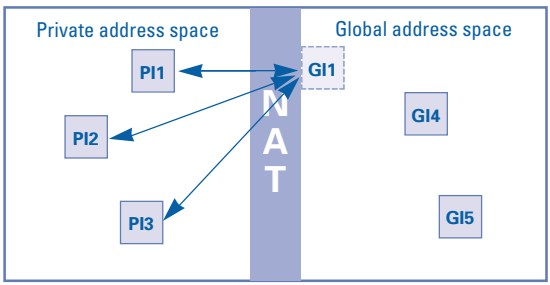
Multiple private IP addresses are assigned to a global IP address and this assignment can be set in a static manner. No port number translation is performed.



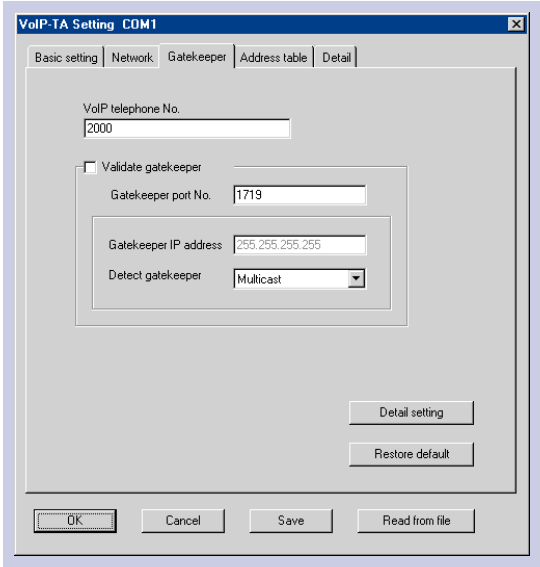
Static IP Masquerade (with port number translations)
Multiple private IP addresses are assigned to a global IP address and this assignment can be set in a static manner.

Port number translations are performed, but the translations are set in a static manner.

The IP address assignment is the same as the *no port number translations* described on the previous page, but port numbers are translated at the time the IP addresses are translated .



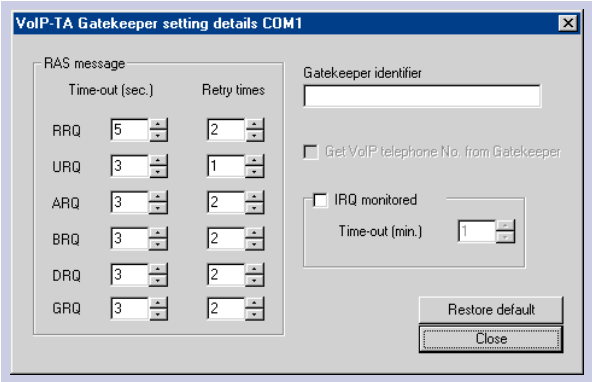
Gatekeeper settings



Item	Description	Default
VoIP telephone No.	Specifies the VoIP telephone number of the VoIP-TA. Use the default number in the gatekeeper when using the gatekeeper.	2000
Validate gatekeeper	Activate to use the gatekeeper.	OFF
Gatekeeper port No.	Specifies the UDT port number, and must be set when using a gatekeeper.	1719
Gatekeeper IP address	Specifies the IP address for the gatekeeper. This address must be entered when using the gatekeeper without using the gatekeeper detection function.	255.255.255.255
Detect gatekeeper	To select *Unicast GRQ* or *Multicast GRQ* when the gatekeeper is detected.	Multicast
Detail setting	To make detailed settings for the gatekeeper. Click on this button to display the setup screen *(see page 35)*.	

Default values, set at the time of product shipping, are displayed when the *Restore default* button is clicked.

Detailed gatekeeper settings



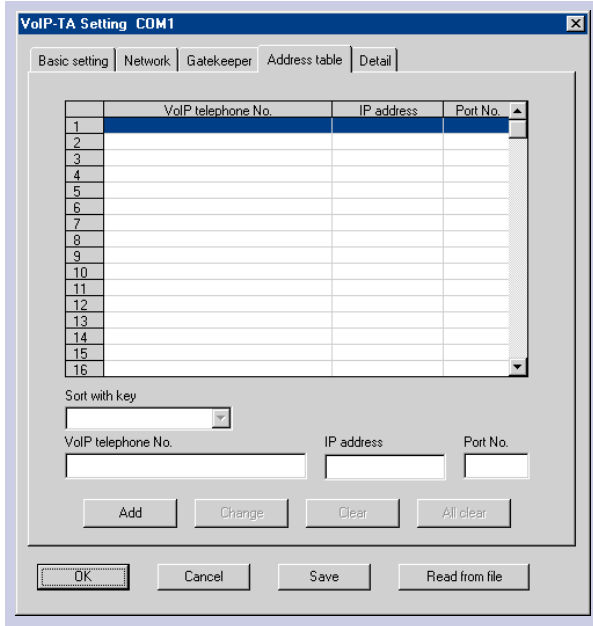
Item	Description	Default
RAS message Time-out	Used to specify the gatekeeper's response time-out value for the messages. This setting does not have to be changed. When the network response is often delayed, select a longer time interval.	RRQ 5 sec. URQ 3 sec. ARQ 3 sec. BRQ 3 sec. DRQ 3 sec. GRQ 3 sec.
RAS message Retry times	Specifies the number of tries the gatekeeper will attempt when the time-out occurs for a message response. This setting does not have to be changed. When the network response is often delayed, select a longer time interval.	RRQ 2 URQ 1 ARQ 2 BRQ 2 DRQ 2 GRQ 2
Gatekeeper identifier	When an identifier is specified, only the gatekeeper with the specified identifier will be used, when detected.	Not specified.
Get VoIP tel. No. from gatekeeper	Activate if the telephone number of VoIP-TA is to be obtained from the gatekeeper. This setting does not need to be changed.	OFF
IRQ monitored	Monitors a gatekeeper by monitoring the IRQ from the gatekeeper. This setting does not need to be changed.	None
Time-out	Used to specify the time-out value for monitoring IRQ.	1 min.

Default values, set at the time of product shipping, are displayed when the *Restore default* button is clicked.

Address table

The address table is available only when the gatekeeper is NOT in use.

Outgoing destinations using the VoIP line are set in this table. The settings in this table is used to originate calls to the outgoing destinations.



Item	Description	Default
Address table	Sets VoIP telephone numbers, IP addresses and up to 100 port numbers*.	None

Sorting the list using each row as a key (Sort with key)

The address table can be sorted by using a VoIP telephone number, IP address or port number as the key for sorting.

Address table display editing

Use the following methods to edit the contents of the address table. The changes are saved in the VoIP-TA by clicking on the *OK* or *Save* button.

Add: Click on this button to add a VoIP telephone number, IP address or port number in the address table.

Change: Click on this button to change the contents of the address table. Click on the line where a change in the VoIP telephone number, IP address, or port number is to be made, then make the changes in the selected line.

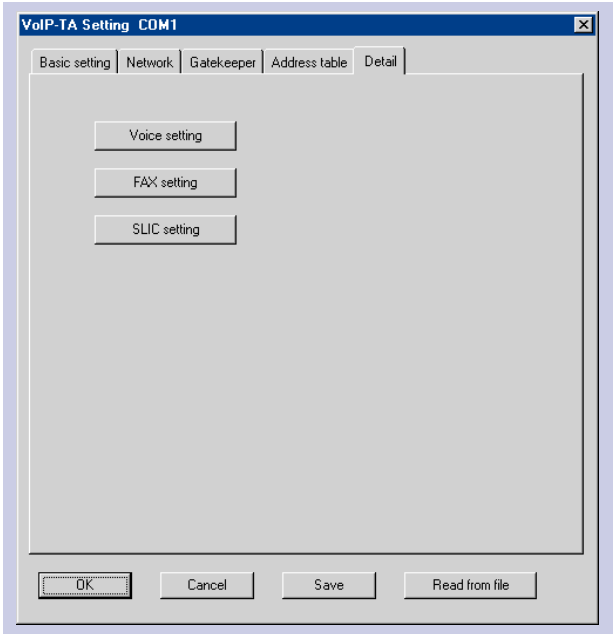
Clear: Select the line to be cleared, and then click on this button to clear the entire selected line.

All Clear: Click on this button to clear all information in the address table.

* The VoIP-TA port number is 1720.

When specifying another gateway, enter a port number specified for the call (usually 1720).

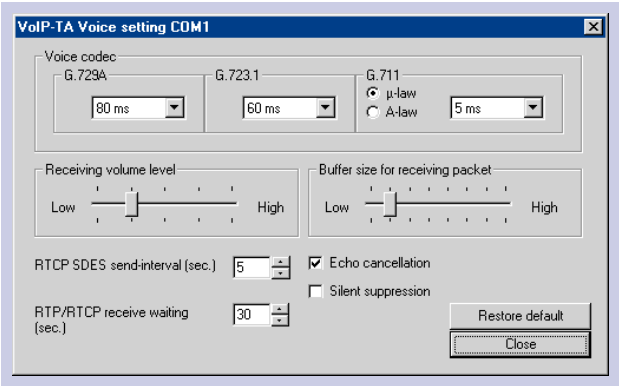
Details



It is usually not necessary to make any changes in the detailed settings (*Detail*). These default settings are changed when the VoIP-TA is not working properly, which may be due to the particular environment wherein the unit is being used.

Item	Description
Voice setting	Used to change the detailed settings related to voice communication. To display the detailed setup window, click on this button *(see example below)*.
FAX setting	Used to change the detailed settings related to facsimile communication. To display the detailed setup window, click on this button *(see pages 41 – 42)*.
SLIC setting	Used to change the detailed settings related to telephone and facsimile units connected to the VoIP-TA. To display the detailed setup window, click on this button *(see pages 42 –43)*.

Voice settings



Item	Description	Default
Voice codec	Used to specify the packet capability of each voice codec. When *Not used* is checked off, the VoIP-TA operates without using that particular voice codec. The priority sequence of the voice codec used for calls is G.729A, G.723.1 and G.711 (μ-law/A-law).	G.729A 80ms G.723.1 60 ms G.711 5 ms
Receiving volume level	Used to specify the receiving volume, selectable in five levels. (–16dB, –12dB, –8dB, –4dB, 0dB)	Second level from the left. (–12 dB)
Buffer size for receiving packet	Specifies the size of the receive-buffer for voice communication (please note that as the receive-buffer size increases, the voice interruption decreases, but at the same time, the voice delay increases. Increase the buffer size if the voice interruption occurs due to network fluctuations).	Second level from the left.
RTCP SDES send-interval	Specifies the send-interval time of RTCP SDES.	5 sec.
RTP/RTCP receive waiting	Specifies the time-out value of receiving RTP/RTCP.	30 sec.
Echo cancellation	Used to turn the echo cancellation ON or OFF, by activating or deactivating a check mark.	ON
Silent suppression	Used to turn the silent suppression ON or OFF, by activating or deactivating a check mark.	OFF

Voice codec setting and bandwidth used

G.729A

Voice codec setting [ms]	Data size [Byte]	Voice packet size including header [Byte]	Usable one-call bandwidth [kbps]
10	10	50	40.00
20	20	60	24.00
30	30	70	18.67
40	40	80	16.00
50	50	90	14.40
60	60	100	13.33
70	70	110	12.57
80	80	120	12.00
90	90	130	11.56
100	100	140	11.20
110	110	150	10.91
120	120	160	10.67

G.723.1

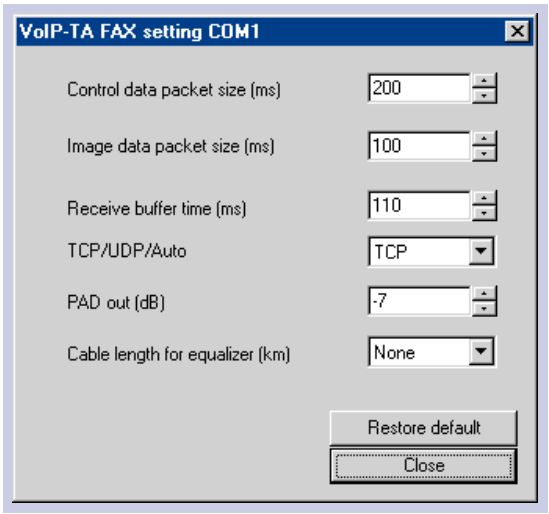
Voice codec setting [ms]	Data size [Byte]	Voice packet size including header [Byte]	Usable one-call bandwidth [kbps]
30	24	64	17.07
60	48	88	11.73
90	72	112	9.96
120	96	136	9.07

G.711

Voice codec setting [ms]	Data size [Byte]	Voice packet size including header [Byte]	Usable one-call bandwidth [kbps]
5	40	80	128.00
10	80	120	96.00
20	160	200	80.00
30	240	280	74.67
40	320	360	72.00
50	400	440	70.40
60	480	520	69.33
70	560	600	68.57
80	640	680	68.00
90	720	760	67.56
100	800	840	67.20
110	880	920	66.91
120	960	1000	66.67

Default values, set at the time of product shipping, are displayed when the *Restore default* button is clicked.

FAX setting

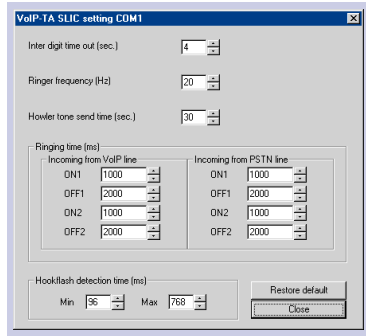


Detailed settings related to facsimile communications via the VoIP line can be made (it is not necessary to change these settings for facsimile communications via the PSTN line).

Item	Description	Default
Control data packet size	Specifies the data packet size of facsimile control data.	200 ms
Image data packet size	To specify the image data packet size (for ECM mode, data are divided into packets for each frame, regardless of this setting).	100 ms
Receive buffer time	Specifies the receive-buffer for facsimile communications (please note that as the receive-buffer size becomes larger the network jitter becomes larger, while the voice delay increases).	110 ms
TCP/UDP/ Auto	To select the protocol used for the facsimile communications through the IP network.	TCP
PAD out	Specifies the level of facsimile signal output.	-7 dB
Cable length for equalizer	To set the send-equalizer suitable for the length of the cable connected to the facsimile.	None

The default values, set at the time of product shipping, are displayed when the *Restore default* button is clicked.

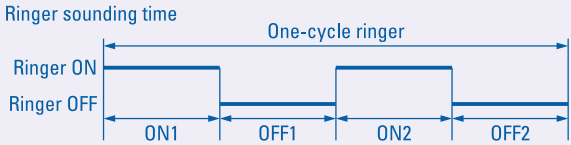
SLIC setting



Detailed settings can be made for telephone and facsimile units connected to the VoIP-TA unit.

Item	Description	Default
Inter digit time-out	To set the time-out value of the telephone number entries. If time-out occurs the system determines that all numbers have been entered and commences to generate the call.	4 sec.
Ringer frequency	Specifies the ringer frequency.	20 Hz
Howler tone send time	Specifies the time for sending the howler tone.	30 sec.
Ringing time	Specifies the ringer sounding time intervals for incoming calls from the VoIP line and PSTN line respectively. See the figure below for a graphic explanation.	ON1=1000 ms OFF1=2000 ms ON2=1000 ms OFF2=2000 ms
Hookflash detection time	To set the minimum and maximum time interval for the Hookflash detection. When an on-hook state exists in the time interval between the specified minimum (*Min.*) and maximum (*Max.*), a hooking condition is determined.	Min.=96 ms Max.=768 ms

The default values, set at the time of product shipping, are displayed when the *Restore default* button is clicked.



V Maintenance

The VoIP-TA is maintained by using the Maintenance Console Software. The Maintenance Console Software is installed in a PC to communicate with the VoIP-TA in remote mode via a LAN interface or in local mode via the RS232C interface. When connecting to the VoIP-TA in remote mode via a LAN, network settings such as the assignment of IP addresses, must be already completed first (*see Chapter IV, pages 17 – 24,* for details on the Maintenance Console Software).

Functions of the Maintenance Console Software

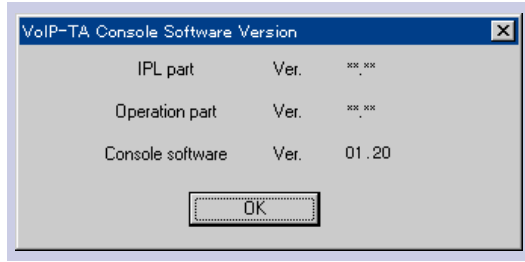
Item	Descriptions	Default
Version	To display the software version.	
Status	To display the VoIP-TA operation status.	
Update	To update unit programs for the VoIP-TA, etc.	Available only in installation mode.
Password change	To change the password for the connection of the VoIP-TA with the Maintenance Console Software on a PC in the remote mode, connected via a LAN.	Available only in the setup mode.

Verifying the Software Version Information

The version of a unit program or the Maintenance Console Software can be verified.

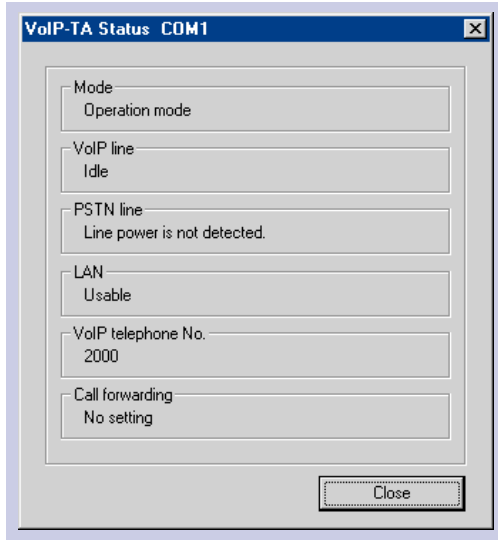
- Start the Maintenance Console Software and connect the software to the VoIP-TA (*see Chapter IV, page 18,* for details on connections).

- Click the *Help (H)* in the menu bar of the main window and select *About VoIP-TA Console Software* from the pull-down menu.
- The version information window will be displayed (when the VoIP-TA is not connected to the Maintenance Console Software, only the Maintenance Console Software Version is displayed).
- Click the *OK* button.



Checking the Operation Status of the VoIP-TA

- Start the Maintenance Console Software and establish connection to the VoIP-TA via the software (*see Chapter IV, page 18,* for details on connections).
- Click on the *Status display* button in the *Main* window.
- The status of the VoIP-TA will be displayed.



Explanation of the displayed information

Display item	Displayed contents	Description
Mode	Operation mode	Operation mode
	Setup mode	Setup mode
	Installation mode	Installation mode
VoIP line	Line locked	The VoIP line is unusable.
	Idle	The VoIP line is ready. No communication.
	Outgoing	Originating via the VoIP line.
	Incoming	Terminating from the VoIP line.
	Telephone call in progress.	A call via the VoIP line in progress.
PSTN line	Line power is not detected.	The PSTN line cannot be detected.
	Idle	The PSTN line is ready. No communication.
	Outgoing	Originating via the PSTN line.
	Incoming	Terminating from the PSTN line.
	Telephone call in progress.	A call via the PSTN line in progress.
	Holding	A call via the PSTN line is currently on hold.
LAN	Usable	The LAN is available.
	Unusable	The LAN is not available.
VoIP telephone number	VoIP telephone number	Current telephone number of the VoIP-TA. When a VoIP telephone number is obtained from a gatekeeper, the number is displayed on the screen. *See gatekeeper settings page 34.*
Call forwarding	VoIP telephone number	VoIP telephone number of the transfer destination specified by *absent service*.
	No setting	No transfer destination for *absent service* is set.

Click the *Close* button.

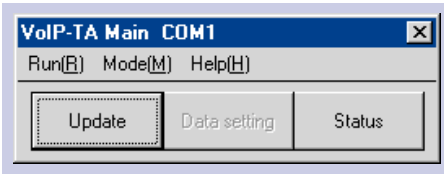
Updating Unit Programs

The following unit programs can be updated.

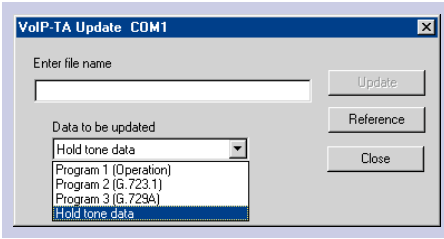
Item	Notes
Program 1 (Operation)	
Program 2 (G.723.1)	DSP program
Program 3 (G.729A)	DSP program
Hold tone data	μ-law, 8k, 8bit, mono wav file only.

- Start the Maintenance Console Software and connect the VoIP-TA via the software (*see Chapter IV, page 18,* for details on the connection).
- Switch to the software to the *installation mode* (*see Chapter IV, page 21,* for details on the mode change).

- When the VoIP-TA is switched to the *installation mode*, the *Update* button on the *Main* window becomes active. Click on the *Update* button.

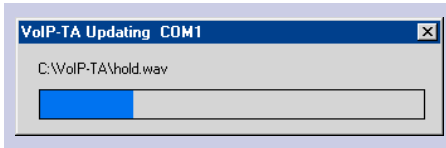


- The *Update* window is displayed. Select the program or data type that needs to be updated.



* If the updated file name and data type are incorrect, the system cannot perform normal operations.

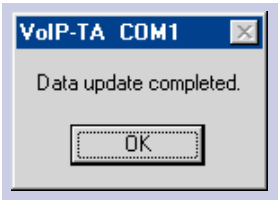
- Enter the file name of the data to be updated or click on the *Reference* button to select a file to be installed. Click on the *Update* button. The installation process will begin.



* Do not turn off the power of the VoIP-TA during an update process, as it will result in a fault.

* If an error occurs in the PC or the power of the VoIP-TA is turned off during an update process, the VoIP-TA cannot perform normal operations. When such interruptions occur, be sure to update the file again.

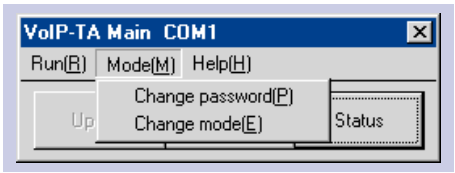
- When the update has been completed, click the *OK* button.
- Switch the VoIP-TA to the *Operation mode* (*see Chapter IV, page 21,* for details on mode changes).



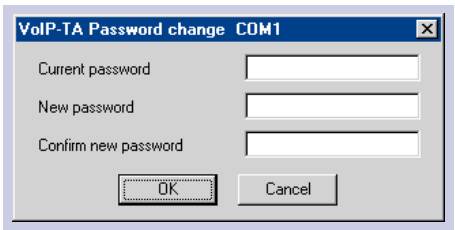
Changing the password

The password, used to connect the VoIP-TA to the Maintenance Console Software, can be changed (be sure to record the new password for later reference).

Switch the VoIP-TA to the *Setup mode* (*see Chapter IV, page 21,* for details on mode changes).



- Click on *Mode (M)* in the menu bar of the *Main* window and select *Password change.*



- The *Password change* window is displayed. Enter the current password, then the new password and again the new password for confirmation. Click the *OK* button.
- Switch the VoIP-TA to the *Operation mode*.

The new password will become valid after the VoIP-TA mode change. *See Chapter IV, page 21*, for details on mode changes.

VI Troubleshooting

If you encounter irregularities with the VoIP-TA, please check the following list before contacting authorized sales agents or service offices.

Symptom	Items to check
Unit does not operate.	• Is the power turned on? Check to see if the *POWER* lamp is lit. • Is the power plug inserted into the port correctly? • Is the AC power adapter connected to the power outlet correctly?
The *ALARM* lamp continues to blink. Not operating.	• Is the *LAN* port link established? • Has gatekeeper started up normally (when in use). • Is the VoIP-TA in *Operation mode?*
No calls can be made.	• Is the *POWER* lamp ON and the *ALARM* lamp OFF? • Is the software set up correctly? • Is the unit properly connected to the corresponding port? • Is the *LAN* port link established? Check to see if the *LAN* lamp is lit. • Is the destination telephone number registered correctly? • Has gatekeeper started up (when in use)? • Is the information registered in gatekeeper (when in use)? • Is the setting of the address table correct if gatekeeper is not in use? • Is the dial signal of the telephone set correctly? (TEL port: DTMF signal. Telephone lines vary depending upon the contract with the regional telephone company.)
No calls are received.	• Is the *POWER* lamp ON and the *ALARM* lamp OFF? • Is the software set up correctly? • Is the unit properly connected to the corresponding port? • Is the *LAN* port link established? Check to see if the *LAN* lamp is lit. • Is the ringer of the telephone in the ON position? • Has gatekeeper started up (when in use)? • Is the information registered in gatekeeper (when in use)?
FAX communication is not available.	• Is the *POWER* lamp ON and the *ALARM* lamp OFF? • Is the facsimile mode a G3?
The unit cannot be connected to a PC for maintenance console.	• Is the setting (remote or local) correct? *In remote mode* • Is the VoIP-TA connected to the LAN network? • Is the IP address of the VoIP-TA to be connected correct? • Is the setting of the PC (e.g. network setting) correct? • Is the PC for the Maintenance Console Software connected to the PC port of the VoIP-TA? *In local mode* • Is the RS232C cable straight? • Is the COM port setting of the Maintenance Console Software correct?

VII Specifications

Dimensions	Approx. 47 (W) x 185 (D) x 155 (H) [mm]
Weight	Approx. 0.42 [kg]
Power dissipation	9 [W] or less
Temperature range	0° C to 40° C

TEL port	Interface	Conventional analogue telephone line
	Selection signal	DTMF signal
	FAX transmission speed	14,400 bps 12,000 bps 9,600 bps 7,200 bps 4,800 bps 2,400 bps
	Number of connectable ports	One only
LAN port	Interface	10BASE-T/100BASE-TX
PC port	Interface	10BASE-T/100BASE-TX
LINE port	Interface	Conventional analogue PSTN
	Selection signal	DTMF signal
CONSOLE port	Interface	RS232C (19,200 bps)
Call control	Protocol	TCP/IP
system	Procedure	ITU-T recommended H.323 Version 2
Voice real-time	Protocol	UDP/IP
transfer system	Real-time procedure	RTP/RTCP
Voice control	Voice codec protocol	G.711 (μ-law, A-law), G.729A and G.723.1
FAX	Protocol	TCP/IP, UDP/IP
	Real-time procedure	T.38
Data setting	Interface	Local: RS232C Remote: LAN
Number of Tel. No. digits	Max. 32	

Note Protocol and service port number used with the VoIP-TA.

Usage	Protocol	TCP/UDP	Port number
Voice packet (H.225.0)	RTP	UDP	UDT port No. +6 or +8
Voice packet (H.225.0)	RTCP	UDP	UDT port No. +7 or +9
FAX communication	T.38 UDP	UDP	UDT port No. +31 or +32
Gatekeeper communication (H.225.0)	RAS	UDP	UDP port No. +1
Gatekeeper detect	RAS	UDP	UDP port No.
Call control (receiving)	Q.931	TCP	TCP port No. for receiving
Call control (sending) FAX communication	Q.931/H.245/T.38 TCP	TCP	TCP port No. –TCP port No. +24
Maintenance	Oki proprietary	TCP	20300

Important Equipment Information

The following information relates to the VoIP-TA compliance with radio interference requirements of various countries in which this equipment is sold.

EU Model

VoIP-TA conforms to the following directives:

- Low Voltage Directive: 73/23/EEC
- EMC Directive: 89/336/EEC
- R&TTE Directive: 1999/5/EC (Annex II)

Compliance with these directives implies conformity to the following European norms:

Safety: EN60950: 1992+A1+A2+A3+A4+A11

EMC: EN55024: 1998
EN55022: 1998
EN 61000-3-2: 1995+A1+A2
EN 61000-3-3: 1995

R&TTE: TBR21: 1998
ETSI EG 201 121: v1.1.2

Warranty and Service

Our authorized sales agents or service office will respond to your inquiries and services in a prompt and courteous manner.

Warranty Period

In the event of a problem occurring during the warranty period, all necessary repairs and replacements will be done free of charge except in the following circumstances:

- Failure or damage that occurred because the equipment was dropped or handled roughly.
- Failure or damage due to fire, earthquake, storm or flood, lightning or other extraordinary natural event.
- Damage due to moisture or salt intrusion, environmental pollution, or the application of abnormal voltage.
- Failure or damage due to improper operation of the equipment, maintenance, repair, or modification by unauthorized service staff or agents.

Following the warranty period

The cost of replacement parts will be charged after expiry of the warranty period.

Please contact the authorized sales agents or service office for inquiries regarding service.

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