CardputerZero Guide

This guide covers powering on, charging, and setting up **CardputerZero**, as well as using its keyboard, built-in apps, and expansion ports. It also covers USB modes, development and debugging, and system recovery.

1. Power and Charging

- **Power on**. Slide the power switch to the right. The first boot may take longer than usual.
- **Power off**. Slide the power switch to the left. The system shuts down before cutting power. If you shut down through the command line or another software interface, slide the switch to the left to cut power.
- **Charging**. Use the USB-C2 port. Charging works with the device on or off and in either USB Switch position. The indicator is red while charging and green when fully charged.



2. Keyboard Operation

Use ### Modifier Keys

`sym` to enter the symbols marked in blue, `shift` to type uppercase letters, and `fn` to activate the shortcuts marked in orange. Each modifier key works as follows.

- **Press and hold**. The indicator stays on, and the modifier applies to other keys while held.
- **Press once**. The indicator flashes slowly, and the modifier applies to the next keypress only.
- **Press twice**. The indicator flashes quickly, and the modifier stays active. Press it again to unlock it.

Common key operations

- **Navigation**. Hold `fn` and press `F` / `X` / `Z` / `C`. Some screens without text input also accept these keys directly.
- **Confirm**. Press `OK` / `ENTER`.
- **Exit**. Hold `ESC` to exit the current app and return to the HOME screen.



Key Combinations

Hold `fn` and press the corresponding key to use these shortcuts.

Key combination	Function
`fn + 1` to `fn + 9`	`F1` to `F9`
`fn + 0`	`F10`
`fn + O`	`F11`
`fn + P`	`F12`
`fn` + Backspace	`DELETE`, delete to the right
`fn + Q`	Play / Pause
`fn + W` / `fn + E`	Previous track / Next track
`fn + U` / `fn + I`	Decrease / Increase screen brightness
`fn + A`	Mute
`fn + S` / `fn + D`	Decrease / Increase volume
`fn + F` / `fn + X`	Up / Down
`fn + Z` / `fn + C`	Left / Right
`fn + H`	Show / Hide app help
`fn + J`	Take a screenshot (`PrintScreen`)
`fn + K` / `fn + N`	`Home` / `End`
`fn + L` / `fn + M`	`PageUp` / `PageDown`
`fn + B`	`Insert`

3. User Setup

On first boot, follow the setup wizard to set a username, connect to a network, and enable SSH if needed. Restart the device to apply the settings. The device skips the wizard if you configured the user when flashing the image.



4. Screen Lock

- **Lock**. Hold `TAB` on the HOME screen to lock the screen manually. By default, the HOME screen and some apps lock after 30 seconds of inactivity. To adjust the timeout, go to `Settings > Screen > DarkTime`.
- **Unlock**. Press any key to wake the display, then press `TAB` followed by `ENTER`.



- **Customize the lock screen**. Access the device file system over SSH or ADB and replace the following file with your PNG image.

```
/usr/share/APPLaunch/share/images/lockscreen.png
```

Use a lock screen image with a recommended resolution of `320 × 150 px`. The status bar occupies the top `20 px` of the screen.

5. Opening, Getting Help, and Exiting Apps

1. Use the directional keys on the HOME screen to select an app, then press `OK` / `ENTER` to open it.
2. In apps that provide help, press `fn + H` to open the help page. Follow the prompt at the bottom of the page to return.

3. Hold `ESC` to exit the app and return to the HOME screen. A short press usually goes back one level or cancels the current action.



6. Built-in Apps

The CardputerZero system image comes with a terminal, a file manager, and multimedia apps that you can open from the HOME screen. GPS, LoRa, NFC, and SubG Chat require their respective expansion modules.



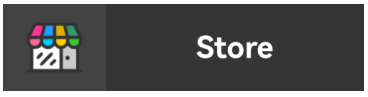
System and Development Tools

Settings



Open Settings and select the setting you want to change. For example, go to `Screen > DarkTime` to adjust the screen lock timeout.

Store



Connect to a network and open Store to browse apps. Open an app's details page and follow the prompts to install it. After installation, open the app from the HOME screen.

CLI



Enter a command in the terminal and press `ENTER` to run it. By default, the terminal fits the screen width. To view wider output, switch to Viewport mode and pan to see content outside the visible area.

- Press `fn + Z` / `fn + C` to move the cursor left / right.
- Press `fn + F` / `fn + X` to recall the previous / next command.
- Press `fn + K` / `fn + N` to jump to the start / end of the line.
- Press `shift + fn + L` / `shift + fn + M` to page up / down.
- Press `fn + 6` to enter or exit Viewport mode. Hold `fn` and press `4`, `5`, `7`, or `8` to pan the viewport.

Python



Open the interactive Python 3 interpreter (REPL), enter Python code, and press `ENTER` to run it. For example, enter `print("Hello, CardputerZero!")` to see the output.

- Press `fn + Z` / `fn + C` to move the cursor left / right.
- Press `fn + F` / `fn + X` to recall the previous / next command.
- Press `shift + fn + L` / `shift + fn + M` to page up / down.

ZClaw



ZClaw is an AI assistant based on ZeroClaw that supports multiple AI services. After setup, press `ENTER` to compose a message, `F` / `X` to scroll the conversation, and `TAB` to open settings.

Set up an AI service on the device

When you first open ZClaw, follow the wizard to create a custom AI service and enter the service URL, API key, and other parameters. After you complete the wizard, ZClaw automatically downloads the required software.

Edit service parameters on a computer

To paste the URL and API key from a computer, first complete the wizard on the device with temporary values. ZClaw creates the service configuration file after the initial setup.

1. Wait for the required software to finish downloading, then exit ZClaw.
2. Connect to the device over SSH or ADB and open the following file in a text editor such as `nano`. Replace `{username}` with the device's Linux username.

   ```
   /home/{username}/.zeroclaw/zclaw_providers.tsv
   ```

3. Find the service you just created and replace the temporary values with the actual URL, API key, and other parameters. Keep the original field order and the tab separators, then save the file.
4. Reopen ZClaw on the device to use the updated configuration.

SSH Client



Enter the remote device's connection details and press `OK` to connect. Use `fn + F` / `fn + X` to move between fields, `TAB` to save, and `ESC` to go back.

IP Panel



View the device's Wi-Fi and Ethernet IP addresses.

Files



Use `F` / `X` to select a file or folder, `OK` to open it, and `ESC` to go back. Press `TAB` to open the menu, where you can copy, cut, paste, rename, delete, or view file information. You can preview files in some compatible formats. Use `PgUp` / `PgDn` to page up / down.

Camera and Audio

Camera



Take photos with the built-in camera or a supported USB camera. The small display may leave out some detail in the preview. CardputerZero Lite has no built-in camera.

- On the camera screen, press `5` / `7` to zoom out / in, `6` or `ENTER` to take a photo, and `8` to open the gallery.
- In the gallery, press `5` / `7` to view the previous / next photo, `6` to view photo information, and `8` to delete the photo. Press `ESC` or `4` to return to the camera screen.

Rec



Open Rec and follow the on-screen prompts to start or stop recording.

Music



Place music files in the `Music` folder in the current user's home directory. The app can display album art and lyrics. It hides the sample tracks when it detects music in that folder.

- Use the left and right directional keys to select an album on the cover screen, then press `ENTER` to open it. In the track list, use the up and down directional keys to select a track, `ENTER` to play or pause, and `8` to view the currently playing track.
- Use keys `4` through `8` for the actions shown on the current screen.
- Press `fn + Q` to play or pause and `fn + W` / `fn + E` to skip to the previous / next track.
- Press `fn + A` to mute and `fn + S` / `fn + D` to lower / raise the volume.

Piano



- Play white keys with `A`, `S`, `D`, `F`, `G`, `H`, `J`, and `K`, and black keys with `W`, `E`, `T`, `Y`, and `U`.
- Press `SPACE` to show or hide the key map, `Z` / `C` to change octaves, and `P` to open the sample song tutorial.
- Press `TAB` to switch between regular play and chord mode. In chord mode, press `M` to switch between major and minor chords.

Compass, Infrared, and Calculator

Compass



Follow the on-screen prompts to calibrate the electronic compass before first use. Press `8` to view live IMU data and other details. CardputerZero Lite does not support this app.

IR Remote



Record and replay infrared remote signals to control appliances and other devices. Navigate with `F` / `X` / `Z` / `C` and use keys `4` through `8` for the actions shown on the current screen. To record, point the original remote at the CardputerZero infrared receiver. To replay, point the infrared emitter at the target device.

IR Chat



Use infrared to exchange messages between two or more devices. Press `ENTER` to open the editor, type the message, then press `ENTER` again to send it. Each message can contain up to 7 printable ASCII characters.

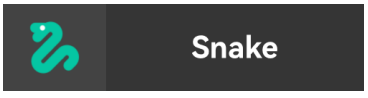
Calculator



Enter digits with the number keys and use `sym` to enter the decimal point and operators. The calculator supports `+`, `-`, `*`, `/`, `^`, and parentheses. Press `OK` or enter `=` to calculate. Press Backspace to delete one character. After getting a result, enter an operator to continue the calculation.

Games and Device Testing

Snake



Use the directional keys to steer the snake. It grows when it eats food. Avoid hitting its body or the edges of the play area.

Tank



Use `F` / `X` / `Z` / `C` to move the tank and `SPACE` to fire. Press `SPACE` to restart after a win or game over.

Keyboard Guide



Open Keyboard Guide to review the modifier keys. It covers the same material as the keyboard tutorial shown on first boot.

FactoryTest



Open FactoryTest and follow the on-screen prompts to check the relevant hardware. If a test reveals a problem, include a photo of the relevant test screen when contacting technical support.

Positioning and Wireless Communication

GPS



Connect Cap LoRa-1262, then open GPS to view the fix status, coordinates, and altitude. Use `Z` / `C` to switch between Position and Details and `F` / `X` to scroll through the details.

LoRa



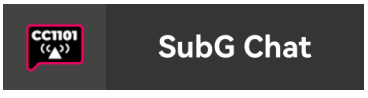
Connect Cap LoRa-1262 and open LoRa. Open the send screen and type a message. Press `ENTER` to send or `ESC` to cancel. The receiving device can view the message in the app.

NFC



Connect Cap CC1101, open NFC, and bring the tag close to the module to read it. Use `Z` / `C` to switch between Scan, Tag Details, and Reader Info, and `F` / `X` to scroll through the details. Press `ENTER` to open Tag Details.

SubG Chat



Connect Cap CC1101 to each participating device and open SubG Chat. Use `Z` / `C` to switch between messages and module information and `F` / `X` to scroll through messages. Press `ENTER` or start typing to open the editor, then press `ENTER` to send. Each message can contain up to 56 printable ASCII characters. Press `ESC` to cancel editing.

For app source code and help content, see the official CardputerZero app repositories and the Launcher source repository.

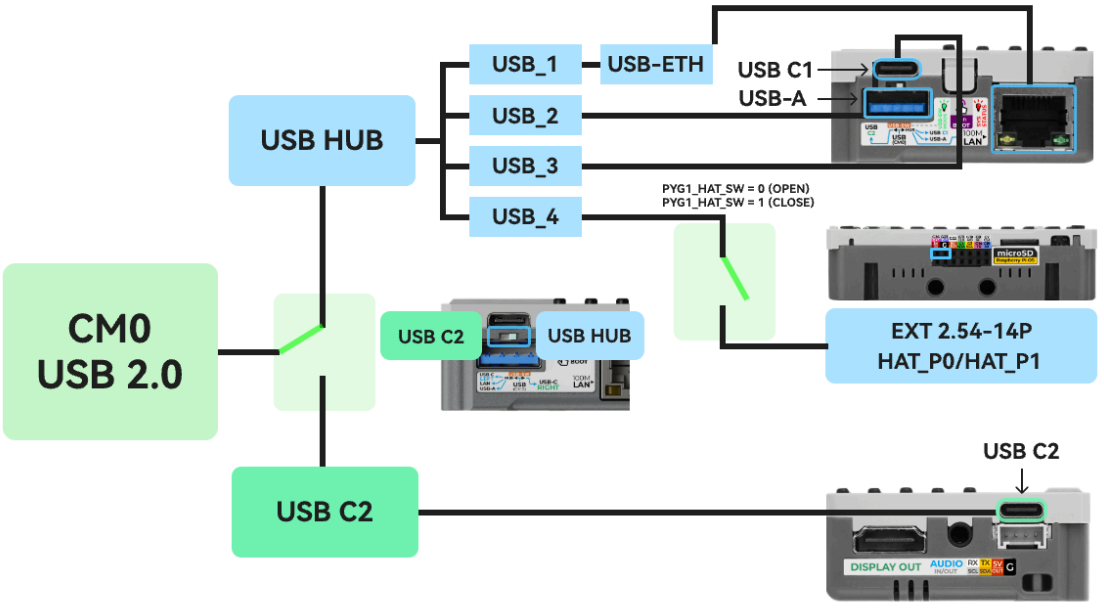
7. Third-Party Apps

- Use Store to browse and install third-party apps.
- To develop an app and publish it to Store, see the CardputerZero Developer Guide.

8. USB 2.0 Interfaces

CardputerZero uses a USB hub to expand the CM0 USB interface and provide USB-A, USB Type-C, HAT-P0/P1 USB, and Ethernet. Use the `USB Switch` on the left side to change modes.

- **Slave mode (left / up)**. The CM0 connects to a host such as a computer through `USB-C2`, and CardputerZero acts as a USB device.
- **Host mode (right / down)**. The CM0 connects to the internal `USB Hub`, which routes USB to `USB-A`, `USB-C1`, and `HAT-P0/P1` on the top EXT connector. One USB connection provides Ethernet through the `USB-ETH` chip.



9. Expansion Interfaces

CardputerZero has a Cap expansion connector (EXT 2.54-14P) on top. The pins labeled `D+*` and `D-*` connect to GPIO by default and can be switched to USB through software.



Cap Expansion Precautions

CardputerZero **does not support hot-plugging Cap expansion modules**. Turn off the device before inserting or removing a module to avoid malfunctions.

- The 5V output on the right-side Grove port and top EXT connector is off by default. Enable it in `Settings > ExtPort`.

10. Development and Debugging

- **SSH**. After enabling SSH, connect to the device using its IP address. Find the address in IP Panel or Settings.
- **ADB**. Enable ADB in `Settings > Developer`, set the USB Switch to Slave mode, and connect the computer through USB-C2. For detailed steps, see CardputerZero ADB Debugging.

11. Updates and Recovery

- Update the preinstalled apps in `Settings > System > Software`.
- To reinstall the system, follow the CardputerZero Image Burning Guide to flash the latest image.