MaxDuino

Instruction Manual

Day-to-day guide for browsing, playing, and recording tape images

Prepared from the supplied Markdown source

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MaxDuino Instruction Manual

This guide focuses on day-to-day use of MaxDuino: how to browse, play, and record tape images, plus which file types are supported.

What MaxDuino Does

MaxDuino is an SD-card tape emulator for retro computers. You copy supported tape files to an SD card, browse them on the device, and play them back as cassette audio.

Some firmware builds also support recording, so MaxDuino can capture incoming tape audio and save it as a new file on the SD card. The maximum SD Card size is 32GB.

Before You Start

- Copy your supported tape files onto the SD card.
- Insert the SD card into MaxDuino.
- Connect MaxDuino audio output to the tape/ear input of the target machine for playback.
- For recording, connect the source tape/audio output to the MaxDuino recording input.
- Format support can vary slightly by firmware build, so smaller builds may not include every format listed in this guide.

Basic Controls

- `Up` / `Down`: Move through files and folders.
- `Play`: Open the highlighted folder, or start the highlighted file.
- `Play` during playback: Pause or resume.
- `Stop`: Stop playback.
- `Stop` while browsing inside a folder: Go back to the parent folder.
- `Root` / `Menu`: Return to the SD-card root or open the menu, depending on your device layout.
- `Record`: Start recording on recorder-enabled builds.

Basic Playback

1. Power on MaxDuino and wait for the file list.
2. Use `Up` and `Down` to highlight a file or folder.
3. Press `Play`.
4. If the selection is a folder, MaxDuino enters it.
5. If the selection is a supported file, playback starts.
6. Run the normal `LOAD` or cassette-loading command on the target computer.
7. Use `Play` to pause/resume and `Stop` to stop playback.

Menu Overview

Depending on the firmware layout, the menu is usually opened with `Root`, or with `Root + Stop`.

Common menu items include:

- `Baud Rate`: Used for formats that support speed selection or speed override.
- `Record Type`: Chooses the recording format when recording is available.
- `Motor Ctrl`: Lets MaxDuino follow motor control from compatible systems.
- `TSXCzxpUEFSW`: An advanced compatibility switch used by some TSX, CDT, ZX, and UEF cases.
- `Skip BLK:2A`: Optional compatibility setting on builds that include it.

For most users, the main menu items that matter are `Baud Rate` and `Record Type`.

Playback File Type Support

Target system / family	Supported file types	Notes
ZX Spectrum	`.tap`, `.tzx`, `.ay`	`.ay` files are wrapped and played as Spectrum-style tape data.
ZX80	`.o`, `.p`	`.p` support is for ZX80 8K ROM conversions.
ZX81	`.p`	Native ZX81 support.
Jupiter Ace	`.tap`	Uses Jupiter Ace TAP handling, not Spectrum TAP timing.
Oric	`.tap`	Native Oric TAP support.
BBC Micro / Acorn Electron / Acorn Atom	`.uef`	Use uncompressed `.uef` files. UEFExtractor
MSX	`.cas`, `.tsx`, TZX-family MSX data	Some MSX tape files also work when saved in TZX-family containers.
Dragon / CoCo	`.cas`	Uses the CAS path for Dragon and CoCo-style tape images.
TRS-80	`.cas`	Auto-detected from `.cas` data when present in the build.
Amstrad CPC	`.cdt`	`.cdt` is handled through the TZX-family playback engine.
Commodore C64 / C16	`.tap`	Must be native `C64-TAPE-RAW` or `C16-TAPE-RAW` TAP images.
Sharp MZ	`.mzf`, `.mzt`, `.m12`	`.mzt` and `.m12` use the same playback path as `.mzf`.
Memotech MTX	`.mtx`	Native MTX playback support.
Mattel Aquarius	`.caq`	Fixed-timing Aquarius support.

Important Notes About Shared Extensions

- `.tap` is not one universal format. MaxDuino distinguishes between Spectrum, Jupiter Ace, Oric, and Commodore TAP files.
- `.cas` is also shared across multiple systems. MaxDuino uses the file content to decide between TRS-80 and the generic CAS path used for systems such as MSX, Dragon, and CoCo.
- `.tsx` belongs to the TZX family. In practice, some MSX files may still work even when they are stored with a `.tzx` extension instead of `.tsx`.

Recording

Recording is only available on recorder-enabled firmware builds.

When recording is available:

- MaxDuino saves the new recording into the folder you are currently browsing.
- Filenames are created automatically, such as `MaxSave0.tzx`, `MaxSave1.cas`, or `MaxSave2.mzf`.
- You should choose the desired `Record Type` in the menu before starting.

Basic Recording Workflow

1. Browse to the folder where you want the recording saved.
2. Open the menu and choose `Record Type` if needed.
3. Connect the source tape/audio output to MaxDuino.
4. Press `Record`.
5. Start playback on the source machine or cassette deck.
6. Press `Stop` to finish and save the recording.

Record File Type Support

Record mode	Saved as	Best use	Notes
`TZX ID15`	`.tzx`	Generic direct recording	Best general-purpose fallback capture mode.
`ZX Spectrum`	`.tzx`	Spectrum-oriented recording	Still saved as `.tzx`, but tuned for Spectrum-style input.
`MSX CAS`	`.cas`	Native MSX recording	Best choice for MSX when available.
`Sharp MZF`	`.mzf`	Native Sharp MZ recording	Preferred over generic capture for Sharp MZ use.

Practical Recording Guidance

- Use `TZX ID15` when you want a general direct recording format.
- Use `ZX Spectrum` when recording Spectrum material and you want the Spectrum-tuned capture path.
- Use `MSX CAS` for native MSX cassette recordings.
- Use `Sharp MZF` for Sharp MZ recordings.
- Native record modes are usually the best option when they exist for your target system.

Everyday Tips

- If a file does not load, first confirm that the format is supported by your firmware build.
- For tricky TSX, CDT, or UEF loads, try adjusting `Baud Rate` and the `TSXCzxpUEFSW` compatibility option.
- `.ay` files are intended for ZX Spectrum AY playback and typically need the appropriate AY loader or player on the target machine.
- Use uncompressed `.uef` files.
- Keep `.tap` and `.cas` files organised by target platform, since those extensions are used by more than one system.
- Some builds allow extra paused-playback navigation for block-based files such as TZX-family tapes.

Summary

For normal use, the workflow is simple:

1. Put supported tape files on the SD card.
2. Browse with `Up` and `Down`.
3. Press `Play` to enter folders or start playback.
4. Press `Stop` to stop or go back.
5. Use the menu for speed, compatibility, and recording format settings.

If your firmware includes recording, choose the right `Record Type`, record into the current folder, and MaxDuino will create the output filename automatically.

Source: MAXDUINO_INSTRUCTION_MANUAL.md