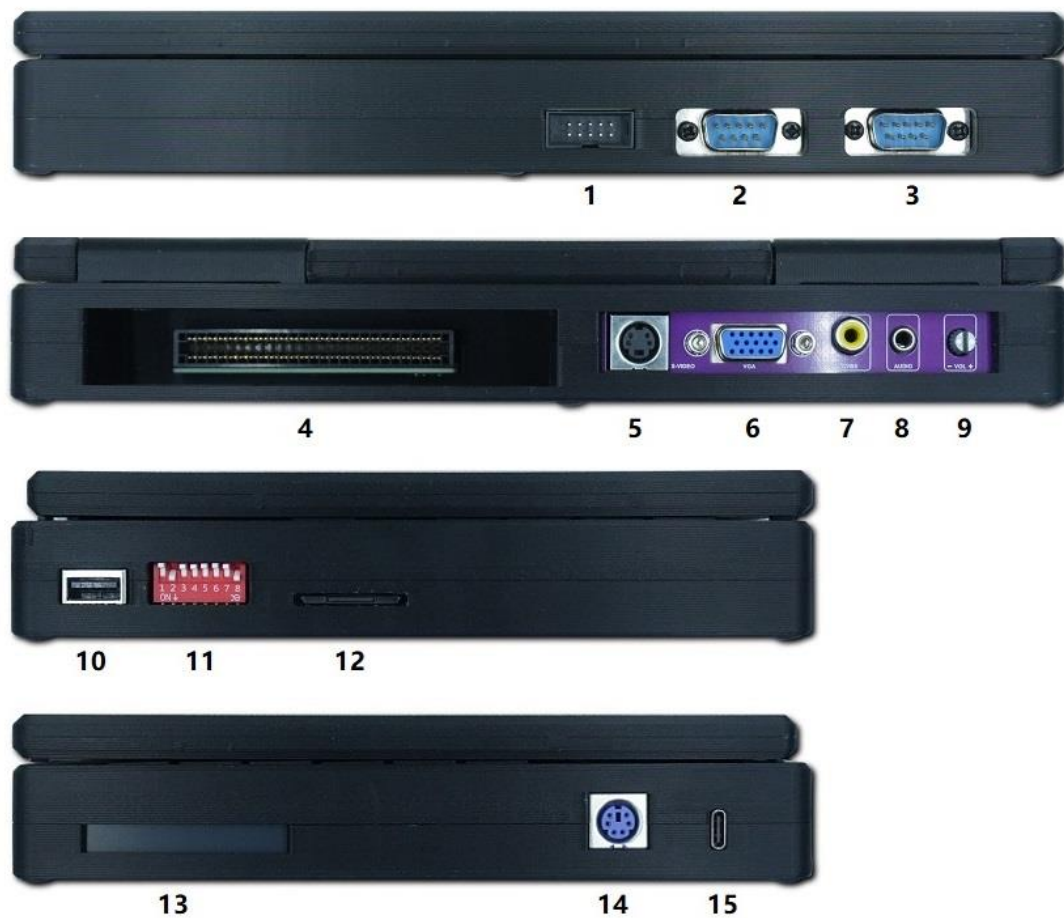




MSXBOOK

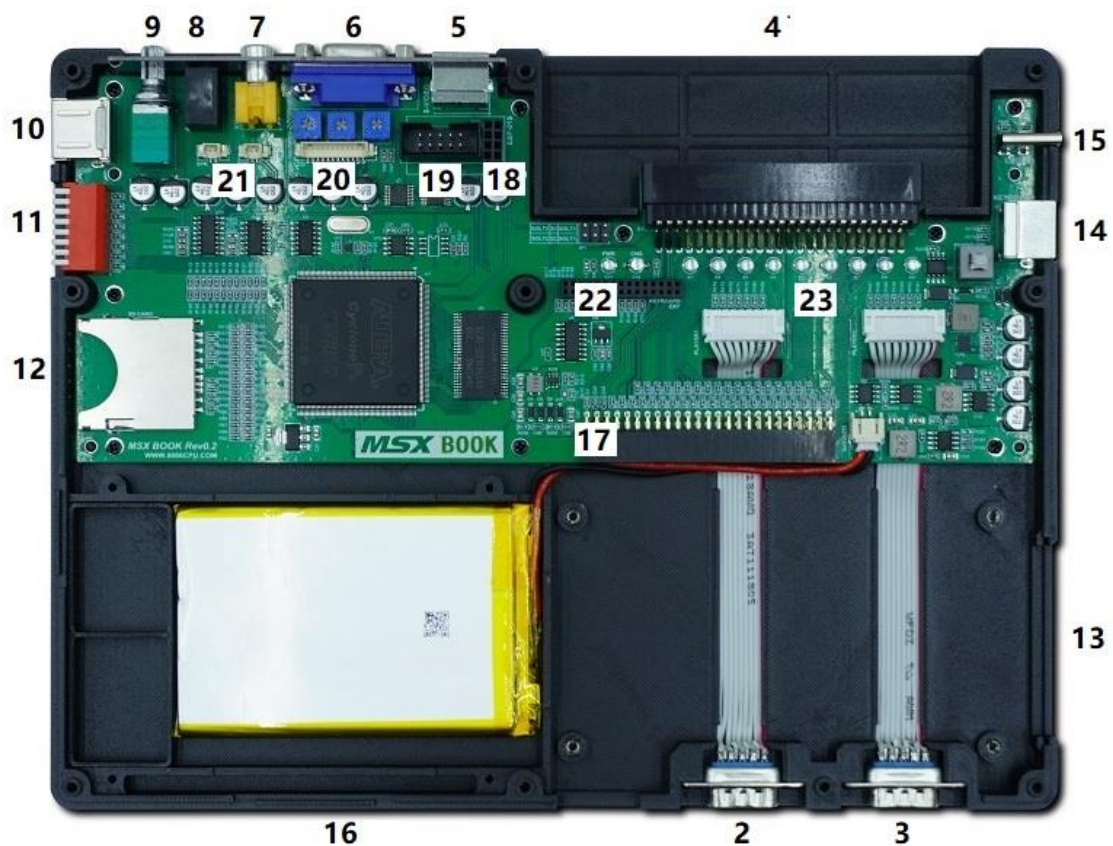
Document Revision 0.2

Overview:



1. **Firmware download port. (Active Serial Programming)**
2. **Player1** (DB9 Joystick Port)
3. **Player2** (DB9 Joystick Port)
4. External expansion cartridge slot
5. **S-Video port**
6. **VGA port**
7. **CVBS port**
8. audio output jack
9. **Volume control knob**
10. **USB2 port**
11. **Setting switch**
12. **SD card slot**
13. **Input/output window with built-in expansion cartridge**
14. **PS/2 Keyboard port**
15. **Type-C charging port (5V-2A)**

Motherboard:



- 16. Battery compartment
- 17. Built-in expansion cartridge slot
- 18. USB1 port(Used for ESP-01S WiFi module)
- 19. Firmware download port. (Active Serial Programming)
- 20. LCD port
- 21. Speaker port
- 22. Built-in keyboard port
- 23. Status LED*9

Note:

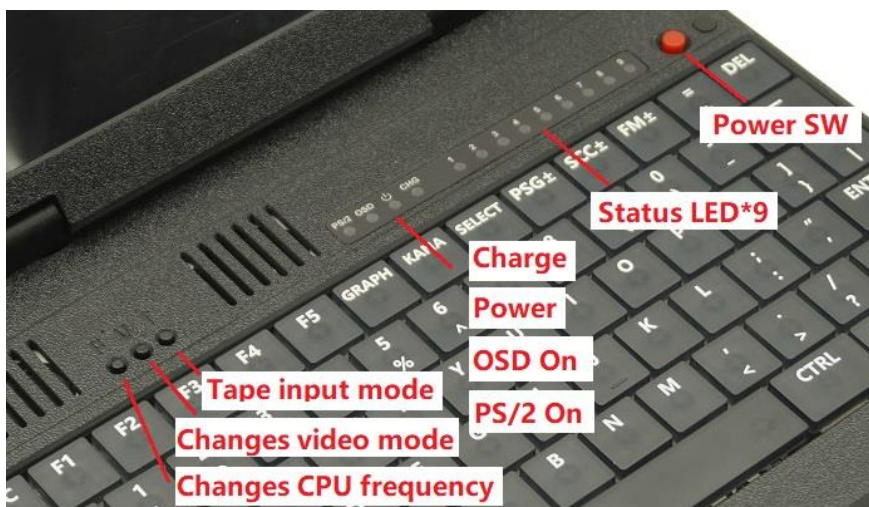
1. Both DIP switch settings and cartridge installation must be performed when the power is turned off.
2. The maximum current provided by the USB port is 300mA. Do not use the USB port to charge other devices or connect devices that exceed this power limit.
4. If the battery is below 10%, disconnecting the charger may cause the system to crash. If the battery is below 5% and the charger is not connected, the system may crash at any time, and the speaker may produce noise.
5. Please use a USB charger with 5V/2A or higher current to charge the device via the Type-C port.
6. If the built-in keyboard is not working, check whether the OSD menu is enabled or an external PS/2 keyboard is connected.

Keyboard/Hotkeys:

Since the MSXBOOK is fully compatible with OCM, its built-in keyboard uses PS/2 signals and is connected in parallel with an external keyboard. Before using an external PS/2 keyboard, you need to press FN+4 to disable the built-in keyboard. Once the PS/2 indicator lights up, you can connect the external keyboard. To reactivate the built-in keyboard, disconnect the external keyboard and press FN+4 (the PS/2 indicator will turn off).

In addition to being compatible with OCM-PS/2 scan codes, the built-in keyboard can also control the LCD-OSD menu, battery level detection, switching between the built-in LCD and external VGA output, and MSX hardware reset. Below is a list of shortcut functions:

- FN+F4: LCD-OSD menu (press ESC to exit)
- FN+F5: LCD-SOSD menu (press ESC to exit)
- FN+1: Switch between the built-in LCD and external VGA display
- FN+3: Turn the keyboard backlight on/off
- FN+4: Switch between the built-in keyboard and external PS/2 keyboard
- FN+R: MSX Reset
- FN+2: STOP



DIP Switch Settings



| SW | FUNCTION | STATUS | DESCRIPTION |
|-----|------------------|---------|--|
| 1 | CPU Clock | OFF | Standard mode 3.58MHz |
| | | ON | Custom Speed mode |
| 2/3 | Video Output | OFF/OFF | Composite / S-Video |
| | | OFF/ON | RGB w/ Audio Out |
| | | ON/OFF | VGA 31khz/60Hz |
| | | ON/ON | VGA w/ scanlines, 31Khz/60Hz |
| 4 | Cartridge Slot-1 | OFF | External slot 1 enabled |
| | | ON | Internal ESE-MegaSCC+ 1024kB |
| 5/6 | Cartridge Slot-2 | OFF/OFF | External slot 2 enabled |
| | | OFF/ON | Internal ESE-MegaRAM ASCII-8K 1024kB |
| | | ON/OFF | Internal ESE-MegaSCC+ 2048kB |
| | | ON/ON | Internal ESE-MegaRAM ASCII-16K 2048kB |
| 7 | Internal Mapper | OFF | Internal 2048kB RAM (Advised like default) |
| | | ON | Internal 4096kB RAM |
| 8 | Internal MegaSD | OFF | Disabled |
| | | ON | Enabled |

Status LEDs:

| LED | Status | DESCRIPTION |
|-----|----------|---------------------------------------|
| 1 | Flashing | SD activity. Flash memory activity |
| 2 | ON | 4MB RAM Mapper |
| | OFF | 2MB RAM Mapper |
| 3/4 | OFF/OFF | External SLOT2 Enabled |
| | OFF/ON | ESE-MegaRAM ASCII 8K |
| | ON/OFF | ESE-MegaSCC+ |
| | ON/ON | ESE-MegaRAM ASCII 16K |
| 5 | OFF | External SLOT 1 Enabled |
| | ON | ESE-SCC+ |
| 6/7 | OFF/OFF | Composite Video/S-Video output |
| | OFF/ON | 15khz RGB+Audio through VGA connector |
| | ON/OFF | VGA |
| | ON/ON | VGA with scanlines |
| 8/9 | OFF/OFF | Standard 3.58Mhz Clock |
| | OFF/ON | Turbo 5.37Mhz Clock |
| | ON/OFF | Turbo 8.06Mhz Clock |

LCD:

By default, the MSXBOOK uses the built-in LCD for display, but it also supports an external VGA monitor. You can quickly switch between displays using the keyboard shortcut (FN+1).

Similar to OCM, the MSXBOOK supports CVBS, S-Video, VGA, and VGA with scanlines. These signals share part of the VGA circuitry. The DIP switch settings or the Video Change key can alter the video output mode. When a signal other than VGA is selected, you need to connect the corresponding port to the appropriate display.

Below is a list of display types and their corresponding signals:

| | |
|-----------------------------------|---------------------------|
| Built-in LCD: | VGA |
| External VGA-LCD/VGA-LED monitor: | VGA |
| External VGA-CRT monitor: | VGA or VGA with scanlines |
| External TV/RGB monitor: | CVBS/S-Video |

When switching the display signal back to the LCD from another mode, the sudden change may cause the image to shift away from the center of the LCD. You can use the OSD menu (FN+F4) and select the "Auto" option to automatically adjust the image position. The OSD menu also allows you to adjust the LCD's color, brightness, and other attributes. If the image cannot be centered or if you need to restore the default settings, you can choose the "Reset" option in the OSD menu.

External Cartridge Slot:

The MSXBOOK has a cartridge slot on the back, allowing users to insert standard MSX cartridges.



Internal Cartridge Slot:

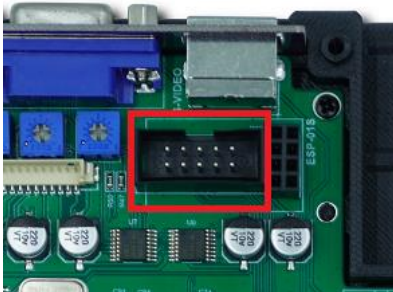
Users can customize a PCB of a specific size using the internal expansion slot of the MSXBOOK for long-term use with expansion cards. On the right side of the machine, there is a window where the input/output interfaces of the internal expansion card can be positioned. Below is a design demonstration of an internal expansion card, which is an OPNA sound expansion card based on the YM2608B.



Firmware download ports. (Active Serial Programming):

The firmware download ports are located on the motherboard and the front panel of the machine. They share the same circuit, so users only need to choose one of them. The port on the motherboard is typically used for debugging during production.

1.



19.



For the MSXBOOK firmware download tool, it is recommended to use the USB Blaster along with the Quartus II Programmer software.

