



# **SMI Linux USB Display Driver for Ubuntu User Manual**

**Revision V1.0.0**

**May 2024**

**Revision History**

Revision	Release Date	Description
V1.0.0	05/8/2024	First version.

**IMPORTANT NOTICE**

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH PRODUCTS OF SILICON MOTION, INC. (“SMI”). NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN SMI'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, SMI ASSUMES NO LIABILITY WHATSOEVER, AND SMI DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF SMI PRODUCTS INCLUDING LIABILITY OR WARRANTIES FOR FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

SMI products are not intended for use in medical, life saving, life sustaining, critical control or safety systems, or in nuclear facility applications. SMI may make changes to specifications and product descriptions at any time, without notice. SMI may have patents or pending patent applications, trademarks, copyrights, or other intellectual property rights that relate to the presented subject matter. The furnishing of documents and other materials and information does not constitute any license, express or implied, by estoppel or otherwise, to any such patents, trademarks, copyrights, or other intellectual property rights. The information in this document is furnished for informational use only, is subject to change without notice, and should not be construed as a commitment by SMI. SMI assumes no responsibility or liability for any errors or inaccuracies that may appear in this document or any software that may be provided in association with this document. Except as permitted by such license, no part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means without the express written consent of SMI. Contact your local SMI sales office or your distributor to obtain the latest specifications and before placing your product order.

Silicon Motion and Silicon Motion logo are registered trademarks of SMI and/or its affiliates. Other brand names mentioned herein are for identification purposes only and may be trademarks and/or registered trademarks of their respective owners.

**Copyright © 2024, SMI. All Rights Reserved.**

## Table of Contents

<b>1. Overview .....</b>	<b>4</b>
<b>2. Requirements .....</b>	<b>4</b>
2.1 Hardware and OS Support .....	4
<b>3. How to Use Linux USB Display Driver .....</b>	<b>5</b>
3.1 Install SMI Linux USB Display Driver.....	5
3.2 Use of SMI Linux USB Display Driver .....	6
3.2.1 Display mode.....	7
3.2.2 Multi-channel display .....	8
<b>4. Uninstall SMI Linux USB Display Driver .....</b>	<b>8</b>

## 1. Overview

Linux USB Display Driver is a USB graphics driver developed by SMI. It provides complete function for the USB graphics card SM768 under the Ubuntu system. SMI Linux USB Display Driver software can drive HDMI and VGA display output. It can support full-screen display and video playback, in addition to supporting different screen resolutions and refresh rates.

SMI Linux USB Display Driver provides USB device plug and play ease of use, in addition to providing a single screen up to 4K high-definition multimedia playback display function, and support HDMI audio output.

## 2. Requirements

### 2.1 Hardware and OS Support

#### **Minimum Hardware Requirements:**

- A SMI USB Display Adapter
- USB 3.0 host port
- Ubuntu system x86 architecture host

#### **OS Support:**

- Ubuntu 20.04 or later

## 3. How to Use Linux USB Display Driver

This chapter introduces the functions of SMI Linux USB Display Driver and recommended steps to use the App.

There is a method to get the SMI Linux USB Display Driver.

- Download the App from: <https://www.siliconmotion.com/downloads/index.html>:

### 3.1 Install SMI Linux USB Display Driver

The SMI USB Display software for Ubuntu features is a simple installer, that aims to perform the installation process in a single step if possible.

The installer should be started with administrative privileges:

```
sudo ./ SMIUSBDisplay-driver.*.*.*.*.run
```

The installer is going to check for dependencies automatically, and execute apt package manager when needed.

The messages may vary depending on the packages already installed in the system. Press ENTER to proceed. The packages required by the driver are dkms and libdrm-dev. The first one is needed to enable loading of EVDI module. libevdi is built during installation, the latter is necessary for the build process.

**WARNING:**

Should the permission to install the packages not be granted, the installation process stops.

During the installation process, if the package cannot be automatically installed, you need to install it manually:

```
sudo apt update
```

```
sudo apt install dkms
```

```
sudo apt install libdrm-dev
```

The installation is complete as shown in the following figure:

```

smi@smi-Default-string: ~/smiwork/r20_test
modprobe: FATAL: Module evdi not found in directory /lib/modules/6.8.0-11-generic
Installing
Installing EVDI
[[ Installing EVDI DKMS module ]]
Sign command: /usr/bin/kmodsign
Binary update-secureboot-policy not found, modules won't be signed
Creating symlink /var/lib/dkms/evdi/1.14.2/source -> /usr/src/evdi-1.14.2

Building module:
Cleaning build area...
make -j4 KERNELRELEASE=6.8.0-11-generic all INCLUDEDIR=/lib/modules/6.8.0-11-generic/build/include KVERSION=6.8.0-11-generic DKMS_BUILD=1.....
Cleaning build area...

evdi.ko.zst:
Running module version sanity check.
- Original module
  - No original module exists within this kernel
- Installation
  - Installing to /lib/modules/6.8.0-11-generic/updates/dkms/
depmod.....
[[ Installing module configuration files ]]
[[ Backuping EVDI DKMS module ]]
[[ Installing EVDI library ]]
cc -I../module -std=gnu99 -fPIC -D_FILE_OFFSET_BITS=64 $(pkg-config --cflags-only-I libdrm) -c -o evdi_lib.o evdi_lib.c
cc evdi_lib.o -shared -Wl,-soname,libevdi.so.1 -o libevdi.so.1.13.1 -lc -lgcc
cp libevdi.so.1.13.1 libevdi.so
ln -sf libevdi.so.1.13.1 libevdi.so.1
Installing x64-ubuntu/SMIUSBDisplayManager
Installing libraries
Installing firmware packages
Adding udev rule for SiliconMotion devices
Adding upstart scripts
Starting SMIUSBDisplay systemd service

Installation complete!

Please reboot your computer if you're intending to use Xorg.
    
```

Figure 2.1 SMI Linux USB Display Driver is installed

### 3.2 Use of SMI Linux USB Display Driver

SMI Linux USB Display Driver is a software that does not need to be opened, only needs to run continuously in the background, and can easily achieve multi-screen extended display function. Whether it is an office environment or an entertainment occasion, just correctly connect the USB graphics card device to the host, without complicated settings, you can immediately enjoy the rich experience brought by multiple screens. The user can operate the monitor in “Settings -> Monitor”.

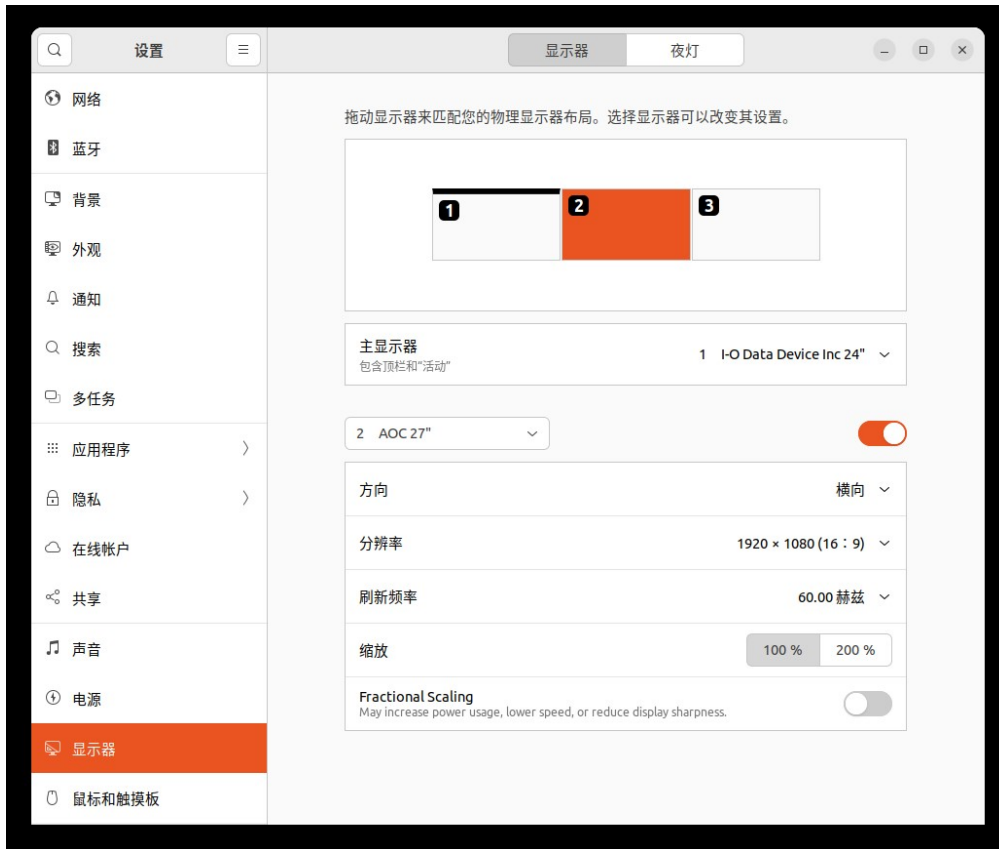


Figure 3.1 Monitor Mode Setting

### 3.2.1 Display mode

The software provides a powerful Extend mode feature that enables each connected monitor on USB graphics devices to display independent content, effectively expanding the desktop space. In Extend mode, users can multitask at the same time or easily switch between different applications. This flexibility greatly improves work efficiency, and users can assign different applications, files or tasks to different displays as needed, making operations more orderly and smooth.



Figure 3.2 Extend Display Mode

In addition, the software also supports the rotation function, the user can simply set the "Settings -> Display" if the display setting support rotation. This feature is very useful for portrait display or special scenes, to bring users more choices and personalized experience.

### 3.2.2 Multi-channel display

Support for dual device display, this software will bring users a more flexible work environment, effectively improve work efficiency. At the same time, if the device is connected to a single 4K display, the software can provide 4K high-definition image support, allowing users to immerse in a high-quality visual experience. This superior image performance will greatly increase user satisfaction, making both work and play a better experience.

## 4. Uninstall SMI Linux USB Display Driver

Use `./run` package name + `uninstall` with root permission. For example:

`sudo ./SMIUSBDisplay-driver.*.*.*.run uninstall`. The uninstallation is complete, as shown in

Figure 4.1.

```

smi@smi-Default-string:~/smiwork/r20_test
Distribution discovered: No LSB modules are available.
Ubuntu Noble Numbat (development branch)
Uninstalling
Stopping SMIUSBDisplay systemd service
Stopping smiusbdisplay systemd service
The unit files have no installation config (WantedBy=, RequiredBy=, UpheldBy=,
Also=, or Alias= settings in the [Install] section, and DefaultInstance= for
template units). This means they are not meant to be enabled or disabled using systemctl.

Possible reasons for having these kinds of units are:
* A unit may be statically enabled by being symlinked from another unit's
.wants/, .requires/, or .upholds/ directory.
* A unit's purpose may be to act as a helper for some other unit which has
a requirement dependency on it.
* A unit may be started when needed via activation (socket, path, timer,
D-Bus, udev, scripted systemctl call, ...).
* In case of template units, the unit is meant to be enabled with some
instance name specified.
[ Removing suspend-resume hooks ]
[ Removing udev rule ]
[ Removing Core folder ]
Removing EVDI from kernel tree, DKMS, and removing sources.
dkms remove evdi/1.14.2 --all
Module evdi-1.14.2 for kernel 6.8.0-11-generic (x86_64).
Before uninstall, this module version was ACTIVE on this kernel.

evdi.ko.zst:
- Uninstallation
- Deleting from: /lib/modules/6.8.0-11-generic/updates/dkms/
- Original module
- No original module was found for this module on this kernel.
- Use the dkms install command to reinstall any previous module version.
depmod.....
Deleting module evdi-1.14.2 completely from the DKMS tree.
rm -f -rf /usr/src/evdi-1.14.2

Uninstallation steps complete.
    
```

Figure 4.1 SMI Linux USB Display Driver Uninstallation is completed