ZX Touch

ZX Spectrum handheld console
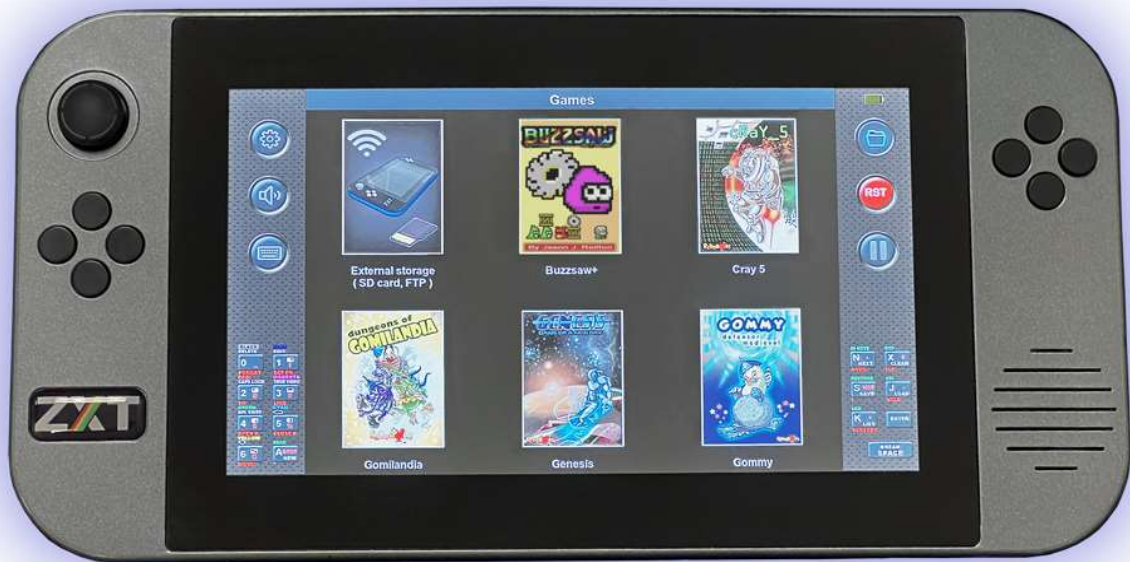
User manual

Content:

1. Introduction:

Welcome to the user manual for the ZX-Touch, a handheld gaming console that offers a unique retro gaming experience. This console was inspired by the popular computer of the 1980s, the ZX Spectrum, which was one of the first home computers available to the general public. Although the ZX Spectrum is no longer in production for decades, it still has a large fan and developer base around the world that continues to enjoy the spirit of this iconic platform.

The size and shape of ZX-Touch (ZXT) are carefully crafted. With a 7" touch-screen high-resolution display, 8 high-quality tactile buttons, and an analog joystick, all in the palm of your hand, the ZX-Touch provides a comfortable gaming experience for hours of gaming.

The ZXT has some built-in games that have been generously licensed by newer authors, however thousands of games written for the ZX Spectrum can be loaded from an SD card. The console is equipped with hardware capabilities for a WiFi connection, but the current firmware version does not support WiFi game loading due to certain formal constraints.

Although this is a pure emulation of an old computer, the original ROM that now has a license for emulation is not built into the console itself, but has been replaced by the SE Basic ROM that has a GPL v2 license. The reason for this is to avoid any legal issue related to the rights to use the original ROM in the future.
However, the console allows changing the ROM with the one saved on the SD card. Thus, by using the original ROM that is widely available on the Internet, ZXT achieves full compatibility with 48k and 128k versions of computers.

Great care was taken about the authenticity and precision of the image display. Unlike PC emulators whose refresh rate is tied to the PC computer (usually 60Hz), the refresh rate of the ZXT image is 50Hz and is fully synchronized with the emulation of the original computer. This essential feature ensures the smoothness of moving images that is achieved with the original ZX Spectrum connected to a TV CRT screen, and cannot be seen on PC emulators. The ZX Spectrum had a fixed palette of basic colors, while the ZXT has a built-in ULAplus^{TM} colors feature that provides the ability to change the palette and thus give a new look to your favorite games.

ZXT is highly configurable. Each button or joystick direction can be mapped to any keyboard key or direction of previously popular joysticks. AY sound can be adjusted for per channel via the touchscreen mixer, and all of this can be memorized and automatically loaded for each specific game. In addition, for each game there are 3 memories in which the current position in the game can be saved and loaded later.

Many fans of the Spectrum platform love text-based adventure games, which can now also be played on the move, because the ZXT can display the full profile of the keyboard on the touchscreen at any time.
This feature also makes this console a fully portable ZX Spectrum computer where you can write BASIC programs without being tied to a desk.

Although ZXT is a commercial product, the inspiration for its creation is of a completely different nature.

Enjoy ZXT!

2. Hardware description:
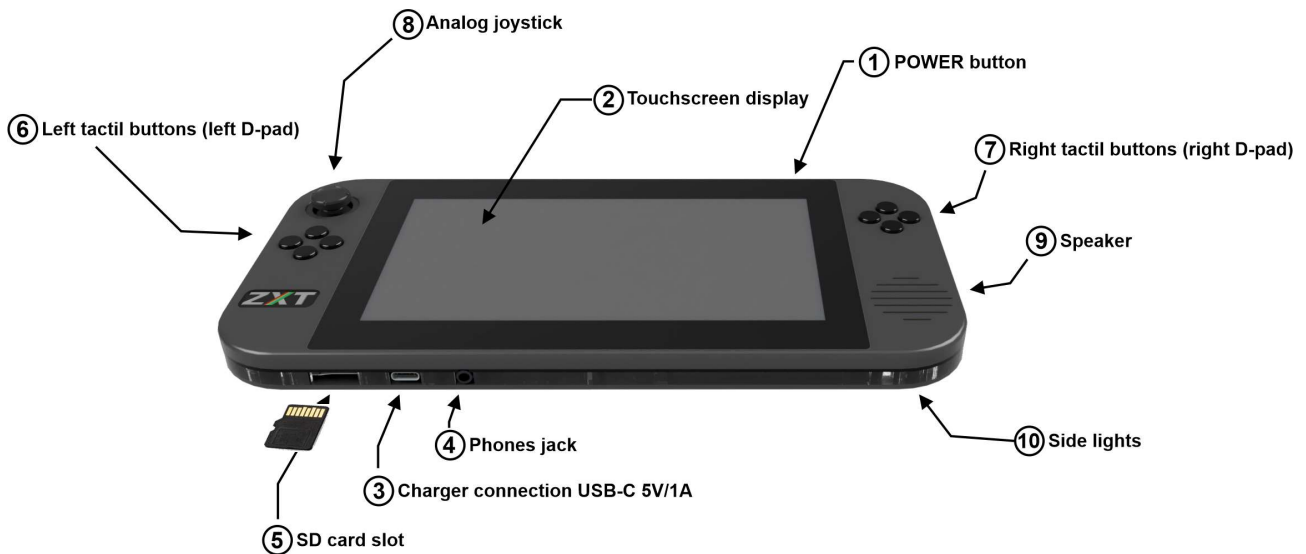
Figure 1.

1. POWER button

One short press of this button turns on the ZXT console. If you hold this button for 3s while the console is running console will turn off.

2. Touchscreen display

The ZXT features a 7-inch LCD IPS display with a high resolution of 1024x600. The refresh rate of the display is 50Hz, perfectly synchronized with ZX Spectrum emulation. The IPS technology delivers a strikingly vivid picture with a wide viewing angle. Beneath the glass, there is a capacitive multitouch screen that offers an intuitive user interface and a full keyboard profile of the ZX Spectrum.

3. Battery charger connection

The ZXT device does not come with an AC/DC adapter for charging its battery. However, it is equipped with a wide spread USB-C port that enables the use of any AC adapter capable of delivering 5V/1A. Through the transparent edge of the console, two LED lights can be seen on the left and right side of the charging connector. The red LED is lit if the charger is connected, and the green is lit when the battery is charging. If the red light is on and the green one is off, it means that the battery is fully charged.
The ZXT features a built-in 3000mAh rechargeable LiPo battery that provides 4-6 hours of playtime, depending on the screen backlight and sidelight settings. Charging time for the battery is approximately 3 hours when using fast mode (1A), and 6 hours when using slow mode (0.5A). The ZXT will automatically select the charging mode based on the type of charger and battery condition.

NOTE: The length of the USB-C cable must not exceed 3 meters.

4. Headphone jack

The console features a 3.5mm headphone jack located on the lower side. Once headphones are plugged in, the built-in speaker will automatically turn off.
Additionally, the ZXT can be connected to an external portable or fixed loudspeaker with an amplifier using this connection.

5. Micro SD card slot

The ZXT comes with a micro SD memory card slot that can accommodate a card of any capacity, but it must be formatted using the FAT32 file system. Please take note of the direction of plugging, which is indicated in the Figure 1. The contacts on the card should be inserted into the slot first, and turned so that they face in same direction as front side of the console, where the screen is located. The micro SD card has multiple functions. It primarily serves as a storage location for games that can be loaded onto the ZXT and played. In addition, the SD card is used by the ZXT to store game positions and configurations for individual games. Alternate ROMs that can be used are also stored on an SD memory card.

6. & 7. Tactil buttons

The console features eight physical buttons that are grouped in a diamond shape, with four buttons on each side forming the left and the right d-pads.These buttons have been thoughtfully selected to provide a soft touch while also ensuring a clear tactile sensation. They are manufactured by Omron type B3F and are considered some of the best quality keys available in the market for their size. Each d-pad is made on a separate PCB and connected to the main PCB with four screws, allowing for easy replacement in case they wear out.

8. Analog joystick

On the left side of the console is an analog joystick that can be assigned to any key on the ZX Spectrum keyboard or to the direction of previously popular joysticks. This analog joystick is the same as one on the Nintedno Switch console and in case of wear, the user can replace it with a spare one using only a Philips type screwdriver.

9. Biuilt in speaker

ZXT produces sound through a built-in 28mm 1.5W speaker located on the right side of the console. The speaker is driven by an adequate amplifier in class D. The AY sound is produced in hardware by mixing three square-wave oscillators and a noise generator through a digitally controlled analog mixer. So the AY chip emulation is achieved with very little software involvement. With this solution, a higher quality of sound has been achieved compared to if the sound was completely produced by software on this platform.

10. Side lights

The case is made of several layers. One of the layers is made of a transparent acrylic sheet cut on a laser cutter. RGB LEDs are placed in the four corners of the console, which lights are transmitted around through this transparent layer. ZXT has several modes for controlling this light.

3. Software description:

The ZXT user interface adopts a familiar approach inspired by smartphones and tablets. Whether you wish to initiate a game or modify settings, the touch screen serves as the primary input method. Tactile switches and a joystick are exclusively employed for gaming purposes.

Upon powering on the console, the title screen briefly displays for a few seconds, followed by the screen depicted in the image below:
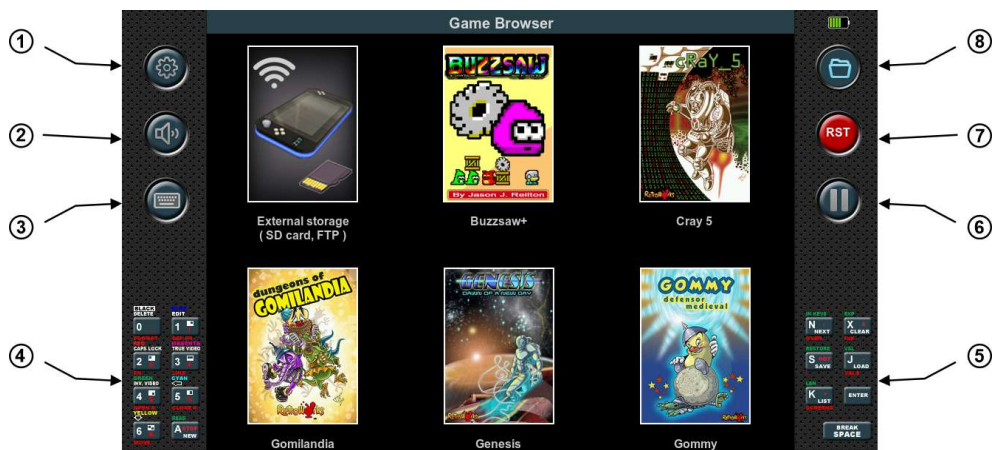

Figure 2.

The display is divided into three sections: left, center, and right. The left and right sections of the screen are constantly visible, while the central section, which is the largest, is dedicated to the game itself, as well as the game browser or settings menu.
In the image above, the central section displays an open game browser, which allows users to launch built-in games or games stored on the SD card. A more detailed explanation of how to use the game browser will be provided later.

1. Settings button:

Tapping this button at any time opens the settings menu, and if the emulation is running, it will be paused. Pressing the button again will make the settings menu disappear, and the emulation will resume functioning as before.

Figure 3.

2. Mute button:

Tapping this button will completely mute the sound. Tapping it again will restore the sound to the previously adjusted volume.

3. ZX Spectrum keyboard button:

This button is only active during emulation. It opens the complete virtual keyboard of the ZX Spectrum in the lower part of central section. To ensure the visibility of the emulation screen, it shrinks from 3:1 to 2:1 and moves upwards, while the left and right sections expand to incorporate additional functions. If it is pressed again, everything returns to its previous state.
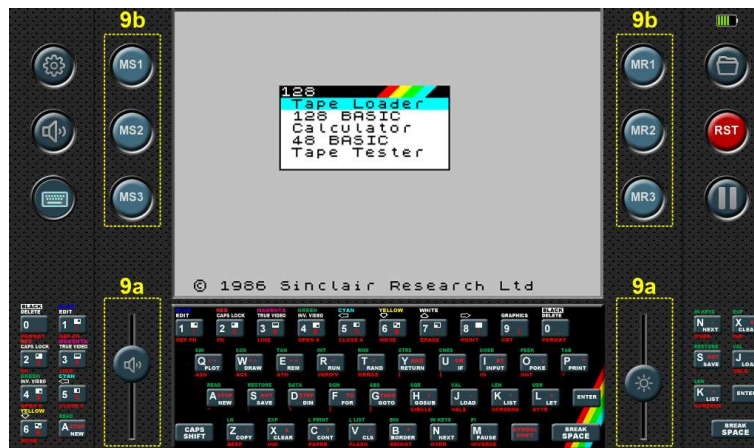

Figure 4.

4. Left-Side Virtual Keyboard:

This is an 8-key keyboard that can be customized with any of the ZX Spectrum keyboard keys. It is active during emulation and provides quick access to frequently used keys.

5. Right-Side Virtual Keyboard:

Similar to the left-side virtual keyboard, this also features 7 keys. However, two keys on this keyboard, namely Enter and Space, are fixed and cannot be changed.

6. Pause button

This button is used to freeze the emulation. By pressing it again, the emulation will resume and continue running.

7. RESET button

This button represents the RESET of the emulated ZX Spectrum computer. By pressing it, the computer boots from its ROM.

8. Game browser button

By tapping this button, the game browser will appear, regardless of whether the emulation is currently active or if you are in the settings menu. If the emulation was active, it will be paused, and pressing the button again will automatically resume the emulation.

9. Extended left and right section

During emulation, when the keyboard view is selected, the left and right sections expand, revealing additional functions.

9a. Sound volume and display backlight

In the lower part of the left and right section, there are convenient sliders for adjusting the volume of the sound and the backlight of the screen. These sliders are shortcuts to functions that can be found in the settings menu.

9b. Saving and loading game position

On the upper left side, three buttons are present: **MS1, MS2, MS3**.
By pressing one of these three buttons during emulation, the current state of the game is saved in one of three memory slots, depending on which button is pressed. This snapshot is then stored as an SNA file on an SD card. The filename and location of the snapshot file match the name and location of the running game, with only the file extension being different. If it is a built-in game, the snapshot file is saved in a dedicated directory called **ZXT_SYSTEM_TEMP**. However, if this directory is not found on the SD card, the save operation will be unsuccessful.
On the right side, there are three buttons: **MR1, MR2, MR3.**
These buttons enable the loading of a previously saved game position from the corresponding memory slot.
If the emulation screen is 3:1 and covers these additional functions, these functions still work even though they are not visible on the screen. So, during the game it is not necessary to press the keyboard button and then one of the Mxx buttons, it is enough to guess and press the position of the Mxx buttons or sliders.

3.1. Game browser

When the console is powered on, the game browser automatically opens, presenting the icons of the built-in games (Figure 2.). Tapping on a game icon opens a window displaying information about the game. Pressing the start button initiates the game, while pressing cancel returns to the game selection screen.
The first icon is not a game, but serves as a transition to display the contents of the SD memory card.

Figure 5.

ZXT supports the loading of three file formats: TAP, SNA, and TRD. However, in order to load TRD files, a TRDOS ROM must be present on the SD card.

The game browser presents the files in a scrollable list format, displaying only those files in the directory that can be loaded. Furthermore, the view can be filtered using the filter located at the top of the list. In addition to files, the list also includes all subdirectories. Navigating through directories is accomplished by tapping on the directory bar, and to return, simply use the back button located at the top of the list.

To start a game, tap on the bar displaying the game's name. Depending on the button selected at the top of the list, the appropriate emulation for either the 48K or 128K game will be launched.

3.2. Settings

When tapping on the settings button, the icon menu will appear, as depicted in Figure 3.
The menu offers eight choices: Display, Sound, Physical Keys, Side Keyboard, Joystick, Side Lights, Miscellaneous, and Save/Load.

3.2.1 Display

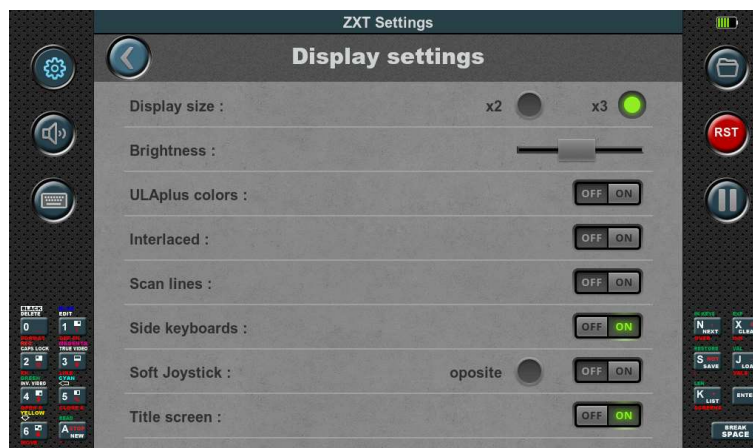Selecting the Display icon will display the following view:

Figure 6.

- Display size

There are two available screen sizes for emulation: x2 and x3.
In x2 size, each pixel of the ZX Spectrum is enlarged twice, resulting in a display of 2x2 pixels on the ZXT screen.
In x3 size, each pixel of the ZX Spectrum is enlarged three times, resulting in a display of 3x3 pixels on the ZXT screen.
These options allow users to choose the desired level of pixel enlargement for an optimal viewing experience.

- Brightness

This slider controls the intensity of the backlight. By adjusting the position of the slider, you can increase or decrease the brightness of the backlight according to your preference.

- ULAplus™ colors

By enabling the ULAplus™ colors option on the ZXT console, you unlock the ability to display the ULAplus™ color palette. This option allows each original ZX Spectrum color to be substituted with one from the extended palette. Not only does it facilitate color transformation, but it also enables a broader range of colors to be displayed on the screen by using additional bits from the attribute information.
It's important to note that the ULAplus™ option is only meaningful if the specific game or software being used supports it.

- Interlaced

When the interlaced mode is enabled on the ZXT console, ZX Spectrum frames are displayed on alternating ZXT lines. Specifically, even ZX Spectrum frames are shown on even-numbered ZXT lines, while odd ZX Spectrum frames are displayed on odd-numbered ZXT lines. It is advised to use this mode primarily for software that utilizes the "interlaced effect" to enhance vertical resolution. In such cases, the ZXT console will provide a highly stable "interlaced" picture.
However, for software that does not employ the interlaced effect, it is recommended to disable this option.

- Scanlines

By enabling this option, depending on the selected display size of either x2 or x3, every second or every third line of the ZXT display is not shown. This intentional omission creates an effect reminiscent of the visuals on older CRT monitors or arcade machines, adding a touch of nostalgia to the image.

- Side Keyboards

This option enables the ability to toggle the side keyboards on or off. When this option is enabled, the side keyboards will be displayed, providing additional input functionality. On the other hand, disabling this option will hide the side keyboards, removing them from view.

- Soft Joystick

By enabling this option, the display of the side keyboards is automatically deactivated, and a soft joystick appears in their place. This provides a smartphone-like input experience, allowing users to control the ZXT console using a virtual joystick instead of physical keys.
Additionally, there is an option available to swap the left and right sides, providing flexibility in terms of joystick placement.

- Title Screen

While the ZXT console already has a quick startup time due to the absence of an operating system, enabling this option allows for an even faster boot-up by skipping the display of the title screen. Please note that this option is only meaningful if the configuration is saved in the default slot. If the configuration is not saved in the default slot, enabling this option will have no effect and it will be forgotten upon shutting down the console.

3.2.2 Sound

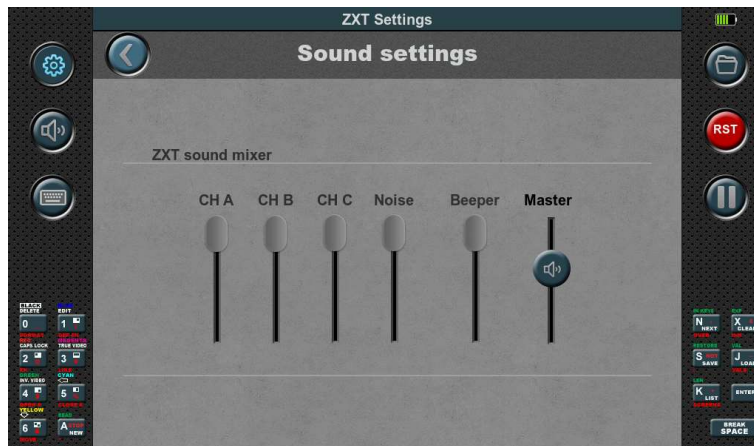Selecting the Sound icon will display the following view:

Figure 7.

The ZX Spectrum 128K featured a multi-channel sound system capable of producing three channels of square wave and one channel of noise. Additionally, it inherited the ability to reproduce the Beeper sound from the ZX Spectrum 48K. In the ZXT console, you have the option to individually control the volume of all five mentioned channels. Furthermore, there is a master volume slider available, which adjusts the overall volume output to the speaker or headphones.

3.2.3 Physical keys

Selecting the Physical keys icon will display the following view:

Figure 8.

This configuration allows you to assign any keyboard key or Kempston joystick direction to the physical keys of the console. As many ZX Spectrum games have different keyboard keys for control, this option becomes necessary to ensure compatibility with all games using the physical keys.

Setting up the key mapping is a straightforward process. Firstly, you need to select the physical key you wish to map by tapping on the corresponding box representing the physical key. Then, press the

desired key on the keyboard to establish the connection. Once mapped, the assigned keyboard key will be displayed inside the box.

In addition to keyboard keys, directions and the fire button of the Kempston joystick can also be assigned to specific physical buttons, expanding the range of control options.

Mapping can also be done using presets, which simplifies the process by automatically assigning all eight physical buttons at once. This feature saves time and effort, allowing for quick and convenient mapping of the physical buttons without the need for individual assignments.

3.2.4 Side keyboards

Selecting the Side Keyboards icon will display the following view:

Figure 9.

In ZX Spectrum games, besides the control keys for gameplay, additional keys are often used to adjust game options or initiate the game. Different game developers utilize different keys for these purposes, making it highly convenient to have a dedicated set of keyboard keys readily accessible. This eliminates the need to frequently bring up the virtual keyboard and minimizes interruptions to the gameplay experience.
Having a designated set of keyboard keys readily available allows for seamless and efficient interaction with the game, ensuring smooth navigation and quick access to essential functions.

The mapping of the side keyboard follows a similar process to that of the physical keys. To map a side keyboard key, you need to select the corresponding box and then tap on the virtual keyboard key you want to assign to it. Once mapped, the assigned button will be displayed inside the box.

Please note that the Enter and Space keys are always present on the right side of the side keyboard and cannot be remapped.

Additionally, there is a default button available, which automatically loads the layout of the side keyboard from the default configuration memory slot. This provides a convenient way to restore the default mappings if needed.
Furthermore, there are Delete and Delete All buttons provided for removing individual or all mappings from the side keyboard, allowing for customization and adjustment as desired.

3.2.5 Joystick

Selecting the Joystick icon will display the following view:

Figure 10.

The built-in joystick is analog. However, the ZX Spectrum computer did not support this type of joystick and only had four basic directions: left, right, up, and down. It also supported four oblique directions, which were combinations of two vertical directions, such as up and right.
Due to the nature of the ZX Spectrum's joysticks, this analog joystick is mapped accordingly. Four keys are assigned to it, with one key for each basic direction.

However, the analog nature of this joystick offers an advantage. It allows for the determination of the trigger position, which is visually indicated by a darkened circle. The radius of this circle can be adjusted using the slider located in the middle.

By default, the joystick is mapped in the same way as the left d-pad, but this can be changed by deselecting the "Same as left D-pad" option. In that case, the joystick can be mapped using the corresponding boxes and the virtual keyboard, just like the physical keys.
Similar to the presets available for physical buttons, there are also presets available for the analog joystick.
Additionally, there is an "All directions" option. When enabled, the joystick has eight directions. When disabled, it only has the four basic directions and does not accept simultaneous input of two basic directions. This mode is suitable for certain games like PACMAN.

If the joystick is correctly calibrated, the red circle representing the position of the analog joystick should be centered. As the joystick is moved, the red circle moves accordingly and should be able to reach the edges of the background circle, which are marked with arrows. If the joystick exceeds the trigger position (darkened circle), the corresponding boxes change color from black to red.

If the calibration is not satisfactory or if the joystick has been replaced with a spare part, it is necessary to perform the calibration. On this screen, there is a button available to initiate the calibration process.

The calibration process consists of three steps:

Step 1.

Begin the calibration process by tapping the Start button. It is essential to remain patient for a few seconds while the progress bar on the right side gradually fills up. During this time, it is crucial to keep the joystick still and refrain from touching or moving it.
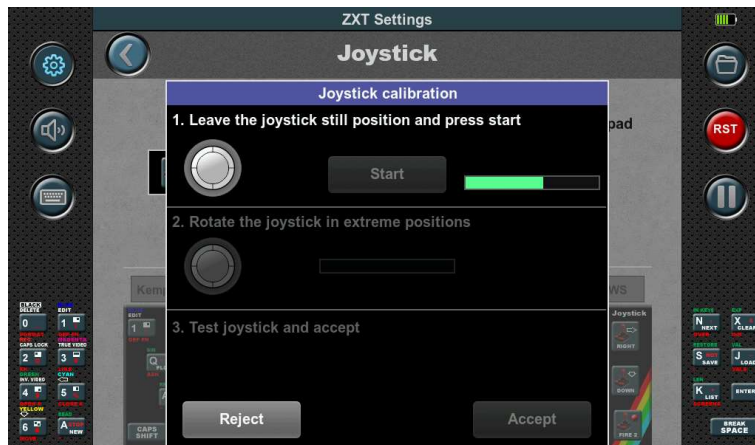

Figure 11.

Step 2.

In the second step, the joystick needs to be rotated to its extreme positions as indicated by the animation. The progress bar on the right side will track these rotations. Once the bar reaches the end, the second step is completed.
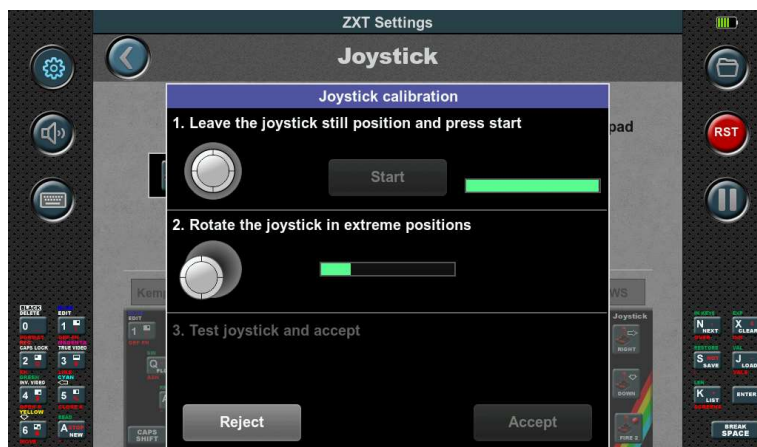

Figure 12.

Step 3.

The third step involves checking the operation of the joystick. After ensuring the joystick is functioning correctly, you can choose to either accept or reject the calibration.
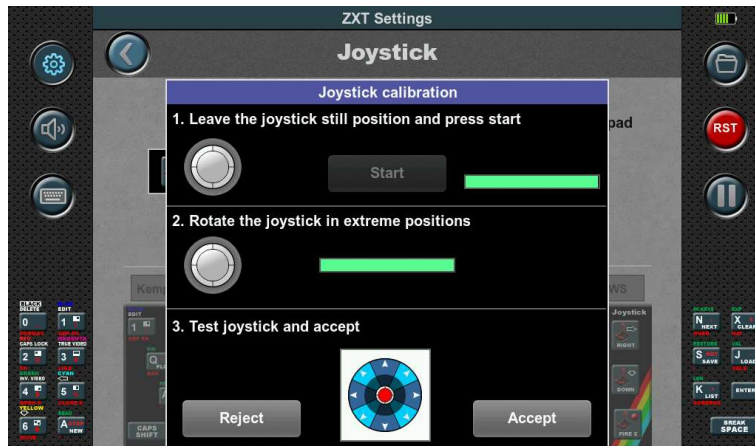

Figure 13.

3.2.6 Side Lights

Selecting the Side Lights icon will display the following view:

Figure 14.

In this configuration section, you can adjust the operation mode of the side lights. The first option, Brightness, allows you to control the brightness level using a slider.

There are four available operating modes for the side lights:

1. Random color overflow: In this mode, the ZXT console automatically transitions between colors, with one color persisting for a period before smoothly flowing into another.

2. ZX Spectrum border color: The side lights' color is determined by the current color of the ZX Spectrum emulation's border on the screen. It synchronizes the side lights with the border color for a cohesive visual effect.

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3. AY sound tracking: The intensity of the individual RGB color components of the side lights follows the volume of the corresponding AY sound channel. This mode creates a dynamic lighting experience that reflects the audio output.

4. Custom fixed color: You can manually set a constant color for the side lights using individual sliders for the RGB color components. This allows for personalized customization of the side lights' appearance.

3.2.7 Miscellaneous

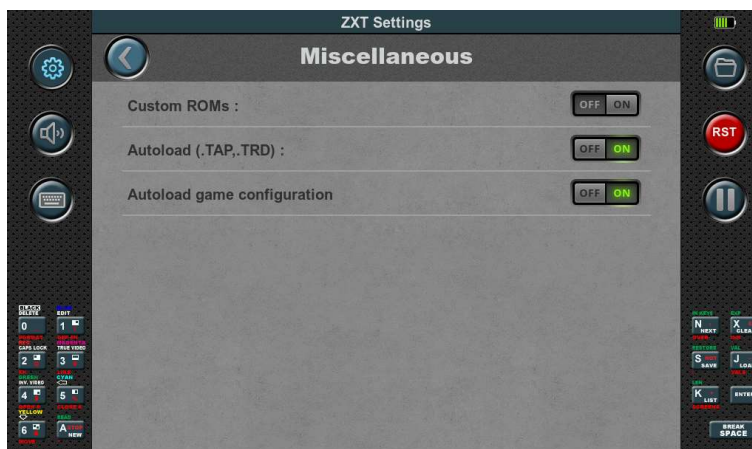Selecting the Miscellaneous icon will display the following view:

Figure 15.

Custom ROMs:

By default, the Custom ROM option is disabled on the ZXT console. However, enabling this option allows you to use alternative ROMs instead of the built-in SE Basic ROM.

To ensure full compatibility with games, it is recommended to use the original ROMs from the ZX Spectrum 48K and ZX Spectrum 128K computers. These ROM files should be placed in the "SD:\ROMs" directory on the SD card. The file names for the ROMs are predefined as follows: "48.rom" for a 48K computer, and "128-0.rom" and "128-1.rom" for a 128K computer.

If you intend to load games in TRD format, it is necessary to include the "trdos.rom" file in the same directory.

These ROM files can often be found online and are commonly bundled with various emulators.

Remember to ensure that the ROM files you use are legally obtained and that you comply with any applicable copyright laws.

Autoload (.Tap,.TRD):

The automatic launch option for games recorded in TAP or TRD format is enabled by default on the ZXT console. This means that when you select a game in either TAP or TRD format, it will be launched automatically without requiring any additional steps.
However, if you disable this option, the ZX Spectrum will start from the ROM instead. In this case, depending on the type of computer and ROM being used, you may need to manually enter the loading command for the game to start.
Enabling the automatic launch option provides a more streamlined and convenient experience, as the console handles the loading and launching of games in TAP or TRD format automatically.

The option is designed to work seamlessly with both the embedded SE Basic ROM and the original ROMs stored on the SD card. It is specifically tailored to these ROM configurations.

If you decide to use alternative ROMs, it's important to note that the automatic game launch option may not function properly. Compatibility issues can arise when the console is expecting specific ROM configurations.

Autoload game configurations

In the settings menu, it is possible to save all the configuration settings for each individual game. By enabling this option before starting a game, ZXT will load a previously saved configuration specific to that game. It is crucial to note that this option is also saved within the configuration for each particular game.

If the option is saved as disabled for a specific game, when you start that game, the option will remain disabled, and the configuration for the next game will not be loaded automatically. This means that the settings will be retained based on the saved configuration for each game, ensuring consistency and personalized preferences.

By allowing settings to be saved on a per-game basis, ZXT provides a convenient way to customize the experience for each game and streamline the gameplay setup.

3.2.8 Save / Load

Selecting the Save / Load icon will display the following view:

Figure 16.

In the settings menu, you can save configurations in different ways.

At the top, there is a round button with a house icon that allows you to return all settings to the factory defaults.

There are four memory slots available for configurations. The first slot, "default," is special as it loads the configuration saved in it when the ZXT is turned on. The other three slots serve as storage for frequently used configurations.

Each memory slot has "Save" and "Load" buttons for saving and loading configurations.

You can also save configurations specific to each individual game. The "Save current game settings" and "Load current game settings" buttons refer to the currently running game. The configuration is saved on the SD card in the same location as the game, with a different file extension.

For built-in games, the configurations are saved in the "ZXT_SYSTEM_TEMP" directory on the SD card's root. Make sure this directory exists; otherwise, the save/load operation will fail.

These saving options provide convenient management and restoration of settings for different scenarios and games.

4. Firmware update:

Like many devices, the firmware of the ZXT console is a continuous work in progress, with ongoing improvements and bug fixes. To ensure the console remains up to date and functioning optimally, easy and straightforward firmware updates are crucial.

Updating the firmware is a straightforward process facilitated by a dedicated application built into the ZXT as an independent software module. This design allows for seamless updates and provides a fail-safe mechanism in case of unsuccessful or partial updates.

The firmware update application, known as the **Firmware Update Tool** (**FUT**), can be accessed using the following procedure: **Press and hold all eight buttons simultaneously, then power on the console**. This action triggers the built-in BIOS to launch the FUT instead of the regular ZXT firmware.

The FUT can be updated as well. This process is handled by the built-in BIOS. If, before launching the FUT, the BIOS detects the presence of the correct file(s) with the ".efu" extension in the "_H7_Autoboot_" directory on the SD card, it will automatically write and update these files without requiring any user interaction. This allows for simultaneous updates of both the ZXT firmware and the FUT, ensuring they stay up-to-date and synchronized.

4.1. Firmware Update Tool (FUT)

After the BIOS starts the FUT, the following is displayed:

Figure 17.

The FUT provides two options for accessing the .efu file: getting it from the SD card or downloading it directly from zxt.efu-server.com using a WiFi connection to the Internet. At the top of the screen, there are two buttons that allow you to select between these two modes.

4.1.1. Updateing from SD card

In the figure 17, the SD card option is selected. This displays the contents of the SD card, showing only directories and .efu files. Other file formats are not displayed. Navigation within the file list is done in the same way as in the Game browser. Once a file is selected, the subsequent screen is displayed.
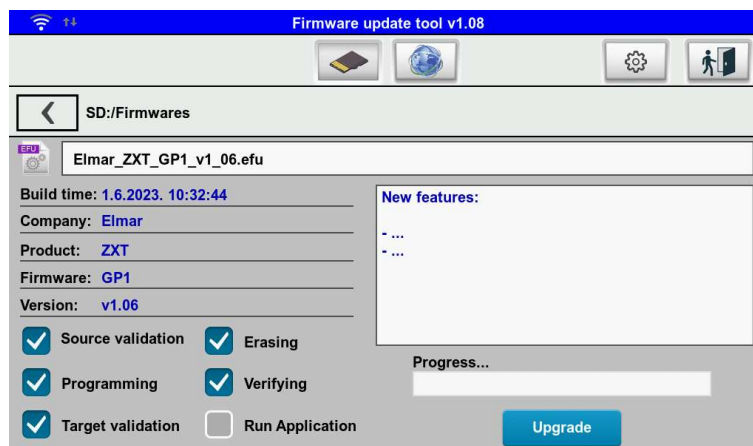

Figure 18.

On the left side of the screen, you will find basic information about the firmware, while the white window on the right side displays information about the new features and improvements included in this firmware update.

The options below do not require any adjustments, and it is recommended to leave them as they were read by the Firmware Update Tool from the .efu file. The last option, "Run Application," allows you to set whether you want to start the ZXT console immediately after the update.
To initiate the firmware update, simply press the "Upgrade" button and wait for the message indicating that the update was successful.
The duration of the update process depends on the size of the firmware being installed. During the update, the progress is indicated by a progress bar, and it may take several minutes to complete the process. Just be patient and allow the update to finish without interrupting or powering off the ZXT console.

After the update is finished, you can exit the Firmware Update Tool by tapping the exit button located in the upper right corner or performing a power cycle. This will bring you back to the updated ZXT firmware.

4.1.2. Updateing from internet

To update the firmware over the Internet, you need to connect to a WiFi network first. Tap on the wheel button located on the left side of the exit button to access the settings. The following screen will be displayed:
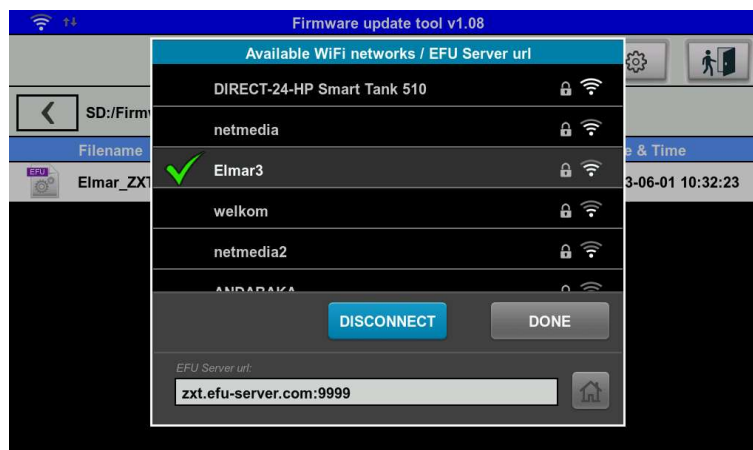

Figure 19.

The list displays all available networks in the area. Select your network from the list and tap "Connect." A keyboard will appear on the screen to enter the network password. After confirming and successfully connecting, a green tick mark will appear next to the network name. Once a network is used, it will be remembered, and you won't need to enter the password again. Remembered networks are indicated by an accented name. To forget a network that is not currently connected, use the "Forget" button.

NOTE: ZXT does not support 5G WiFi networks, only 2.4G WiFi networks.

After successfully connecting to the WiFi network, we can tap on the server access button located at the top in the middle, next to the SD card button.

Then, a list of efu files available on the Internet server is displayed on the screen. The subsequent procedure is identical to when we perform the update from the SD card.

EU Declaration of Conformity:

For the following equipment:

Product Name: ZX Spectrum handheld console
Model : ZXT-001
Manufacturer Name: ELMAR electronic d.o.o.
Manufacturer Address: Kopilica 5, 21000 Split, CROATIA

Normative documents:
EN 55032:2015+A1:2020+A11:2020
EN 55035:2017+A11:2020
RoHs – Directive 2011/65/EU

CE marking

$$C \epsilon$$

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