EPSON

PX-16 BASE UNIT OPERATING INSTRUCTIONS

English

PX-16 BASISEINHEIT BEDIENUNGSANLEITUNG

Deutsch

MODULE DE BASE PX-16 NOTICE D'UTILISATION

Français

UNIDAD BASE DEL PX-16 INSTRUCCIONES DE FUNCIONAMIENTO

Español

PX-16 UNITA' CENTRALE ISTRUZIONI PER L'USO

Italiano

Y2109911127o2

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

Trademark Acknowledgements

MS-DOS and GW-BASIC are registered trademarks of Microsoft Corporation.

**Notice**

OPERATING INSTRUCTIONS

1. Overview

The PX-16 is a 16-bit portable computer which is very compact and light weighted.

The modular structure is one of the major features of the PX-16. Users can build up their own PX-16 system by adding option units to the PX-16 Base unit according to their needs. Therefore, the PX-16 Base unit is the core of the PX-16 system.

This document describes how to setting up the PX-16 Base unit. In addition to this document, the PX-16 Base unit package should contain the following items:

Base unit 1
Main (NiCd) battery 1
Fastening screw for the battery box cover 1
Battery box cover 1
Before you use 1
EPSON Software License Agreement 1

＜OPERATING COMPONENTS＞
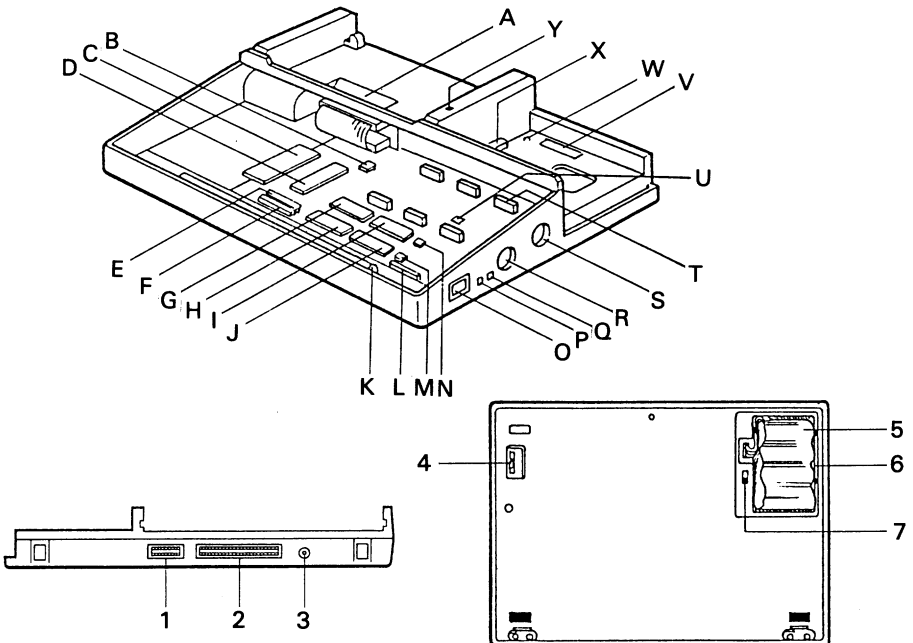
A	Cartridge 2 I/F	K	Sub battery	U	Jumper 7 (J7)
B	ROM 1 switch (SW8)	L	Connector 11 (CN11)	V	DIP switch (SW5)
C	Expansion I/F	M	ROM 2 switch (SW7)	W	System reset switch
D	Main CPU			X	Cartridge 1 I/F˙
E	Connector 9 (CN9)	N	ROM 3 switch (SW6)	Y	Power indicator
F	Connector 10 (CN10)	O	Power switch	1	Printer I/F
		P	Reset switch	2	System bus
G	ROM 1	Q	System clock select switch	3	AC adapter jack
H	ROM 0 (SYSTEM ROM)			4	Cartridge 1 lock switch
		R	Barcode reader I/F	5	Main battery
I	ROM 3	S	RS-232C I/F	6	Battery box
J	ROM 2	T	RAM board connectors	7	Back-up switch

2. Before setting up the PX-16

Before setting up the PX-16 system, note the following points:

WARNING

- Never touch the electronic parts inside the PX-16 Base unit.
- To prevent damage from static electricity, touch a metal pipe. This will discharge any static electricity.
- Do not attach or remove the following options without removing the battery. Please refer to each "OPERATING INSTRUCTIONS" for installation.
  - RAM board
  - Standard keyboard
  - Touch keyboard
- After attaching the above options (RAM board, Standard keyboard, Touch keyboard), the contents of RAM in the PX-16 Base unit will be lost. All important files must be backed up.

To install option units, please refer to the "OPERATING INSTRUCTIONS" of each unit.

< INSTALLING THE BATTERY >

When you set up the PX-16 for the first time, you must install the main battery to the PX-16 Base unit. (After you installed the RAM board, the Standard keyboard or the Touch keyboard.) Procedure is as follows:

1. Place the main battery in the battery box.
2. Insert the battery connector to the plug.
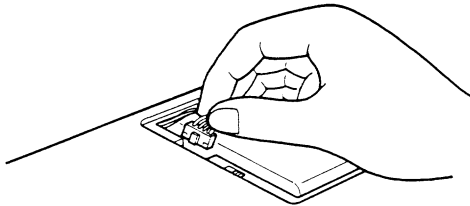
3. Put the lead wire of the main battery neatly in the battery box.
4. Turn on the back up switch.
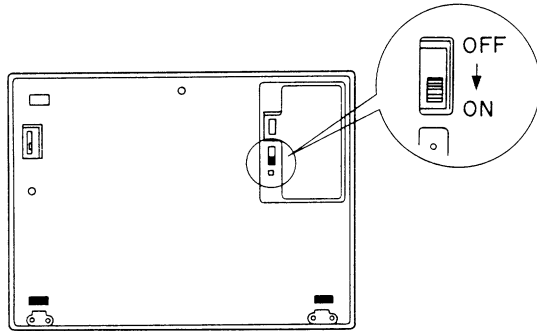
5. Close the battery box cover.
6. Fix the battery box cover with the screw.

3. Setting of the various switches

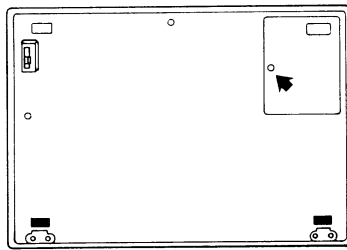The PX-16 equips several switches with special functions. By setting these switches, the PX-16 can be expanded to various systems.

<POWER SWITCH>

To turn on the PX-16, press the power switch at the right side. To turn it off, press it once again.

<JUMPER 7 (J7)>

Jumper 7 is used to adjust the buzzer volume.

Setting	Volume level
a	Low
b	High

The default J7 setting is "a" (Low).

<DIP SWITCH (SW5)>

There is one set of ten DIP switches, which is located beside the cartridge 1 interface. The DIP switch controls the various configurations. Turn off the PX-16 before changing the DIP switch. The function of these switches are:

• The DIP switch settings when the PX-16 is shipped are as follows:

1	2	3	4	5	6	7	8	9	10
OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF

Keyboard setting........ ASCII
Display .... Color monitor, LCD80 (80 × 25) or
                           LCD40
FDD .... 2 drives
                           Disk Unit 720 KB (2DD)
Boot type................. HC boot without FDD/HDD

• DIP switch 8 is effective only when the disk unit is connected. When the TF-16 is connected, DIP switch 8 has no meaning.

	1	2	3	4	5	6	7	8	9	10	MEANING
C O U N T R Y	OFF	OFF	OFF	OFF							ASCII
	ON	OFF	OFF	OFF							U.K.
	OFF	ON	OFF	OFF							FRANCE
	ON	ON	OFF	OFF							GERMANY
	OFF	OFF	ON	OFF							ITALY
	ON	OFF	ON	OFF							SPAIN
	OFF	ON	ON	OFF							DENMARK
	ON	ON	ON	OFF							FINLAND
	OFF	OFF	OFF	ON							NORWAY
	ON	OFF	OFF	ON							SWEDEN
	OFF	ON	OFF	ON							SWISS (FRENCH)
	ON	ON	OFF	ON							SWISS (GERMAN)
	OFF	OFF	ON	ON							(Reserved)
	ON	OFF	ON	ON							(Reserved)
	OFF	ON	ON	ON							JAPANESE
	ON	ON	ON	ON							JAPANESE
D I S P L A Y					OFF	OFF					MONOCHROME CRT, LCD40
					ON	OFF					COLOR CRT, LCD80 (80×25) LCD40
					OFF	ON					COLOR CRT, LCD80 (40×25) LCD40
					ON	ON					NO DISPLAY
F D D							OFF				FDD 2 DRIVES
							ON				FDD 1 DRIVE
								OFF			720 KB (3.5 inch, 2DD)
								ON			1.2 MB (3.5 inch, 2HD)
B O O T T Y P E									OFF	OFF	HC BOOT, WITHOUT FDD/HDD
									ON	OFF	HC BOOT, WITH FDD/HDD RAM PREFERENCE
									OFF	ON	HC BOOT, WITH FDD/HDD FDD PREFERENCE
									ON	ON	PC BOOT(*1)

(*1) If you set the boot type to "PC boot", DIP switch settings 1~6 are ignored.

‹BACK UP SWITCH›

The back up switch in the battery box turns ON and OFF the sub-battery. Keep it turning on when the PX-16 is in operation. Turn it off during storage or when the PX-16 will not be used for a long time. The setting when the PX-16 is shipped from the factory is OFF. Please turn it on before use.

‹RESET SWITCH›

When the reset switch is pressed, the system will be initialized. All devices are reset except the slave CPU. The contents of the RAM disk will be kept.

‹SYSTEM RESET SWITCH›

When this switch is pressed, the system will be initialized. The system reset switch has the following different points to the reset switch.

- All the devices including the slave CPU are reset.
- Contents of the RAM disk will be lost. After installed the RAM board, the Standard keyboard or the Touch keyboard, press this switch before turning on the power of the PX-16 Base unit.

‹SYSTEM CLOCK SELECT SWITCH›

This switch changes the CPU clock speed. The CPU clock speed is either 4.77 MHz or 10 MHz. Before changing the clock speed, please turn off the PX-16 Base unit. The default setting is 10 MHz.
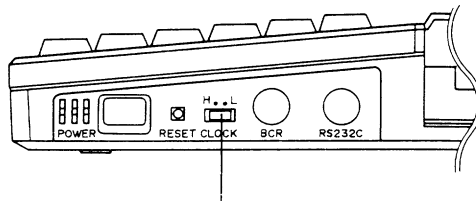

System clock select switch

H: 10 MHz (default setting)
L: 4.77 MHz

- 7 -

<ROM SWITCH>

The ROM switches located on the motherboard of the PX-16 Base unit select the type of application ROM. When an application ROM is installed to the ROM socket, the ROM switches must be adjusted according to the ROM type. There are 3 pairs of ROM switches.

ROM 1 switch (SW8) .... Selects the type of ROM 1
ROM 2 switch (SW7) .... Selects the type of ROM 2
ROM 3 switch (SW6) .... Selects the type of ROM 3

ON
OFF
 1 2

The default setting is 1:OFF, 2:ON.
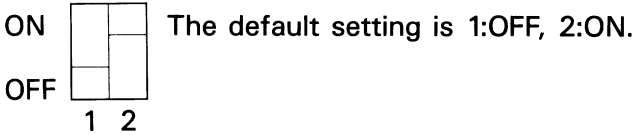
1	2	Usable ROM
ON	OFF	27C256 or 256Kbit CMOS mask ROM
ON	ON	27C512 or 512Kbit CMOS mask ROM
X	ON	27C1001
OFF	ON	2M bit, 4M bit CMOS mask ROM

X means that the setting of that DIP switch has no affect in that situation.

4. Boot type

There are 2 different ways to boot up the PX-16. They are:

PC boot
HC boot

There are 3 ways to boot up the PX-16 in HC boot. They are:

HC boot without FDD
HC boot with FDD, RAM preference
HC boot with FDD, FDD preference

By switching the DIP switch 9 and 10, boot type can be changed.

<HC BOOT>

When the PX-16 is turned on in HC boot, the PX-16 DOS in the SYSTEM ROM will be executed. To use the unique functions with the PX-16, boot up the PX-16 in HC boot. There are 3 modes for the HC boot.

a. WITHOUT FDD/HDD:

When the TF-16 or the Disk unit is not connected or you do not use them, boot up the PX-16 in this mode. The allocation of the drives are:

Drive A .... RAM Disk
Drive B .... ROM 0 (SYSTEM ROM)
Drive C .... ROM 1
Drive D .... ROM 2
Drive E .... ROM 3
Drive F .... Cartridge 1
Drive G
   to   .... Expansion device
Drive Z

b. WITH FDD/HDD, RAM PREFERENCE:

Same devices as the above are allocated from Drive A to F.

Drive G .... FDD Drive 1
Drive H .... FDD Drive 2
Drive I .... HDD
Drive J
   to   .... Expansion device
Drive Z

If the HDD (Disk Unit Type 3) is not connected, drive J advances to drive I. If you connect the Disk unit Type 1 (1 FDD) or Type 3 (1 FDD and 1 HDD), set the DIP switch 7 to ON. Single Drive can be used as drive G and H.

c. WITH FDD/HDD, FDD PREFERENCE:

The difference between the RAM preference and the FDD preference is the drive allocation. For the FDD preference, the drive names are allocated from the FDD. The allocation of the drives are as follows:

Drive A .... FDD Drive 1
Drive B .... FDD Drive 2
Drive C .... HDD
Drive D .... RAM Disk
Drive E .... ROM 0 (SYSTEM ROM)
Drive F .... ROM 1
Drive G .... ROM 2
Drive H .... ROM 3
Drive I .... Cartridge 1
Drive J
  to   .... Expansion device
Drive Z

If the HDD (Disk Unit Type 3) is not connected, drive D advances to drive C. If you connect the Disk unit Type 1 (1 FDD) or Type 3 (1 FDD and 1 HDD), set the DIP switch 7 to ON. Single Drive can be used as drive A and B.

<PC BOOT>

When the PX-16 is turned on in PC boot, the PX-16 DOS in the SYSTEM ROM is not used. Instead of that, the PX-16 is turned on using the DOS in the floppy disk (TF-16 or Disk unit).

When the PX-16 is turned on in PC boot, special functions unique to the PX-16 are unavailable. Drives are allocated as follows:

A drive .... FDD Drive 1
B drive..................... FDD Drive 2
C drive .... HDD

NOTE: When the PX-16 is turned on in PC boot without connecting the FDD, following error message is displayed.

601—Diskette error
F1 key to resume

When this message is displayed, connect the FDD, insert the system disk in it and press the F1 key.

5. Charging the PX-16

The PX-16 can be operated with the NiCd battery or with the AC adapter. When the AC adapter is connected to the PX-16 Base unit, power is supplied from the AC adapter and the main battery is charged. When the AC adapter is disconnected, power is supplied from the main battery.
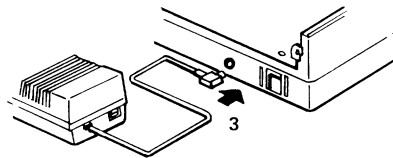
If the voltage of the main battery drops below a certain level when the AC adapter is disconnected, the power indicator flickers. If this happens, connect the AC adapter. The duration to recharge the main battery fully is about 15 hours whether the power of the PX-16 Base unit is ON or OFF.

Procedure to recharge the battery is as follows:

1. Connect the end of the AC cable to the AC adapter's input socket.

2. Plug the other end of the AC adapter into the electrical wall outlet. Confirm that the LED on the AC adapter is turned on.
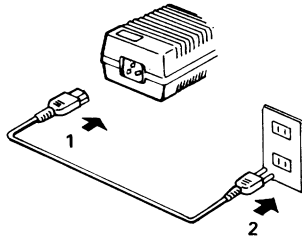
3. Insert the AC adapter to the jack of the PX-16.

WARNING

• Use the specified AC adapter only.

• Never use the AC adapter specified for the PX-16 for other products.

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6. Power failure

When the voltage of the battery drops below a certain level approximately 4.75V, the power indicator will flicker. When this happens, connect the AC adapter to the PX-16 Base unit.

The procedure to follow after low voltage is detected is different according to the boot type.

＜HC BOOT＞

2 minutes after low voltage is detected, the PX-16 is turned off auto- matically. (The period to turn off the PX-16 after low battery is detected can be changed by software.)

When the PX-16 is turned on once again, the PX-16 starts in resume start, which means that the execution continues from the point at which it was interrupted.

＜PC BOOT＞

4 minutes after low voltage is detected, the PX-16 is turned off auto- matically.

When the PX-16 is turned on once again, the PX-16 always executes warm boot. When warm boot is executed, the system boots up again.

7. Specifications

CPU	Main CPU	V20 (4.77/10MHz Selectable)
	Slave CPU	μPD75106
RAM	Main RAM	256 KB (Standard), 640 KB (MAX.)
	Expansion RAM Disk	0 KB (Standard), 768 KB (MAX.)
ROM	System ROM	MS-DOS Ver 3.2, GW-BASIC, Utilities

	Application ROM	Zero Insertion Force socket × 3
		CMOS EPROM:
		    256Kbit, 512Kbit or 1Mbit
		CMOS MASK ROM:
		    256Kbit, 512Kbit, 2Mbit or 4Mbit

I/F	Interface	Cartridge 1 Cartridge 2 Expansion Interface System Bus Printer Interface RS-232C Interface Barcode Reader Interface
SIZE	Width	315 mm
	Depth	224 mm
	Height	47 mm
	Weight	Base unit + Standard keyboard + LCD40: Approx. 2.1 kg Base unit + Standard keyboard + LCD80: Approx. 2.9 kg
ENVIRONMENT	Temperature	Operating	$5°\sim35°C$ $(40°\sim95°F)$
		Data Integrity	$5°\sim35°C$ $(40°\sim95°F)$
		Storage	$-20°\sim50°C$ $(-5°\sim122°F)$
	Humidity	Operating	$10\sim80\%$ (Non-condensing)
		Storage	$10\sim80\%$ (Non-condensing)
	Vibration	Frequency $5\sim150$ Hz Acceleration 1.0G	

Note: Specifications are subject to change without notice.

EPSON

PX-16
BEFORE YOU USE

English

PX-16
VORDER INBETRIEBNAHME

Deutsch

PX-16
AVANT TOUT

Français

PX-16
¡ANTES DE COMENZAR!

Español

PX-16
PRIMA DI COMINCIARE!

Italiano

BEFORE YOU USE

Thank you for purchasing the Epson PX-16 portable Computer System.

This product is the Base Unit, which is the central component of the PX-16 system. By connecting various input/output units or cartridges to this Base Unit, you can create an PX-16 system that perfectly meets your exclusive requirements.

In addition to the input/output units and cartridges, many other components can also be connected to this Base Unit, such as the Expansion Board or the 384KB RAM board. Because the connection procedures may become rather complex, be sure to connect each device while referring to its accompanying "OPERATING INSTRUCTIONS".

If you are assembling your PX-16 system for the first time, perform assembly in the sequence listed in the next page. (You may skip any steps that describe devices that you do not plan to install.)

Before setting up the PX-16 system, note the following points:

WARNING
- Never touch the electronic parts inside the PX-16 Base unit.
- To prevent damage from static electricity, touch a metal pipe. This will discharge any static electricity.

Step	Procedure	Refer to the following "Operating Instructions"
1.	Set jumper J7 (Buzzer volume)	Base unit (page 5)
2.	Install the 384KB RAM board	384KB RAM board
3.	Set the ROM switch and install the Application ROM	Base unit (page 8)
4.	Install the keyboard	Standard keyboard or Touch keyboard
5.	Install the main battery (NiCd battery) and turn the back up switch ON.	Base unit (page 3)
6.	Connect an option to the Expansion Interface	Asynchrounous RS board or Development tool
7.	Connect an option to the Cartridge 2 Interface	LCD80, LCD80/2, LCD40 etc.
8.	Set DIP switch (SW5)	Base unit (page 5)
9.	Connect the AC adapter and push the system reset switch (Battery charging starts) (*1)	Base unit (page 11)
10.	Connect an option to the Cartridge 1 interface	Cartridge printer H etc.
11.	Connect the Disk unit to the System bus.	Disk unit

(*1) For a full charge the Main battery requires approx. 15 hours. The sub battery requires approx. 21 hours.

For instructions on the removal of any of the devices from the Base unit or on the procedure for replacing any devices, refer to the "OPERATING INSTRUCTIONS" provided with the device concerned. The "OPERATING INSTRUCTIONS" provided with each device contain important information that you will require whenever you install or remove that device, so be sure to store these documents in a safe place for future reference.

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