

SX-2 FPGA MSX Quick Guide (2023)



Thanks for purchasing your SX-2 FPGA MSX machine! We hope you'll enjoy it!

The unit comes loaded with the latest firmware available from KdL (3.9.1 at the moment of writing this document), thus running as a MSX2+ machine with the following features (**features might vary if a different firmware is loaded into the machine**):

- 2 Standard MSX cartridge Slots
- 1 Extra expansion IDC-50 connector (works as slot 1 mirror)
- CPU Turbo 5.37 or 8.06 MHz Modes
- microSD support through Nextor/MSXDOS (FAT-16 support only)
- Internal PSG, SCC+, OPLL (YM2413), OPL (YM3526), OPL2 (YM3812) and OPL3 (YMF262).
- 1 Mb ESE-MegaRAM/ESE-RAM SCC+ internal (soft-cart slots)
- 2/4 Mb RAM Mapper
- D-Sub-15 VGA/RGB video output w/ scanline generator
- Composite and S-Video output through VGA connector
- PS/2 Keyboard Connector
- PS2 mouse port (emulates MSX mouse on joystick port 1)
- 2 DB9 Joystick Ports (MSX compatible)
- 3.5mm Jack Stereo Audio Output
- 3.5mm jack tape in/out
- WiFi support (require SDBIOS setup)
- MIDI out (through joystick 2 port)

We highly advise NOT to reflash the firmware unless you have the tools and knowledge to recover the unit in case it bricks. Remember also, if you open the unit the warranty is automatically void. If you need to use a different BIOS, different keyboard layout, etc. we recommend to use the SDBIOS package provided by KdL. In this way you can load your BIOS of choice from the SD card without the need to reflashing the firmware.

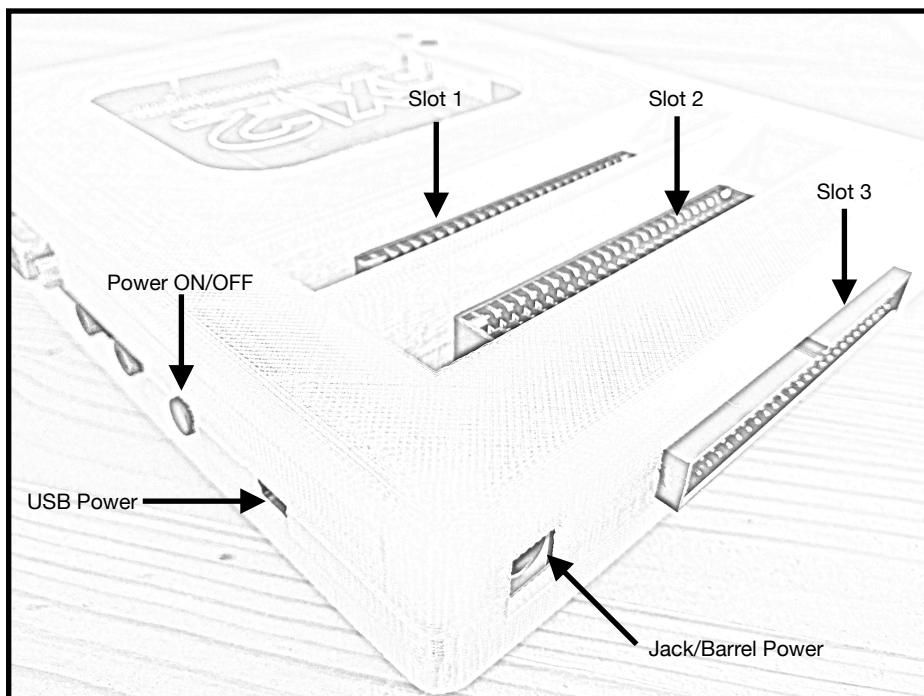
To start using your SX-2 you'll need:

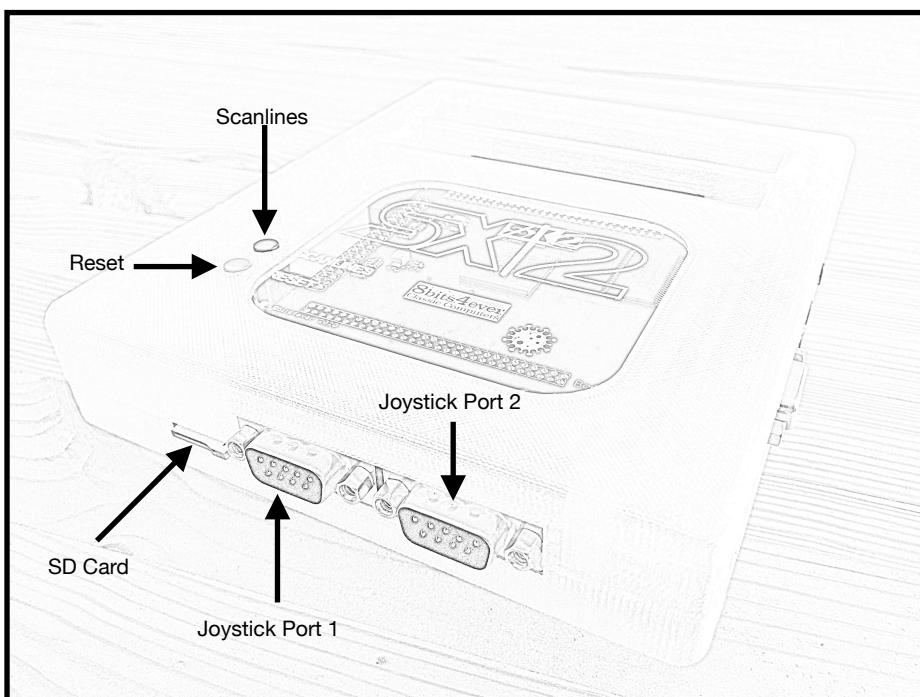
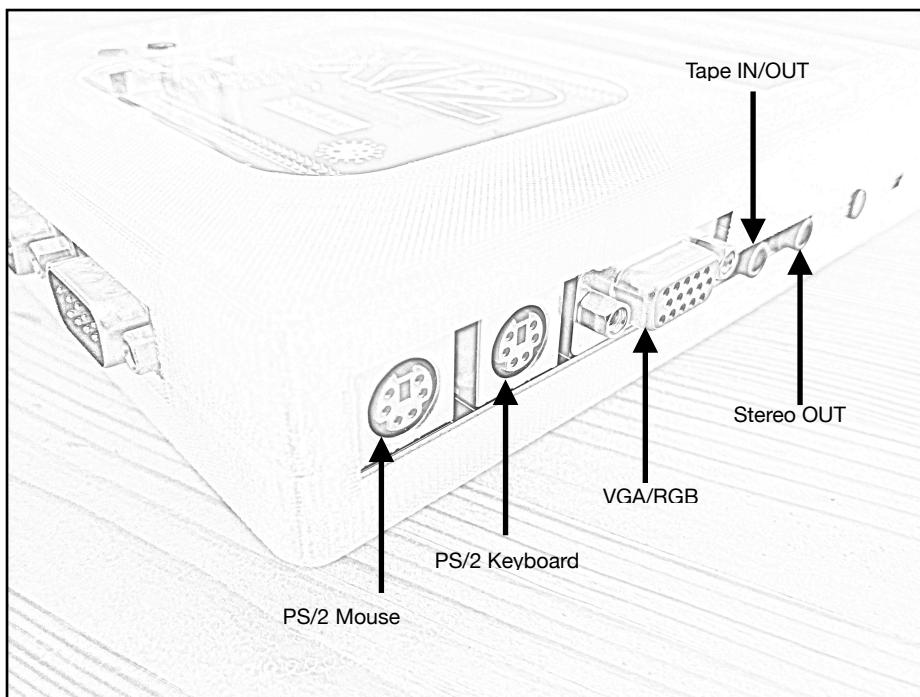
- USB power supply or **DC barrel style (5.5/2.1 mm) power supply 5 volts, center positive.**
Unit requires at least 2 Amp (2000 mA) output.
- High quality shielded Mini-USB cable (in case you use USB power supply).
- Monitor and video cable. Either VGA or RGB-Scart standards are supported.
- PS/2 Keyboard. Optional PS/2 Mouse
- FAT16 formatted SD card with MSXDOS2/Nextor boot files.
- Optionally, DB9 joysticks (MSX compatible), tape player (or Maxduino), MSX compatible cartridges, etc

You can plug any MSX compatible cartridge (game cartridges, Floppy/IDE controllers, FlashROM carts, etc are supported).

WARNING!!! Do not plug/unplug any cartridge when the unit is powered. It will very likely damage the unit permanently.

Connectors and Switches





DIP Switch Configuration

Switch	Function	Setting	
SW1	CPU Clock	OFF	CPU 3.58Mhz
		ON	Custom Speed mode 4.10MHz to 8.06MHz • [F12] change clock (3.58MHz >> 5.37MHz >> Custom Speed) • The external clock is set on [Sync to CPU] by default • [Turbo Pana] is 5.37MHz like the original specification • A special hybrid clock [Turbo MegaSD] is enabled by default
SW2/ SW3	Video Output	OFF/OFF	Composite / S-Video w/ mono audio signal(through the VGA connector, NTSC 60hz).
		OFF/ON	RGBs 15khz
		ON/OFF	VGA Mode for LED TV or LED Display • Progressive video signal 31kHz / 50Hz+60Hz with the ability to set the pixel ratio 1:1 at 60Hz
		ON/ON	VGA+ Mode for CRT Monitor • Progressive video signal 31kHz / 50Hz+60Hz / SETSMART -D0 must be executed to force 60Hz
SW4	SLOT 1 Config	OFF	External Slot-1 / Optional Slot-3 (shared) • Advised like default
		ON	Internal ESE-MegaSCC+ 1024kB (shared w/ the 2nd half of ESE-MegaSCC+ Slot-2) • External Slot-1 / Optional Slot-3 are disabled • Memo: the internal OPL3 toggle is [Scroll Lock] key (disabled by default). OPL3 is always active when both ESE-MegaSCC are enabled
SW5/ SW6	SLOT 2 Config	OFF/OFF	External Slot-2 • Advised like default
		OFF/ON	Internal ESE-MegaRAM ASCII-8K 1024kB • External Slot-2 is disabled
		ON/OFF	Internal ESE-MegaSCC+ 2048kB • External Slot-2 is disabled
		ON/ON	Internal ESE-MegaRAM ASCII-16K 2048kB • External Slot-2 is disabled
SW7	RAM Mapper	OFF	Internal 2048kB RAM / 1st EPBIOS
		ON	Internal 4096kB RAM / Optional 2nd EPBIOS
SW8	SD Card Slot	OFF	Disabled
		ON	Enabled

For more detailed information and specs please download the complete documentation from our gdrive server.

We also encourage you to check out all the documentation provided by KdL together with his firmware package.