



version 2

Powerful and smart 8bit home computer, a ZX Spectrum clone with lots of popular, already built-in peripherals. The **eLeMeNt ZX** combines a real Z80 CPU and a modern FPGA circuit to achieve the best compatibility with all software and hardware for the ZX Spectrum family.

Designed as a standalone unit, for the **Tiny case** and an external PC keyboard and mouse. Or to fit into cases of ZX Spectrum +2 and +2A models, with their excellent keyboards.

Main features of the LMN128 FPGA core:

- ZX Spectrum 48, 128 and +2A, Pentagon 128, 512, 1024 v2.2 and 4096 KB memory models
- CPU speed 3.5/7/14/20 MHz, overclocking up to 30 MHz
- precise display engine, perfectly synced timings, digital output incl. sound
- SD and micro-SD slots, esxDOS, DivSD (divMMC) and Z-Controller storage interfaces
- TurboSound FM, SID, 6-channel SAA1099, SoundDrive/Stereo Covox/Spectrum sound
- retro scan-line effects, hardware GigaScreen - no flickering, enhanced graphics: Timex modes, ULAplus and TrueColour palettes, HiRes with attributes, HGFx - ZX-Planar
- K-Mouse, Z80-DMA, Ultimate, DivMMC and MB02 RAM expansions
- Atari, Kempston or SEGA controllers
- Wi-Fi connectivity

HW specifications:

- real Z80 CPU @ **20 MHz**
- replaceable FPGA board: **Alchitry Au** FPGA Xilinx **Artix-7** board
- 2MB SRAM (main memory), 512KB FLASH (sets of ROMs), FRAM 8KB (system and bios config)
- modern **digital video and audio output** to any standard PC monitor or TV
- standard ZX Spectrum expansion bus, 2x internal ZX bus and others
- analog stereo sound output, internal sockets for +2/+2A cassette players
- 3x joystick: **Atari, Kempston or Sega** controller, two Sinclair slots are optional
- reset button in original place, two additional (NMI and extra) buttons
- 2x microSD a 2x SD card socket
- **two USB sockets** for external PC keyboard and mouse (**K-Mouse** compatible) [*]
- internal serial to USB convertor for fast and easy connections with a PC through a standard USB-A cable
- internal socket for an ESP2866 **Wi-Fi module** (MB03+, ZX-Uno/Karabas, ZX128-AY compatible)
- motherboard fits to the standalone **Tiny case v2.0** or to ZX Spectrum +2/+2A cases (both +2 and +2A keyboards can be used)
- ready for the expansion memory **AA-SRAM 2048-8** and for the **Alchitry Au+** board
- 9V power supply (at least 1A, polarity does not matter)

[*] USB keyboards or mice must support the PS/2 protocol.
Use „passive“ PS/2toUSB convertors for old PS/2 devices.

More information at:

<https://sites.google.com/view/elementzx/home>
<https://www.facebook.com/groups/743960316425769/>