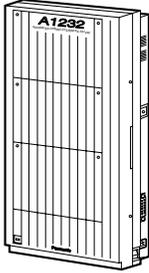# Panasonic

Advanced Hybrid System

Installation Manual

Model No. KX-TA1232

Please read this manual before connecting the Advanced Hybrid System.

Thank you for purchasing this Panasonic Model KX-TA1232, Advanced Hybrid System.

System Components

System Components Table

	Model	Description
Service Unit	KX-TA1232	Advanced Hybrid System (Main Unit)
Telephone	KX-T7135	Proprietary telephone with backlit display
	KX-T7130	Proprietary telephone with display
	KX-T7020	Proprietary telephone
	KX-T7030	Proprietary telephone with display
	KX-T7050	Proprietary telephone
	KX-T7055	Proprietary telephone
Optional Equipment	KX-T7040	DSS Console
	KX-TA123260	Doorphone / Door Opener Interface Card
	KX-TA123270	8 Extension Expansion Unit
	KX-TA123280	4 CO Line Expansion Unit
	KX-TA123291	DISA Card
	KX-TA123293	Caller ID Card
	KX-T30865	Doorphone

Important Safety Instructions

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

a) Read and understand all instructions.

b) Follow all warnings and instructions marked on the product.

c) Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

d) Do not use this product near water, for example, near a bathtub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.

e) Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.

f) Slots and openings in the cabinet and the back or bottom are provided for ventilation, to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on the bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.

g) This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your dealer or local power company.

h) This product is equipped with a three wire grounding type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug.

i) Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by people walking on it.

j) Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.

k) Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.

l) To reduce the risk of electric shock, do not disassemble this product, but take it to a qualified serviceman when some service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the appliance is subsequently used.

m) Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

1) When the power supply cord or plug is damaged or frayed.

2) If liquid has been spilled into the product.

3) If the product has been exposed to rain or water.

4) If the product does not operate normally by following the operating instructions. Adjust only those controls, that are covered by the operating instructions because improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

5) If the product has been dropped or the cabinet has been damaged.

6) If the product exhibits a distinct change in performance.

n) Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

o) Do not use the telephone to report a gas leak in the vicinity of the leak.

<u>SAVE THESE INSTRUCTIONS</u>

Attention

- Keep the unit away from heating appliances and electrical noise generating devices such as fluorescent lamps, motors and televisions. These noise sources can interfere with the performance of the Advanced Hybrid System.
- This unit should be kept free of dust, moisture, high temperature (more than 40 °C / 104 °F) and vibration, and should not be exposed to direct sunlight.
- Never attempt to insert wires, pins, etc. into the vents or other holes of this unit.
- If there is any trouble, disconnect the unit from the telephone line. Plug the telephone directly into the telephone line. If the telephone operates properly, do not reconnect the unit to the line until the trouble has been repaired by an authorized Panasonic Factory Service Center. If the telephone does not operate properly, chances are that the trouble is in the telephone system, and not in the unit.
- Do not use benzine, thinner, or the like, or any abrasive powder to clean the cabinet. Wipe it with a soft cloth.

<u>WARNING</u>

THIS UNIT MAY ONLY BE INSTALLED AND SERVICED BY QUALIFIED SERVICE PERSONNEL.

WHEN A FAILURE OCCURS WHICH RESULTS IN THE INTERNAL PARTS BECOMING ACCESSIBLE, DISCONNECT THE POWER SUPPLY CORD IMMEDIATELY AND RETURN THIS UNIT TO YOUR DEALER.

DISCONNECT THE TELECOM CONNECTION BEFORE DISCONNECTING THE POWER CONNECTION PRIOR TO RELOCATING THE EQUIPMENT, AND RECONNECT THE POWER FIRST.

THIS UNIT IS EQUIPPED WITH AN EARTHING CONTACT PLUG. FOR SAFETY REASONS THIS PLUG MUST ONLY BE CONNECTED TO AN EARTHING CONTACT SOCKET WHICH HAS BEEN INSTALLED ACCORDING TO REGULATIONS.

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

Accessory Order Information

- Replacement parts and accessories are available through your local authorized parts distributor.
- For ordering accessories, call toll free: 1-800-332-5368.

Part No.	Picture	Description	Comment
KX-J07W/B KX-J15W/B KX-J25W/B		Handset cord	213.36 cm (7 feet) 457.2 cm (15 feet) 762 cm (25 feet)

W:White   B:Black

When you ship the product
Carefully pack and send it prepaid, adequately insured and preferably in the original carton. Attach a postage-paid letter, detailing the symptom, to the outside of the carton. DO NOT send the product to the Executive or Regional Sales offices. They are NOT equipped to make repairs.

Product service
Panasonic Factory Servicenters for this product are listed in the servicenter directory. Consult your authorized Panasonic dealer for detailed instructions.

The serial number of this product may be found on the label affixed to the bottom of the unit. You should note the model number and the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid in identification in the event of theft.

MODEL NO.: _____

SERIAL NO.: _____

For your future reference

DATE OF PURCHASE   _____

NAME OF DEALER   _____

DEALER'S ADDRESS   _____

_____

_____

_____

DEALER'S TEL NO.   _____

Telephone Company and F.C.C. Requirements and Responsibilities

1. **Notification to the Telephone Company**

   Customers, before connecting terminal equipment to the telephone network, shall upon request of the Telephone Company, inform the Telephone Company of the particular line(s) to which such connection is made, the F.C.C. registration number (see the label on the bottom of the unit) and ringer equivalence number (REN) of the registered terminal equipment.
   The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your telephone number is called. In most, but not all areas, the sum of the REN's of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

2. **Connection to Telephone Line**

   This unit must not be connected to a coin operated line. If you are on a party line, check with your local telephone company.

3. **Incidence of Harm to the Telephone Lines**

   Should terminal equipment cause harm to the telephone network, the telephone company shall, where practical, notify the customer that temporary discontinuance of service may be required.
   However, where prior notice is not practical, the telephone company may temporarily discontinue service forthwith, if such action is reasonable in the circumstances. In case of such unnotified temporary discontinuance of service, the telephone company shall:

   1) Promptly notify the customer of such temporary discontinuance of service.

   2) Afford the customer the opportunity to correct the situation which gave rise to the temporary discontinuance.

   3) Inform the customer of the right to bring a complaint to the Federal Communication Commission pursuant to the procedures set out in Subpart E of Part 68 of FCC Telephone Equipment Rules.

4. **Compatibility of the Telephone Network and Terminal Equipment**

   a) **Availability of telephone interface information.**

   Technical information concerning interface parameters and specifications not specified in FCC Rules, including the number of Ringers which may be connected to a particular telephone line, which is needed to permit Terminal Equipment to operate in a manner compatible with Telephone Company communications facilities, shall be provided by the Telephone Company upon customer's request.

   b) **Changes in Telephone Company Communications Facilities, Equipment, Operations and Procedures.**

   The Telephone Company may make changes in its communications facilities, equipment, operations or procedures, where such action is reasonably required in the operation of its business and is not inconsistent with the rules and regulations in FCC Part 68.

If such changes can be reasonably expected to render any customer Terminal Equipment incompatible with Telephone Company Communications Facilities, or require modification or alteration of such Terminal Equipment, or otherwise materially affect its use or performance, the customer shall be given adequate notice in writing, to allow the customer an opportunity to maintain uninterrupted service.

Notify the Telephone Company

Installation must be performed by a qualified professional installer. If required, provide the telephone company with the following technical information:

- Telephone numbers to which the system will be connected
- Make: Panasonic
- Model: KX-TA1232
- FCC Registration No.: found on the bottom of the unit
- Ringer Equivalence No.: 0.4B
- Facility Interface Code: 02LS2
- Service Order Code: 9.0F, AS.2
- Required Network Interface Jack: RJ11 / 14C

Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this device.

When programming emergency numbers and / or making test calls to emergency numbers:
1. Remain on the line and briefly explain to the dispatcher the reason for the call before hanging up.
2. Perform such activities in the off-peak hours, such as early morning hours or late evenings.

Introduction

This Installation Manual provides technical information for the Panasonic Advanced Hybrid System, KX-TA1232. It is designed to serve as an overall technical reference for the system and includes a description of the system, its hardware and software, features and services and environmental requirements.

This manual contains the following sections:

Section 1, System Outline
Provides general information on the system including system capacity and specifications.

Section 2, General Installation
Contains the basic system installation and wiring instructions, as well as how to install the optional cards and units.

Section 3, Troubleshooting
Provides information for system and telephone troubleshooting.

Section 4, Index
Provides the important words and phrases to help you access the required information easily.

Terms used in this Installation Manual

Programming Guide References
The related and required programming titles described in the *Programming Guide* are noted for your reference.
Programming Guide reference is also shown in the sentences as follows.
Example: *<SYS PRG [109]>*
Explanation: Refer to system program [109] in the Programming Guide.
This helps you know the related and required programming easily for the contents of the sentences.

Features Guide References
The related feature titles described in the *Features Guide* are noted for your reference.

About the other manuals

Along with this Installation Manual, the following manuals are available to help you know the available features, program and use the KX-TA1232 system.

Features Guide
Provides information about the system features.

Programming Guide
Provides system programming instructions.

User Manual
Provides operating instructions for the end users using proprietary telephones, single line telephones, consoles.

Table of Contents

Section   1

System Outline

This section provides general information on the system, including system capacity and specifications.

1.1 System Highlights

1.1.1 System Highlights

System Maximum Capacity

		KX-TA1232
Extension	PT&SLT	32
Outside Line	Analog	12

Module Expansion

Expansion modules are used to increase the system capacity.

Paralleled Telephone Connection

Every jack in the system also supports the parallel connection of a proprietary telephone and a single line device. They share the same extension number and are considered by the system to be one extension.

Advanced Hybrid System

This system supports the connection of analog proprietary telephones, a DSS Console and single line devices such as single line telephones, fax machines, and data terminals.

Analog Proprietary Telephones (APT)

The system supports six different models of analog proprietary telephones.

Programming System

The system can be programmed from a proprietary telephone.

Voice Mail Integration

The system supports Voice Processing Systems with in-band DTMF signaling as well as DPT integration. The Panasonic Voice Processing System provides automated attendant, voice mail, interview and custom services.

Caller ID

Allows the user to see the name or telephone number of a caller on the telephone display before answering a call.

Trunk (Outside Line) Answer From Any Station (TAFAS)

Ringing occurs over the external paging system; the call can be answered from any station.
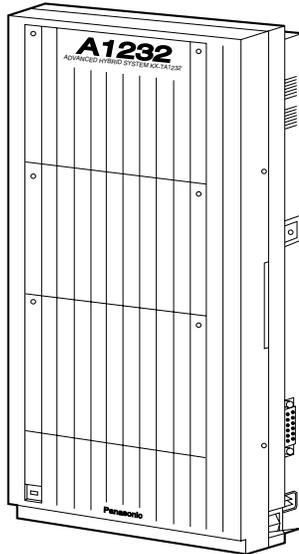
Remote Station Lock Control

Allows an operator to lock an extension so that outgoing calls cannot be made.
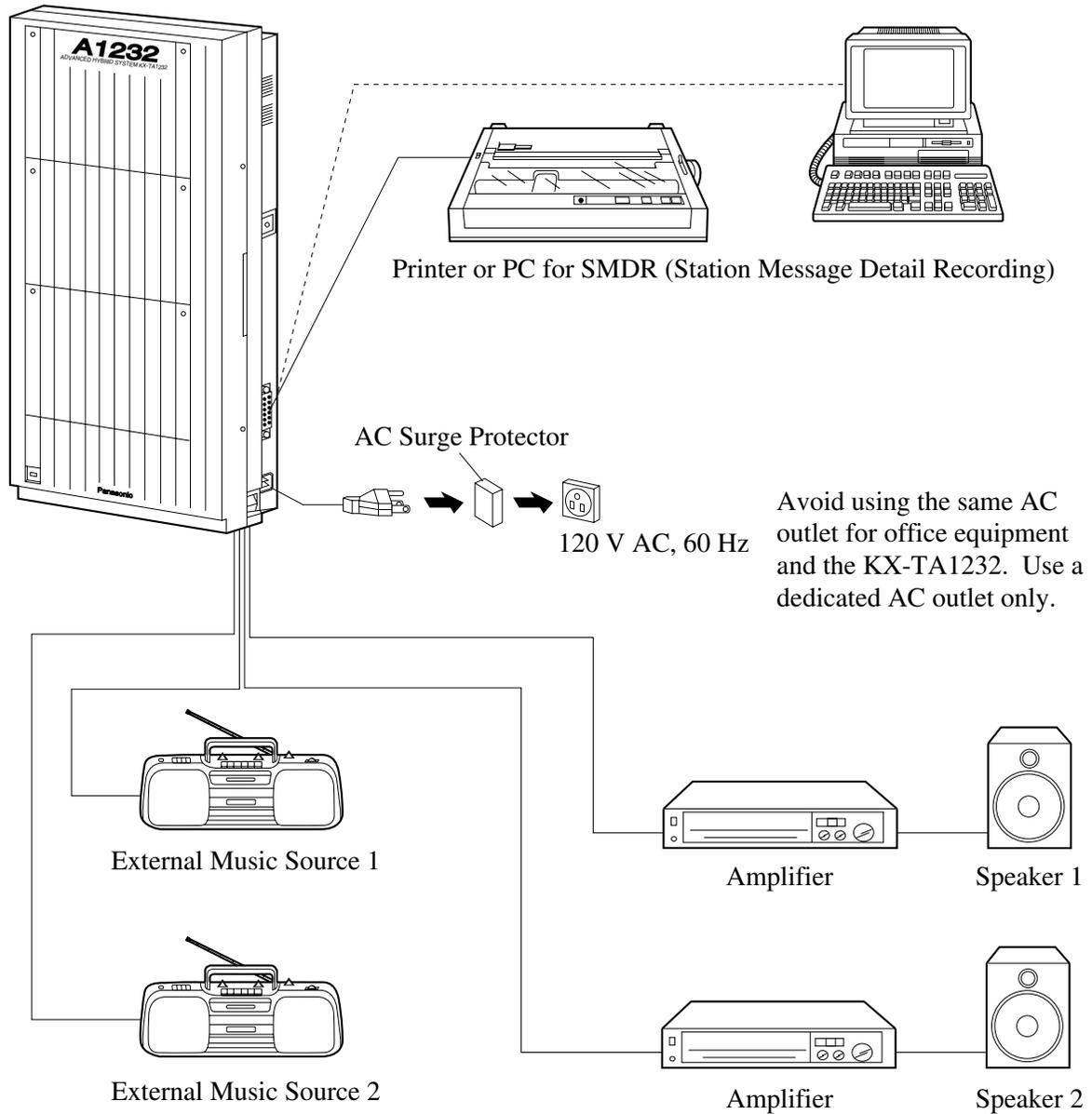
1.2　Basic System Construction
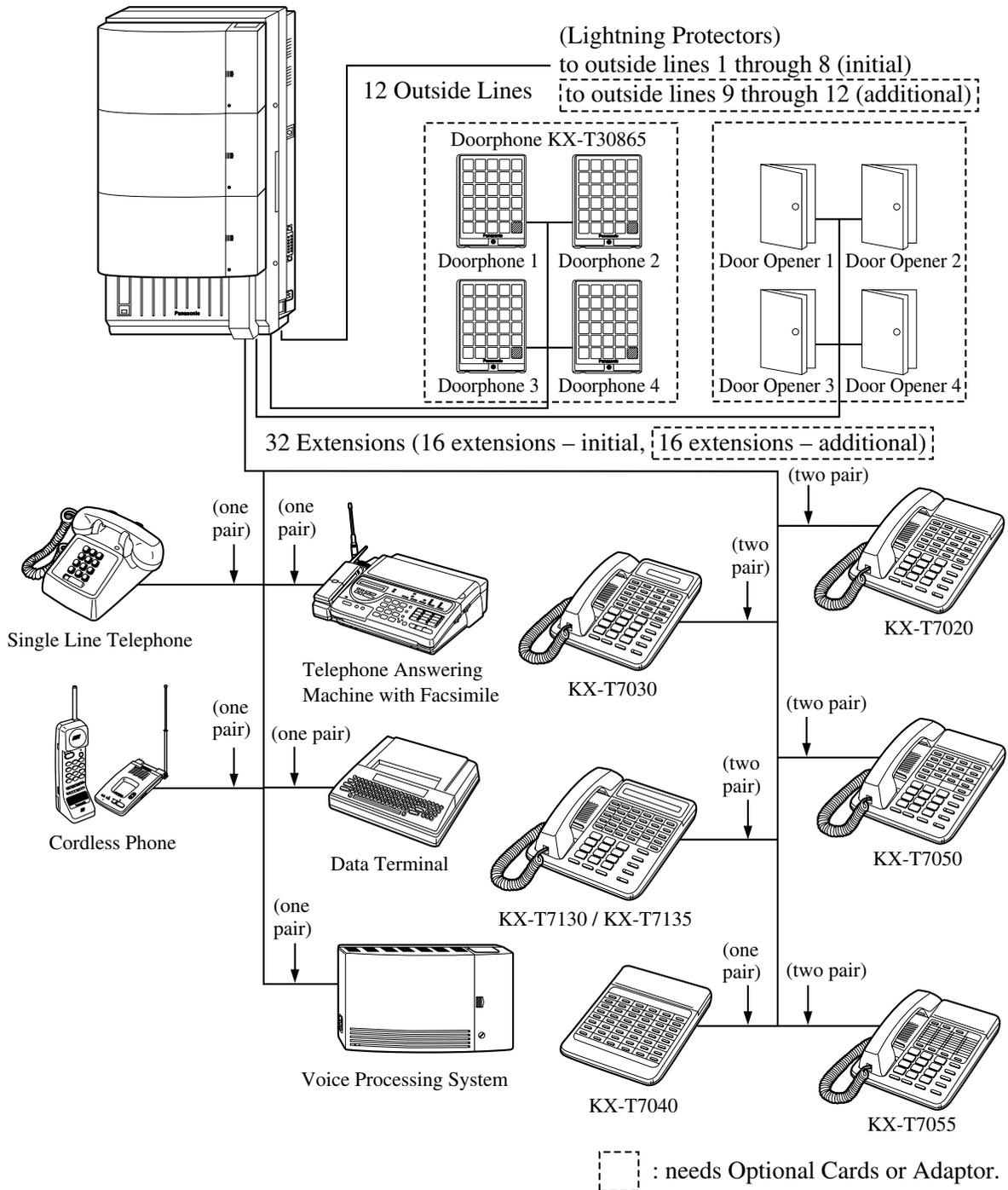
1.2.1　Basic System Construction

The KX-TA1232 Advanced Hybrid System has a basic capacity of eight outside lines and 16 extensions. It is capable of supporting Panasonic analog proprietary telephones, a DSS Console and single line devices such as single line telephones and fax machines.

To expand its capabilities, the system can be equipped with optional components or customer-supplied peripherals such as external speakers and external music sources (e.g., radios).

1.2.2   System Connection Diagram

Printer or PC for SMDR (Station Message Detail Recording)

AC Surge Protector

120 V AC, 60 Hz

Avoid using the same AC outlet for office equipment and the KX-TA1232. Use a dedicated AC outlet only.

External Music Source 1

Amplifier

Speaker 1

External Music Source 2

Amplifier

Speaker 2

(Lightning Protectors)
to outside lines 1 through 8 (initial)
to outside lines 9 through 12 (additional)

12 Outside Lines

Doorphone KX-T30865

Doorphone 1   Doorphone 2

Doorphone 3   Doorphone 4

Door Opener 1   Door Opener 2

Door Opener 3   Door Opener 4

32 Extensions (16 extensions – initial, 16 extensions – additional)

(one pair)   (one pair)   (two pair)

Single Line Telephone

Telephone Answering Machine with Facsimile

KX-T7030

(two pair)

KX-T7020

Cordless Phone

(one pair)   (one pair)

Data Terminal

KX-T7130 / KX-T7135

(two pair)

(two pair)

KX-T7050

(one pair)

Voice Processing System

KX-T7040

(one pair)   (two pair)

KX-T7055

: needs Optional Cards or Adaptor.

Note

- It is recommended that extension of jack 1 is a display proprietary telephone.
- Parallel connection of telephones is possible. Refer to the Paralleled Telephone Connection in 2.3.3   Telephone Connection.

1.3   Proprietary Telephones

1.3.1   Proprietary Telephones

The following Panasonic proprietary telephones are available with this system.

Proprietary Telephone	Description
KX-T7135	1-line backlit display, speakerphone, 12 Flexible CO, 12 PF
KX-T7130	1-line display, speakerphone, 12 Flexible CO, 12 PF
KX-T7020	Speakerphone, 12 Flexible CO, 4 PF
KX-T7030	1-line display, speakerphone, 12 Flexible CO, 4 PF
KX-T7050	Monitor, 12 Flexible CO, 4 PF
KX-T7055	Monitor, 3 Flexible CO, 3 PF

<u>Note</u>

Flexible CO : Flexible CO button (programmable)

PF : Programmable Feature button

1.4 Options

1.4.1 Options

Model No.	Model Name	Description	Max. Quantity on KX-TA1232
KX-TA123270	8 Extension Expansion Unit	Adds 8 extension lines.	2
KX-TA123280	4 CO Line Expansion Unit	Adds 4 outside lines.	1
KX-TA123291	DISA Card	Supports the Direct Inward System Access (DISA) feature and records outgoing messages.	1
KX-TA123293	Caller ID Card	Supports the Caller ID Service of the central office.	3
KX-TA123260	Doorphone / Door Opener Interface Card	Supports 4 doorphones and 4 door openers.	1
KX-T7040	DSS Console	Provides easy and quick access to extensions and features. This must be used with a proprietary telephone.	4
KX-T30865	Doorphone	Used for a doorphone call.	4

1.5 Specifications

1.5.1 General Description

Control Method		CPU: 16-bit CPU	
Switching		Non Blocking PCM Time Switch	
Power Supplies	Primary	120 V AC, 60 Hz	
	Secondary	Station Supply Volt: 30 V Circuit Volt: ± 5 V, ± 15 V	
	Power Failure	• Memory backup duration: seven years with the factory-provided lithium battery • 3 outside lines max. for KX-TA1232 automatic transfer to extensions (Power Failure Transfer)	
	Power Consumption	87 W (under maximum load conditions) 0 W (when power switch is off)	
Dialing	Outward	Dial Pulse (DP) 10 pps, 20 pps Tone (DTMF) Dialing	
	Internal	Dial Pulse (DP) 10 pps, 20 pps Tone (DTMF) Dialing	
Connectors	Outside lines	Modular Jack (RJ14C)	
	Extensions	Amphenol Connector	
	Paging Output	Pin Jack (RCA JACK)	
	External Music Input	Two-conductor Jack (MINIJACK 3.5 mm diameter)	
Extension Connection Cable		Single line telephones	1 pair wire (T, R)
		KX-T7135, KX-T7130, KX-T7020, KX-T7030, KX-T7050, KX-T7055	2 pair wire (T, R, L, H)
		KX-T7040	1 pair wire (L, H)
Station Message Detail Recording (SMDR)	Interface	Serial Interface (RS-232C) (D-SUB, 25-pin)	
	Output Equipment	Printer	
	Detail Recording	Date, Time, Extension Number, Outside Line Number, Dialed Number, Ring Duration, Call Duration, Account Code, Caller ID, Timed Reminder	

1.5.2   Characteristics

Station Loop Limit	Proprietary Telephone: 40 Ω Single Line Telephone: 600 Ω including set Doorphone: 20 Ω
Minimum Leakage Resistance	15 000 Ω
Maximum Number of Station Instruments per Line	**1** for proprietary telephone or single line telephone **2** by Parallel Connection of a proprietary telephone and a single line telephone
Ring Voltage	70 Vrms at 20 Hz depending on the Ringing Load
Central Office Loop Limit	1 600 Ω max.
Environmental Requirements	0 °C – 40 °C (32 °F – 104 °F), 10 % – 90 % relative humidity
Hookswitch Flash Timing Range	200 ms – 1000 ms
Door Opener / Doorbell/Door Chime	30 V DC, 5 A (Max.)/250 V AC, 5 A (Max.)
Dimensions (W x H x D)	325 mm x 640 mm x 115 mm (12-13/16 x 25-3/16 x 4-1/2 inches)
Mass (Weight)	7.8 kg (17.2 lb)

1.5.3 System Capacity

Lines, Station Equipment

Actual capacity will depend on the number or / and type of units connected to the system.

Item	Max. Quantity on KX-TA1232
Doorphones	4
Door Openers	4
Doorbell/Door Chime	4
External Pagers	2
External Music Sources	2

System Data

Item	Max. Quantity
Operators	2
System Speed Dialing	500
One-Touch Dialing	24 per extension (proprietary telephone)
Personal Speed Dialing	10 per extension
Call Park areas	10
Absent Messages	9
Outside Line Groups	8
Toll Restriction Levels	8
Extension Groups	8
Class of Service levels	8
Message Waitings	128

Section 2

General Installation

2.1 Before Installation

2.1.1 Before Installation

Please read the following notes concerning installation and connection before installing the system and terminal equipment.

Safety Installation Instructions

When installing telephone wiring, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

a) Never install telephone wiring during a lightning storm.

b) Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

c) Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

d) Use caution when installing or modifying telephone lines.

Installation Precautions

This system is designed for wall mounting only. Avoid installing in the following places. (Doing so may result in malfunction, noise, or discoloration.)

a) In direct sunlight and hot, cold, or humid places. (Temperature range: 0 °C – 40 °C / 32 °F – 104 °F)

b) Sulfuric gases produced in areas where there are thermal springs, etc. may damage the equipment or contacts.

c) Places in which shocks or vibrations are frequent or strong.

d) Dusty places, or places where water or oil may come into contact with the system.

e) Near high-frequency generating devices such as sewing machines or electric welders.

f) On or near computers, telexes, or other office equipment, as well as microwave ovens or air conditioners. (It is preferable not to install the system in the same room with the above equipment.)

g) Install at least 1.8 m (6 feet) away from radios and televisions. (Both the system and Panasonic proprietary telephones)

h) Do not obstruct area around the system (for reasons of maintenance and inspection — be especially careful to allow space for cooling above and at the sides of the system).

Wiring Precautions

Be sure to follow these instructions when wiring the unit:

a) To assure good quality telephone connection, it is recommended new and modifications to existing installation of customer premise wiring shall use solid twisted pair copper

conductors with minimum 24 gauge that comply with the electrical specifications for Category 3 wiring as detailed in ANSI/EIA/TIA-570A Building Wiring Standards.

b) Do not wire the telephone cable in parallel with an AC power source, computer, telex, etc. If the cables are run near those wires, shield the cables with metal tubing or use shielded cables and ground the shields.

c) If cables are run on the floor, use protectors to prevent the wires from being stepped on. Avoid wiring under carpets.

d) Avoid using the same power supply outlet for computers, telexes, and other office equipment. Otherwise, the system operation may be interrupted by the induction noise from such equipment.

e) Please use one pair telephone wire for extension connection of (telephone) equipment such as single line telephones, data terminals, answering machines, computers, voice processing systems, etc., except Panasonic proprietary telephones (e.g., KX-T7135, KX-T7130).

f) The Power Switch of the system must be off during wiring. After all of the wiring is completed, turn the Power Switch on.

g) Mis-wiring may cause the system to operate improperly. Refer to 3.1.1   Installation and 3.1.2   Connection.

h) If an extension does not operate properly, disconnect the telephone from the extension line and then connect again, or turn off the Power Switch of the system and then on again.

i) The system is equipped with a 3-wire grounding type plug. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.

j) Use twisted pair cable for outside line connection.

k) Outside lines should be installed with lightning protectors. For details, refer to 2.3.8   Installation of Lightning Protectors.

WARNING

Static sensitive devices are used. To protect printed circuit boards from static electricity, do not touch connectors indicated to the right. To discharge body static, touch ground or wear a grounding strap.

Warning: Static sensitive connectors
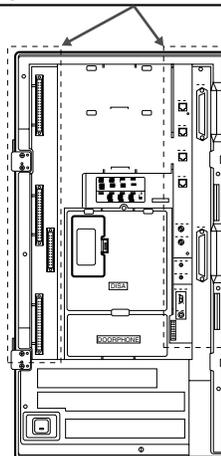
2.2   Installation of the Main Unit

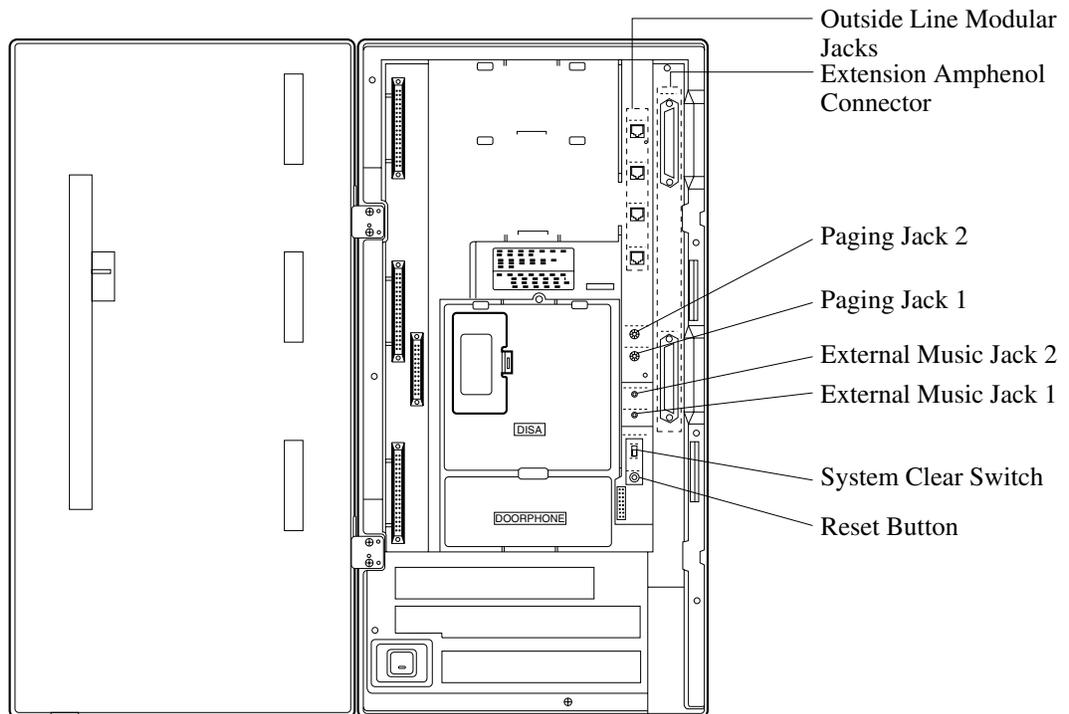## 2.2.1   Unpacking

Unpack the box and check the items below:

|	KX-TA1232
Main Unit	one
AC Cord	one
Template	one
Screws (Wall Mounting)	four
Pager Connectors	two
Music Source Connectors	two
Expansion Line Cord Holder	one

2.2.2   Location of Interfaces

Overview

- Ground Terminal
- Serial Interface (RS-232C) Connector
- AC Inlet
- Power Switch
- Power Indicator

Inside View

- Outside Line Modular Jacks
- Extension Amphenol Connector
- Paging Jack 2
- Paging Jack 1
- External Music Jack 2
- External Music Jack 1
- System Clear Switch
- Reset Button

DISA

DOORPHONE
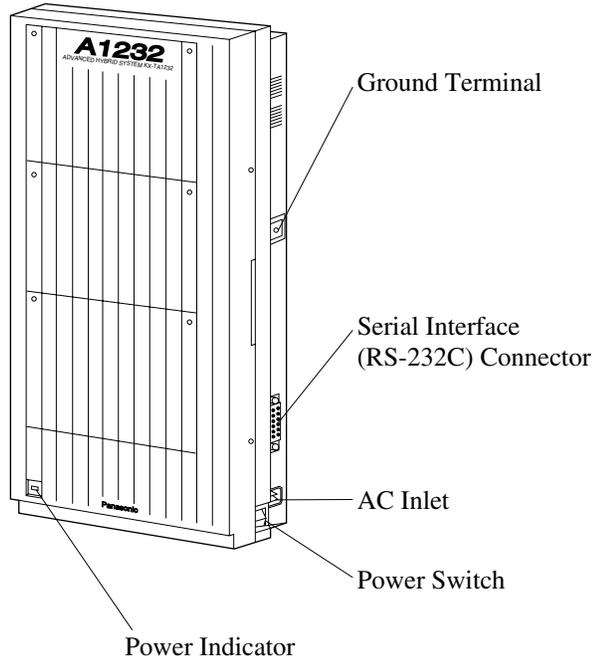
2.2.3 Wall Mounting

This set is designed for wall mounting only. The wall where the main unit is to be mounted must be able to support the weight of the main unit. If screws other than the ones supplied are used, use screws with the same diameter as the ones enclosed.

Mounting on Wooden Wall

1. Place the template (included) on the wall to mark the screw positions.

Template

2. Install the screws (included) into the wall.

Wooden Wall
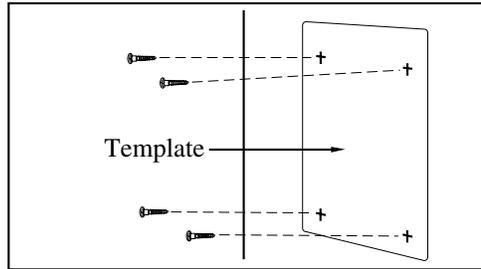
Drive the screw to this position
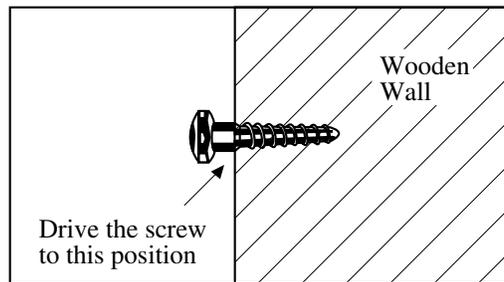
3. Hook the main unit on the screw heads.
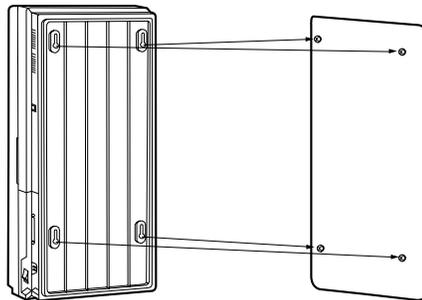
Mounting on Concrete or Mortar Wall

1. Place the template (included) on the wall to mark the screw positions.
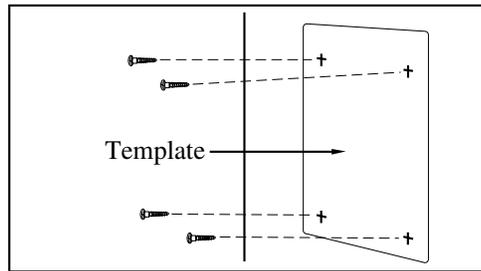
2. Drill holes and drive the anchor plugs (user-supplied) with a hammer, flush to the wall.
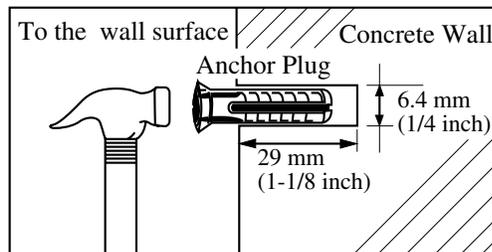
3. Install the screws (included) into the anchor plugs.
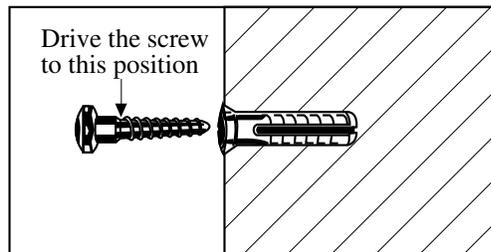
4. Hook the main unit on the screw heads.
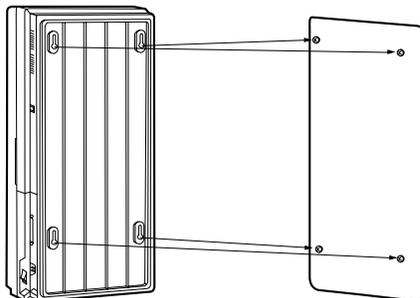
2.2.4   Opening Front Cover

1. Loosen the two screws on the right side of the main unit.

2. Open the front cover in the direction of arrow Ⓐ.
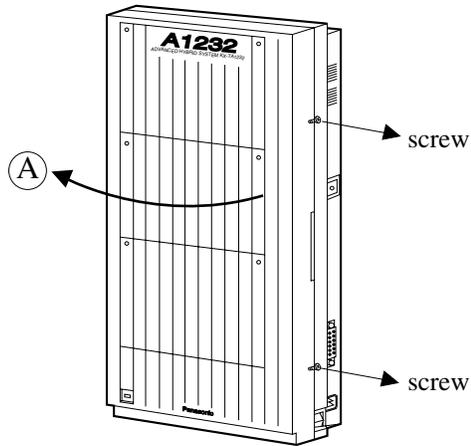
Note

The two screws are attached to the front cover with springs so that they will not be lost.

2.2.5   Frame Ground Connection

IMPORTANT

Connect the frame of the main unit to ground.

1. Loosen the screw.

2. Insert the grounding wire.

3. Tighten the screw.

4. Connect the grounding wire to ground.
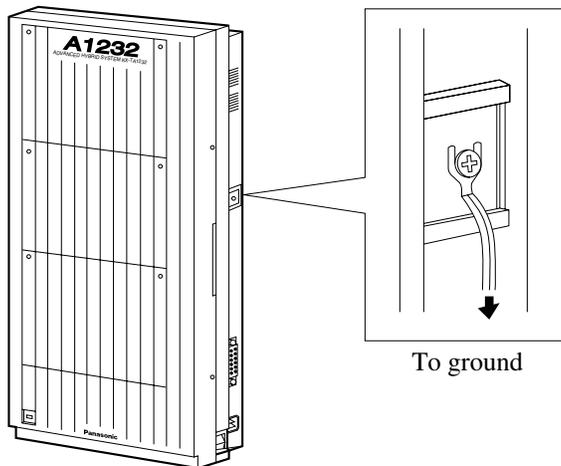
To ground

In most of the continental United States, the ground provided by the "Third wire ground" at the commercial power outlet will be satisfactory. However, in a small percentage of cases this ground may be installed incorrectly. Therefore, the following test procedure should be performed.

Test Procedure

1. Obtain a suitable voltmeter and set it for a possible reading of up to 250 V AC.

2. Connect the meter probes between the two main AC voltage points on the wall outlet. The reading obtained should be 108 V AC-132 V AC.

3. Move one of the meter probes to the 3rd prong terminal (GND).
Either the same reading or a reading of 0 V should be obtained.

4. If a reading of 0 V at one terminal and a reading of 108 V AC-132 V AC at the other terminal is not obtained, the outlet is not properly grounded.
This condition should be corrected by a qualified electrician (per article 250 of the National Electrical Code).

5. If a reading of 0 V at one terminal and a reading of 108 V AC-132 V AC at the other terminal is obtained, then set the meter to the "OHMS / RX1" scale, place one probe at the GND Terminal and the other probe at the terminal which gave a reading of 0 V.
A reading of less than 1 ohm should be obtained.

If the reading is not obtained the outlet is not adequately grounded, see a qualified electrician.

2.3   Connection

2.3.1   Outside Line Connection

Connection

    1. Insert the modular plugs of the telephone line cords (4-conductor wiring) into the modular jacks on the system.

    2. Connect the line cord to the terminal board or the Central Office jack.

To Terminal Board or Modular
Jacks from the Central Office.
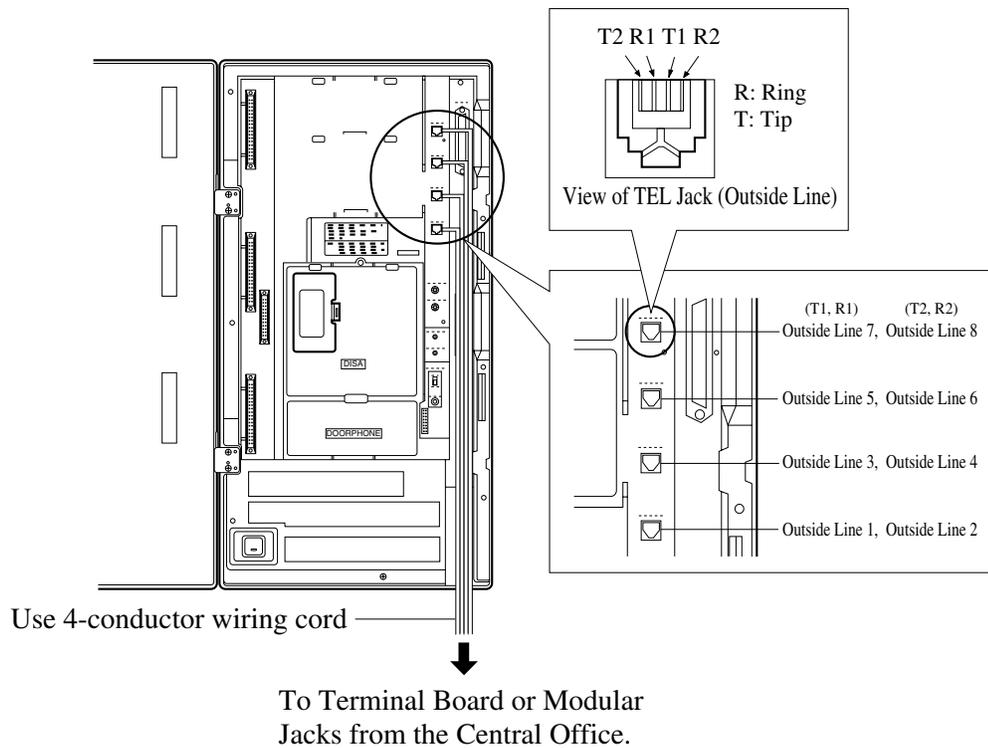
   <u>Notice</u>
- Use twisted pair cable for installation.
- It is recommended to use RJ14C telephone jacks.
- Mis-connection may cause the system to operate improperly. See 3.1.1   Installation and 3.1.2   Connection.

2.3.2 Extension Connection

Extension jacks 1 through 16 are for all kinds of telephones.

Maximum Cabling Distance

The maximum length of the extension line cord (twisted cable) which connects the system and the extension is as follows:

	Diameter of the line	Max. length
Single Line Telephone	22 AWG 24 AWG 26 AWG	1798 m (5900 feet) 1128 m (3700 feet) 698 m (2290 feet)
Proprietary Telephone / DSS Console	22 AWG 24 AWG 26 AWG	360 m (1180 feet) 229 m (750 feet) 140 m (460 feet)

Telephone Wiring

2 or 4-conductor wiring is required for each extension as listed below. There are four pins for possible connection: "T", "R", "L" and "H".

T:Tip
R:Ring
L:Low
H:High

Telephone	Wiring
Single line telephones wiring	1 pair wire (T, R)
Analog proprietary telephone (KX-T7135, KX-T7130, KX-T7020, KX-T7030, KX-T7050, KX-T7055)	2 pair wire (L, H, T, R)
DSS console (KX-T7040)	1 pair wire (L, H)

* **2-pair twisted cabling:**
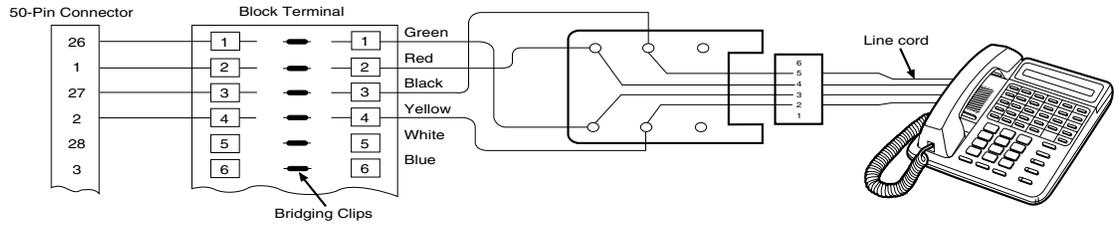
Connection

1. Insert the 50-pin connector to the Extension Jack as shown.

2. Connect the wire cords to the appropriate connector pins and the terminal equipment. Refer to the Telephone Wiring (Page 38) and Pin Number Chart (Page 41).

Connector type

50-pin (Amphenol 57JE series or the equivalent)

To extensions
(Jacks 9-16)

To extensions
(Jacks 1-8)
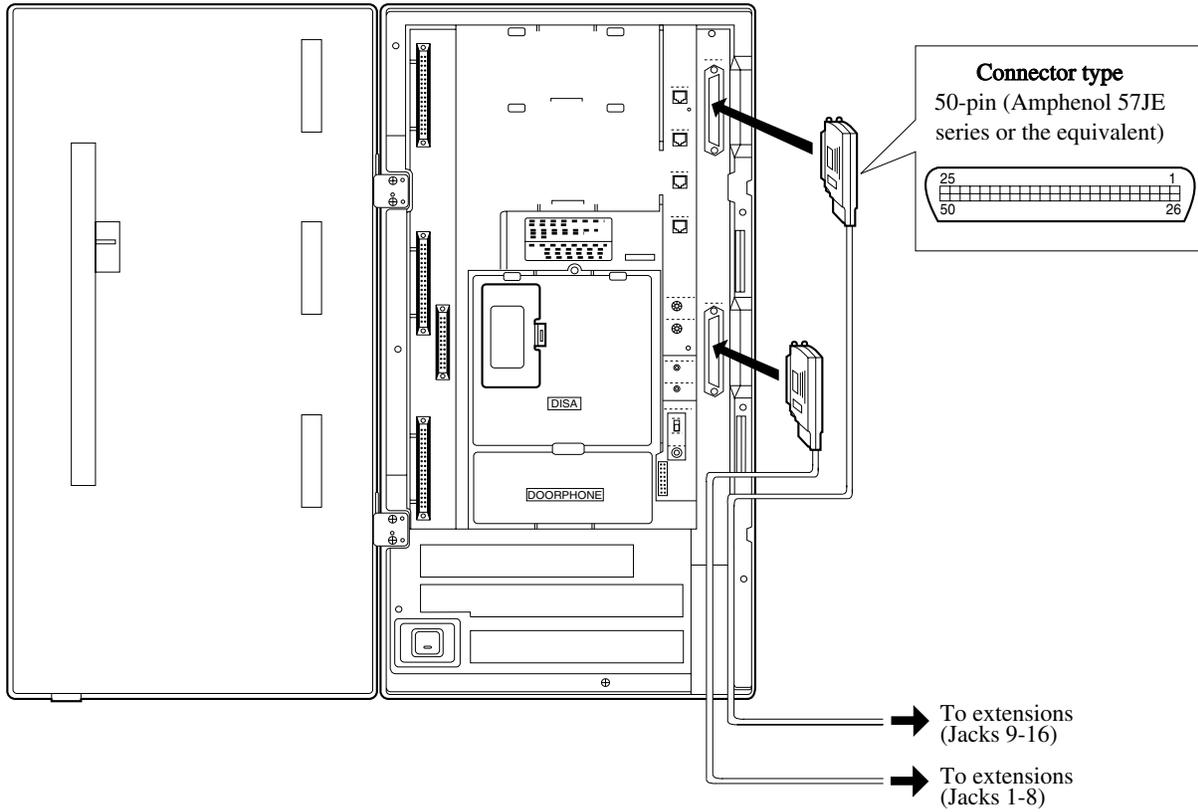
3. After inserting the connector, fasten the connector with the nylon tie.
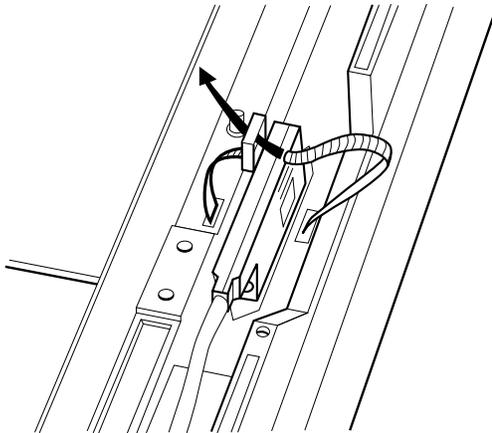
Pin Number Chart

Pin no.	Cable Color	EXTN. 1-8 / Doorphone		EXTN. 9-16		8EXTN.*		8EXTN.*	
26	WHT-BLU		T		T		T		T
1	BLU-WHT		R		R		R		R
27	WHT-ORN	Jack	L	Jack	L	Jack	L	Jack	L
2	ORN-WHT	No.1	H	No.9	H	No.17	H	No.25	H
29	WHT-BRN		T		T		T		T
4	BRN-WHT		R		R		R		R
30	WHT-SLT	Jack	L	Jack	L	Jack	L	Jack	L
5	SLT-WHT	No.2	H	No.10	H	No.18	H	No.26	H
32	RED-ORN		T		T		T		T
7	ORN-RED		R		R		R		R
33	RED-GRN	Jack	L	Jack	L	Jack	L	Jack	L
8	GRN-RED	No.3	H	No.11	H	No.19	H	No.27	H
35	RED-SLT		T		T		T		T
10	SLT-RED		R		R		R		R
36	BLK-BLU	Jack	L	Jack	L	Jack	L	Jack	L
11	BLU-BLK	No.4	H	No.12	H	No.20	H	No.28	H
38	BLK-GRN		T		T		T		T
13	GRN-BLK		R		R		R		R
39	BLK-BRN	Jack	L	Jack	L	Jack	L	Jack	L
14	BRN-BLK	No.5	H	No.13	H	No.21	H	No.29	H
41	YEL-BLU		T		T		T		T
16	BLU-YEL		R		R		R		R
42	YEL-ORN	Jack	L	Jack	L	Jack	L	Jack	L
17	ORN-YEL	No.6	H	No.14	H	No.22	H	No.30	H
44	YEL-BRN		T		T		T		T
19	BRN-YEL		R		R		R		R
45	YEL-SLT	Jack	L	Jack	L	Jack	L	Jack	L
20	SLT-YEL	No.7	H	No.15	H	No.23	H	No.31	H
47	VIO-ORN		T		T		T		T
22	ORN-VIO		R		R		R		R
48	VIO-GRN	Jack	L	Jack	L	Jack	L	Jack	L
23	GRN-VIO	No.8	H	No.16	H	No.24	H	No.32	H
50									
25									

Note

> *"8EXTN" in the table indicates an extension expansion area for 8 Extension Expansion Unit (KX-TA123270).
> System Programming is required for card location identification.
>
> - If a telephone or answering machine with an A-A1 relay is connected to the main unit, set the A-A1 relay switch of the telephone or answering machine to OFF position.
> - Mis-connection may cause the system to operate improperly. See 3.1.1 Installation and 3.1.2 Connection.
> - A DSS Console (KX-T7040) can be installed. As the DSS Console itself cannot work alone, it always requires a proprietary telephone used in pair. Place the DSS Console and the paired telephone side by side on your desk.
> - It is necessary to designate the jack numbers of paired DSS Consoles and proprietary telephones by system programming.
> - After completing all the required inside cabling, including outside lines, extensions, external pagers, external music sources, doorphones and door openers, fasten the cables with the nylon tie (included) as shown.
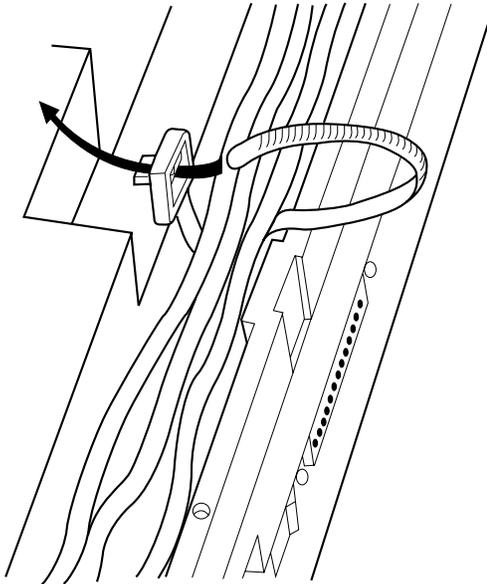
Programming Guide Reference

> [007] DSS Console Port and Paired Telephone Assignment
> [109] Expansion Unit Type

Features Guide Reference

> DSS Console
> Module Expansion

2.3.3 Telephone Connection

Proprietary Telephone / DSS Console Connection

Connect proprietary telephones and a DSS Console as follows:

Analog Proprietary Telephone

Included telephone
line cord

→ Connect to an Advanced Hybrid System
(TO EMSS).

KX-T7040 DSS Console

Included telephone
line cord

→ Connect to an Advanced
Hybrid System (TO EMSS).
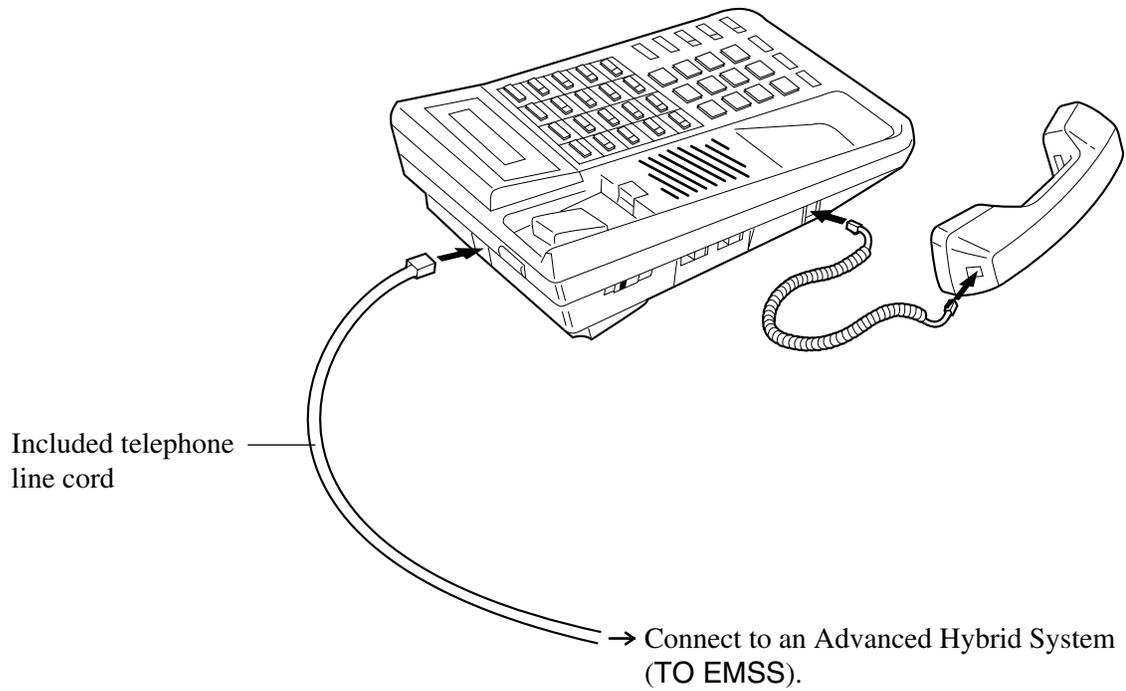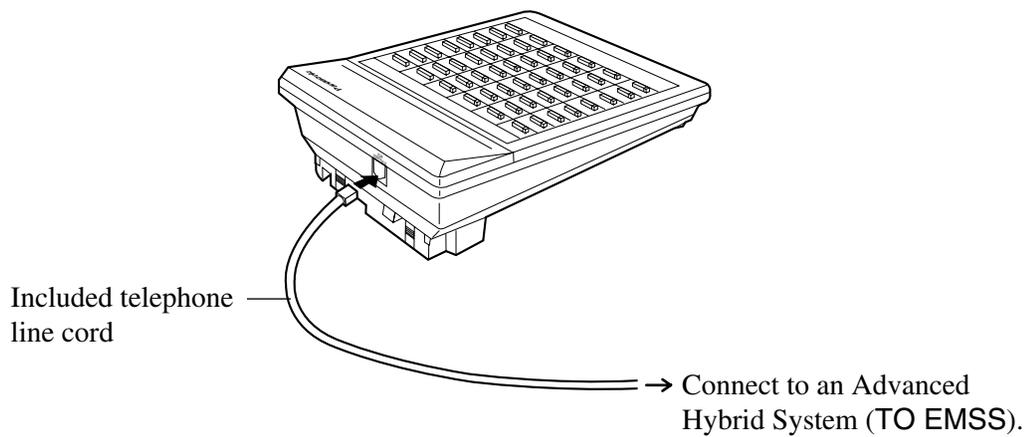
Paralleled Telephone Connection

Any single line telephone can be connected in parallel with a proprietary telephone as follows:

Method: Using a Modular T-Adaptor

Any single line telephone can be connected in parallel with a proprietary telephone as follows:

Modular T-Adaptor
(Panasonic KX-J66 or USOC RJA2X)

2-conductor wiring cord
Connect pins "T" and "R".

4-conductor wiring cord
For APT: Connect pins "T", "R", "L"
and "H".

Analog Proprietary
Telephone

Single Line Telephone
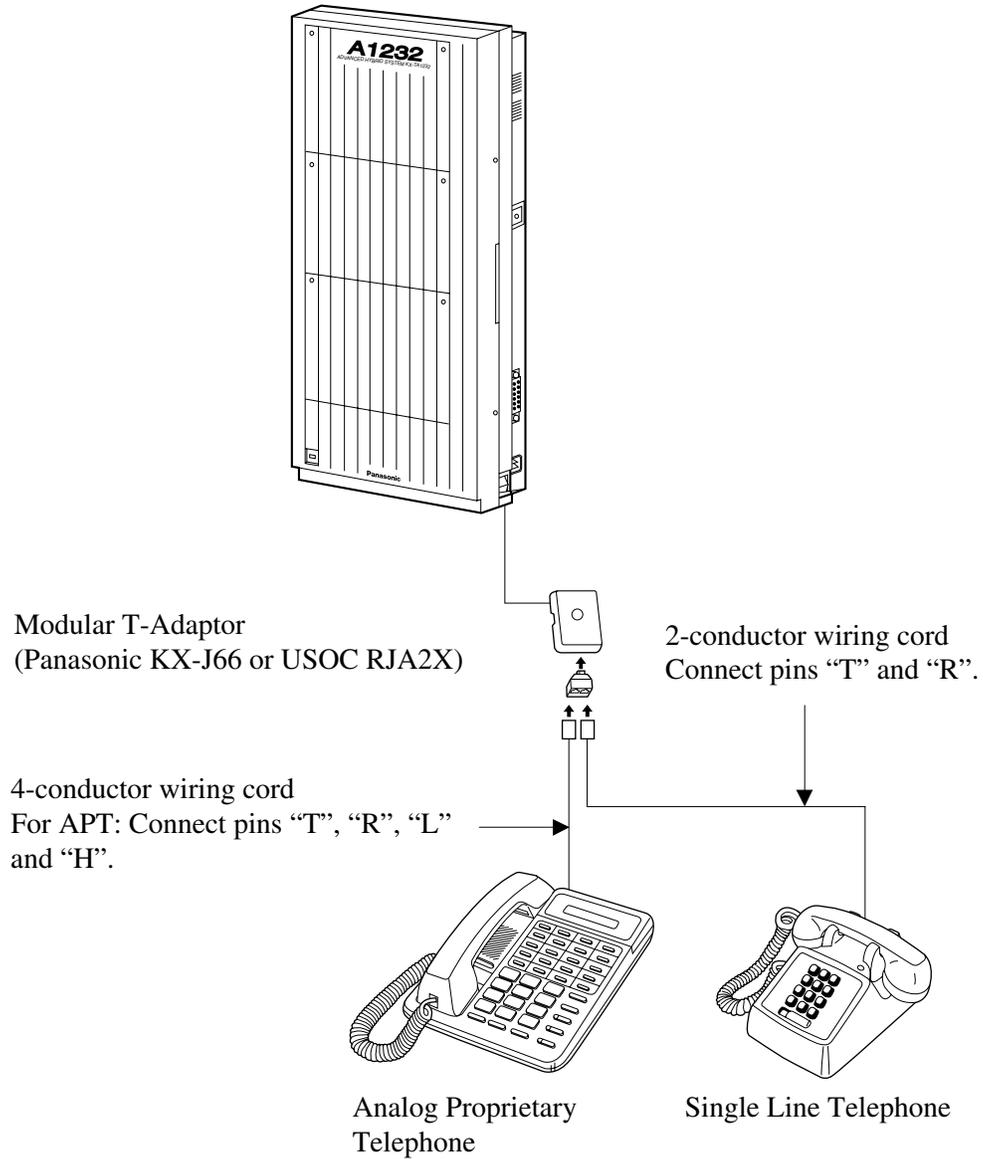
2.3.4   Polarity Sensitive Telephone Connection

If your telephone is polarity sensitive, follow the procedure below:

1. Complete all the required extension wiring.

2. Confirm that dialing can be done from all the extensions using a touch-tone telephone. If dialing fails, the polarity between the extension and the system must be reversed.

3. Reverse as shown.

Extension

Central Office Line

Reverse here
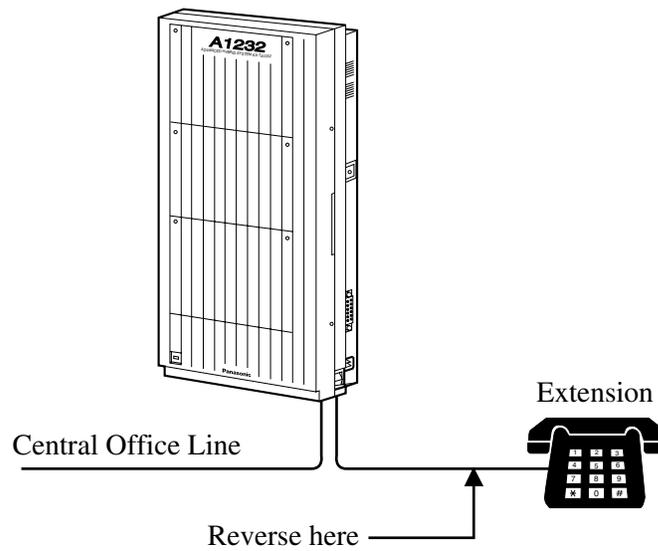
4. Set the Power Switch to "OFF" position.

5. Connect all outside lines.

6. Confirm that dialing can be done on the following extensions using a tone telephone.
Extension (T, R) of jack 1: Outside line 1
Extension (T, R) of jack 9: Outside line 3
Extensions (T, R) of jacks 17 (Extension Expansion Unit 1): Outside line 9
If dialing fails, the polarity between the system and the outside line must be reversed.

7. Reverse as shown.

Extension

Central Office Line

Reverse here
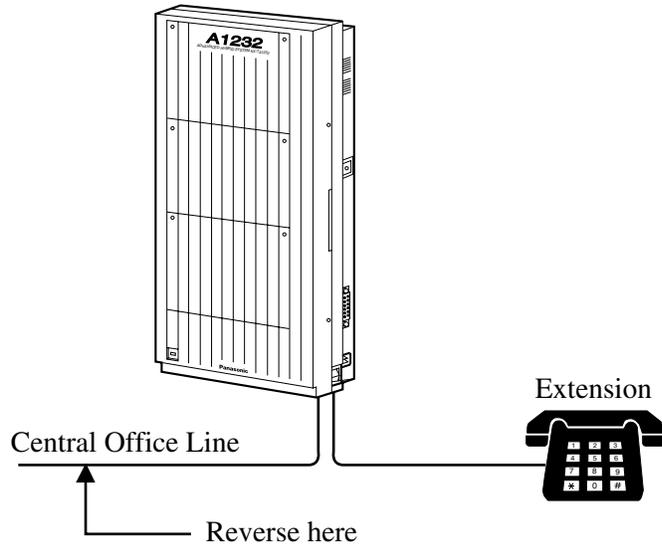
8. Every time an extension telephone is replaced, repeat the above procedure.

2.3.5 External Pager (Paging Equipment) Connection

Up to two external pagers (user-supplied) can be connected to the KX-TA1232 as illustrated below.

Use an RCA connector and shielded cable.

- Output impedance: 600 Ω
  Maximum length of the cable
  AWG 18 — 22: Under 10 m (33 feet)
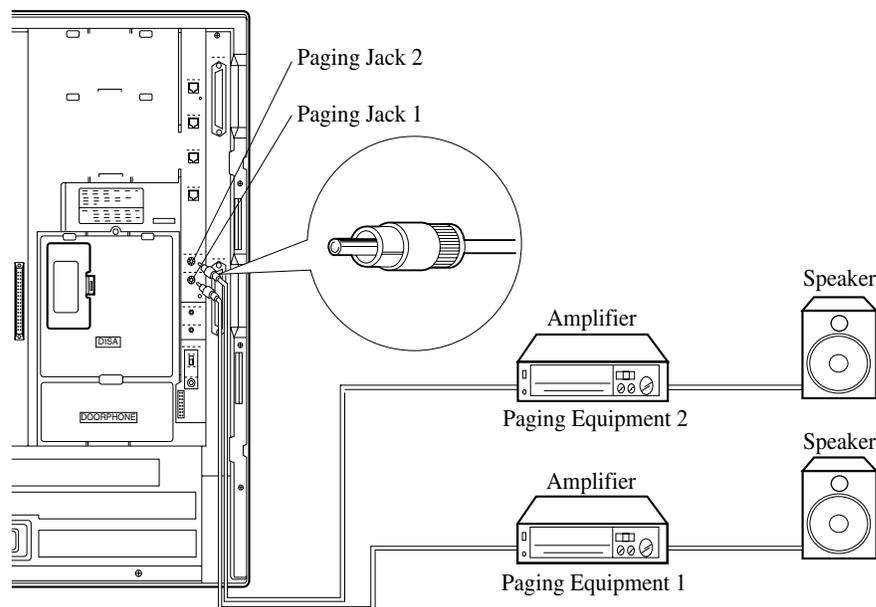
Note

- It is programmable which external pager will send background music and whether all the pagers will generate a confirmation tone.
- To adjust the sound level of the pagers, use the volume control on the amplifiers.

Programming Guide Reference

[804] External Pager BGM

[805] External Pager Confirmation Tone

Features Guide Reference

Background Music (BGM)

Paging — All

Trunk (Outside Line) Answer From Any Station (TAFAS)

2.3.6 External Music Source Connection

Up to two music sources such as a radio (user-supplied) can be connected to the KX-TA1232 as illustrated below.

Insert the plug to the earphone / headphone jack on the external music source.
Use a two-conductor plug {3.5 mm (9/64 inch) in diameter}.

- Input impedance: 600 Ω
  Maximum length of the cable
  AWG 18 — 22: Under 10 m (33 feet)

External Music Jack 2
External Music Jack 1
External Music Source 2
External Music Source 1
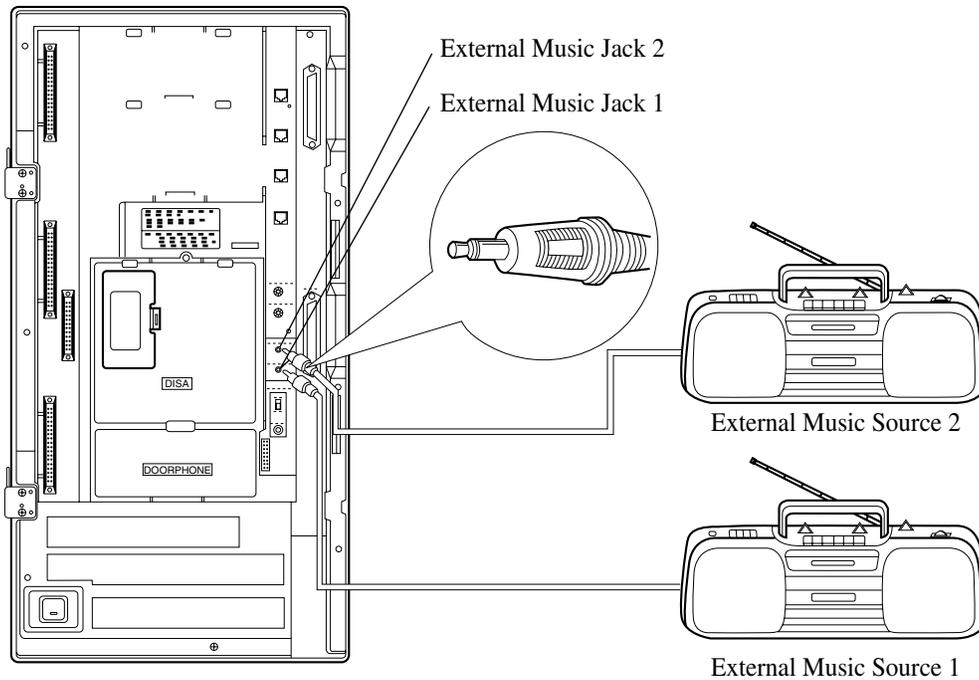
Note
- System Programming of music sources used for Music on Hold and Background Music is required.
- To adjust the sound level of the Music on Hold, use the volume control on the external music source.

Programming Guide Reference

[803] Music Source Use
[990] System Additional Information

Features Guide Reference

Background Music (BGM)

Background Music (BGM) — External

Music on Hold

2.3.7 Printer and PC Connection

A user-supplied printer or personal computer (PC) can be connected to the system. These are used to print out or refer to the Station Message Detail Recording (SMDR) call records and system programming data.
Connect the printer cable or the PC cable to the Serial Interface (RS-232C) connector. The cable must be shielded and the maximum length is 2 m (6.5 feet).

Serial Interface
(RS-232C) (25-pin)

Printer   or   Computer
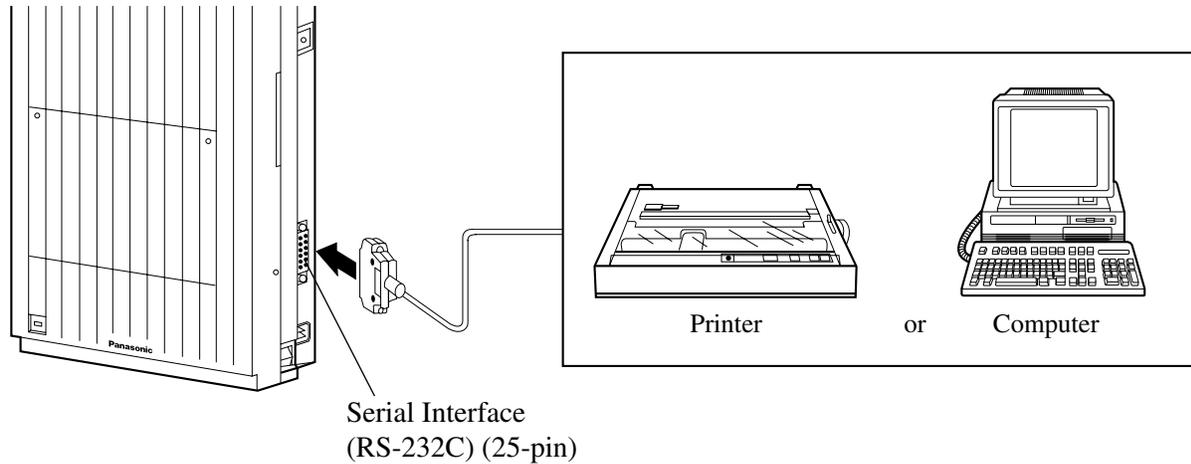
Note

Arrange cables so that the printer will be connected to the system as shown in the chart on the following page.
When using special accessories such as cable, the user should use those specified in this installation manual to comply with the limits for a class A digital device pursuant to the FCC Rules.

The pin configuration of Serial Interface (RS-232C) Connector is as follows:

Pin No.	Signal Name		Circuit Type	
			EIA	CCITT
1	FG	Frame Ground	AA	101
2	SD (TXD)	Transmitted Data	BA	103
3	RD (RXD)	Received Data	BB	104
4	RS (RTS)	Request To Send	CA	105
5	CS (CTS)	Clear To Send	CB	106
6	DR (DSR)	Data Set Ready	CC	107
7	SG	Signal Ground	AB	102
8	CD (DCD)	Data Carrier Detect	CF	109
20	ER (DTR)	Data Terminal Ready	CD	108.2

Connection Chart for Printer / IBM® *1 Personal Computer

If you connect a printer or a PC with a 25-pin cable, follow the chart below.

System				**25-pin Cable Printer/PC**		
Circuit Type (EIA)	Signal Name	Pin No.		Pin No.	Signal Name	Circuit Type (EIA)
AA	FG	1		1	FG	AA
BA	SD (TXD)	2		3	RD (RXD)	BB
BB	RD (RXD)	3		2	SD (TXD)	BA
CB	CS (CTS)	5				
CC	CR (DSR)	6		20	ER (DTR)	CD
AB	SG	7		7	SG	AB
CD	ER (DTR)	20		5	CS (CTS)	CB
				6	CR (DSR)	CC
				8	CD (DCD)	CF

---
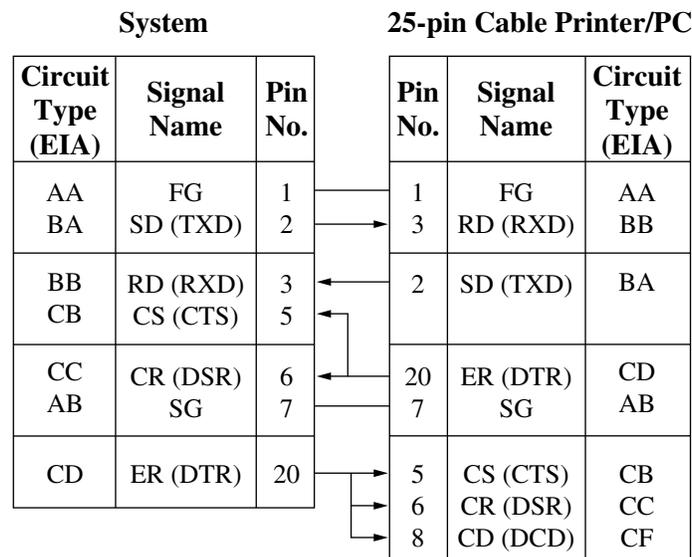
*1 IBM is either a registered trademark or a trademark of International Business Machines Corporation in the United States.

If you connect a printer or an IBM-PC with a 9-pin cable, follow the chart below.

System   **9-pin Cable Printer/IBM-PC**

Circuit Type (EIA)	Signal Name	Pin No.		Pin No.	Signal Name	Circuit Type (EIA)
AA	FG	1				
BA	SD (TXD)	2		2	RD (RXD)	BB
BB	RD (RXD)	3		3	SD (TXD)	BA
CA	RS (RTS)	4		4	ER (DTR)	CD
CB	CS (CTS)	5		5	SG	AB
CC	DR (DSR)	6		6	DR (DSR)	CC
CB	SG	7		7	RS (RTS)	CA
CC	ER (DTR)	20		8	CS (CTS)	CB
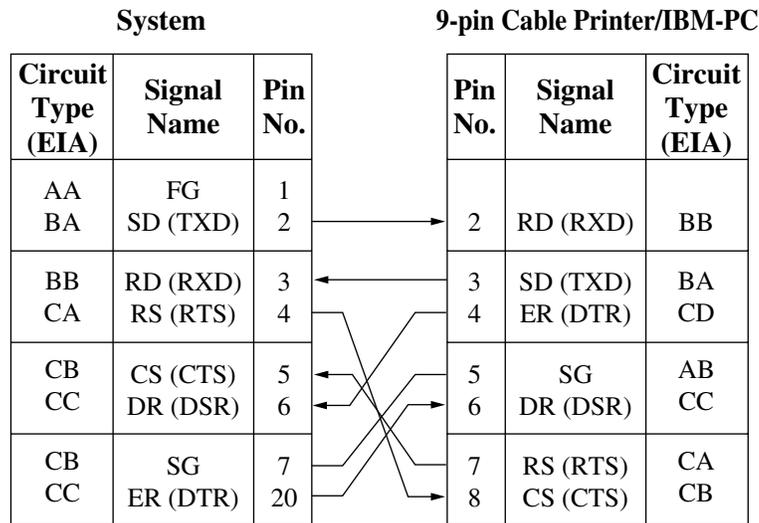
Note

Please read your printer manual and connect the first EIA pin (FG) of this unit to the printer cable.

Serial Interface (RS-232C) Signals

Frame Ground: FG
Connects to the unit frame and the earth ground conductor of the AC power cord.

Transmitted Data: SD (TXD): (output)
Conveys signals from the unit to the printer. A "Mark" condition is held unless data or BREAK signals are being transmitted.

Received Data: RD (RXD): (input)
Conveys signals from the printer.

Request to Send: RS (RTS): (output)
This lead is held ON whenever DR (DSR) is ON.

Clear To Send: CS (CTS): (input)
An ON condition of circuit CS (CTS) indicates that the printer is ready to receive data from the unit. The unit does not attempt to transfer data or receive data when circuit CS (CTS) is OFF.

Data Set Ready: DR (DSR): (input)
An ON condition of circuit DR (DSR) indicates the printer is ready. Circuit DR (DSR) ON does not indicate that communication has been established with the printer.

Signal Ground: SG
Connects to the DC ground of the unit for all interface signal.

Data Terminal Ready: ER (DTR): (output)
This signal line is turned ON by the unit to indicate that it is ON LINE. Circuit ER (DTR) ON does not indicate that communication has been established with the printer. It is switched OFF when the unit is OFF LINE.

Data Carrier Detect: CD (DCD): (input)
The ON condition is an indication to data terminal (DTE) that the carrier signal is being received.

Programming Guide Reference

[800] SMDR Incoming / Outgoing Call Log Printout

[801] SMDR Format

[802] System Data Printout

[806] Serial Interface (RS-232C) Parameters

Features Guide Reference

Station Message Detail Recording (SMDR)

2.3.8 Installation of Lightning Protectors

Overview

A lightning protector is a device to be installed on an outside line to prevent a dangerous surge from entering the building and damaging equipment.

A dangerous surge can occur if a telephone line comes in contact with a power line. Trouble due to lightning surges has been showing a steady increase with the development of electronic equipment.

In many countries, there are regulations requiring the installation of a lightning protector. A lightning strike to a telephone cable which is 10 m (33 feet) above ground can be as high as 200,000 V.

This system should be installed with lightning protectors. In addition, grounding (connection to earth ground) is very important for the protection of the system.

Recommended lightning protectors

- TELESPIKE BLOK MODEL TSB (TRIPPE MFG. CO.)
- SPIKE BLOK MODEL SK6-0 (TRIPPE MFG. CO.)
- Super MAX (PANAMAX)
- MP1 (ITW LINK)

Installation
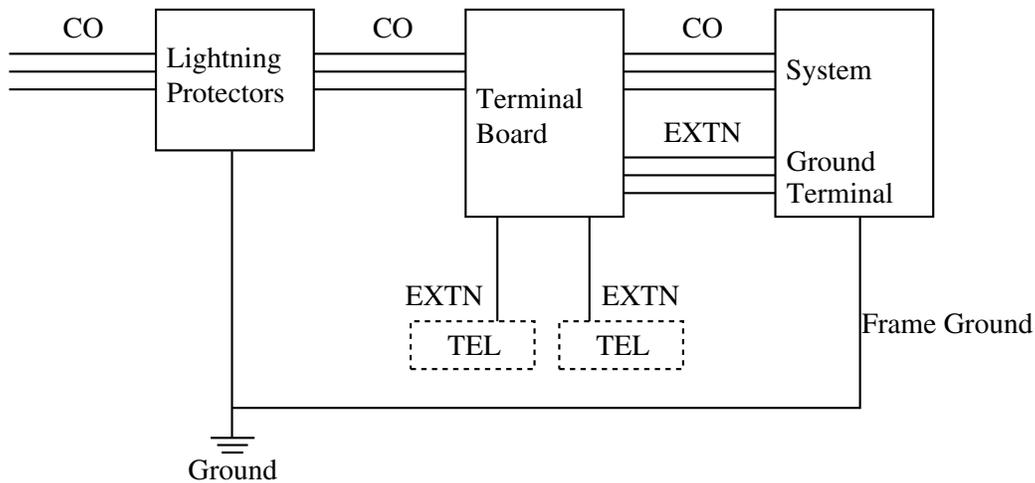
CO: Central Office (Outside line)
EXTN: Extension line
TEL: Telephone

Outside Installation Diagram

If you install an extension outside of the main building, the following precautions are recommended:

a) Install the extension wire underground.

b) Use a conduit to protect the wire.

(Main Building)
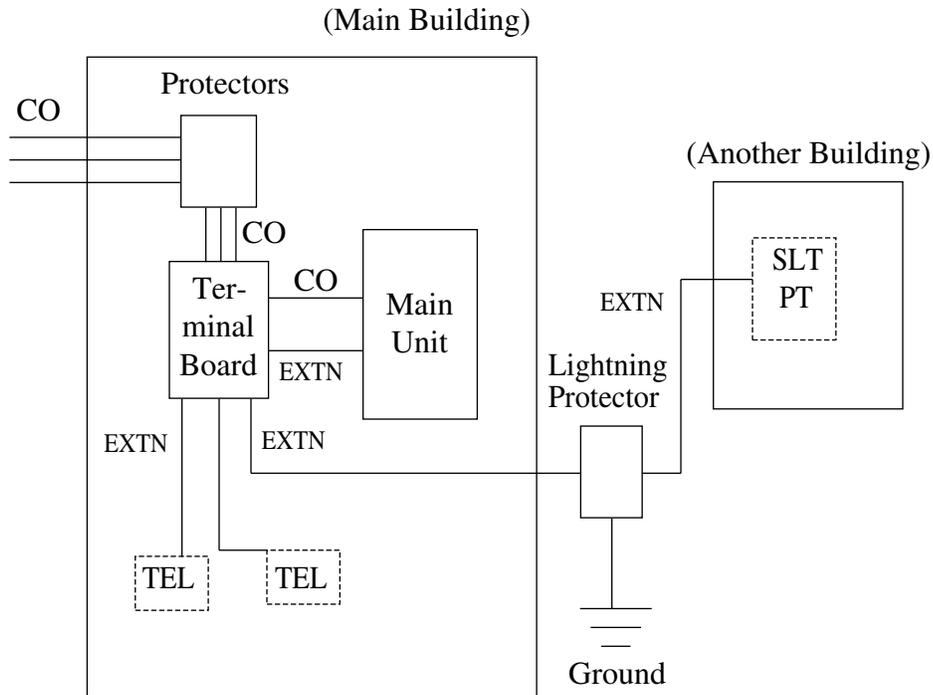
Note

• The lightning protector for an extension is different from that for outside line.

Earth Rod Installation Diagram
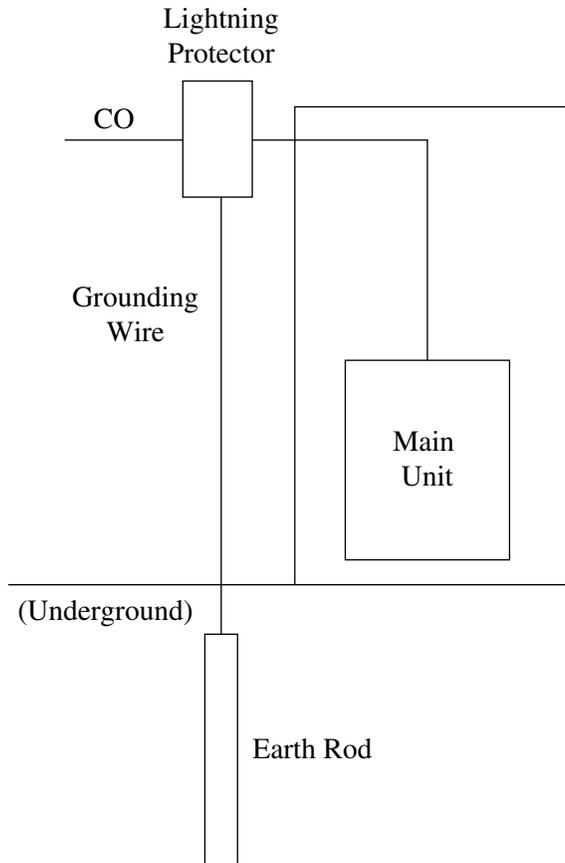
1. Installation location of the earth rod: Near the protector
2. Check obstructions: None
3. Composition of the earth rod: Metal
4. Depth of the earth rod: More than 50 cm (20 inches)
5. Size of the grounding wire: Thickness is more than 16 AWG.
6. Length of the grounding wire: As short as possible

Note
- The above figures are recommendations only.
- The length of earth rod and the required depth depend on the composition of the soil.

2.4 Installation of Optional Cards and Units

2.4.1 Location of Optional Cards and Units

The location of the optional cards and units is shown below.

Precaution

To protect the printed circuit boards (P-boards) from static electricity, do not touch parts on the P-boards in the main unit and on the optional cards.

Expansion Units

The following expansion units can be installed to any of the three expansion areas.

Expansion area 3

Expansion area 2

Expansion area 1

Expansion Unit Connectors

A1232

Remove the cover plate(s) on the front cover.

Max. two extension line units

8 Extension Expansion Unit, KX-TA123270

One outside line unit

4 CO Line Expansion Unit, KX-TA123280
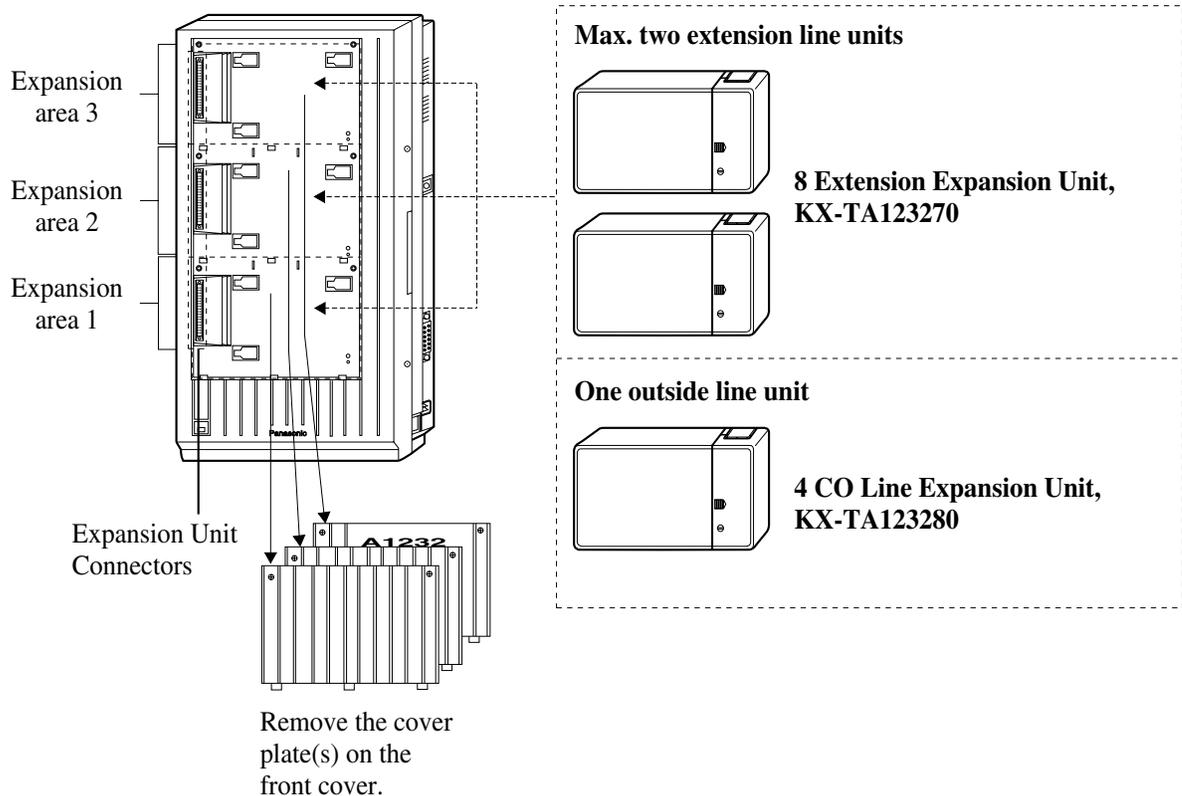
Note

System Programming is required for expansion unit location. Refer to [109] Expansion Unit Type.
Default:
Area 1 = 4 CO Line Expansion Unit,
Area 2 and 3 = 8 Extension Expansion Unit.

DISA Card, Doorphone / Door Opener Interface Card

DISA Card Connector

Doorphone / Door Opener Interface Card Connector

Front Cover is open.

Install **DISA Card, KX-TA123291**.
This card permits access to the system from outside tone telephones.

Install **Doorphone / Door Opener Interface Card, KX-TA123260**.
This card connects four doorphones and four door openers.
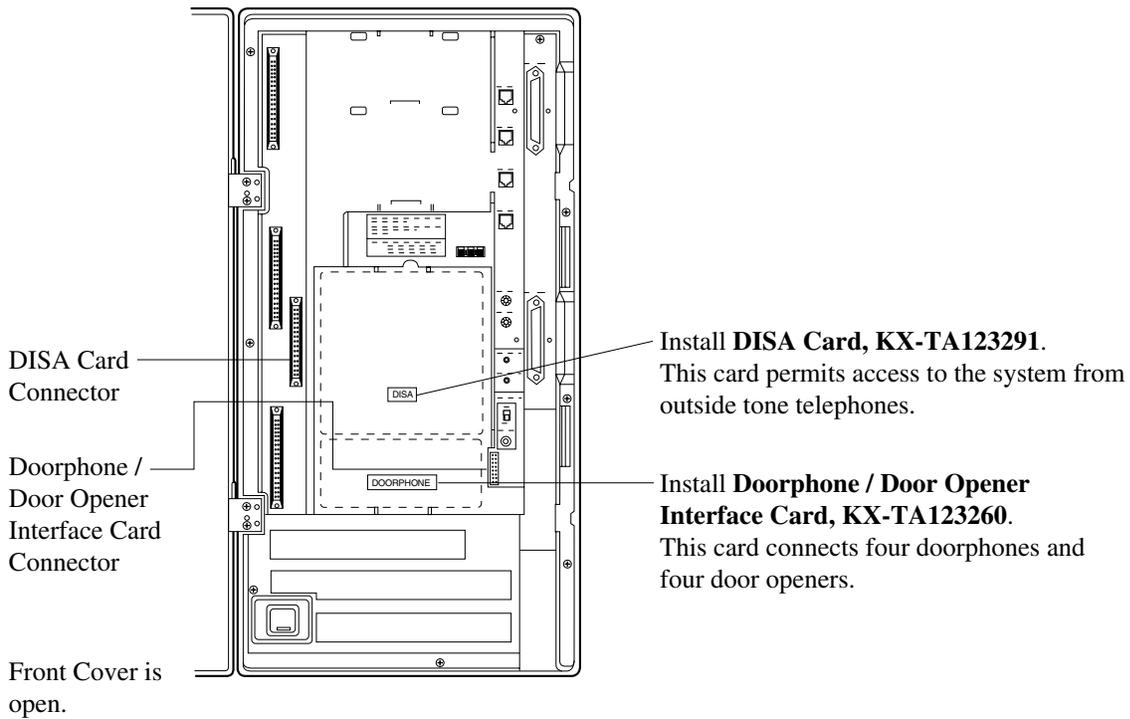
Caller ID Cards

Up to three Caller ID Cards (KX-TA123293) can be installed to the initially provided Outside Line Card and 4 CO Line Expansion Unit. This card supports Caller ID services offered by the central office. The initially provided Outside Line Card is located behind the inside cover.

Initial Outside Line Card
Install up to two **Caller ID Cards, KX-TA123293**.

Inside cover

4 CO Line Expansion Unit, KX-TA123280
(inside the cabinet)
Install one **Caller ID Card, KX-TA123293**.
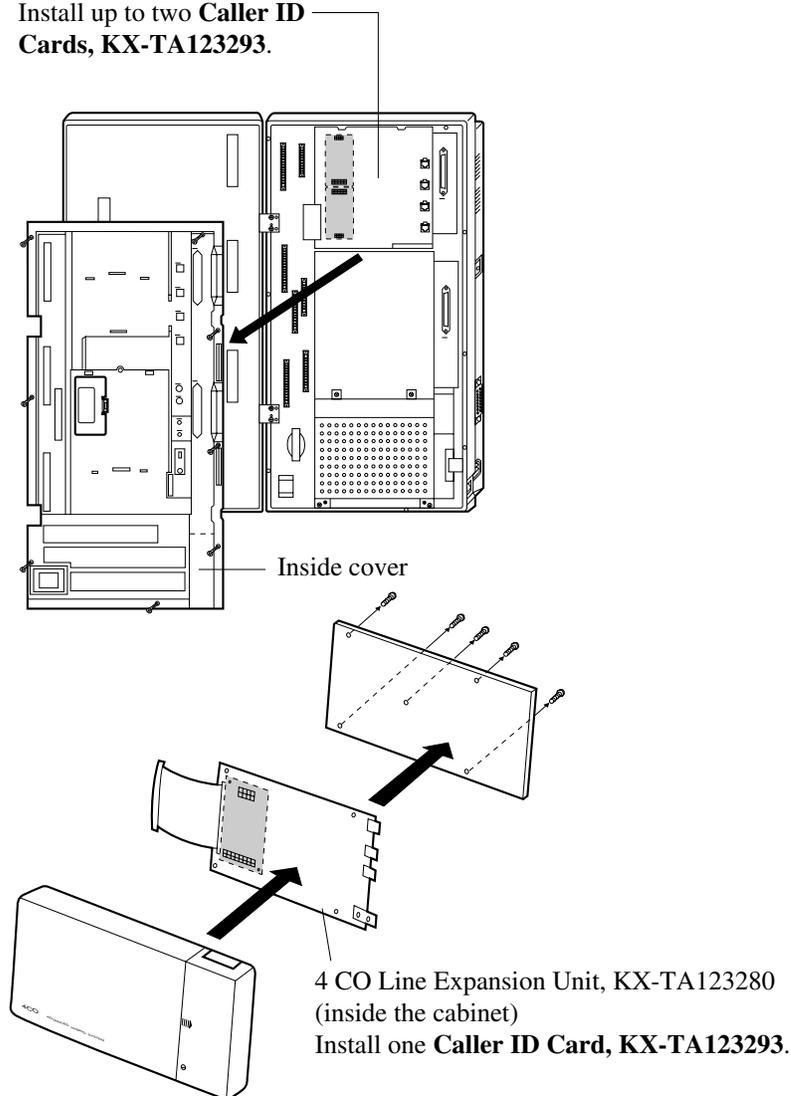
2.4.2   4 CO Line Expansion Unit Connection

To add four outside lines (outside lines 9 through 12), use the optional 4 CO Line Expansion Unit (KX-TA123280). This unit can be installed to any of the expansion unit areas provided on the front of the main unit. For outside line expansion unit installation, see 2.4.4   Installing Expansion Unit.

Note
- System Programming is required for card location identification.
- If you intend to attach a Caller ID Card to the 4 CO Line Expansion Unit, attach the Caller ID Card before outside line connection. See 2.4.6   Caller ID Card Installation.

Programming Guide Reference

[109] Expansion Unit Type

Features Guide Reference

Module Expansion

2.4.3 8 Extension Expansion Unit Connection

To add eight extensions (jack numbers 17 through 24 or 25 through 32), use the optional 8 Extension Expansion Unit (KX-TA123270). To add 16 extensions (jack numbers 17 through 32), use two 8 Extension Expansion Units.
This unit can be installed to any of the expansion unit areas provided on the front of the main unit.
For extension expansion unit installation, see 2.4.4   Installing Expansion Unit.

<u>Note</u>

System Programming is required for card location identification.

Programming Guide Reference

[109] Expansion Unit Type

Features Guide Reference

Module Expansion

2.4.4 Installing Expansion Unit

The following procedures can be used to install the optional expansion units.
The following steps 1 through 5 and 7 through 10 are the same for all expansion units. Step 6 is different for each unit.

1. Loosen the two screws on the cover plate. Insert fingers into the slits to remove the cover plate.

Slit

Slit
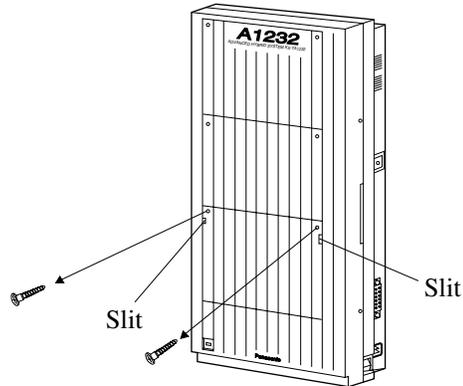
Note

Any of the cover plates can be removed, as needed.

2. Connect the cabinet cord to the connector in the main unit firmly.
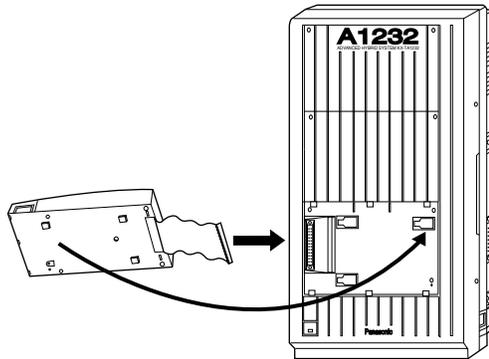
3. Hook the cabinet on the main unit and slide the cabinet to the left until it is secured.
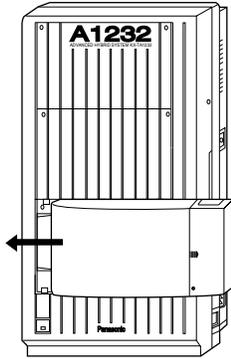
4. Loosen the outside screw and slide the cover to the right.
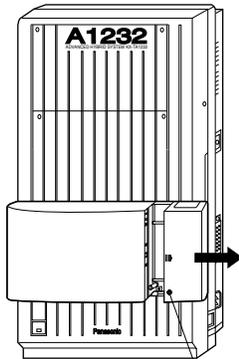
Outside screw

5. Secure the inside screw (included) to fix the cabinet to the main unit.
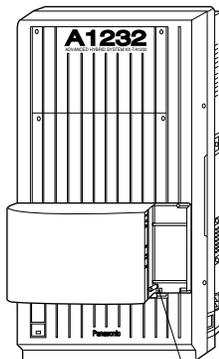
Inside screw

<u>Note</u>

Be sure to fix the inside screw to the main unit, or the unit may not work properly.

6. (If a option is to be installed)

If a KX-TA123280 is to be installed;

Insert the modular plugs of the telephone line cords (4-conductor wiring) into the modular jacks on the unit.

Jack for Power
Failure Transfer *

(T1/R1)   (T2/R2)
Outside Line 9, Outside Line 10

Outside Line 11, Outside Line 12

T2 R1 T1 R2

R: Ring
T: Tip

View of TEL Jack (Outside Line)

To Terminal Board or Modular
Jacks from the Central Office
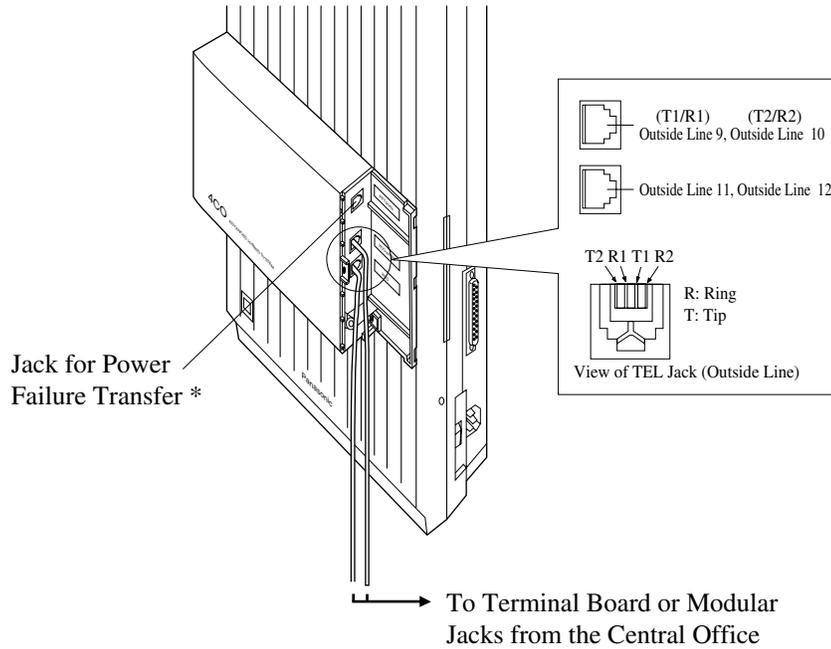
<u>Note</u>
- * For details, refer to 2.5.1   Auxiliary Connection for Power Failure Transfer.

If a KX-TA123270 is to be installed;

Insert the connector into the jack.
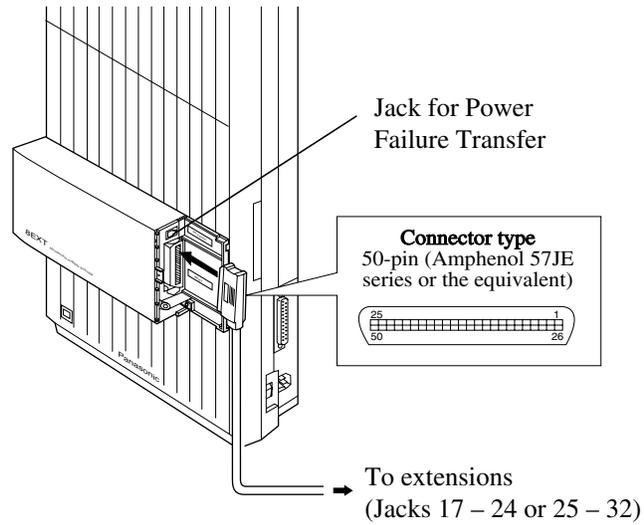
Note

- For details, refer to 2.5.1   Auxiliary Connection for Power Failure Transfer.
- For cable pin numbers to be connected, see "Pin Number Chart" in 2.3.2   Extension Connection.
- For fixing the connector, see "Amphenol 57JE Type (screw-attach-type 50-pin connector) Connection for KX-TA123270" in 2.4.4   Installing Expansion Unit.

7. Tie all of the cords into a bundle. If other cords are exposed in the upper cabinets, tie them also.

8. Close the cabinet cover and secure the outside screw.

9. Cover the cords with the cord holder (included).

Cord holder
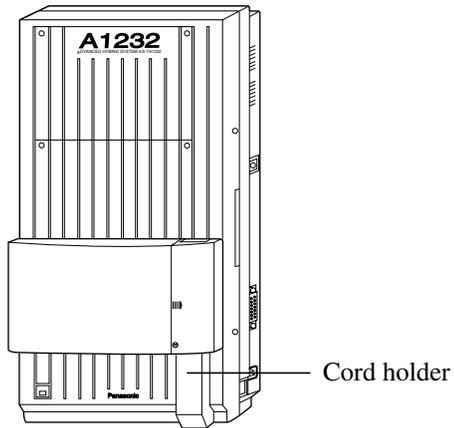
10. Fix the cords to the wall as shown so that the front cover can be opened.
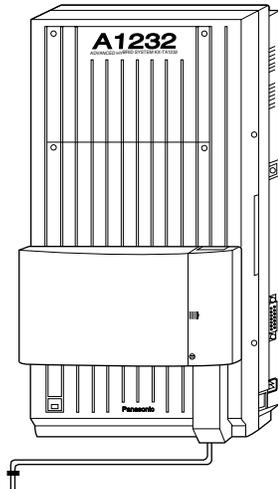
<u>Note</u>
- If you attach the Caller ID Card (KX-TA123293) to the 4 CO Line Expansion Unit (KX-A123280), attach it before installing the 4 CO Line Expansion Unit to the main unit. For installation, Refer to 2.4.6   Caller ID Card Installation.
- If two expansion units are installed, cut the cabinet cover(s) on the lower cabinet(s) to allow the cords from upper cabinet to go down through the cabinet cover(s). To protect the cords, smooth the cut edges.

Cut here
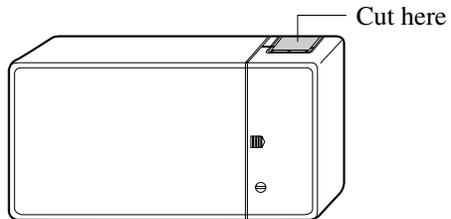
Amphenol 57JE Type (screw-attach-type 50-pin connector) Connection for KX-TA123270

To fix the Amphenol 57JE type (screw-attach type 50-pin connector) to the 8 Extension Expansion Unit, follow the procedure below.

1. The 50-pin connector (Jack) on the Expansion Unit has two hook-pins. Remove the upper hook-pin, and take out the screw.

Screw

8EXT

ADVANCED HYBRID SYSTEM

50-pin connector
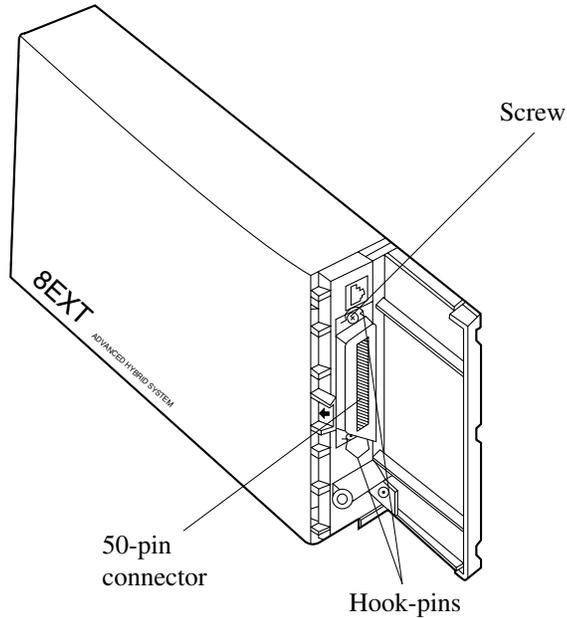
Hook-pins

Note

When installing a connector like the type shown below, unscrew the lower hook-pin also. Then drive both accessory screws.

Accessory screw

Amphenol 57JE type

50-pin connector
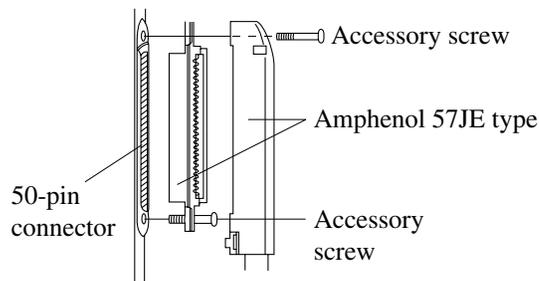
Accessory screw

2. To attach the Amphenol 57JE type (Plug) to the connector, drive the accessory screw into the upper part.
Fasten the accessory wire tie around the lower hook-pin and the Amphenol 57JE type, as shown.

Accessory screw

Amphenol 57JE type

Accessory wire tie

57JE type

Hook-pin

Accessory
wire tie
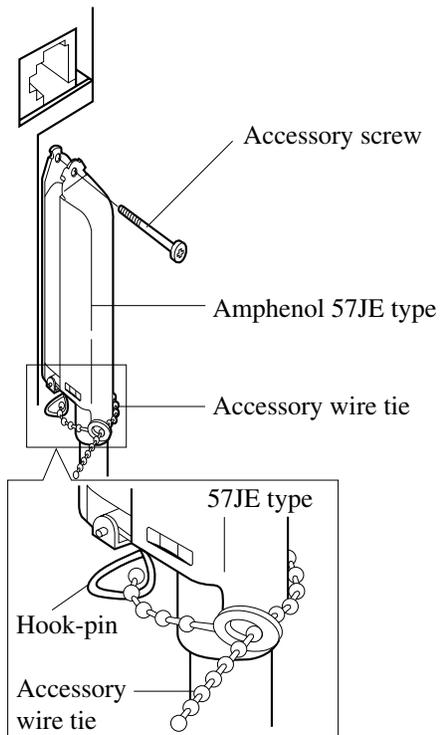
2.4.5 DISA Card Installation

The DISA Card (KX-TA123291) can be installed as follows.

Installing the DISA Card (KX-TA123291)

1. Insert the upper side of the DISA Card into the two hooks on the main unit.
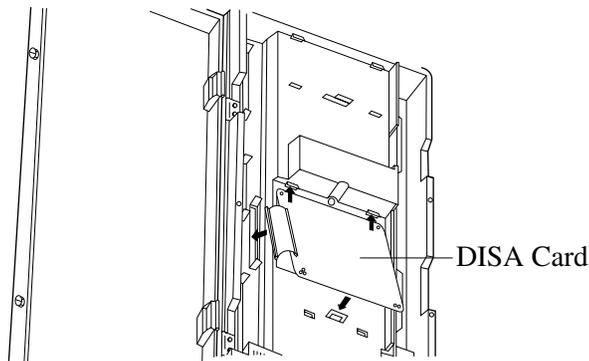
DISA Card

2. Press down the two corners of the lower side of the DISA Card.

3. Connect the cord to the DISA Card Connector.

Features Guide Reference

Direct Inward System Access (DISA)

2.4.6 Caller ID Card Installation

A maximum of three Caller ID Cards can be installed. The Caller ID Cards can be installed to the initially provided Outside Line Card and / or to an optional 4 CO Line Expansion Unit (KX-TA123280), as required.
The initially provided Outside Line Card can accept two Caller ID Cards and the 4 CO Line Expansion Unit can accept one Caller ID Card.

Installing to the Initial Outside Line Card

1. Loosen the eight screws to open the inside cover of the main unit.

Note

If any cards, units, or cords are installed to the main unit, remove them beforehand.

2. Insert the Caller ID Card(s) to the connectors on the Outside Line Card.
Up to two cards can be installed to the initial Outside Line Card.

Outside Line Card

Caller ID Card
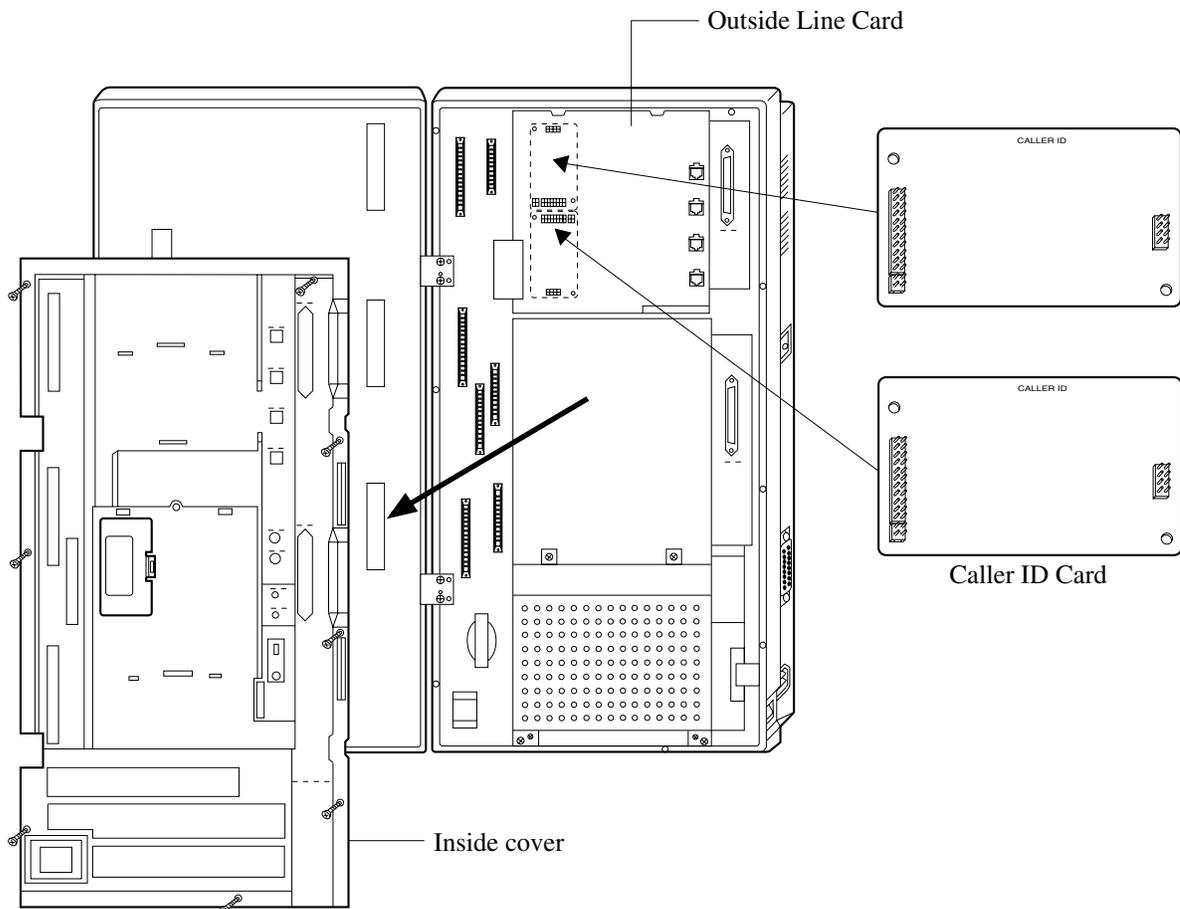
Inside cover

3. Put the inside cover back on the main unit and secure the screws.

Installing to the Optional 4 CO Line Expansion Unit

The following procedure must be done before installing the 4 CO Line Expansion Unit (KX-TA123280) to the main unit.

1. Loosen the five screws located at the rear of the 4 CO Line Expansion Unit.

2. Remove the back plate and take out the P-board.

3. Attach the Caller ID Card to the P-board, fitting the connectors.

4. Put the P-board back into the cabinet and fix the rear plate with the five screws.
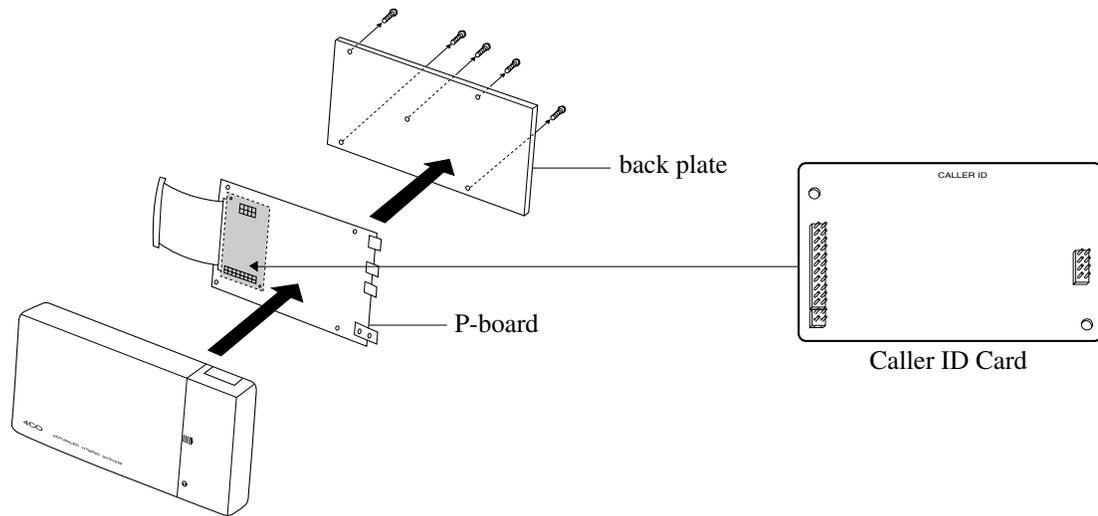
Note

For installing the 4 CO Line Expansion Unit to the main unit, refer to 2.4.4   Installing Expansion Unit.

Programming Guide Reference

[110] Caller ID Code Set

[111] Caller ID Name Set

[125] Area Code Assignment

[126] Caller ID Modification for Local Call

[127] Caller ID Modification for Long Distance Call

[406] Caller ID Assignment

Features Guide Reference

Caller ID

2.4.7 Doorphone and Door Opener Connection

To connect up to four doorphones (KX-T30865) and up to four door openers (user-supplied), a Doorphone / Door Opener Interface Card (KX-TA123260) is required.

Installing the Doorphone

1. Loosen the screw to separate the doorphone into two halves.
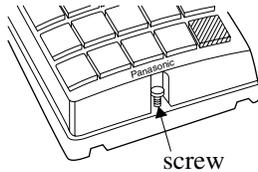
screw

2. Install the base cover to the wall with two screws.
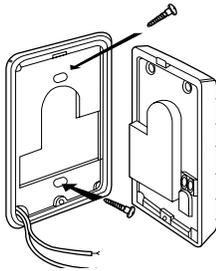
Note

Two kinds of screws are included. Please choose the appropriate one depending on your wall type:

Type 1: When the doorphone plate has been fixed to the wall.

Type 2: When you wish to install the doorphone directly to the wall.

3. Connect the wires to the screws located in the front cover.

To the terminal box (See "Wiring of the Doorphone".)
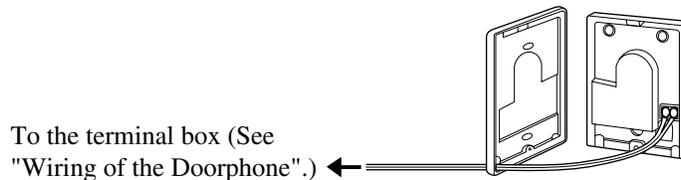
4. Secure both halves together and re-install the screw.

Doorphone / Door Opener Interface Card Installation

1. Connect two 4-conductor modular connectors to the Doorphone / Door Opener Interface Card Cabinet, and pass the cords through the grooves in the cabinet.
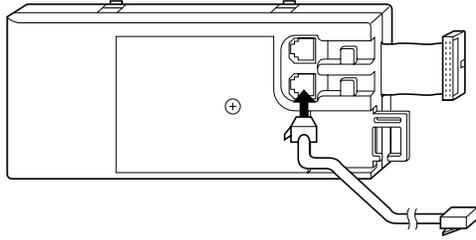
2. Attach the Doorphone / Door Opener Interface Card Cabinet to the main unit and press down.

3. Connect the cord to the Doorphone / Door Opener Interface Card Connector.

➡ To Terminal Box Installation
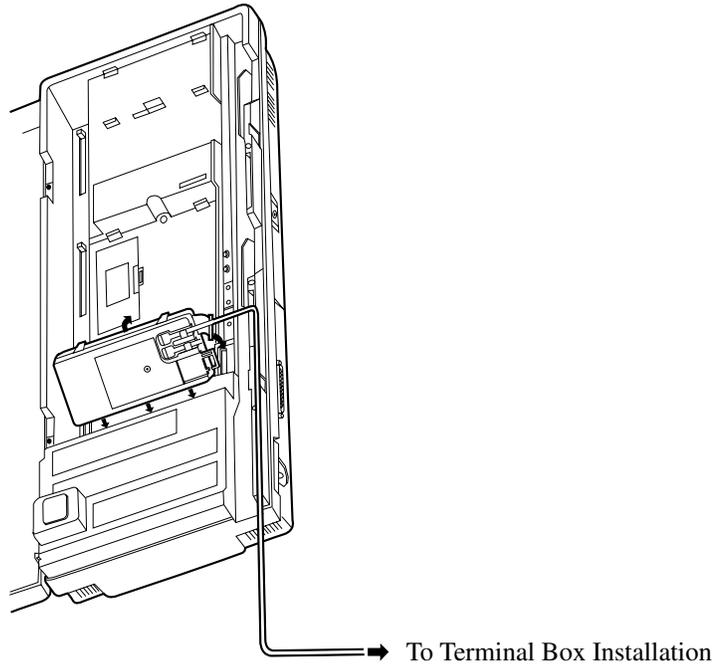
Wiring of the Doorphone

1. Connect the Doorphone / Door Opener Interface Card to the terminal box using two 4-conductor modular connectors.

2. Connect the wires of doorphone 1 to the red and green screws of the terminal box.

3. Connect the wires of doorphone 2 to the yellow and black screws of the terminal box.

4. Connect the wires of doorphone 3 to the red and green screws of the terminal box.

5. Connect the wires of doorphone 4 to the yellow and black screws of the terminal box.

View of Doorphone Connector Jack

Doorphone 4
Doorphone 3
Doorphone 2
Doorphone 1

4-conductor wiring is required.

Terminal Box

Doorphone 3 (KX-T30865)

Yellow
Red

Black
Green

Doorphone 4 (KX-T30865)

4-conductor wiring is required.

Terminal Box

Doorphone 1 (KX-T30865)

Yellow
Red

Black
Green

Doorphone 2 (KX-T30865)
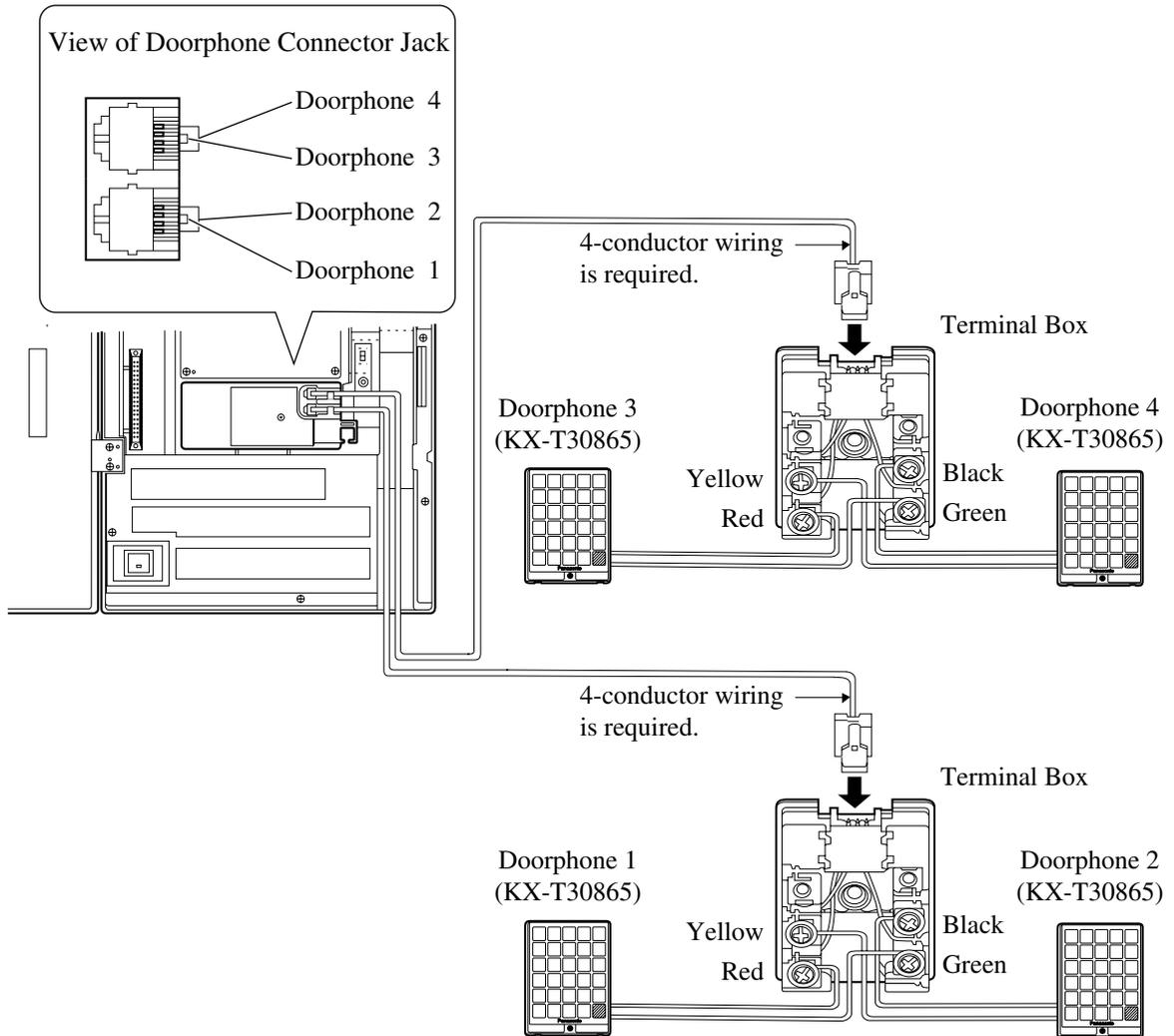
Connecting Door Openers

1. Loosen the screw to remove the cover.
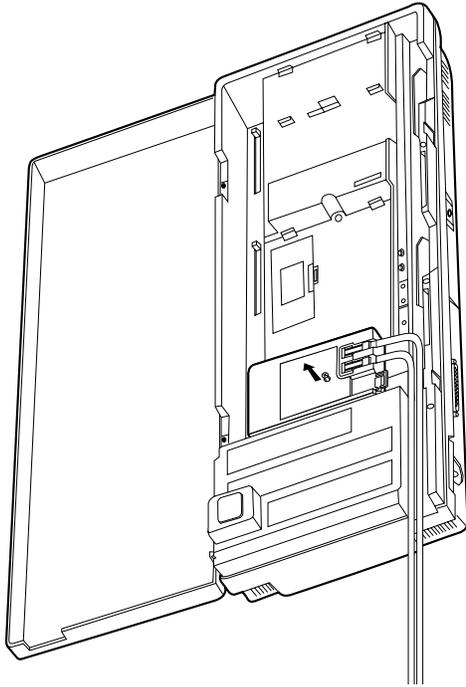
2. Loosen the screws on the terminal strip.
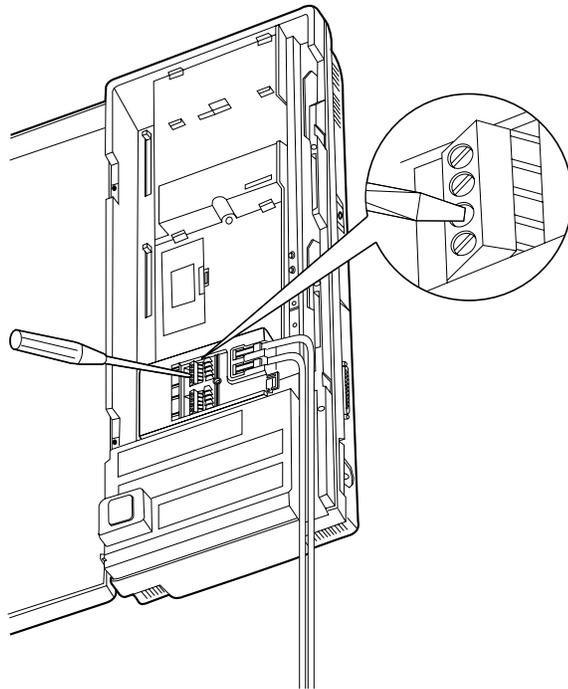
3. Insert the wires coming from the door openers into holes and tighten the screws.
Pass all the wires through the Holder.

Holder

To door opener 4

To door opener 3

To door opener 2
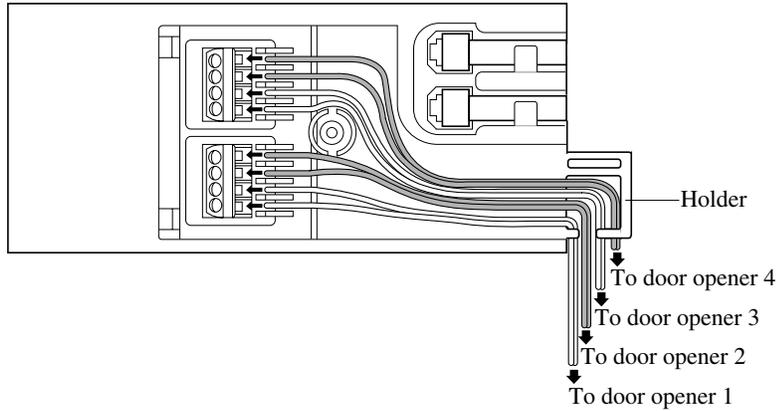
To door opener 1

<u>**Note**</u>

- Set the door opener paired with the doorphone.
- For wiring, UL 1015, AWG 22 twisted wire or the equivalent is recommended.
- The wire should be between 1.2 mm and 2.4 mm (3/64 inch and 3/32 inch) in diameter including the coating.

D=1.2 mm-2.4 mm (3/64 inch-3/32 inch)
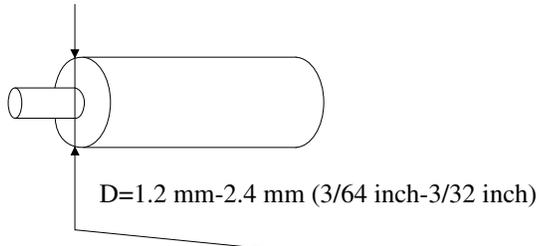
Maximum cabling distance of the doorphone and the door opener line

The maximum length of the doorphone and door opener line that connects to the main unit is shown below:

26 AWG: Under 70 m (230 feet)
24 AWG: Under 113 m (370 feet)
22 AWG: Under 180 m (590 feet)

Doorphone
KX-T30865

22 AWG: Under 180 m (590 feet)
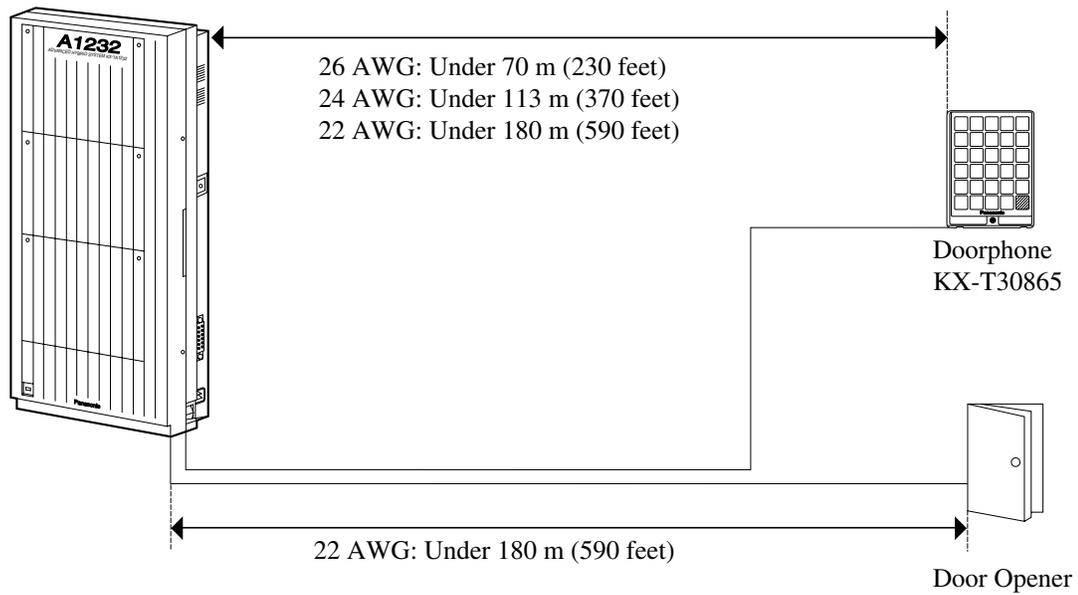
Door Opener

Programming Guide Reference

[607-608] Doorphone Ringing Assignment —— Day / Night

Features Guide Reference

Door Opener
Doorphone Call

2.4.8 Doorbell/Door Chime Connection

While loosening the screw with a screwdriver as described below, insert the wire from the doorbell/door chime into the hole and tighten the screw. You can use a standard doorbell/door chime of the United States. For more details, please consult your dealer. For information about how to connect the doorphones (KX-T30865) and door openers, refer to 2.4.7 Doorphone and Door Opener Connection.

<Connecting example>
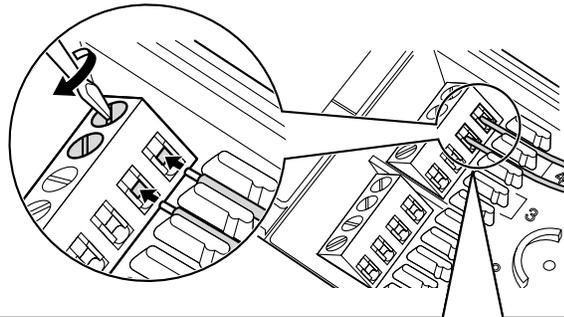
Doorphone/Door Opener Interface Card
(KX-TA123260)
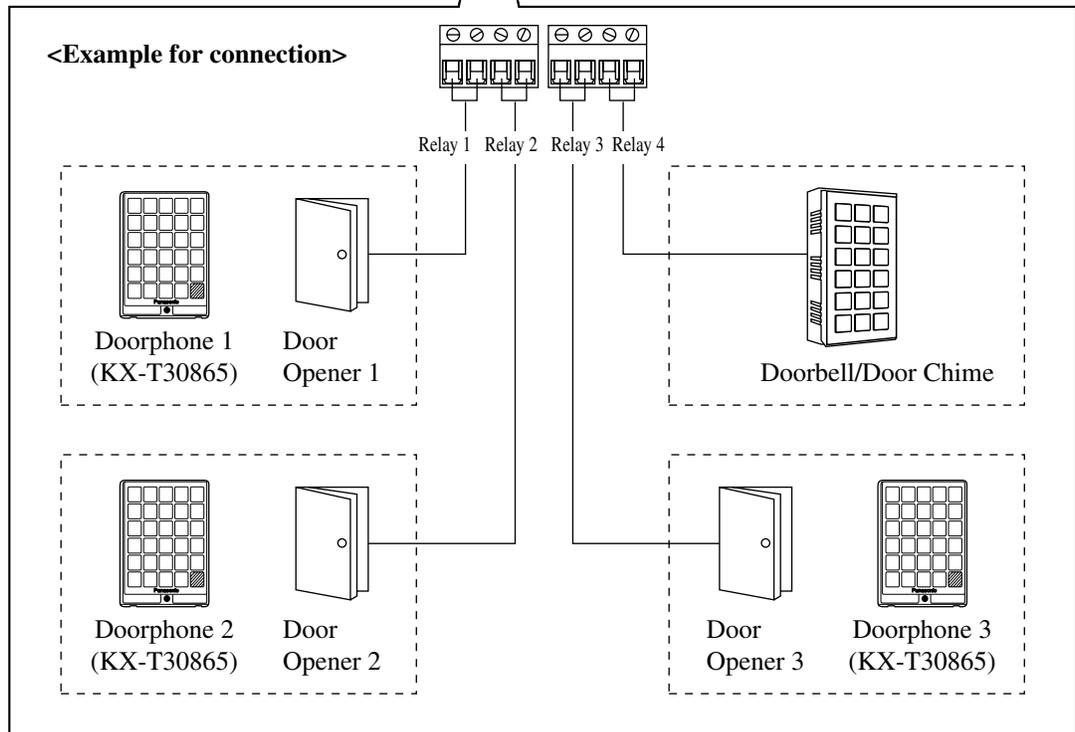
Programming Guide Reference

[607-608] Doorphone Ringing Assignment —— Day / Night

[820] Doorphone Ringing Time

[821] Doorphone Ring/Chime Selection

[822] Doorphone Chime Assignment

[823] Doorphone Chime Pattern Selection

Features Guide Reference

Doorbell/Door Chime (user-supplied)

2.5 Auxiliary Connection for Power Failure Transfer

2.5.1 Auxiliary Connection for Power Failure Transfer

Power Failure Transfer connects specific single line telephones to selected outside lines in the event of system power failure as follows:

Outside Line 1 — Extension (T, R) Jack 1 /
Outside Line 3 — Extension (T, R) Jack 9 /
Outside Line 9 — Extension (T, R) Jack 17
Connections of outside lines 1 through 3 and the respective extensions require no auxiliary connection. Outside line 9 requires auxiliary connection to implement this feature.

Insert the modular plugs of connection cords (4-conductor wiring) to the modular jacks of 4 CO Line Expansion Unit and the amphenol connector of 8 Extension Expansion Unit 1.
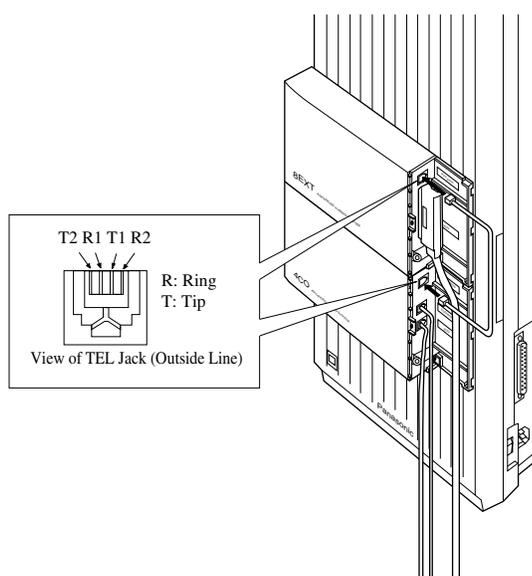
Note

- In the event of a power failure, system memory is protected by a factory-provided lithium battery. There is no memory loss except the memories of Camp-on, Saved Number Redial, Last Number Redial, Call Park and Message Waiting.
- The system changes the current connection to this connection automatically when the power supply stops.
- If DC power is available from backup batteries if AC power fails, the system does not change the current connection to the above connection.

Features Guide Reference

Power Failure Transfer

2.6   Closing the Front Cover

2.6.1   Closing the Front Cover

1. Fasten all the cables and cords with the cord fastener.
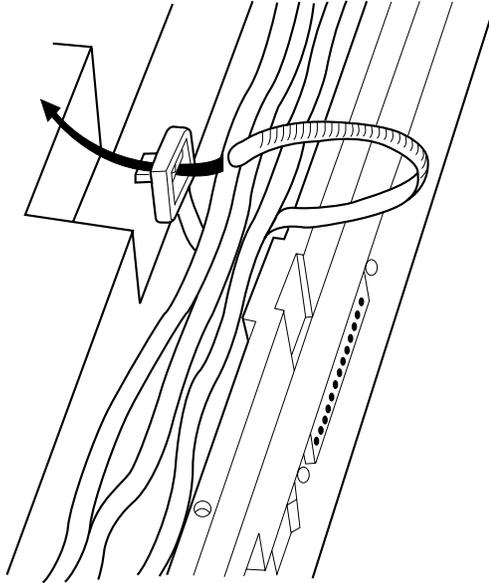
2. Replace the cover and tighten the screw.

<u>Note</u>

Be sure to tighten two screws, or the unit may not work properly.
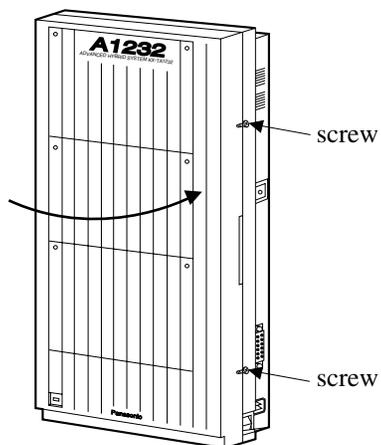
3. Tie together all of the connected cords and attach them to the wall so that the cords cannot be pulled out of the main unit.
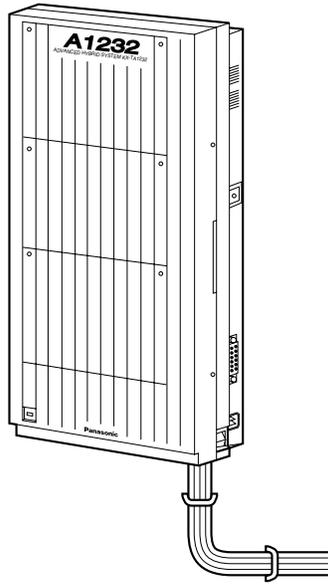
2.7   Starting the System for the First Time

2.7.1   Starting the System for the First Time

1. Set the Power Switch to the "OFF" position.

2. Set the System Clear Switch to the "CLEAR" position.

3. Plug the AC power cord into the system and an AC outlet.

4. Turn the Power Switch on.

5. Press the Reset Button with a pointed tool.
(The power indicator will flash.)

6. Slide the System Clear Switch to the "NORMAL" position while the power indicator is flashing (within approximately 10 seconds).

The system will be initialized with default values. The system will also check the outside lines, extensions, and optional cards and units.
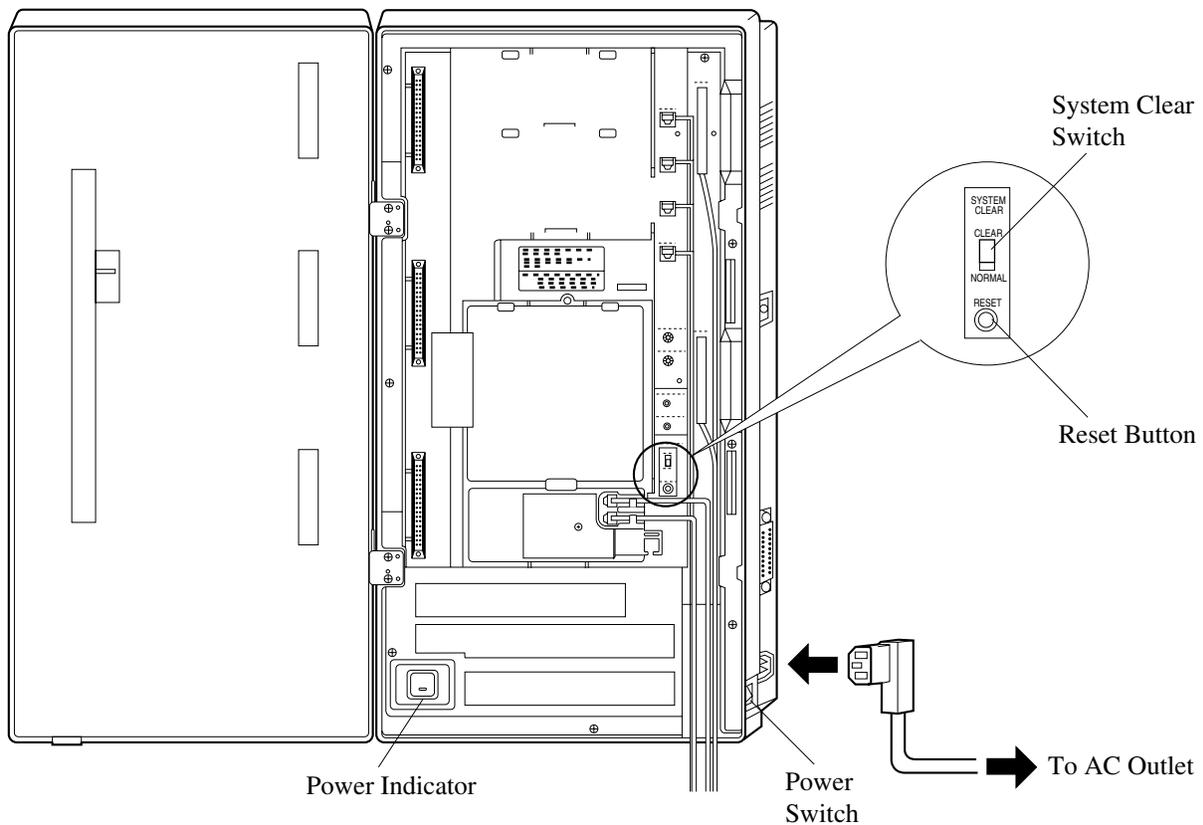
Notice

- After pressing the Reset Button, slide the System Clear Switch to the "NORMAL" position at step 6 while the power indicator is flashing (within approximately 10 seconds). Otherwise, the system will not start up with the default values.

CAUTION

The power supply cord is used as the main disconnect device, ensure that the socket-outlet is located/installed near the equipment and is easily accessible.

Once you start up the system and you turn the power off, do not perform the above procedure to start the system again. Otherwise, your programmed data will be cleared. To start the system, just turn the Power Switch on.

2.8   System Restart

2.8.1   System Restart

After starting the system, if the system does not operate properly, restart the system.
Before restarting the system, try the system feature again to confirm whether there definitely
is a problem or not.
System Restart causes the following:

   a) Camp-on is cleared.

   b) Calls on Hold are terminated.

   c) Calls on Exclusive Hold are terminated.

   d) Calls in progress are terminated.

   e) Call Park is cleared.

Other data is not cleared by System Restart.

1. Make sure that the System Clear Switch is set to the "NORMAL" position.

2. Press the Reset Button with a pointed tool.

Notice

After pressing the Reset Button, if you notice that the System Clear Switch is set to the
"CLEAR" position, never slide the System Clear Switch to the "NORMAL" position within 20
seconds. Otherwise, all the system programming data are reset to default values (Refer to
2.9.1   System Data Clear). Wait at least 30 seconds, then slide to the "NORMAL" position.
Then the system will work as before.

If the system still does not operate properly, please see 3.1.4   Using the Reset Button.

2.9   System Data Clear

2.9.1   System Data Clear

After storing or changing the system programming data, it is possible to clear your programming data stored in the system, if required. The system will restart with the default setting.

1. Slide the System Clear Switch to the "CLEAR" position.

2. Press the Reset Button with a pointed tool.

3. Return the System Clear Switch to the "NORMAL" position while the power indicator is flashing (within approximately 10 seconds).

Notice

After pressing the Reset Button, return the System Clear Switch to the "NORMAL" position in step 3 while the power indicator is flashing (within approximately 10 seconds). Otherwise, the system will not clear.

Section   3

Troubleshooting

This section provides information for system and telephone troubleshooting.

3.1   Troubleshooting

3.1.1   Installation

PROBLEM	PROBABLE CAUSE	POSSIBLE SOLUTION
Extension does not operate.	Bad printed circuit board (Extension Unit).	Exchange printed circuit board for another printed circuit board.
	Bad connection between the system and extension.	Take the extension and plug it into the same extension port using a short telephone cord. If the telephone does not work, the connection between the system and the extension must be repaired.
	A telephone with an A-A1 relay is connected.	Use a 2 wire cord. Set the A-A1 relay switch of the telephone to the "OUT" or "OFF" position.
	Bad extension.	Take the extension and plug it into another extension port that is working. If the telephone does not work, replace the phone.
Incorrect reset operation.		Press the Reset Button.
Noise in external paging.	Induced noise on the wire between the system and the amplifier.	Use a shielded cable as the connection wire between the system and amplifier. A short shielded cable is recommended.
Volume distortion from external music source.	Excessive input level from external music source.	Decrease the output level of the external music source by using the volume control on the music source.
Speed Dialing or One-Touch Dialing does not function.	Bad programming.	Enter the outside line access number (9, 81 through 88) into programming.

3.1.2 Connection

Connection between the system and a proprietary telephone:

Connection between the system and a proprietary telephone:

CAUSE	SOLUTION
The T / R is connected to the L / H. KX-TA1232 extension	Use the correct cord (inner 2 wires are for T / R and the outer 2 wires are for L / H).

Connection between the system and a single line telephone:

CAUSE	SOLUTION
The T / R is connected to the L / H. KX-TA1232 extension	Use the correct cord (inner 2 wires are for T / R). • If a telephone equipped with an A-A1 relay is connected to the system, set the A-A1 relay switch of the telephone to "OFF".

Connection between the system and a single line telephone that is polarity-sensitive:

CAUSE	SOLUTION
The "T" is connected to the "R". KX-TA1232 extension	Reverse the connections of the T / R.

Can you dial an extension? — No

Yes

(Continued on the following.)

Connection between the central office and the system:

Connection between the central office and the system:

(Continued from the previous.)

Can you dial out on an outside line?

No
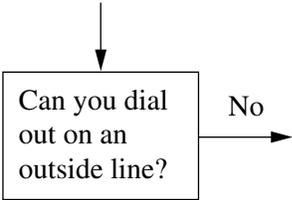
CAUSE	SOLUTION
Outside lines are connected to the T2 / T1. T2 R1 T1 R2 Outside line KX-TA1232 Outside lines are connected to the T2 / R1. T2 R1 T1 R2 Outside line KX-TA1232	Reconnect the outside lines to the T1 / R1 or T2 / R2 of the telephone jack using 2-conductor wiring.
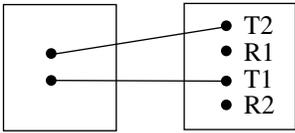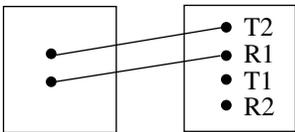
3.1.3 Operation

PROBLEM	PROBABLE CAUSE	POSSIBLE SOLUTION
• When using the speakerphone mode with a proprietary telephone KX-T7135, KX-T7130 or KX-T7030, nothing is audible.	• The HANDSET / HEADSET selector of the KX-T7135, KX-T7130 or KX-T7030 is set to the "HEADSET" position.	• When the headset is not used, set the HANDSET / HEADSET selector to the "HANDSET" position.
• The unit does not ring.	• The Ringer Volume Selector is set to "OFF".	• Set to "HIGH" or "LOW".
• During a power failure, extensions connected to jack numbers 1, 9 and 17 for KX-TA1232 do not operate.	• An analog proprietary telephone (APT) is connected to the jack. • The dialing mode (tone or pulse) is improper.	• Disconnect the APT and connect a single line telephone. • Set the Tone / Pulse switch to the other position.
• Originating an outside call, Call Transfer, or Conference cannot be performed.	• The corresponding CO button does not exist on the proprietary telephone.	• Program the CO button. See Section [005] Flexible CO Button Assignment.

3.1.4   Using the Reset Button

If the system does not operate properly, use the Reset Button.
Before using the Reset Button, try the system feature again to confirm whether there definitely is a problem or not.

1. When the System Clear Switch is set to "NORMAL", pressing the Reset Button causes the following:

   a) Camp-on is cleared.

   b) Calls on Hold are terminated.

   c) Calls on Exclusive Hold are terminated.

   d) Calls in progress are terminated.

   e) Call Park is cleared.

   All other data stored in memory is not cleared.

2. When the System Clear Switch is set to the "CLEAR" position, you must press the Reset Button with caution. All data stored in memory will be cleared by the following operation: pressing the Reset Button and setting the System Clear Switch to the "NORMAL" position while the Power Indicator is flashing.

Operation

1. If the system does not operate properly,

   a) Make sure that the System Clear Switch is set to the "NORMAL" position.

   b) Press the Reset Button with a pointed tool.

2. If the system still does not operate properly,

   a) Set the System Clear Switch to the "CLEAR" position.

   b) Press the Reset Button with a pointed tool.

   c) Return the System Clear Switch to the "NORMAL" position while the Power Indicator is flashing (approximately within 10 seconds).

3. If the system still does not work, switch the power off and on again after five minutes.

4. If the system still does not work,

   a) Switch the power off.

   b) Set the System Clear Switch to the "CLEAR" position.

   c) Switch the power on.

   d) Press the Reset Button with a pointed tool.

   e) Set the System Clear Switch to the "NORMAL" position while the Power Indicator is flashing (approximately within 10 seconds).

5. If the system still does not work, switch the power off. Then consult an authorized service person.

When the power supply stops, certain extensions are automatically connected straight to specific outside lines:

      Extension (T, R) of jack number 1: Outside line 1

      Extension (T, R) of jack number 9: Outside line 3

      Extension (T, R) of jack number 17: Outside line 9

Connect single line telephones to the above extension jacks.

Section   4

Index

W