

WiFi-VirtDisk Manual (Quick Guide)

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The WiFi-VirtDisk for the Z80-MBC2 can be connected as a replacement for the SD card on the Z80-MBC2. However, the SD card protocol is not emulated; instead, a custom protocol is used to communicate with an ESP8266. This ESP8266 connects via WLAN to server software, which then provides the disk images. The server allows you to manage the entire SD card content in a directory. Additionally, a single disk can be emulated in a directory. This is made possible by using **libdisk**.

Installation

The WiFi-VirtDisk consists of three parts, each created for different tasks:

- IOS for Z80-MBC2 with WiFi-VirtDisk support
- WiFi-VirtDisk Client (ESP8266)
- WiFi-VirtDisk Server (PC with Windows or Linux)

After cloning the repository from GitHub, the MBC2 IOS and the WiFi-VirtDisk Client can be compiled with the Arduino IDE (tested with v2.3.6).

For the WiFi-VirtDisk Client, the libraries **WiFiManager** by *tzapu* and **DoubleResetDetector** by *Stephen Denne* are required, which can be installed via the library manager.

The WiFi-VirtDisk Server was created with Visual Studio Code and WinLibs (<https://winlibs.com>) under Windows 11. It is best to use the CMake plugin for this.

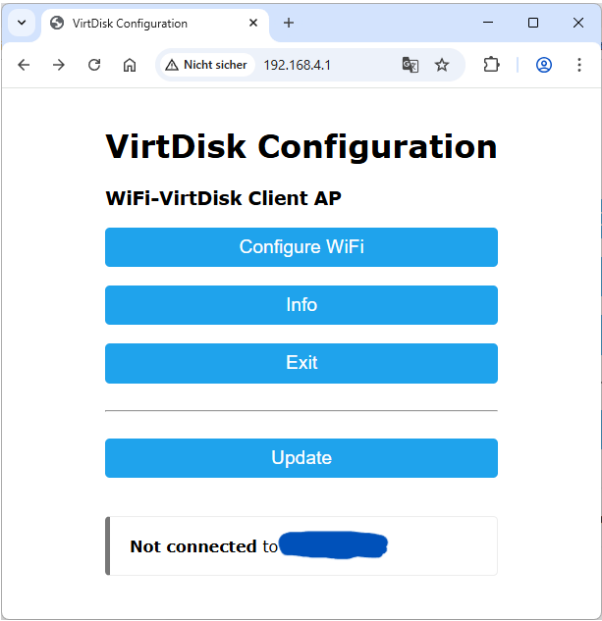
Commissioning

The **WiFi-VirtDisk Client** should be connected to the SD card port of the Z80-MBC2 according to the schematic. The debug functions for operating the reset and user buttons are optional.

Observe 5V supply voltage! The 5V from the PC (USB) must not be connected to the 5V (external) of the Z80-MBC2! Only the ground connection is required!

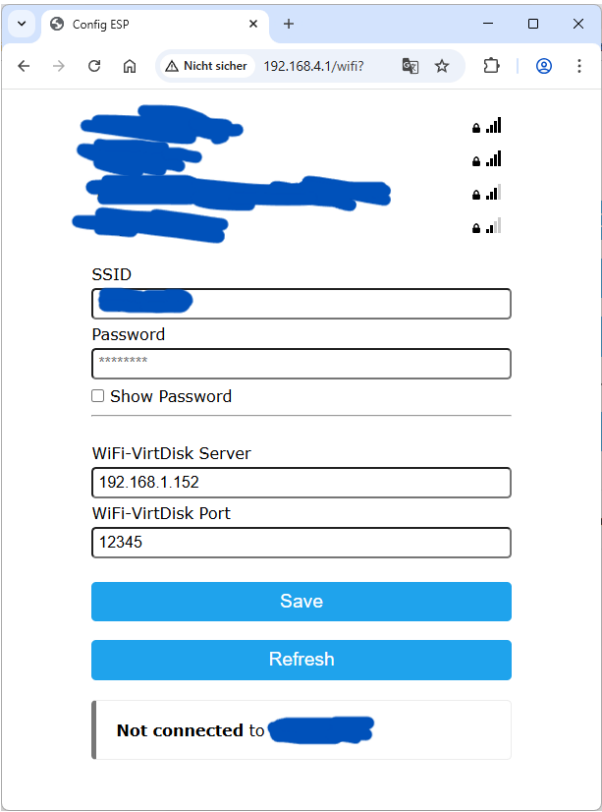
The WiFi-VirtDisk Client can be connected to the PC via USB cable and then provides a COM port. This is configured with 115200 baud, 8N1, and displays information about the status.

When the WiFi-VirtDisk Client (ESP8266) is started for the first time, it is not configured. This is indicated by a fast blinking LED. It then operates in Access Point mode and provides its own WLAN with the SSID **WiFi-VirtDisk Client AP**. You can then access the configuration portal with a web browser at the IP address **<http://192.168.4.1>**.



Here you can select your own WLAN (SSID) and set the password.

Additionally, the IP address of the WiFi-VirtDisk Server and the port (default: 12345) are set here. The debug server port is always one number higher (default: 12346).



After saving successfully, the client should connect to the configured WLAN. While connecting, the LED blinks slowly. Once the connection is established, the LED stays on.

Afterwards, the WiFi-VirtDisk Client tries to connect to the server.

The **WiFi-VirtDisk Server** is started in a terminal and requires a port release for the main port and the debug port.

```
Windows PowerShell
PS D:\Projekte\WiFi-VirtDisk\WiFi-VirtDisk-Server\Release> .\WiFi-VirtDisk-Server.exe

WiFi-VirtDisk Server v1.0.0 (50) - Copyright (c) 2025 by Welzel-Online
Using LibDsk v1.5.21, CP/M Tools v2.23 and SimpleIni v4.22

'H' for help, 'Q' for quit

INFO: Using configuration file: .WiFi-VirtDisk
INFO: Server port: 12345, Debug Server port: 12346
INFO: File path: D:/Projekte/WiFi-VirtDisk/WiFi-VirtDisk-Server/testData/files/
INFO: Disk path: D:/Projekte/WiFi-VirtDisk/WiFi-VirtDisk-Server/testData/disk/
INFO: Disk emulation file: DS0N00.DSK

INFO: WiFi-VirtDisk Server started, listening on port 12345
INFO: Debug Server started, listening on port 12346
'R' for reset the Z80-MBC2, 'U' for user button and reset

INFO: Client connected (192.168.1.158:63918)
INFO: Client thread created
INFO: Client connected to Debug Server (192.168.1.158:56482)
INFO: Debug Client thread created
```

On startup, the server reads the configuration from the file ".WiFi-VirtDisk" in the same directory. This file is in INI format.

```
[WiFi-VirtDisk]
serverPort=12345

filePath=D:/Projekte/WiFi-VirtDisk/WiFi-VirtDisk-Server/testData/files/
diskPath=D:/Projekte/WiFi-VirtDisk/WiFi-VirtDisk-Server/testData/disk/

diskEmuFilename=DS0N00.DSK
```

Description of the parameters

Parameter	Description
serverPort	The port of the WiFi-VirtDisk Server.
filePath	This directory contains the files (disk images) of the SD card.
diskPath	This directory contains the files for disk emulation.
diskEmuFilename	This disk image is emulated by the server.

At the moment, only the disk image *DS0N00.DSK* can be emulated, as its geometry (CP/M 2.2, system track) is hardcoded!

After starting the server, it outputs information about the configuration and the ports. When a client connects, this is displayed. The server also outputs information about the executed commands and requested data.

Simple Start

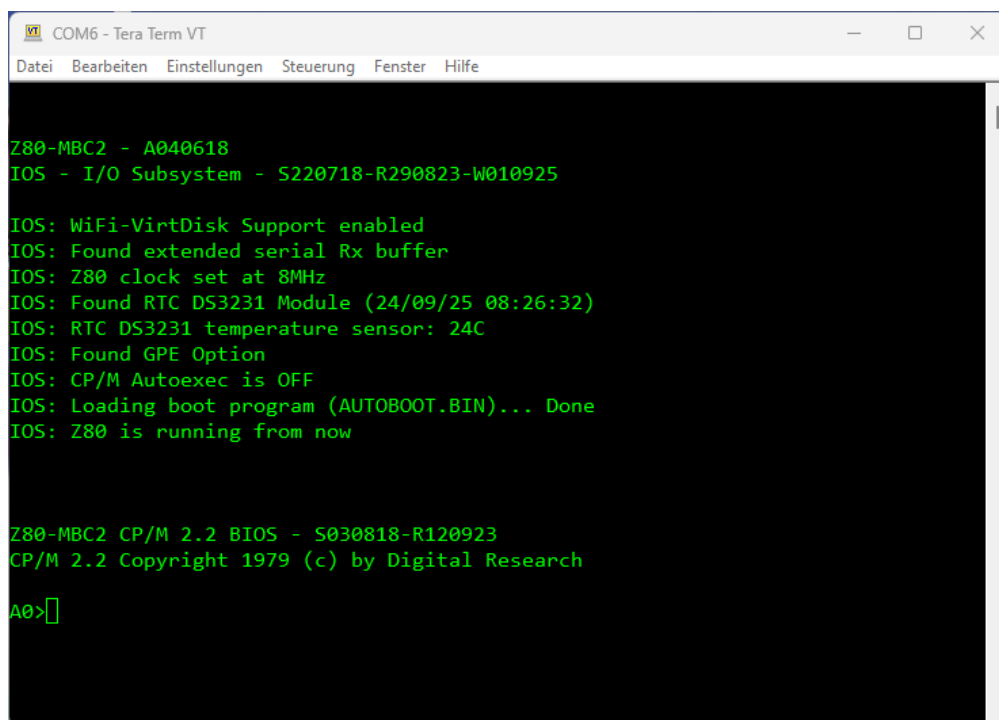
For a simple start, it is recommended to extract the entire contents of the SD card zip archive into the **filePath** folder and leave **diskEmuFilename** empty.

```
diskEmuFilename=
```

With this configuration, the Z80-MBC2 behaves as if it had an SD card.

Development for the Z80-MBC2

Developing applications for CP/M 2.2 is greatly simplified when a disk image is emulated. In this way, programs cross-compiled under Windows can be copied directly into the directory of the emulated disk image after creation. They are then immediately available under CP/M, eliminating the need to copy to an SD card or upload via XModem.

A screenshot of a Tera Term VT window titled 'COM6 - Tera Term VT'. The window has a menu bar with 'Datei', 'Bearbeiten', 'Einstellungen', 'Steuerung', 'Fenster', and 'Hilfe'. The main area displays green text on a black background, showing the boot sequence of a Z80-MBC2 system. The logs include hardware identification, IOS initialization, and the loading of the CP/M 2.2 BIOS and boot program. The prompt 'A0>' is visible at the bottom.

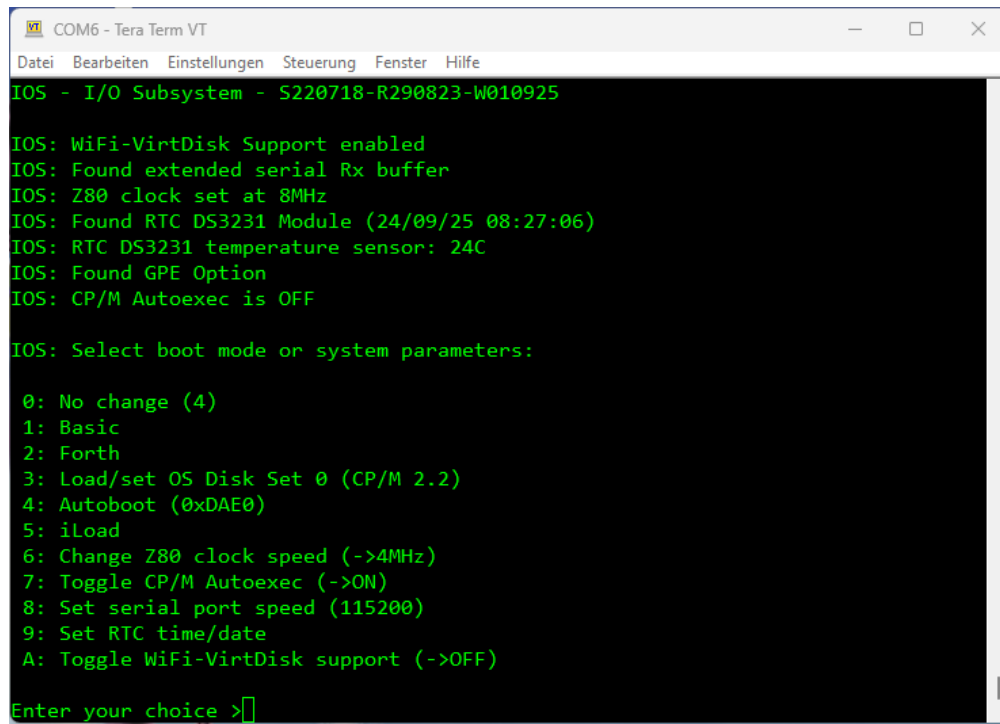
```
COM6 - Tera Term VT
Datei Bearbeiten Einstellungen Steuerung Fenster Hilfe

Z80-MBC2 - A040618
IOS - I/O Subsystem - S220718-R290823-W010925

IOS: WiFi-VirtDisk Support enabled
IOS: Found extended serial Rx buffer
IOS: Z80 clock set at 8MHz
IOS: Found RTC DS3231 Module (24/09/25 08:26:32)
IOS: RTC DS3231 temperature sensor: 24C
IOS: Found GPE Option
IOS: CP/M Autoexec is OFF
IOS: Loading boot program (AUTOBOOT.BIN)... Done
IOS: Z80 is running from now

Z80-MBC2 CP/M 2.2 BIOS - S030818-R120923
CP/M 2.2 Copyright 1979 (c) by Digital Research

A0>
```

A screenshot of a Tera Term VT window titled 'COM6 - Tera Term VT'. The window has a menu bar with 'Datei', 'Bearbeiten', 'Einstellungen', 'Steuerung', 'Fenster', and 'Hilfe'. The main display area shows green text on a black background. The text indicates the IOS version 'S220718-R290823-W010925' and lists various system components found, such as WiFi-VirtDisk Support, extended serial Rx buffer, Z80 clock at 8MHz, RTC DS3231 Module, and GPE Option. It then presents a boot menu with options 0 through 9 and A, including 'No change', 'Basic', 'Forth', 'Load/set OS Disk Set 0 (CP/M 2.2)', 'Autoboot', 'iLoad', 'Change Z80 clock speed', 'Toggle CP/M Autoexec', 'Set serial port speed', 'Set RTC time/date', and 'Toggle WiFi-VirtDisk support'. The prompt 'Enter your choice >' is at the bottom.

```
COM6 - Tera Term VT
Datei Bearbeiten Einstellungen Steuerung Fenster Hilfe
IOS - I/O Subsystem - S220718-R290823-W010925

IOS: WiFi-VirtDisk Support enabled
IOS: Found extended serial Rx buffer
IOS: Z80 clock set at 8MHz
IOS: Found RTC DS3231 Module (24/09/25 08:27:06)
IOS: RTC DS3231 temperature sensor: 24C
IOS: Found GPE Option
IOS: CP/M Autoexec is OFF

IOS: Select boot mode or system parameters:

0: No change (4)
1: Basic
2: Forth
3: Load/set OS Disk Set 0 (CP/M 2.2)
4: Autoboot (0xDAE0)
5: iLoad
6: Change Z80 clock speed (->4MHz)
7: Toggle CP/M Autoexec (->ON)
8: Set serial port speed (115200)
9: Set RTC time/date
A: Toggle WiFi-VirtDisk support (->OFF)

Enter your choice >
```