

**NEC**  
ND-43177-001 (E)  
ISSUE 4

**NEAX<sup>®</sup> 1400 IMS**  
General Information

**NEC America, Inc.**  
OCTOBER, 1991



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ISSUE No.	40	41	42	43	44	45	46	47	48	49	50	51	52	53
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8															
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ISSUE No.	i	ii	iii	1	2	3	4	5	6	7	8	9	10	11
	PAGE No.													

ISSUE 1		ISSUE 2		ISSUE 3		ISSUE 4	
DATE	FEBRUARY, 1989	DATE	SEPTEMBER, 1989	DATE	JUNE, 1990	DATE	OCTOBER, 1991
ISSUE 5		ISSUE 6		ISSUE 7		ISSUE 8	
DATE		DATE		DATE		DATE	

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8														
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ISSUE No.	82	83	84	85	86	87	88	PAGE No.						
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8														
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ISSUE No.	68	69	70	71	72	73	74	75	76	77	78	79	80	81	PAGE No.	
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8															
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ISSUE No.	54	55	56	57	58	59	60	61	62	63	64	65	66	67	PAGE No.	
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ISSUE 1		ISSUE 2		ISSUE 3		ISSUE 4	
DATE	FEBRUARY, 1989	DATE	SEPTEMBER, 1989	DATE	JUNE, 1990	DATE	OCTOBER, 1991
ISSUE 5		ISSUE 6		ISSUE 7		ISSUE 8	
DATE		DATE		DATE		DATE	

**NEAX1400 IMS**  
**General Information**

Revision Sheet 2/2

**ND- 43177-001 (E)**

NEAX1400 IMS  
 General Information

TABLE OF CONTENTS

	Page		Page
LIST OF ILLUSTRATIONS .....	ii	3.4 System Specification .....	69
LIST OF TABLES .....	iii	3.5 Transmission Loss .....	74
INTRODUCTION .....	1	3.6 Power Requirements .....	74
CHAPTER 1 MANUAL GUIDE .....	1	4. SYSTEM FEATURE LIST .....	75
1. GENERAL .....	1	CHAPTER 3 SYSTEM PLANNING ...	79
2. OUTLINE OF MANUALS .....	1	1. INSTALLATION	
3. HOW TO USE MANUALS .....	2	REQUIREMENTS .....	79
CHAPTER 2 SYSTEM DESCRIPTION .	3	1.1 Environmental Condition (Operating) .	79
1. GENERAL .....	3	1.2 Floor Space .....	79
2. SYSTEM CONFIGURATION .....	3	1.3 Equipment Location .....	79
2.1 System Outer View .....	3	1.4 AC Power Supply .....	79
2.2 Equipment List .....	9	1.5 Ground .....	79
2.3 Equipment Description .....	14	1.6 Installation Materials .....	79
2.4 Equipment Quantity Table .....	32	1.7 Installation Tools .....	81
2.5 Function of Switches and Lamps on Each Board .....	33	2. GENERAL INFORMATION ON THE CUSTOMIZING DATA .....	82
3. TECHNICAL DESCRIPTION .....	66	2.1 Numbering Plan .....	82
3.1 System Block Diagram .....	66	2.2 Station Data .....	82
3.2 System Control .....	67	2.3 Trunk Data .....	82
3.3 System Speech Path .....	67	2.4 Station Hunting Group Data .....	83
		2.5 Call Pickup Group Data .....	83
		2.6 System Speed Dialing .....	83
		2.7 Port Assignment Table .....	83
		2.8 Resident System Program .....	85
		CHAPTER 4 GLOSSARY OF TERMS ..	87

## LIST OF ILLUSTRATIONS

Figure	Title	Page	Figure	Title	Page
2-1	NEAX1400 IMS Outer View (1-4) ..	4	2-23	PJ-PW01 (PWRA) Board .....	38
2-2	Bay Face Layout .....	9	2-24	PJ-PW04 (PWRB) Board .....	39
2-3	System Controllers Face Layout ..	14	2-25	PJ-PW14 (PWRB) Board .....	40
2-4	Ports Face Layout .....	18	2-26	PJ-ME03 (MEM) Board .....	42
2-5	Power Unit (PWRU) .....	22	2-27	PJ-AP00 Board .....	43
2-6	SN1071 PWRM-A (PWRM) .....	23	2-28	PJ-AP01 Board .....	45
2-7	SN1071 PWRM-B (PWRM) .....	24	2-29	PJ-AP02 Board .....	46
2-8	Power Supply System Block Diagram .....	25	2-30	PJ-4MDTA Board .....	48
2-9	Load Sharing Operation .....	26	2-31	PJ-24DTB Board .....	50
2-10	Parallel Operation .....	26	2-32	PJ-CK01 Board .....	53
2-11	HA610-Z ATTCOM .....	27	2-33	PJ-SC00 (CCH) Board .....	55
2-12	SN610 ATTCOM .....	27	2-34	PK-ODTC/ODTE/2EMTB Card .....	57
2-13	ETE-16D-2 TEL/ETE-6D-2 TEL .....	28	2-35	PK-2COTG Card .....	58
2-14	ETE-16-2 TEL/ETE-6-2 TEL .....	28	2-36	PK-2COTN Card .....	59
2-15	MAT (Multi-Speed) .....	30	2-37	PK-2DITD/2DITE Card .....	60
2-16	MAT (APCIV/IBM PC) .....	30	2-38	PK-DTLA Card .....	61
2-17	DSS BLF Console/Add-On Module (EDE-30-2) .....	31	2-39	PK-TNTC Card .....	62
2-18	PIM Quantity Quick Reference .....	32	2-40	Other Cards .....	63
2-19	PJ-CP01 (MP) Board .....	33	2-41	PK-ME00/PK-ME01 Card .....	64
2-20	PJ-CP02 (FP) Board .....	35	2-42	PK-LLCG Card .....	65
2-21	PJ-CS00 (ATI) Board .....	36	2-43	System Block Diagram .....	66
2-22	PJ-64SPA (64SPI) Board .....	37	2-44	NEAX1400 IMS System Control ..	67
			2-45	System Speech Path .....	68



## LIST OF TABLES

Table	Title	Page	Table	Title	Page
1-1	List of Manuals for NEAX1400 IMS .....	1	2-21	Switches and Lamp of PJ-4MDTA Board .....	48
1-2	How to Use Manuals .....	2	2-22	Switches and Lamps of PJ-24DTB Board- .....	51
2-1	Modules, Units and Covers .....	8	2-23	Switches and Lamps of PJ-CK01 (PLO) Board .....	53
2-2	Boards and Cards .....	11	2-24	Switches and Lamps of PJ-SC00 (CCH) Board .....	55
2-3	Cables .....	12	2-25	Switch and Lamps of PK-ODTC/ODTE Card .....	57
2-4	Peripheral Equipment .....	13	2-26	Switches and Lamps of PK-2COTG Card .....	58
2-5	List of Boards .....	15	2-27	Switches and Lamps of PK-2COTN Card .....	59
2-6	Maximum Number of Ports .....	19	2-28	Switches and Lamps of PK-2DITD/2DITE Card .....	60
2-7	List of Cards .....	20	2-29	Switch and Lamp of PK-DTLA Card .....	61
2-8	Function Comparison Between Multiline Terminals .....	29	2-30	Switch of PK-TNTC Card .....	62
2-9	Equipment Quantity Table (Typical) .....	32	2-31	Lamps of Other Cards .....	63
2-10	Switches and Lamps of PJ-CP01 (MP) Board .....	34	2-32	Switch and Lamp of PK-ME00/PK-ME01 Card .....	64
2-11	Switches and Lamp of PJ-CP02 (FP) Board .....	35	2-33	Switches and Lamp of PK-LLCG Card .....	65
2-12	Switches and Lamps of PJ-CS00 (ATI) Board .....	36	2-34	Number of Lines .....	69
2-13	Switch and Lamps of PJ-64SPA (64SPI) Board .....	37	2-35	System Capacities .....	70
2-14	Lamp of PJ-PW01 (PWRA) Board ..	38	2-36	Line Conditions .....	71
2-15	Switch and Lamps of PJ-PW04 (PWRB) Board .....	39	2-37	Signaling Conditions .....	72
2-16	Switch and Lamps of PJ-PW14 (PWRB) Board .....	41	2-38	Audible Tones .....	73
2-17	Lamps of PJ-ME03 (MEM) Board .....	42	2-39	Power Consumption .....	74
2-18	Switches and Lamps of PJ-AP00 Board .....	44	3-1	Number of Required AC Outlets ..	79
2-19	Switches and Lamp of PJ-AP01 Board .....	45	3-2	Materials for Installation .....	80
2-20	Switches and Lamps of PJ-AP02 Board .....	47	3-3	Installation Tools .....	81
			3-4	Port Assignment Method .....	84

## INTRODUCTION

This General Information explains the system configuration and the system specifications of the NEAX1400 IMS. The use of this manual, together with other manuals covering system installation and maintenance, will assure proper performance of the system.

## CHAPTER 1 MANUAL GUIDE

### 1. GENERAL

This Chapter outlines various manuals which should be used as a reference in relation to the installation and maintenance of the NEAX1400 IMS.

### 2. OUTLINE OF MANUALS

Table 1-1 lists the various manuals available.

Table 1-1 List of Manuals for NEAX1400 IMS

MANUAL	DESCRIPTION
• Installation and Test Manual [ND-43177-002 (E)]	The installation procedures in this manual cover all details from unpacking to starting up the NEAX1400 IMS. This includes System Initialization, using the MAT (refer to the MAT Operations Manual) for system data entry and the methods of testing.
• System Programming Manual [ND- 43177-005 (E)]	This Manual contains command procedures, and initial data settings. It is also used for system data programming. The Numbering Plan, Station Data, Trunk Data, etc. created are to be recorded on the related sheets in the manual.
• Troubleshooting Guide [ND- 43177-003 (E)]	Used for troubleshooting when a fault has occurred in the system.
• Feature Programming Manual [NDA-24081]	Used for programming the NEAX1400 IMS by features instead of command level programming.
• SMDR System Manual [(ND-43651 (E)]	Provides details of installation and data programming for Station Message Detail Recording. <b>Note</b>
• Data Communications Manual [ND-43652 (E)]	Describes details of the installation and operation of various data communication services. <b>Note</b>
• Hotel/Motel System Manual [ND-43653 (E)]	Describes the installation and system data programming for Hotel/Motel features. <b>Note</b>
• MAT Operation Guide (For MultiSpeed) [ND-43654 (E)]	Describes how to program the NEAX1400 IMS using the MultiSpeed, NEC's laptop personal computer. <b>Note</b>
• MAT Operation Guide (For APCIV/IBM PC - XT/AT) [ND-44248 (E)]	Describes how to program the NEAX1400 IMS using the desktop computer (APCIV or IBM PC-XT/AT). <b>Note</b>
• Direct Digital Interface (DDI) System Manual [ND-44083 (E)]	Describes details of the installation and data programming for the Direct Digital Interface (T1). <b>Note</b>
• No. 7 CCIS System Manual [ND-44359(E)]	Describes details of the installation and data programming for No. 7 CCIS. <b>Note</b>
• ACD-MIS System Manual [NDA-24127]	Describes details of the installation, operation and data programming for ACD-MIS. <b>Note</b>

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**Note :** *These are optional manuals.*

### 3. HOW TO USE MANUALS

Table 1-2 below shows how to use the manuals for various work items.




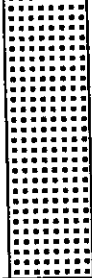
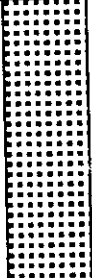



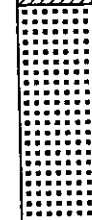
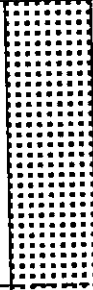
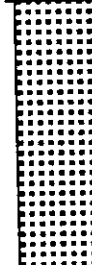

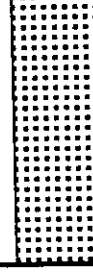
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Table 1-2 How to Use Manuals

WORKS	MANUALS	SYSTEM PROGRAMMING MANUAL	INSTALLATION AND TEST MANUAL	TROUBLE-SHOOTING GUIDE	FEATURE PROGRAMMING MANUAL
<ul style="list-style-type: none"> <li>• Installation Designing</li> <li>- System Data Programming</li> <li>- Numbering Plan</li> <li>- Floor Layout</li> <li>- Module Face Layout</li> </ul>					
<ul style="list-style-type: none"> <li>• Installation and Test</li> <li>- Unpacking</li> <li>- Marking &amp; Drilling</li> <li>- Main Equipment</li> <li>- Cable Connection</li> <li>- Extended Cable to MDF</li> <li>- Mounting of Cards and Boards</li> <li>- Connection Test</li> <li>- Feature Test</li> </ul>					
<ul style="list-style-type: none"> <li>• System Data Entry</li> <li>- Initializing</li> <li>- MAT Connection</li> <li>- System Data Entry/Change from CAT</li> </ul>					
<ul style="list-style-type: none"> <li>• Troubleshooting</li> <li>- Procedure</li> <li>- Troubleshooting Report</li> </ul>					

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## CHAPTER 2 SYSTEM DESCRIPTION

### 1. GENERAL

This chapter describes the system configuration and the system specification of the NEAX1400 IMS.

Prior to engaging in installation and maintenance, the installer or maintenance personnel must become thoroughly familiar with the contents of this chapter.

### 2. SYSTEM CONFIGURATION

#### 2.1 System Outer View

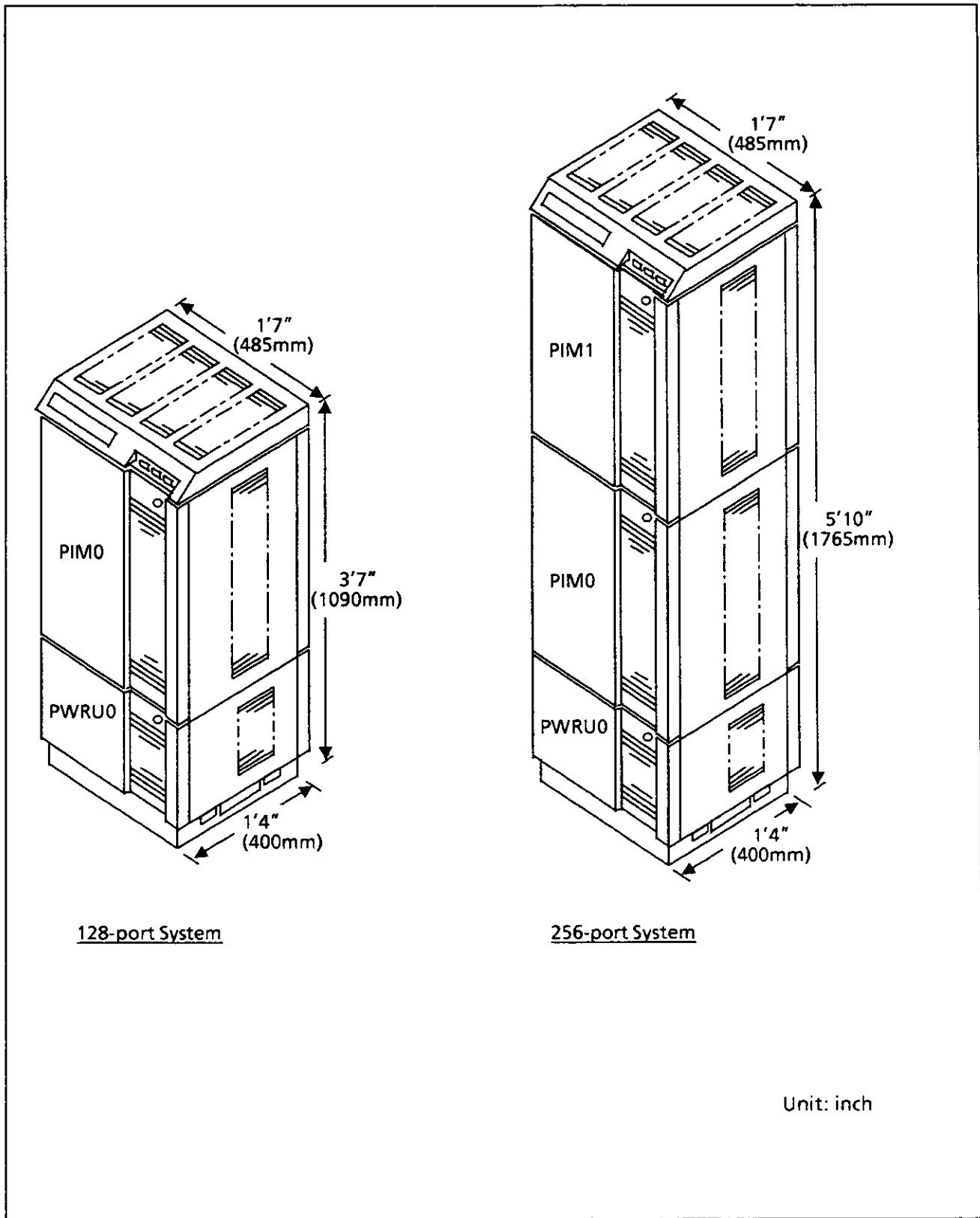
The NEAX1400 IMS is a Digital PABX System that provides conventional PBX functions. In addition to these functions, the NEAX1400 IMS provides key system functions, data communication functions and various kinds of networking functions.

The NEAX1400 IMS employs modular growth. The port capacity of a system is increased by adding Port Interface Modules (PIMs), each containing 128 ports. The NEAX1400 IMS can be configured to provide a maximum of 512 ports.

The boards constituting the control system are mounted on the left side shelf of the PIM. Interface cards (for accommodating Station Lines, C.O. Lines, Tie Lines, etc.) are mounted on the right side shelf of the PIM.

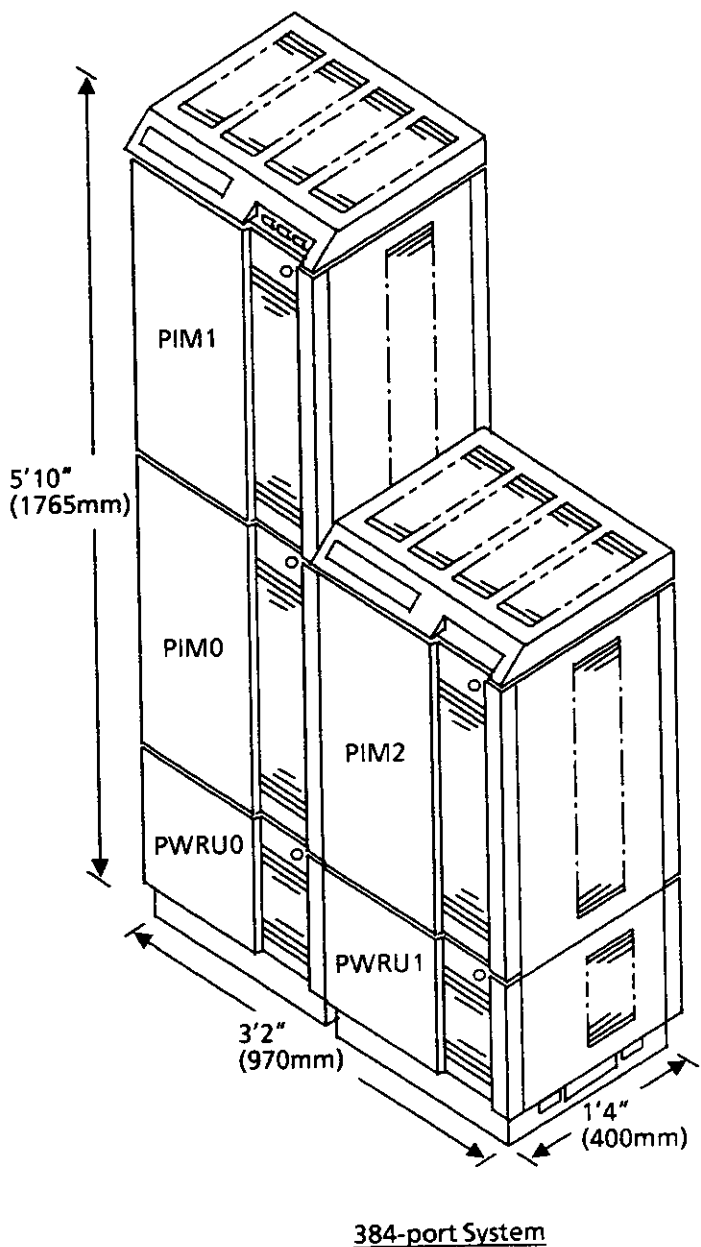
A 12-Line Power Failure Transfer (PFT) Panel can be mounted under each PIM.

The Power Unit is equipped with the Power Panel for power distribution, and a maximum of two Power Module units (AC-DC power converter).



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Figure 2-1 NEAX1400 IMS Outer View (1/4)



Unit: inch

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Figure 2-1 NEAX1400 IMS Outer View (2/4)

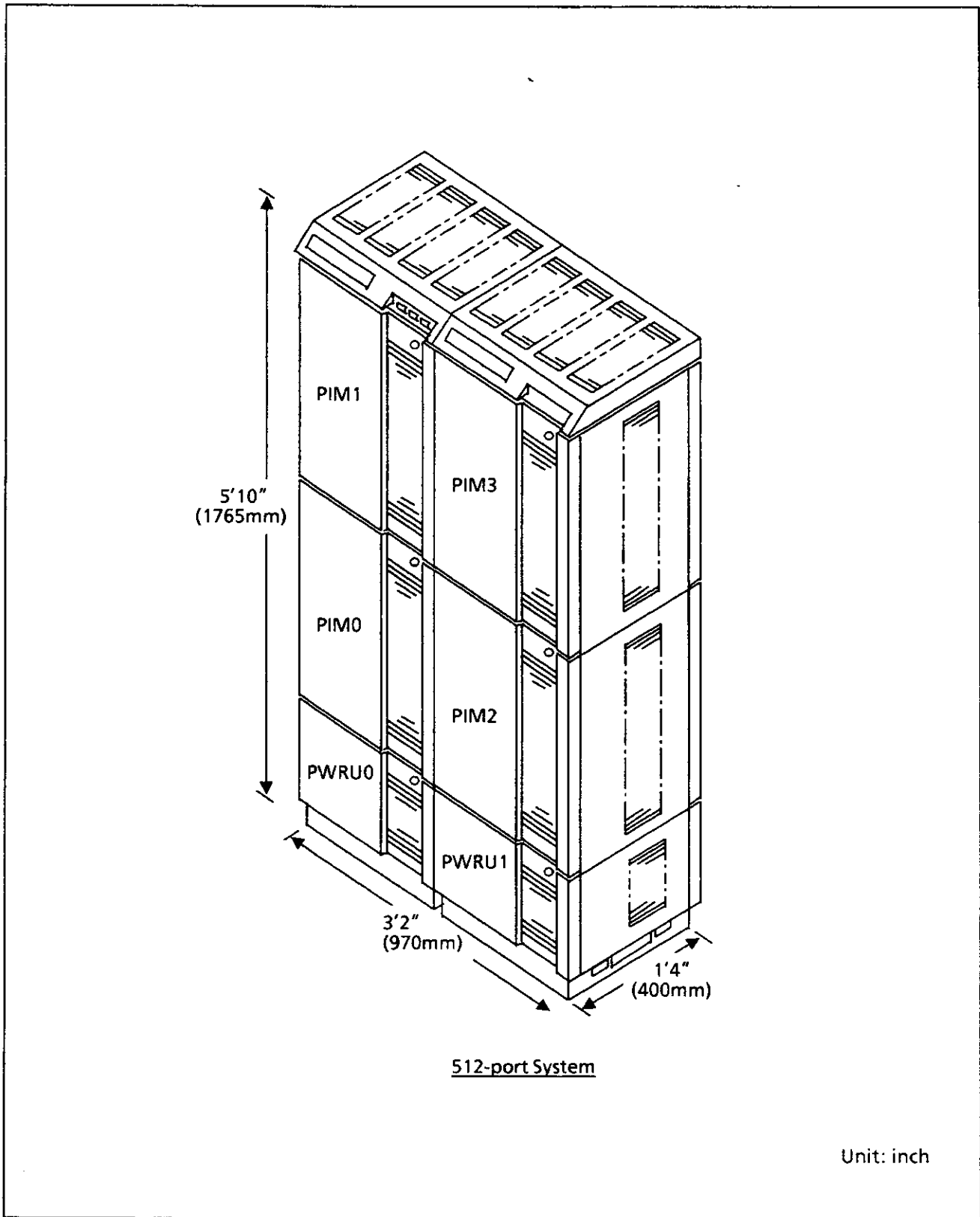
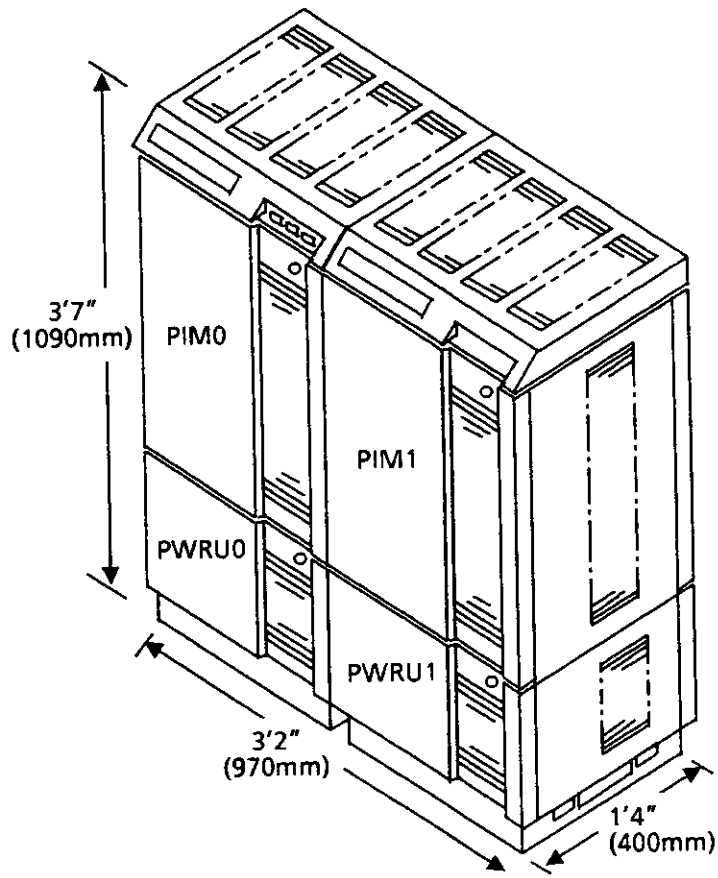


Figure 2-1 NEAX1400 IMS Outer View (3/4)

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256-port System

Unit: inch

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Figure 2-1 NEAX1400 IMS Outer View (4/4)

Table 2-1 Modules, Units and Covers

SYMBOL	DESCRIPTION	DESIGNATION
PIM 0–3	Port Interface Module	SN1060 PIM-A
TOPU 0, 1	Top Unit	SN1082 TOPU-A
PWRU 0, 1	Power Unit	SN1062 PWRU-A
PWRM	Power Module	SN1071 PWRM-A /SN1071 PWRM-B
BASEU 0, 1	Base Unit	SN1083 BASEU-A
PFT 0–3	Power Failure Transfer Panel	SN4005 PFT PANEL-A/ SN4017 PFT PANEL-A
	Connection Bracket PIM (0)-PIM (2)/ PIM (1)-PIM (3) PWRU (0)-PWRU (1)	CONN BRACKET
	Side Cover for PIM	SIDE COVER (A)
	Side Cover for PWRU	SIDE COVER (B)
	Front Cover for PIM	FRONT COVER (A)
	Front Cover for PWRU	FRONT COVER (B)
	Rear Cover for PIM	REAR COVER (A)
	Rear Cover for PWRU	REAR COVER (B)

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2.2 Equipment List

The Bay Face Layout of a 4-PIM system is shown below.

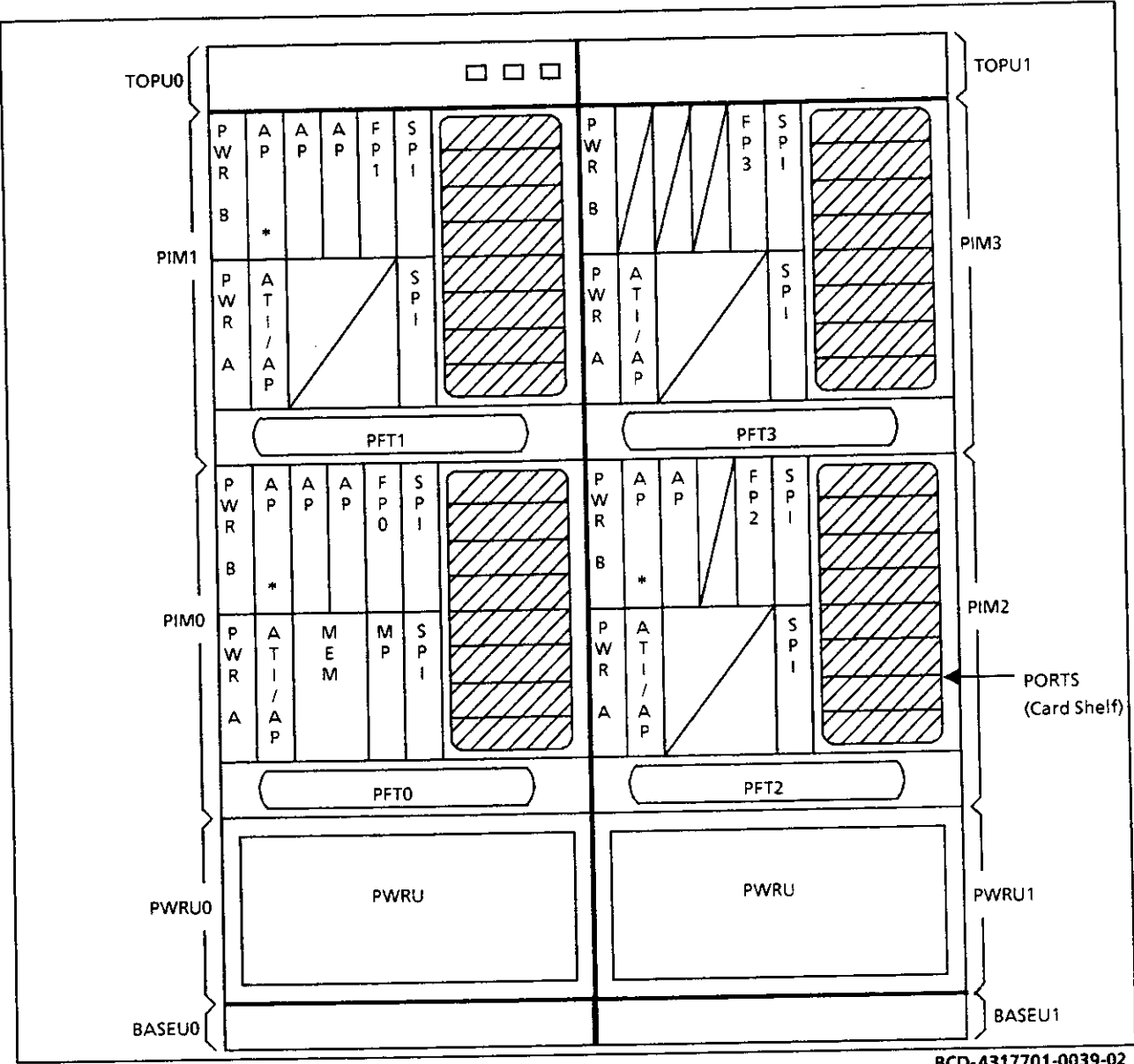


Figure 2-2 Bay Face Layout

Please refer to the notes on the following page.

- Note 1:** *The PJ-AP00 board is mounted in any one of the AP slots marked with an “\*”.*
- Note 2:** *A maximum of twelve (12) AP slots per system are available simultaneously.*
- Note 3:** *The PJ-4MDTA board is mounted in the AP slot of PIM0-3.*
- Note 4:** *The PJ-24DTB (DTI) Board is mounted in the AP or ATI/AP slots of PIM0-2.*
- Note 5:** *The PJ-CK01 (PLO) board is mounted in the AP slots of PIM0, except ATI/AP slots.*
- Note 6:** *The PJ-SC00 (CCH) board is mounted in the AP or ATI/AP slots of PIM0-2.*
- Note 7:** *The PJ-PW14 (PWRB) board must not be mounted together with the PJ-PW01 and PJ-PW04 in the same PIM.*
- Note 8:** *If the PJ-AP02 board is used for expanded Authorization/DISA Codes, then the board designation is PJ-AP02. If the board is used for ACD-MIS, then the board designation is AP-ACDB.*

Table 2-2 Boards and Cards

SYMBOL	DESCRIPTION	DESIGNATION
PWRA	DC-DC PWR PKG (Input: -27 V; output: +5 V, 12 A; -5 V, 5 A)	PJ-PW01
PWRB	DC-DC PWR PKG (Input: -27 V; output: -48 V, 3.5 A, CR 50 mA)	PJ-PW04
	DC-DC PWR PKG (Input: -27 V; output: +5 V, 12 A, -5 V, 5 A, -48 V, 3.5 A, CR50 mA)	PJ-PW14
MP	Main Processor	PJ-CP01
MEM	Memory for MP	PJ-ME03
FP 0-3	Firmware Processors	PJ-CP02
SPI	Speech Path Interface	PJ-64SPA
ATI 0-3	Attendant Console Interfaces	PJ-CS00
AP	Application Processors	PJ-AP00
		PJ-AP01
		PJ-AP02/AP-ACDB
MDT	4L MODEM Trunk	PJ-4MDTA
DTI	24-channel Digital Trunk Interface	PJ-24DTB
CCH	Common Channel Handler	PJ-SC00
PLO	Phase Locked Oscillator	PJ-CK01
LC	2L Line Circuit	PK-2LCF
LC	2L Line Circuit for Message Waiting	PK-2LCH
LC	2L Line Circuit for Momentary Open	PK-2LCP-A
LLC	2L Long Line Circuit	PK-2LLCC
LLC	1L Long Line Circuit	PK-LLCG
DLC	2L Digital LC for Multiline Terminal and DSS Console (Short Line)	PK-2DLCA
DLC	2L Digital LC for Multiline Terminal and DSS Console (Long Line)	PK-2DLCC
DTLA	1L Digital LC for DT-003 Data Module	PK-DTLA
COT	2L Central Office Trunk	PK-2COTG/2COTN
ODT	1L E&M Trunk (4W)	PK-ODTC/ODTE
EMT	2L E&M Trunk (2W)	PK-2EMTB
DIT	2L Direct Inward Dialing Trunk	PK-2DITD/2DITE
PBR	4L DTMF Receiver	PK-4RSTA
HDT	Hold Tone Source / Music Source Interface	PK-TNTC
EXTI	4L External Equipment Interface	PK-DK01
KEYI	8L External Key Interface	PK-DK02
APMEM	Expansion Memory for Application Processor (PJ-AP00)	PK-ME00
VRMEM	Memory for Voice Recording	PK-ME01

BCD-4317701-0003-06

Table 2-3 Cables

DESCRIPTION		DESIGNATION
Ground Cable PWRP 0-PWRP 1		PWR CA-G
DC PWR Cable PIM 0-PWRP 0, PIM 2-PWRP 1		PWR CA-J
DC PWR Cable PIM 1-PWRP 0, PIM 3-PWRP 1		PWR CA-K
DC PWR Multi-Cable PWRP 0-PWRP 1		PWR CA-L
ALM Cable PWRP 0-PWRP 1		PWR CA-M
BUS Cable PIM 0-PIM 1, PIM 2-PIM 3		BUSCA-A
BUS Cable PIM 1-PIM 2		BUSCA-B
PFT Cable PFT PANEL-PFT PANEL		PFT CA-C
SMDR Cable (system side)		AP CA-B
SMDR Cable (peripheral equipment side)		SMDS CA-D
MAT Cable	For MultiSpeed/IBM PC-XT	MAT CA-D
	For APCIV/IBM PC-AT	MAT CA-F
	For Remote Maintenance (at remote PBX)	MAT CA-E
MODEM Cable (For 2 Modems)		MODEM POOLING CABLE-G
PLO Cable (PLO - DTI installed in PIM 0)		PLO CA-A
PLO Cable (PLO - DTI installed in PIM 1 - 2)		PLO CA-C
ACD-MIS Interface Cable (Local/Remote)		AP RS CA-A
ACD-MIS Interface Cable (Local)		AP RVS CA-A
Direct Digital Interface Cable		DTI-A CABLE F

BCD-4317701-0004-05

Table 2-4 Peripheral Equipment

DESCRIPTION		DESIGNATION
Attendant Console		HA-610Z ATTCON
		SN610 ATTCON
Handset for operator		F-HS-INI (CG) HANDSET
Multiline Terminal	With LCD	ETE-16D-2/ETE-6D-2
	Without LCD	ETE-16-2/ETE-6-2
Maintenance Administration Terminal (MAT)		NEC MultiSpeed (PC-16-01)/Multi-Speed-EL(PC-16-02)/MultiSpeed-H0 (PC-16-03)/APCIV/IBM PC-AT/XT
DSS Console/Add-On Module		EDE-30-2
Data Adaptor for Asynchronous Data Switching (installed in Multiline Terminal)		DTA-E
Data Adaptor for Asynchronous/Synchronous Data Switching and Keyboard Dialing		DA-005A-2
Interface Adaptor for DA-005A (installed in Multiline Terminal)		INT-E
Standalone Synchronous Data Module		DT-003
Asynchronous/Synchronous Data Adaptor		DA-013
Synchronous Data Adaptor		DA-008-2
Synchronous Data Adaptor		DA-007-2

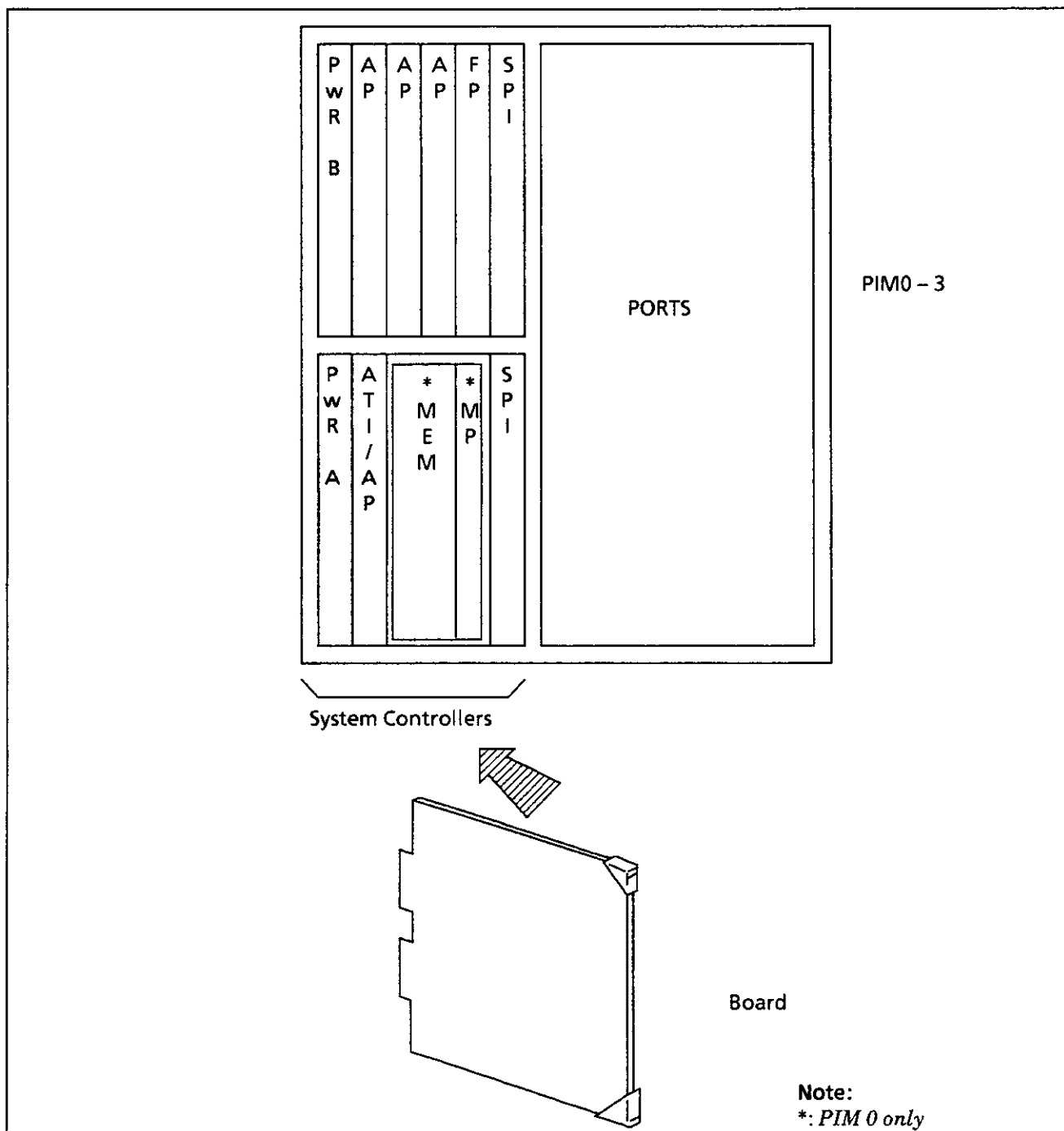
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2.3 Equipment Description

(1) Port Interface Module (PIM)

The PIM consists of ports for Station Lines, C.O. Lines and Tie Lines, and the controllers for the ports and peripheral equipment.

The boards listed in Table 2-5 are mounted within the PIM.



Note:  
\*: PIM 0 only

BCD-4317701-0017-01

Figure 2-3 System Controllers Face Layout



Table 2-5 List of Boards

BOARD NAME (SYMBOL)	FUNCTION	CONDITION
PJ-CP01 (MP)	This board is used as the Main Processor for the centralized control of the system, and is equipped with the following circuits in addition to the CPU (16-bit microprocessor): <ul style="list-style-type: none"> <li>• Time Division Switch</li> <li>• Tone Generator including DTMF transmitter</li> <li>• 3-Way Conference Trunks (8 circuits)</li> <li>• RS-232C ports</li> </ul>	Mounted in PIM0
PJ-ME03 (MEM)	This board is equipped with memory devices (ROM: 864 KB, RAM: 384 KB) for the MP.	Mounted in PIM0
PJ-CP02 (FP)	This board is used as the Firmware Processor (FP) for controlling 128 ports accommodated in a PIM.  The board is equipped with ROM (64 KB) and RAM (192 KB) for the FP.	One board mounted in each PIM (PIM0 - 3)
PJ-64SPA (SPI)	This board is the interface circuit between the FP and ports, and performs serial - parallel conversion of I/O Bus, and channel designation of PCM Highways.	Two boards mounted in each PIM (PIM0 - 3)
PJ-AP00 (AP)	This board is used as the Application Processor (AP) for SMDR H/M Printer and PMS functions.  The board is equipped with four RS-232C ports, and is also equipped with ROM (256 KB) and RAM (256 KB) for the AP.	Mounted in any one of the AP slots of PIM 0 - 3. (See Figure 2-2)
PJ-AP01 (AP)	This board is the Application Processor (AP) required for enabling synchronous data connection and keyboard dialing from a Data Terminal connection using a Multiline Terminal (ETE-16D-2 TEL/ETE-6D-2 TEL and DA-005A Data Adaptor). The board is equipped with ROM (128 KB) and RAM (64 KB) for the AP.	Mounted in the AP slot of PIM 0 - 3.
PJ-AP02 (AP)	This board is the Application Processor (AP) for expanded authorization code.	Mounted in the AP slot of PIM 0 - 3.

BCD-4317701-0006-03

Table 2-5 List of Boards (continued)

BOARD NAME (SYMBOL)	FUNCTION	CONDITION
AP-ACDB (AP)	This board is the ACD-MIS interface common control board. This board allows the system to interface with the personal computer that executes the ACD-MIS FD program.	One board per system, mounted in an AP slot of PIM 0-2.
PJ-CS00 (ATI)	This board is used to control the HA-610Z Attendant Consoles. One board can control a maximum of two Attendant Consoles.	One board is mounted in each PIM (PIM 0-3).
PJ-PW01 (PWRA)	This board is the DC-DC power converter for a PIM. Rating:   Input       - 27V Output     + 5V, 12A - 5V, 5A	One board is mounted in each PIM (PIM 0 - 3).
PJ-PW04 (PWRB)	This board is the DC-DC power converter & ring generator for a PIM.  Rating:   Input       - 27 V Output     - 48 V, 3.5 A (DC-DC Power Converter) Output     75 Vrms, 20 Hz (Ringing Generator)	One board is mounted in each PIM (PIM 0 - 3).
PJ-PW14 (PWRB)	This board is the DC-DC power converter & ring generator for a PIM.  Rating:   Input       - 27 V Output     + 5 V, 12 A, - 5V, 5A, - 48 V, 3.5 A (DC-DC Power Converter) Output     75 Vrms, 20 Hz/90 Vrms, 25 Hz (Ringing Generator)	One board is mounted in each PIM (PIM 0 - 3).
PJ-4MDTA (MDT)	This board accommodates a maximum of four synchronous or asynchronous Modems for the modem pool function. The modem pool function allows data terminals to share one set of Modems. This provides efficient use of the available Modems.	Mounted in the AP slot of PIM 0 - 3.

BCD-4317701-0007-05

Table 2-5 List of Boards (continued)

BOARD NAME (SYMBOL)	FUNCTION	CONDITION
PJ-24DTB (DTI)	This board is the Digital Trunk Interface (DTI) board. It accommodates 24-channel, PCM digital lines (T1 lines).	Mounted in the AP or ATI/AP slots of PIM 0-2.
PJ-CK01 (PLO)	This board is the Phase Locked Oscillator which generates clock signals used by the internal circuitry to synchronize with the clock signals received from the master office via DTI.	Mounted in the AP slots of PIM0, except ATI/AP slots.
PJ-SC00 (CCH)	This board is the Common Channel Handler (CCH) which transmits or receives signals on the common signaling channel of No. 7 CCIS.	Mounted in the AP or ATI/AP slots of PIM 0-2.

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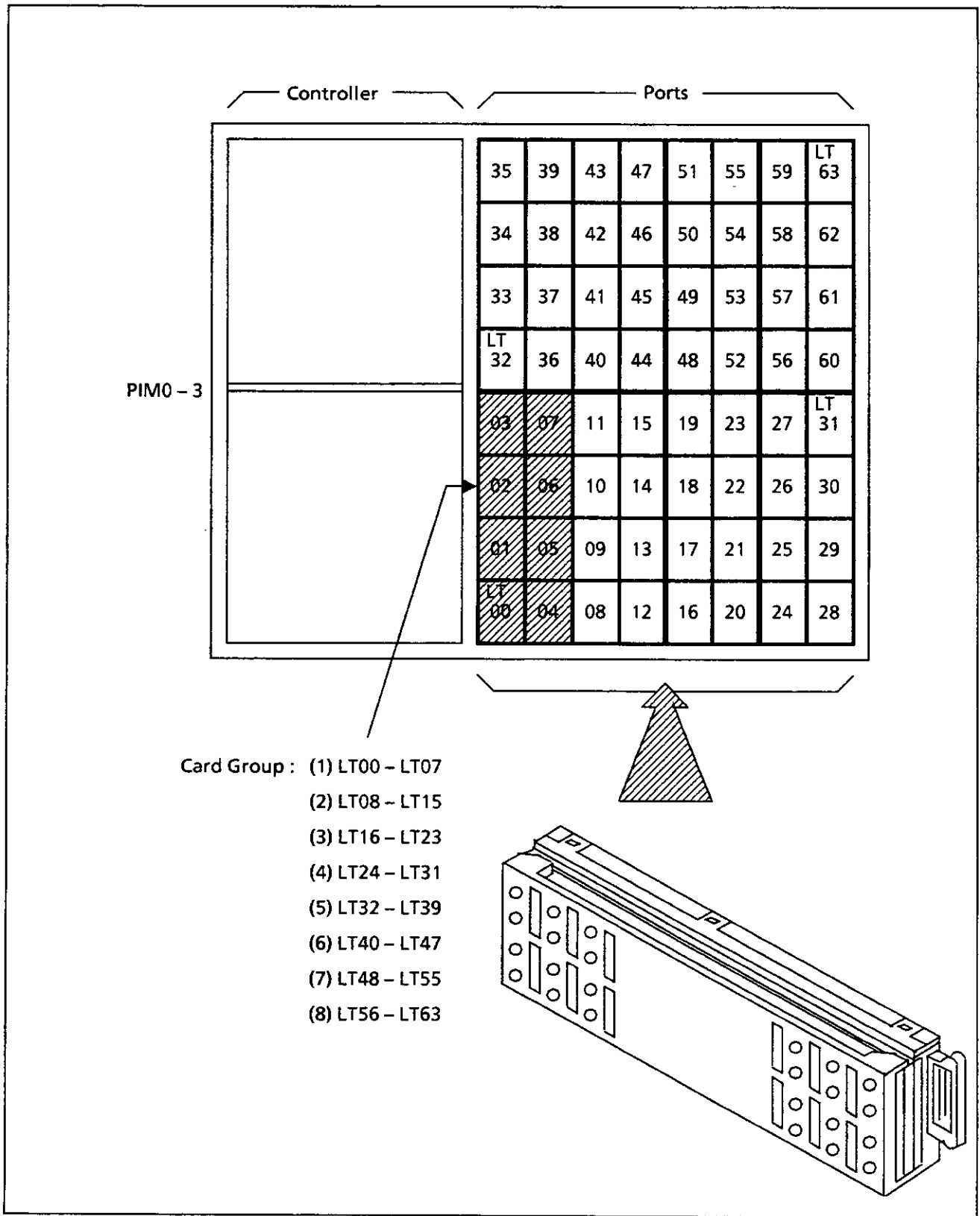




Figure 2-4 Ports Face Layout

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There are 64 card slots per PIM, each of which provides from 1 to 4 ports. It should be noted that the overall maximum number of ports available, per PIM, is 128. Various kinds of interface cards can be mounted in any of these 64 card slots (LT00-63). The number of ports actually

provided by each card slot is determined by the type of card. The total number of ports must not exceed the maximum number of ports specified in Table 2-6 below.

Table 2-6 Maximum Number of Ports

ITEM	REMARKS
Number of ports within a Card Group  32 ports	For the details of a Card Group, refer to Figure 2-4.
Number of ports within a PIM (0-3)  128 ports	For the number of ports required for each card, refer to Table 2-7.

BCD-4317701-0008-02

Table 2-7 below shows the function of each card mounted in a PIM, and the number of ports used by each card.

Table 2-7 List of Cards

CARD	FUNCTION	NUMBER OF PORTS PER CARD
PK-2LCF	This card is the line circuit for single-line telephone stations, and one card can accommodate two (2) lines.	2 ports
PK-2LCH	This card is the line circuit for single-line telephones with Message Waiting lamps, and one card can accommodate two (2) lines.	2 ports
PK-2LCP-A	This card is the interface circuit for two single-line telephones with Message Waiting lamps and Momentary Open. One card can accommodate two (2) lines.	2 ports
PK-2LLCC	This card is the line circuit for long-line single-line telephone stations, and one card can accommodate two (2) lines.	2 ports
PK-LLCG	This card is the interface circuit for long-line single-line telephones, and one card accommodates one (1) line.	1 port
PK-2DLCA	This card is the interface circuit for Multiline Terminal stations, SN610 ATTCONs, DSS Consoles and Add-On Modules (EDE-30-2). One card can accommodate two (2) lines.	<ul style="list-style-type: none"> <li>• For voice communication only: 2 ports (1 port/CKT)</li> <li>• For voice and data communication: 4 ports (2 ports/CKT)</li> <li>• For voice Data and Keyboard Dialing: 6 ports (3 ports/CKT)</li> </ul>
PK-2DLCC	This card is the interface circuit for long-line Multiline Terminal Stations, SN610 ATTCONs, DSS Consoles and Add-On Modules (EDE-30-2). One card can accommodate two (2) lines.	Same as above
PK-2COTG/N	This card is the interface circuit for C.O. Trunks, and one card can accommodate two (2) circuits.	2 ports
PK-2DITD/E	This card is the interface circuit for DID Trunks, and one card can accommodate two (2) circuits.	2 ports
PK-DTLA	This card is the interface circuit for DT-003 Data Modules, and one card can accommodate one (1) DT-003 Data Module.	1 port for voice (not used) 1 port for data 1 port for AP01 (control)

BCD-4317701-0009-04

Table 2-7 List of Cards (continued)

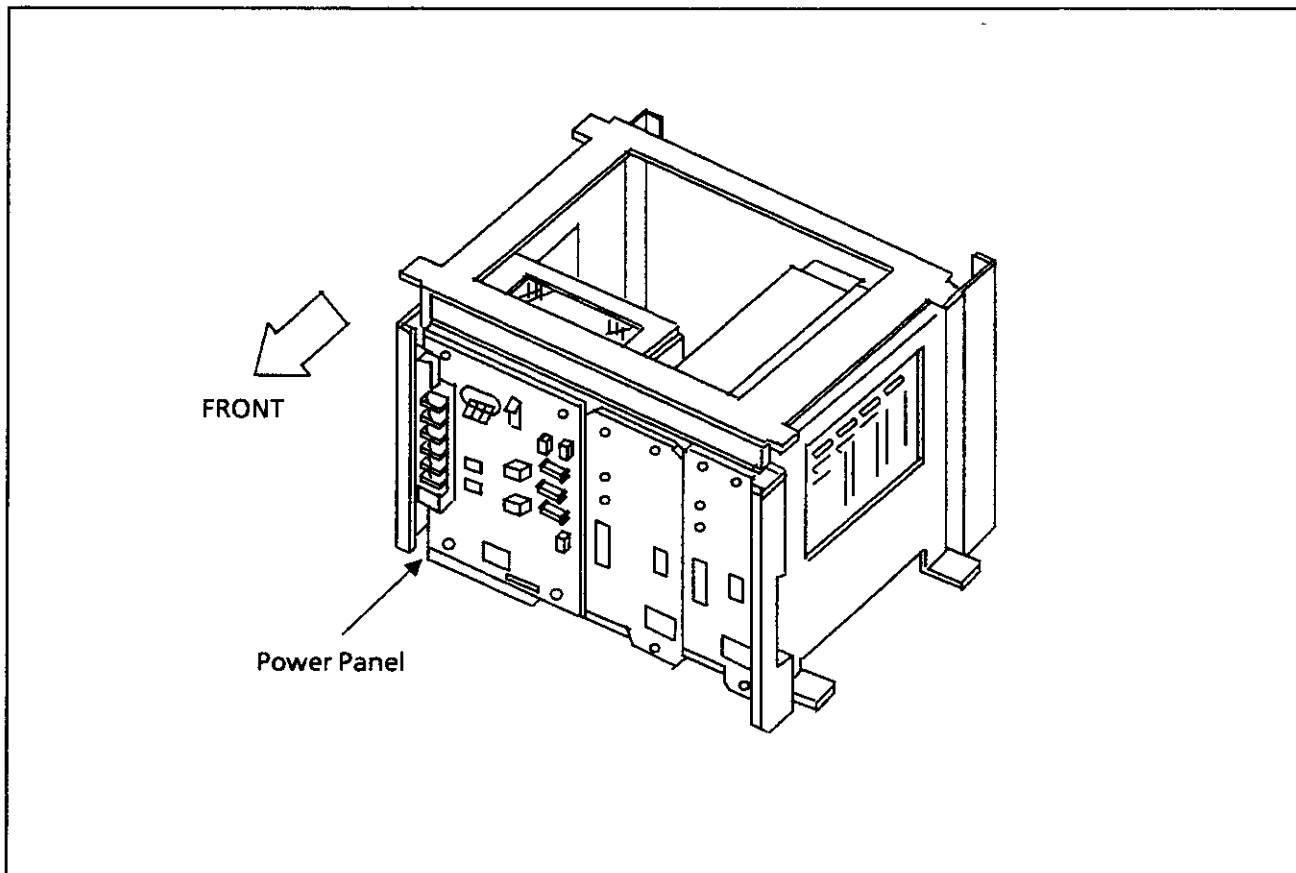
CARD	FUNCTION	NUMBER OF PORTS PER CARD
PK-2EMTB	Interface circuit for 2-wire Tie Line Trunk E&M type; one card can accommodate two (2) circuits.	2 ports
PK-ODTC/E	Interface circuit for 4-wire Tie Line trunk E&M type; one card can accommodate one (1) circuit.	1 port
PK-4RSTA	This card is the DTMF signal receiver, and one card is equipped with four (4) circuits.  This card is required when the station telephone set is of the DTMF type, or DTMF signals from the Tie line or DID line are to be received.	4 ports
PK-TNTC	This card is used for BGM or Music on Hold, and has the Tone (music) Generator which generates music (either one of two melodies can be selected) and two interfaces for an external music source.	2 ports
PK-DK01	This card is used for controlling external equipment. One card is equipped with four dry contacts. The rating of the contact is 125 mA.  This card is required when TAS (Trunk Answer Any Station) Indicators, etc. are provided.	No port is used.
PK-DK02	This card provides an interface with external keys. The card detects key on/off information, and provides the FP with the detected information. One card can be connected to a maximum of eight (8) external keys.	No port is used.
PK-ME00	This card contains 256 KB of memory, and is internally equipped with an 8-bit microprocessor.  The card is used as an expansion memory for an AP (PJ-AP00).	1 port
PK-ME01	This card contains 256 KB of memory, and is internally equipped with an 8-bit microprocessor.  The card is used for voice recording.	1 port

BCD-42891-0015-04

(2) Power Unit (PWRU)

The Power Unit consists of a Power Panel and one or two Power Module units (AC-DC Power Converter), and supplies -27V DC to its associated PIM.

The Power Panel is equipped with an AC outlet for the Power Module, Power Switch, Fuse, DC Power Supply Connector, and terminals for supplying DC power.

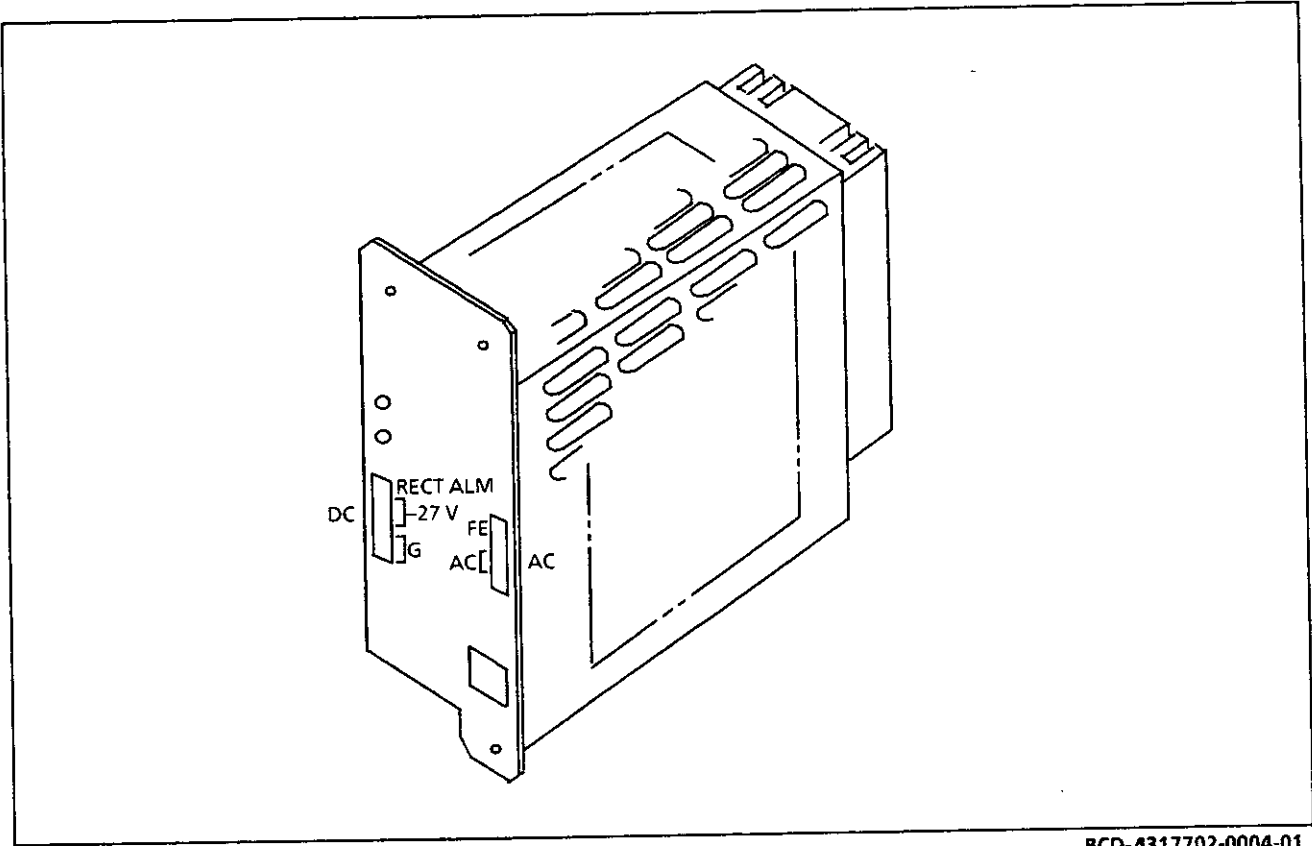


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Figure 2-5 Power Unit (PWRU)



The Power Module (SN1071 PWRM-A) is an AC-DC Converter which generates output power of -27V DC, 15 A from a commercial input source power of 117V AC.



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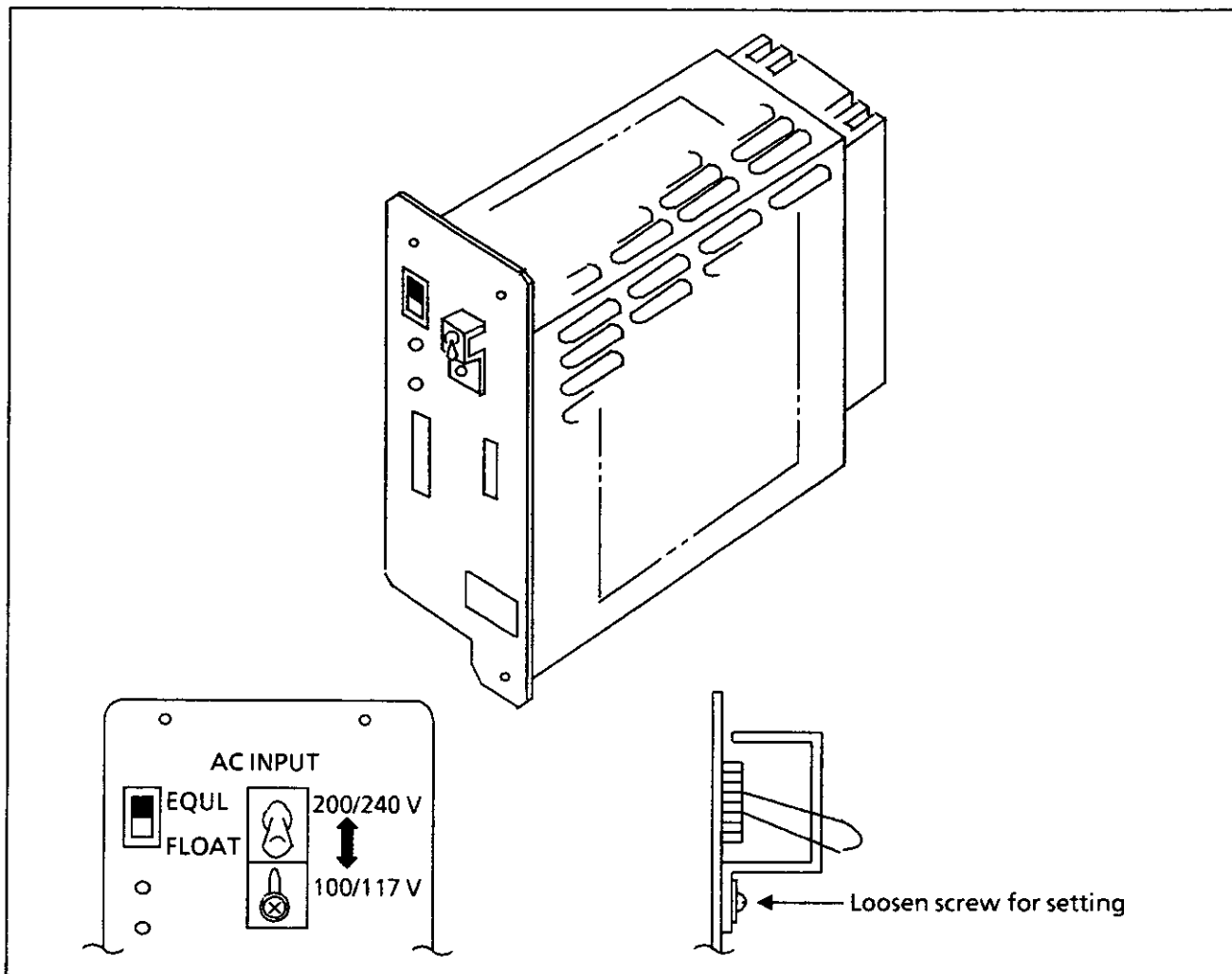
Figure 2-6 SN1071 PWRM-A (PWRM)

Mount the PWRM (Power Module) in the PWRU, and screw in.

- Set the AC INPUT switch to the commercial power voltage; down for 100 – 117 volts, or up for 200 – 240 volts.
- Set the EQU/FLOAT switch according to the type of battery connected:

- No Battery/Sealed Battery...“FLOAT”
- Lead-Acid Battery... “EQU”  
(Equalizing Charge)  
“FLOAT”  
(Floating Charge)

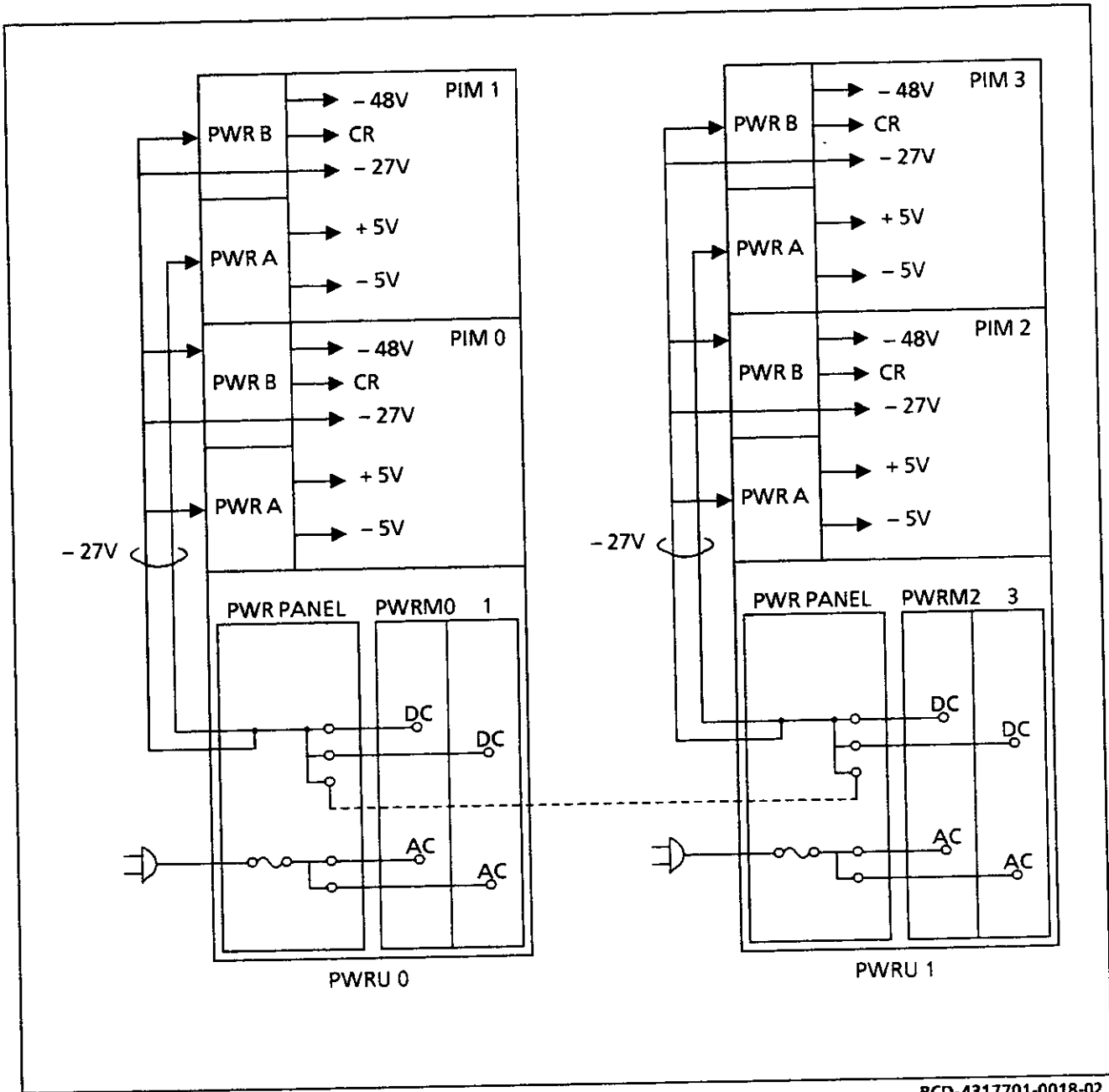
When changing the EQU/FLOAT mode in the case of plural PWRMs, the changes should be done as simultaneously as possible.



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Figure 2-7 SN1071 PWRM-B (PWRM)

A block diagram of the NEAX1400 IMS Power supply system follows .



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Figure 2-8 Power Supply System Block Diagram

Since the NEAX1400 IMS employs a modular Power Unit, power supply systems of various capacities can be used.

This is dependent upon the power consumption of the given system.

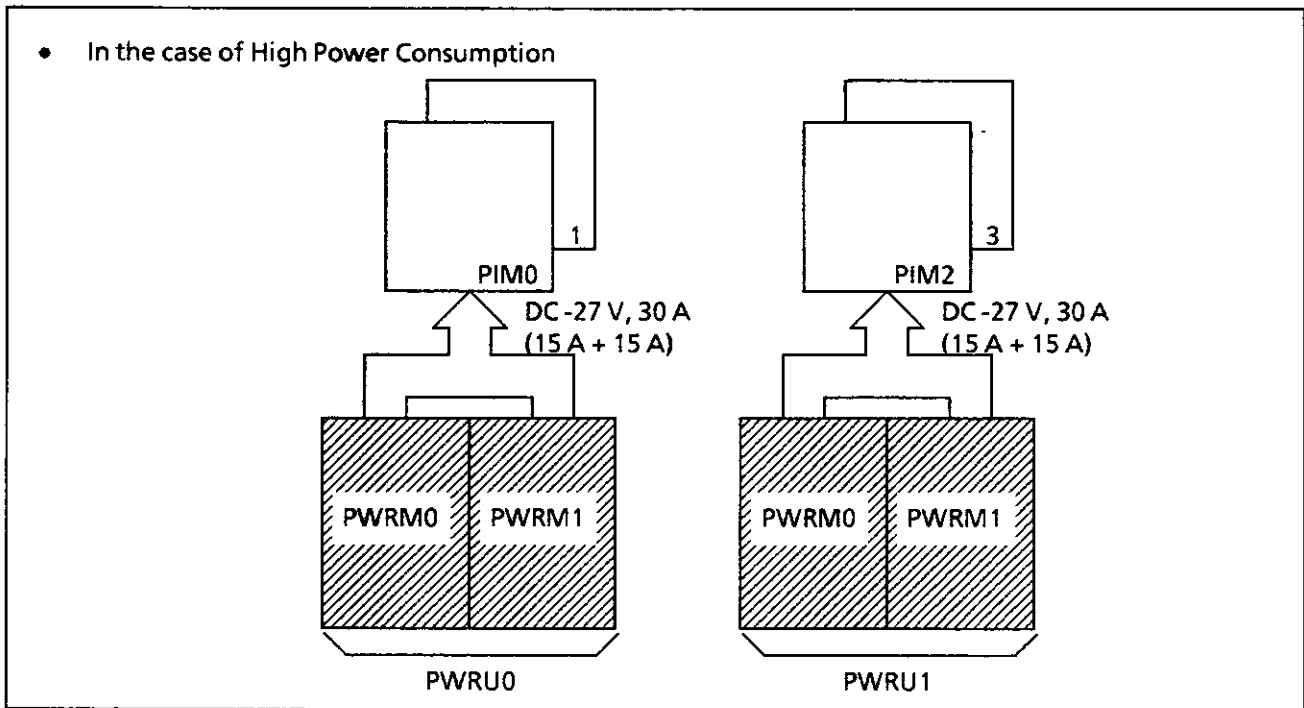


Figure 2-9 Load Sharing Operation

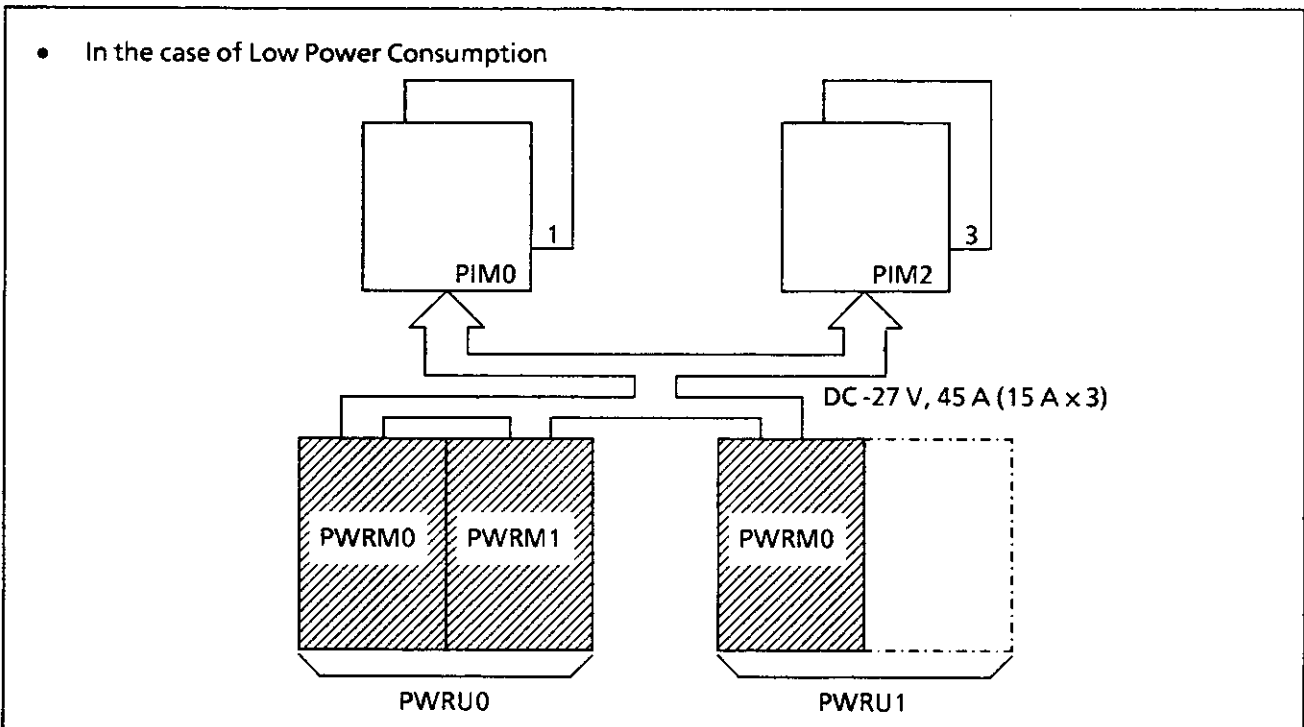


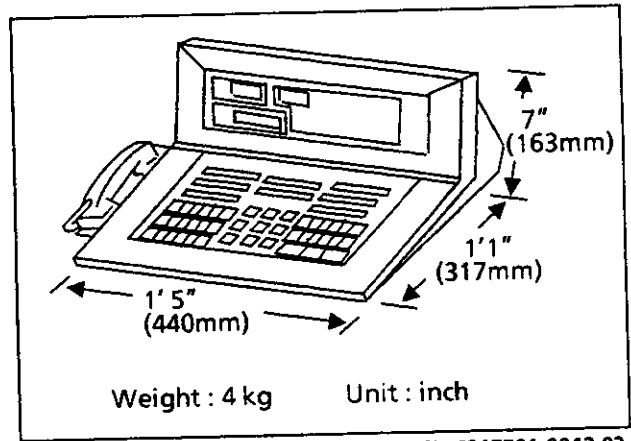
Figure 2-10 Parallel Operation

(3) Peripheral Equipment

- Attendant Console

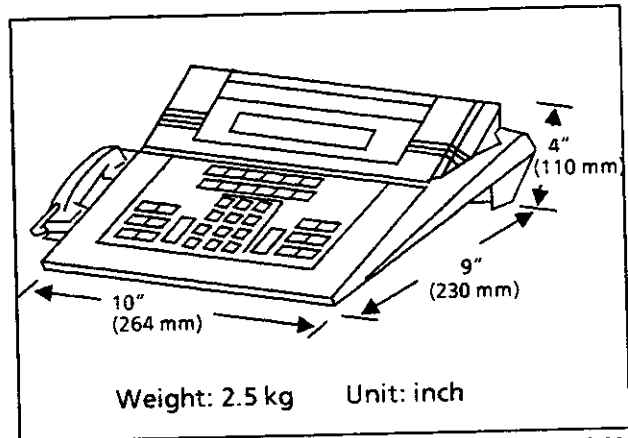
The NEAX1400 IMS can provide two types of Attendant Consoles (ATTCON): the HA-610Z ATTCON and the SN610 ATTCON. The HA-610Z ATTCON contains a clock display, station/trunk number display, 6 loop keys, 12 incoming call identification keys, 15 function keys, a busy lamp field and other system indication LEDs such as night mode and alarm. Operating power of -48 Vdc is supplied from the main equipment via 25-pair cable. The Attendant Console Controller Board (PJ-CS00) is required to use this console.

The SN610 ATTCON has a 4-line LCD display with 40 characters per line, and 24 programmable function keys for functions such as loop and incoming call identification. This console has the same hardware interface with the main equipment as the Multiline Terminal, DSS Console and Add-On Module. Therefore, either the PK-2DLCA card or the PK-2DLCC card are required to use this console. Operating power of -48 Vdc (using PK-2DLCC) or -24 Vdc (using PK-2DLCA) is supplied from the main equipment via 2-pair cable.



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Figure 2-11 HA-610Z ATTCON



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Figure 2-12 SN610 ATTCON

- Multiline Terminals: ETE-16D-2 TEL  
ETE-6D-2 TEL  
ETE-16-2 TEL  
ETE-6-2 TEL

The Multiline Terminal is a digital, multi-function telephone that has line keys and dedicated function keys. Line keys are programmed as feature or line appearance keys and provide extension numbers and features such as camp-on, etc. Dedicated function keys are predefined and cannot be changed. These keys are used for Hold, Conference, etc.

The operating power for these Multiline Terminals is supplied from the main equipment through station cable wiring.

Table 2-8 compares the functions of the various Multiline Terminals.

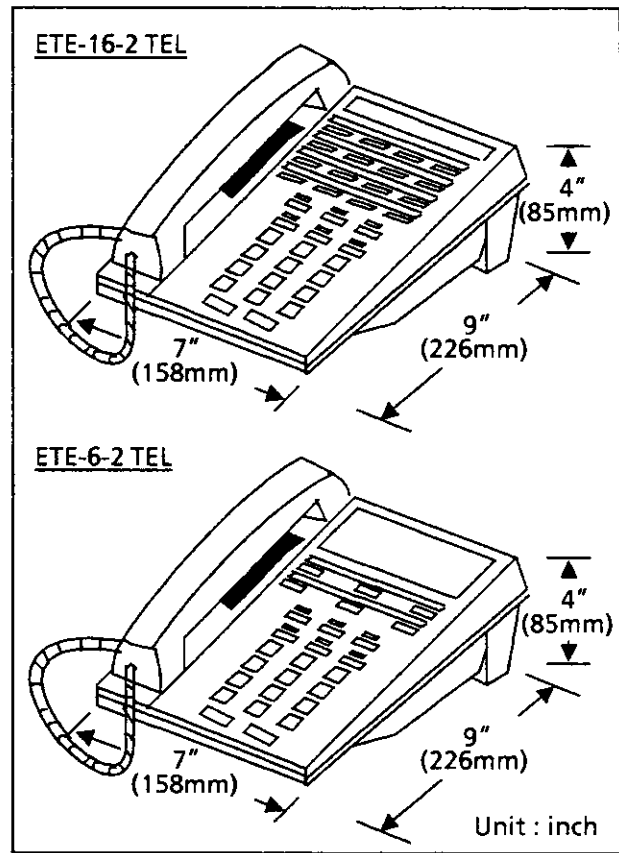


Figure 2-14 ETE-16-2 TEL/ETE-6-2 TEL

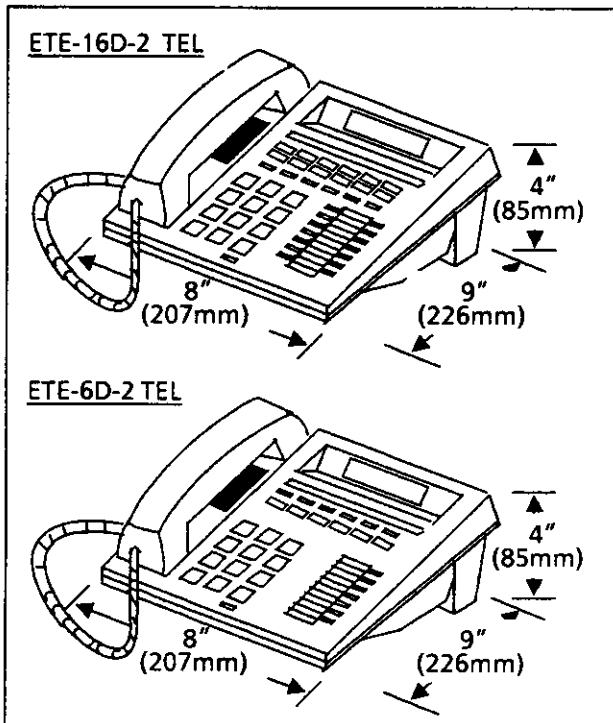


Figure 2-13 ETE-16D-2 TEL/ETE-6D-2 TEL

Table 2-8 Function Comparison Between Multiline Terminals

FUNCTION	TYPE OF MULTILINE TERMINAL			
	ETE-16D-2 TEL	ETE-6D-2 TEL	ETE-16-2 TEL	ETE-6-2 TEL
• Line Key	16 Keys	6 Keys	16 Keys	6 Keys
• Dedicated Function Key	7 Keys	7 Keys	7 Keys	7 Keys
• Feature Access Key (for Speed Dialing)	20 Keys	10 Keys	N/A	N/A
• Alphanumeric LCD (16-character × 2 lines)	A	A	N/A	N/A
• Asynchronous/Synchronous Data Switching	A	A	N/A	N/A
• Handsfree Unit	A	A	N/A	N/A
• Dedicated MW Lamp	N/A	N/A	A	A
• Multiline Terminal Attendant Position	A	N/A	N/A	N/A
• Front Desk Instrument	A	N/A	N/A	N/A
• Customer Administration Terminal (CAT)	A	A	N/A	N/A

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A : Available  
N/A : Not Available

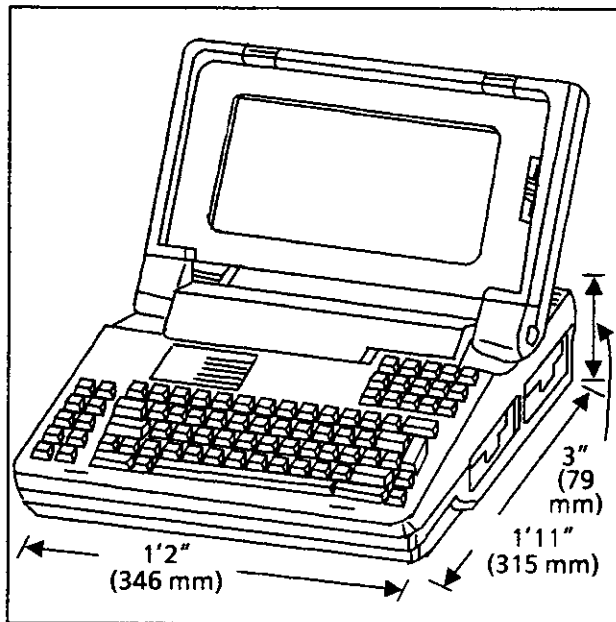
- Maintenance Administration Terminal (MAT): NEC Multi-Speed (PC-16-01/PC-16-02/PC-16-03)/APCIV/IBM PC-XT/AT

A personal computer (Multi-Speed, APCIV or IBM PC-XT/AT) is used as the Maintenance Administration Terminal (MAT), and has the following functional capabilities.

- System data entry/change
- System data load/save/verify
- Instruction display of data entry procedures
- Remote maintenance
- System configuration report

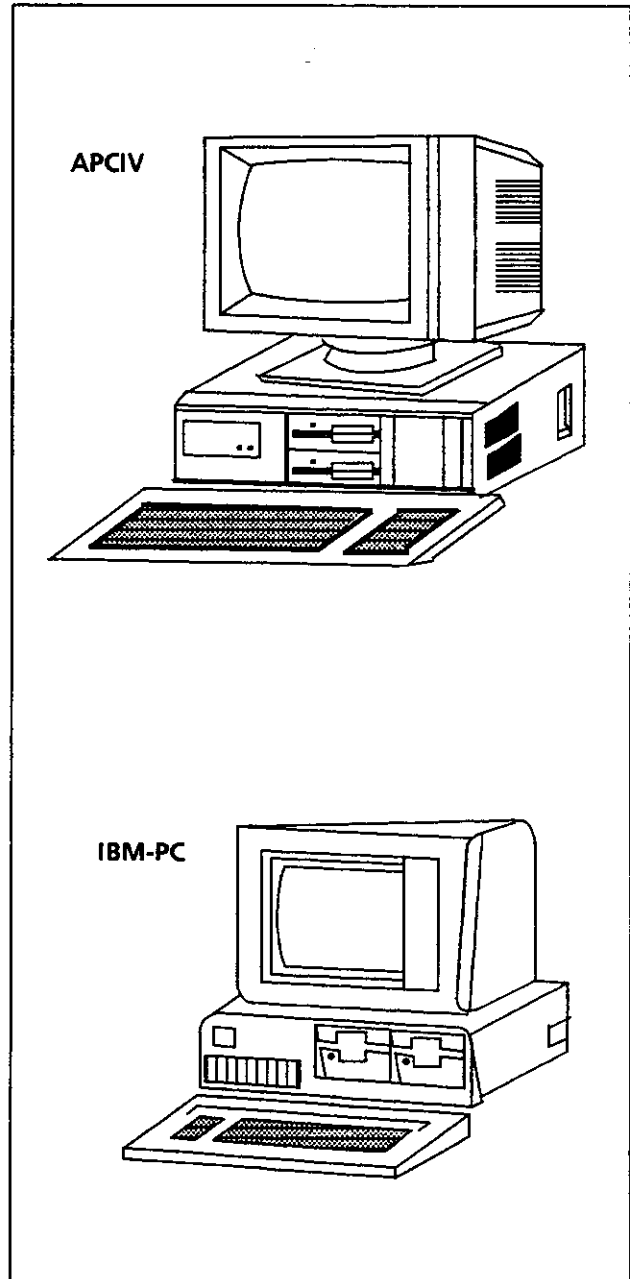
It is connected to the Main Processor (PJ-CP01) board, within the main equipment, by a dedicated cable.

The operating power for the MAT is supplied from the AC adaptor of the MAT.



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Figure 2-15 MAT (Multi-Speed)



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Figure 2-16 MAT (APCIV/IBM PC)

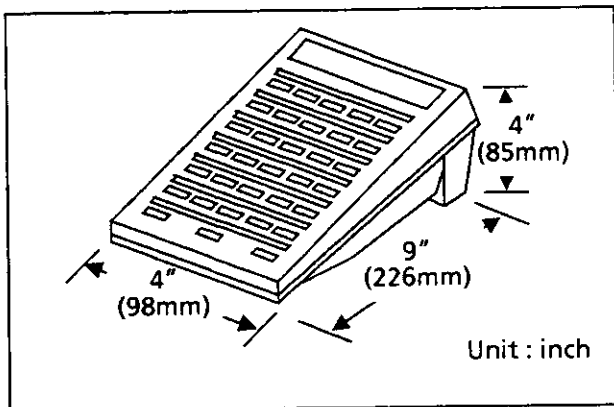


- DSS/BLF Console/Add-On Module: (EDE-30-2)

The EDE-30-2 provides a Direct Station Selection function and Busy Lamp Field, which when used in conjunction with a Multiline Terminal, can serve as an alternate Attendant position. Each DSS Console is equipped with thirty (30) Direct Station Selection buttons and three (3) Programmable Function Keys.

The EDE-30-2, when used as an Add-On Module, provides the Multiline Terminal with an additional twenty five (25) line/trunk keys. This provides the station user with a total of forty one (41) line/trunk keys, if an ETE-16D-2/ETE-16-2 is used. This Add-On Module is also equipped with five (5) feature access keys for speed dialing and two (2) dedicated feature keys: a day/night mode change key and a release key.

The operating power for the EDE-30-2 is supplied from the main equipment through the 2-pair connecting wire.



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Figure 2-17 DSS/BLF Console / Add-On Module (EDE-30-2)

**2.4 Equipment Quantity Table**

An example of possible configurations is shown below. For detailed information on determining equipment quantity, refer to the NEAX1400 Configuration Guide.

The total number of PIMs required is determined by the number of Station and C.O. lines.

**Table 2-9 Equipment Quantity Table (Typical)**

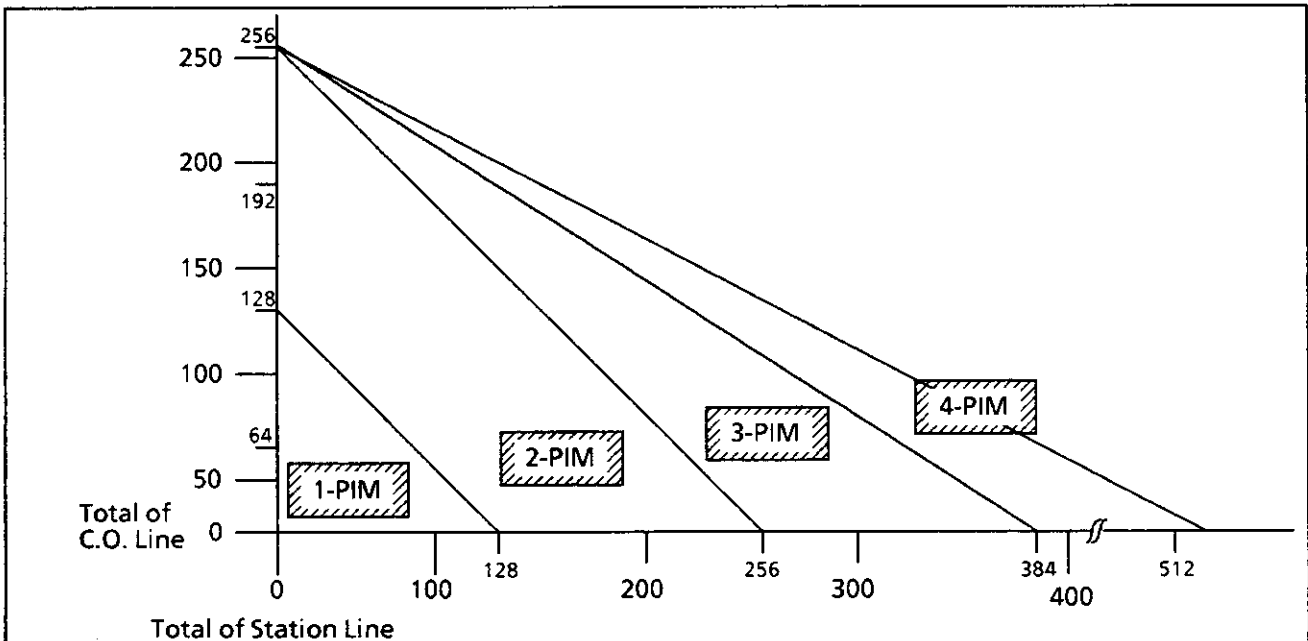
TOTAL OF STATIONS	C.O. LINES	RST	ATT-CONS	PORTS	PIM	LC CARD	DLC CARD	COT CARD	RST CARD	ATT BOARD	MP BOARD	FP BOARD	SPI BOARD
40	12	4	1	56	1	14	6	6	1	1	1	1	2
80	20	4	1	104	1	28	12	10	1	1	1	1	2
120	26	4	1	154	2	42	18	13	1	1	1	2	4
160	32	8	1	200	2	56	24	16	2	1	1	2	4
200	38	8	1	246	2	70	30	19	2	1	1	2	4
240	42	8	2	290	3	84	36	21	2	1	1	3	6
280	48	8	2	336	3	98	42	24	2	1	1	3	6
320	54	8	2	382	3	112	48	27	2	1	1	3	6
360	60	8	2	428	4	126	54	30	2	1	1	4	8

BCD-4317701-0026-01

**Note:** The above quantities are based on the following conditions:

- DTMF Telephone: 70 %
- Multiline Terminal: 30 %
- Total Traffic: 6 ccs/line

A quick reference of the total number of C.O. and station lines per PIM is shown below.



BCD-4317701-0200-01

**Figure 2-18 PIM Quantity Quick Reference**

**2.5 Function of Switches and Lamps on Each Board**

The following sections present the locations of the switches and lamps on each board. Also, the setting for each switch and the function of each lamp is provided.

- **PJ-CP01 (MP) Board**  
The location of each switch and lamp on the PJ-CP01 board is shown in Figure 2-19. The setting for each switch and the function of each lamp is explained in Table 2-10.

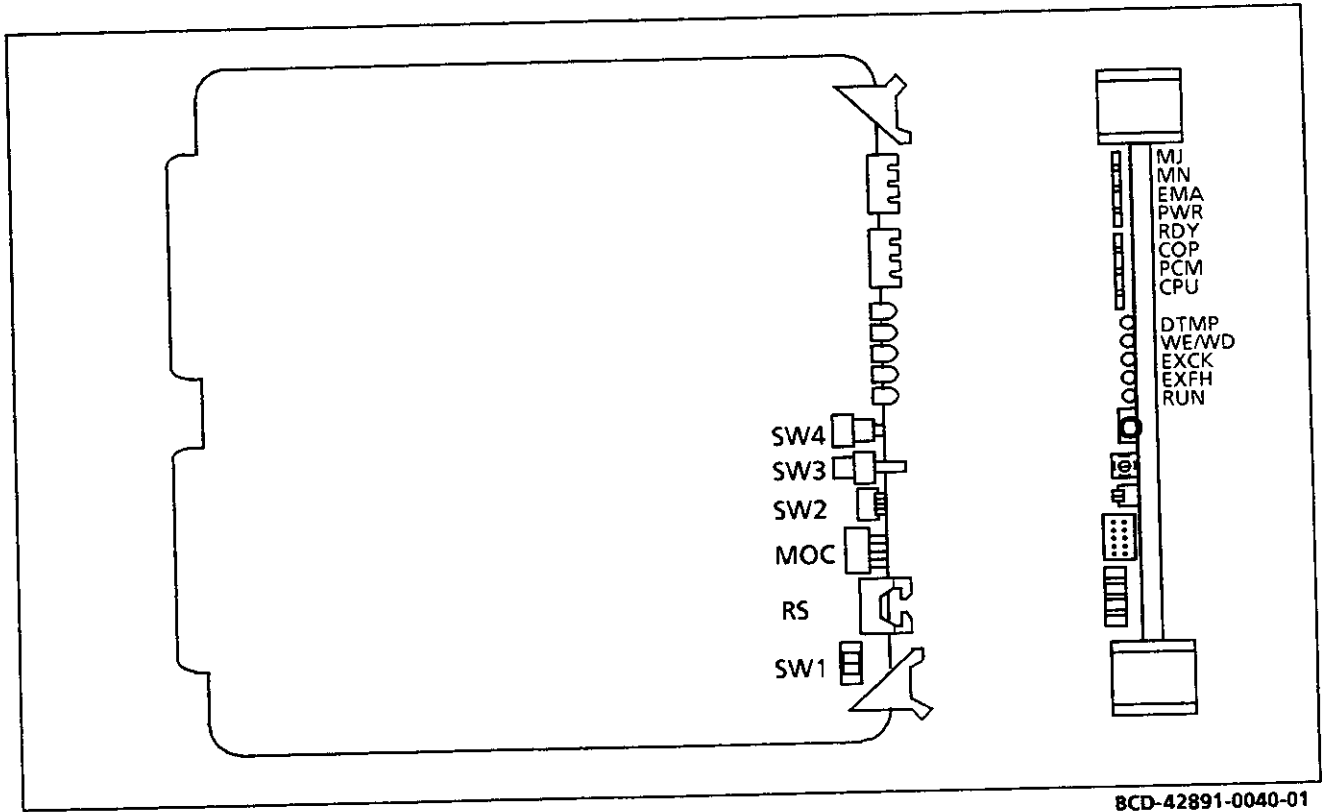


Figure 2-19 PJ-CP01 (MP) Board

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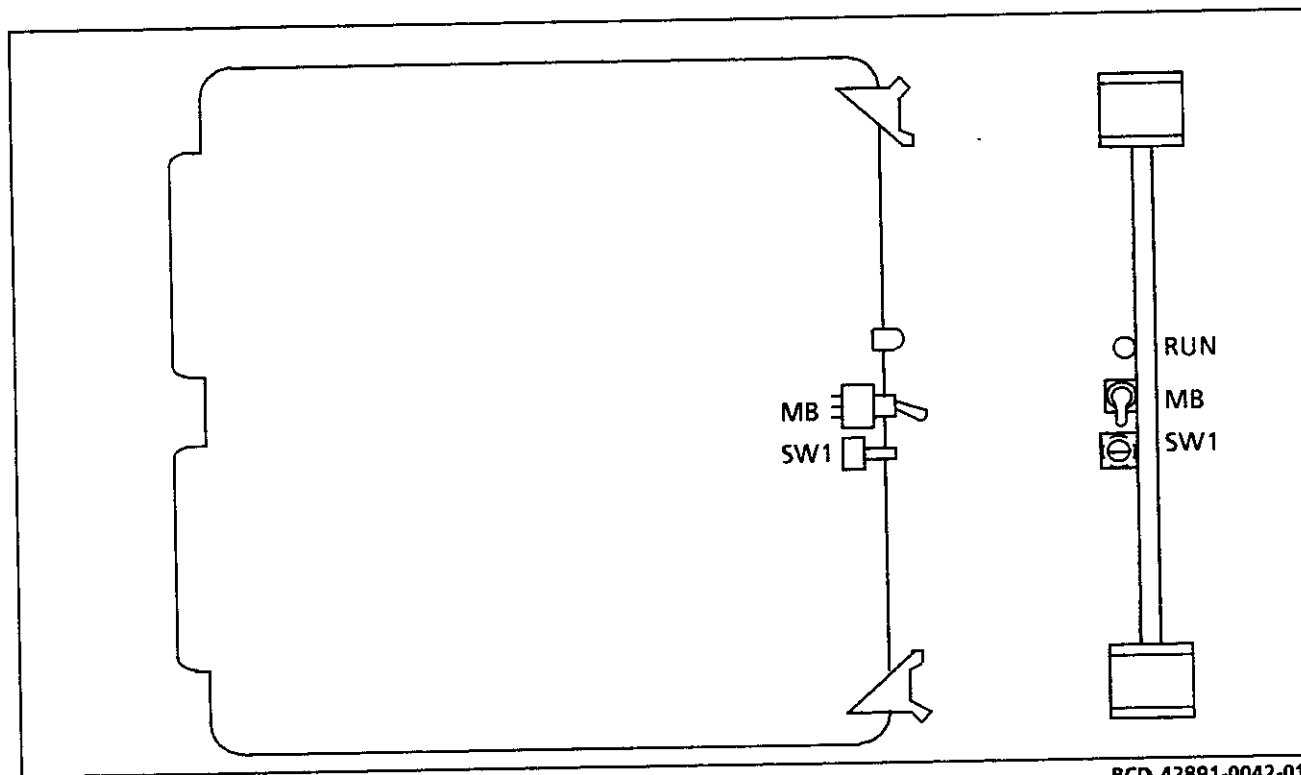
Table 2-10 Switches and Lamps of PJ-CP01 (MP) Board

SWITCH	LAMP	FUNCTION
SW1		Designation of terminal connected to "MOC" connector. Down: MOC. Up: RS-232C terminal.
SW2-1		Used for the protection of system data: ON: For system data entry (WE mode). OFF: For system operation (WD mode).
SW2-2		For factory testing. Should be "ON".
SW2-3		Designation of type of system ON: KF      OFF: PF/MF
SW2-4		Not used.
SW3		Selection of CPU operation mode: 0: On-Line Mode (Normal Operation). 2: Off-Line Mode (Used for Factory Test). A: For Resident System Program. B: System Data All Clear for CAT. 1,3-9, C-F : Not used.
SW4		Switch is used for initialization of MP.
	MJ	Lights when a C-Level infinite loop, MP clock-down or PCM clock-down fault has occurred.
	MN	Lights when power fault has occurred, or the number of lockout station lines has exceeded the predetermined number.
	EMA	Lights when an emergency condition has occurred (PFT operation).
	PWR	Lights when a power fault has occurred.
	RDY	Lights when a "READY" signal from MEM Board is not returned.
	COP	Lights when a C-Level infinite loop has occurred.
	PCM	Lights when a PCM Clock fault has occurred.
	CPU	Lights when a MP Clock fault has occurred.
	DTMP	Momentarily lights when a Memory All Clear is performed.
	WE/WD	Lights when data can be written into the memory area (WE mode).
	EXCK	Lights when receiving the external clock signal.
	EXFH	Lights when receiving the external Frame Head signal.
	RUN	Normal on-line operation in progress (120 IPM-Flashing).

BCD-4317701-0049-01

- PJ-CP02 (FP) Board  
Figure 2-20 shows the location of each switch and the lamp on a PJ-CP02 board.

Table 2-11 shows the setting of each switch and the function of the lamp.



BCD-42891-0042-01

Figure 2-20 PJ-CP02 (FP) Board

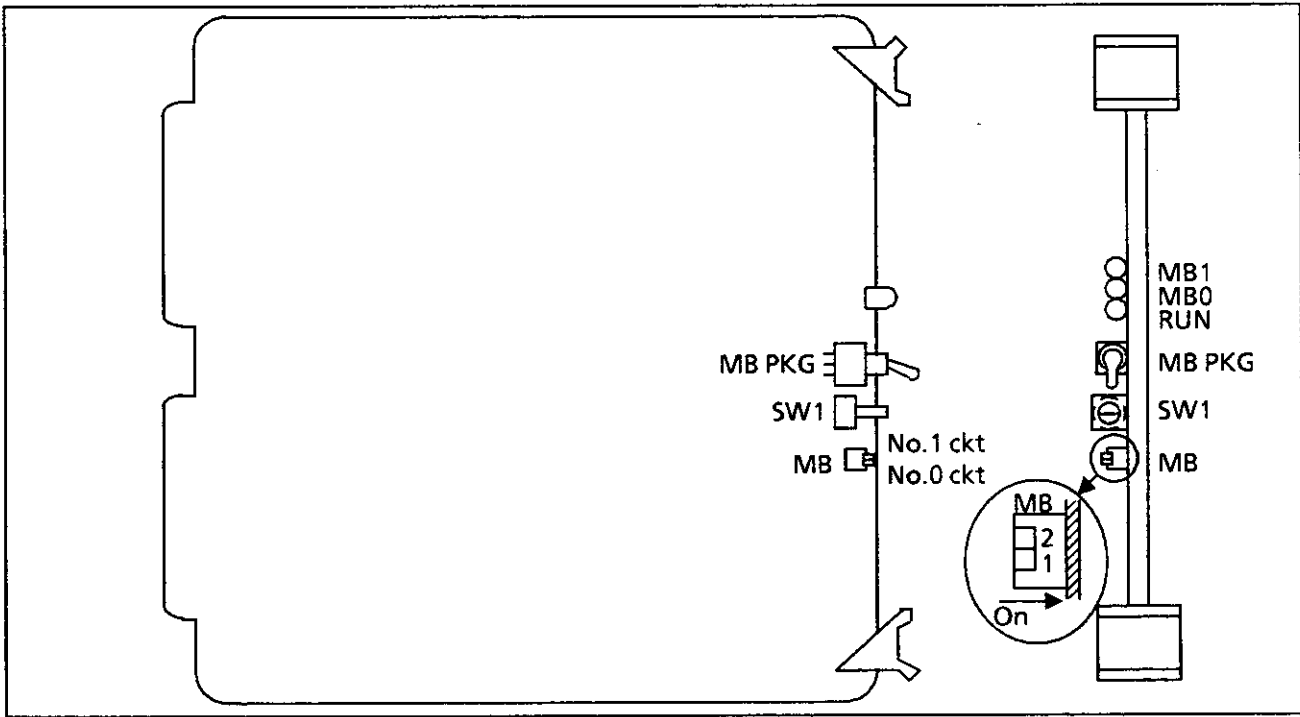
Table 2-11 Switches and Lamp of PJ-CP02 (FP) Board

SWITCH	LAMP	FUNCTION
SW1		Designation of Module location for this board: 0: For PIM 0    2: For PIM 2. 1: For PIM 1    3: For PIM 3.
MB		Make Busy this board: Down: In Service. Up: Make Busy. When this board is plugged/unplugged to/from the PIM, the MB switch should be set to the UP (Make Busy) position.
	RUN	Normal on-line operation in progress (120 IPM - flashing):

BCD-4317701-0050-01

- PJ-CS00 (ATI) Board  
Figure 2-21 shows the location of each switch and lamp on the PJ-CS00 board.

Table 2-12 shows the setting of each switch and the function of each lamp.



BCD-42891-0044-01

Figure 2-21 PJ-CS00 (ATI) Board

Table 2-12 Switches and Lamps of PJ-CS00 (ATI) Board

SWITCH	LAMP	FUNCTION
MB-1		Make Busy the No.0 Attendant Console Interface circuit: ON: Make Busy OFF: In Service
MB-2		Make Busy the No.1 Attendant Console Interface circuit: ON: Make Busy OFF: In Service
SW1		Designation of Module location of this board: 4: For PIM 0 6: For PIM 2 5: For PIM 1 7: For PIM 3
MB PKG		Make Busy of this board: Down: In Service. Up: Make Busy. When this board is plugged/unplugged to/from the PIM, the MB switch should be set to the UP (Make Busy) position.
	MB 0	Lights when Circuit 0 is in the Make Busy state.
	MB 1	Lights when Circuit 1 is in the Make Busy state.
	RUN	Normal on-line operation in progress (120 IPM - flashing).

BCD-4317701-0051-01