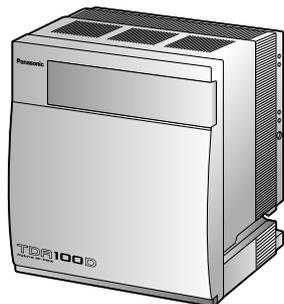


Panasonic®



Installation Manual Hybrid IP-PBX

Model No. **KX-TDA100D**



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

KX-TDA100D: PDMPR Software File Version 5.1000 or later



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a trademark of
SD-3C, LLC.

System Components

System Components Table

Category	Model No.	Description
Shelf	KX-TDA100D	Basic Shelf
Main Processing Card		Main Processing Card (DMPR)
DMPR Option Card	KX-TDA0196	Remote Card (RMT)
Trunk Cards	KX-TDA0180	8-Port Analogue Trunk Card (LCOT8)
	KX-TDA0181	16-Port Analogue Trunk Card (LCOT16)
	KX-TDA0182	8-Port DID Card (DID8)
	KX-TDA0183	4-Port Analogue Trunk Card (LCOT4)
	KX-TDA0184	8-Port E & M Trunk Card (E&M8)
	KX-TDA0187	T-1 Trunk Card (T1)
	KX-TDA0188	E-1 Trunk Card (E1)
	KX-TDA0189	8-Port Caller ID/Pay Tone Card (CID/PAY8)
	KX-TDA0193	8-Port Caller ID Card (CID8)
	KX-TDA0284	4-Port BRI Card (BRI4)
	KX-TDA0288	8-Port BRI Card (BRI8)
	KX-TDA0290CE/ CJ	PRI Card (PRI30)
	KX-TDA0290	PRI Card (PRI23)
	KX-TDA0484	4-Channel VoIP Gateway Card (IP-GW4E)
	KX-TDA0490	16-Channel VoIP Gateway Card (IP-GW16)
	KX-TDA1180	8-Port Analogue Trunk Card with CID (CLCOT8)
	KX-TDA1186	8-Port Analogue Trunk with Caller ID Daughter Card (CLCOT8E)
Extension Cards	KX-TDA0143	4 Cell Station Interface Card (CSIF4)
	KX-TDA0144	8 Cell Station Interface Card (CSIF8)
	KX-TDA0171	8-Port Digital Extension Card (DLC8)
	KX-TDA0172	16-Port Digital Extension Card (DLC16)
	KX-TDA0470	16-Channel VoIP Extension Card (IP-EXT16)
	KX-TDA1176	16-Port Single Line Telephone Extension with Caller ID and Message Lamp Card (MCSLC16)
	KX-TDA1178	24-Port Single Line Telephone Extension with Caller ID and Message Lamp Card (MCSLC24)

Category		Model No.	Description
Other Cards		KX-TDA0161	4-Port Doorphone Card (DPH4)
		KX-TDA0162	2-Port Doorphone Card (German Type) (DPH2)
		KX-TDA0164	4-Port External Input/Output Card (EIO4)
		KX-TDA0166	16-Channel Echo Canceller Card (ECHO16)
		KX-TDA0190	Optional 3-Slot Base Card (OPB3)
		KX-TDA0191	4-Channel Message Card (MSG4)
		KX-TDA0192	2-Channel Simplified Voice Message Card (ESVM2)
		KX-TDA0194	4-Channel Simplified Voice Message Card (ESVM4)
		KX-TDA0410	CTI Link Card (CTI-LINK)
Optional SD Memory Card		KX-TDA0920	SD Memory Card for Software Upgrade to Enhanced Version
Cell Stations (CSs)	2.4 GHz	KX-TDA0151CN	2-Channel Cell Station Unit Using a DLC Card (PT-interface CS) for 2.4 GHz Portable Station
	DECT	KX-TDA0155CE	2-Channel Cell Station Unit Using a DLC Card (PT-interface CS) for DECT Portable Station
		KX-TDA0156CE	4-Channel Cell Station Unit Using a CSIF Card for DECT Portable Station
		KX-TDA0158CE	8-Channel High-density Cell Station Unit Using a DLC Card (PT-interface CS) for DECT Portable Station
Proprietary Equipment		KX-A228	Back-up Battery Cable
		KX-A258	Blank Slot Cover
		KX-T30865	Doorphone
		KX-T7765	

Equipment Compatibility

Compatible Panasonic Proprietary Telephones

The PBX supports the following telephones:

- Digital proprietary telephones (e.g., KX-DT300 series)
- IP proprietary telephones (e.g., KX-NT300 series)
- Portable stations (e.g., KX-TCA355, KX-TCA256)
- DSS consoles (e.g., KX-DT390)
- Single line telephones (e.g., KX-T7710)

Incompatible Panasonic Proprietary Telephones

The PBX does not support the following telephones:

- KX-T7400 series digital proprietary telephones
- KX-T7500 series digital proprietary telephones
- Analogue proprietary telephones (e.g., KX-T7700 series)
- KX-T30800 series proprietary telephones and DSS consoles

System Components

- KX-T61600 series proprietary telephones and DSS consoles
- KX-T123200 series proprietary telephones and DSS consoles
- KX-TD7500 DECT portable station

Note

- For the equipment (e.g., Add-on Key Module, USB Module, Headset) that can be connected to a particular telephone, refer to the telephone's manual.
- For other equipment that can be connected to the PBX, refer to "1.1.2 System Connection Diagram".

Notice

- Under power failure conditions, the connected telephones may not operate. Please ensure that a separate telephone, not dependent on local power, is available for emergency use.
- Prior to connection of this product, please verify that the intended operating environment is supported. Satisfactory performance cannot be guaranteed for the following:
 - interoperability and compatibility with all devices and systems connected to this product
 - proper operation and compatibility with services provided by telecommunications companies over connected networks

Note

- Some optional hardware, software, and features are not available in some countries/areas. Please consult your certified Panasonic dealer for more information.
- In this manual, the suffix of each model number (e.g., KX-TDA100D**CE**) is omitted unless necessary.

Safety Notices

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

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

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

List of Abbreviations

- DPT → Digital proprietary telephone
- IP-PT → IP proprietary telephone
- PS → Portable station
- PT → Proprietary telephone
- SLT → Single line telephone

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:

- Do not use the product near water, for example, near a bathtub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
- Avoid using wired telephones during an electrical storm. There is a remote risk of electric shock from lightning.
- Do not use a telephone in the vicinity of a gas leak to report the leak.

SAVE THESE INSTRUCTIONS

Important Information

SAVE THESE INSTRUCTIONS

WARNING

SAFETY REQUIREMENTS

For All Telephone Equipment

- Do not install the product in any other way than described in relevant manuals.
- The product must only be installed and serviced by qualified service personnel. The product should be used as-is from the time of purchase; it should not be disassembled or modified. Disassembly or modification can cause a fire, electric shock, or damage to the product.
- Do not install the product in a place exposed to rain or moisture, or a place where water, oil, or other liquids can drip or splash onto on the product. Such conditions can lead to fire or electric shock, and may impair the performance of the product.
- Follow all warnings and instructions marked on the product.
- Do not place the product on an unstable or uneven surface. If the product were to fall over, it may cause injury or damage to the product.
- Products that require a power source should only be connected to the type of electrical power supply specified on the product label. If you are not sure of the type of power supply to your home, consult your dealer or local power company.
- For safety purposes some products are equipped with an earthed plug. If you do not have an earthed outlet, please have one installed. Do not bypass this safety feature by tampering with the plug.
- Do not supply power to a combination of devices that exceeds the total rated capacity of the wall outlets or extension cables used. If outlets, power strips, extension cords, etc. are used in a manner that exceeds their rated capacity, they emit large amounts of heat, which could cause a fire.
- Unplug the product from the wall outlet and have it serviced by qualified service personnel in the following cases:
 - a. When the power supply cord or plug is damaged or frayed.
 - b. If liquid has been spilled into the product.
 - c. If the product has been exposed to rain or water.
 - d. If the product does not operate according to the operating instructions. Adjust only the controls that are explained in the operating instructions. Improper adjustment of other controls may result in damage and may require service by a qualified technician to restore the product to normal operation.
 - e. If the product has been dropped or the cabinet has been damaged.
 - f. If product performance deteriorates.

For the PBX

- If damage to the unit exposes any internal parts, disconnect the power supply cord immediately and return the unit to your dealer.
- To prevent fires, electric shock, injury, or damage to the product, be sure to follow these guidelines when performing any wiring or cabling:
 - a. Before performing any wiring or cabling, unplug the product's power cord from the outlet. After completing all wiring and cabling, plug the power cord back into the outlet.
 - b. When laying cables, do not bundle the product's power cord with the power cords of other devices.
 - c. Do not place any objects on top of the cables connected to the PBX.
 - d. When running cables along the floor, use protectors to prevent the cables from being stepped on.
 - e. Do not run any cables under carpeting.

- Unplug this unit from the AC outlet if it emits smoke, an abnormal smell or makes unusual noise. These conditions can cause fire or electric shock. Confirm that smoke has stopped and contact an authorised Panasonic Factory Service Centre.
- Danger of explosion exists if a battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the battery manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- Make sure that the wall that the shelf will be attached to is strong enough to support the shelf. If not, it is necessary for the wall to be reinforced.
- Only use the wall-mounting equipment (anchor plugs, screws, metal bracket) included with the PBX.
- Do not insert objects of any kind into this product, as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock.

CAUTION

SAFETY REQUIREMENTS

For All Telephone Equipment

- The product should be kept free of dust, moisture, high temperature (more than 40 °C) and vibration, and should not be exposed to direct sunlight.
- Unplug the product from the wall outlet before cleaning. Wipe the product with a soft cloth. Do not clean with abrasive powders or with chemical agents such as benzene or thinner. Do not use liquid cleaners or aerosol cleaners.

For the PBX

- Before touching the product (PBX, cards, etc.), discharge static electricity by touching ground or wearing an earthing strap. Failure to do so may cause the PBX to malfunction due to static electricity.
- When driving the screws into the wall, be careful to avoid touching any metal laths, wire laths or metal plates in the wall.
- When relocating the equipment, first disconnect the telecom connection before disconnecting the power connection. When the unit is installed in the new location, reconnect the power first, and then reconnect the telecom connection.
- The power supply cord is used as the main disconnect device. Ensure that the AC outlet is located near the equipment and is easily accessible.
- The SD Memory Card poses a choking hazard. Keep the SD Memory Card out of reach of children.
- Slots and openings in the front, back and bottom of the cabinet 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 a bed, sofa, rug, or other similar surface while in use. The product should never be placed near or over a radiator or other heat source. This product should not be placed in a sealed environment unless proper ventilation is provided.
- When this product is no longer in use, make sure to detach it from the wall.

SECURITY REQUIREMENTS

In order to use the PBX safely and correctly, the Security Requirements below must be observed. Failure to do so may result in:

- Loss, leakage, falsification or theft of user information.
- Illegal use of the PBX by a third party.
- Interference or suspension of service caused by a third party.

What is User Information?

User Information is defined as:

1. Information stored on the SD Memory Card

Important Information

Phonebook data, user IDs, system settings data, passwords (User/Administrator/Installer), Personal Identification Numbers (PINs), etc.

2. Information sent from the PBX to a PC or other external device:
Phone call data (including telephone numbers of outside parties), call charge data, etc.

Requirements

1. The SD Memory Card contains software for all the processes of the PBX and all customer data. It can be easily removed and taken away from the PBX by a third party. Therefore, do not allow unauthorised access to prevent data leakage.
2. Always make backups of data stored on the SD Memory Card. For details, refer to "2.6.2 Utility—File Transfer PC to PBX (SD Card)" and "2.6.3 Utility—File Transfer PBX (SD Card) to PC" in the PC Programming Manual.
3. To prevent illegal access from the Internet, activate a Firewall.
4. To avoid unauthorised access and possible abuse of the PBX, we strongly recommend:
 - a. Keeping the password secret.
 - b. Selecting a complex, random password that cannot be easily guessed.
 - c. Changing your password regularly.
5. Perform the following when sending the PBX for repair or handing it over to a third party.
 - a. Make a backup of data stored on the SD Memory Card.
 - b. Using an SD formatter, format the SD Memory Card so that information cannot be retrieved from it.
6. To prevent data leakage, render the SD Memory Card physically unusable before disposal.
7. When user information is sent from the PBX to a PC or other external device, the confidentiality of that information becomes the responsibility of the customer. Before disposing of the PC or other external device, ensure that data cannot be retrieved from it by formatting the hard disk and/or rendering it physically unusable.

Notice

SAFETY REQUIREMENTS

For All Telephone Equipment

- Read and understand all instructions.

For the PBX

- When placing the metal bracket, make sure that the "TOP" arrow is pointing upward.
- Keep the unit away from heating appliances and devices that generate electrical noise such as fluorescent lamps, motors and televisions. These noise sources can interfere with the performance of the PBX.
- If you are having problems making calls to outside destinations, follow this procedure to test the trunks:
 - a. Disconnect the PBX from all trunks.
 - b. Connect known working SLTs to those trunks.
 - c. Make a call to an external destination using those SLTs.

If a call cannot be carried out correctly, there may be a problem with the trunk that the SLT is connected to. Contact your telephone company.

If all SLTs operate properly, there may be a problem with your PBX. Do not reconnect the PBX to the trunks until it has been serviced by an authorised Panasonic Factory Service Centre.

Precaution

For users in the European Union only

Information for Users on Collection and Disposal of Old Equipment and used Batteries



These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries should not be mixed with general household waste.

For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC and 2006/66/EC.

By disposing of these products and batteries correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.

For more information about collection and recycling of old products and batteries, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.



Information on Disposal in other Countries outside the European Union

These symbols are only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.



Cd

Note for the battery symbol (bottom two symbol examples):

This symbol might be used in combination with a chemical symbol. In this case it complies with the requirement set by the Directive for the chemical involved.

Introduction

This Installation Manual is designed to serve as an overall technical reference for the Panasonic Hybrid IP-PBX, KX-TDA100D. It provides instructions for installing the hardware, and programming the PBX using the Maintenance Console.

The Structure of this Manual

This manual contains the following sections:

Section 1 System Outline

Provides general information on the PBX, including the system capacity and specifications.

Section 2 Installation

Describes the procedures to install the PBX. Detailed instructions for planning the installation site, installing the optional service cards, and cabling of peripheral equipment are provided. Further information on system expansion and peripheral equipment installation is included.

Section 3 Guide for the Maintenance Console

Explains the installation procedure, structure, and basic information of the Maintenance Console.

Section 4 Troubleshooting

Provides information on the PBX and telephone troubleshooting.

About the Other Manuals

Along with this Installation Manual, the following manuals are available:

Feature Guide

Describes all basic, optional and programmable features of the PBX.

PC Programming Manual

Provides step-by-step instructions for performing system programming using a PC.

PT Programming Manual

Provides step-by-step instructions for performing system programming using a PT.

User Manual

Provides operating instructions for end users using a PT, SLT, PS, or DSS Console.

About the software version of your PBX

The contents of this manual apply to PBXs with a certain software version, as indicated on the cover of this manual. To confirm the software version of your PBX, see "How do I confirm the software version of the PBX or installed cards?" in 2.7.1 Frequently Asked Questions (FAQ) of the PC Programming Manual, or "[190] Main Processing (MPR) Software Version Reference" in the PT Programming Manual.

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Section 1

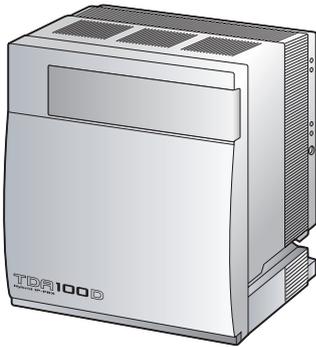
System Outline

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

1.1 Basic System Construction

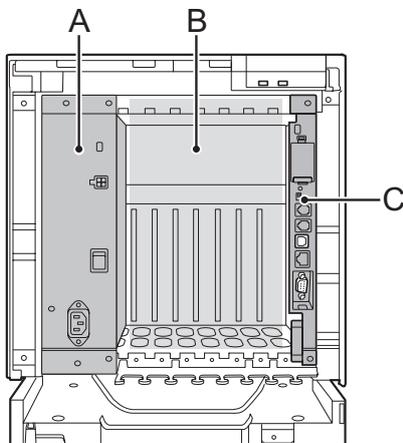
1.1.1 Basic Shelf

The basic shelf contains a power supply unit (PSU) and a DMPR card for starting and controlling the PBX. To use the system, install optional service cards in the basic shelf.

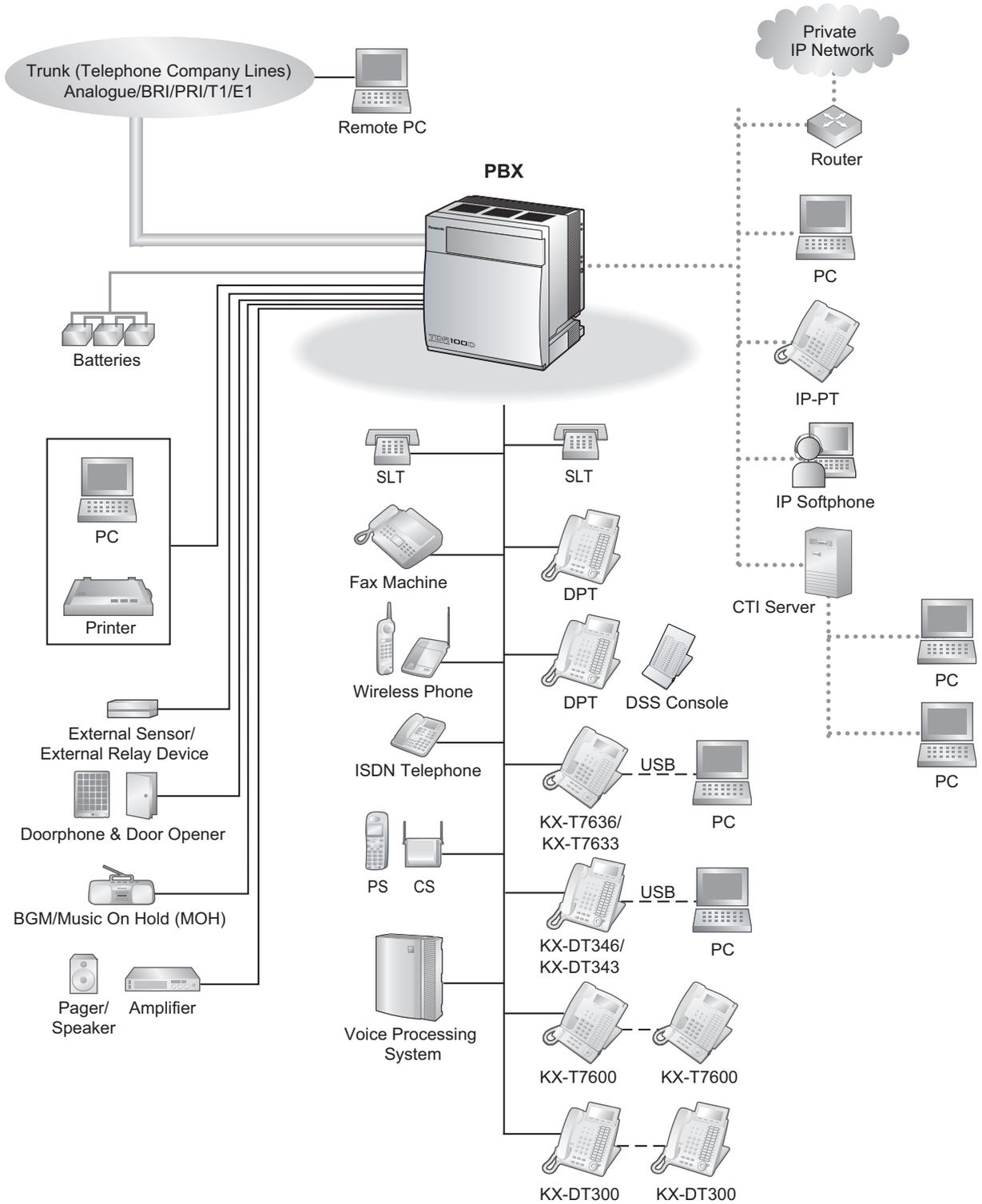


Construction of the Basic Shelf

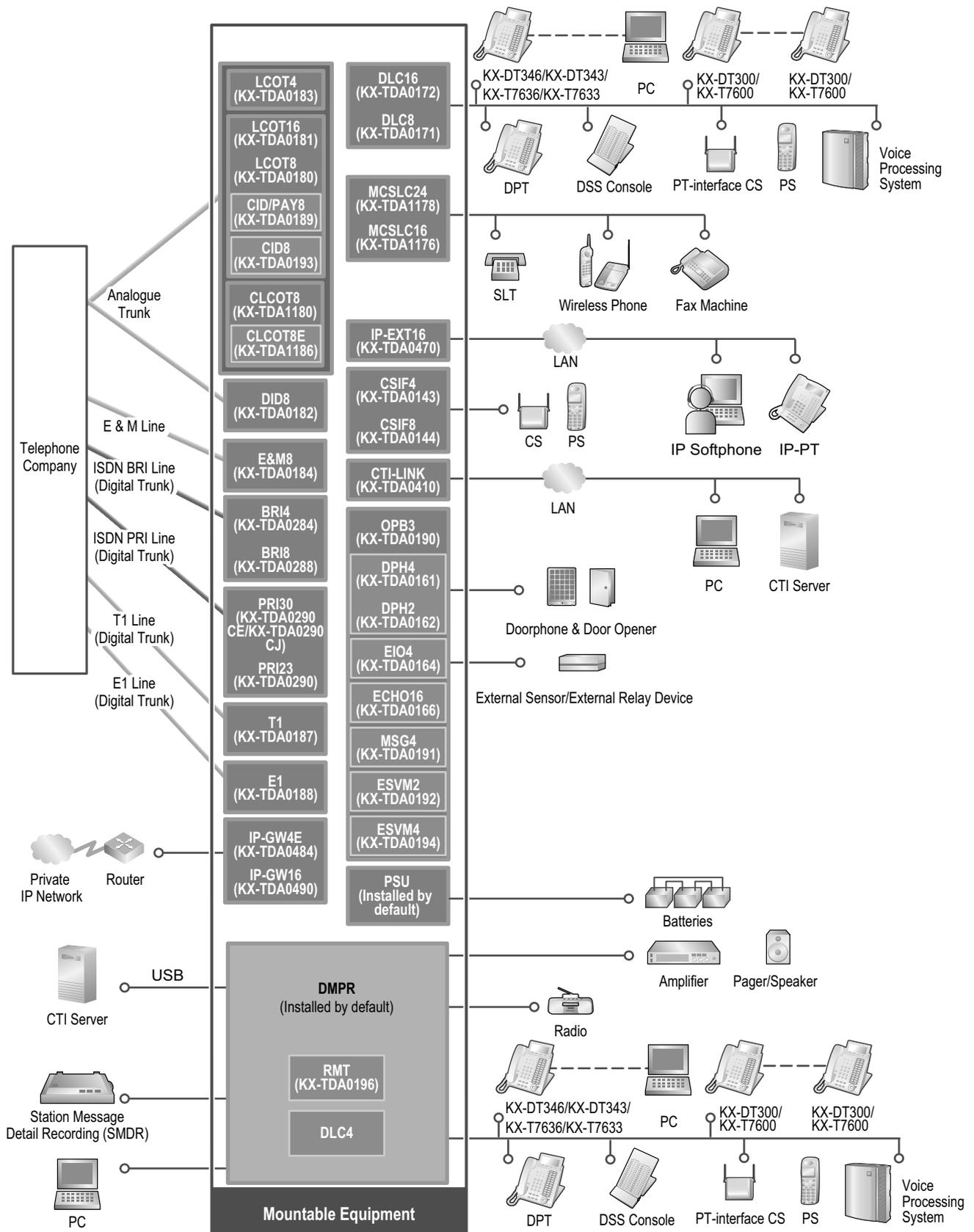
- A. PSU
- B. Slots for Expansion
- C. DMPR Card



1.1.2 System Connection Diagram



1.1.2 System Connection Diagram



1.2 Optional Equipment

1.2.1 Optional Equipment

Model No.	Model Name	Description
KX-TDA0143	4 Cell Station Interface Card (CSIF4)	4-port CS interface card for 4 CSs.
KX-TDA0144	8 Cell Station Interface Card (CSIF8)	8-port CS interface card for 8 CSs.
KX-TDA0161	4-Port Doorphone Card (DPH4)	4-port doorphone card for 4 doorphones and 4 door openers. To be mounted on the OPB3 card.
KX-TDA0162	2-Port Doorphone Card (German Type) (DPH2)	2-port doorphone card for 2 German-type doorphones and 2 door openers. To be mounted on the OPB3 card.
KX-TDA0164	4-Port External Input/Output Card (EIO4)	4-port external input/output card. To be mounted on the OPB3 card.
KX-TDA0166	16-Channel Echo Canceller Card (ECHO16)	16-channel card for echo cancellation during conferences. To be mounted on the OPB3 card.
KX-TDA0171	8-Port Digital Extension Card (DLC8)	8-port digital extension card for DPTs, DSS consoles, and PT-interface CSs.
KX-TDA0172	16-Port Digital Extension Card (DLC16)	16-port digital extension card for DPTs, DSS consoles, and PT-interface CSs.
KX-TDA0180	8-Port Analogue Trunk Card (LCOT8)	8-port analogue trunk card with 2 power failure transfer (PFT) ports.
KX-TDA0181	16-Port Analogue Trunk Card (LCOT16)	16-port analogue trunk card with 4 power failure transfer (PFT) ports.
KX-TDA0182	8-Port DID Card (DID8)	8-port DID trunk card.
KX-TDA0183	4-Port Analogue Trunk Card (LCOT4)	4-port analogue trunk card with 2 power failure transfer (PFT) ports.
KX-TDA0184	8-Port E & M Trunk Card (E&M8)	8-port E & M (TIE) trunk card. Type 5 support.
KX-TDA0187	T-1 Trunk Card (T1)	1-port T1 trunk card. EIA/TIA standard compliant.
KX-TDA0188	E-1 Trunk Card (E1)	1-port E1 trunk card. ITU-T standard compliant.
KX-TDA0189	8-Port Caller ID/Pay Tone Card (CID/PAY8)	8-port Caller ID signal type FSK/FSK (with Call Waiting Caller ID [Visual Caller ID])/DTMF, and 8-port Pay Tone Service (12 kHz/16 kHz). To be mounted on the LCOT8/LCOT16 card.
KX-TDA0190	Optional 3-Slot Base Card (OPB3)	Optional 3-slot base card for mounting a maximum of 3 optional service cards from the following: MSG4, ESVM4, ESVM2, DPH4, DPH2 or EIO4 card.

1.2.1 Optional Equipment

Model No.	Model Name	Description
KX-TDA0191	4-Channel Message Card (MSG4)	4-channel message card. To be mounted on the OPB3 card.
KX-TDA0192	2-Channel Simplified Voice Message Card (ESVM2)	2-channel simplified voice message card for Built-in Simplified Voice Message feature. Also supports MSG card features. To be mounted on the OPB3 card.
KX-TDA0193	8-Port Caller ID Card (CID8)	8-port Caller ID signal type FSK/FSK (with Call Waiting Caller ID [Visual Caller ID])/DTMF. To be mounted on the LCOT8/LCOT16 card.
KX-TDA0194	4-Channel Simplified Voice Message Card (ESVM4)	4-channel simplified voice message card for Built-in Simplified Voice Message feature. Also supports MSG card features. To be mounted on the OPB3 card.
KX-TDA0196	Remote Card (RMT)	Analogue modem card for remote communication with the PBX. ITU-T V.90 support. To be mounted on the DMPP card.
KX-TDA0284	4-Port BRI Card (BRI4)	4-port ISDN Basic Rate Interface card with 1 power failure transfer port. EURO-ISDN/ETSI compliant.
KX-TDA0288	8-Port BRI Card (BRI8)	8-port ISDN Basic Rate Interface card with 1 power failure transfer port. EURO-ISDN/ETSI compliant.
KX-TDA0290CE/ KX-TDA0290CJ	PRI Card (PRI30)	1-port ISDN Primary Rate Interface card (30B channels). EURO-ISDN/ETSI compliant.
KX-TDA0290	PRI Card (PRI23)	1-port ISDN Primary Rate Interface card (23B channels). NI (North American standard ISDN protocol) compliant.
KX-TDA0410	CTI Link Card (CTI-LINK)	Ethernet card for CTI communication via 10BASE-T port. CSTA Phase 3 protocol compatible.
KX-TDA0470	16-Channel VoIP Extension Card (IP-EXT16)	16-channel VoIP extension card. Compliant with Panasonic proprietary protocol, and ITU-T G.729a and G.711 codec methods.
KX-TDA0484	4-Channel VoIP Gateway Card (IP-GW4E)	4-channel VoIP gateway card. Compliant with VoIP H.323 V.2 protocol, and ITU-T G.729a, G.723.1, and G.711 codec methods.
KX-TDA0490	16-Channel VoIP Gateway Card (IP-GW16)	16-channel VoIP gateway card. Compliant with VoIP H.323 V.2 protocol, and ITU-T G.729a, G.723.1, and G.711 codec methods.
KX-TDA0920	SD Memory Card for Software Upgrade to Enhanced Version	Optional SD Memory Card to use enhanced features. For more details, refer to the SD Memory Card Installation/Upgrade Guide.

Model No.	Model Name	Description
KX-TDA1176	16-Port Single Line Telephone Extension with Caller ID and Message Lamp Card (MCSLC16)	16-port extension card for SLTs with Caller ID (FSK), Message Waiting Lamp control, and 2 power failure transfer (PFT) ports. Maximum power output of 90 V for Message Waiting Lamp control.
KX-TDA1178	24-Port Single Line Telephone Extension with Caller ID and Message Lamp Card (MCSLC24)	24-port extension card for SLTs with Caller ID (FSK), Message Waiting Lamp control, and 2 power failure transfer (PFT) ports. Maximum power output of 90 V for Message Waiting Lamp control.
KX-TDA1180	8-Port Analogue Trunk Card with CID (CLCOT8)	8-port analogue trunk card with Caller ID, and 2 power failure transfer (PFT) ports. Caller ID signal type FSK/FSK (with Call Waiting Caller ID [Visual Caller ID])/DTMF compatible.
KX-TDA1186	8-Port Analogue Trunk with Caller ID Daughter Card (CLCOT8E)	8-port analogue trunk daughter card with Caller ID. Caller ID signal type FSK/FSK (with Call Waiting Caller ID [Visual Caller ID])/DTMF compatible. To be mounted on the CLCOT8 card.

Note

For the maximum number of optional service cards that can be installed in the PBX, refer to "1.3.3 System Capacity".

1.3 Specifications

1.3.1 General Description

Control Bus		Original bus (16-bit, 8 MHz, 10 megabytes per second)	
Communication Bus		H.100 bus conformity (1024 time slots)	
Switching		Non-blocking	
Power Input		100 V AC to 130 V AC; 2.8 A/200 V AC to 240 V AC; 1.7 A; 50 Hz/60 Hz	
External Battery		+36 V DC (+12 V DC × 3, recommended maximum capacity is 28 Ah)	
Maximum Power Failure Tolerance		300 ms (without using backup batteries)	
Memory Backup Duration		7 years	
Dialling	Trunk	Dial Pulse (DP) 10 pps, 20 pps Tone (DTMF) Dialling	
	Extension	Dial Pulse (DP) 10 pps, 20 pps Tone (DTMF) Dialling	
Mode Conversion		DP-DTMF, DTMF-DP	
Ring Frequency		20 Hz/25 Hz (selectable)	
Trunk Loop Limit		1600 Ω maximum	
Operating Environment	Temperature	0 °C to 40 °C	
	Humidity	10 % to 90 % (non-condensing)	
Conference Call Trunk		From 10 × 3-party conference call to 4 × 8-party conference call	
Music on Hold (MOH)		2 ports (Level Control: -11 dB to +11 dB in 1 dB steps) MOH1: External Music Source port MOH2: Selectable Internal/External Music Source port	
Paging	Internal	Level Control: -15 dB to +6 dB in 3 dB steps	
	External	2 ports (Volume Control: -15 dB to +15 dB in 1 dB steps)	
Serial Interface Port	RS-232C	1 (maximum 115.2 kbps)	
	USB	1	
Extension Connection Cable		SLT	1-pair wire (T, R)
		DPT	1-pair wire (D1, D2) or 2-pair wire (T, R, D1, D2)
		PT-interface CS	1-pair wire (D1, D2)
		PT-interface CS (High-density)	4-pair wire (D1, D2)
		DSS Console and Add-on Key Module	1-pair wire (D1, D2)
Dimension		334 mm (W) × 390 mm (H) × 270 mm (D)	

Weight (when fully mounted)	Under 12 kg
------------------------------------	-------------

1.3.2 Characteristics

Terminal Equipment Loop Limit	<ul style="list-style-type: none"> • PT: KX-DT300/KX-T7600 series DPT: 90 Ω • SLT: 600 Ω including set • Doorphone: 20 Ω • CS: 130 Ω; PT-interface CS: 65 Ω
Minimum Leakage Resistance	15 000 Ω minimum
Maximum Number of Extension Instruments per Line	<ol style="list-style-type: none"> 1. for PT or SLT 2. by Digital eXtra Device Port connection of 2 DPTs
Ring Voltage	65 Vrms ^{*1} at 20 Hz/25 Hz depending on the Ringing Load
Trunk Loop Limit	1600 Ω maximum
Hookswitch Flash/Recall Timing Range	24 ms to 2032 ms
BRI Cards Internal ISDN Mode	Supply Voltage: 40 V Power Supply (BRI4): 4.5 W per 1 line, 9 W per 4 lines Power Supply (BRI8): 4.5 W per 1 line, 9 W per 8 lines Power Supply Method: Phantom Power Supply
Door Opener Current Limit	24 V DC/30 V AC, 1 A maximum
External Relay Current Limit	24 V DC/30 V AC, 1 A maximum
External Sensor Current Limit	Power to the external sensor is provided from the EIO4 card and must be grounded through the EIO4 card. For the connection diagram, refer to "2.6.4 EIO4 Card (KX-TDA0164)". The PBX detects input from the sensor when the signal is under 100 Ω .
Paging Terminal Impedance	600 Ω
MOH (Music on Hold) Terminal Impedance	10 000 Ω

*1 KX-TDA100DML: 75 Vrms

1.3.3 System Capacity

Maximum Optional Service Cards

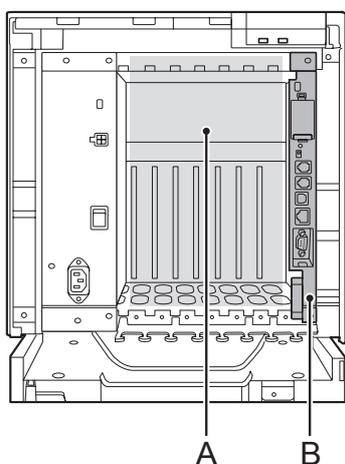
There are 2 types of optional service cards for installation:

- Cards installed in the slots of the PBX
- Cards mounted on other optional service cards

Note

- Any card that exceeds the capacity of the PBX will be ignored.
- When the PBX starts up with an invalid configuration, some cards will be ignored.

Cards Installed in the Slots of the PBX



A. Free Slots 1 to 7 (from the left)

B. DMPR Card Slot

The following number of optional service cards can be installed in the various slots of the PBX.

Card Type	Maximum Number	Installed in
DMPR	1	DMPR Card Slot

1.3.3 System Capacity

Card Type	Maximum Number	Installed in
Trunk Card	Total 7 ^{*1}	Free Slots 1 to 7
LCOT4	7	
LCOT8		
LCOT16		
CLCOT8		
DID8		
E&M8		
BRI4		
BRI8		
T1	4	
E1		
PRI23		
PRI30		
IP-GW4E	4	
IP-GW16		
Extension Card	Total 7	
DLC8	7	
DLC16		
MCSLC16		
IP-EXT16		
MCSLC24	5	
CSIF4	4	
CSIF8		
OPB3	4	
CTI-LINK	1	

*1 When installing T1, E1, PRI30, or PRI23 cards, make sure that the number of these cards × 2 + the number of other cards (including IP-GW4E cards) does not exceed 8.

Cards Mounted on Other Optional Service Cards

The following number of optional service cards can be mounted on the specified other optional service cards.

Card Type	Maximum Number	Mounted on
RMT	1	DMPR Card
CID/PAY8	14	LCOT8 Card/LCOT16 Card
CID8		
CLCOT8E	7	CLCOT8 Card
DPH4	4	OPB3 Card
DPH2	8	
ECHO16	2 ^{*1}	
MSG4	4	
ESVM2		
ESVM4		
EIO4	4	

*1 Only 1 ECHO16 card can be mounted on each OPB3 card.

Maximum Terminal Equipment

The following number of items of terminal equipment can be supported by the PBX. For how to count the total number of items of equipment to be connected, refer to "Power Supply Unit Capacity".

Terminal Equipment Type	Maximum Number
Telephone	176 ^{*1}
SLT	128
KX-DT300/KX-T7600 series DPT	104
IP-PT	112
DSS console	8
CS	26
High-density CS	13
PS	128
Voice Processing System (VPS)	2
Doorphone	16
Door Opener	16
External Sensor	16
External Relay	16

^{*1} When the PBX is equipped with 104 DPTs (Digital XDP), 48 IP-PTs, and 24 SLTs.

Power Supply Unit Capacity

Calculate the load figure from the type and number of items of equipment to be connected.

Load Figure Calculation

Equipment Type		Load Figure
PT	KX-DT300 series DPT/KX-DT300 series DSS console/KX-T7600 series DPT/KX-T7600 series DSS console	1
	IP-PT	0
Trunk Card	DID8	16
	E&M8	8
	Others	0
Extension Card ¹	MCSLC16	16
	MCSLC24	24
CS (1 unit)		4
PT-interface CS (1 unit)		4
PT-interface CS (High-density) (1 unit)		8
ISDN Extension		2
VPS (1 port)		1

¹ Only the extension cards that can support SLTs count for the load figures.

Maximum Load Figure

The pre-installed power supply unit (PSU) supports the following load figures.

System Equipment	Maximum Load Figure
Any Equipment	104
Additional Load Capacity for a MCSLC16/ MCSLC24 Card	24
Total	128

In addition to any combination of equipment totalling a load figure of up to 104, one additional MCSLC16 card (load figure: 16) or one MCSLC24 card (load figure: 24) may also be added, for a total load figure of up to 128.

1.3.3 System Capacity

Calculation Example

Equipment Type		Load Figure
KX-DT300/KX-T7600 series DPT	4 units	4
MCSLC24	4 cards	96
VPS	8 ports	8
Total		108

Section 2

Installation

This section describes the procedures to install the PBX. Detailed instructions for planning the installation site, installing the shelves and optional service cards, and cabling of peripheral equipment are provided. Further information on system expansion and peripheral equipment installation is included.

2.1 Before Installation

2.1.1 Before Installation

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

Be sure to comply with all applicable laws, regulations, and guidelines.

Safety Installation Instructions

WARNING

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:

- **Never install telephone wiring during a lightning storm.**
- **Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.**
- **Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.**
- **Use caution when installing or modifying telephone lines.**

Installation Precautions

This set is made for wall mounting and should be installed in a location where it is accessible for inspections and maintenance.

To prevent malfunction, noise, or discolouration, follow the instructions below:

WARNING

Do not install the system in the following locations:

- **Areas where shocks or vibrations are frequent or strong. Such activity may lead to the product falling over and causing injury, or may impair the product's performance.**
- **Areas with high amounts of dust. High amounts of dust can lead to fire or electric shock, and impair the performance of the product.**

CAUTION

Do not install the system in the following locations:

- In direct sunlight and hot, cold, or humid places. (Temperature range: 0 °C to 40 °C)
- Areas where sulfuric gases may be present, such as near thermal springs.
- Near devices that generate high frequencies, such as sewing machines or electric welders.
- Locations where other objects will obstruct the area around the PBX. Be especially careful to leave at least 20 cm of space above and 10 cm to the sides of the PBX for ventilation.

Notice

Do not install the system in the following locations:

- 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 as the above equipment.)
- Within 1.8 m of radios and televisions. (Both the PBX and PTs should be at least 1.8 m away from such devices.)

Do not perform the following:

- Do not block the openings of the PBX.
- Do not stack up the optional service cards.

Wiring Precautions

Be sure to follow these instructions when wiring the unit:

CAUTION

- Avoid using the same AC outlet for computers, telexes, and other office equipment, as noise generated by such equipment may hamper system performance or interrupt the system.
- Unplug the system from its power source when wiring, and plug the system back in only after all wiring is completed.
- Trunks should be installed with surge protectors. For details, refer to "2.2.11 Surge Protector Installation".

Notice

- Use 2-pair telephone cables when connecting PTs.
Use 1-pair telephone cables when connecting SLTs, data terminals, answering machines, computers, Voice Processing Systems, etc.
- Mis-wiring may cause the PBX to operate improperly. Refer to "Section 2 Installation" when wiring the system.
- If an extension does not operate properly, disconnect the telephone from the extension line and connect it again, or turn off the PBX using the power switch, then turn it on again.
- Use twisted pair cable for trunk connection.
- To prevent signal noise from interfering with the performance of the product, do not run unshielded telephone cables near AC power cables, computer cables, AC power sources, etc. When running cables near other noise-generating devices or cables, use shielded telephone cables or shield the telephone cables with metal tubing.

2.2 Installation of the PBX

2.2.1 Unpacking

Unpack the box and check the items below:

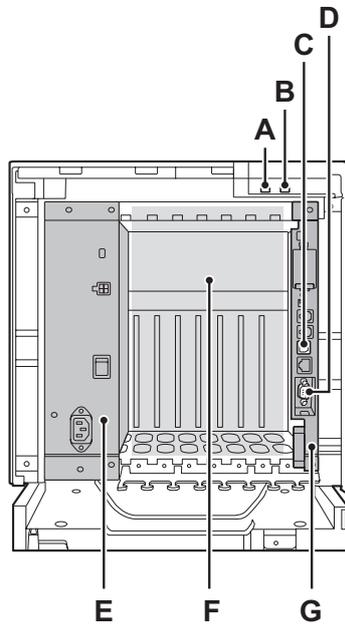
Main Unit	1
AC Cord	1 ^{*1}
Metal Bracket	1
Screw A	3
Screw B (Black)	2
Anchor Plug	3
SD Memory Card	1
Ferrite Core (for the DMPR card)	2 ^{*2}

*1 KX-TDA100DBX is supplied with 2 types of AC cord. Please use whichever is appropriate for the country/area.

*2 The larger of the two ferrite cores is used for the RJ45 cable.
The smaller of the two ferrite cores is used for the RJ11 cable(s).

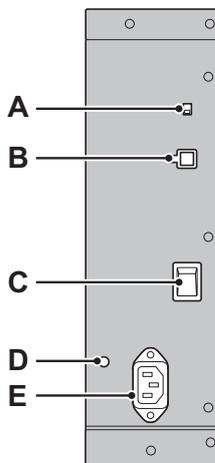
2.2.2 Names and Locations

Inside View



- A. RUN Indicator
- B. ALARM Indicator
- C. USB Port
- D. RS-232C Port
- E. PSU
- F. Free Slots 1 to 7 (from the left)
- G. DMPR Card Slot

PSU View



- A. Battery Switch
- B. Battery Connector

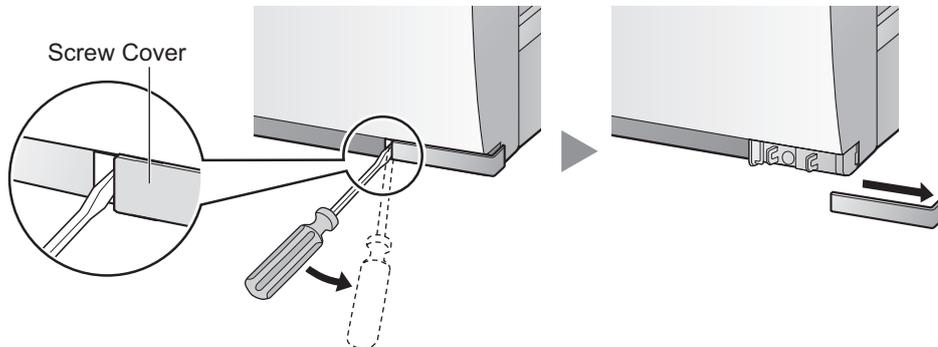
2.2.2 Names and Locations

- C. Power Switch
- D. Earth Terminal
- E. AC Inlet

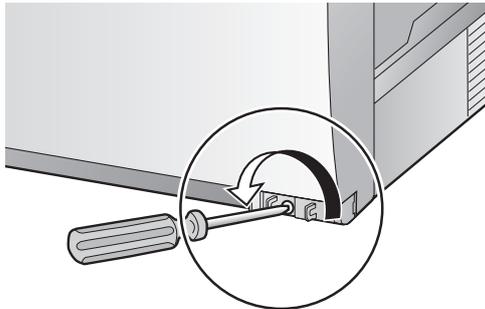
2.2.3 Opening/Closing the Front Cover

Opening the Front Cover

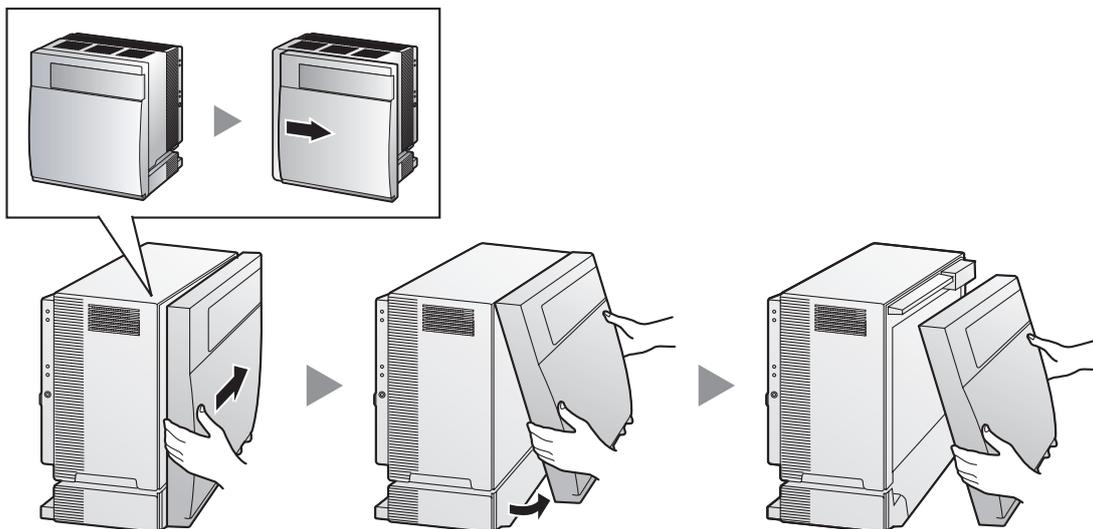
1. Insert a flathead screwdriver into the opening (on the left of the screw cover) and unlatch the screw cover.



2. Turn the screw anticlockwise to loosen.

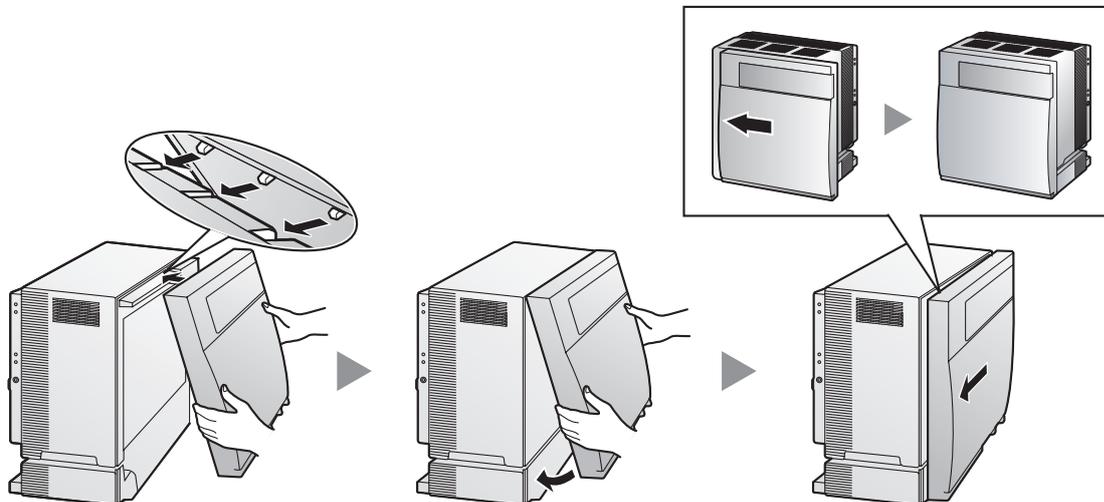


3. Slide the front cover to the right until it stops, then lift the front cover.

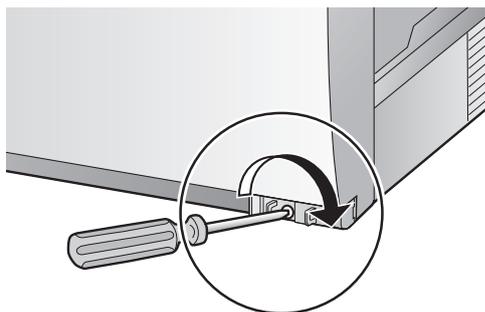


Closing the Front Cover

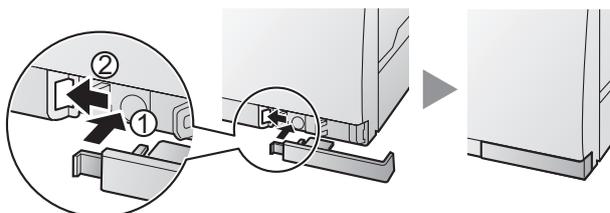
1. Hook the front cover onto the shelf (line up the protrusions on the cover with the receptacles on the shelf). Then slide the front cover to the left until it locks.



2. Turn the screw clockwise to tighten.



3. Secure the screw cover.

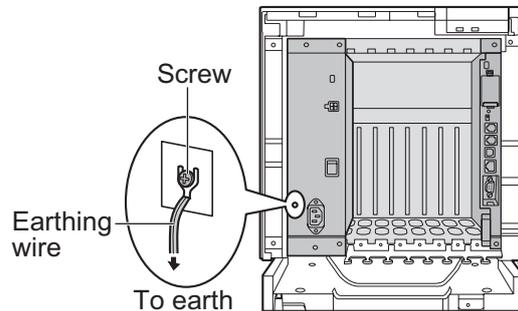


CAUTION

- For safety reasons, close the front cover and tighten the screw before operating the PBX.
- Do not forget to tighten the screw before securing the screw cover.

2.2.4 Frame Earth Connection

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



WARNING

- Proper earthing (connection to earth) is very important to reduce the risk to the user of electrocution or to protect the PBX from the bad effects of external noise in the case of a lightning strike.
- The earthing wire of the AC cable has an effect against external noise and lightning strikes, but it may not be enough to protect the PBX. A permanent connection between earth and the earth terminal of the PBX must be made.

CAUTION

For earthing wire, green-and-yellow insulation is required, and the cross-sectional area of the conductor must be more than 0.75 mm² or 18 AWG.

Notice

Be sure to comply with applicable local regulations (e.g., laws, guidelines).

2.2.5 Backup Battery Connection

The backup batteries and Back-up Battery Cable provide a backup power supply to allow full use of the PBX in the event of a power failure. In case of power failure, the backup batteries automatically maintain the power to the PBX without interruption.

User-supplied Items

- Backup Batteries: VRLA (Valve Regulated Lead Acid) 12 V DC × 3
- Back-up Battery Cable: KX-A228

WARNING

- **There is a danger of explosion if backup batteries are incorrectly replaced. Replace only with the same or equivalent type recommended by the battery manufacturer. Dispose of used batteries according to the manufacturer's instructions.**
- **Make sure that you do not short the backup batteries or cables.**

CAUTION

- Make sure that the Back-up Battery Cable is securely fastened to both the backup batteries and the PBX.
- Make sure that the polarities of the backup batteries and wiring are correct.
- Use the correct type of Back-up Battery Cable for the PSU.

Notice

Be sure to comply with applicable local regulations (e.g., laws, guidelines).

Note

- Turn on the battery switch on the PSU only after the installation of the PBX is finished and AC power is available.
- The recommended maximum capacity is 28 Ah, to maintain effective battery charge.
- Make sure that the type and capacity of the 3 backup batteries are identical.
- The Back-up Battery Cable should not be exposed to direct sunlight. Keep the Back-up Battery Cable and the backup batteries away from heating appliances and fire. Place the backup batteries in a ventilated place.
- For details about the backup batteries, refer to the manual for the batteries.

Backup Power Supply Duration

The length of time that backup batteries can power the PBX varies depending on the total load figure. For how to calculate the load figure from the connected items, refer to "Load Figure Calculation".

Examples

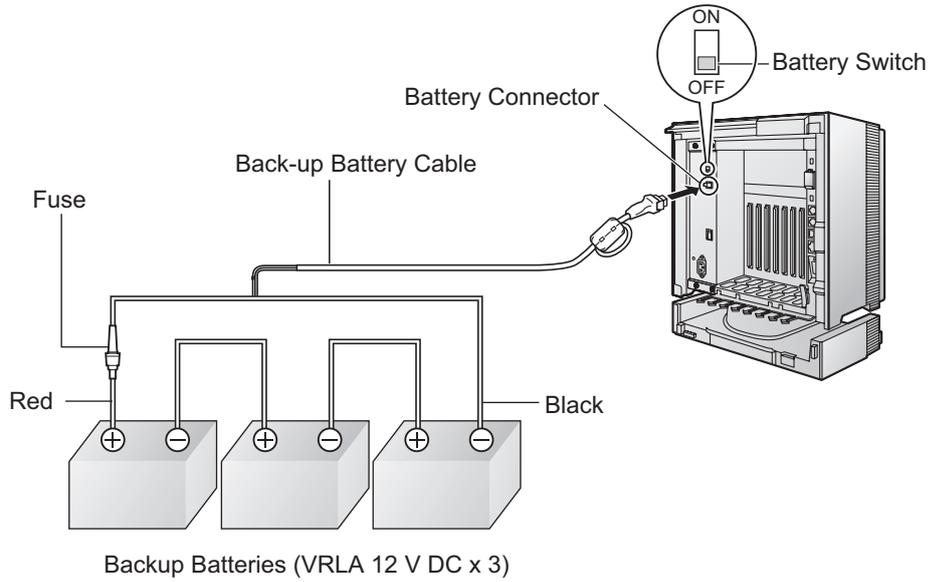
Battery Capacity	Total Load Figure	Backup Power Supply Duration ^{*1}
28 Ah	64	11 h
	128	5.5 h

^{*1} The duration may vary depending on the conditions.

Connecting Backup Batteries

1. Turn off the battery switch on the PSU.

2. Connect the Back-up Battery Cable to a set of 3 identical backup batteries.



2.2.6 Installing/Removing the Optional Service Cards

CAUTION

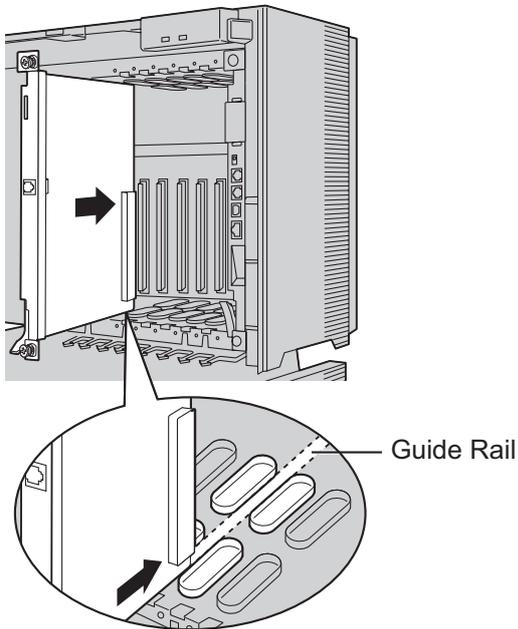
- To protect the back board from static electricity, do not touch parts on the back board in the main unit and on the optional service cards. To discharge static electricity, touch ground or wear an earthing strap.
- When installing or removing the DMPR card, the DC power supply must be turned off.

Note

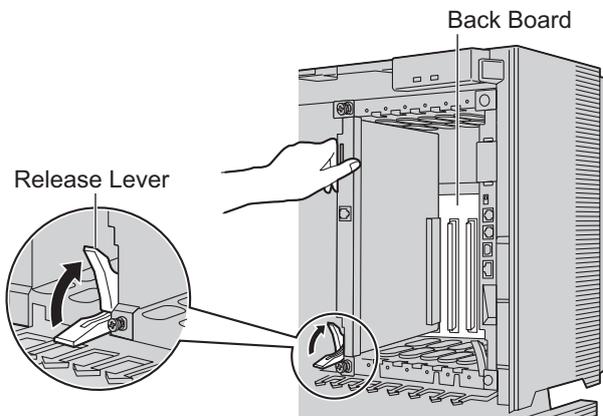
The optional service cards can be installed or removed while the DC power is supplied.

Installing Optional Service Cards

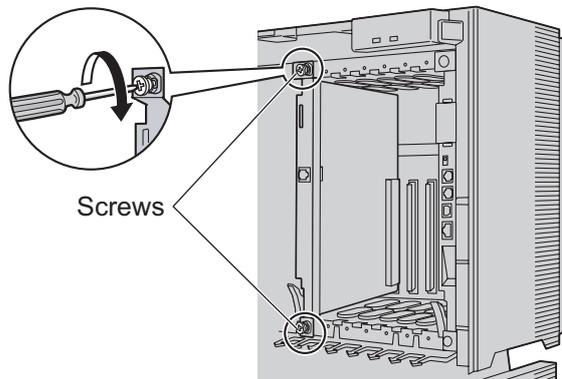
1. Insert the card along the guide rails.



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



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



Note

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

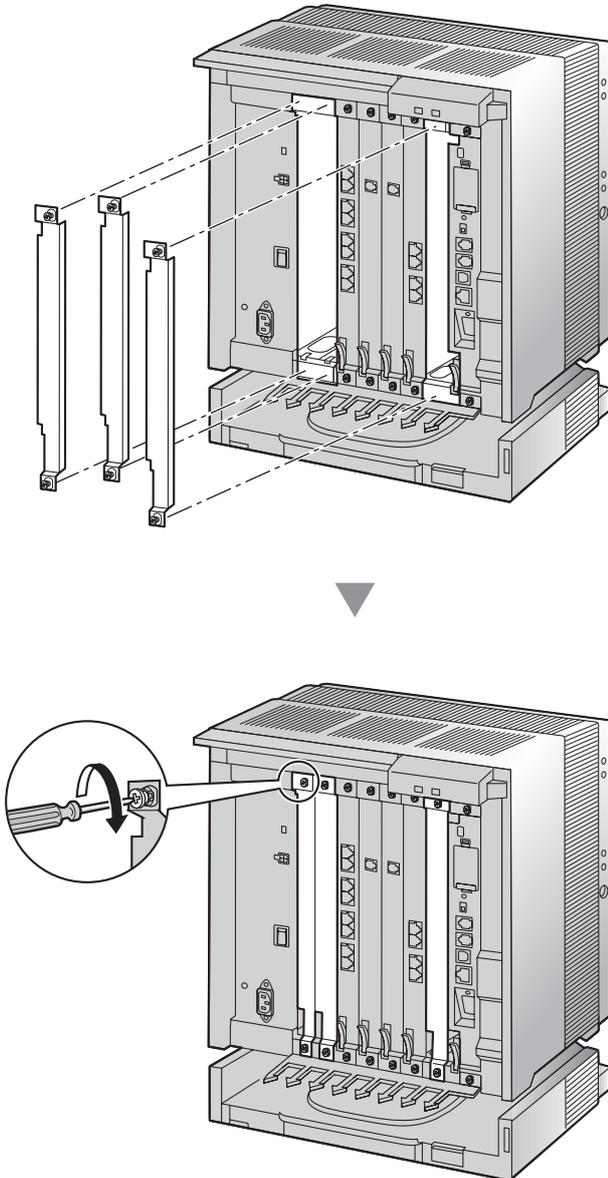
2.2.6 Installing/Removing the Optional Service Cards

Covering the Blank Slots

Be sure to cover each slot in which no optional service card is installed by using a Blank Slot Cover.

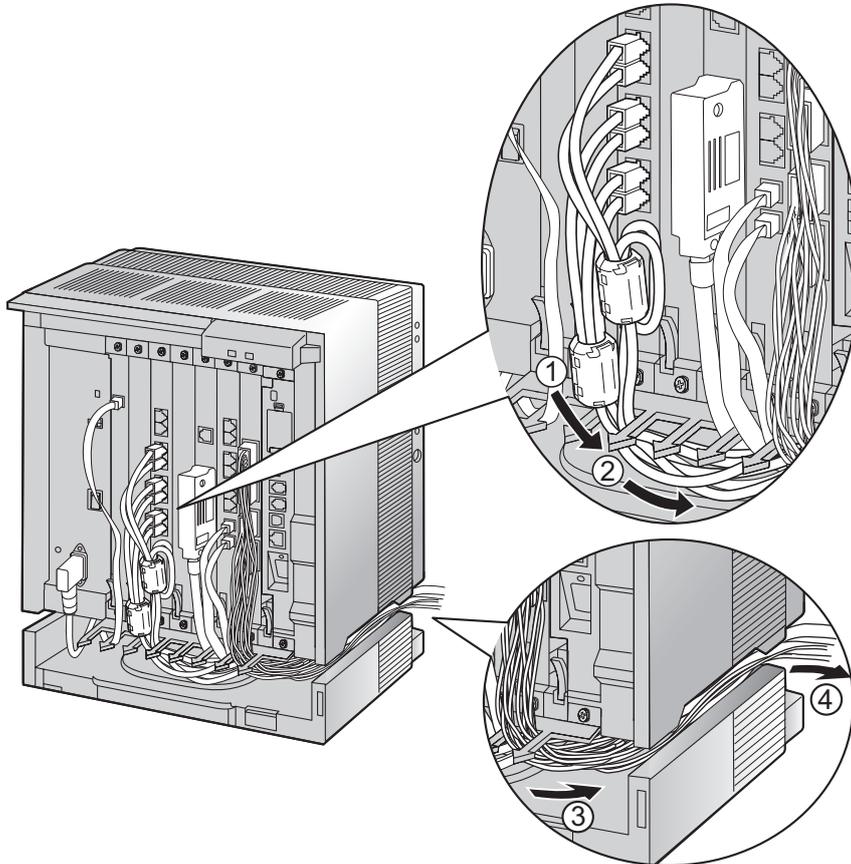
CAUTION

Failure to install the Blank Slot Cover may cause electromagnetic interference.



Handling of the Cables

When cables are connected to the PBX, run the cables to either the right or the left and then towards the back of the shelf as shown below.

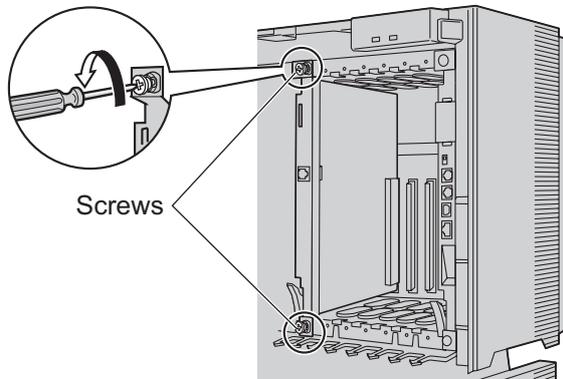


Note

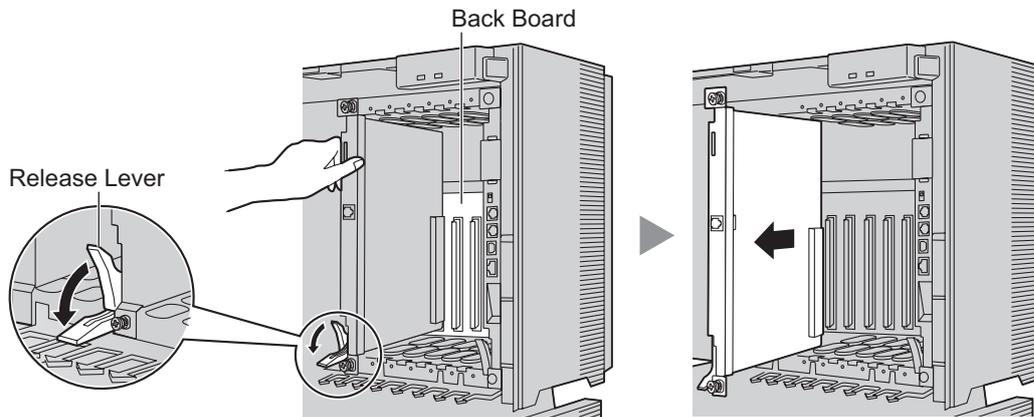
For safety reasons, do not stretch, bend, or pinch the AC power cord.

Removing the Optional Service Cards

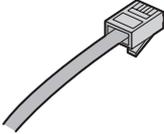
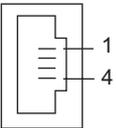
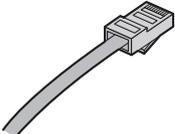
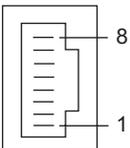
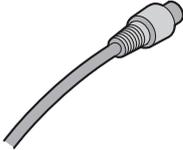
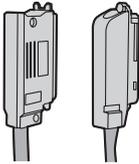
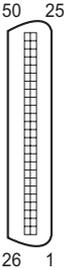
1. Turn the 2 screws anticlockwise to loosen them.



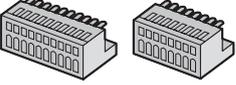
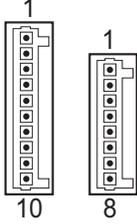
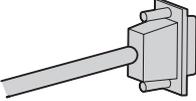
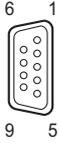
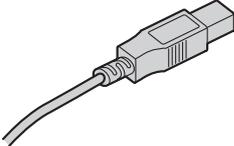
2. Pull the release lever in the direction of the arrow to disconnect the card from the back board. Pull the card from the shelf to remove it.



2.2.7 Types of Connectors

Connector Type	Pin Number	Used for
<p>RJ11</p>  <p>(Twisted pair cable)</p>		<ul style="list-style-type: none"> • MCSLC16 (KX-TDA1176) • MCSLC24 (KX-TDA1178) • CLCOT8 (KX-TDA1180) • CLCOT8E (KX-TDA1186) • LCOT8 (KX-TDA0180) • LCOT16 (KX-TDA0181) • LCOT4 (KX-TDA0183) • DMPR
<p>RJ45</p>  <p>(Twisted pair cable)</p>		<ul style="list-style-type: none"> • CSIF4 (KX-TDA0143) • CSIF8 (KX-TDA0144) • T1 (KX-TDA0187) • E1 (KX-TDA0188) • BRI4 (KX-TDA0284) • BRI8 (KX-TDA0288) • PRI30 (KX-TDA0290CE/CJ) • PRI23 (KX-TDA0290) • CTI-LINK (KX-TDA0410) • IP-EXT16 (KX-TDA0470) • IP-GW4E (KX-TDA0484) • IP-GW16 (KX-TDA0490) • DMPR
<p>BNC</p> 		<ul style="list-style-type: none"> • E1 (KX-TDA0188) • PRI30 (KX-TDA0290CE/CJ)
<p>Amphenol Type A Type B</p>  <p>(Shielded twisted pair cable)</p>		<ul style="list-style-type: none"> • DLC8 (KX-TDA0171) • DLC16 (KX-TDA0172) • MCSLC16 (KX-TDA1176) • MCSLC24 (KX-TDA1178) • CLCOT8 (KX-TDA1180) • CLCOT8E (KX-TDA1186) • LCOT8 (KX-TDA0180) • LCOT16 (KX-TDA0181) • DID8 (KX-TDA0182) • LCOT4 (KX-TDA0183) • E&M8 (KX-TDA0184)

2.2.7 Types of Connectors

Connector Type	Pin Number	Used for
<p>10-pin Terminal Block 8-pin Terminal Block</p> 		<ul style="list-style-type: none"> DPH4 (KX-TDA0161) DPH2 (KX-TDA0162) EIO4 (KX-TDA0164)
<p>RS-232C</p>  <p>(Shielded cable)</p>		<ul style="list-style-type: none"> DMPR
<p>USB</p> 		<ul style="list-style-type: none"> DMPR

2.2.8 Attaching a Ferrite Core

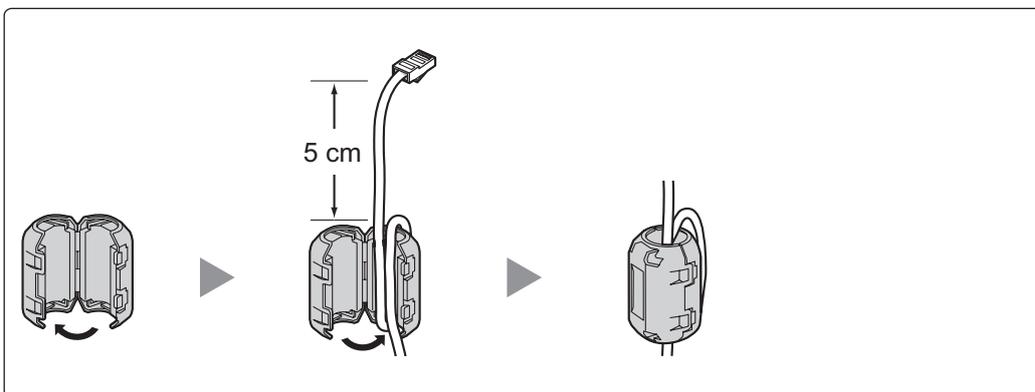
A ferrite core must be attached when:

- an RJ45 connector is connected to T1, E1, PRI, BRI, IP-GW16, IP-EXT16, or DMPR cards.
- an Amphenol connector is connected to an extension card.
- an RJ11 connector is connected to the DMPR card.

Attaching to an RJ45 Connector

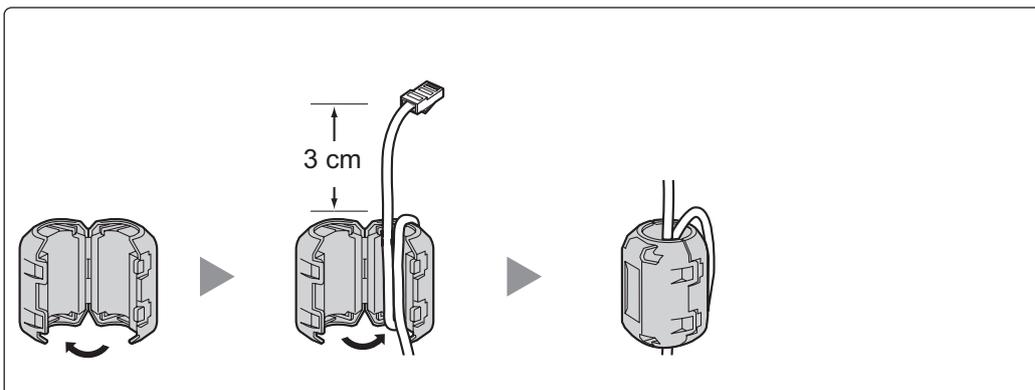
For T1/E1/PRI/IP-GW16/IP-EXT16 Cards

Wrap the cable once around the ferrite core, then close the case of the ferrite core. Attach the ferrite core 5 cm away from the connector. The ferrite core is included with the card.



For the DMPR Card

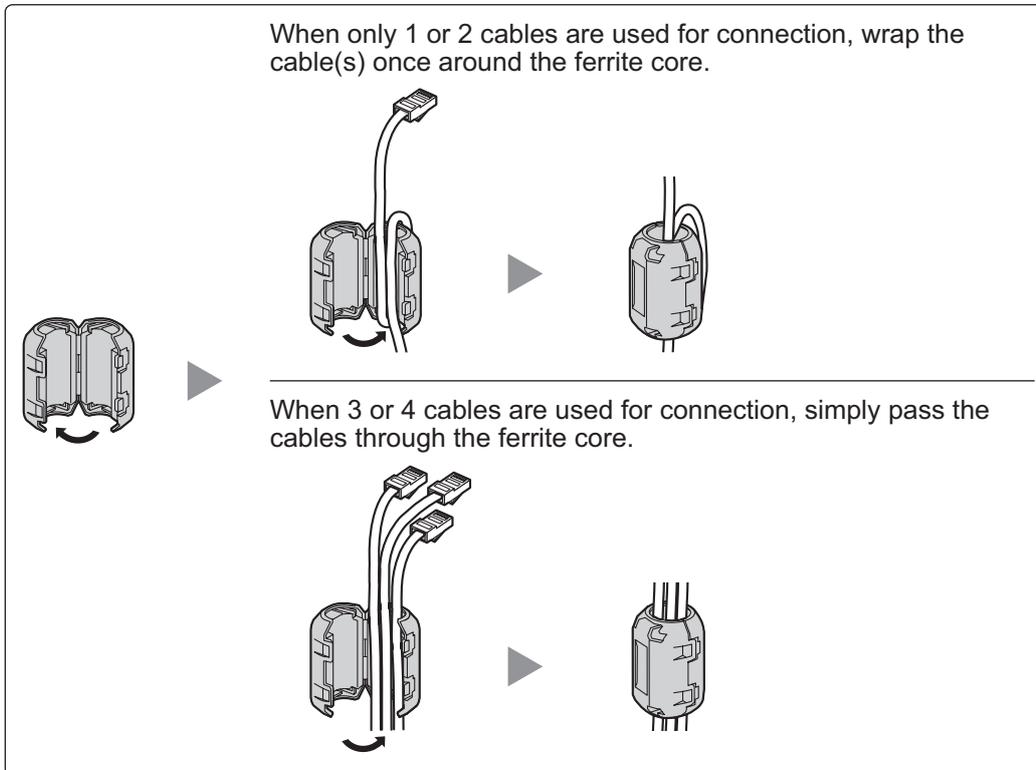
Wrap the cable once around the ferrite core, then close the case of the ferrite core. Attach the ferrite core 3 cm away from the connector. The ferrite core is included with the PBX.



2.2.8 Attaching a Ferrite Core

For a BRI Card

Attach the ferrite core, then close the case of the ferrite core. Attach the ferrite core as close to the card's connector as possible. The ferrite core is included with the card.



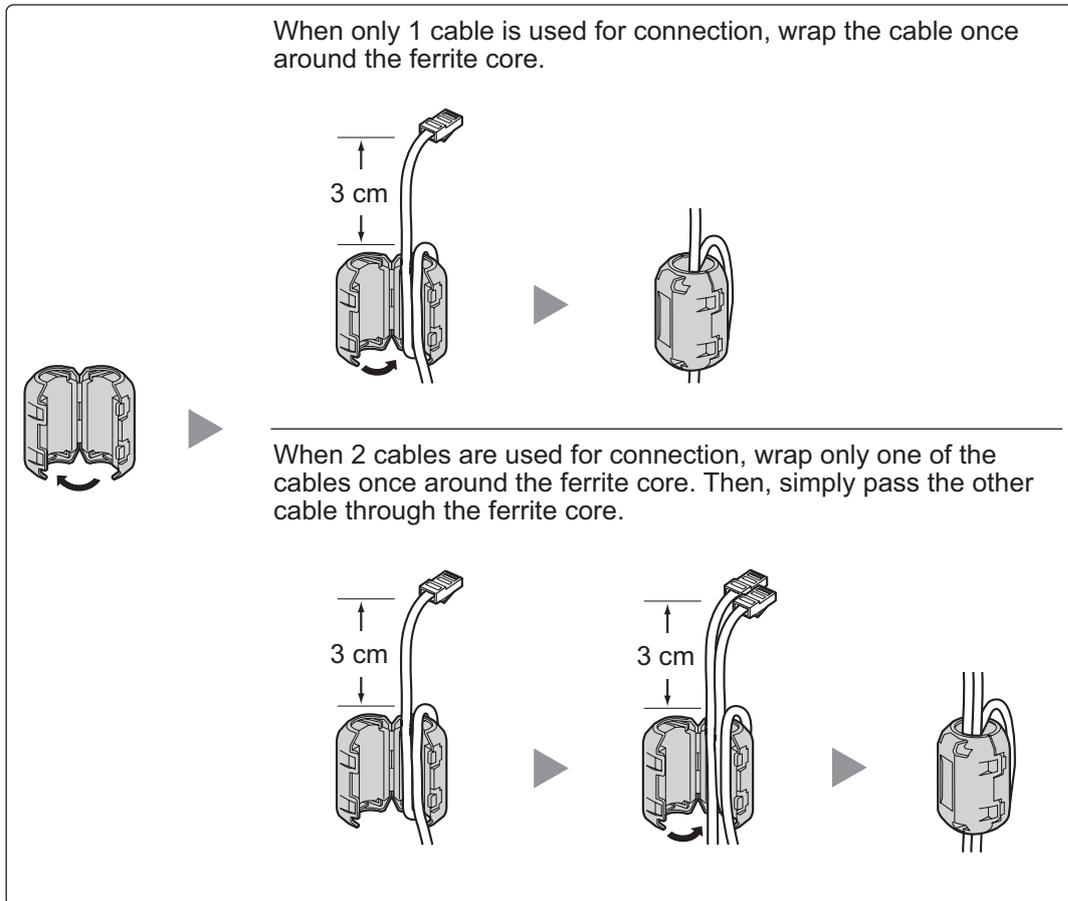
Note

For every 4 cables, use 1 ferrite core; a ferrite core holds a maximum of 4 cables.

Attaching to an RJ11 Connector

For the DMPR Card

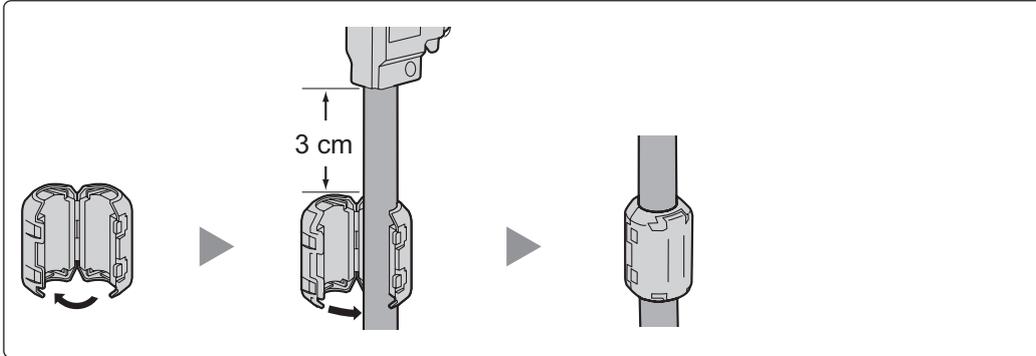
Attach the ferrite core, then close the case of the ferrite core. Attach the ferrite core 3 cm away from the connector. The ferrite core is included with the PBX.



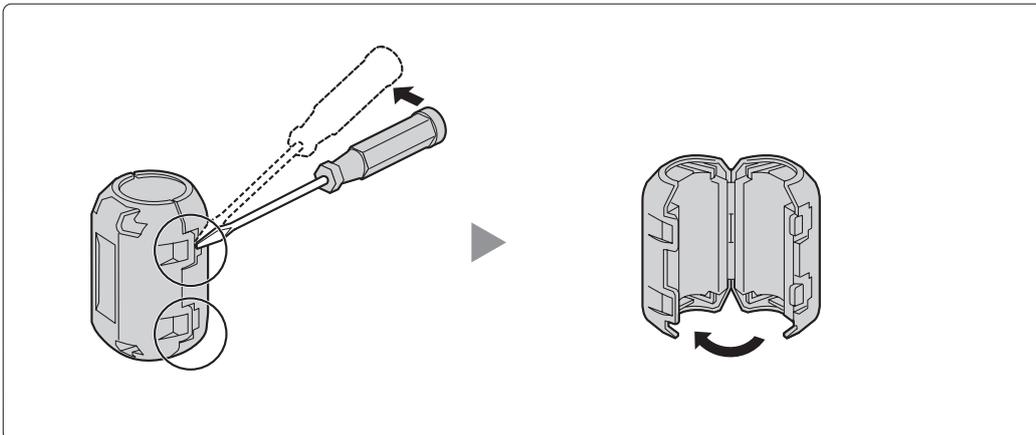
Attaching to an Amphenol Connector

For Extension Cards

Pass the cable through the ferrite core, then close the case of the ferrite core. Attach the ferrite core 3 cm away from the connector. The ferrite core is included with the card.



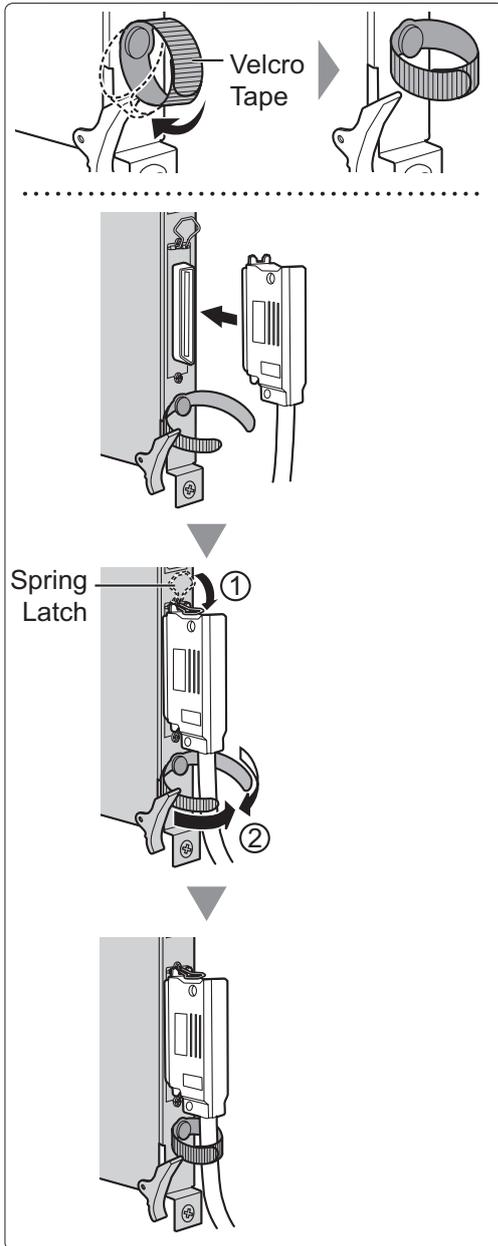
If you need to open the ferrite core, use a flathead screwdriver to unlatch the case of the ferrite core.



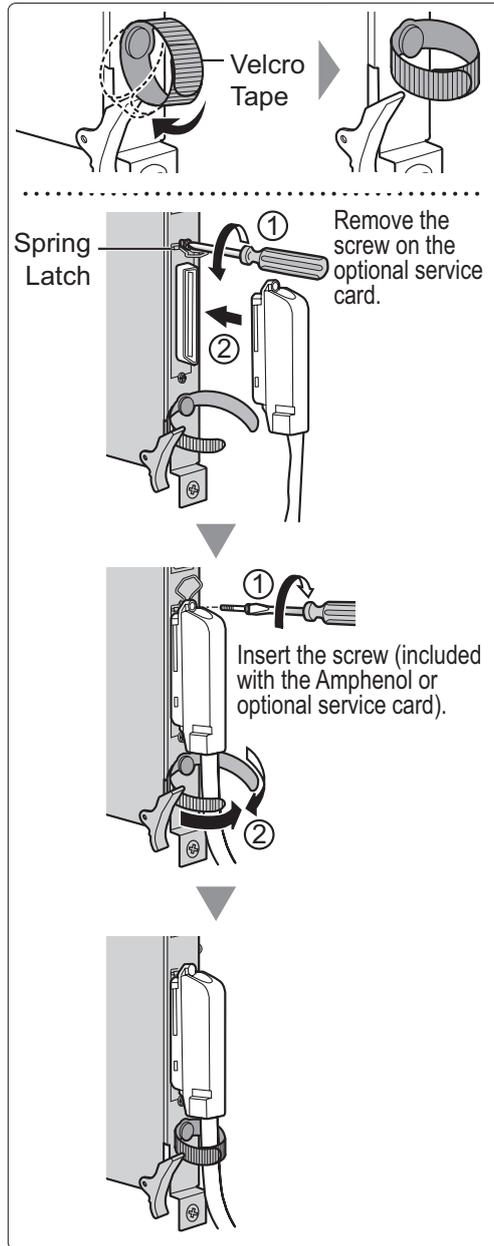
2.2.9 Fastening Amphenol Connector

An Amphenol 57JE-type connector is used on some of the optional service cards. To connect an Amphenol connector, use the spring latch or screw to fix the upper part and use Velcro® tape to fix the lower part of the connector.

Type A (Spring Latch + Velcro Tape)



Type B (Screw + Velcro Tape)



2.2.9 Fastening Amphenol Connector

Amphenol Connector Pin Assignment Chart

Below is an Amphenol connector pin assignment chart for all optional service cards that use the Amphenol connector. For more details, refer to the appropriate section in "2.4 Information about the Trunk Cards" and "2.5 Information about the Extension Cards".

Pin No.	LCOT4	LCOT8	LCOT16	CLCOT8	DID8	E&M8	DLC8	DLC16	MCSLC16	MCSLC24
1 26	RA	RA	RA	RA	RA	TA		D2A	RA	RA
	TA	TA	TA	TA	TA	RA		D1A	TA	TA
2 27	RB	RB	RB	RB	RB	T1A	D2A	D2B	RB	RB
	TB	TB	TB	TB	TB	R1A	D1A	D1B	TB	TB
3 28	RC	RC	RC	RC	RC	EA		D2C	RC	RC
	TC	TC	TC	TC	TC	MA		D1C	TC	TC
4 29	RD	RD	RD	RD	RD	SGA		D2D	RD	RD
	TD	TD	TD	TD	TD	SGB		D1D	TD	TD
5 30		RE	RE	RE	RE	TB	D2B	D2E	RE	RE
		TE	TE	TE	TE	RB	D1B	D1E	TE	TE
6 31		RF	RF	RF	RF	T1B		D2F	RF	RF
		TF	TF	TF	TF	R1B		D1F	TF	TF
7 32		RG	RG	RG	RG	EB		D2G	RG	RG
		TG	TG	TG	TG	MB		D1G	TG	TG
8 33		RH	RH	RH	RH	TC	D2C	D2H	RH	RH
		TH	TH	TH	TH	RC	D1C	D1H	TH	TH
9 34			RI	RI		T1C		D2I	RI	RI
			TI	TI		R1C		D1I	TI	TI
10 35			RJ	RJ		EC		D2J	RJ	RJ
			TJ	TJ		MC		D1J	TJ	TJ
11 36			RK	RK		TD	D2D	D2K	RK	RK
			TK	TK		RD	D1D	D1K	TK	TK
12 37			RL	RL		T1D		D2L	RL	RL
			TL	TL		R1D		D1L	TL	TL
13 38			RM	RM		ED		D2M	RM	RM
			TM	TM		MD		D1M	TM	TM
14 39			RN	RN		TE	D2E	D2N	RN	RN
			TN	TN		RE	D1E	D1N	TN	TN
15 40			RO	RO		T1E		D2O	RO	RO
			TO	TO		R1E		D1O	TO	TO
16 41			RP	RP		EE		D2P	RP	RP
			TP	TP		ME		D1P	TP	TP
17 42						TF	D2F			RQ
						RF	D1F			TQ
18 43						T1F				RR
						R1F				TR
19 44						EF				RS
						MF				TS
20 45						TG	D2G			RT
						RG	D1G			TT
21 46						T1G				RU
						R1G				TU
22 47						EG				RV
						MG				TV
23 48						TH	D2H			RW
						RH	D1H			TW
24 49						T1H				RX
						R1H				TX
25 50						EH				
						MH				

2.2.10 Wall Mounting

WARNING

- Make sure that the wall that the shelf will be attached to is strong enough to support the shelf. If not, it is necessary for the wall to be reinforced.
- Only use the wall-mounting equipment (anchor plugs, screws, metal bracket) included with the PBX.
- Be careful not to drop any components. Dropping components may damage them or cause an injury.

CAUTION

- Do not block the openings of the shelf. Allow space of at least 20 cm above and 10 cm at the sides of the shelf.
- Make sure that the surface behind the shelf is flat and free of obstacles, so that the openings on the back of the shelf will not be blocked.
- Make sure that the surface behind the shelf is not made of wood.
- When driving the screws into the wall, be careful to avoid touching any metal laths, wire laths or metal plates in the wall.
- When this product is no longer in use, make sure to detach it from the wall.

Notice

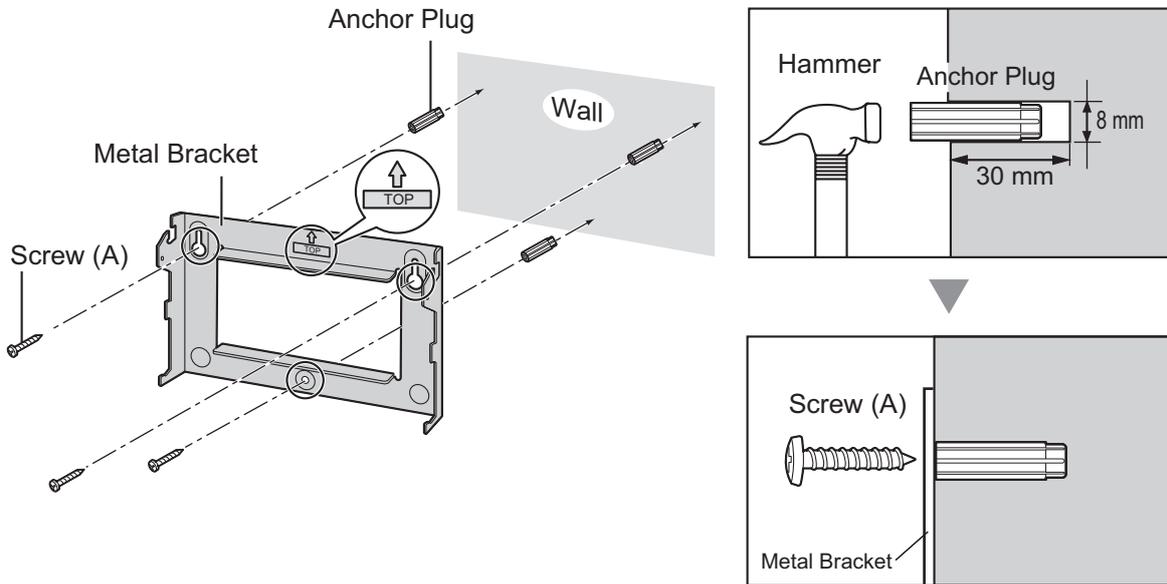
When placing the metal bracket, make sure that the "TOP" arrow is pointing upward.

Note

- Make sure to remove the front cover from the shelf before installing the shelf (refer to "2.2.3 Opening/Closing the Front Cover").
- Do not install any optional service cards in the shelf before installation.
- For details about the dimensions and weight of the PBX, refer to "1.3.1 General Description".

2.2.10 Wall Mounting

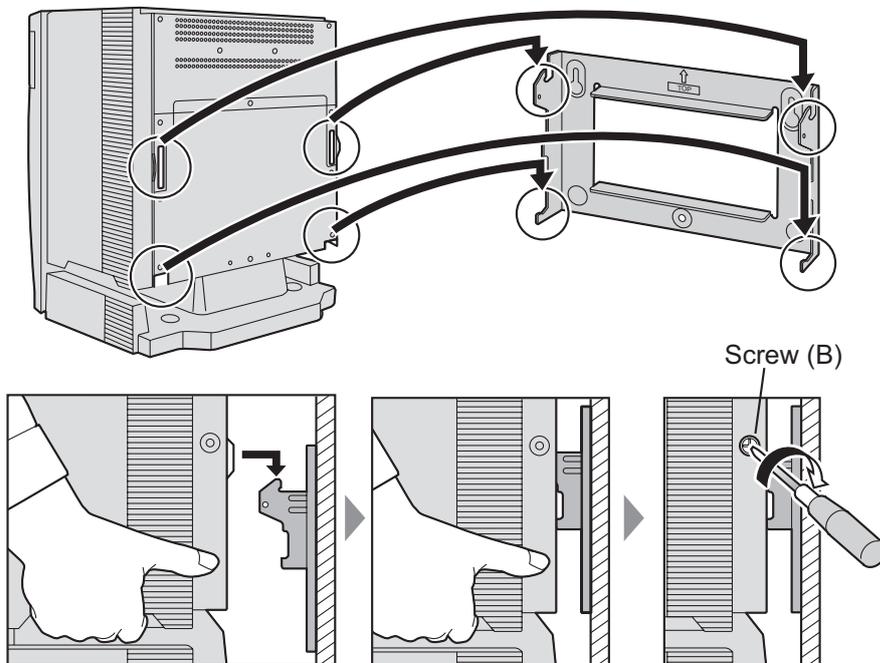
1. Install 3 anchor plugs in the wall, using the metal bracket as a template. Fix the metal bracket with 3 screws (A).



Note

The pull-out strength of the installation area must be at least 294 N (30 kgf) per screw.

2. Hook the shelf onto the metal bracket, making sure that the shelf slides down and onto the hooked parts of the metal bracket. Use 2 screws (B) to fix both sides of the shelf. (Recommended torque: 0.8 N·m [8.2 kgf·cm] to 1.0 N·m [10.2 kgf·cm])



2.2.11 Surge Protector Installation

Overview

A massive electrical surge can be caused if lightning strikes a telephone cable 10 m above ground, or if a telephone line comes into contact with a power line. A surge protector is a device that is connected to a trunk to prevent potentially dangerous electrical surges from entering the building via the trunk and damaging the PBX and connected equipment.

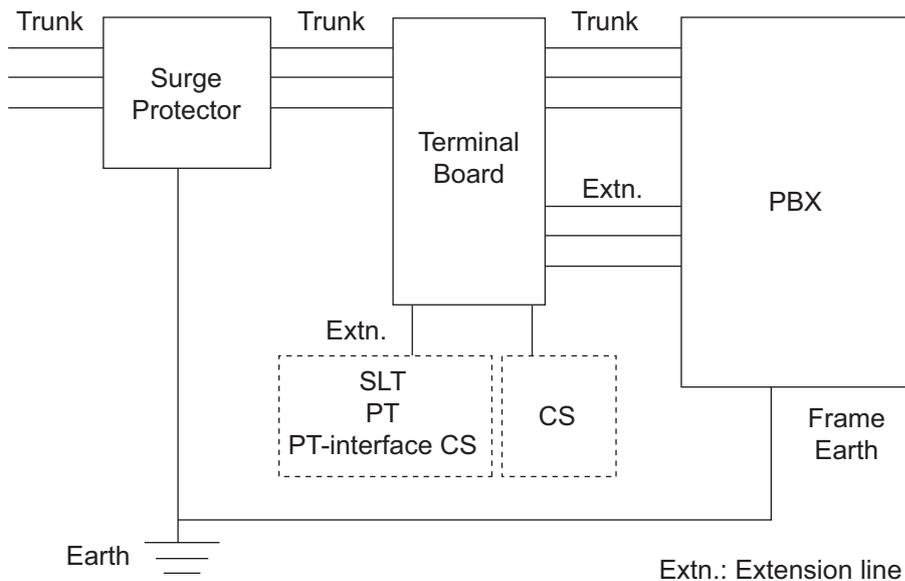
To protect the system from electrical surges, we strongly recommend connecting the system to a surge protector that meets the following specifications:

- Surge arrestor type: 3-electrode arrestor
- DC spark-over voltage: 230 V
- Maximum peak current: at least 10 kA

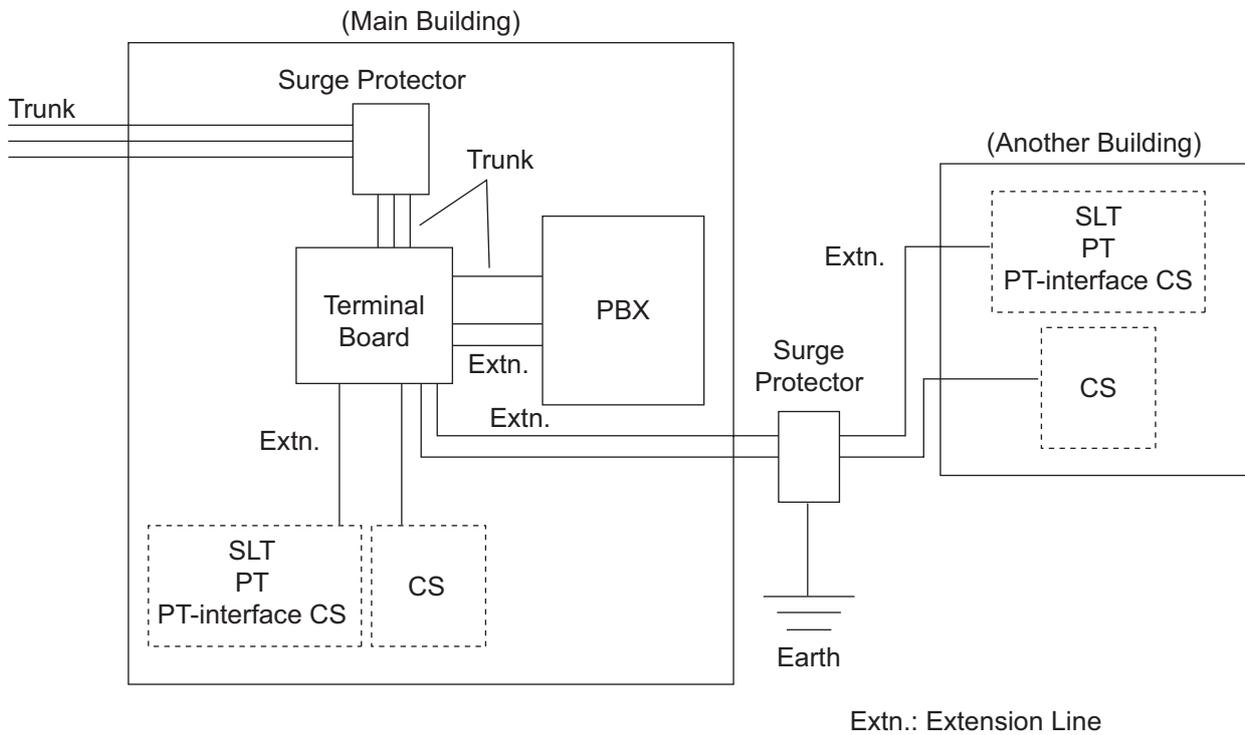
Additionally, proper earthing is very important for the protection of the system (refer to "2.2.4 Frame Earth Connection").

Many countries/areas have regulations requiring surge protection. Be sure to comply with all applicable laws, regulations, and guidelines.

Installation



Outside Installation



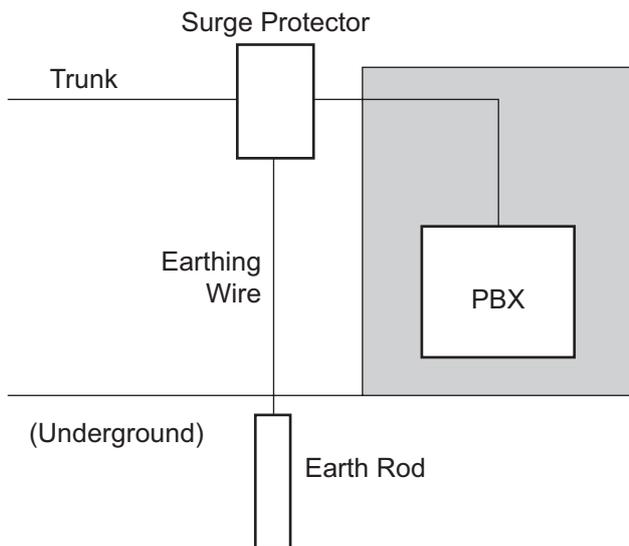
If you install an extension outside of the building, the following precautions are recommended:

- a. Install the extension wire underground.
- b. Use a conduit to protect the wire.

Note

The surge protector for an extension and CS is different from that for a trunk.

Installation of an Earth Rod



1. Connect the earth rod to the surge protector using an earthing wire with a cross-sectional area of at least 1.3 mm².
2. Bury the earth rod near the protector. The earthing wire should be as short as possible.
3. The earthing wire should run straight to the earth rod. Do not run the wire around other objects.
4. Bury the earth rod at least 50 cm underground.

Note

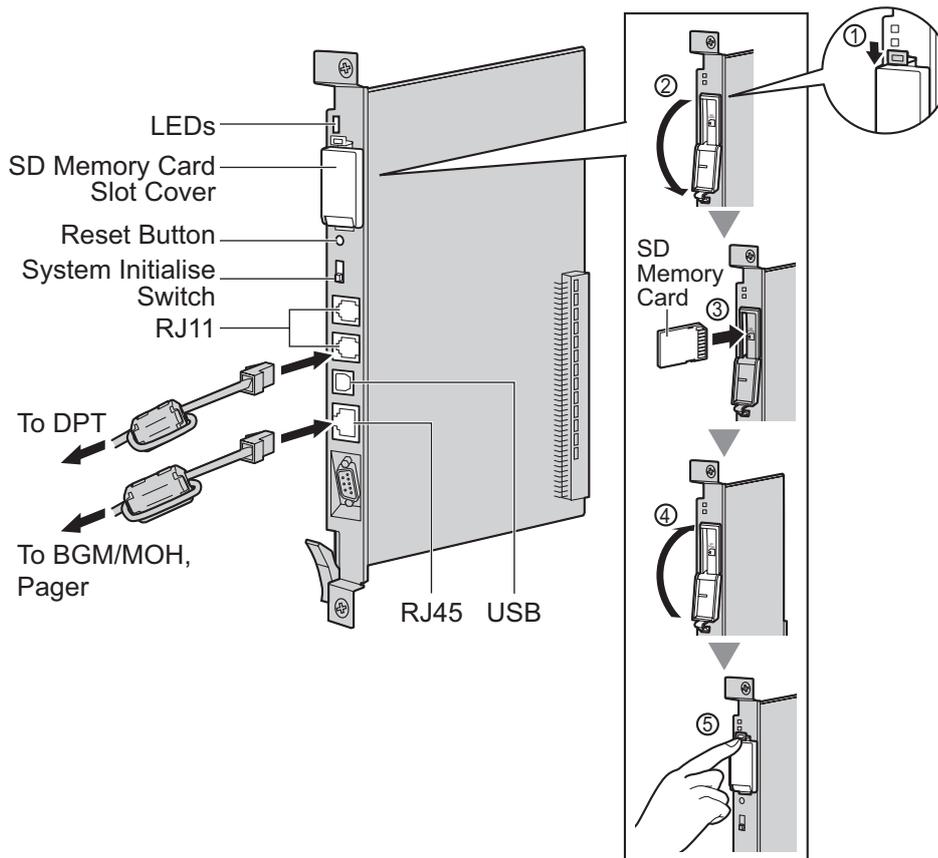
- The above figures are recommendations only.
- The length of earth rod and the required depth depend on the composition of the soil.

2.3 Information about the Main Processing Card

2.3.1 DMPR Card

Function

Contains the main processor for all processes, basic shelf main protocol, time switch (TSW) control, detection of system clock alarm, basic shelf power down alarm, and watchdog timer overflow. An RMT card can be mounted on the DMPR card (refer to "2.3.2 RMT Card (KX-TDA0196)").



WARNING

A lithium battery is used in the DMPR card. There is a risk of explosion if the battery is replaced with the incorrect type. Dispose of used batteries according to the manufacturer's instructions.

CAUTION

- The SD Memory Card contains software for all the processes of the PBX and all the customer data. It can be easily removed and taken away from the PBX by a third party. Therefore, do not allow unauthorised access to prevent data leakage.
- Do not remove the SD Memory Card while power is supplied to the PBX. Doing so may cause the PBX to fail to start when you try to restart the system.
- To prevent data leakage, render the SD Memory Card physically unusable before disposal.

Notice

- Use only the SD Memory Card included with the PBX, or a Panasonic optional upgrade SD Memory Card.

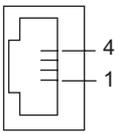
- The SD Memory Card must be inserted in the SD Memory Card slot of the DMPR card before startup.

Note

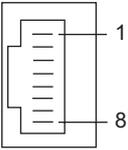
- For details about connecting peripherals, refer to "2.9.1 Connection of Peripherals".
- For details about System Initialise Switch, refer to "2.11.1 Starting the PBX".
- For details about Reset Button, refer to "4.1.4 Using the Reset Button".
- When connecting the RJ11 or RJ45 connector, attach the included ferrite core. Refer to "2.2.8 Attaching a Ferrite Core".
- Portions of this product contains software of Datalight, Inc. Copyright 1993–2000 Datalight, Inc., All Rights Reserved.

Pin Assignments

RJ11 Connector

	No.	Signal Name	Function
	1	D2A	Data port 1 (Low)
	2	D2B	Data port 2 (Low)
	3	D1B	Data port 2 (High)
	4	D1A	Data port 1 (High)

RJ45 Connector

	No.	Signal Name	Level [V]	Function
	1	MOH1	Nonpolar	Music on Hold Jack: Port 1
	2	MOH1	Nonpolar	Music on Hold Jack: Port 1
	3	PAG2	Nonpolar	External Paging Jack: Port 2
	4	PAG1	Nonpolar	External Paging Jack: Port 1
	5	PAG1	Nonpolar	External Paging Jack: Port 1
	6	PAG2	Nonpolar	External Paging Jack: Port 2
	7	MOH2	Nonpolar	Music on Hold Jack: Port 2
	8	MOH2	Nonpolar	Music on Hold Jack: Port 2

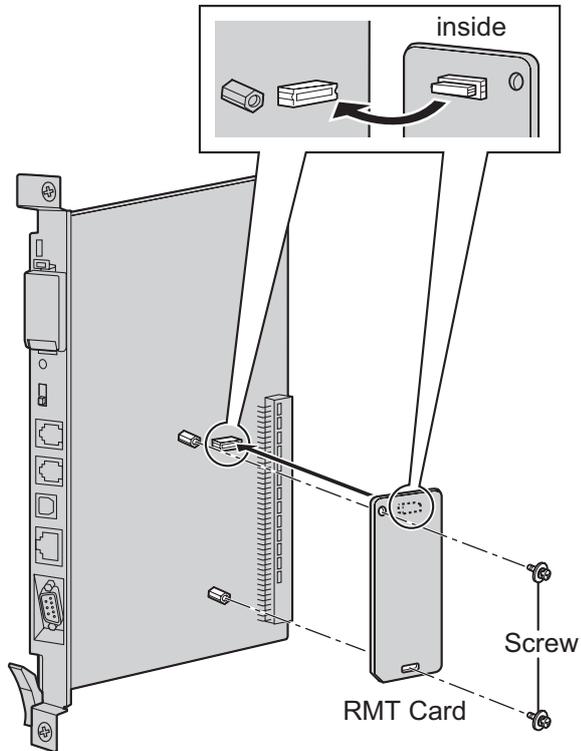
LED Indications

Indication	Colour	Description
BATT ALARM	Red	Battery alarm indication <ul style="list-style-type: none"> OFF: Normal ON: Alarm
SD ACCESS	Green	SD memory card status <ul style="list-style-type: none"> ON: Accessing

2.3.2 RMT Card (KX-TDA0196)

Function

Analogue modem card for remote communication with the PBX. ITU-T V.90 support. To be mounted on the DMPR card.



Accessories and User-supplied Items

Accessories (included): Screws × 2

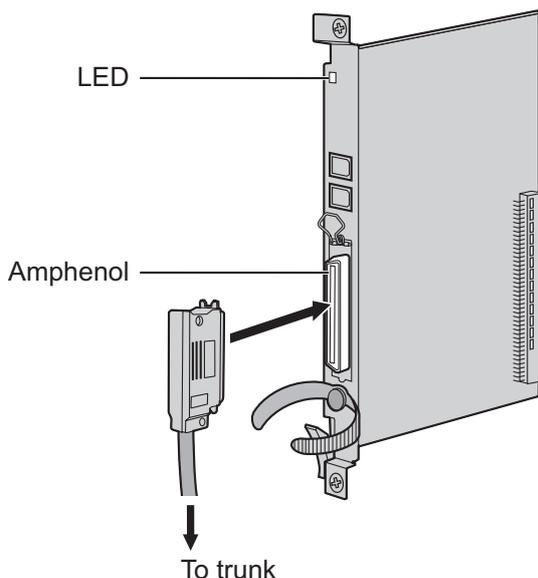
User-supplied (not included): none

2.4 Information about the Trunk Cards

2.4.1 LCOT4 Card (KX-TDA0183), LCOT8 Card (KX-TDA0180), LCOT16 Card (KX-TDA0181), and CLCOT8 Card (KX-TDA1180)

Function

- LCOT4:** 4-port analogue trunk card with 2 power failure transfer (PFT) ports.
- LCOT8:** 8-port analogue trunk card with 2 power failure transfer (PFT) ports. One CID8 or CID/PAY8 card can be mounted on the LCOT8 card (refer to "2.4.3 CID/PAY8 Card (KX-TDA0189)" and "2.4.4 CID8 Card (KX-TDA0193)").
- LCOT16:** 16-port analogue trunk card with 4 power failure transfer (PFT) ports. A maximum of 2 CID8 cards, 2 CID/PAY8 cards, or one of each can be mounted on the LCOT16 card (refer to "2.4.3 CID/PAY8 Card (KX-TDA0189)" and "2.4.4 CID8 Card (KX-TDA0193)").
- CLCOT8:** 8-port analogue trunk card with Caller ID, and 2 power failure transfer (PFT) ports. Caller ID signal type FSK/FSK (with Call Waiting Caller ID [Visual Caller ID])/DTMF compatible. One CLCOT8E card can be mounted on the CLCOT8 card (refer to "2.4.5 CLCOT8E Card (KX-TDA1186)").



Accessories and User-supplied Items

Accessories (included): Screws × 2

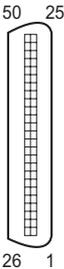
User-supplied (not included): Amphenol connector

Note

- To connect the Amphenol connector, refer to "2.2.9 Fastening Amphenol Connector".
- For details about power failure transfer, refer to "2.10.1 Power Failure Connections".
- To confirm the trunk connection, refer to "Confirming the Trunk Connection" in "2.11.1 Starting the PBX".

Pin Assignments

Amphenol Connector

	No.	Signal Name	Function	No.	Signal Name	Function
	1	RA	Ring port 1	26	TA	Tip port 1
	2	RB	Ring port 2	27	TB	Tip port 2
	3	RC	Ring port 3	28	TC	Tip port 3
	4	RD	Ring port 4	29	TD	Tip port 4
	5	RE	Ring port 5	30	TE	Tip port 5
	6	RF	Ring port 6	31	TF	Tip port 6
	7	RG	Ring port 7	32	TG	Tip port 7
	8	RH	Ring port 8	33	TH	Tip port 8
	9	RI	Ring port 9	34	TI	Tip port 9
	10	RJ	Ring port 10	35	TJ	Tip port 10
	11	RK	Ring port 11	36	TK	Tip port 11
	12	RL	Ring port 12	37	TL	Tip port 12
	13	RM	Ring port 13	38	TM	Tip port 13
	14	RN	Ring port 14	39	TN	Tip port 14
	15	RO	Ring port 15	40	TO	Tip port 15
	16	RP	Ring port 16	41	TP	Tip port 16
	17-25	Reserved	–	42-50	Reserved	–

Note

- Pin assignments for the pins 5 to 8 and 30 to 33 are only for the LCOT8, LCOT16, and CLCOT8 cards.
- Pin assignments for the pins 9 to 16 and 34 to 41 are only for the LCOT16 card, or a CLCOT8 card with a CLCOT8E card mounted.

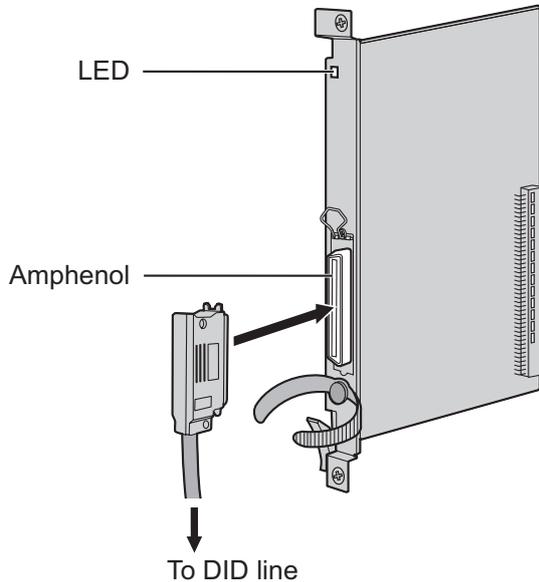
LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service

2.4.2 DID8 Card (KX-TDA0182)

Function

8-port DID trunk card.



Accessories and User-supplied Items

Accessories (included): Screws × 2

User-supplied (not included): Amphenol connector

Note

- To connect the Amphenol connector, refer to "2.2.9 Fastening Amphenol Connector".
- To confirm the trunk connection, refer to "Confirming the Trunk Connection" in "2.11.1 Starting the PBX".

Pin Assignments

Amphenol Connector

	No.	Signal Name	Function	No.	Signal Name	Function
	1	RA	Ring port 1	26	TA	Tip port 1
	2	RB	Ring port 2	27	TB	Tip port 2
	3	RC	Ring port 3	28	TC	Tip port 3
	4	RD	Ring port 4	29	TD	Tip port 4
	5	RE	Ring port 5	30	TE	Tip port 5
	6	RF	Ring port 6	31	TF	Tip port 6
	7	RG	Ring port 7	32	TG	Tip port 7
	8	RH	Ring port 8	33	TH	Tip port 8
	9-25	Reserved	–	34-50	Reserved	–

LED Indications

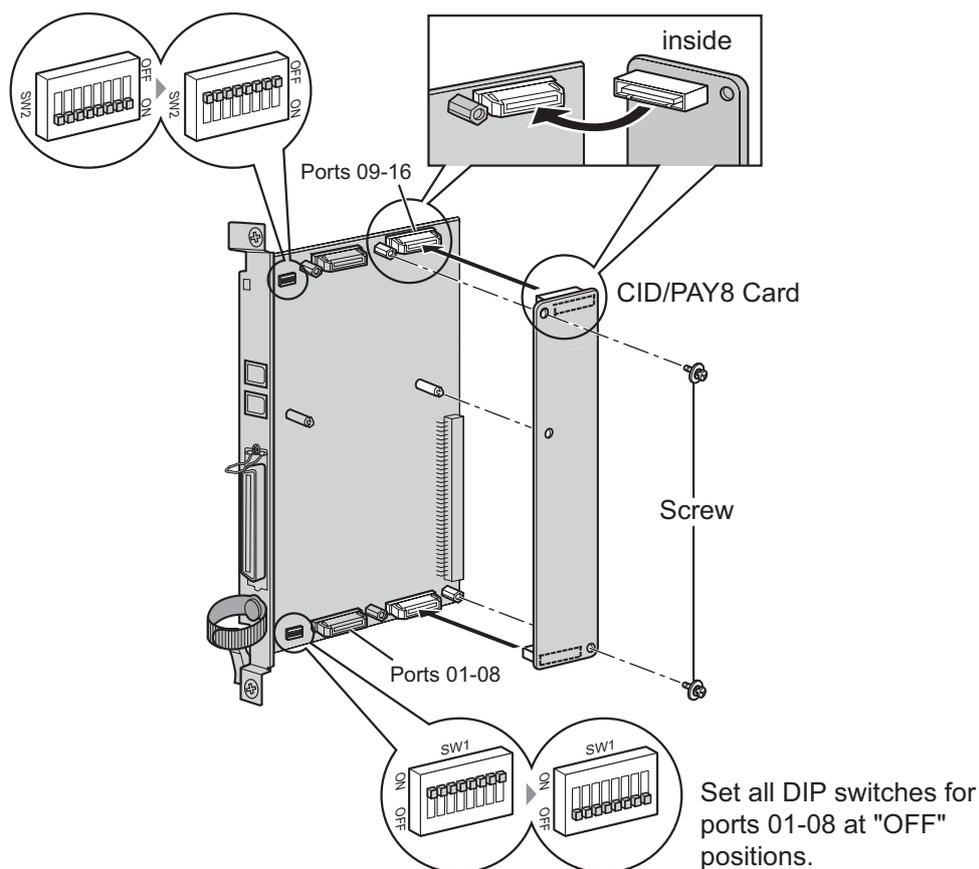
Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none">• OFF: Power Off• Green ON: Normal (all ports are idle)• Green Flashing (60 times per minute): Normal (a port is in use)• Red ON: Fault (includes reset)• Red Flashing (60 times per minute): Out of Service

2.4.3 CID/PAY8 Card (KX-TDA0189)

Function

8-port Caller ID signal type FSK/FSK (with Call Waiting Caller ID [Visual Caller ID])/DTMF, and 8-port Pay Tone Service (12 kHz/16 kHz). To be mounted on the LCOT8/LCOT16 card.

Set all DIP switches for ports
09-16 at "OFF" positions
(LCOT16 card only).



Accessories and User-supplied Items

Accessories (included): Screws × 2

User-supplied (not included): none

Note

Only 1 CID/PAY8 card can be mounted on the LCOT8 card.

Switch Settings (on LCOT8/LCOT16 cards)

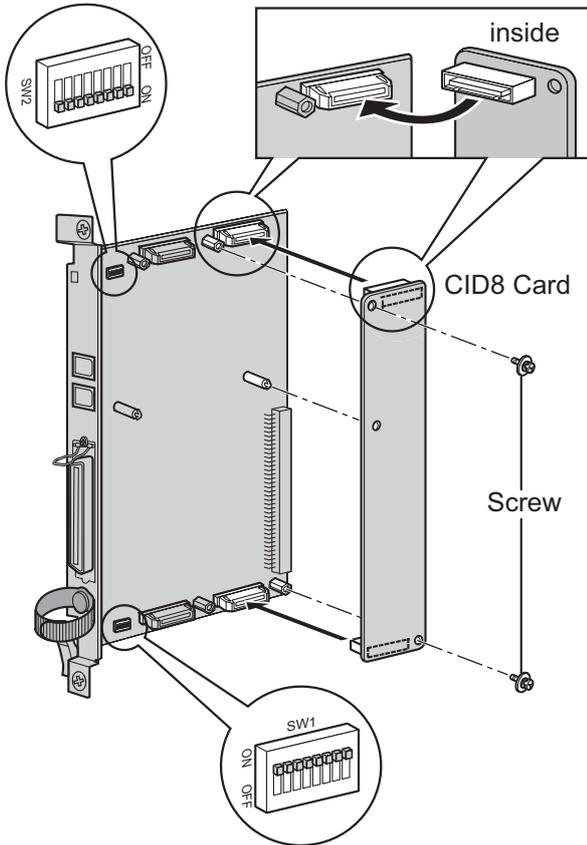
Switch	Type	Usage and Status Definition
Port Setting	DIP	Set all DIP switches at "OFF" positions. Note SW2 is for the LCOT16 card only.

2.4.4 CID8 Card (KX-TDA0193)

Function

8-port Caller ID signal type FSK/FSK (with Call Waiting Caller ID [Visual Caller ID])/DTMF. To be mounted on the LCOT8/LCOT16 card.

LCOT16 card only



Accessories and User-supplied Items

Accessories (included): Screws × 2

User-supplied (not included): none

Note

Only 1 CID8 card can be mounted on the LCOT8 card.

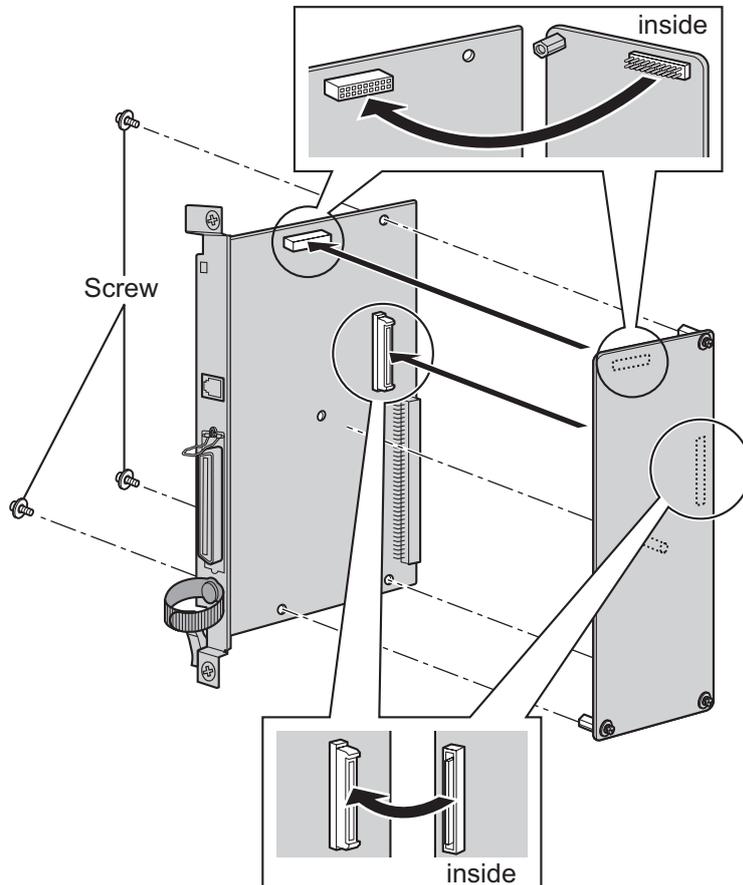
Switch Settings (on LCOT8/LCOT16 cards)

Switch	Type	Usage and Status Definition
Port Setting	DIP	Keep all DIP switches at default "ON" positions. Do not change the positions of these switches. Note SW2 is for the LCOT16 card only.

2.4.5 CLCOT8E Card (KX-TDA1186)

Function

8-port analogue trunk daughter card with Caller ID. Caller ID signal type FSK/FSK (with Call Waiting Caller ID [Visual Caller ID])/DTMF compatible. To be mounted on the CLCOT8 card.



Accessories and User-supplied Items

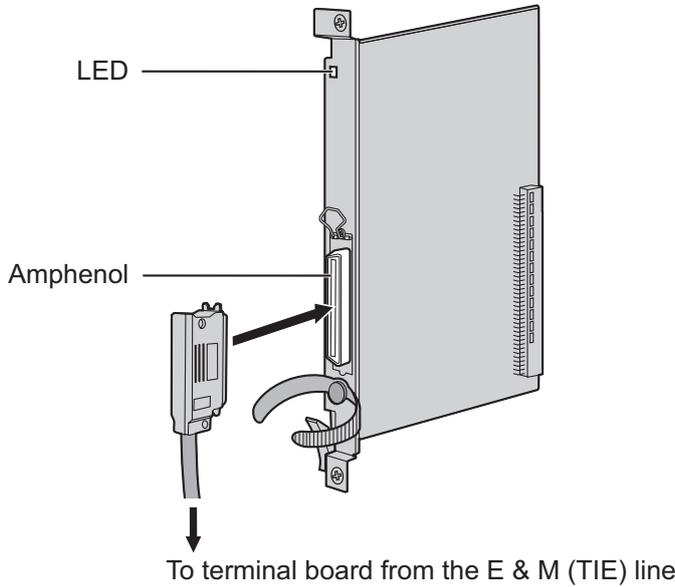
Accessories (included): Screws × 3

User-supplied (not included): none

2.4.6 E&M8 Card (KX-TDA0184)

Function

8-port E & M (TIE) trunk card. Type 5 support.



Accessories and User-supplied Items

Accessories (included): Screws × 2

User-supplied (not included): Amphenol connector

Note

- Connect this optional service card to the trunk through terminal board from the E & M (TIE) line; do not connect to the trunk directly.
- To connect the Amphenol connector, refer to "2.2.9 Fastening Amphenol Connector".
- To confirm the trunk connection, refer to "Confirming the Trunk Connection" in "2.11.1 Starting the PBX".

Pin Assignments

Amphenol Connector

	No.	Signal Name	Function	No.	Signal Name	Function
	1	TA	Tip port 1	26	RA	Ring port 1
	2	T1A	Tip 1 port 1	27	R1A	Ring 1 port 1
	3	EA	E line port 1	28	MA	M line port 1
	4	SGA	SG line port 1	29	SGB	SG line port 2
	5	TB	Tip port 2	30	RB	Ring port 2
	6	T1B	Tip 1 port 2	31	R1B	Ring 1 port 2
	7	EB	E line port 2	32	MB	M line port 2
	8	TC	Tip port 3	33	RC	Ring port 3

	No.	Signal Name	Function	No.	Signal Name	Function
	9	T1C	Tip 1 port 3	34	R1C	Ring 1 port 3
	10	EC	E line port 3	35	MC	M line port 3
	11	TD	Tip port 4	36	RD	Ring port 4
	12	T1D	Tip 1 port 4	37	R1D	Ring 1 port 4
	13	ED	E line port 4	38	MD	M line port 4
	14	TE	Tip port 5	39	RE	Ring port 5
	15	T1E	Tip 1 port 5	40	R1E	Ring 1 port 5
	16	EE	E line port 5	41	ME	M line port 5
	17	TF	Tip port 6	42	RF	Ring port 6
	18	T1F	Tip 1 port 6	43	R1F	Ring 1 port 6
	19	EF	E line port 6	44	MF	M line port 6
	20	TG	Tip port 7	45	RG	Ring port 7
	21	T1G	Tip 1 port 7	46	R1G	Ring 1 port 7
	22	EG	E line port 7	47	MG	M line port 7
	23	TH	Tip port 8	48	RH	Ring port 8
	24	T1H	Tip 1 port 8	49	R1H	Ring 1 port 8
	25	EH	E line port 8	50	MH	M line port 8

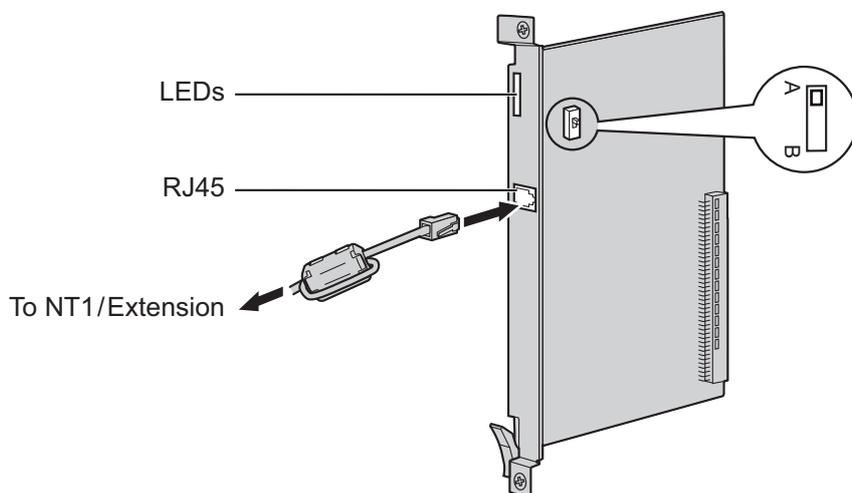
LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service

2.4.7 T1 Card (KX-TDA0187)

Function

1-port T1 trunk card. EIA/TIA standard compliant.



Accessories and User-supplied Items

Accessories (included): Ferrite core × 1

User-supplied (not included): RJ45 connector

CAUTION

- When connecting this optional service card to the trunk, connect through NT1; do not connect to the trunk directly.
- T1 ports are SELV ports and should only be connected to SELV services.

Notice

When connecting the RJ45 connector, attach the included ferrite core. Refer to "2.2.8 Attaching a Ferrite Core".

Note

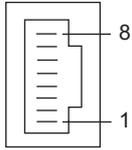
- This optional service card can be used for either trunk or extension connection, by setting the A/B switch or using the connector with appropriate pin assignments.
- To confirm the trunk connection, refer to "Confirming the Trunk Connection" in "2.11.1 Starting the PBX".

Switch Settings

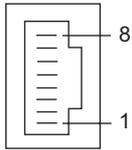
Switch	Type	Usage and Status Definition
A/B	Slide	Select A (default) for trunk or B for extension use.

Pin Assignments

RJ45 Connector for Trunk Use

	No.	Signal Name	Level [V]	Function
	1	RX+	(+)	Receive data (+)
	2	RX-	(-)	Receive data (-)
	3	Reserved	–	–
	4	TX-	(-)	Transmit data (-)
	5	TX+	(+)	Transmit data (+)
	6-8	Reserved	–	–

RJ45 Connector for Extension Use

	No.	Signal Name	Level [V]	Function
	1	TX-	(-)	Transmit data (-)
	2	TX+	(+)	Transmit data (+)
	3	Reserved	–	–
	4	RX+	(+)	Receive data (+)
	5	RX-	(-)	Receive data (-)
	6-8	Reserved	–	–

LED Indications

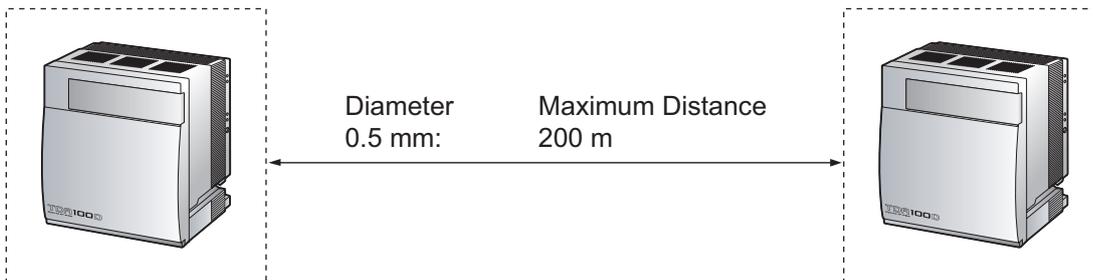
Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service
SYNC-ERR	Red	Non-synchronisation status indication <ul style="list-style-type: none"> • OFF: Normal • ON: Out of synchronisation
RAI	Red	RAI signal status indication <ul style="list-style-type: none"> • OFF: Normal • ON: Alarm (Clock Slave) • Flashing (60 times per minute): Alarm (Clock Master)
AIS	Red	AIS status indication <ul style="list-style-type: none"> • OFF: Normal • ON: Alarm

2.4.7 T1 Card (KX-TDA0187)

Indication	Colour	Description
SYNC	Green	Synchronisation status indication <ul style="list-style-type: none">• OFF: Not synchronised• ON: Synchronised• Flashing (60 times per minute): Synchronised (Clock Master)

Maximum Cabling Distance of Extension Connection

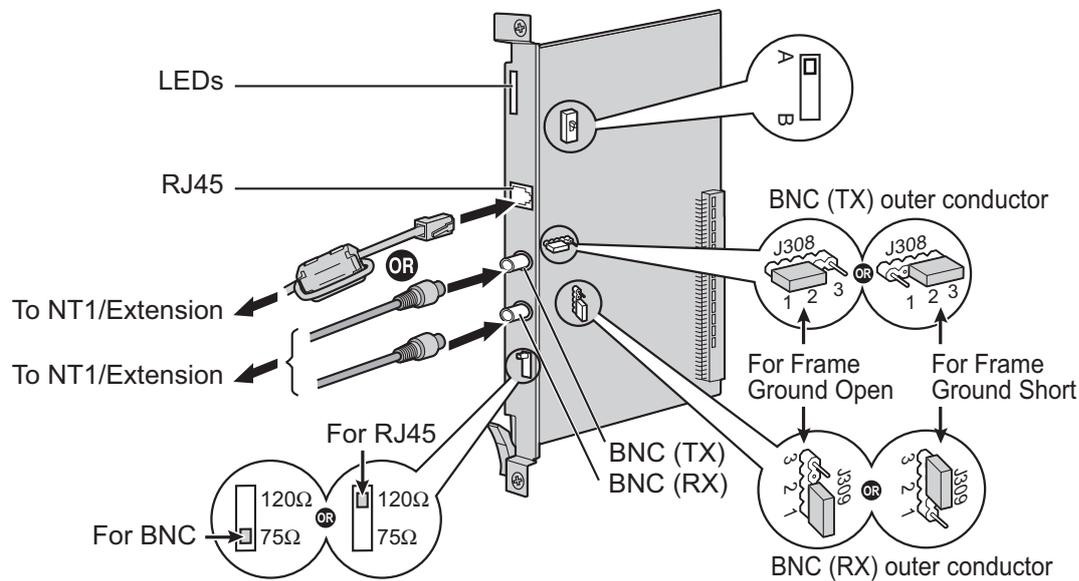
The maximum length of the extension cable that connects the T1 cards is shown below:



2.4.8 E1 Card (KX-TDA0188)

Function

1-port E1 trunk card. ITU-T standard compliant.



Accessories and User-supplied Items

Accessories (included): Ferrite core × 1

User-supplied (not included): RJ45 or BNC connector

CAUTION

- When connecting this optional service card to the trunk, connect through NT1; do not connect to the trunk directly.
- E1 ports are SELV ports and should only be connected to SELV services.

Notice

When connecting the RJ45 connector, attach the included ferrite core. Refer to "2.2.8 Attaching a Ferrite Core".

Note

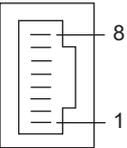
- In some countries/areas, this optional service card must not be connected to the Public Switched Telephone Network.
- Use only 1 type of connector (RJ45 or BNC) for connection; RJ45 and BNC cannot be used simultaneously.
- This optional service card can be used for either trunk or extension connection, by setting the A/B switch or using the connector with appropriate pin assignments.
- To confirm the trunk connection, refer to "Confirming the Trunk Connection" in "2.11.1 Starting the PBX".

Switch Settings

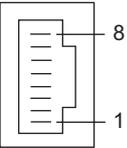
Switch	Type	Usage and Status Definition
Termination	Slide	Select 120 Ω (default) or 75 Ω to match the connector type to be used.
A/B	Slide	When using an RJ45 connector, select A (default) for trunk or B for extension use. When using BNC connectors, make sure that A is selected.
Frame Ground Short	Short pin	J308 is for BNC (TX) outer conductor, and J309 is for BNC (RX) outer conductor. Connection of 1 and 2: Open (default) Connection of 2 and 3: Short

Pin Assignments

RJ45 Connector for Trunk Use

	No.	Signal Name	Level [V]	Function
	1	RX+	(+)	Receive data (+)
	2	RX-	(-)	Receive data (-)
	3	Reserved	–	–
	4	TX-	(-)	Transmit data (-)
	5	TX+	(+)	Transmit data (+)
	6-8	Reserved	–	–

RJ45 Connector for Extension use

	No.	Signal Name	Level [V]	Function
	1	TX-	(-)	Transmit data (-)
	2	TX+	(+)	Transmit data (+)
	3	Reserved	–	–
	4	RX+	(+)	Receive data (+)
	5	RX-	(-)	Receive data (-)
	6-8	Reserved	–	–

BNC (coaxial) Connector (TX)

	No.	Signal Name	Level [V]	Function
	1	TX+	(+)	Transmit data (+)
	2	TX-	(-)	Transmit data (-)

BNC (coaxial) Connector (RX)

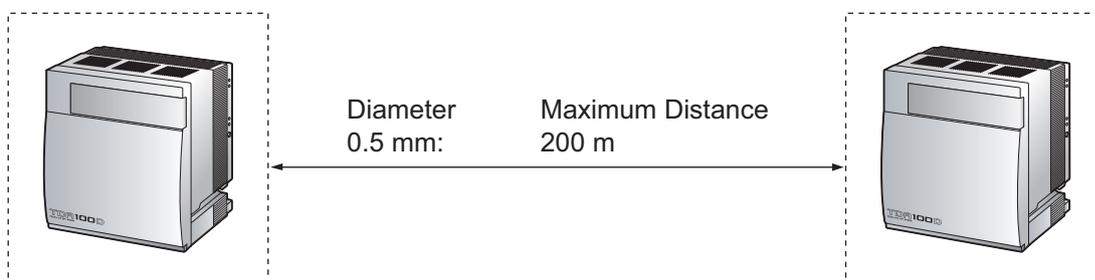
	No.	Signal Name	Level [V]	Function
	1	RX-	(-)	Receive data (-)
	2	RX+	(+)	Receive data (+)

LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service
SYNC-ERR	Red	Non-synchronisation status indication <ul style="list-style-type: none"> • OFF: Normal • ON: Out of synchronisation
RAI	Red	RAI signal status indication <ul style="list-style-type: none"> • OFF: Normal • ON: Alarm (Clock Slave) • Flashing (60 times per minute): Alarm (Clock Master)
AIS	Red	AIS status indication <ul style="list-style-type: none"> • OFF: Normal • ON: Alarm
SYNC	Green	Synchronisation status indication <ul style="list-style-type: none"> • OFF: Not synchronised • ON: Synchronised • Flashing (60 times per minute): Synchronised (Clock Master)

Maximum Cabling Distance of Extension Connection

The maximum length of the extension cable that connects the E1 cards is shown below:

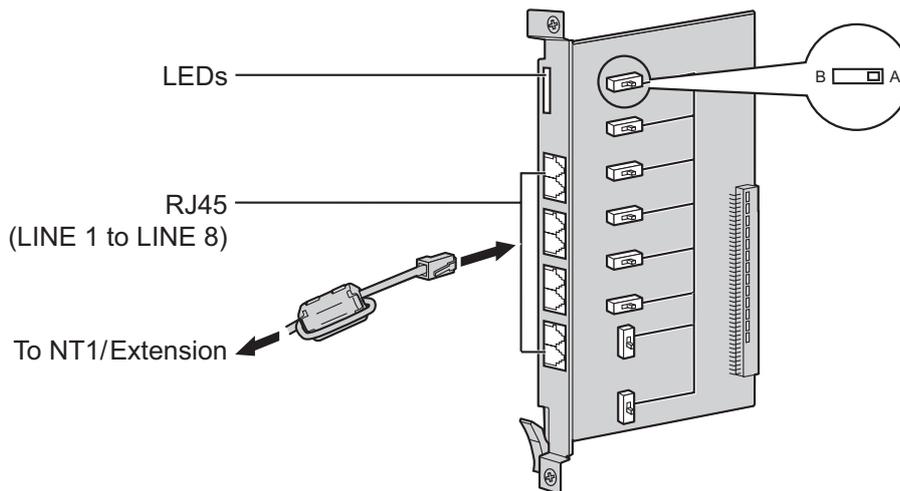


2.4.9 BRI4 Card (KX-TDA0284) and BRI8 Card (KX-TDA0288)

Function

BRI4: 4-port ISDN Basic Rate Interface card with 1 power failure transfer port. EURO-ISDN/ETSI compliant.

BRI8: 8-port ISDN Basic Rate Interface card with 1 power failure transfer port. EURO-ISDN/ETSI compliant.



Accessories and User-supplied Items

Accessories (included): Ferrite core(s) × 1 (BRI4 card) or 2 (BRI8 card)

User-supplied (not included): RJ45 connector

CAUTION

- If the connected ISDN terminal has no external power source, make sure that the power is supplied from the BRI4/BRI8 card by programming the PBX accordingly. However, if there is an external power source to the terminal, make sure that there is no power supplied to the terminal from the BRI4/BRI8 card. Failure to do so may cause damage to the power supply circuit of the BRI4/BRI8 card or the terminal.
- When connecting these optional service cards to the trunk, connect through an NT1; do not connect to the U interface of the trunk directly.

Notice

When connecting the RJ45 connector, attach the included ferrite core. Refer to "2.2.8 Attaching a Ferrite Core".

Note

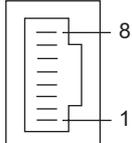
- LINE 5 to LINE 8 are for BRI8 card only.
- These optional service cards have 100 Ω of terminal resistance. For use in point to multi-point connection, the cards must be placed at the end of the bus.
- These optional service cards can be used for either trunk or extension connection, by setting the A/B switch or using the connector with appropriate pin assignments.
- For details about power failure transfer, refer to "2.10.1 Power Failure Connections".
- To confirm the trunk connection, refer to "Confirming the Trunk Connection" in "2.11.1 Starting the PBX".

Switch Settings

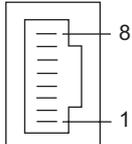
Switch	Type	Usage and Status Definition
A/B	Slide	Select A (default) for trunk or B for extension use.

Pin Assignments

RJ45 Connector for Trunk Use

	No.	Signal Name	Level [V]	Function
	1-2	Reserved	–	–
	3	TX1	(+)	Transmit data 1
	4	RX2	(+)	Receive data 2
	5	RX1	(-)	Receive data 1
	6	TX2	(-)	Transmit data 2
	7-8	Reserved	–	–

RJ45 Connector for Extension Use

	No.	Signal Name	Level [V]	Function
	1-2	Reserved	–	–
	3	RX2	(+)	Receive data 2
	4	TX1	(+)	Transmit data 1
	5	TX2	(-)	Transmit data 2
	6	RX1	(-)	Receive data 1
	7-8	Reserved	–	–

LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service

2.4.9 BRI4 Card (KX-TDA0284) and BRI8 Card (KX-TDA0288)

Indication	Colour	Description
LINE 8 LINE 7 LINE 6 LINE 5 LINE 4 LINE 3 LINE 2 LINE 1	Green	Line status indication (LINE 1 to LINE 8): Refer to "LINE LED Pattern" below for details. Note LINE 5 to LINE 8 are for BRI8 card only.

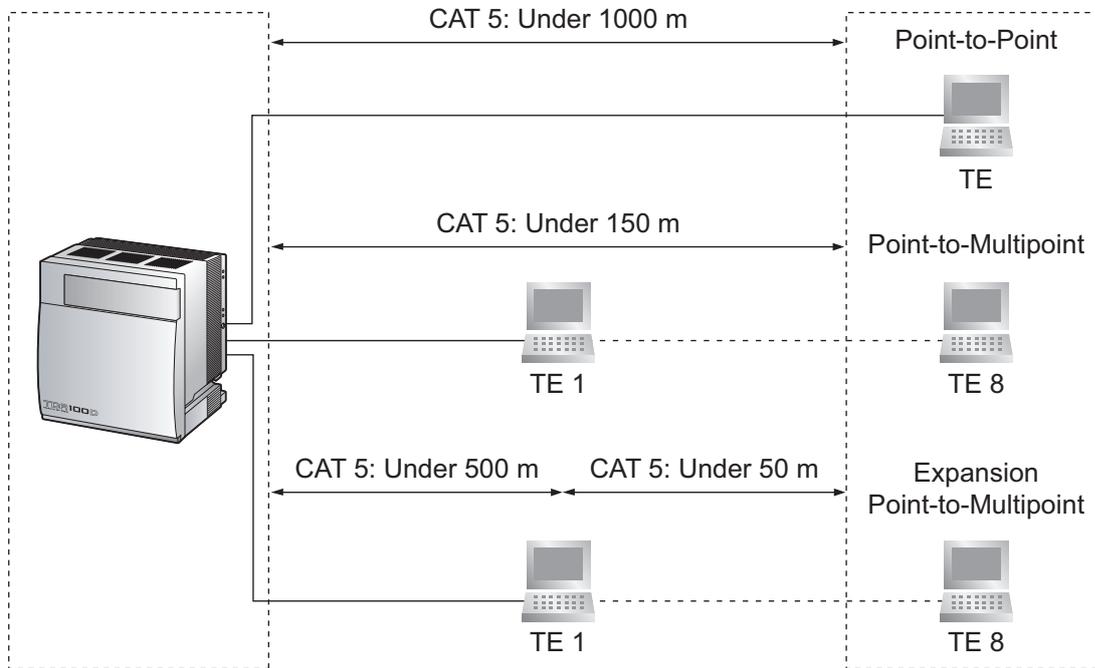
LINE LED Pattern

Layer 1	Layer 2	Master Clock	LED Pattern
OFF	OFF	OFF	
ON	OFF	OFF	
ON	ON	OFF	
ON	OFF	ON	
ON	ON	ON	

Layer 1: ON (Synchronous)
 Layer 2: ON (Link established)/OFF (Link not established)
 Master Clock: ON (Master)/OFF (Slave)

Maximum Cabling Distance of S0 Bus Connection

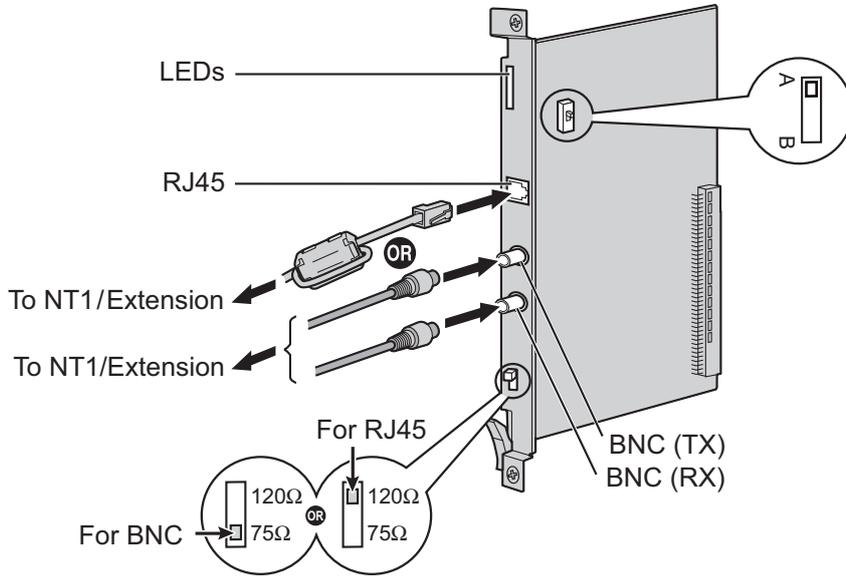
The maximum length of the extension cable that connects the PBX and the ISDN terminal equipment (TE) is shown below:



2.4.10 PRI30 Card (KX-TDA0290CE/KX-TDA0290CJ)

Function

1-port ISDN Primary Rate Interface card (30B channels). EURO-ISDN/ETSI compliant.



Accessories and User-supplied Items

Accessories (included): Ferrite core × 1

User-supplied (not included): RJ45 or BNC connector

CAUTION

- When connecting this optional service card to the trunk, connect through an NT1; do not connect to the U interface of the trunk directly.
- PRI ports are SELV ports and should only be connected to SELV services.

Notice

When connecting the RJ45 connector, attach the included ferrite core. Refer to "2.2.8 Attaching a Ferrite Core".

Note

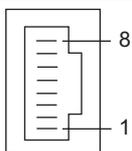
- In some countries/areas, this optional service card must not be connected to the Public Switched Telephone Network.
- Use only 1 type of connector (RJ45 or BNC) for connection; RJ45 and BNC cannot be used simultaneously.
- This optional service card can be used for either trunk or extension connection, by setting the A/B switch or using the connector with appropriate pin assignments.
- To confirm the trunk connection, refer to "Confirming the Trunk Connection" in "2.11.1 Starting the PBX".

Switch Settings

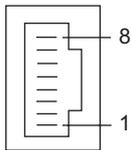
Switch	Type	Usage and Status Definition
Termination	Slide	Select 120 Ω (default) or 75 Ω to match the connector type to be used.
A/B	Slide	When using an RJ45 connector, select A (default) for trunk or B for extension use. When using BNC connectors, make sure that A is selected.

Pin Assignments

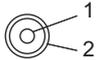
RJ45 Connector for Trunk Use

	No.	Signal Name	Level [V]	Function
	1	RX+	(+)	Receive data (+)
	2	RX-	(-)	Receive data (-)
	3	Reserved	–	–
	4	TX-	(-)	Transmit data (-)
	5	TX+	(+)	Transmit data (+)
	6-8	Reserved	–	–

RJ45 Connector for Extension Use

	No.	Signal Name	Level [V]	Function
	1	TX-	(-)	Transmit data (-)
	2	TX+	(+)	Transmit data (+)
	3	Reserved	–	–
	4	RX+	(+)	Receive data (+)
	5	RX-	(-)	Receive data (-)
	6-8	Reserved	–	–

BNC (coaxial) Connector (TX)

	No.	Signal Name	Level [V]	Function
	1	TX+	(+)	Transmit data (+)
	2	TX-	(-)	Transmit data (-)

BNC (coaxial) Connector (RX)

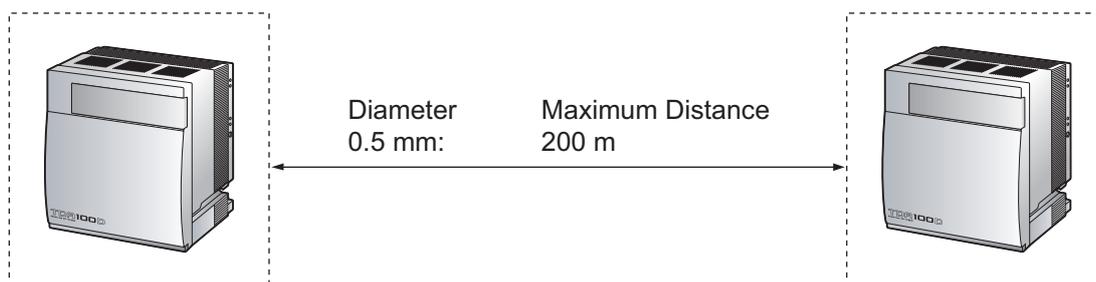
	No.	Signal Name	Level [V]	Function
	1	RX-	(-)	Receive data (-)
	2	RX+	(+)	Receive data (+)

LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service
SYNC-ERR	Red	Non-synchronisation status indication <ul style="list-style-type: none"> • OFF: Normal • ON: Out of synchronisation
RAI	Red	RAI signal status indication <ul style="list-style-type: none"> • OFF: Normal • ON: Alarm (Clock Slave) • Flashing (60 times per minute): Alarm (Clock Master)
AIS	Red	AIS status indication <ul style="list-style-type: none"> • OFF: Normal • ON: Alarm
SYNC	Green	Synchronisation status indication <ul style="list-style-type: none"> • OFF: Not synchronised • ON: Synchronised • Flashing (60 times per minute): Synchronised (Clock Master)
D-LINK	Green	Data link status indication <ul style="list-style-type: none"> • OFF: Not established • ON: Established

Maximum Cabling Distance of Extension Connection

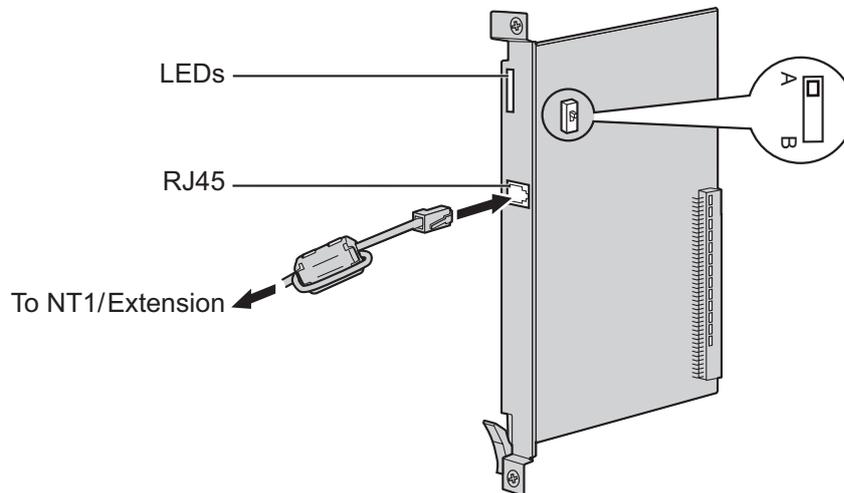
The maximum length of the extension cable that connects the PRI30 cards is shown below:



2.4.11 PRI23 Card (KX-TDA0290)

Function

1-port ISDN Primary Rate Interface card (23B channels). NI (North American standard ISDN protocol) compliant.



Accessories and User-supplied Items

Accessories (included): Ferrite core × 1

User-supplied (not included): RJ45 connector

CAUTION

- When connecting this optional service card to the trunk, connect through an NT1; do not connect to the U interface of the trunk directly.
- PRI ports are SELV ports and should only be connected to SELV services.

Notice

When connecting the RJ45 connector, attach the included ferrite core. Refer to "2.2.8 Attaching a Ferrite Core".

Note

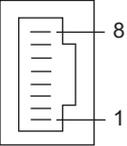
- This optional service card can be used for either trunk or extension connection, by setting the A/B switch or using the connector with appropriate pin assignments.
- To confirm the trunk connection, refer to "Confirming the Trunk Connection" in "2.11.1 Starting the PBX".

Switch Settings

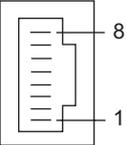
Switch	Type	Usage and Status Definition
A/B	Slide	Select A (default) for trunk or B for extension use.

Pin Assignments

RJ45 Connector for Trunk Use

	No.	Signal Name	Level [V]	Function
	1	RX+	(+)	Receive data (+)
	2	RX-	(-)	Receive data (-)
	3	Reserved	–	–
	4	TX-	(-)	Transmit data (-)
	5	TX+	(+)	Transmit data (+)
	6-8	Reserved	–	–

RJ45 Connector for Extension Use

	No.	Signal Name	Level [V]	Function
	1	TX-	(-)	Transmit data (-)
	2	TX+	(+)	Transmit data (+)
	3	Reserved	–	–
	4	RX+	(+)	Receive data (+)
	5	RX-	(-)	Receive data (-)
	6-8	Reserved	–	–

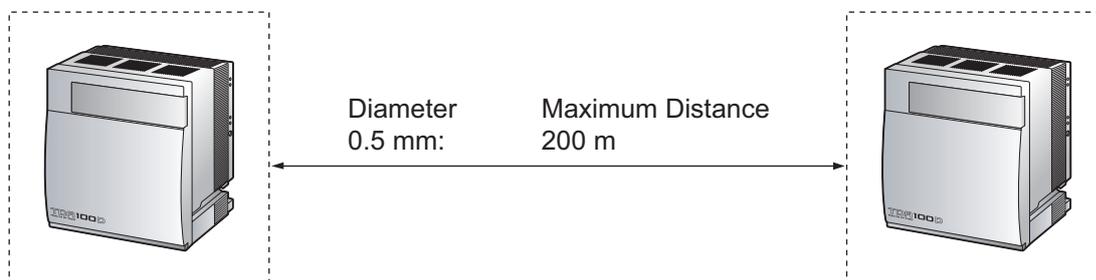
LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service
SYNC-ERR	Red	Non-synchronisation status indication <ul style="list-style-type: none"> • OFF: Normal • ON: Out of synchronisation
RAI	Red	RAI signal status indication <ul style="list-style-type: none"> • OFF: Normal • ON: Alarm (Clock Slave) • Flashing (60 times per minute): Alarm (Clock Master)
AIS	Red	AIS status indication <ul style="list-style-type: none"> • OFF: Normal • ON: Alarm

Indication	Colour	Description
SYNC	Green	Synchronisation status indication <ul style="list-style-type: none"> • OFF: Not synchronised • ON: Synchronised • Flashing (60 times per minute): Synchronised (Clock Master)
D-LINK	Green	Data link status indication <ul style="list-style-type: none"> • OFF: Not established • ON: Established

Maximum Cabling Distance of Extension Connection

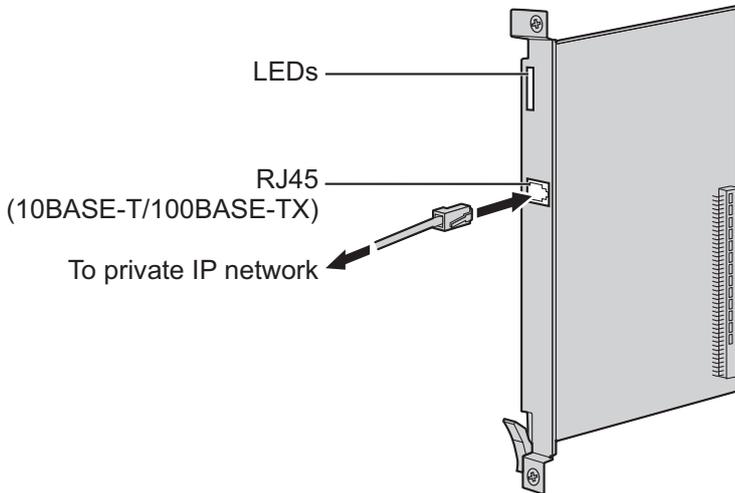
The maximum length of the extension cable that connects the PRI23 cards is shown below:



2.4.12 IP-GW4E Card (KX-TDA0484)

Function

4-channel VoIP gateway card. Compliant with VoIP H.323 V.2 protocol, and ITU-T G.729a, G.723.1, and G.711 codec methods.



Accessories and User-supplied Items

Accessories (included): CD-ROM (including documentation for web programming) × 1

User-supplied (not included): RJ45 connector

Note

- The maximum length of the cable to be connected to this optional service card is 100 m.
- The IP-GW4E card occupies the space of only 1 free slot when it is installed in the PBX.
- For programming instructions and other information about the IP-GW4E card, refer to the documentation for the IP-GW4E card. When referring to the IP-GW4E documentation, information for the KX-TDA100 applies to the KX-TDA100D. To programme the IP-GW4E card, use the web programming designed for the IP-GW4E card.
- To confirm the trunk connection, refer to "Confirming the Trunk Connection" in "2.11.1 Starting the PBX".

Pin Assignments

RJ45 Connector (10BASE-T/100BASE-TX)

	No.	Signal Name	Input (I)/Output (O)	Function
	1	TPO+	O	Transmit data+
	2	TPO-	O	Transmit data-
	3	TPI+	I	Receive data+
	4-5	Reserved	—	—
	6	TPI-	I	Receive data-
	7-8	Reserved	—	—

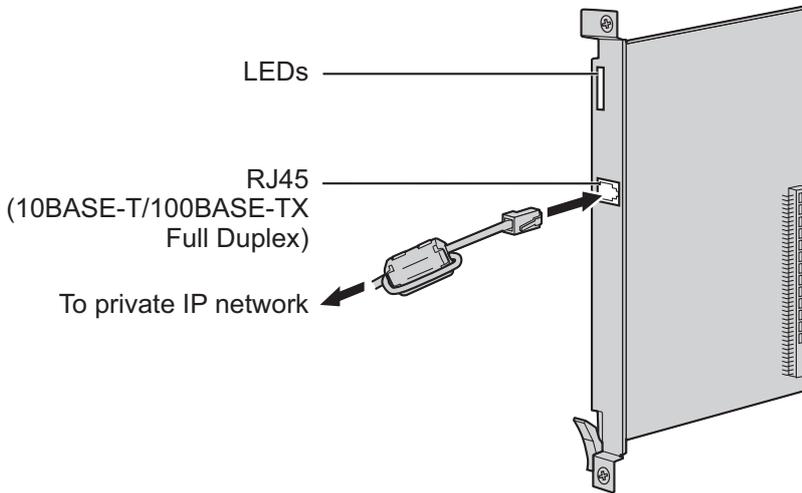
LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service
ONLINE	Green	On-line status indication <ul style="list-style-type: none"> • ON: On-line mode • OFF: Off-line mode • Flashing: Maintenance mode <p>Note</p> If the LINK indicator is OFF, the ONLINE indicator will also be OFF.
ALARM	Red	Alarm indication <ul style="list-style-type: none"> • OFF: Normal • ON: Alarm
VoIP BUSY	Green	VoIP (H.323) process indication <ul style="list-style-type: none"> • OFF: VoIP process inactive • ON: VoIP process active
LINK	Green	Link status indication <ul style="list-style-type: none"> • OFF: Connection error • ON: Normal connection
DATA	Green	Data transmission indication <ul style="list-style-type: none"> • OFF: No data transmitted • ON: Data transmitting

2.4.13 IP-GW16 Card (KX-TDA0490)

Function

16-channel VoIP gateway card. Compliant with VoIP H.323 V.2 protocol, and ITU-T G.729a, G.723.1, and G.711 codec methods.



Accessories and User-supplied Items

Accessories (included): Ferrite core × 1, CD-ROM (including documentation for web programming) × 1

User-supplied (not included): RJ45 connector

Note

- The maximum length of the cable to be connected to this optional service card is 100 m.
- When connecting the RJ45 connector, attach the included ferrite core. Refer to "2.2.8 Attaching a Ferrite Core".
- For programming instructions and other information about the IP-GW16 card, refer to the documentation for the IP-GW16 card. When referring to the IP-GW16 documentation, information for the KX-TDA100 applies to the KX-TDA100D. To programme the IP-GW16 card, use the web programming designed for the IP-GW16 card.
- To confirm the trunk connection, refer to "Confirming the Trunk Connection" in "2.11.1 Starting the PBX".

Pin Assignments

RJ45 Connector (10BASE-T/100BASE-TX)

	No.	Signal Name	Input (I)/Output (O)	Function
	1	TPO+	O	Transmit data+
	2	TPO-	O	Transmit data-
	3	TPI+	I	Receive data+
	4-5	Reserved	–	–
	6	TPI-	I	Receive data-
	7-8	Reserved	–	–

LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service
ONLINE	Green	On-line status indication <ul style="list-style-type: none"> • ON: On-line mode • OFF: Off-line mode • Flashing: Maintenance mode <p>Note</p> If the LINK indicator is OFF, the ONLINE indicator will also be OFF.
ALARM	Red	Alarm indication <ul style="list-style-type: none"> • OFF: Normal • ON: Alarm
VoIP BUSY	Green	VoIP (H.323) process indication <ul style="list-style-type: none"> • OFF: VoIP process inactive • ON: VoIP process active
LINK	Green	Link status indication <ul style="list-style-type: none"> • OFF: Connection error • ON: Normal connection
DATA	Green	Data transmission indication <ul style="list-style-type: none"> • OFF: No data transmitted • ON: Data transmitting

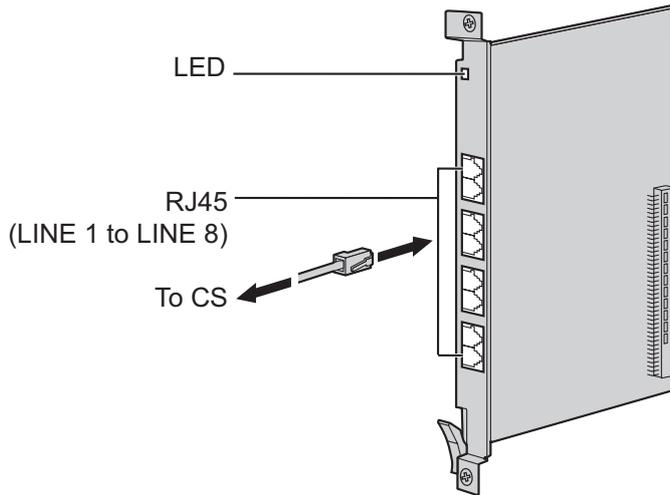
2.5 Information about the Extension Cards

2.5.1 CSIF4 Card (KX-TDA0143) and CSIF8 Card (KX-TDA0144)

Function

CSIF4: 4-port CS interface card for 4 CSs.

CSIF8: 8-port CS interface card for 8 CSs.



Accessories and User-supplied Items

Accessories (included): none

User-supplied (not included): RJ45 connector

CAUTION

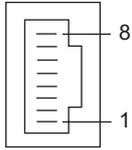
Make sure that the status of all the CSs connected to the CSIF cards are set to in-service (INS). For information about how to view CS information using the Maintenance Console, refer to "2.6.14 Utility—CS Information" in the PC Programming Manual. If there is a CS in out-of-service (OUS) status, make sure that it is securely connected to the CSIF card. If the CS remains in OUS status, there may be a fault with the connection. Do not leave the connected CS in OUS status since it may cause severe damage to the CSIF card.

Note

- LINE 5 to LINE 8 are for CSIF8 card only.
- When using the CSIF4 card, please note that the PBX software will recognise the CSIF4 card as the CSIF8 card. As a result, 8 cell stations may appear to be available; however, only 4 cell stations are supported by the CSIF4 card.
- For details about connecting CSs, refer to the Quick Installation Guide for the relevant CS.

Pin Assignments

RJ45 Connector

	No.	Signal Name	Function
	1-2	Reserved	–
	3	D1	Data port (High)
	4	POWH	Power (High)
	5	POWL	Power (Low)
	6	D2	Data port (Low)
	7-8	Reserved	–

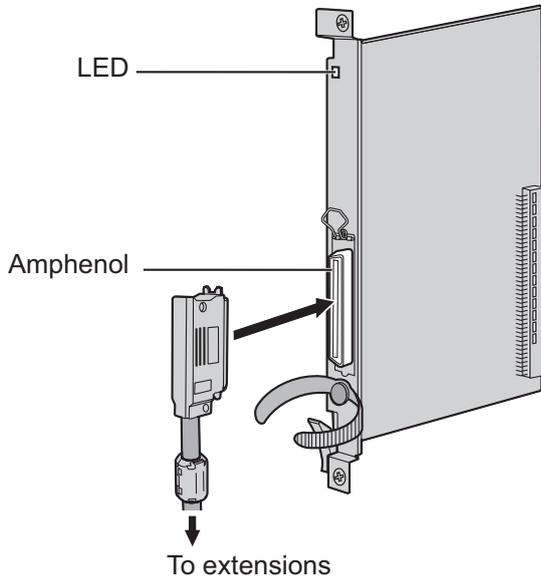
LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service

2.5.2 DLC8 Card (KX-TDA0171)

Function

8-port digital extension card for DPTs, DSS consoles, and PT-interface CSs.



Accessories and User-supplied Items

Accessories (included): Screws × 2, Ferrite core × 1

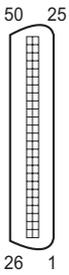
User-supplied (not included): Amphenol connector

Note

- Attach the included ferrite core to the cable. Refer to "2.2.8 Attaching a Ferrite Core".
- To connect the Amphenol connector, refer to "2.2.9 Fastening Amphenol Connector".
- To use a DLC8 card with DSS consoles or Voice Processing System (VPS), the Local Processor (LPR) software of the card must be version 7.000 or later.

Pin Assignments

Amphenol Connector

	No.	Signal Name	Function	No.	Signal Name	Function
	1	Reserved	–	26	Reserved	–
	2	D2A	Data port 1 (Low)	27	D1A	Data port 1 (High)
	3-4	Reserved	–	28-29	Reserved	–
	5	D2B	Data port 2 (Low)	30	D1B	Data port 2 (High)
	6-7	Reserved	–	31-32	Reserved	–
	8	D2C	Data port 3 (Low)	33	D1C	Data port 3 (High)
	9-10	Reserved	–	34-35	Reserved	–
	11	D2D	Data port 4 (Low)	36	D1D	Data port 4 (High)
	12-13	Reserved	–	37-38	Reserved	–
	14	D2E	Data port 5 (Low)	39	D1E	Data port 5 (High)
	15-16	Reserved	–	40-41	Reserved	–
	17	D2F	Data port 6 (Low)	42	D1F	Data port 6 (High)
	18-19	Reserved	–	43-44	Reserved	–
	20	D2G	Data port 7 (Low)	45	D1G	Data port 7 (High)
	21-22	Reserved	–	46-47	Reserved	–
	23	D2H	Data port 8 (Low)	48	D1H	Data port 8 (High)
	24-25	Reserved	–	49-50	Reserved	–

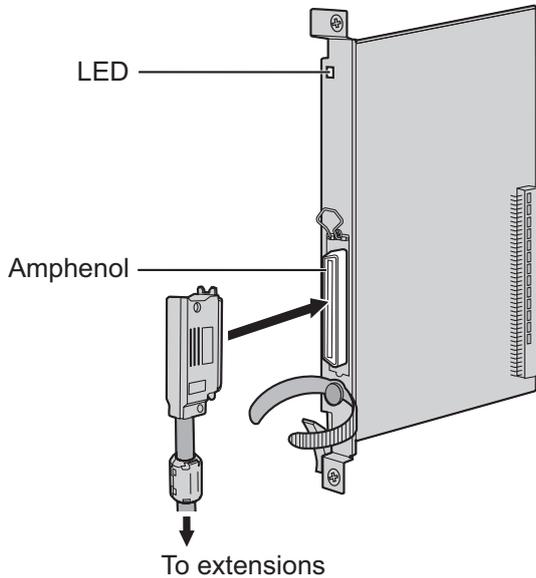
LED Indications

Indication	Colour	Description
CARD STATUS	Green/ Orange/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Orange Flashing: Detection of PT-interface CS connection (when starting up the PT-interface CS) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service

2.5.3 DLC16 Card (KX-TDA0172)

Function

16-port digital extension card for DPTs, DSS consoles, and PT-interface CSs.



Accessories and User-supplied Items

Accessories (included): Screws × 2, Ferrite core × 1

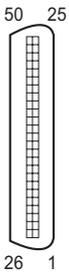
User-supplied (not included): Amphenol connector

Note

- Attach the included ferrite core to the cable. Refer to "2.2.8 Attaching a Ferrite Core".
- To connect the Amphenol connector, refer to "2.2.9 Fastening Amphenol Connector".
- To use a DLC16 card with DSS consoles or Voice Processing System (VPS), the Local Processor (LPR) software of the card must be version 7.000 or later.

Pin Assignments

Amphenol Connector

	No.	Signal Name	Function	No.	Signal Name	Function
	1	D2A	Data port 1 (Low)	26	D1A	Data port 1 (High)
	2	D2B	Data port 2 (Low)	27	D1B	Data port 2 (High)
	3	D2C	Data port 3 (Low)	28	D1C	Data port 3 (High)
	4	D2D	Data port 4 (Low)	29	D1D	Data port 4 (High)
	5	D2E	Data port 5 (Low)	30	D1E	Data port 5 (High)
	6	D2F	Data port 6 (Low)	31	D1F	Data port 6 (High)
	7	D2G	Data port 7 (Low)	32	D1G	Data port 7 (High)
	8	D2H	Data port 8 (Low)	33	D1H	Data port 8 (High)
	9	D2I	Data port 9 (Low)	34	D1I	Data port 9 (High)
	10	D2J	Data port 10 (Low)	35	D1J	Data port 10 (High)
	11	D2K	Data port 11 (Low)	36	D1K	Data port 11 (High)
	12	D2L	Data port 12 (Low)	37	D1L	Data port 12 (High)
	13	D2M	Data port 13 (Low)	38	D1M	Data port 13 (High)
	14	D2N	Data port 14 (Low)	39	D1N	Data port 14 (High)
	15	D2O	Data port 15 (Low)	40	D1O	Data port 15 (High)
	16	D2P	Data port 16 (Low)	41	D1P	Data port 16 (High)
	17-25	Reserved	–	42-50	Reserved	–

LED Indications

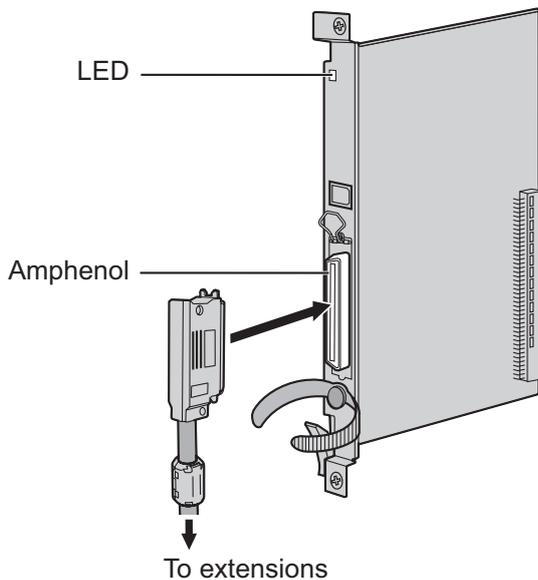
Indication	Colour	Description
CARD STATUS	Green/ Orange/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Orange Flashing: Detection of PT-interface CS connection (when starting up the PT-interface CS) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service

2.5.4 MCSLC16 Card (KX-TDA1176) and MCSLC24 Card (KX-TDA1178)

Function

MCSLC16: 16-port extension card for SLTs with Caller ID (FSK), Message Waiting Lamp control, and 2 power failure transfer (PFT) ports. Maximum power output of 90 V for Message Waiting Lamp control.

MCSLC24: 24-port extension card for SLTs with Caller ID (FSK), Message Waiting Lamp control, and 2 power failure transfer (PFT) ports. Maximum power output of 90 V for Message Waiting Lamp control.



Accessories and User-supplied Items

Accessories (included): Screws × 2, Ferrite core × 1

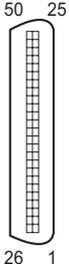
User-supplied (not included): Amphenol connector

Note

- Attach the included ferrite core to the cable. Refer to "2.2.8 Attaching a Ferrite Core".
- To connect the Amphenol connector, refer to "2.2.9 Fastening Amphenol Connector".
- For details about power failure transfer, refer to "2.10.1 Power Failure Connections".

Pin Assignments

Amphenol Connector

	No.	Signal Name	Function	No.	Signal Name	Function
	1	RA	Ring port 1	26	TA	Tip port 1
	2	RB	Ring port 2	27	TB	Tip port 2
	3	RC	Ring port 3	28	TC	Tip port 3
	4	RD	Ring port 4	29	TD	Tip port 4
	5	RE	Ring port 5	30	TE	Tip port 5
	6	RF	Ring port 6	31	TF	Tip port 6
	7	RG	Ring port 7	32	TG	Tip port 7
	8	RH	Ring port 8	33	TH	Tip port 8
	9	RI	Ring port 9	34	TI	Tip port 9
	10	RJ	Ring port 10	35	TJ	Tip port 10
	11	RK	Ring port 11	36	TK	Tip port 11
	12	RL	Ring port 12	37	TL	Tip port 12
	13	RM	Ring port 13	38	TM	Tip port 13
	14	RN	Ring port 14	39	TN	Tip port 14
	15	RO	Ring port 15	40	TO	Tip port 15
	16	RP	Ring port 16	41	TP	Tip port 16
	17	RQ	Ring port 17	42	TQ	Tip port 17
	18	RR	Ring port 18	43	TR	Tip port 18
	19	RS	Ring port 19	44	TS	Tip port 19
	20	RT	Ring port 20	45	TT	Tip port 20
	21	RU	Ring port 21	46	TU	Tip port 21
	22	RV	Ring port 22	47	TV	Tip port 22
	23	RW	Ring port 23	48	TW	Tip port 23
	24	RX	Ring port 24	49	TX	Tip port 24
	25	Reserved	–	50	Reserved	–

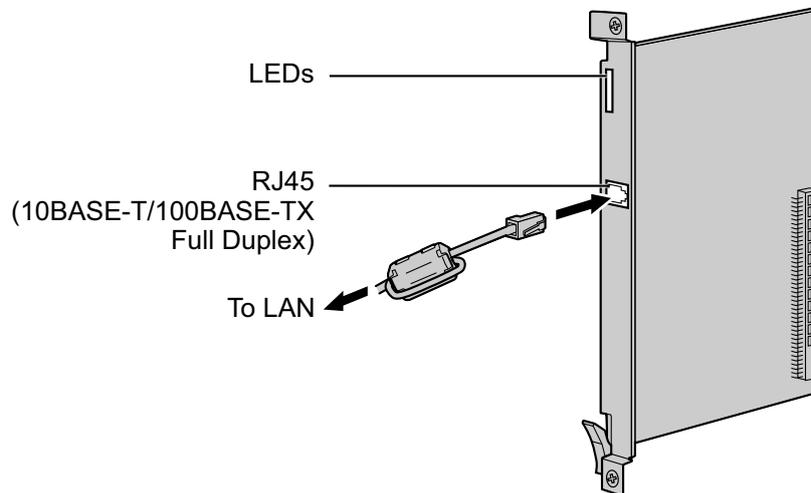
LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none">• OFF: Power Off• Green ON: Normal (all ports are idle)• Green Flashing (60 times per minute): Normal (a port is in use)• Red ON: Fault (includes reset)• Red Flashing (60 times per minute): Out of Service

2.5.5 IP-EXT16 Card (KX-TDA0470)

Function

16-channel VoIP extension card. Compliant with Panasonic proprietary protocol, and ITU-T G.729a and G.711 codec methods.



Accessories and User-supplied Items

Accessories (included): Ferrite core × 1

User-supplied (not included): RJ45 connector

Note

- The maximum length of the cable to be connected to this optional service card is 100 m.
- When connecting the RJ45 connector, attach the included ferrite core. Refer to "2.2.8 Attaching a Ferrite Core".
- Portions of this product contains software of Datalight, Inc. Copyright 1993–2000 Datalight, Inc., All Rights Reserved.

Pin Assignments

RJ45 Connector (10BASE-T/100BASE-TX)

	No.	Signal Name	Input (I)/Output (O)	Function
	1	TPO+	O	Transmit data+
	2	TPO-	O	Transmit data-
	3	TPI+	I	Receive data+
	4-5	Reserved	–	–
	6	TPI-	I	Receive data-
	7-8	Reserved	–	–

LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service
ONLINE	Green	On-line status indication <ul style="list-style-type: none"> • ON: At least one port is in use (an IP-PT is connected) • OFF: No ports are in use (no IP-PTs are connected) <p>Note If the LINK indicator is OFF, the ONLINE indicator will also be OFF.</p>
ALARM	Red	Alarm indication <ul style="list-style-type: none"> • OFF: Normal • ON: Alarm
VoIP BUSY	Green	Panasonic proprietary VoIP protocol process indication <ul style="list-style-type: none"> • OFF: VoIP process inactive • ON: VoIP process active
LINK	Green	Link status indication <ul style="list-style-type: none"> • OFF: Connection error • ON: Normal connection
DATA	Green	Data transmission indication <ul style="list-style-type: none"> • OFF: No data transmitted • ON: Data transmitting

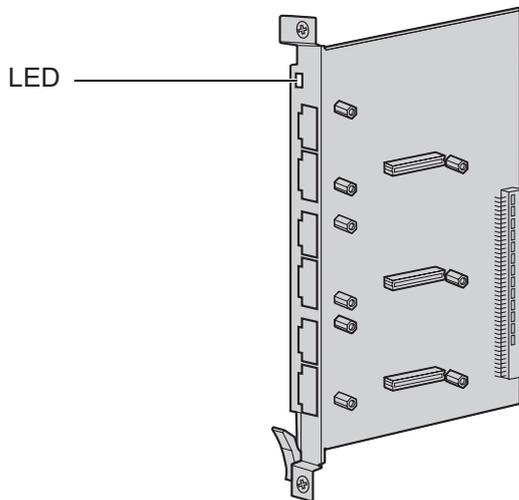
2.6 Information about the Other Cards

2.6.1 OPB3 Card (KX-TDA0190)

Function

Optional 3-slot base card for mounting a maximum of 3 option cards from the following:

- DPH4 card
- DPH2 card
- EIO4 card
- ECHO16 card
- MSG4 card
- ESVM2 card
- ESVM4 card



Accessories and User-supplied Items

Accessories (included): none

User-supplied (not included): none

WARNING

A lithium battery is used in OPB3 card. There is a risk of explosion if the battery is replaced with the incorrect type. Dispose of used batteries according to the manufacturer's instructions.

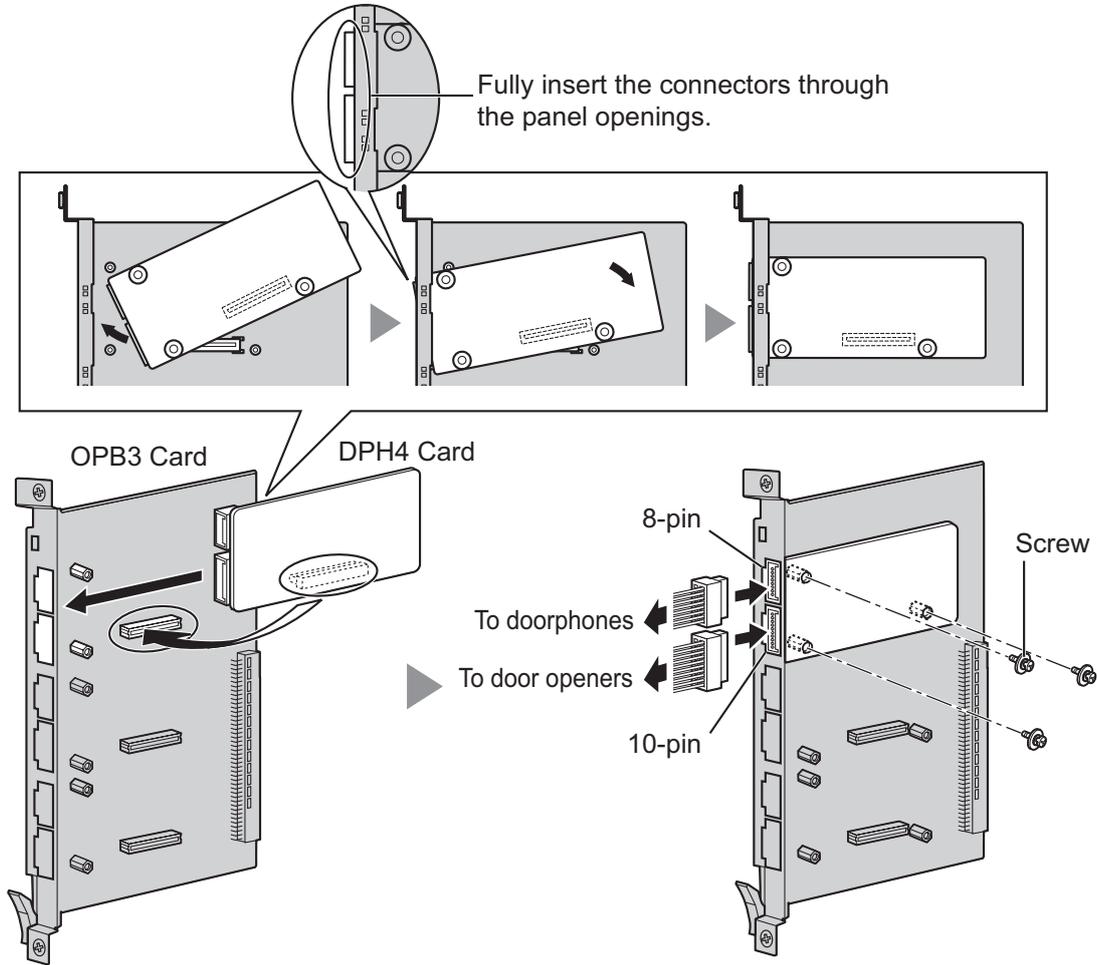
LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none"> • OFF: Power Off • Green ON: Normal (all ports are idle) • Green Flashing (60 times per minute): Normal (a port is in use) • Red ON: Fault (includes reset) • Red Flashing (60 times per minute): Out of Service

2.6.2 DPH4 Card (KX-TDA0161)

Function

4-port doorphone card for 4 doorphones and 4 door openers. To be mounted on the OPB3 card.



Accessories and User-supplied Items

Accessories (included): Screws × 3, 10-pin terminal block × 1, 8-pin terminal block × 1

User-supplied (not included): Copper wire

Note

For details about connection to doorphones and door openers, refer to "2.8.1 Connection of Doorphones, Door Openers, External Sensors, and External Relays".

Pin Assignments

8-pin Terminal Block

	No.	Signal Name	Function
	1	DP4	Doorphone 4 transmit
	2	com4	Doorphone 4 receive
	3	DP3	Doorphone 3 transmit
	4	com3	Doorphone 3 receive
	5	DP2	Doorphone 2 transmit
	6	com2	Doorphone 2 receive
	7	DP1	Doorphone 1 transmit
	8	com1	Doorphone 1 receive

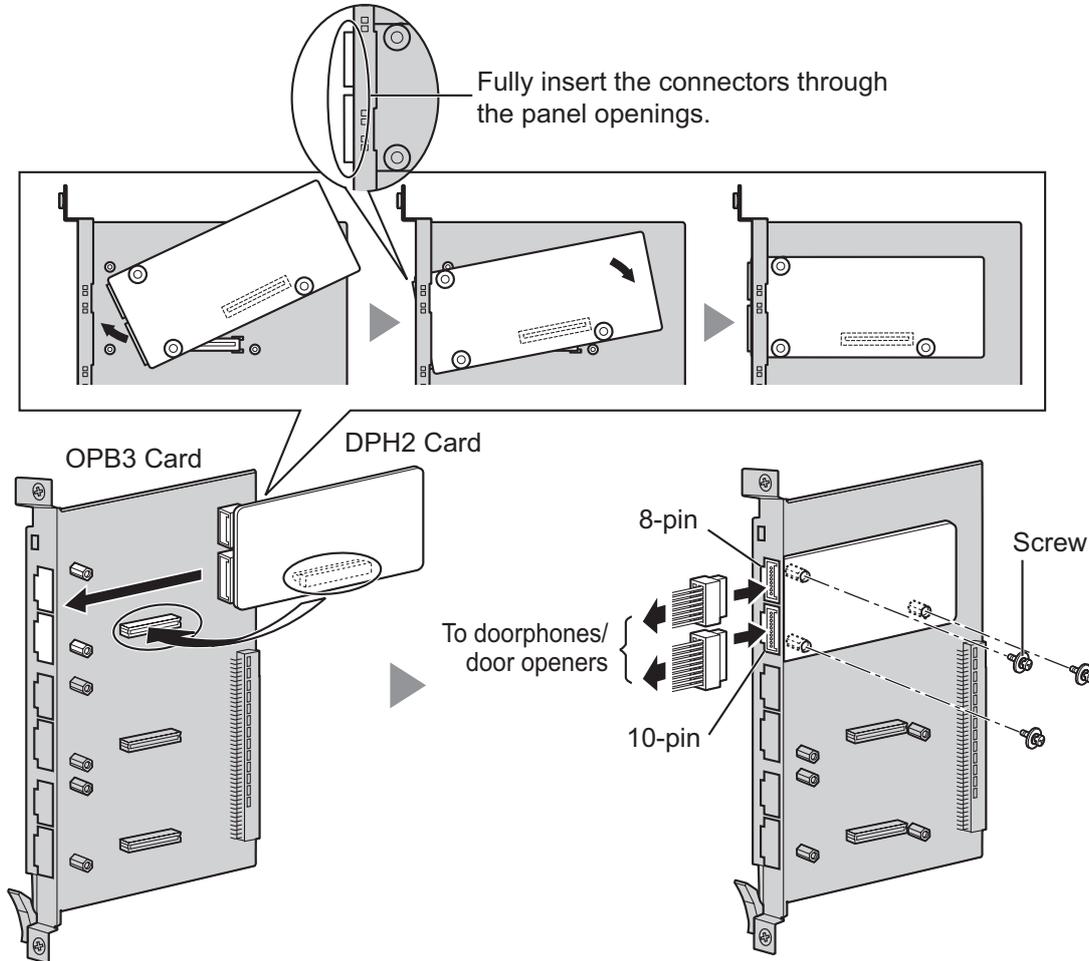
10-pin Terminal Block

	No.	Signal Name	Function
	1-2	Reserved	–
	3	OP4b	Door opener 4
	4	OP4a	Door opener 4 com
	5	OP3b	Door opener 3
	6	OP3a	Door opener 3 com
	7	OP2b	Door opener 2
	8	OP2a	Door opener 2 com
	9	OP1b	Door opener 1
	10	OP1a	Door opener 1 com

2.6.3 DPH2 Card (KX-TDA0162)

Function

2-port doorphone card for 2 German-type doorphones and 2 door openers. To be mounted on the OPB3 card.



Accessories and User-supplied Items

Accessories (included): Screws × 3, 10-pin terminal block × 1, 8-pin terminal block × 1

User-supplied (not included): Copper wire

Note

For details about connection to doorphones and door openers, refer to "2.8.1 Connection of Doorphones, Door Openers, External Sensors, and External Relays".

Pin Assignments

8-pin Terminal Block

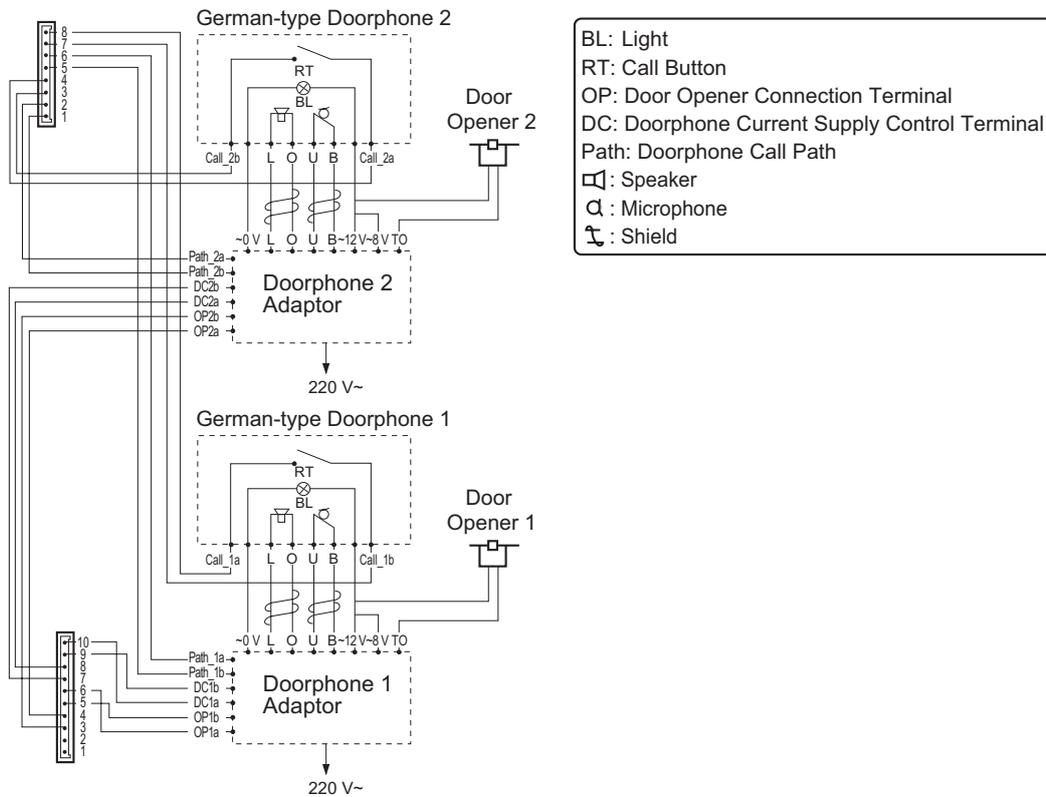
	No.	Proprietary Signal Name	Standard Signal Name	Function
	1	Path_2b	b (2)	Doorphone 2 transmit
	2	Path_2a	a (2)	Doorphone 2 receive
	3	Call_2b	RT b (2)	Doorphone 2 call button
	4	Call_2a	RT a (2)	Doorphone 2 call button com
	5	Path_1b	b (1)	Doorphone 1 transmit
	6	Path_1a	a (1)	Doorphone 1 receive
	7	Call_1b	RT b (1)	Doorphone 1 call button
	8	Call_1a	RT a (1)	Doorphone 1 call button com

10-pin Terminal Block

	No.	Proprietary Signal Name	Standard Signal Name	Function
	1-2	Reserved	Reserved	–
	3	OP2b	TO b (2)	Door opener 2
	4	OP2a	TO a (2)	Door opener 2 com
	5	OP1b	TO b (1)	Door opener 1
	6	OP1a	TO a (1)	Door opener 1 com
	7	DC2b	TS b (2)	Doorphone control 2
	8	DC2a	TS a (2)	Doorphone control 2 com
	9	DC1b	TS b (1)	Doorphone control 1
	10	DC1a	TS a (1)	Doorphone control 1 com

2.6.3 DPH2 Card (KX-TDA0162)

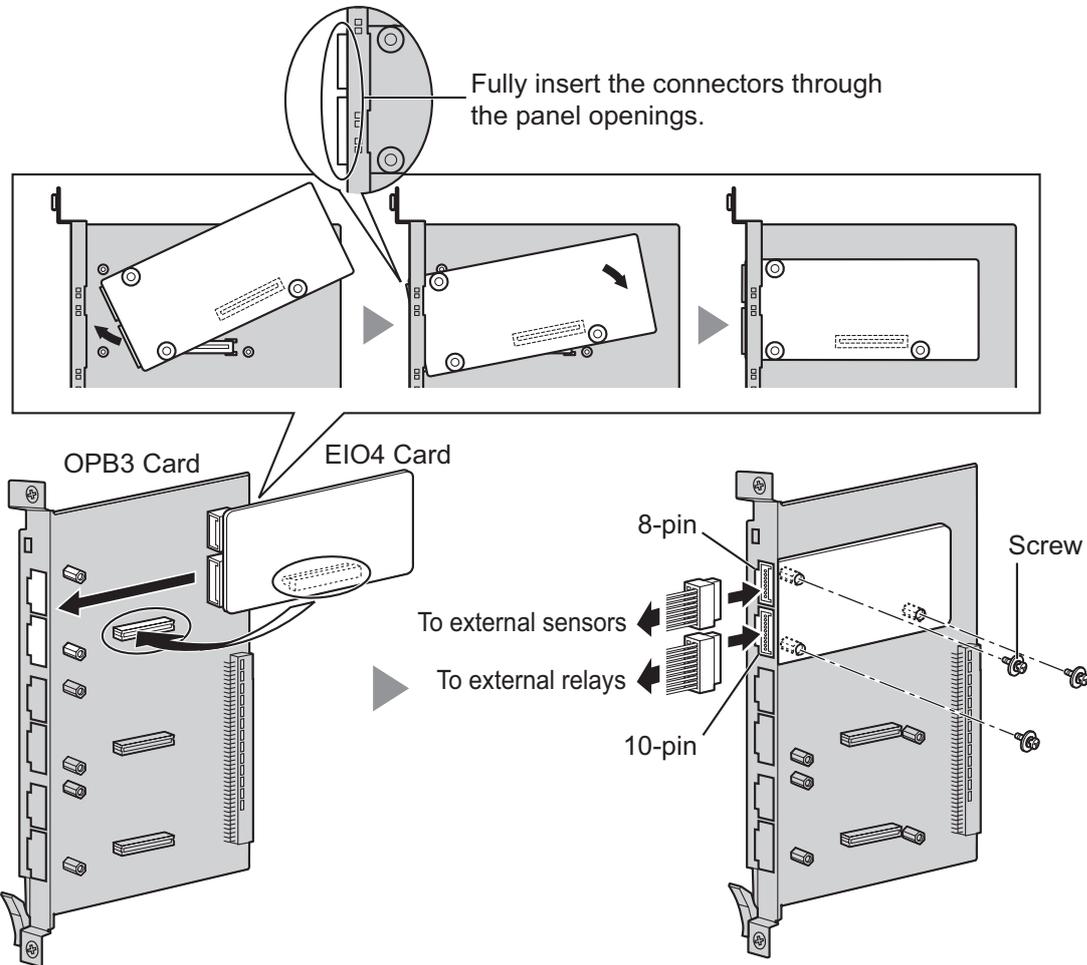
Connection Diagram for German-type Doorphones and Door Openers



2.6.4 EIO4 Card (KX-TDA0164)

Function

4-port external input/output card. To be mounted on the OPB3 card.



Accessories and User-supplied Items

Accessories (included): Screws × 3, 10-pin terminal block × 1, 8-pin terminal block × 1

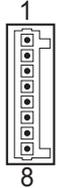
User-supplied (not included): Copper wire

Note

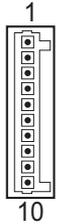
For details about connection to external sensors and external relays, refer to "2.8.1 Connection of Doorphones, Door Openers, External Sensors, and External Relays".

Pin Assignments

8-pin Terminal Block

	No.	Signal Name	Function
	1	C4b	Control 4
	2	C4a	Control 4 com
	3	C3b	Control 3
	4	C3a	Control 3 com
	5	C2b	Control 2
	6	C2a	Control 2 com
	7	C1b	Control 1
	8	C1a	Control 1 com

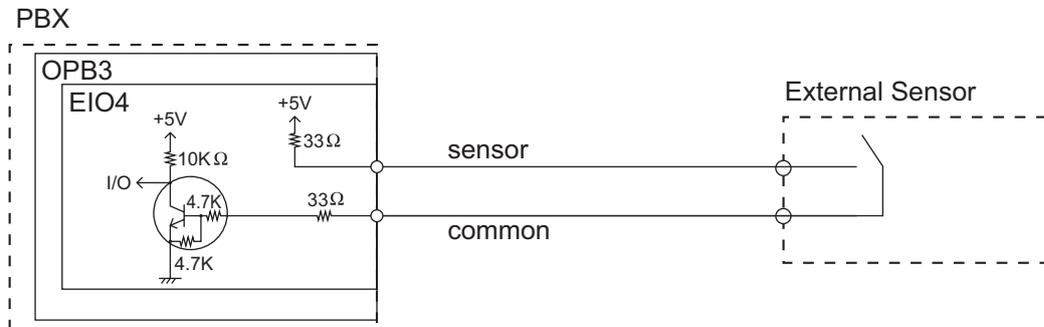
10-pin Terminal Block

	No.	Signal Name	Function
	1-2	Reserved	–
	3	OP4b	Opener 4
	4	OP4a	Opener 4 com
	5	OP3b	Opener 3
	6	OP3a	Opener 3 com
	7	OP2b	Opener 2
	8	OP2a	Opener 2 com
	9	OP1b	Opener 1
	10	OP1a	Opener 1 com

External Sensor

Power to the external sensor is provided from the EIO4 card and must be grounded through the EIO4 card as indicated in the diagram below. A pair of "sensor" and "common" lines are connected to the EIO4 card for each external sensor. The PBX detects input from the sensor when the signal is under 100 Ω .

Connection Diagram



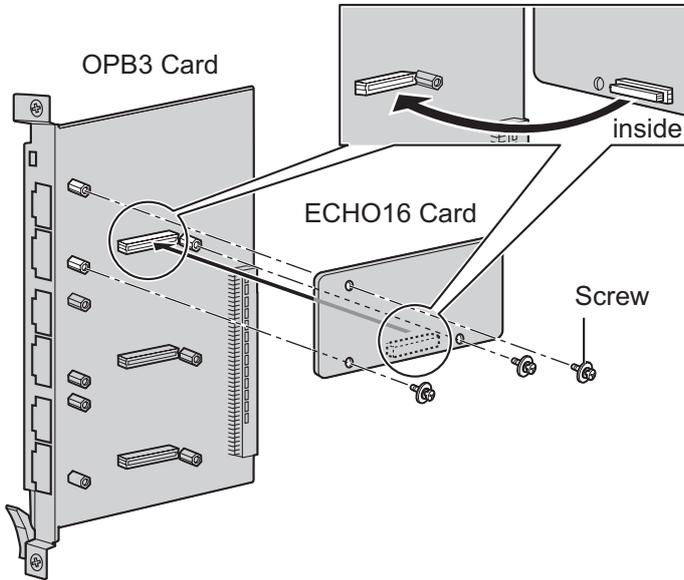
External Relay

Current Limit: 24 V DC/30 V AC, 1 A maximum

2.6.5 ECHO16 Card (KX-TDA0166)

Function

16-channel card for echo cancellation during conferences. To be mounted on the OPB3 card.



Accessories and User-supplied Items

Accessories (included): Screws × 3

User-supplied (not included): none

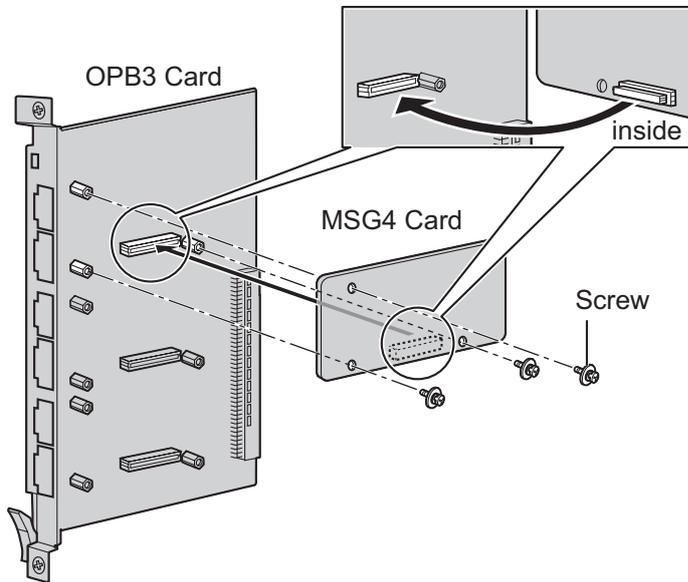
Note

To establish a conference call involving 6 to 8 parties, install an ECHO16 card and enable echo cancellation for conferences using the Maintenance Console. For details, refer to "Echo Cancel—Conference" in "4.17 [2-9] System Options" of the PC Programming Manual.

2.6.6 MSG4 Card (KX-TDA0191)

Function

4-channel message card. To be mounted on the OPB3 card.



Accessories and User-supplied Items

Accessories (included): Screws × 3

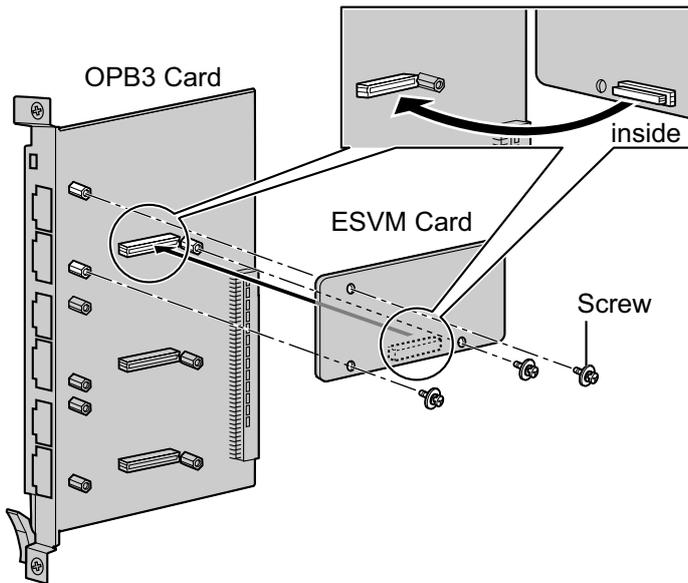
User-supplied (not included): none

2.6.7 ESVM2 Card (KX-TDA0192) and ESVM4 Card (KX-TDA0194)

Function

ESVM2: 2-channel simplified voice message card for Built-in Simplified Voice Message feature. Also supports MSG card features. To be mounted on the OPB3 card.

ESVM4: 4-channel simplified voice message card for Built-in Simplified Voice Message feature. Also supports MSG card features. To be mounted on the OPB3 card.



Accessories and User-supplied Items

Accessories (included): Screws × 3

User-supplied (not included): none

CAUTION

When installing/uninstalling an ESVM card, be careful not to damage the chips around the connection parts. Doing so may cause severe damage to the ESVM card.

Notice

- When replacing an ESVM card, ensure that the status of the OPB3 card is In Service (INS), and then initialise the ESVM card. For details about the initialisation procedure, refer to "2.5.5 Tool—Simplified Voice Message—Delete All Recording" in the PC Programming Manual.
- When installing an ESVM card for the first time on an OPB3 card that is already installed in the PBX, do not remove the OPB3 card from the PBX until the card status becomes INS.
- After installing the OPB3 card, with an ESVM card mounted, for the first time, do not remove the OPB3 card from the PBX until the card status becomes INS.

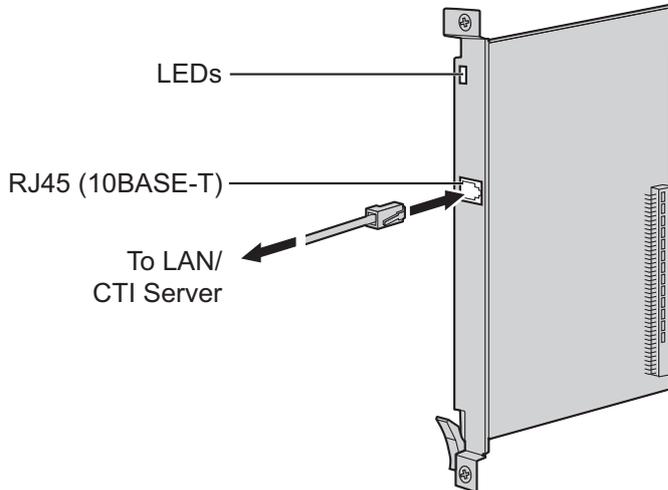
Note

When using an ESVM card for the SVM feature, it must be mounted on sub-slot 3 (highest slot) of the OPB3 card.

2.6.8 CTI-LINK Card (KX-TDA0410)

Function

Ethernet card for CTI communication via 10BASE-T port. CSTA Phase 3 protocol compatible.



Accessories and User-supplied Items

Accessories (included): none

User-supplied (not included): RJ45 connector

Note

- The maximum length of the cable to be connected to this optional service card is 100 m.
- This optional service card can be connected to PCs on a LAN via a CTI server to provide third party call control CTI.
The operating system of the PC or CTI server required for third party call control depends on your CTI application software. For details, refer to the manual for your CTI application software.
- Portions of this product contains software of Datalight, Inc. Copyright 1993–2000 Datalight, Inc., All Rights Reserved.

Pin Assignments

RJ45 Connector (10BASE-T)

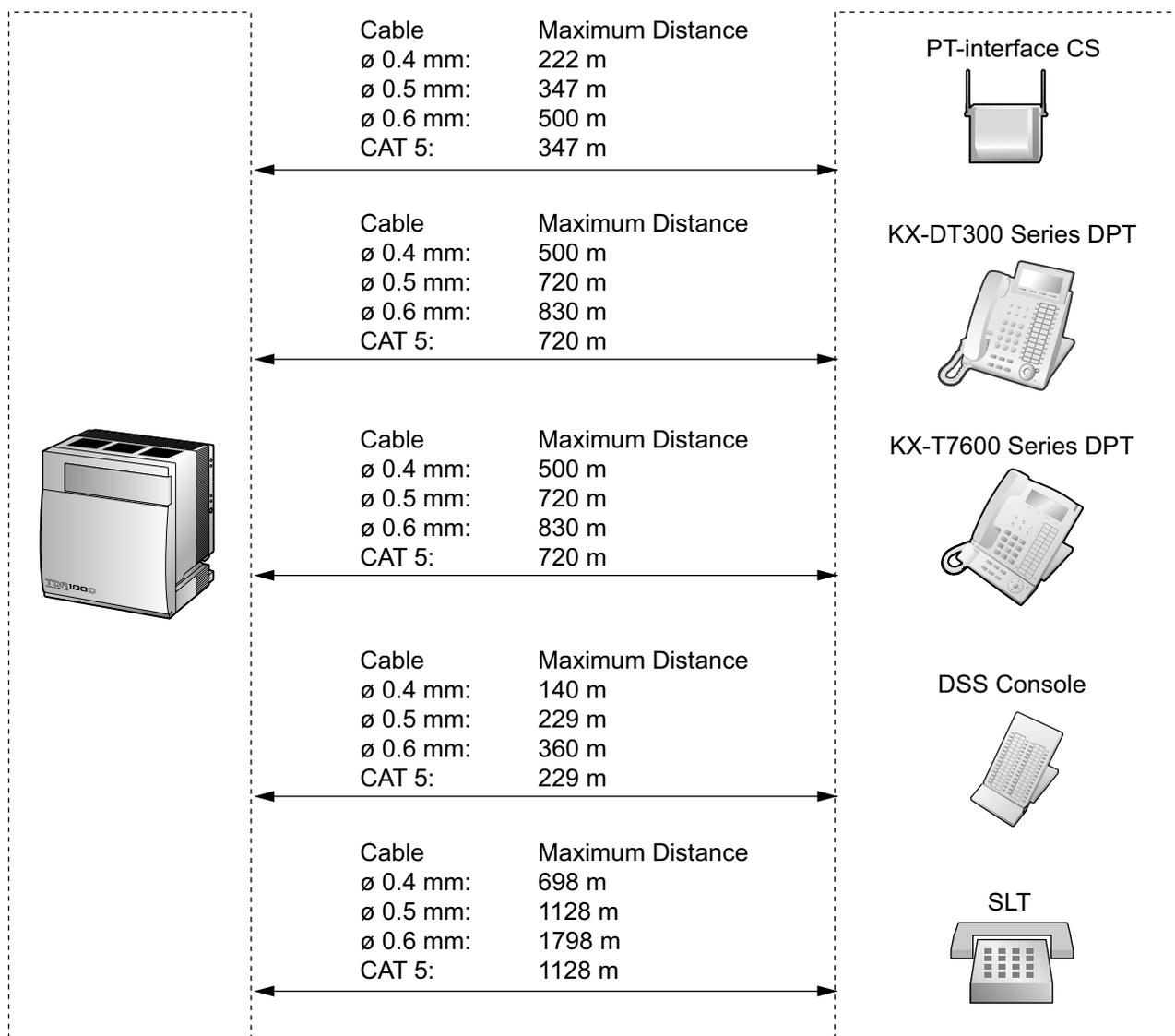
	No.	Signal Name	Input (I)/Output (O)	Function
	1	TPO+	O	Transmit data+
	2	TPO-	O	Transmit data-
	3	TPI+	I	Receive data+
	4-5	Reserved	–	–
	6	TPI-	I	Receive data-
	7-8	Reserved	–	–

LED Indications

Indication	Colour	Description
CARD STATUS	Green/Red	Card status indication <ul style="list-style-type: none">• OFF: Power Off• Green ON: Normal• Red ON: Fault (includes reset)• Red Flashing (60 times per minute): Out of Service
LINK STATUS	Green	Link status indication <ul style="list-style-type: none">• Flashing: In communication• ON: Linked normally

2.7 Connection of Extensions

2.7.1 Maximum Cabling Distances of the Extension Wiring (Twisted Cable)



Notice

The maximum cabling distance may vary depending on the conditions.

	PT-interface CS	DPT	DSS Console	SLT
MCSLC24, MCSLC16 Cards				✓
DLC16, DLC8 Cards	✓	✓	✓	
DLC4 Port on the DMPR Card	✓	✓	✓	

2.7.1 Maximum Cabling Distances of the Extension Wiring (Twisted Cable)

"✓" indicates that the extension card or port supports the terminal.

2.7.2 Digital EXtra Device Port (Digital XDP) Connection

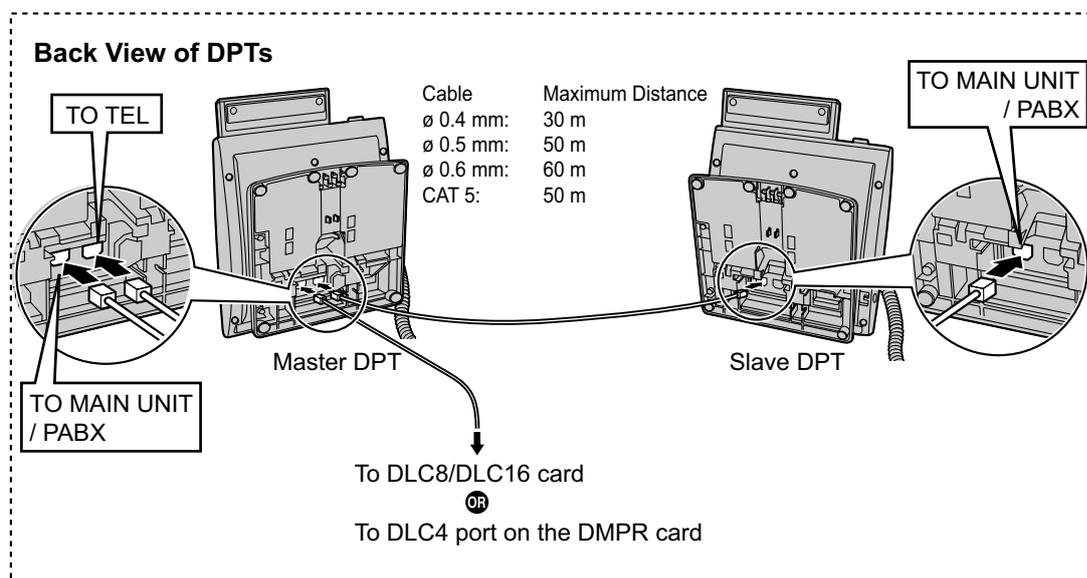
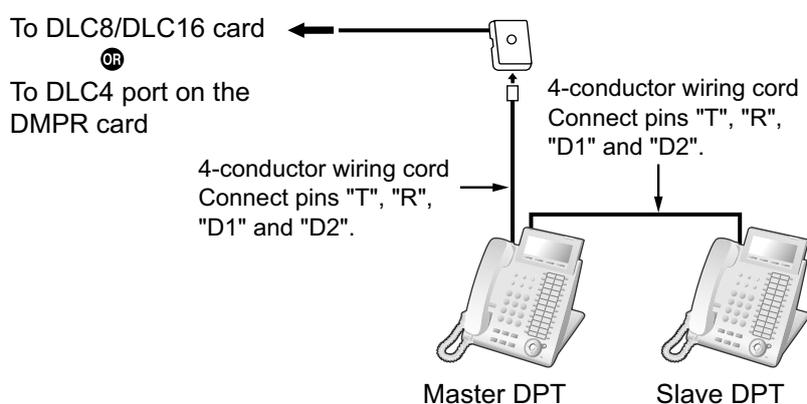
A DPT can be connected to another DPT on the Digital XDP connection.

Note

- Both DPTs must be KX-DT300/KX-T7600 series DPTs (except KX-T7640). Note that the KX-T7667 can only be connected as a slave DPT.
- Bluetooth® Modules or USB Modules must not be connected to DPTs in the Digital XDP connection.

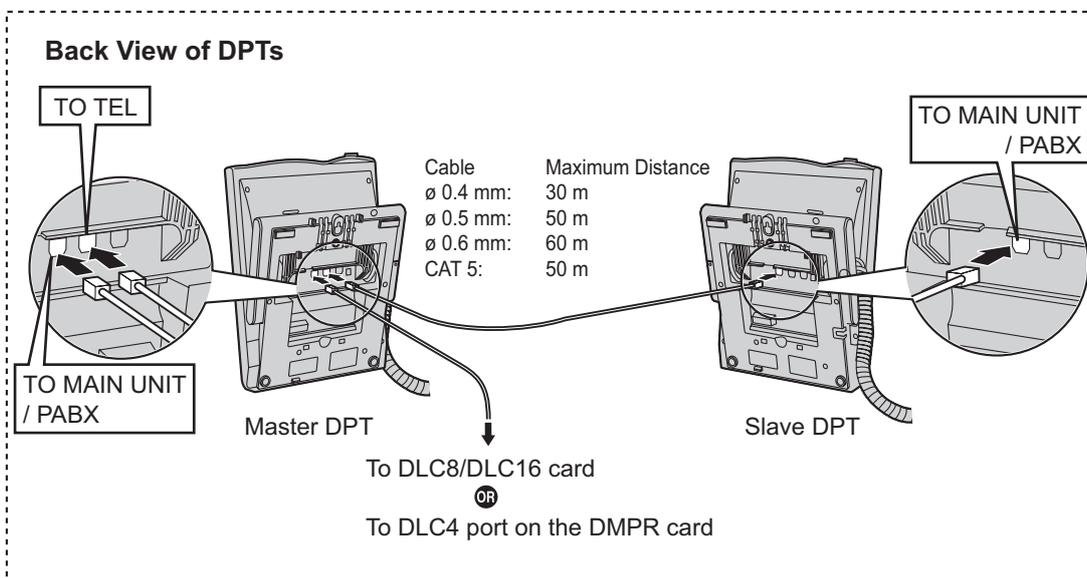
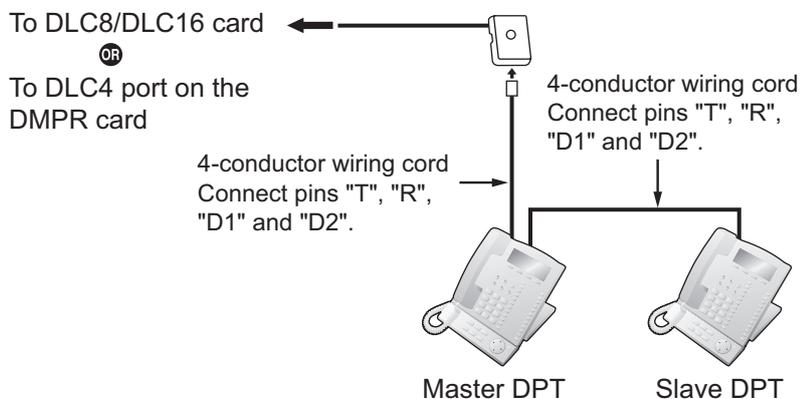
With KX-DT300 Series DPT

Using an EXtra Device Port



With KX-T7600 Series DPT

Using an EXtra Device Port



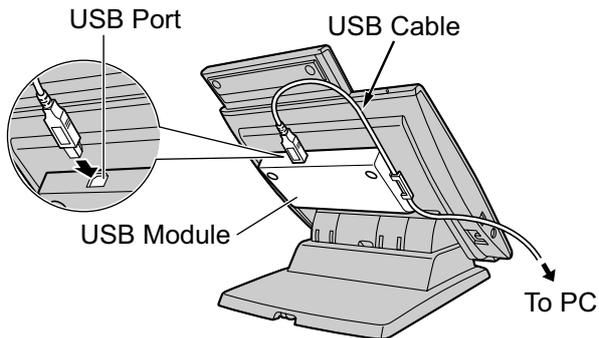
2.7.3 First Party Call Control CTI Connection

CTI connection between a PC and a KX-DT343/KX-DT346/KX-T7633/KX-T7636 DPT provides first party call control. The CTI connection is made via a USB interface (version 2.0), and uses the TAPI 2.1 protocol. A USB Module must be connected to the DPTs.

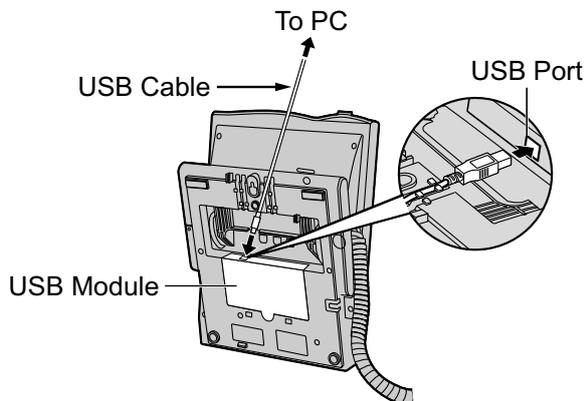
Note

The operating system of the PC required for first party call control depends on your CTI application software. For details, refer to the manual for your CTI application software.

KX-DT343/KX-DT346



KX-T7633/KX-T7636



Note

The maximum length of the USB cable is 3 m.

2.8 Connection of Doorphones, Door Openers, External Sensors, and External Relays

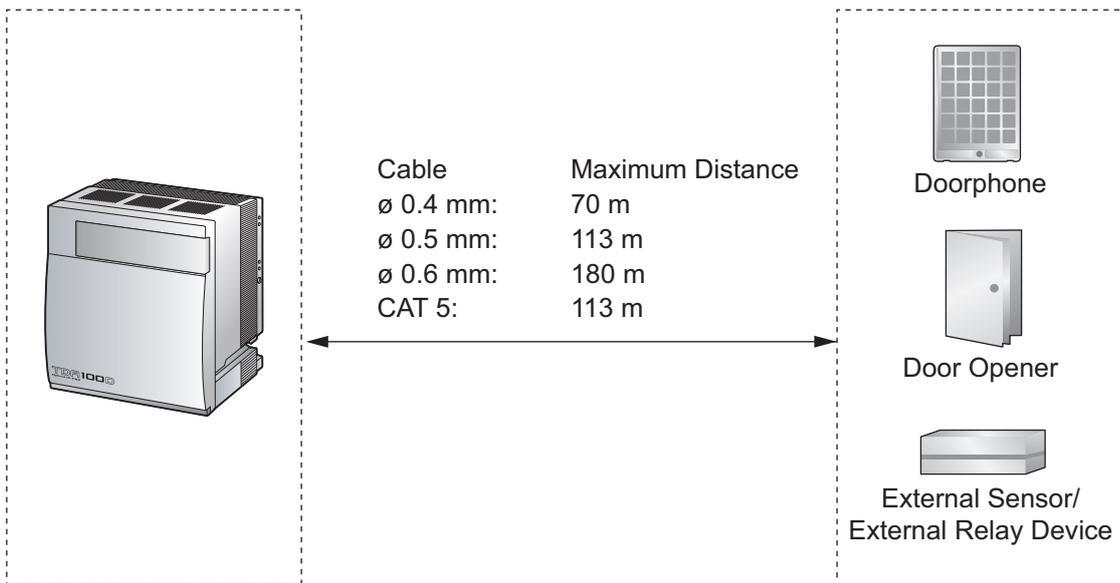
2.8.1 Connection of Doorphones, Door Openers, External Sensors, and External Relays

The PBX supports a maximum of 16 doorphones (KX-T30865/KX-T7765 with a DPH4 card, or German-type doorphone with a DPH2 card), 16 door openers, 16 external sensors, and 16 external relays.

Note

Doorphones, door openers, external sensors, and external relays are user-supplied.

Maximum Cabling Distance

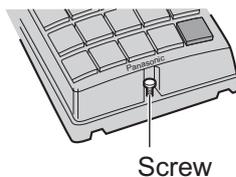


Installing the Doorphone (KX-T30865/KX-T7765)

Note

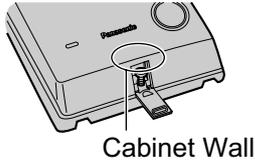
The illustrations shown in the installation procedure are based on the KX-T30865.

1. Loosen the screw to separate the doorphone into 2 halves.

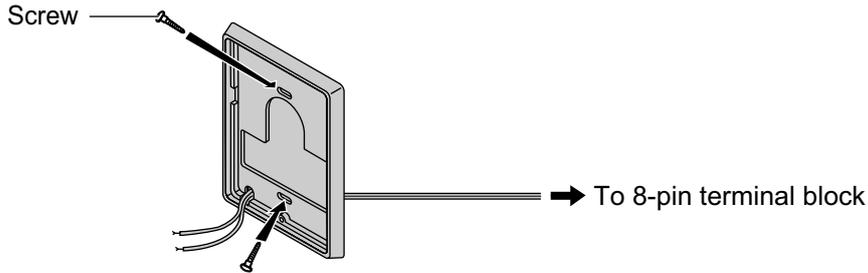


Note for KX-T7765 Users

When loosening/tightening the screw, do not scratch the cabinet wall with the driver shaft.



2. Pass the wires through the hole in the base cover, and attach the base cover to a wall using 2 screws.



Note

Two kinds of screws are included with the doorphone. Please choose the appropriate kind for your wall type.

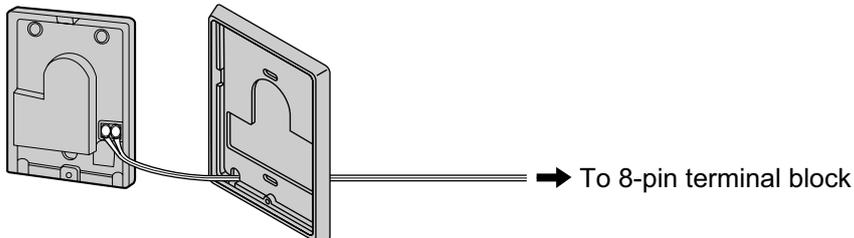


: when a doorphone plate has been fixed to the wall



: when you wish to install the doorphone directly onto the wall

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

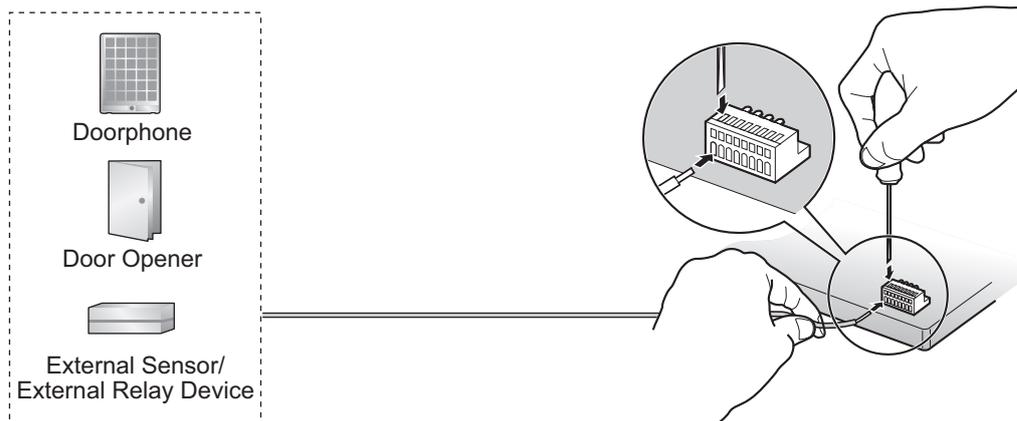


4. Re-attach the 2 halves and re-insert the screw.

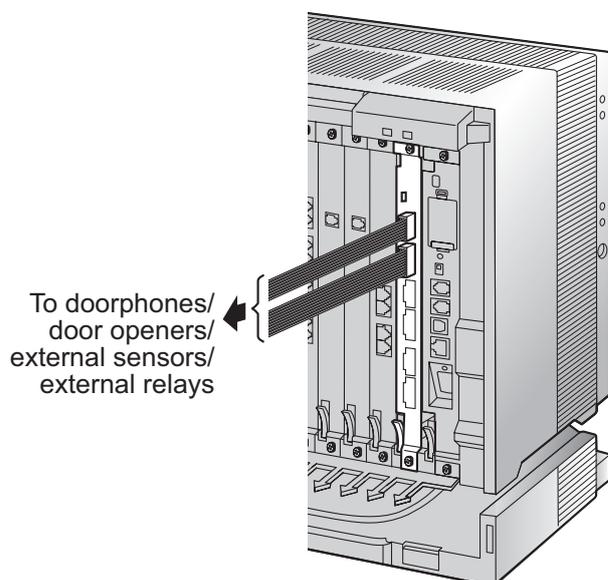
Connection

Use 8-pin and 10-pin terminal blocks (included with the card) for connection.

1. While pressing down on the hole at the top of the terminal block using a screwdriver, insert the wire into the side hole as shown below. Repeat this procedure for other doorphones, door openers, external sensors, and external relays.
Refer to "2.6.2 DPH4 Card (KX-TDA0161)", "2.6.3 DPH2 Card (KX-TDA0162)", and "2.6.4 EIO4 Card (KX-TDA0164)" for pin assignments.

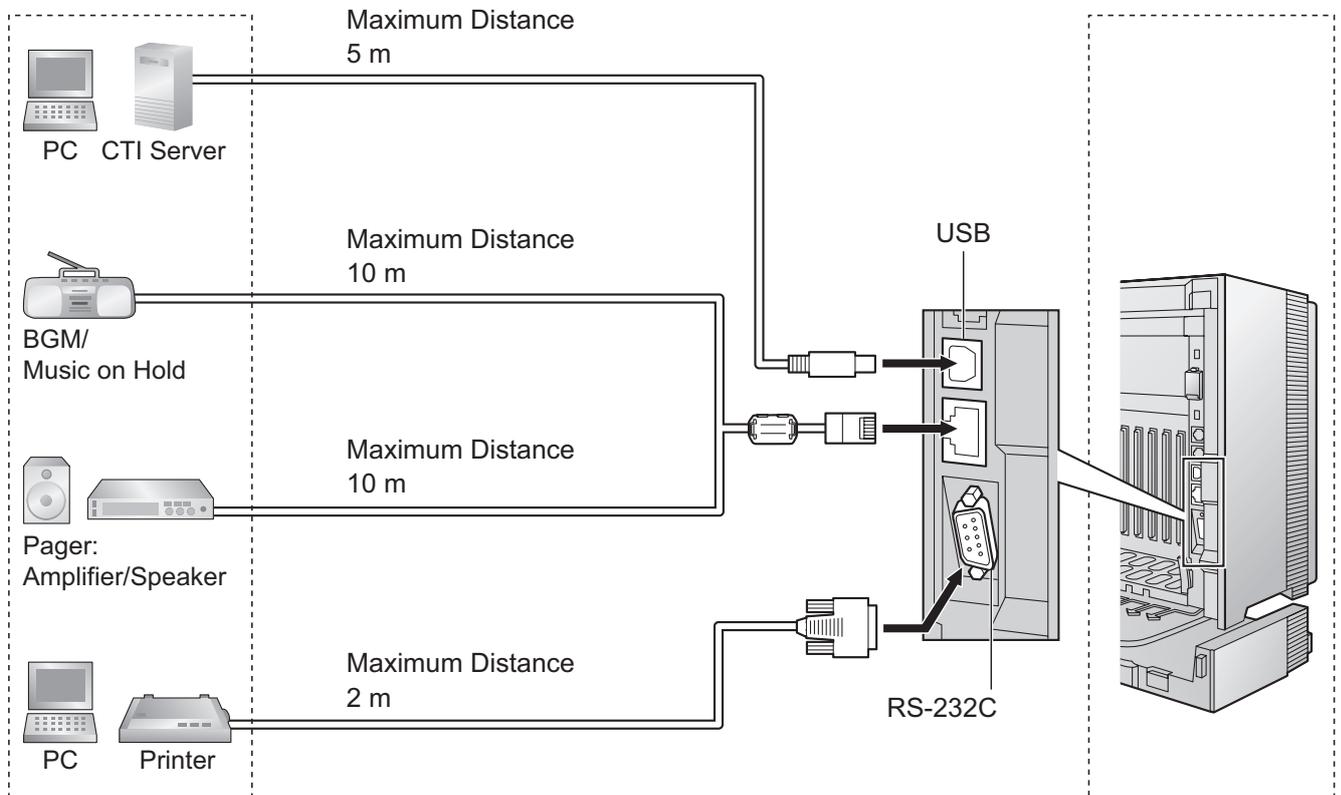


2. Attach the terminal blocks to the connectors of the DPH4/DPH2/EIO4 card on the PBX.



2.9 Connection of Peripherals

2.9.1 Connection of Peripherals



BGM/MOH

The PBX provides Background Music and Music on Hold. Up to 2 external music sources (e.g., user-supplied radios) can be connected to the PBX.

CAUTION

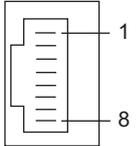
- Wiring should be done carefully to prevent undue force being exerted on the plug. Otherwise, sound may only be heard intermittently.
- External Music Jacks are SELV ports and should only be connected to approved SELV devices, or in Australia, via the Line Isolation Unit with the Telecommunications Compliance Label.

Note

When the PBX and external music sources are not connected to the same earth, hum noise may be induced into Background Music and Music on Hold.

2.9.1 Connection of Peripherals

Pin Assignments

	No.	Signal Name	Level [V]	Function
	1	MOH1	Nonpolar	Music on Hold Jack: Port 1
	2	MOH1	Nonpolar	Music on Hold Jack: Port 1
	3	PAG2	Nonpolar	External Paging Jack: Port 2
	4	PAG1	Nonpolar	External Paging Jack: Port 1
	5	PAG1	Nonpolar	External Paging Jack: Port 1
	6	PAG2	Nonpolar	External Paging Jack: Port 2
	7	MOH2	Nonpolar	Music on Hold Jack: Port 2
	8	MOH2	Nonpolar	Music on Hold Jack: Port 2

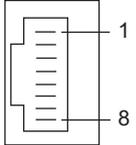
Pager

Up to 2 paging devices (user-supplied) can be connected to the PBX.

CAUTION

External Paging Jacks are SELV ports and should only be connected to approved SELV devices, or in Australia, via the Line Isolation Unit with the Telecommunications Compliance Label.

Pin Assignments

	No.	Signal Name	Level [V]	Function
	1	MOH1	Nonpolar	Music on Hold Jack: Port 1
	2	MOH1	Nonpolar	Music on Hold Jack: Port 1
	3	PAG2	Nonpolar	External Paging Jack: Port 2
	4	PAG1	Nonpolar	External Paging Jack: Port 1
	5	PAG1	Nonpolar	External Paging Jack: Port 1
	6	PAG2	Nonpolar	External Paging Jack: Port 2
	7	MOH2	Nonpolar	Music on Hold Jack: Port 2
	8	MOH2	Nonpolar	Music on Hold Jack: Port 2

PC/Printer (via RS-232C)

The PBX is equipped with an RS-232C interface. This interface provides communication between the PBX and the user-supplied devices such as PC or line printers. The RS-232C port is used for system programming, SMDR, diagnostics and external system database storage (save/load) functions.

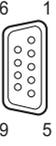
CAUTION

To protect the system, keep the following in mind:

1. Make sure that both connector cases (frame ground) of the RS-232C cross cable (shielded cable) are conductive. If they are not conductive, make sure that both connector cases of the cable are firmly connected.

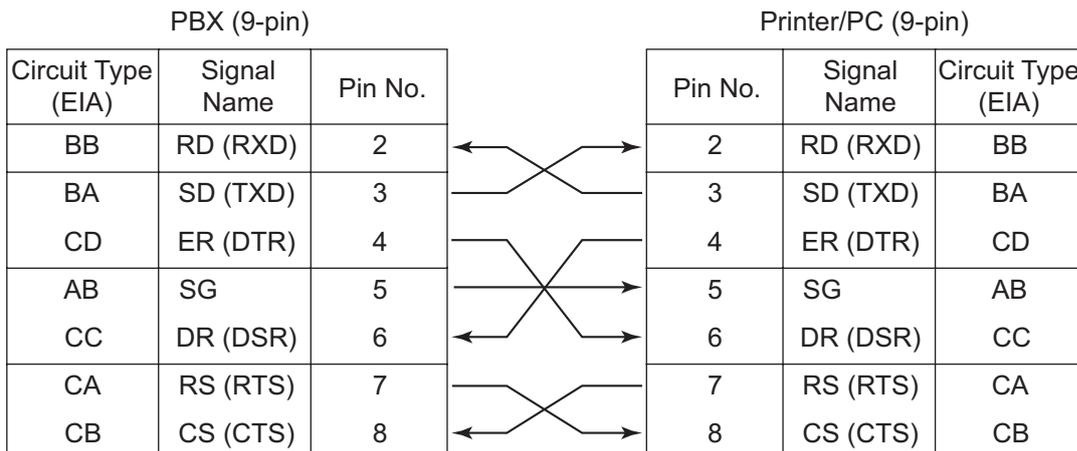
- If this is not possible, connect the frame of the PBX to the frame of the PC/Printer using an earthing wire in order to prevent difference in the electrical potentials.

Pin Assignments

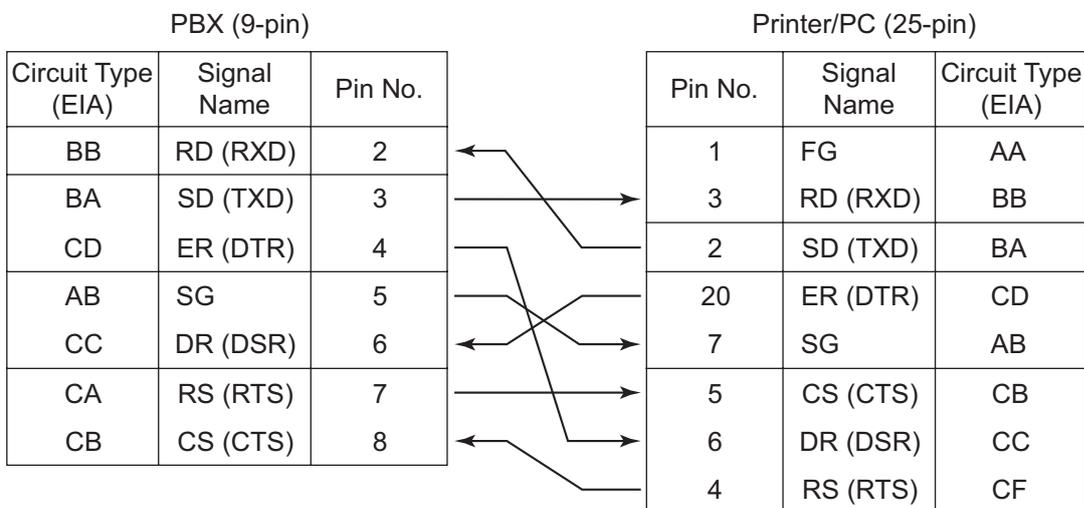
	No.	Signal Name	Function	Circuit Type	
				EIA	CCITT
	2	RD (RXD)	Receive Data	BB	104
	3	SD (TXD)	Transmit Data	BA	103
	4	ER (DTR)	Data Terminal Ready	CD	108.2
	5	SG	Signal Ground	AB	102
	6	DR (DSR)	Data Set Ready	CC	107
	7	RS (RTS)	Request To Send	CA	105
	8	CS (CTS)	Clear To Send	CB	106

Connection Charts

For connecting a printer/PC with a 9-pin RS-232C connector



For connecting a printer/PC with a 25-pin RS-232C connector



RS-232C Signals

- **Receive Data (RXD):...**(input)
Conveys signals from the printer or the PC.
- **Transmit Data (TXD):...**(output)
Conveys signals from the unit to the printer or the PC. A "Mark" condition is held unless data or BREAK signals are being transmitted.
- **Data Terminal Ready (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 or the PC. It is switched OFF when the unit is OFF LINE.
- **Signal Ground (SG)**
Connects to the DC ground of the unit for all interface signals.
- **Data Set Ready (DSR):...**(input)
An ON condition of circuit DR (DSR) indicates the printer or the PC is ready. Circuit DR (DSR) ON does not indicate that communication has been established with the printer or the PC.
- **Request To Send (RTS):...**(output)
This lead is held ON whenever DR (DSR) is ON.
- **Clear To Send (CTS):...**(input)
An ON condition of circuit CS (CTS) indicates that the printer or the PC 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.
- **Frame Ground (FG)**
Connects to the unit frame and the earth ground conductor of the AC power cord.

PC/CTI Server (via USB version 2.0)

The PBX is equipped with a USB interface. This interface provides communication between the PBX and a PC or a CTI server.

The PC is used for system programming, diagnostics and external system database storage (save/load) functions.

The CTI server is used for connecting PCs on a LAN to provide third party call control CTI. The CTI connection uses the CSTA Phase 3 or TAPI 2.1 protocol.

Note

The operating system of the PC or CTI server required for third party call control depends on your CTI application software. For details, refer to the manual for your CTI application software.

CAUTION

To protect the system, keep the following in mind:

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

Pin Assignments

	No.	Signal Name
	1	VBUS
	2	USB D-
	3	USB D+
	4	GND

2.10 Power Failure Connections

2.10.1 Power Failure Connections

When the power supply to the PBX fails, power failure transfer (PFT) will switch from the current connection to the Power Failure Connection. Refer to "2.4.1 Power Failure Transfer" in the Feature Guide for further information.

Note

While DC power is provided by the backup batteries, the PBX will remain fully operational and the connection will not switch to the Power Failure Connection.

Using Analogue Trunk Card and Extension Card

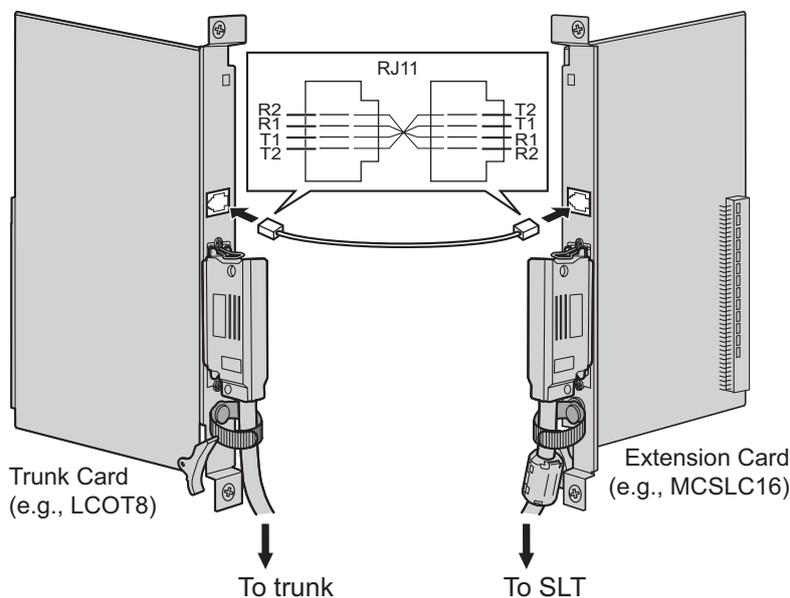
Power Failure Connection connects a specific SLT and a trunk in the event of power failure. The following analogue trunk and extension cards can be used for Power Failure Connections:

- **Analogue trunk cards:** LCOT16 (4 PFT ports), LCOT8 (2 PFT ports), LCOT4 (2 PFT ports), and CLCOT8 (2 PFT ports)
- **Extension cards:** MCSLC24 (2 PFT ports) and MCSLC16 (2 PFT ports)

To 1 analogue trunk card, connect only 1 extension card.

Note

By programming the PBX, a trunk conversation established during power failure can be maintained even when the power returns and the connection is switched back to the normal configuration from the Power Failure Connection. However, if no special programming is performed, the connection will be dropped when power returns.

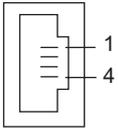


Accessories and User-supplied Items

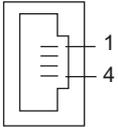
Accessories (included): none

User-supplied (not included): RJ11 connectors

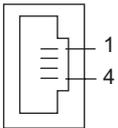
RJ11 Connector Pin Assignments for Analogue Trunk Card PFT Ports 1 and 2

	No.	Signal Name	Function
	1	R2	Ring port 2
	2	R1	Ring port 1
	3	T1	Tip port 1
	4	T2	Tip port 2

PFT Ports 3 and 4 (for LCOT16 card only)

	No.	Signal Name	Function
	1	R4	Ring port 4
	2	R3	Ring port 3
	3	T3	Tip port 3
	4	T4	Tip port 4

RJ11 Connector Pin Assignments for Extension Card**PFT Ports 1 and 2**

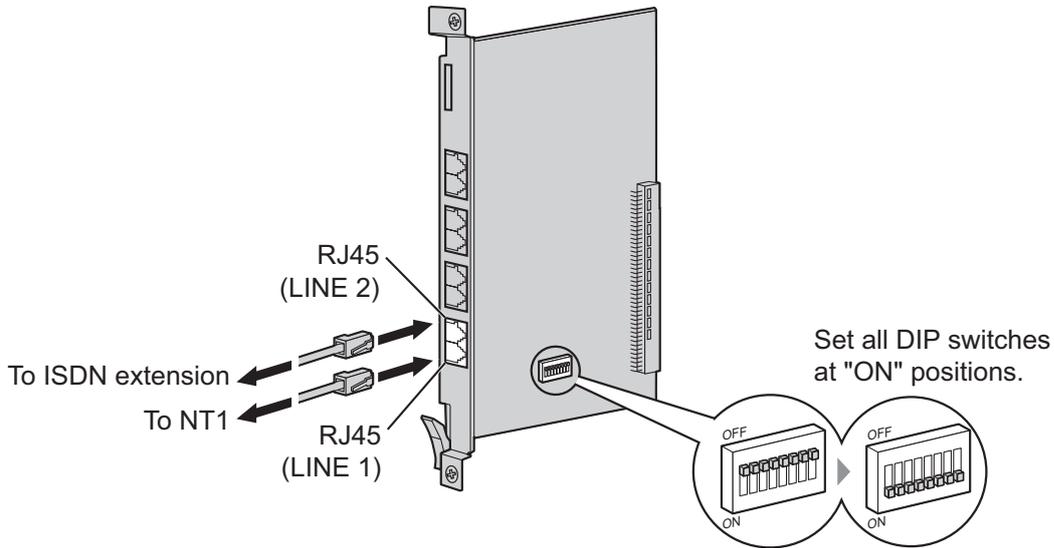
	No.	Signal Name	Function
	1	T2	Tip port 2
	2	T1	Tip port 1
	3	R1	Ring port 1
	4	R2	Ring port 2

Using BRI Card

LINE 1 and LINE 2 of the BRI4 and BRI8 cards can be used for Power Failure Connections.

Note

When the power returns, the connection will switch back to normal configuration from the Power Failure Connection, and a trunk conversation established during power failure will be dropped.



Accessories and User-supplied Items

Accessories (included): none

User-supplied (not included): RJ45 connectors

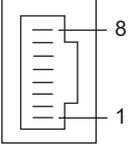
Switch Settings

Switch	Type	Usage and Status Definition
PFT Setting	DIP	Set all DIP switches to "ON" positions to use LINE 1 and LINE 2 as a PFT port. LINE 1: Power Failure LINE (NT1) LINE 2: Power Failure EXTN (extension)

RJ45 Connector LINE 1 Pin Assignments

	No.	Signal Name	Level [V]	Function
	1-2	Reserved	–	–
	3	TX1	(+)	Transmit data 1
	4	RX2	(+)	Receive data 2
	5	RX1	(-)	Receive data 1
	6	TX2	(-)	Transmit data 2
	7-8	Reserved	–	–

RJ45 Connector LINE 2 Pin Assignments

	No.	Signal Name	Level [V]	Function
	1-2	Reserved	–	–
	3	RX2	(+)	Receive data 2
	4	TX1	(+)	Transmit data 1
	5	TX2	(-)	Transmit data 2
	6	RX1	(-)	Receive data 1
	7-8	Reserved	–	–

2.11 Starting the PBX

2.11.1 Starting the PBX

Before Starting the PBX

Before starting the PBX, please pay attention to the following:

Notice

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

Starting the PBX

CAUTION

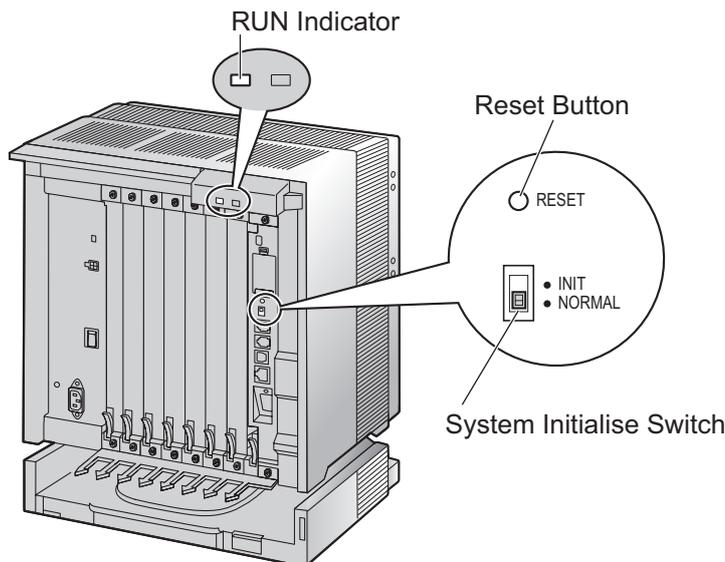
- Use only the AC power cord included with the PBX for the PSU.
- Before touching the System Initialise Switch, discharge static electricity by touching ground or wearing an earthing strap.
- Once you have started the PBX and if you unplug the PBX, do not perform the following procedures to start the PBX again. Otherwise, your programmed data is cleared. To restart the PBX, refer to "4.1.4 Using the Reset Button".
- The power supply cord is used as the main disconnect device. Ensure that the AC outlet is located near the equipment and is easily accessible.

Note

The PBX will continue to be powered even if the power switch is turned "OFF".

System Initialisation Procedure

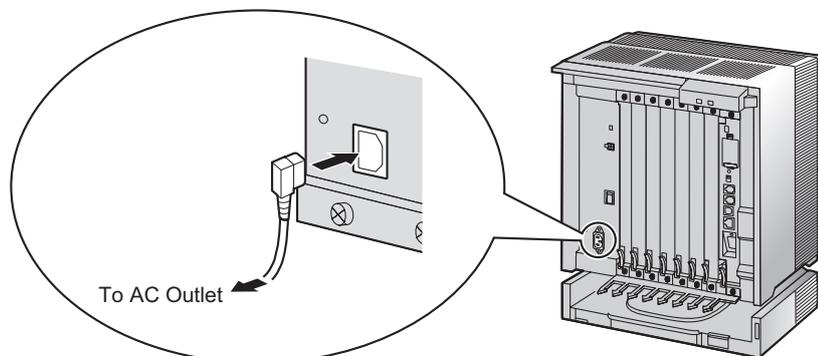
1. Slide the System Initialise Switch to the "INIT" position.



2. Plug the AC power cord into the PBX and an AC outlet, and turn on the PBX. The RUN indicator will flash.

Note

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



3. While the RUN indicator is flashing, slide the System Initialise Switch back to the "NORMAL" position.

Depending on the configuration, initialisation takes about 1 min to 3 min. If successfully executed, the RUN indicator will stop flashing and stay lit.

All data will be cleared, and the PBX as well as all optional service cards (except for the IP-GW card) will be initialised to the default values. The DPTs should show the time as 01:00.

The data of the IP-GW card will not be initialised.

LED Indications

Indication	Colour	Description
RUN	Green	PBX status indication <ul style="list-style-type: none"> • OFF: Power Off (includes normal reset) • ON: Power On and running (on-line) • Flashing (60 times per minute): Starting up • Flashing (120 times per minute): Starting up or resetting with: <ul style="list-style-type: none"> • the System Initialise Switch in "INIT" position • the SD Memory Card not inserted
ALARM	Red	Alarm indication <ul style="list-style-type: none"> • OFF: Normal • ON: Alarm (CPU stop, alarm for each optional service card installed in the Basic Shelf) • Flashing: Alarm (MPR file error in restarting)

Confirming the Trunk Connection

After initialisation, programme the PBX and connect trunks to the PBX.

To confirm that the trunks are successfully connected, dial [*] [3] [7] + trunk number (3 digits) on a PT, or press the PT's S-CO button. You will hear a dial tone if the trunk is available and connected.

2.11.1 Starting the PBX

Section 3

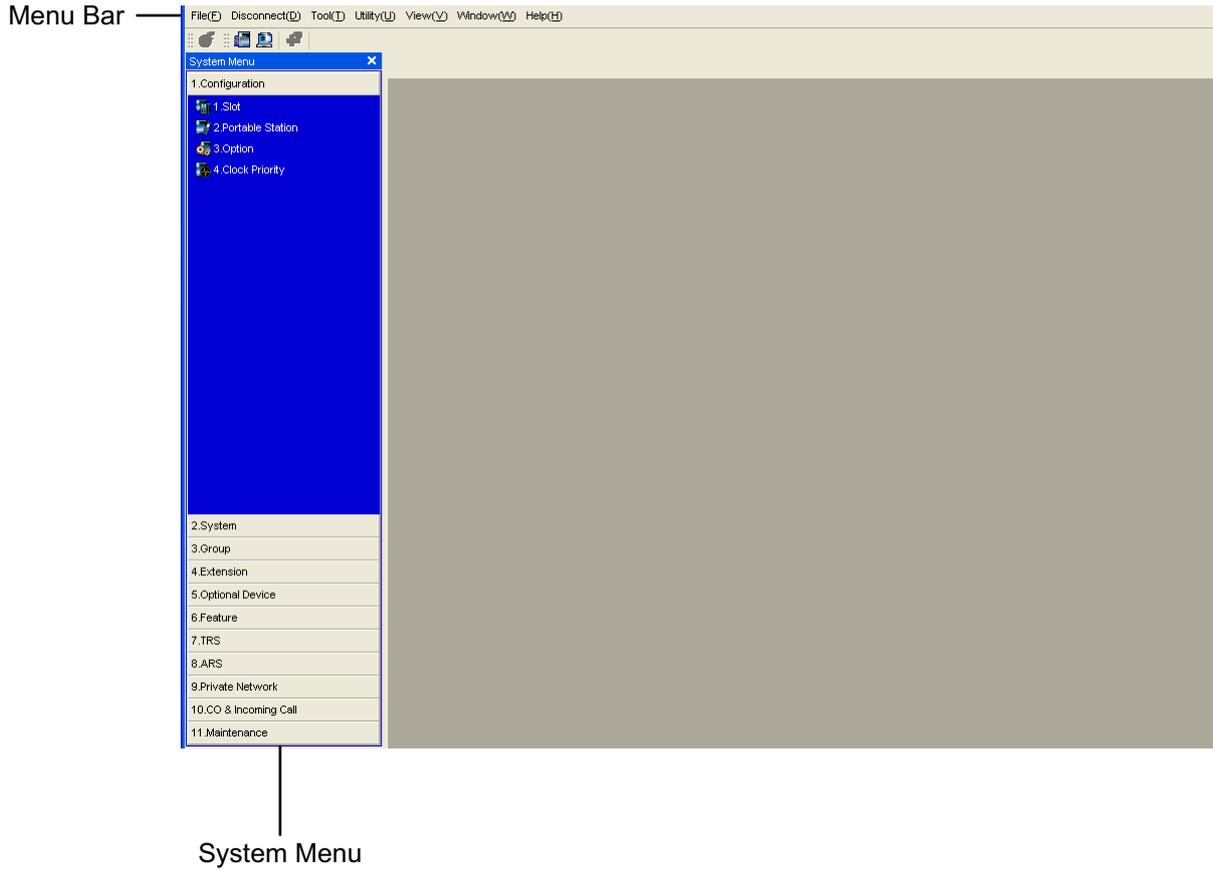
Guide for the Maintenance Console

Explains the installation procedure, structure, and basic information of the Maintenance Console.

3.1 Overview

3.1.1 Overview

The Maintenance Console is designed to serve as an overall system programming reference for the PBX. To programme and administer the PBX by PC, you need to install the Maintenance Console onto the PC. This section describes overview and installation of the Maintenance Console only.



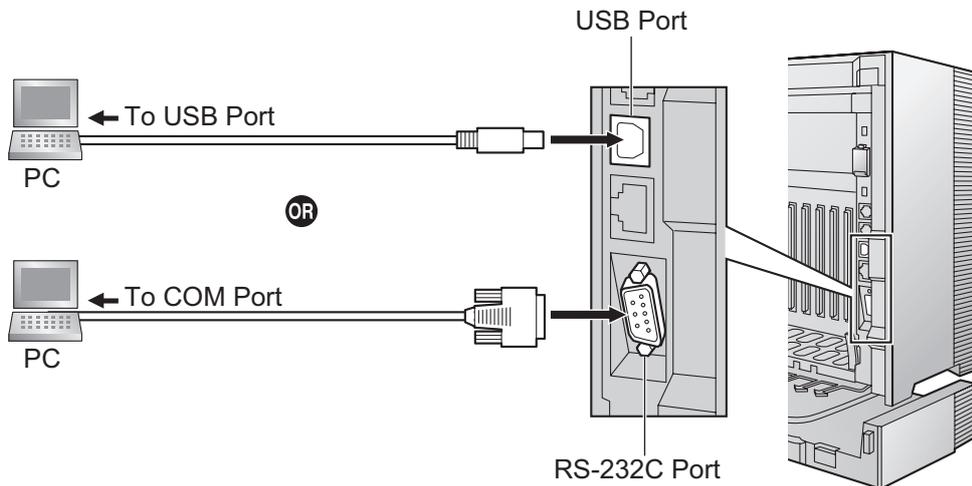
Note

The contents and design of the software are subject to change without notice.

3.2 PC Connection

3.2.1 PC Connection

Serial Interface Connection



CAUTION

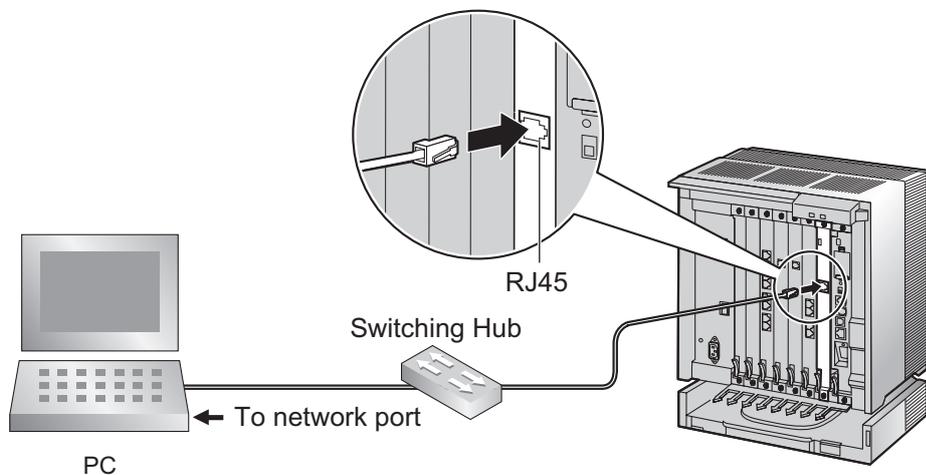
To protect the system, keep the following in mind:

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

Note

For pin assignments and maximum cabling distance, refer to "2.9.1 Connection of Peripherals".

LAN Connection via CTI-LINK Card

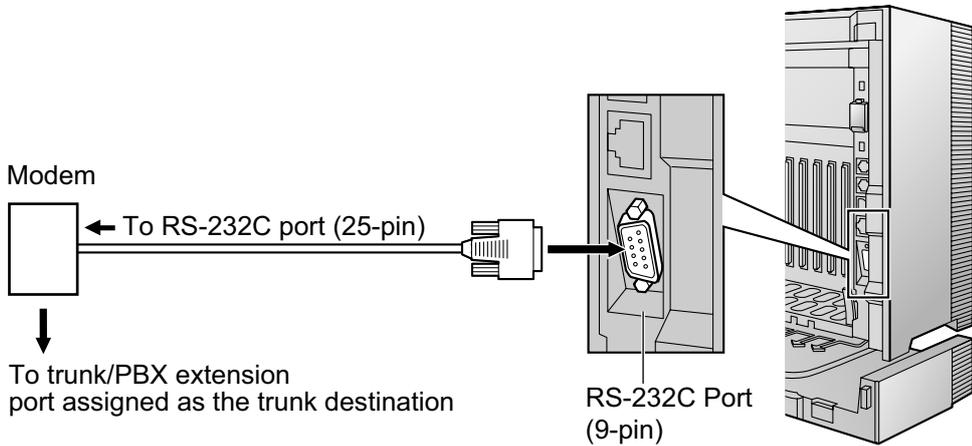


3.2.1 PC Connection

Note

For pin assignments and maximum cabling distance, refer to "2.6.8 CTI-LINK Card (KX-TDA0410)".

External Modem Connection



External Modem (25-pin)		PBX (9-pin)	
Signal Name	Pin No.	Pin No.	Signal Name
RD (RXD)	3	2	RD (RXD)
SD (TXD)	2	3	SD (TXD)
ER (DTR)	20	4	ER (DTR)
DR (DSR)	6	6	DR (DSR)

CAUTION

To protect the system, keep the following in mind:

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

After connecting the PBX and the external modem, set the power switch of the external modem to "ON", then the external modem will be initialised with the default values.

The following AT command settings may be required for the modem:

- The Data Terminal Ready (DTR) signal should be ignored.
- The Data Terminal Equipment (DTE)/Modem flow control should be turned off.
- Data compression should be disabled.
- Error Correction is not necessary.

Note

- An AT command (for initialisation, enabling automatic answer, etc.) can only be programmed by the Maintenance Console. "AT&F" is stored as the default value.
- For more information about the AT command, refer to the external modem's instructions.

3.3 Installation of the Maintenance Console

3.3.1 Installing and Starting the Maintenance Console

System Requirements

Required Operating System

- Microsoft® Windows® XP, Windows Vista® Business, or Windows 7 Professional operating system

Minimum Hardware Requirements

- HDD: 100 MB of available hard disk space

Recommended Display Settings

- Screen resolution: XGA (1024 × 768)
- DPI setting: Normal size (96 DPI)

Password Security

CAUTION

To the Administrator or Installer regarding the system password

1. Please provide all system passwords to the customer.
2. To avoid unauthorised access and possible abuse of the PBX, keep the passwords secret, and inform the customer of the importance of the passwords, and the possible dangers if they become known to others.
3. The PBX has default passwords preset. For security, change these passwords the first time that you programme the PBX.
4. Change the passwords periodically.
5. It is strongly recommended that passwords of 10 numbers or characters be used for maximum protection against unauthorised access. For a list of numbers and characters that can be used in system passwords, refer to "1.1.2 Entering Characters" in the PC Programming Manual.

Installing the Maintenance Console

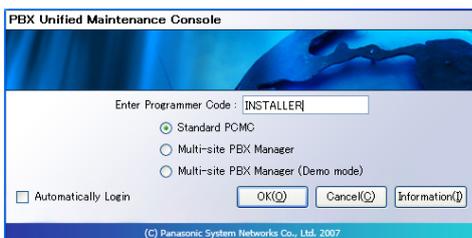
Note

- Make sure to install and use the latest version of the Maintenance Console.
 - To install or uninstall the software on a PC running Windows XP Professional, you must be logged in as a user in either the "Administrators" or "Power Users" group.
 - To install or uninstall the software on a PC running Windows Vista Business or Windows 7 Professional, you must be logged in as a user in the "Administrators" group.
 - To connect the PC to the PBX via USB, the KX-TDA USB driver must be installed. Follow the instructions of the wizard to install the KX-TDA USB driver. When the PBX is first connected to the PC via USB, you may be asked to select the appropriate USB driver. Browse for and select the KX-TDA USB driver that was installed previously.
1. Copy the setup file of the Maintenance Console to your PC.
 2. Double-click the setup file to run the installer.
 3. Follow the on-screen instructions provided by the installation wizard.

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

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

1. Connect the PC to the PBX with a USB cable.
2. Start the Maintenance Console from the Start menu.
3. "Information before programming" appears.
 - a. Carefully read this important additional information, which includes updates to this and other manuals.
 - b. Click **OK** to close this window.
4.
 - a. Enter the Installer Level Programmer Code (default: **INSTALLER**).
The Programmer Code authorises different programming levels, and the Quick Setup is only available when you start the Maintenance Console with the Installer Level Programmer Code.

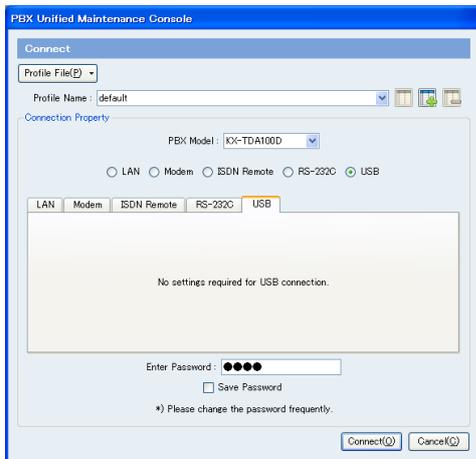


Note

There are 2 other Programmer Codes with limited authorisation: Administrator Level (default: **ADMIN**), and User Level (default: **USER**).

- b. Click **OK**.
5. Click **Connect**.



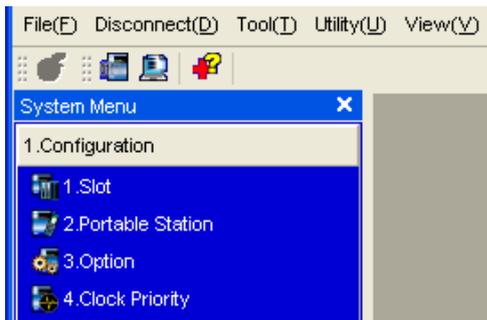


6.
 - a. Select **KX-TDA100D** from **PBX Model**. Depending on the type of Maintenance Console used, you may not be required to select a PBX model.
 - b. Select the **USB** tab.
 - c. Enter the system password for installer (default: **1234**).
 - d. Click **Connect**.

Note

To connect to the PBX via USB, the KX-TDA USB driver must be installed on the PC, as explained above in "Installing the Maintenance Console".

7. **When country/area data do not match:**
 - a. Click **OK** to replace the country/area data of the PBX. Replacement may take several minutes to complete.
 - b. Follow the procedure described in "2.11.1 Starting the PBX" and restart the PBX.
 - c. Repeat step 5 to reconnect the Maintenance Console to the PBX.



8. Follow the instructions of the Quick Setup wizard and assign the basic items (Quick Setup).

The system menu appears. You may now begin programming the PBX.

Notice

1. During a long programming session, it is highly recommended that you periodically save the system data to the SD Memory Card. If the PBX undergoes a sudden power failure or if the system is reset for some reason, all the system data in RAM will be lost. However, if system data has been saved to the SD Memory Card, it can be easily restored.
To save the system data to the SD Memory Card, (1) click the "**SD Memory Backup**" icon before resetting the PBX or turning off the power, or (2) exit the Maintenance Console so that the PBX automatically saves the system data.
2. The PC will not perform any shutdown operation, or enter the power-saving system standby mode while the Maintenance Console is connected to the PBX. To perform either of the operations above, first close the connection to the PBX.

CAUTION

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

3.3.1 Installing and Starting the Maintenance Console

Section 4

Troubleshooting

This section provides information on the PBX and telephone troubleshooting.

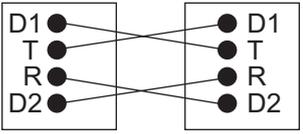
4.1 Troubleshooting

4.1.1 Installation

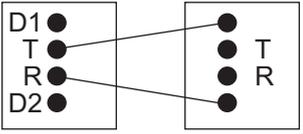
PROBLEM	PROBABLE CAUSE	SOLUTION
Extension does not operate.	Bad extension card.	<ul style="list-style-type: none"> Exchange the card for a known working one.
	Bad connection between the PBX and telephone.	<ul style="list-style-type: none"> Take the telephone and plug it into the same extension port using a short telephone cord. If the telephone works, then the connection between the PBX and the telephone must be repaired.
	A telephone with an A-A1 relay is connected.	<ul style="list-style-type: none"> Use a 2-wire cord. Set the A-A1 relay switch of the telephone to the "OUT" or "OFF" position.
	Bad telephone.	<ul style="list-style-type: none"> Take the telephone and plug it into another extension port that is working. If the telephone does not work, replace the telephone.
The PBX does not operate properly.		<ul style="list-style-type: none"> Press the Reset Button (refer to "4.1.4 Using the Reset Button"). Turn off the power switch, and then turn it back on. Turn off the power switch, and then unplug the PBX. After 5 minutes, plug the PBX back in, and turn the power switch back on.
Distorted external music.	Excessive input level from external music source.	<ul style="list-style-type: none"> Decrease the output level of the external music source by using the volume control on the music source.
Alternate Calling—Ring/Voice and Live Call Screening (LCS) do not function as set when using a Wireless Phone (KX-TD7894/KX-TD7895).	Voice-calling mode and Hands-free mode with LCS are not available with Wireless Phones.	<ul style="list-style-type: none"> Switch the calling mode to ring-calling. Set the LCS mode to "Private".
The ALARM indicator on the front of the shelf turns on red.	A major system error occurs in the PBX.	<ul style="list-style-type: none"> See the error log using the Maintenance Console (refer to "4.1.5 Troubleshooting by Error Log").

4.1.2 Connection

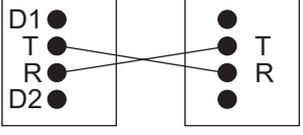
Connection between the PBX and a PT:

Can you dial an extension?	No	CAUSE	SOLUTION
		<p>The T/R is connected to the D1/D2.</p>  <p>PBX Extension</p>	<p>Use the correct cord (the inner 2 wires are for T/R and the outer 2 wires are for D1/D2).</p>

Connection between the PBX and an SLT:

Can you dial an extension?	No	CAUSE	SOLUTION
		<p>The T/R is connected to the D1/D2.</p>  <p>PBX Extension</p>	<p>Use the correct cord (the inner 2 wires are for T/R).</p> <ul style="list-style-type: none"> If a telephone equipped with an A-A1 relay is connected to the PBX, set the A-A1 relay switch of the telephone to "OFF".

Connection between the PBX and an SLT that is polarity-sensitive:

Can you dial an extension?	No	CAUSE	SOLUTION
		<p>The "T" is connected to the "R".</p>  <p>PBX Extension</p>	<p>Reverse the connections of the T/R.</p>

Yes

(Continued on the next page.)

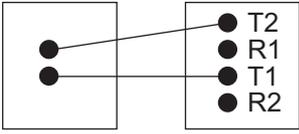
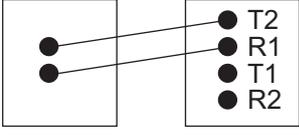
4.1.2 Connection

Connection between the trunk and the PBX:

(Continued from the previous page.)

Can you dial out on a trunk?

No

CAUSE	SOLUTION
<p>Trunk is connected to the T2/T1.</p>  <p>Trunk PBX</p>	<p>Reconnect the trunk to the T1/R1 or T2/R2 of the telephone jack using 2-conductor wiring.</p>
<p>Trunk is connected to the T2/R1.</p>  <p>Trunk PBX</p>	

4.1.3 Operation

PROBLEM	PROBABLE CAUSE	SOLUTION
<ul style="list-style-type: none"> When using the speakerphone/monitor mode with a DPT, nothing is audible. 	<ul style="list-style-type: none"> The "HEADSET" mode is selected by Personal Programming, "Handset/Headset Selection". 	<ul style="list-style-type: none"> When the headset is not used, select the "HANDSET" mode by Personal Programming.
<ul style="list-style-type: none"> The PT does not ring. 	<ul style="list-style-type: none"> The ringer volume is off. 	<ul style="list-style-type: none"> Turn on the ringer volume.
<ul style="list-style-type: none"> During a power failure, extensions connected to ports 1 to 2 of MCSLC16/MCSLC24 do not operate. 	<ul style="list-style-type: none"> A DPT is connected to the extension port. 	<ul style="list-style-type: none"> Disconnect the DPT and connect an SLT.
	<ul style="list-style-type: none"> The dialling mode (tone or pulse) is incorrect. 	<ul style="list-style-type: none"> Set the Tone/Pulse switch to the other position.
<ul style="list-style-type: none"> Originating an outside call, call transfer, or conference cannot be performed. 	<ul style="list-style-type: none"> The corresponding CO button does not exist on the PT. 	<ul style="list-style-type: none"> Programme the CO button. Refer to "1.20.2 Flexible Buttons" in the Feature Guide.

4.1.4 Using the Reset Button

If the PBX 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.

CAUTION

In order to avoid possible corruption of data on the SD Memory Card, please ensure that the "SD ACCESS" LED is off before pressing the Reset Button.

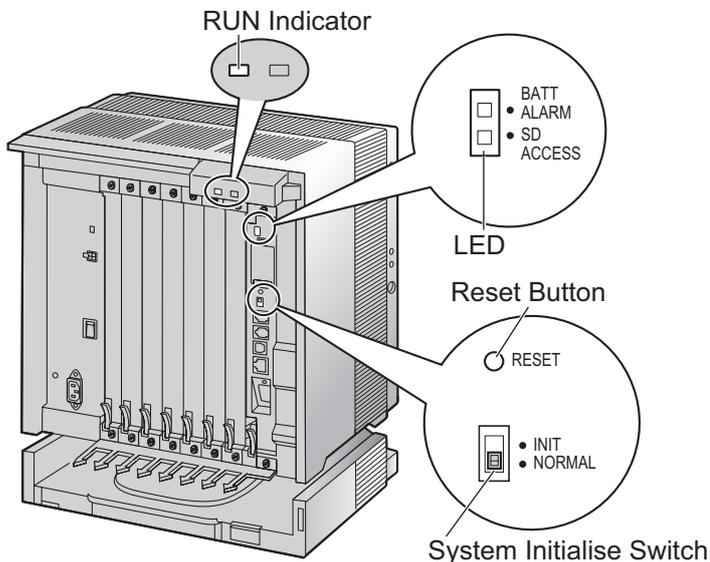
Note

- When the System Initialise Switch is set to "NORMAL", pressing the Reset Button causes the following:
 - Camp-on is cleared.
 - Calls on hold are terminated.
 - Calls on exclusive hold are terminated.
 - Calls in progress are terminated.
 - Call park is cleared.Other data stored in memory, except the above, are not cleared.
- Be aware that pressing the Reset Button with the System Initialise Switch in the "INIT" position clears all data stored in the PBX. Do not perform this operation unless you intend to delete all data from the PBX.

Operation

If the PBX does not operate properly:

1. Slide the System Initialise Switch to the "NORMAL" position.
2. Press the Reset Button for about 1 second.



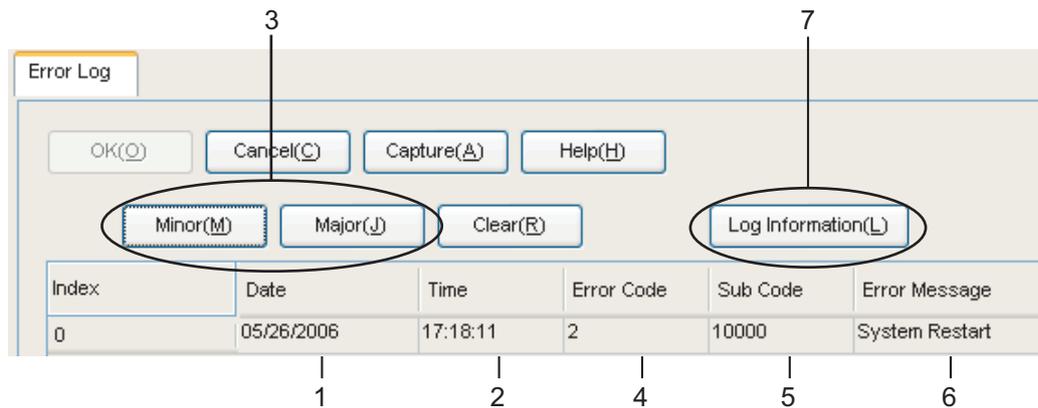
4.1.5 Troubleshooting by Error Log

When a major system error occurs in the PBX, the ALARM indicator on the front of the shelf turns on red, and the system logs the error information.

Error Log Display Format

Below is the display format of the error log. For information about how to view the error log using the Maintenance Console, refer to "2.6.8 Utility—Error Log" in the PC Programming Manual.

Example: Maintenance Console



Example: Station Message Detail Recording (SMDR)

```

04/01/01 10:37AM MJ ALM #000 10000 MPR WDT overflow
04/01/01 11:07AM MN ALM #010 10000 AC power down
04/01/01 03:55PM MN ALM #301 10501 Digital trunk RAI reception
  
```

Numbered callouts 1-6 are positioned below the SMDR lines, corresponding to the columns in the Error Log table: 1 (Date), 2 (Time), 3 (Level), 4 (Error Code), 5 (Sub Code), 6 (Error Message).

Description

	Item	Description
1	Date	The date of the error detection.
2	Time	The time of the error detection.
3	Level	Minor (MN ALM) Displays minor errors, which affect only a certain part of system operation.
	Major (MJ ALM)	Displays major errors, which affect operation of the whole system, or result in system failure.
4	Error Code	The 3-digit error code assigned by the PBX.

4.1.5 Troubleshooting by Error Log

	Item	Description
5	Sub Code	<p>The 5-digit sub code of the relevant hardware (1XXYY).</p> <ul style="list-style-type: none"> • 1: Shelf number • XX: Slot number <ul style="list-style-type: none"> – 00 to 07, 11 (00: DMPR Card Slot; 01 to 07: Free Slots; 11: DLC4 Port on the DMPR Card) • YY: Physical port number <ul style="list-style-type: none"> – For optional service cards except OPB3 card: Physical port number (01 to 24) will be displayed. – For OPB3 card: Sub slot number (1 to 3) + port number (1 to 4) will be displayed as follows: <ul style="list-style-type: none"> • Sub slot 1 of OPB3: 11 to 14 • Sub slot 2 of OPB3: 21 to 24 • Sub slot 3 of OPB3: 31 to 34 <p>Note</p> <p>When there are no parameters for the slot and physical port numbers, XX and YY will be displayed as "00". Example: Sub code for DMPR card = 10000</p>
6	Error Message	A description of the error.
7	Log Information	Displays probable causes of the errors and their solutions.

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The KX-TDA100DCE is designed to interwork with the:

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

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

Declarations of Conformity for the relevant Panasonic products described in this manual are available for download by visiting:

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

Contact to Authorised Representative:
Panasonic Testing Centre
Panasonic Marketing Europe GmbH
Winsbergring 15, 22525 Hamburg, Germany

For Future Reference

Please print, record, and retain the following information for future reference.

Note

The serial number of this product can be found on the label affixed to the unit. You should record the model number and the serial number of this unit as a permanent record of your purchase to aid in identification in the event of theft.

MODEL NO.	_____
SERIAL NO.	_____
DATE OF PURCHASE	_____
NAME OF DEALER	_____
DEALER'S ADDRESS	_____ _____ _____
DEALER'S TEL. NO.	_____

Panasonic System Networks Co., Ltd.

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