K230 Flash GUI User Manual

1. Software Overview

K230 Flash GUI is a tool for flashing firmware to K230 development boards, providing both **single flash** and **batch flash** modes, and supporting multiple storage media (eMMC, SD Card, Nand Flash, NOR Flash, OTP).

This tool is based on the **k230-flash** library with a friendly GUI interface. If you need to use **command-line tools** for automated flashing workflows, you can directly call the **k230-flash** library without GUI interaction.

2. System Requirements

- **Operating System**: Windows 10/11, Linux, or macOS
- **Hardware Requirements**: USB port for connecting K230 development board
- **Required Components**: libusb drivers (must be installed for Windows users) or libusb library (required for Linux/macOS users)

3. Development Board Hardware Setup

Before flashing, you need to put the **K230 development board** into **Burning Mode**:

1. **Method 1** (Recommended):

   - **Hold down** the **BOOT** button on the development board, then **plug in the USB cable** to power on the board.

2. **Method 2**:

   - When the board is already powered on, **hold down** the **BOOT** button, then **press and hold the RESET** button, then **release RESET**, and finally **release BOOT**.

After entering **Burning Mode**, you can check in **Device Manager** (Windows), `lsusb` (Linux), or `system_profiler SPUSBDataType` (macOS) to see if the **"K230 USB Boot Device"** is recognized.

4. Driver Installation

4.1 Windows Users

K230 Flash GUI uses **libusb** for USB device communication. On Windows, you **must** install the corresponding drivers:

1. **Download Zadig tool** (https://zadig.akeo.ie/).
2. **Connect K230 development board to PC and enter Burning Mode**.
3. **Open Zadig**, select **Options > List All Devices**, then find **K230 USB Boot Device**.
4. In the **Driver** option, select **WinUSB**.
5. Click **Install Driver** and wait for installation to complete.
6. After installation, you can see **K230 USB Boot Device (WinUSB)** in **Device Manager**.

4.2 Linux Users

1. **Install libusb development package**:

```
# Ubuntu/Debian
sudo apt-get install libusb-1.0-0-dev

# CentOS/RHEL/Fedora
sudo yum install libusb1-devel
```

2. **Add udev rules** (optional, to avoid requiring sudo permissions):

```
echo 'SUBSYSTEM=="usb", ATTR{idVendor}="29f1", ATTR{idProduct}=="*",
MODE="0666"' | sudo tee /etc/udev/rules.d/99-k230.rules
sudo udevadm control --reload-rules
```

4.3 macOS Users

1. **Install libusb**:

It is recommended to install libusb using Homebrew:

```
# Install libusb
brew install libusb
```

2. **Verify installation**:

```
# Verify libusb installation
brew list libusb
```

3. **Notes**:

   - macOS usually does not require additional drivers, the system will automatically recognize K230 devices
   - If you encounter permission issues, you may need to allow relevant permissions in "System Preferences > Security & Privacy"

5. User Interface

The software provides an intuitive graphical interface, including menu bar, main interface, and log area.
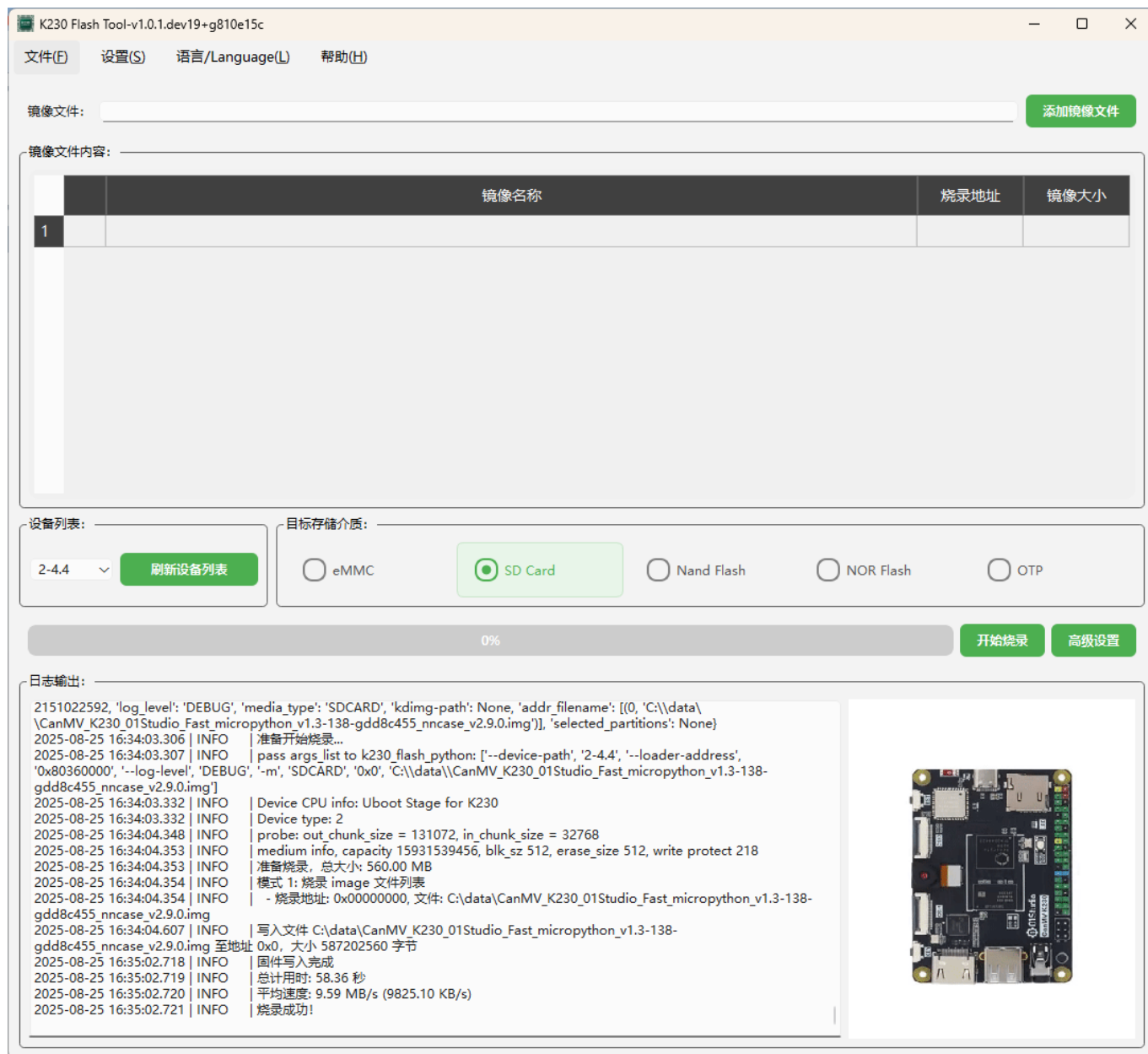
5.1 Menu Bar

- **File (F)**: Provides exit function (shortcut `Ctrl+Q`).
- **Settings (S)**: Select flash mode (single / batch) and advanced settings.
- **Language / Language (L)**: Supports Chinese / English switching.
- **Help (H)**: Contains "About" information and user manual.

5.2 Main Interface

- **Image File Selection**: Select `.bin`, `.img`, `.kdimg` files, as well as compressed format files (`.zip`, `.gz`, `.tgz`, `.tar.gz`).
- **Target Storage Media**: Supports eMMC, SD Card, Nand Flash, NOR Flash, OTP.
- **Progress Bar and Log**: Shows flashing progress and log information.

6. Flashing Process

6.1 Select Flash Mode

In **Settings > Flash Mode**, choose:

- **Single Flash Mode**: Flash a single device individually.
- **Batch Flash Mode**: Flash multiple devices simultaneously (this feature is still under development).

6.2 Select Firmware File

1. Click the "Add Image File" button to select files in the following formats:
   - **Image files**: `.bin`, `.img`, `.kdimg`
   - **Compressed files**: `.zip`, `.gz`, `.tgz`, `.tar.gz` (the tool will automatically extract and find image files within)
2. If you select a `.kdimg` file, it will be parsed into multiple partitions, and users can check the parts they want to flash.
3. For compressed files, the system will automatically extract them in a temporary directory and find the first available image file.

6.3 Select Target Storage Media

Select **eMMC / SD Card / Nand Flash / NOR Flash / OTP** in the media options.

6.4 Start Flashing

1. **Confirm the image file, target storage media, and flash address**.
2. Click the **"Start Flash"** button, and the progress bar will show real-time flashing progress.
3. After flashing is complete, the log area will show **"Flash Complete!"**.

7. Advanced Settings

You can configure advanced options in **Settings > Advanced Settings**, such as adjusting flash parameters, modifying flash addresses, etc.

8. Language Switching

Select **Chinese** or **English** in the **Language / Language** menu, and the interface language will switch automatically.

9. Troubleshooting

9.1 Cannot Find Flash Device

If you cannot find the K230 device in the device list, please check the following:

1. **Confirm if the development board is in Burning Mode**:

   - Re-follow the steps in Chapter 3 to put the development board into burning mode
   - Confirm in Device Manager (Windows) or `lsusb` (Linux) if the K230 device is recognized

2. **Check drivers** (Windows users):

   - Ensure WinUSB driver has been installed according to Chapter 4.1
   - Confirm in Device Manager that the device shows as "K230 USB Boot Device (WinUSB)"

3. **Check libusb** (Linux users):

   - Ensure libusb-1.0-0-dev package is installed
   - Try running the program with sudo privileges, or configure udev rules

4. **Check libusb** (macOS users):

   - Ensure libusb has been installed via Homebrew: `brew install libusb`
   - Check if relevant permissions are allowed in System Preferences
   - Try running `system_profiler SPUSBDataType` in terminal to see if K230 device is recognized

5. **Check USB connection**:

   - Replace USB data cable (avoid using charging-only cables)
   - Try different USB ports
   - Ensure USB cable quality is good and supports data transmission

9.2 Flash Process Failure

- **Check firmware file**: Ensure firmware file is complete and compatible with current development board model
- **Check storage media**: Confirm correct target storage media is selected (eMMC/SD Card, etc.)
- **Re-enter burning mode**: Disconnect USB connection, let development board re-enter Burning Mode
- **Check log information**: Pay attention to error messages in log area, troubleshoot based on specific error information