

Release notes for ZX Touch firmware v1.12

Welcome to Firmware Upgrade v1.12 for the ZX Touch gaming console. We are committed to continuously enhancing the ZX Touch, ensuring it remains the premier choice for ZX Spectrum gaming enthusiasts. This release focuses primarily on addressing emulation deficiencies and fixing bugs to enhance the stability and accuracy of our platform. Additionally, we have introduced important new features and four high-quality games, further enriching your gaming experience.

As always, the firmware can be upgraded using the stand-alone FUT application built into the console. This ensures that even if there are issues with the main firmware, the upgrade process remains reliable and accessible. Detailed instructions are available in the user manual.

NOTE: After updating the firmware, it is recommended to reset the device to factory settings to ensure proper initialization of the new parameters introduced in this update. To do this, navigate to the Save/Load settings, press the button with the Home icon to reset, and then select 'Save defaults' to apply these settings on every boot.

CHANGE LOG:

1. AY Sound emulation

The latest firmware update for the ZX Touch console significantly improves the hardware-based AY chip emulation, addressing previously noted issues with non-standard sound techniques such as buzz bass and sample playback. These improvements have ensured that the emulation is now precise and accurate.

However, the hardware emulation was initially designed with the console's built-in speaker in mind, which cannot adequately reproduce deep bass tones. To overcome this limitation and provide a richer audio experience, a new software-based emulation option has been developed. This software emulation is not constrained by the hardware limitations and enhances the depth of bass tones, especially noticeable when using headphones.

Both the hardware and software emulations now accurately replicate the AY chip, offering users a choice between the original, precise hardware sound and the enhanced depth of the software sound. This choice can be made within the Sound submenu, allowing for a customized audio experience based on user preference.

2. Resolved Speaker Noise Issue on Low Battery

In this firmware update, we have successfully addressed an issue where users experienced an unwanted noise from the beeper sound when the battery level was low during silent moments in gameplay.

3. Comprehensive Emulator Enhancements and Increased Accuracy

This firmware update introduces a range of optimizations to our emulator, with a key focus on expanding the contended memory emulation to include scenarios where the CPU is not accessing memory. This specific enhancement was crucial for achieving more accurate emulation, noticeable particularly in some demos and more rarely in games. Alongside this critical update, we've implemented additional refinements across the emulator to address various other minor inaccuracies. These collective improvements ensure a much closer emulation of the original ZX Spectrum's behavior, enhancing the authenticity and quality of the gaming experience.

4. Correction of .TAP File Loading Issues

We have addressed a specific issue with the loading of .tap files where blocks that should be skipped resulted in incorrect loading of subsequent blocks. This update ensures that the console more accurately handles these files, enhancing overall reliability and performance for games with unique block structures.

5. Expanded Game File Size Limit

We have significantly increased the maximum allowable game file size in the latest firmware update. Previously, the limit was set at 640KB, which restricted the loading of larger .tap files. Now, the maximum file size for any game format has been expanded to 4MB. This update is especially beneficial for .tap files, which can be large due to the number of blocks, and for .tzx files, which may vary greatly in size depending on the type and quantity of blocks.

6. ZTG Tool Enhancements and Fixes

In this firmware update, we have made several key improvements to the ZTG tool. Firstly, we resolved an issue where the option to save generated ZTG files directly to the games library folder or to a local folder was not functioning as intended. This option now works correctly, allowing users more flexibility in managing their files.

Additionally, the "Add to Library" feature has been fixed to handle large ZTG files properly when used on files already generated and stored in different folders. Previously, using this feature on large ZTG files, especially when combined with slower SD cards, could unexpectedly shut down the console. This issue has been addressed, ensuring reliable operation regardless of file size or SD card speed.

We have also extended the capability of the ZTG tool to convert TRD files into ZTG format. This conversion functionality has now been enabled for all game file types, including the newly supported TZX and SCL formats.

7. Game Display Issue Fix in Interlaced Mode

We have corrected an issue where adjusting the display size during a paused game in interlaced mode caused game display corruption.

8. Updated 'Hide Side Sections' Functionality

We've refined the 'Hide Side Sections' feature for better gameplay interaction. Now, revealing the side sections by tapping the screen with one finger will no longer pause the game, unless the 'auto' option is enabled. With 'auto' enabled, the game will pause to prevent the sections from immediately hiding again.

9. Turbo Modes

This firmware update brings exciting enhancements with two new turbo modes: Turbo Mode and Double Emulation Speed.

Turbo Mode: Operates by emulating the CPU at 7MHz, double the standard 3.5MHz, while maintaining the ULA interrupt at a constant 50Hz. This mode is supported by specific games that can detect and adapt to this increased speed, often resulting in enhanced graphics without altering the AY music, which remains driven by the interrupt. This mode is akin to the turbo mode found in Pentagon computers, a ZX Spectrum clone that can run many of the same games.

Double Emulation Speed Mode: This mode doubles the entire emulation speed, with the CPU running at 7MHz and the ULA interrupt frequency boosted to 100Hz. As a result, all aspects of the game, including the music, are accelerated, providing a unique and faster gaming experience.

These options can be enabled from the Settings menu, under the Miscellaneous submenu,

10. New Game File Format Supported: SCL

This firmware update introduces support for the SCL game file format. SCL is a condensed format for storing disk image data from the Beta Disk interface, which is traditionally saved in TRD files, already supported by the ZX Touch. This update allows users to directly load SCL files without the need for conversion to TRD format on a computer, as the ZX Touch handles this automatically upon game launch. Additionally, we have addressed previous issues with the Beta Disk interface support that affected some TRD files, ensuring smooth and problem-free loading of both SCL and TRD files.

11. New Game File Format Supported: TZX

We are pleased to announce support for the TZX game file format in this firmware update. The TZX format faithfully reproduces the data stored on cassette tapes, using a variety of block types. This includes cassettes that featured copy protection and games that utilized custom loaders. While loading these files, tape traps are employed to instantly load blocks that the ZX Spectrum would typically process through ROM routines. However, all other blocks are loaded in a manner that mimics actual playback from a tape player.

12. Tape Player for TZX and TAP Files

With the introduction of the TZX format, we have implemented a tape player accessible from the settings menu, which simulates the playback of audio cassettes. This feature enhances the emulation experience by allowing for the authentic loading of TZX and TAP files. For TAP files, which are predominantly loaded via ROM routines, users can experience audio-based loading by disabling the 'tape traps' option in the tape player.

The tape player includes an 'auto start/stop' feature, which is enabled by default. It operates intelligently to activate the tape playback only for file sections that cannot be loaded through tape traps, unless the tape traps option is entirely disabled. In cases where 'disable tape traps' is active, all TAP and TZX files will be loaded based on audio emulation. Additionally, users can select an option within the player to automatically engage turbo mode during tape activation to reduce loading times. The player also displays a list of blocks in the selected file and their current position. A progress box appears in the right section of the screen when the tape is running, providing visual feedback on the loading status.

13. Snapshot Feature

We have introduced a new 'Snapshot' feature that allows players to capture and save the current state of a game in Z80 or SNA formats at any time. This feature is especially useful for games in TAP or TZX formats, which due to specific TZX block types or the presence of custom loaders, can only be loaded via tape playback. As tape loading can be lengthy, once a game is fully loaded, users can save a snapshot to bypass the loading process in future sessions. These snapshots can be loaded instantly or converted into a ZTG file for even more versatility. Additionally, saving snapshots enables players to continue their gameplay on other platforms, enhancing the ZX Touch's flexibility and user convenience.

14. New Built-in Games

In the latest firmware update, we are pleased to include three new high-quality games from the homebrew community, along with an excellent text adventure from 1986. Special thanks to all developers for allowing us to showcase their exceptional work. We proudly support the homebrew community and appreciate the creators of classic games for their innovative contributions that continue to enhance the ZX Touch as a vibrant platform for both classic and contemporary gaming experiences.

- **Pentacorn Quest** (José Ignacio Rodríguez – Nightwolf)
- **Secrets: The Castle of Doom** (Wizbit Games)
- **Max Stone** (Juan Leal – Flopping)
- **Quest For The Golden Eggcup** (Harvey Lodder – Network Adventure Games 1968)