



SD Card Formatter Linux User's Manual

Version 1.03

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SD Card Association

Revision History

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Jun. 10, 2022	1.00	First release
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Table of Contents

1.	Introduction	4
2.	System Requirements	4
2.1	Operating Systems	4
2.1.1	Debian	4
2.1.2	Ubuntu.....	4
2.1.3	Raspberry Pi OS 64-bit.....	4
2.1.4	Fedora.....	4
2.1.5	Arch Linux	4
2.2	SD Cards Capacity Types.....	4
2.3	SD Card Interface Devices	4
3.	SD Card Formatter Installation	5
4.	SD Card Formatter Uninstallation	5
5.	Operation Guide	6
5.1	SD Card Formatter Command Line Interface	6
5.2	SD Card Formatter Version Information	8
5.3	SD Card Formatter Update Function.....	8
5.4	SD Card Formatter Help Function	8
6.	Important Notice	9

Table of Figures

Figure 1: SD Card Formatter Main Window	6
Figure 2: Version information.....	8
Figure 3: Update check	8

Abbreviations

Name	Description
SD(SC)	SD Standard Capacity up to 2GB
SDHC	SD High Capacity over 2GB and up to 32GB
SDXC	SD eXtended Capacity over 32GB and up to 2TB
EULA	End User License Agreement
SDA	SD (Card) Association
CPRM	Content Protection for Recordable Media

1. Introduction

The SD Card Formatter formats SD Memory Card, SDHC Memory Card and SDXC Memory Card (respectively SD/SDHC/SDXC Cards) complying with the SD File System Specification created by the SD Association (SDA).

It is strongly recommended to use the SD Card Formatter to format SD/SDHC/SDXC Cards rather than using formatting tools provided with individual operating systems. In general, formatting tools provided with operating systems can format various storage media including SD/SDHC/SDXC Cards, but it may not be optimized for SD/SDHC/SDXC Cards, and it may result in lower performance.

2. System Requirements

2.1 Operating Systems

The SD Card Formatter has been tested to work under the following operating systems. Execution of SD Card Formatter requires Administrator Rights.

2.1.1 Debian

- Debian 10, x86_64
- Debian 11, x86_64
- Debian 11, ARM64

2.1.2 Ubuntu

- Ubuntu 20.04, x86_64

2.1.3 Raspberry Pi OS 64-bit

- Raspberry Pi OS, ARM64 2022-04-07

2.1.4 Fedora

- Fedora 35, x86_64
- Fedora 35, ARM64

2.1.5 Arch Linux

- Arch Linux, 2022.06.06 (5.17)

2.2 SD Cards Capacity Types

The SD Card Formatter formats the following SD Card capacity types.

- SD up to 2GB
- SDHC more than 2GB up to 32GB
- SDXC more than 32GB up to 2TB

2.3 SD Card Interface Devices

The following SD interface devices are available to access SD/SDHC/SDXC Card:

- SD Card slot on PC
- USB2.0, USB3.0, USB3.1, USB-C SD Card reader

Please check that your SD Card interface device is compatible with your SD, SDHC or SDXC Card before using the SD Card Formatter.

3. SD Card Formatter Installation

SD Card Formatter for Linux is a portable command line tool. To use the tool, extract the tool to desired location and invoke the tool using the path to the tool.

To use the tool, you have to accept the terms in the EULA.

4. SD Card Formatter Uninstallation

To remove SD Card Formatter for Linux from your computer, navigate to the folder where the tool is located and remove the folder.

5. Operation Guide

5.1 SD Card Formatter Command Line Interface

SD Card Formatter for Linux has the following options for formatting the device. To format SD card, please unmount any partitions on it.

```

$ lsblk
NAME        MAJ:MIN RM   SIZE   RO  TYPE MOUNTPOINTS
sdb          8:16    1    59,5G  0   disk
└─sdb1       8:17    1    59,5G  0   part /media/XXX/YYY

$ sudo umount /dev/sdb1

$ sudo ./format_sd --help (10)
SD Card Formatter version 1.0.0 (build 3022.6.9d)
Developed by Tuxera Inc.
For assistance, please contact SDA Helpdesk at:
    SDA Helpdesk <helpdesk@sdcard.org>

    (1)      (2)      (3)      (5)      (6)      (7)      (8)
usage: format_sd [-l <volume label>] [--cp <code page>] [--discard] [--overwrite] [--update-check] <device>

$ sudo umount /dev/sdb1

$ sudo ./format_sd -l Untitled /dev/sdb
SD Card Formatter version 1.0.0 (build 3022.6.9d)
Developed by Tuxera Inc.
Zero-filling unused sectors...
(9) [=====] 14 %
Formatted volume "/dev/sdb" successfully as exFAT!

```

Figure 1: SD Card Formatter Main Window

- (1) **Formatting tool: `./format_sd`**
Portable command line tool for formatting SD Memory Card, SDHC Memory Card and SDXC Memory Card (respectively SD/SDHC/SDXC Cards) complying with the SD File System Specification created by the SD Association (SDA).
- (2) **Volume label: `--l <volume label>`**
This option is used to specify the volume label of the card to be written into the card during formatting. You can enter up to 11 characters in the [Volume label] field.
Note: if the volume label has been written in other than English characters, the information in may not be shown correctly. In this case, you should enter a new volume label using English characters.
- (3) **Code page: `--cp <code page>`**
Use the given code page to encode the volume label. The default code page is 437. To use Japanese characters, select 932.
- (4) **Formatting Option, Quick format**
By default, the formatter performs a quick formatting. It deletes all the file/directory entries by initializing file system parameters of the card but does not initialize the data written in files. If you need to initialize the data in the files, use the [Overwrite format] option.
- (5) **Formatting Option, `--discard`**
This option deletes file/directory entries by discarding the whole device using Linux BLKDISCARD interface and initializing file system parameters of the card. This formatting option requires support from the SD card adapter and the card. If discard is not supported by the configuration, tool will use default quick formatting instead.
- (6) **Formatting Option, `--overwrite`**
This option deletes file/directory entries by initializing file system parameters of the card and erase all data by overwriting the user data area completely. This formatting option takes much longer time than Quick format depending on the card capacity. Please make sure that your computer is connected to a power supply and that sleep mode is disabled.
- (7) **Update check option: `--update-check`**
This option checks SDA website for newer version of the tool. If newer version is found, the tool will ask the user to visit SD Card Formatter download site.
- (8) **Device: `<device>`**
SD card that will be formatted. Device is the special file corresponding to the SD card (e.g. `/dev/sdX`). The device and partitions on the device must be unmounted. You can only select the whole device for formatting.
- (9) **Progress Information**
Progress information will be displayed when formatting.
- (10) **Help option: `--help`**
This option shows available command line options.
- (11) **About option: `--about`**
This option shows the version of the tool.
- (12) **Cancel Formatting**
You can cancel on-going formatting using keyboard shortcut Ctrl-c in terminal.

5.2 SD Card Formatter Version Information

You can check the version of the tool by invoking the tool with option `--about`.

```
$ sudo ./format_sd --about

SD Card Formatter version 1.0.0 (build 3022.6.9d)
Developed by Tuxera Inc.
-----
Copyright (C) 2010-2022 Tuxera Inc.
All rights reserved.
```

Figure 2: Version information

5.3 SD Card Formatter Update Function

The tool has Update check functionality to check for updates to the tool. You can invoke the update check by option `--update-check`. If a new version is available, please visit the [SDA SD Card Formatter download page](#). Proceed to download the most recent version from this page.

```
$ sudo ./format_sd --update-check

SD Card Formatter version 1.0.0 (build 3022.6.9d)
Developed by Tuxera Inc.
Fetching latest version information...
No update available.
The current version is 1.0.0.
The latest version is 1.0.0.
```

Figure 3: Update check

5.4 SD Card Formatter Help Function

The help function provides available options for SD Card Formatter tool. To access the help menu, use option `--help`

6. Important Notice

- (1) Do not format recordable media other than SD/SDHC/SDXC Cards using the SD Card Formatter. If you accidentally formatted a recordable media other than SD/SDHC/SDXC Cards, reformat the media using the appropriate formatting software which came with the media.
- (2) Do not remove an SD/SDHC/SDXC Card or an SD Card interface device like USB SD Card reader while formatting. Please use Umount function on Linux for safe removal of the card.
- (3) Once formatting has started, all recorded information will no longer be available.
- (4) Check the position of the write protect switch on your card before formatting. The position shall be on the NOT PROTECTED position (i.e., upward).
- (5) If the system does not recognize the SD/SDHC/SDXC Card, re-insert the card.
- (6) The SD Card Formatter does not format the Protected Area in the card. The Protected Area is used by CPRM (Content Protection for Recordable Media). The Protected Area shall be formatted by appropriate PC applications or SD host devices that provide CPRM function.
- (7) If the SD/SDHC/SDXC Card cannot be recognized by the SD Card Formatter after the card is inserted into an SD interface device (SD Card slot on PC, USB SD Card reader), check that the SD interface device is compatible with SD/SDHC/SDXC Cards. Some SD interface devices are interoperable only with SD and SDHC Cards. Also, some PCs need to install drivers and file systems to work with SD/SDHC/SDXC Cards.
If your system is compatible with SD/SDHC/SDXC Cards but the card is not recognized, try to restart your PC, and execute the SD Card Formatter again.
- (8) If you choose the [Quick format] option, all files in the card are deleted. However, data in the files still remains in the card and it may be retrieved by using data recovery tool. Please use the [Overwrite format] option if you want to erase all data in the files completely.
- (9) SD Card Formatter does not format SD/SDHC/SDXC Card encrypted by the "BitLocker To Go" provided with Windows. Please unlock the SD/SDHC/SDXC Card specified by Windows before formatting the card.
- (10) Execution of the SD Card Formatter requires Administrative Right for Linux.
- (11) Overwrite format can be long depending on the size and speed of the card. Make sure that your computer is connected to a power supply and that sleep mode is disabled.