CHAPTER 1. OUTLINE OF THE PC-3000

1. Features

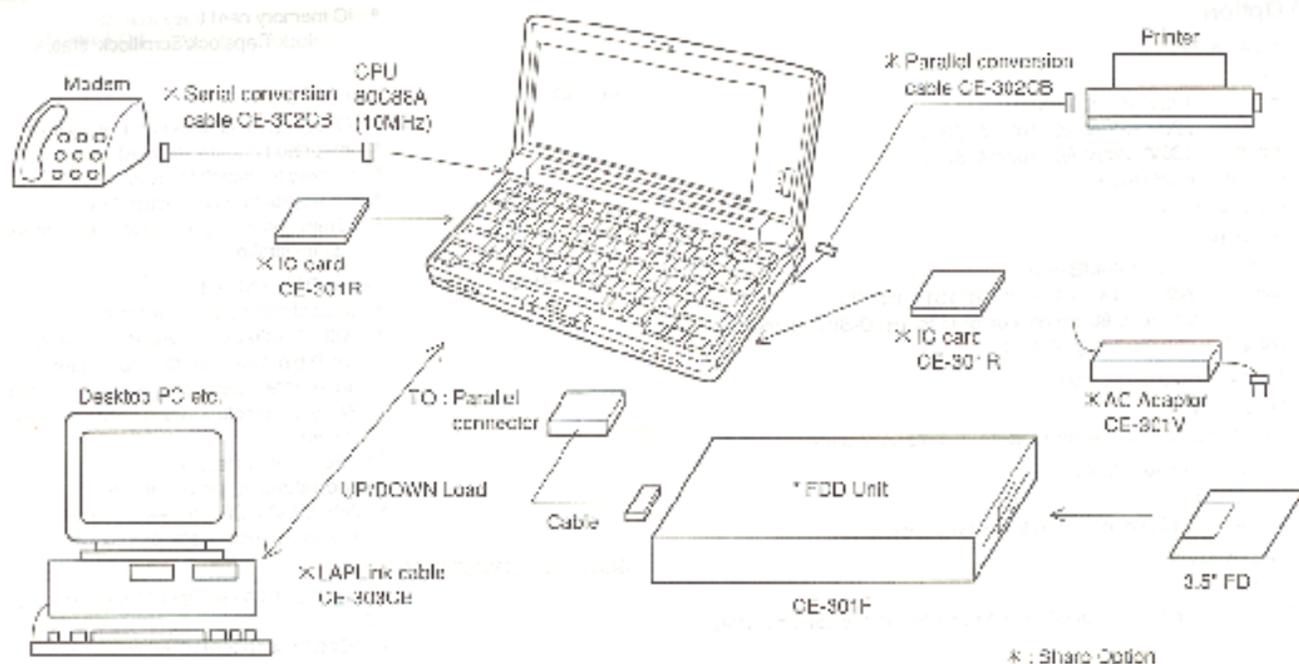### 1) Big LCD Display and Fully-featured 77-key Keyboard

Open up the PC-3000 and you'll be immediately impressed by its large display and keyboard. The display is a black and white LCD that boasts a resolution of 640 X 200 pixels, and CGA/MDA emulation. Wide enough to handle a spreadsheet. The PC-3000 also features a 77-key full-functioning keyboard that your fingers won't stumble on.

2) A Full 2 MB of Memory and 80C88A Processor

The PC-3000 features two megabytes of system memory: 1MB of RAM and 1MB of ROM. That's a size that many laptop and some desktops don't boast of. Together with such capacity, here's a 10MHz 80C88A processor, giving you high-speed access. Personal Information Management Software is also provided as standard.

* Address book for personal and business data
* Calculator for 12-digit calculation with memory
* Scheduler for monthly/weekly/daily scheduling with alarm
* Editor for making notes and organizing reports
* Spreadsheet for processing business data
* Clock
* To-do list for arranging your jobs.
* File Manager for running applications and managing files without struggling with DOS commands
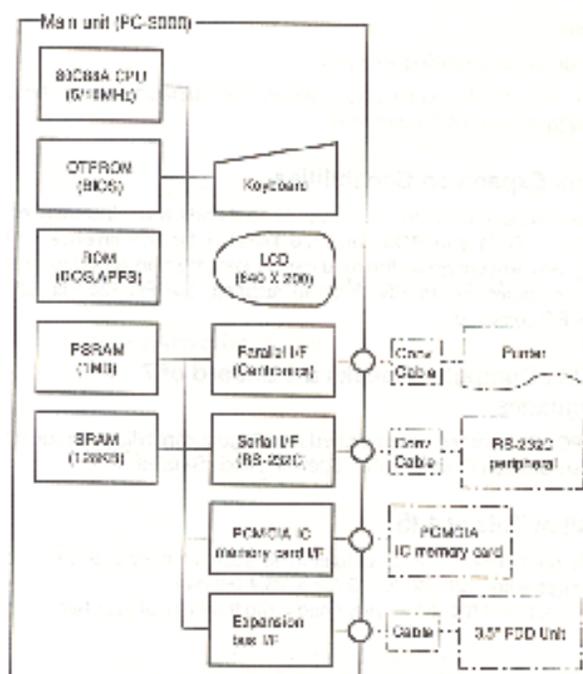
3) Full Expansion Capabilities

Memory expansion comes from dual IC card ports which increase the PC-3000's RAM and ROM, and are lockable for convenience and safety. Any work done on the road can be instantly transferred to your main computer via an RS-232C. In addition, the PC-3000 is fully IBM® PC compatible.

4) This Computer Speaks a standard of 7 Languages

The PC-3000 comes with standard multilingual capabilities, including English German French, Italian Spanish Dutch Swedish.

5) All of This at 1 lb.

That's right. The PC-3000 weighs in at approximately a pound and measures a tiny 222 (W) X 112 (D) X 25.4 (H) mm (8.7" X 4.4" X 1.0X)-fitting very snugly into the palm of your hand!

6) System configuration

Modem — X Serial conversion cable CE-302CB — CPU 80C88A (10MHz) — X IC card CE-301R — Printer — X Parallel conversion cable CE-302CB — X IC card CE-301R — X AC Adaptor CE-301V — Desktop PC etc. — TO : Parallel connector — UP/DOWN Load — Cable — X LAPLink cable CE-303CB — * FDD Unit — CE-301F — 3.5" FD

* : Sharp Option

PC-3000

2. Specification

1) Hardware

Main unit (PC-3000)

```
┌─ Main unit (PC-3000) ─────────────────┐
│  ┌──────────────┐                      │
│  │ 80C88A CPU   │                      │
│  │ (5/10MHz)    │                      │
│  └──────────────┘   ┌──────────┐       │
│  ┌──────────────┐   │ Keyboard │       │
│  │ OTPROM       │   └──────────┘       │
│  │ (BIOS)       │                      │
│  └──────────────┘                      │
│  ┌──────────────┐   ┌──────────┐       │
│  │ ROM          │   │  LCD     │       │
│  │ (DOS/APPS)   │   │(640 X 200)│      │
│  └──────────────┘   └──────────┘       │
│  ┌──────────────┐   ┌──────────┐       │
│  │ PSRAM        │   │Parallel I/F│  ○──│── Conv. ┄ Printer
│  │ (1MB)        │   │(Centronics)│     │  Cable
│  └──────────────┘   └──────────┘       │
│  ┌──────────────┐   ┌──────────┐       │
│  │ SRAM         │   │Serial I/F │   ○──│── Conv. ┄ RS-232C
│  │ (128KB)      │   │(RS-232C)  │      │  Cable    peripheral
│  └──────────────┘   └──────────┘       │
│                     ┌──────────┐       │
│                     │PCMCIA IC │    ○──│── PCMCIA
│                     │memory card I/F│  │   IC memory card
│                     └──────────┘       │
│                     ┌──────────┐       │
│                     │Expansion │     ○─│── Cable ┄ 3.5" FDD Unit
│                     │bus I/F   │       │
│                     └──────────┘       │
└────────────────────────────────────────┘
```

┄┄ : Options

CPU:

80C88 (10/5MHz)
* Clock speed can be changed in Setup screen.

CO PROCESSOR:

N/A

ROM:

1M byte Mask ROM x 1
* Contents: MS-DOS, Application, Laplink, DIAG, ROM libraries
128K byte OTPROM x 1
* Contents: IPL, Self Test, BIOS, Video BIOS

RAM:

1M byte standard
* 4M bit PS-RAM x 2
* 640K byte for conventional, 384K byte for RAM disk or Extended memory
* LIM/EMS 4.0 support
* Bus width: 16 bit
128K bytes SRAM
* 1M bit SRAM x 1
* 16K byte for video memory, 3K byte for system, 109K byte for RAM disk

DISPLAY:

FSTN (Firm Super Twisted Nematic) LCD w/o backlight
* Resolution: 640 x 200 pixels
* CGA/MDA compatible
* 4 gray shades
* Viewing area: 6.8" x 2.6"
* Aspect ratio: 1:2
* Dot pitch: 0.27mm x 0.33 mm
* Contrast is adjustable by Fn key function
Static LCD
* IC memory card busy indicator
* Numlock/Capslock/Scrollock status indicator

KEYBOARD:

IBM 101/102 like keyboard layout
* 77 keys (US, German and UK) layout
* Integrated numeric keypad
* Fn key for special function
* 12 programmable function keys
* 15mm pitch (type writer key pan), 1.5mm stroke

INTERFACE:

Serial (RS-232C) x 1
* Specialized 10 pin connector
* With CE-302CB conversion cable to D-sub 9 pin male standard connector.
* Baud rate, Data bits, stop bits, and Parity parameters are chosen in setup screen.
Parallel (centronics) x 1
* Specialized 20 pin connector
* With CE-301CB conversion cable to D-sub 25 pin female standard connector

SLOT/BUS CONNECTOR:

Slot for PCMCIA standard IC memory card x 2
* PCMCIA standard IC memory card can be installed.
Expansion Bus connector x 1
* CE-301F 3.5"FDD unit can be connected with FDD cable.

7) Option

① AC Adapter

CE-301V
Input: 120V AC, 200mA, 60 Hz
Input: 220V - 230V AC, 100mA, 50Hz
Input: 230V - 240V AC, 100mA, 50Hz
Output: 6.3V DC, 1.0A

② 3 1/2" FDD Unit

CE-301F
Unit: 3 1/2" 1.44MB drive
Size: 222 mm (w) x 124 mm (d) x31.5 mm (h)
Cable: Converts 80-pin connector to 25-pin D-SUB connector
Weight: Approx. 1.0kg (2.2lbs)

③ Parallel Conversion Cable

CE-301CB
Converts 20-pin connector to 25-pin female connector

④ Serial Conversion Cable

CE-302CB
Converts 10-pin connector to 9-pin male connector

⑤ LapLink Cable

CE-303CB
Connects computer to another computer to use the LapLink Utility

POWER SUPPLY: AA dry battery × 3
* Main battery
Lithium battery × 1
* for SRAM memory backup
* Provides backup power while changing the AA battery
CE-301V AC adaptor
* Specified adaptor for each destination
* Output: 6.3V DC
* AC cord is not detachable from AC adaptor.

BATTERY LIFE: 30 hours
* LCD contrast medium, without options.

POWER SAVE FUNCTION:
Automatic clock stop
* No activities make CPU clock stop automatically.
Automatic power down
* No key input for certain period causes automatic power down.

LOW BATTERY ALARM: 1st step:
When a battery is discharged to preset level, LOW BATTERY warning message appears on the screen and CPU speed is decreased.
2nd step:
When a battery is almost empty, FLAT BATTERY warning message appears on the screen and turn the power off automatically.
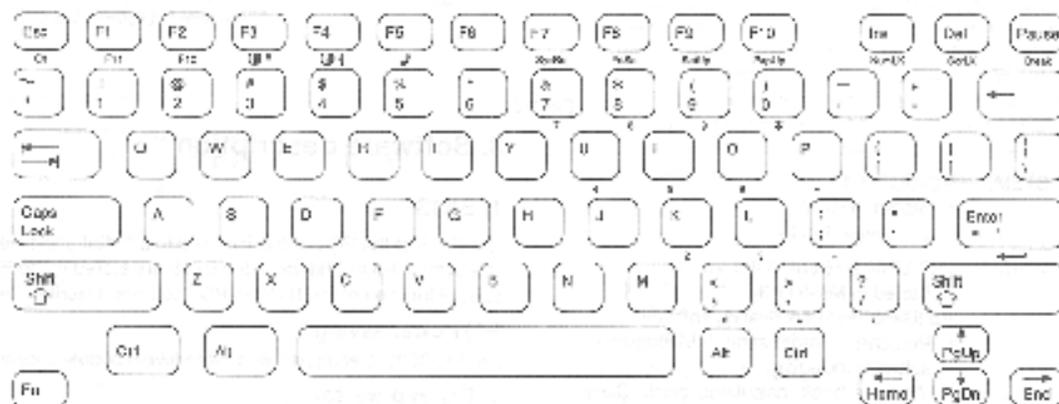
POWER CONSUMPTION:
Typ. 0.4 W (without options)

2) Mechanical

CONNECTORS:
External connectors for
Serial interface: Specialized 10 pin connector
Parallel interface: Specialized 20 pin connector
AC adaptor: 2 conductor phone jack
Expansion bus: 80 pin connector

SLOTS: Slots for PCMCIA standard IC memory card × 2
LEVERS: Levers for PCMCIA IC card removal × 2
SWITCHES: Reset switch (button switch) IC memory card lock switch × 2
DIMENSIONS:
4.4"(D) × 8.8"(W) × 1.0"(H)
112mm(D) × 222mm(W) × 25.4mm(H)
WEIGHT: 450 g
(Main unit with battery)

Key board Layout
a) US version
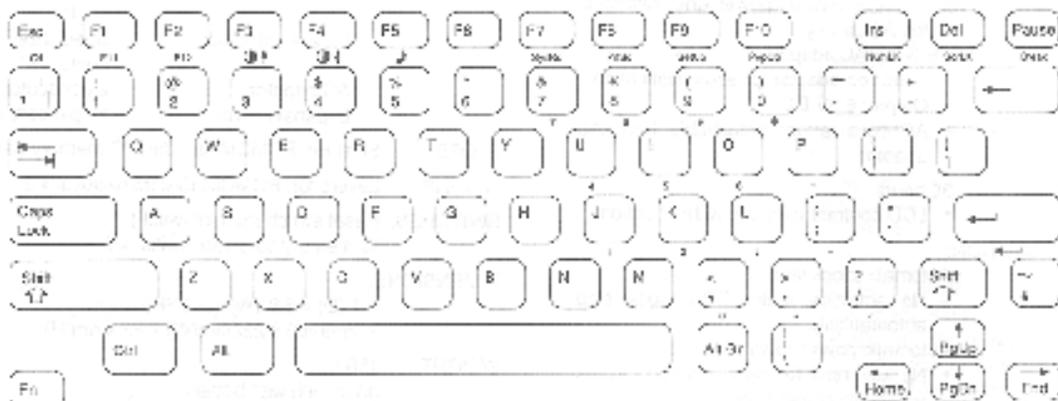
a) US version

Fig.1-3

PC-3000

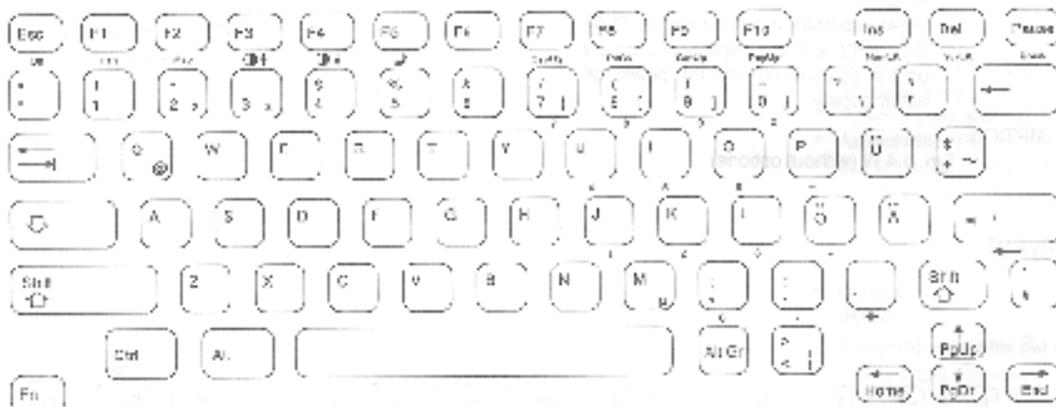## b) UK version

Fg.1-4

c) German version

Fig.1-5

3) Software

OPERATING SYSTEM: MS-DOS 3.3
* Stored in ROM
* Language: English

BUILT-IN SOFTWARE: LAP-LINK 2.16 self install version
* Stored in Mask ROM
Multi languages application software
* Personal Information Management software including:
Address book, calculator, clock, Diary, Editor, File Manager, Spreadsheet, To Do List
* Stored in Mask ROM
* Languages: English, German, French Italic, Spanish, Dutch, Swedish

4) Operational and storage range

Operational range   50 to 95 degrees F
10 to 35 degrees C
20 to 80% humidity (Non-condensing)

Storage range: −4 to 140 degrees F
−20 to 60 degrees C
10 to 90% humidity (non-condensing)

3. Software description

1) BIOS

The BIOS of the PC-3000 is included in a 1 MBit one-time ROM. The system BIOS and the video BIOS are stored in the ROM. Special function of the BIOS in PC-3000 are described below:

1-1) Power saving

The PC-3000 is equipped with three levels of power saving.

① Display power saving

② System power saving

These power saving functions are performed with the time-out values set by SETUP. The system power saving can be also executed by key input. Some application software may not work correctly with system power saving function. If there are any problems in the power saving function, Please disable the function by SET_UP.

4

1-2) Automatic setting of hardware

The PC-3000 hardware setting is performed for the following items.

① Built-in CGA mode setting

② Display adapter setting

③ Each device I/O port setting

④ FDD assignment (When FDD is set)

⑤ Built-in memory setting

The following items are automatically detected and proper settings are made automatically.

① FDD presence

② FDD type

③ Main memory and expansion memory capacity

When no FDD is connected, BIOS level emulation is performed. Then the machine works as if two FDD's are connected without disk insertion.

1-3) ROM disk

To use ROM disk, set Drive C to ROM disk in hardware installation. With the ROM disk, only the following three items can be executed.

① MS-DOS installation

② Diag. program execution

③ Setup execution

④ Multi languages application software

1-4) Special functions with key operation

* Fn + F3: LCD contrast is dark.

* Fn + F4: LCD contrast is bright.

* Fn + F5: KEY click ON/OFF.

* Fn + F10: Popup program exution.

* Fn + F4: Setup program exution.

2) Setup

2-1) Setting up the Machine

You can configure various aspects of the hardware by selecting menu options as follows. The changes you make will remain until either you change them again, or perform a cold boot (i.e. lose all battery power).

To set up the hardware:

* Select Options from the Pop Up Menu and select the Setup the machine option from the menu or press the Set Up key:

```
─────── System Setup ───────

Low-power mode              On
Power down delay . . .      2 minutes
Keyclick                    On
All sounds                  On
Screen inverse
Microprocessor speed        10 MHz
Character set               Default
RS-232C port settings . . .
```

This shows the current setting for each setup option, other than the RS-232C port.

* To change a setting, select it by typing its initial letter OR move the highlight to it and press Enter.

* Once you have defined the setup you want, press Esc to store it and return to the Options menu. The changes take effect immediately.

Each option will now be described in turn.

(1) Low Power Mode

Normally, the computer switches off the processor when there is no processing to perform. This is low power mode, and is used to maximize battery life. However, certain badly-behaved third party programs may not operate correctly with low power mode selected, as this also stops the timer ticks which such programs may rely on.

To disable low power mode, select the Low-power mode option to toggle the setting to Off. To restore normal power handling, toggle it back to On.

Caution: If you disable low power mode, the batteries will run down very quickly!

(2) Power Down Delay

The computer will normally turn itself off to conserve battery power, if it has been waiting for keyboard input for more than 5 minutes. To control power down, select the Power down delay option and choose an option (0, 1, 2 or 5 minutes) from the menu. 0 means do not power down. For example, you might select 1 minute to maximize battery life.

(3) Keyclick

Normally, all keyboard keys sound a click via the speaker when you press them, but you can toggle this off or on again by selecting the Keyclick option or by pressing Fn-F5. If the keys don't click with Keyclick set to On, check the All sounds setting.

(4) All Sounds

The computer normally uses audible signals to warn you of errors, indicate that a clock alarm is ringing and for keyclicks, but you can toggle these all between Off and On by selecting the All sounds option. For example, you might be working in a place where the noise is intrusive, such as a library.

(5) Screen Inverse

The computer screen normally shows black text on a white background. Select the Screen inverse option to toggle between this and white text on a black background. (The change is made immediately.)

(6) Microprocessor Speed

The computer can operate at two clock speeds: 5MHz and 10MHz. These have nothing to do with time keeping, they dictate the speed at which the microprocessor executes programs i.e. at 10MHz, programs execute up to twice as fast. The computer normally operates at the slower speed, 5MHz, as this is fast enough for most uses and consumes less power than 10MHz operation.

To change the clock speed, select the Microprocessor speed option, to toggle it between 5 MHz and 10 MHz. For example, you might select 10 MHz if you are using the Worksheet with a large or complex spreadsheet, to reduce the time taken to recalculate.

(7) Character Set

A character set is the range of characters that the computer displays for each ASCII code (0 to 255). The computer has two character sets: Default and Scandinavian, which are listed in Appendix A. To switch character sets, select the character set option, to toggle between Default (International) and Scandinavian.

(8) RS-232C Port Settings

Before using a serial port, you must check that it is set up to suit the connected device:

```
─────── RS-232C Port ───────

Baud rate . . .         9600
Parity . . .            None
Data bits               8
Stop bits               1
Mouse of port           COM1
```