



Pocket8086

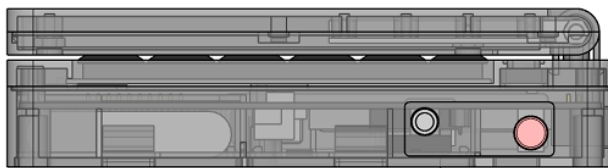
User's Guide

Document Revision 1.0

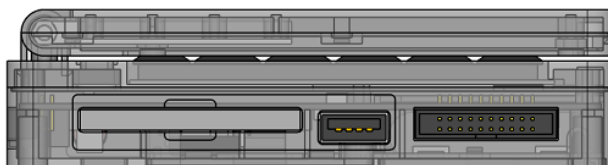
Overview

Pocket8086 is an IBM PC-XT compatible laptop that supports one of the 8086 or 8088 processors, as well as the NEC V20/V30 processor. In addition to the base 640KB memory, it also comes with 128KB UMB memory. Its BIOS uses IBM PC-XT 05/08/86 version, and is pre-installed with DOS6.22 system. If a V20 or V30 processor is installed, it will support Windows3.1. IPS LCD can seamlessly switch between 16:9 and 4:3 display ratios.

- 8086/8088 CPU with clock frequency of 4.77-10Mhz
- Chipset: 8284/8259/8254/8237
- 768KB RAM(Base640KB+UMB128KB)
- Replaceable VGA Card (TVGA9000i+512KB)
- OPL3 (Yamaha YMF262-M) Sound Card
- 512MB CF Card Storage
- USB (CH375B Controller, U-disk only)
- Seamless Online Switching between 4:3 and 16:9 display ratios. (640x480 / 800x480)
- Built-in Mouse
- PS/2 Keyboard&Mouse
- VGA Output
- OSD/SOSD LCD Control
- Lithium Battery(4000mAh)
- External Interface



3.5mm Line-OUT Power



CF Card

USB

Parallel Port



DC 12V

Serial port

PS2/VGA

ISA(8Bit)

1. Introduction to New Features

- **8086CPU support**

The 8086 is the world's first x86 CPU, the internal bus and external bus of which are both 16-bit. Historically, there have been very few PC products using 8086 processors, which is because most IO chips are 8-bit. Therefore, it would have been more expensive to build a PC with 8086 at that time, while those using an 8-bit external bus 8088 processor will be more easy.

Pocket8086 can support one of the 8086 or 8088 processors, and it can select the 8086 or 8088 processor installed on the motherboard through jumpers. When an 8086 processor is plugged into the motherboard, the RAM will be accessed in 16-bit mode, which will greatly increase the memory access speed. Regardless of whether an 8086 or 8088 processor is installed on the motherboard, IO will be accessed in an odd-even 8-bit manner, which makes the 8086 processor fully compatible with IBM PCs.

- **Upper Memory Blocks**

Pocket8086 installs 128KB of memory in the D0000-EFFFF address segment and uses bit2 of IO port 060H as its switch flag. When it is written to 0, UMB is turned on (default). When it is written to 1, the UMB is turned off.

- **VGA**

The graphics card uses a TVGA9000i display chip and is equipped with 512KB Video memory, supporting 640x480x256 color displays.

- **PC-XT BIOS**

Pocket8086 uses the slightly modified IBM PC-XT 05/08/86 version BIOS and provides source code. The BIOS is compiled based on the MASM

- **PS/2 keyboard and PS/2 mouse support**

Pocket8086 uses serial port 2 as the mouse channel and has a built-in conversion chip to convert external PS/2 mice to serial port mouse protocol. At the same time, the keyboard controller is also connected to serial port 2, so the directional keys on the keyboard can also serve as mouse controllers.

- **Display Aspect Ratio Switching (4:3 & 16:9):** Utilize the OSD menu with Fn+F4 to seamlessly switch between 4:3 (default) and 16:9 display ratios



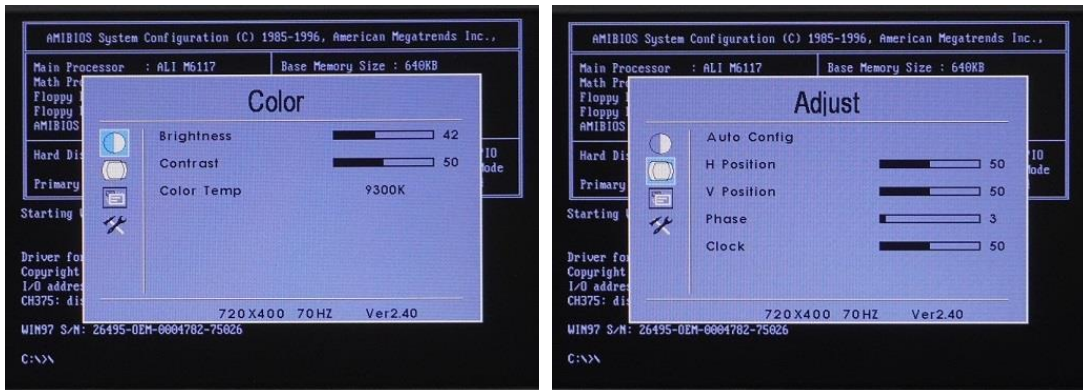
(4:3 Mode)



(16:9 Mode)

- **Super On-Screen Display (SOSD) (Fn+F5)**

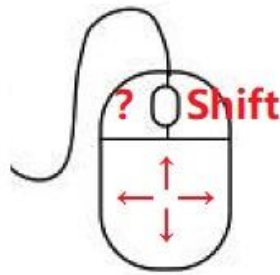
The advanced OSD feature allows for on-screen overlay of function menus, enabling users to adjust LCD parameters such as brightness, contrast, and color. Additionally, it provides real-time status updates on internal devices and battery level without interrupting PC operations.



(Partial functions of OSD)

- **Integrated Mouse Control:**

Users can enable the built-in mouse feature without an external PS2 mouse, using keyboard directional keys for navigation. The "?" and "shift" keys function as left and right mouse buttons, respectively.



- **Connectivity and Expansion Ports:** Equipped with a built-in CH375 USB controller for DOS/Windows compatibility, 8-bit ISA bus extension, PS2 ports, VGA output, and a DB25 parallel port, facilitating versatile connectivity and expansion.

- **Open Source Circuit Diagram & PC-XT BIOS:**

Provides open access to hardware circuit designs for user-driven expansion and customization.

Visit WWW.8086CPU.COM for detailed information.

2. Power Management

- **Turning On:** Press the power switch to turn on the device
- **Turning Off:** Direct power-off in DOS.



3. Sound and Peripheral Management

Fn+3: Turn on/off the sound card amplifier. This function mutes the speaker, directing audio exclusively to the Line Port for focused listening without external disturbances.

4. Turbo Mode

Fn+Turbo: Turn on/off the Turbo mode

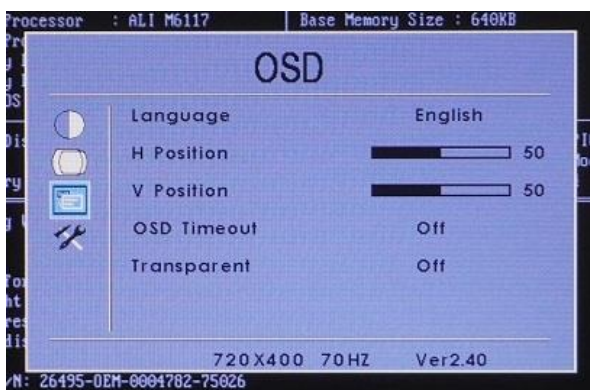
5. Define Turbo Mode

Fn+4: Turn on/off the Turbo mode at startup

6. OSD Settings:

To access the OSD (On-Screen Display) menu, press Fn+F4 once the display content stabilizes. Navigate through the OSD options using the directional keys. To select an option, press the Enter key; to exit the menu, press the Esc key.

Note: The keyboard will be inactive if the OSD menu is not exited properly. Should you encounter this, press the Esc key to exit the OSD menu and restore keyboard functionality. Be aware that frequently refreshing the OSD menu might cause display characters to become garbled. This does not impact the PC's operation and will be corrected upon the next restart.



(Partial functions of OSD)

7. SOSD Menu:

To access the Super On-Screen Display (SOSD) menu, press Fn+F5 once the display content is stable. This menu provides advanced settings and system information.




8. VGA Output Switching:

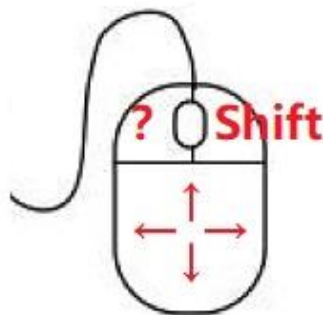
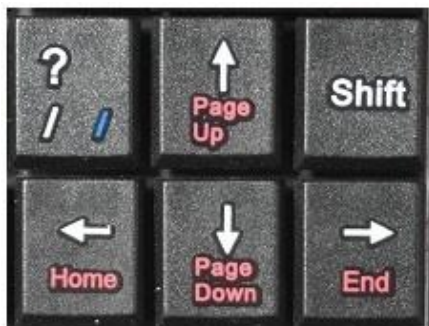
Use the "FN+1" key to toggle between the device's LCD and an external monitor. When switching to an external monitor, the LCD will indicate "No Signal", signifying that the display output has been redirected.



(The LCD will display "No Signal", After switching to an external monitor)

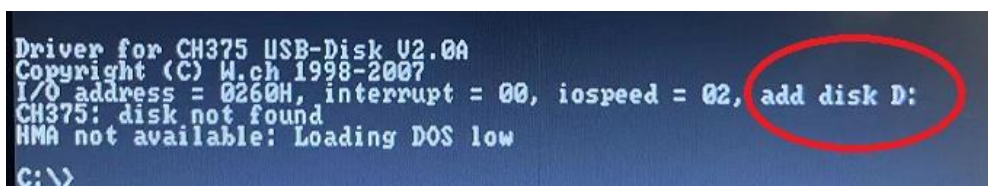
9. Mouse Functionality:

To activate mouse control keys, press the "MouseKey"  This action reassigns the directional, "?", and "shift" keys for mouse navigation.



10. USB Port:

The CH375B USB controller integrates USB flash devices with DOS/Windows Disk Manager seamlessly. Upon connecting a USB device and entering the DOS system, a prompt displaying the assigned disk symbol, such as "D", will appear.

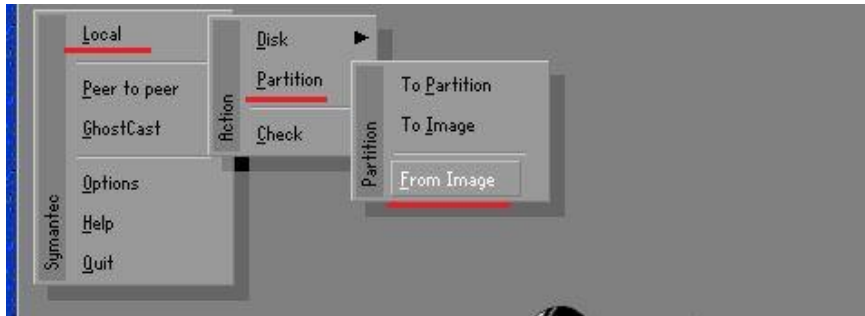


To access the contents of the USB device, enter "D" and press Enter to navigate to the D drive.

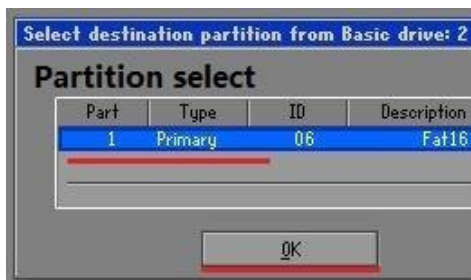
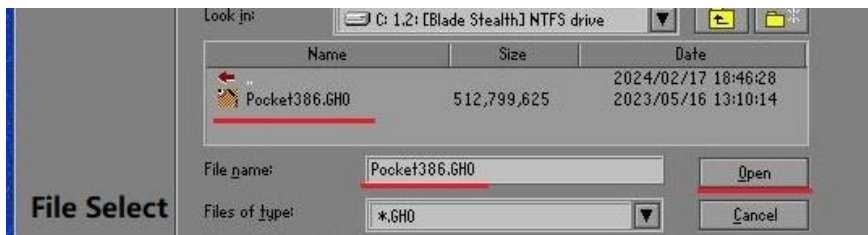
11. CF Adapter & System Recovery:

The Pocket8086 uses a CF card (formatted in FAT with a capacity of 2GB or less) as its storage device. In cases of system file corruption, the "Ghost" software on another computer can be used to restore ".gho" image files to the CF card:

- Download the "Pocket8086.gho" image file and "Ghost.exe" software.
- Insert the CF card into the new computer's USB port using a CF-to-USB card reader.
- Launch the Ghost software and select "Local -> Partition -> From Image".



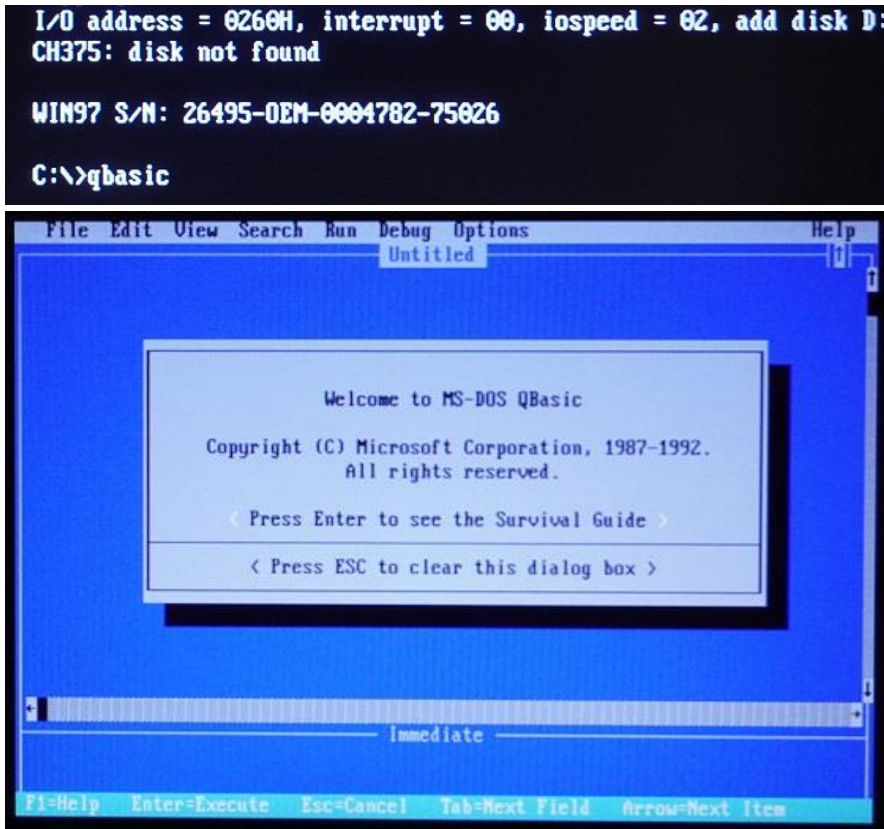
-Navigate to and select the directory containing the ".gho" file.



-Wait for the restoration process to complete, effectively recovering the system.

12. Using Qbasic as an Example

To open the Qbasic software, simply type qbasic at the command prompt and press Enter. For assistance or to access the help documentation within Qbasic, press Shift+F1.



13. Common Problems and Solutions:

● Keyboard Not Functioning

- If the keyboard becomes unresponsive, it may be due to the OSD menu being active. Press the Esc key to exit the OSD menu.

- If the "?" "shift", and directional keys do not work while the built-in mouse is enabled, press the "MouseKey" to toggle back to keyboard mode.

● Low Battery Shutdown

A low battery can cause system instability or an abrupt shutdown, accompanied by noise from the speaker. In such instances, turn off the device and charge it. To monitor the battery level, press Fn+F5.

● USB & Windows

After booting up, it defaults to the DOS system. If the U-disk is not inserted, a message "Disk not found" will appear. Enter "win" to enter the Windows system