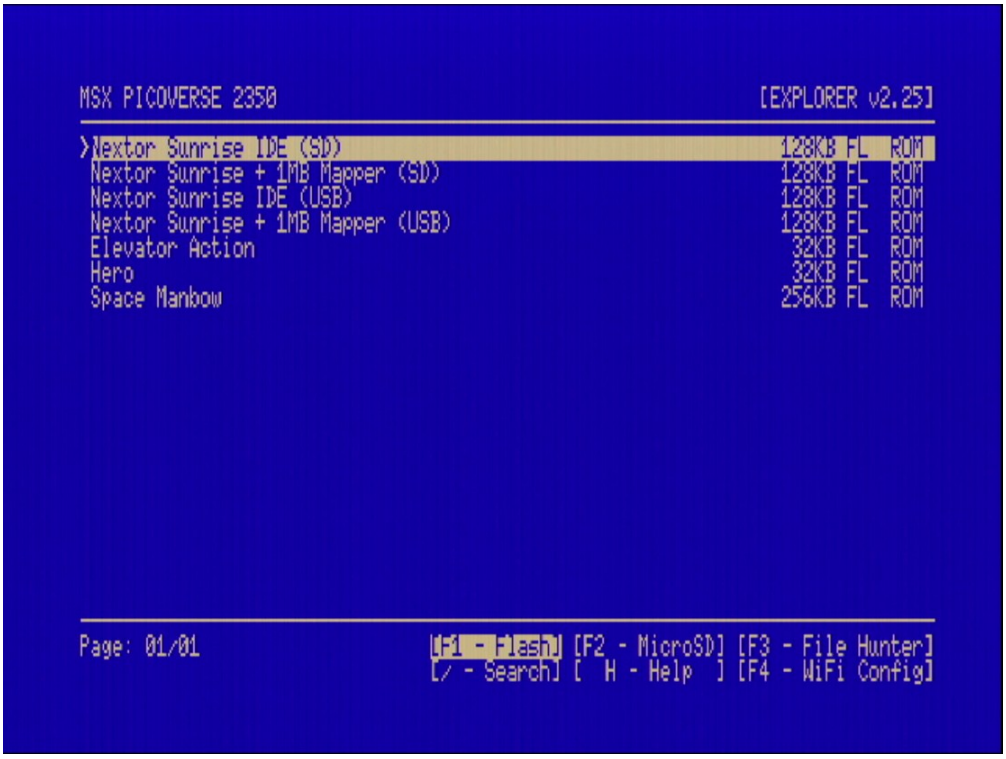
MSX

MSX PicoVerse 2350 User Manual

Operation of the assembled cartridge Explorer MultiROM microSD Nextor audio and WiFi



MSX PicoVerse 2350 Explorer firmware

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Purpose of this manual

This manual explains how to prepare, update and operate a fully assembled and tested MSX PicoVerse 2350 cartridge. It covers the user-facing functions: loading games from flash memory or microSD, navigating Explorer and MultiROM, using Nextor, selecting sound profiles, playing audio and accessing File Hunter over WiFi.

PCB assembly, soldering, component fitting and manufacturing instructions are intentionally excluded. Some functions depend on the installed firmware and the accessories fitted to your unit.

Safety and connection

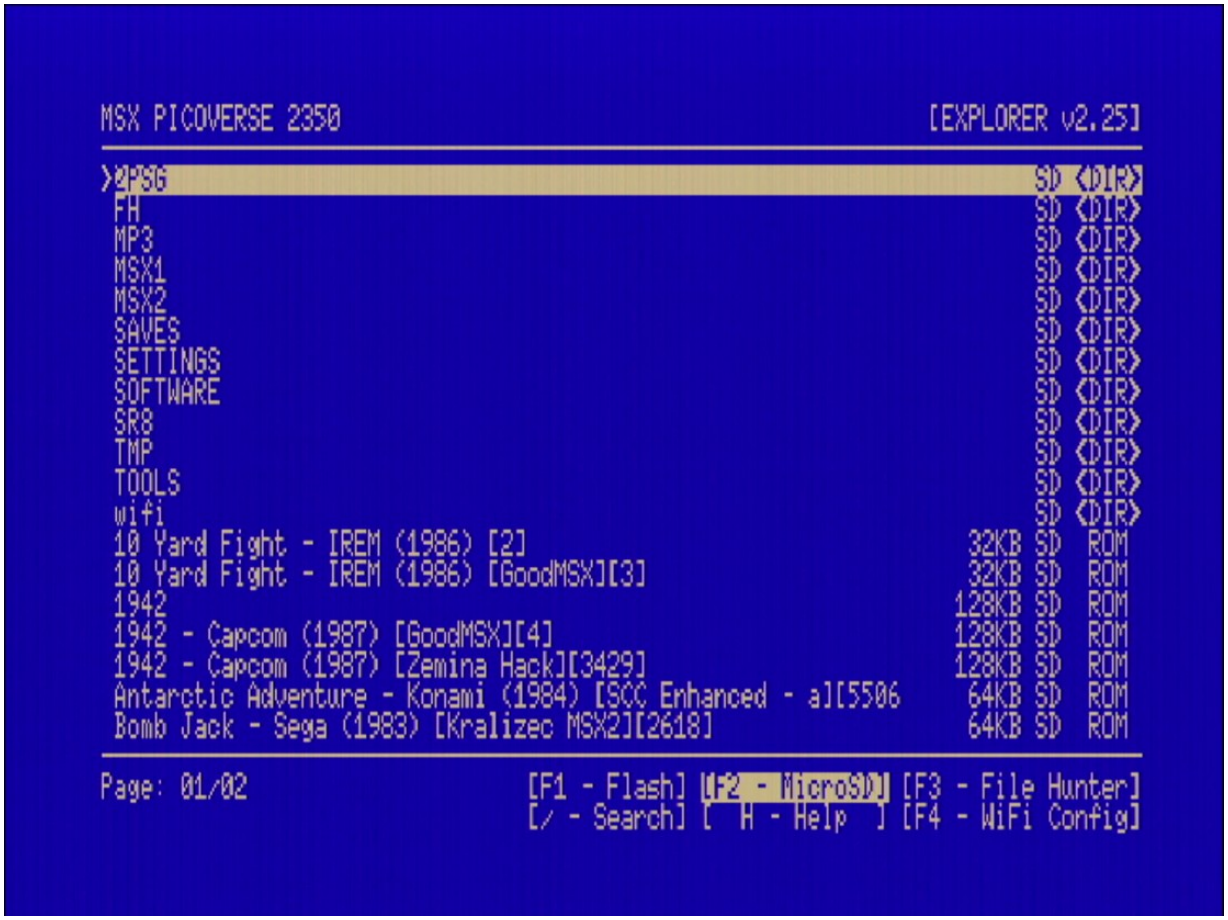
- Always switch the MSX off before inserting or removing the cartridge.
- Insert the PicoVerse straight into the cartridge slot without forcing it and check the correct orientation.
- Do not remove the microSD card while data is being written, downloaded or accessed by Nextor.
- The USB C connector is used for firmware updates and, in specific modes, for USB mass storage.
- Advanced sound engines output through the cartridge I2S DAC; connect that output according to the enclosure or supplied configuration.

Identifying the installed mode

Mode	Startup behaviour	Primary use
Explorer	Displays a browser with FL and SD sources and F1 to F4 commands.	Full access to flash, microSD, audio and WiFi.
MultiROM	Displays a list of ROM images embedded in the firmware.	Selecting one of several games stored in flash.
LoadROM	Boots one game or application directly without a menu.	Using PicoVerse as a dedicated cartridge.
Nextor or SYSTEM	Starts Nextor directly or through a SYSTEM entry.	Using microSD or USB storage from MSX.
Dedicated audio	Operates as MoonSound OPL4 or MSX AUDIO hardware.	Running compatible music software; this mode does not load a game by itself.

Explorer quick start

1. With the MSX switched off, insert a prepared microSD card if SD loading is required.
2. Insert PicoVerse into an MSX cartridge slot and switch the computer on.
3. Press F1 to display flash ROMs or F2 to browse the microSD card.
4. Select a ROM with the cursor keys. Press Space for quick launch or Enter to review its settings.
5. To return after a ROM has started, reset the MSX. The launched software has complete control of the machine.



Explorer microSD browser

Explorer controls

Key	Function
Up / Down	Move the selection.
Left / Right	Change pages or adjust a value on the ROM details screen.
Enter	Open a folder, audio player or ROM details screen.
Space	Quick-launch a ROM with saved or default settings.
Esc	Return to the parent folder or leave File Hunter and secondary screens.
F1	Display ROMs stored in flash.
F2	Display microSD files and folders.
F3	Open the online File Hunter browser.
F4	Open WiFi configuration.
/	Search for part of a name in the current folder or source.
H	Display built-in help.
C	Toggle 40/80-column display when supported by the MSX.
P	In F2 view, cycle through supported microSD partitions.
D	In F2 view, delete the selected file after Y/N confirmation; folders are protected.

Using the microSD card

Explorer accepts FAT16, FAT32 and exFAT partitions for ordinary browsing. Copy ROM, MP3 and WAV files to the root or organise them in folders. Large collections should be divided by genre, system or initial letter.

- SD ROMs are marked SD; ROMs embedded in firmware are marked FL.
- Each folder view supports up to 1,024 entries. A microSD ROM file must not exceed 4 MB.
- Folders containing fewer than 50 ROMs normally open in 1–2 seconds. Hundreds of files can require more than 5 seconds; the blinking Loading message is normal.
- If several supported partitions exist, press F2 and use P to cycle through them. Explorer saves the selection in /PICOVERSE.PVC.

Nextor restriction: Sunrise Nextor SD entries require a FAT16 partition no larger than 4 GB. FAT32 and exFAT remain valid for Explorer ROM loading, MP3/WAV playback and File Hunter downloads, but cannot be used as Sunrise Nextor storage.

Folders search and deletion

6. Press F2 to open the microSD view.
7. Select a folder marked DIR and press Enter or Space.
8. Press Esc or select the two-dot entry to return to the parent folder.
9. Press /, type part of a title and press Enter. Only the current folder is searched.
10. To delete a file, select it, press D and confirm with Y. Check the filename carefully because the card is modified immediately.

Opening a ROM and adjusting its settings

Pressing Enter on a ROM opens its details screen. Space launches it immediately with saved settings, or defaults if no .PVC file exists. An unknown SD mapper briefly displays Detecting while PicoVerse identifies it.

Field	Recommended use
Mapper	Keep the detected value. Change it only if the ROM fails to start and the correct mapper is known.
Audio	Select None, SCC, SCC+, external SCC, Dual PSG, MSX MUSIC or YM2151 SFG as required by the software.
PSG	Yes mirrors the primary MSX PSG through the cartridge DAC; it does not disable the internal PSG.
Wifi	Enable only on compatible Sunrise entries to expose the ESP8266P BIOS. Unavailable in Carnivore2 and MegaRAM modes.
SD Part	For Nextor SD, select the required FAT16 partition of up to 4 GB.
Action Run	Press Enter to launch with the displayed values.

Sound profiles

Profile	Use
None	No additional cartridge sound engine; the MSX internal PSG still operates.
SCC	Standard Konami SCC software such as Space Manbow,

	Salamander, Nemesis 2 or Gradius 2.
SCC+	Software requiring SCC+ or SCC I with independent waveforms.
External SCC/SCC+	Software that searches for a separate SCC cartridge in another subslot.
Dual PSG	Software or patches writing to a second AY-compatible PSG through ports 10h and 11h.
MSX MUSIC	Software supporting YM2413 or FM PAC.
YM2151 SFG01/SFG05	Software detecting a Yamaha SFG interface. Select 4 MHz only for programs composed for that clock.

Only one additional audio profile can be active. PSG mirroring is independent and can be mixed with the selected profile. With Dual PSG plus PSG mirroring, Dual PSG is routed left and the primary PSG copy right.

MP3 and WAV playback

Copy audio files to microSD and press F2. MP3 entries open a player showing filename, size, state and elapsed time; total duration is not pre-scanned.

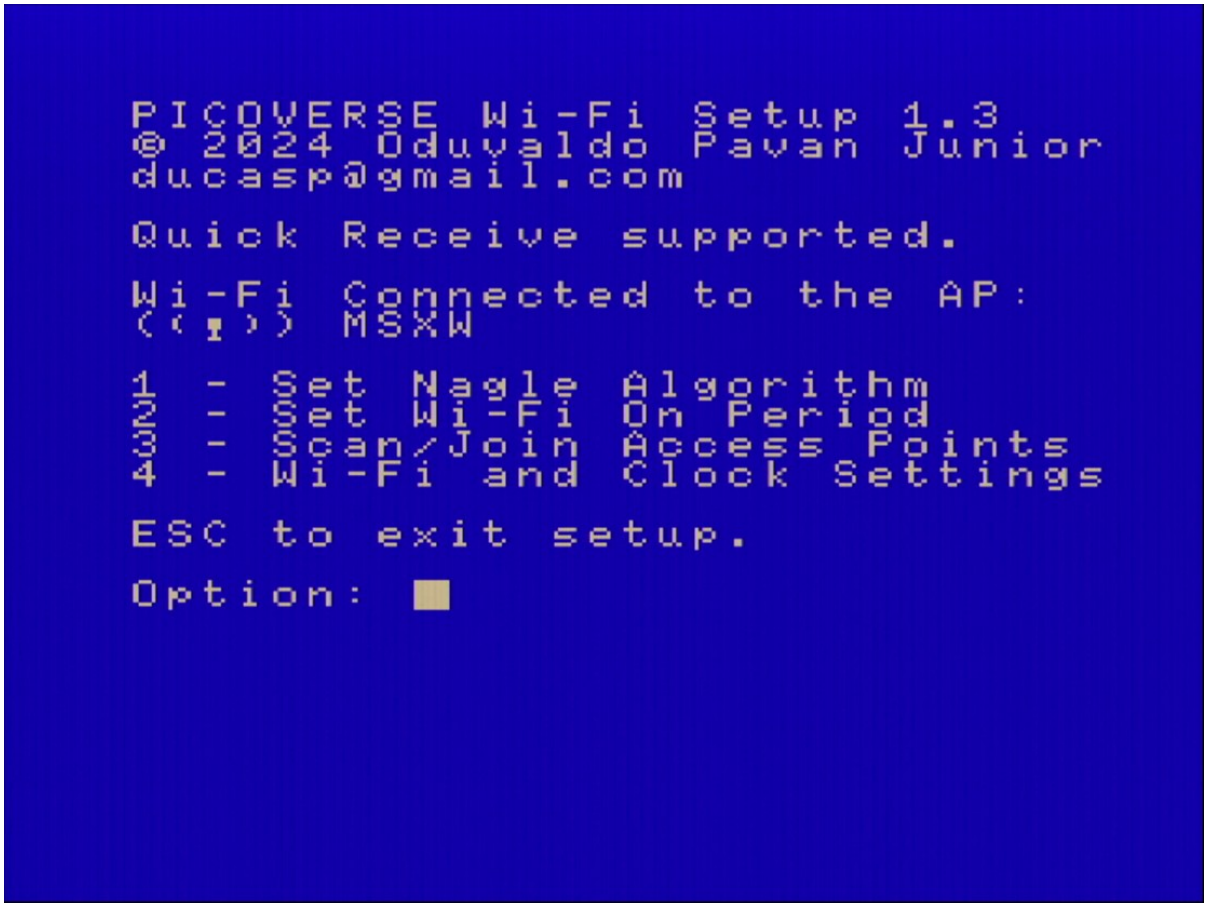
Control	Action
Up / Down	Select Play/Stop or Pause/Resume.
Enter / Space	Perform the selected action.
Esc	Stop playback and return to Explorer.
C	Toggle 40/80 columns when supported.

Decoding is performed by PicoVerse and stereo audio is sent to its DAC. Compatible WAV files can also be played from microSD; WAVEGAME ROMs may control streamed WAV playback directly.

File Hunter and WiFi

Explorer can query the public File Hunter catalogue, download a ROM and save it in the root of the selected microSD partition. An ESP-01 with compatible firmware, configured WiFi and a mounted microSD card are required.

11. Press F2 once to mount and verify the microSD card.
12. Press F4 and follow the WiFi setup screen.
13. Press F3 to display the latest File Hunter entries.
14. Use the cursor keys to browse. Press / to search; queries are limited to 24 characters.
15. Press Enter for details, then Enter or Space to download.
16. Wait for Saved to microSD. Press key, then press any key and F2 to locate the downloaded ROM.



Integrated WiFi setup

If a file with the same name already exists in the root, it is replaced. Transfer speed depends on WiFi quality, the ESP module, the external service and the microSD card.

Using MultiROM

MultiROM embeds all ROM files in flash and starts directly at a selection menu. Entry names come from filenames and are limited to 50 characters.

Key	Function
Up / Down	Move through the list.
Left / Right	Change page when more than 19 entries exist.
Enter / Space	Load the selected ROM or SYSTEM entry.
H	Show help; press any key to return.

PicoVerse 2350 MultiROM menu

Using Nextor

Nextor turns PicoVerse into an MSX storage interface. The available SYSTEM entries depend on the firmware image.

Typical entry	Storage	Additional function
Sunrise SD	FAT16 microSD up to 4 GB	Nextor disk interface.
Sunrise SD + Mapper	FAT16 microSD up to 4 GB	1 MB memory mapper.
Carnivore2 SD	FAT16 microSD up to 4 GB	1 MB mapper and SROM-compatible RAM loader.
MegaRAM SD	FAT16 microSD up to 4 GB	1 MB mapper plus separate 1 MB MegaRAM.
Sunrise USB	USB mass storage on USB C	Nextor disk interface.
Sunrise USB + Mapper	USB mass storage	1 MB memory mapper.

Select the entry matching the connected storage device. In Explorer, press Enter and verify SD Part for microSD. Never remove storage while it is being accessed.

Updating firmware from Windows

A PicoVerse update consists of copying a compatible UF2 file. The enclosure does not need to be opened and no external programmer is required.

17. Switch off the MSX and remove PicoVerse. Do not update it while inserted in the MSX.
18. Hold the cartridge BOOTSEL button while connecting USB C to the PC.

19. Release BOOTSEL when the RPI-RP2 drive appears.
20. Copy explorer.uf2, multirom.uf2, loadrom.uf2 or another UF2 built specifically for PicoVerse 2350 to that drive.
21. The drive disconnects automatically after programming. Wait a few seconds and disconnect USB.
22. With the MSX off, insert the cartridge again and test it.

Use firmware for the RP2350 PicoVerse model and the correct hardware revision. A new UF2 replaces the previous mode; retain a known-working image for recovery.

Creating MultiROM or Explorer firmware on Windows

This optional procedure changes the collection held in flash. It is unnecessary when Explorer loads the collection from microSD.

23. Place multirom.exe or explorer.exe and the ROM files to embed in one folder. Flash building does not scan subfolders.
24. Run the selected tool. The default outputs are multirom.uf2 and explorer.uf2.
25. Review the console messages. Invalid or unsupported ROMs are skipped. Flash builds support up to 128 ROMs and approximately 14 MB of combined payload.
26. Program the generated UF2 using the BOOTSEL procedure.

```
multirom.exe

multirom.exe -s1 -s2

multirom.exe -m1 -scc

explorer.exe

explorer.exe -a

explorer.exe -s1 -r1 -r2 -o explorer_nextor.uf2
```

When a ROM does not work

Mapper detection uses an openMSX-derived database followed by heuristic analysis. If a ROM fails, first test a known-good dump. You may then force a mapper by placing a tag before the ROM extension.

Tag	Mapper
PLA-16	Plain 16 KB
PLA-32	Plain 32 KB
KonSCC	Konami SCC
PLN-48	Planar 48 KB
ASC-08	ASCII 8 KB
ASC-16	ASCII 16 KB
ASC16X	ASCII16 X
Konami	Konami without SCC
NEO-8	NEO 8 KB
NEO-16	NEO 16 KB
PLN-64	Planar 64 KB
MANBW2	Manbow2

Example: Knight Mare.PLA-32.ROM. In Explorer, Mapper can also be changed on the details screen. Do not override a correct automatic result.

Quick troubleshooting

Problem	Recommended check
No menu appears	Power off, reseat the cartridge, confirm that the UF2 targets PicoVerse 2350 and reflash in BOOTSEL mode.
RPI-RP2 does not appear	Reconnect while holding BOOTSEL and use a USB data cable; some cables provide power only.
microSD is missing	Use FAT32/exFAT for Explorer and press F2. Nextor requires FAT16 up to 4 GB.
Nextor cannot find a disk	Choose the correct SD/USB SYSTEM entry and the correct FAT16 partition.
Directory listing is slow	Divide collections containing hundreds of files into smaller folders.
ROM is not listed	Check the .ROM extension, the 4 MB SD size limit and mapper support.
ROM fails to start	Try a verified dump, review Mapper and Audio, or add a mapper filename tag.
File Hunter is Offline	Check ESP-01, configure F4, mount microSD with F2 and retry F3.
SCC or FM is silent	Select the correct audio profile and connect the cartridge DAC output.
PSG sounds doubled	Set PSG to No if both the internal MSX PSG and the DAC copy are audible.

Main limits

- MultiROM and Explorer flash: up to 128 ROM files and approximately 14 MB combined.
- Explorer: up to 1,024 entries in one folder view and names up to 60 characters.
- microSD ROM: maximum 4 MB per file.
- Nextor over microSD: FAT16 partition up to 4 GB.
- Manbow2 save data and emulated ASCII16 X flash writes are volatile and lost on power-off.
- File Hunter writes to the microSD root and replaces an existing file with the same name.

Information and sources

Prepared from the public MSX PicoVerse repository, especially the official PicoVerse 2350 MultiROM, Explorer and LoadROM manuals and the Nextor and WiFi technical notes. Features may change in later firmware releases. Use only ROM images and software you are entitled to use. File Hunter is an external service.

https://github.com/cristianoag/msx-picoverse-public

https://github.com/cristianoag/msx-picoverse-public/blob/main/docs/msx-picoverse-2350-multirom-tool-manual.en-us.md

https://github.com/cristianoag/msx-picoverse-public/blob/main/docs/msx-picoverse-2350-explorer-tool-manual.en-us.md