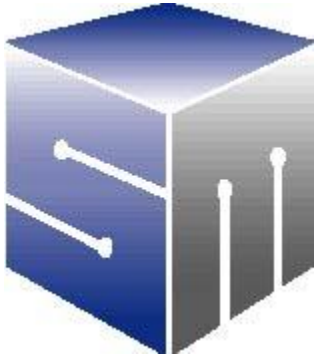




Silicon Motion®, Inc.



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SMI macOS USB Software User Manual

V1.11.0





Silicon Motion®, Inc.

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History

Date	Changes	Changed by
07/07/2016	First Draft	Crystal Liu
09/12/2016	Modify the software install and uninstall process	Crystal Liu
12/05/2016	Update to support SM768 ASIC chip	Teddy Wang
11/20/2017	Ready for release	Teddy Wang
12/18/2017	Support macOS10.13	Teddy Wang
01/26/2018	Add one important note on macOS 10.13.x	Teddy Wang
04/13/2018	Add important note on macOS 10.13.4	Teddy Wang
12/28/2018	Change Pictures	Ilena Zhou
07/03/2019	Add retina and notes on macOS 10.15.	Ilena Zhou



1 Overview

This Document is mainly describing the Function, architecture and usage of SiliconMotion USB Display macOS software..



2 Requirements

2.1 Hardware and OS Support

The minimum PC and hardware requirement for SMI MacOS USB Display software:

- SMI USB Display Adapter.
- USB: At least one USB 2.0 or USB 3.0 host port.
- When you need multi-card display, please use a higher configuration MacBook: At least MacBook Pro 2017.
- Do not plug multiple SMI devices into the same USB hub due to the limited USB3.0 bandwidth.

SMI MacOS USB Display is available on the following Mac operating system:

- macOS version 10.10.x, 10.11.x, 10.12.x, 10.13.x, 10.14.x

2.2 Languages Support

The following languages are supported on all supported operating systems for current SMI USB macOS Display Software:

- English
- Simplified Chinese





3 Function Description

3.1 Introduction

User can extend the desktop when SMI USB Display Adapter plug in. Current SM768 supports resolution up to 4K UHD (3840x2160@30p) or full HD (1920x1080@60p).

3.2 macOS USB Display Function Description

The functions of macOS USB Display support are listed as following:

- 1). Supporting set mode.
- 2). Supporting Dual View
- 3). Supporting Monitor EDID Reading.
- 4). Supporting Monitor PnP.
- 5). Supporting hardware cursor.
- 6). Supporting Raw Data, Golumb, JPEG and YUV encoder algorithms.
- 7). Supporting SMI CAT(Content Adaptive Technology).
- 8). Supporting Device PnP.

3.3 macOS USB Display Restrictions

The restrictions of SMI macOS USB Display driver are listed as following:

- 1) macOS USB Display Driver can NOT remember the main/secondary screen status in some cases.
- 2) Can't support Mirror Mode on macOS 10.13.x High Sierra.
- 3) In macOS 10.12.x, It may have corrupted window title bar and widgets. To work around, select System Preferences -> Accessibility -> Display -> Reduce transparency
- 4) SMI USB display screen is black with only mouse cursor visible in some cases and device re-plug is required to recover





4 How to use SMI macOS USB Display

The SMI macOS USB Display install and uninstall process are listed as following:

4.1 Install USB display driver

- a) Double-click the installation package which named “SMI USB Display Software for macOS vX.X.X.X.dmg”. You will see the install welcome page:

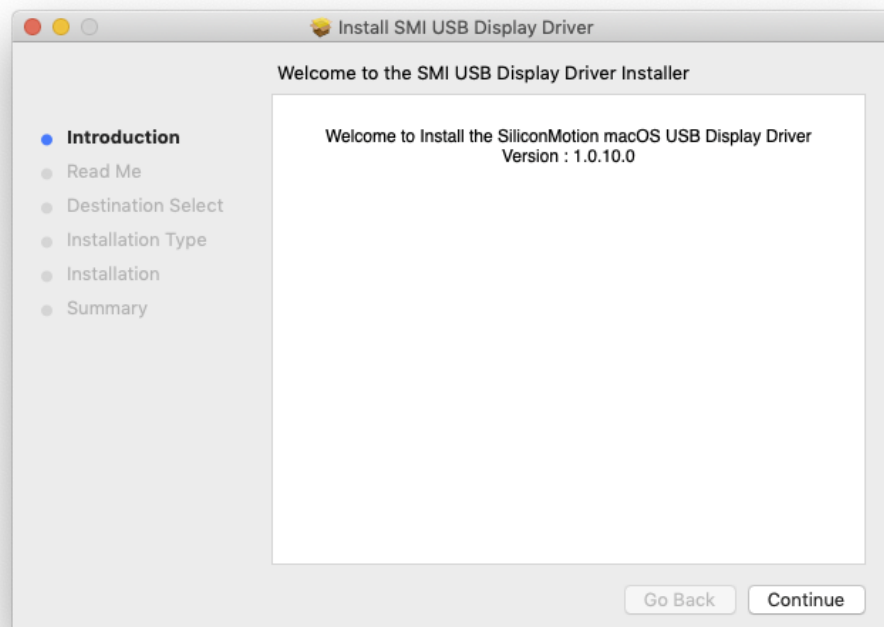


Figure 4-6 Install Introduction



b) Then click the “Continue” button. You will see the “Read Me” file of this driver:

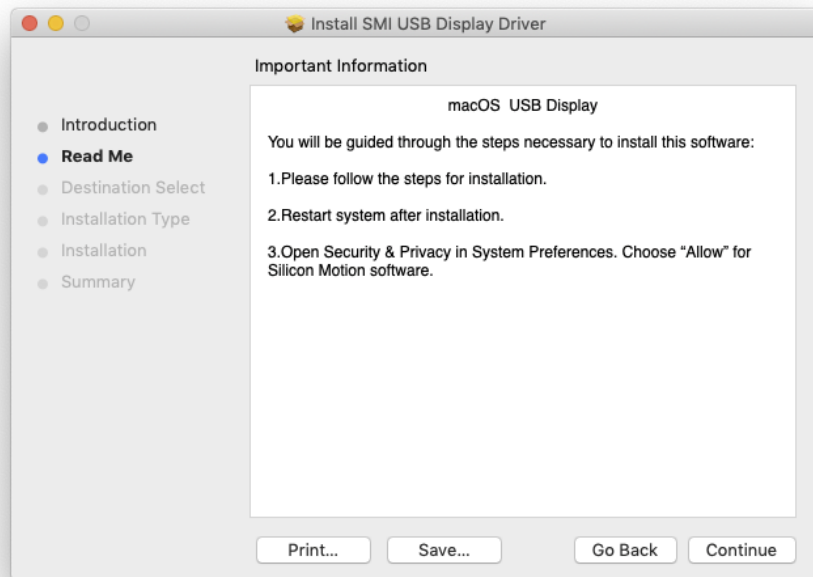


Figure 4-7 Read me

c) Click the “Continue” button. The “Installation Type” will appear in front of you, and it will tell you need how much memory space to install this software:

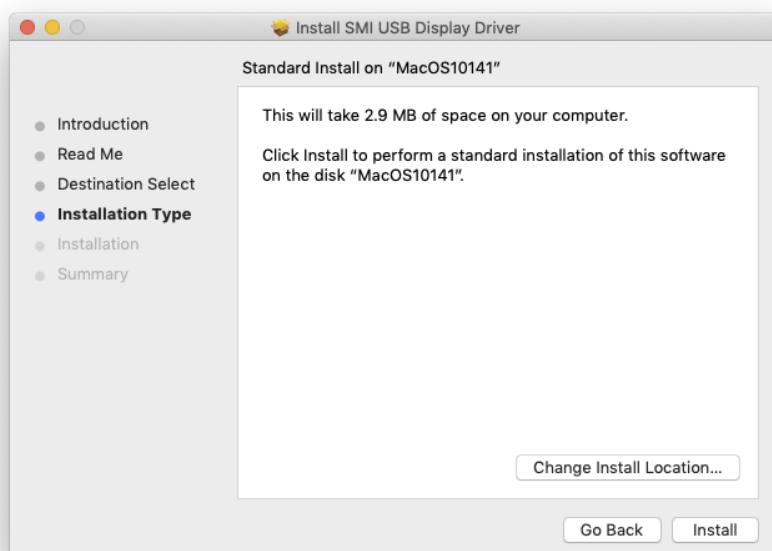


Figure 4-8 Installation type





d) Click the “Install” button. System will pop up a window, and if you want to continue to install the driver, you need type user’s password to allow system to install the driver. Then click “Install Software”:

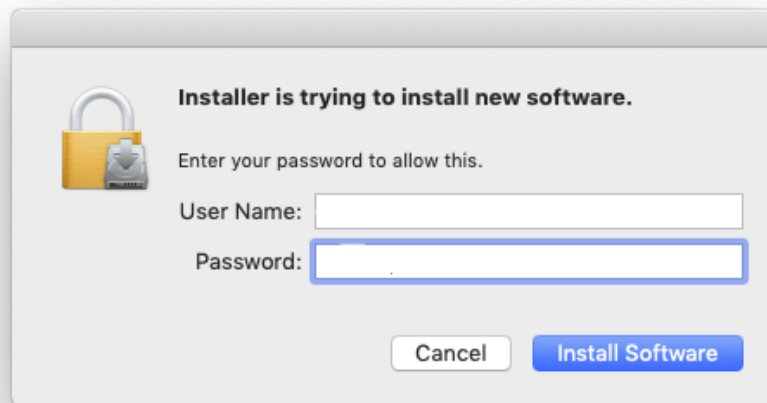


Figure 4-9 Authority

e) Click the “Install” button to continue the installation, then “Continue Installation” to confirm restart computer:

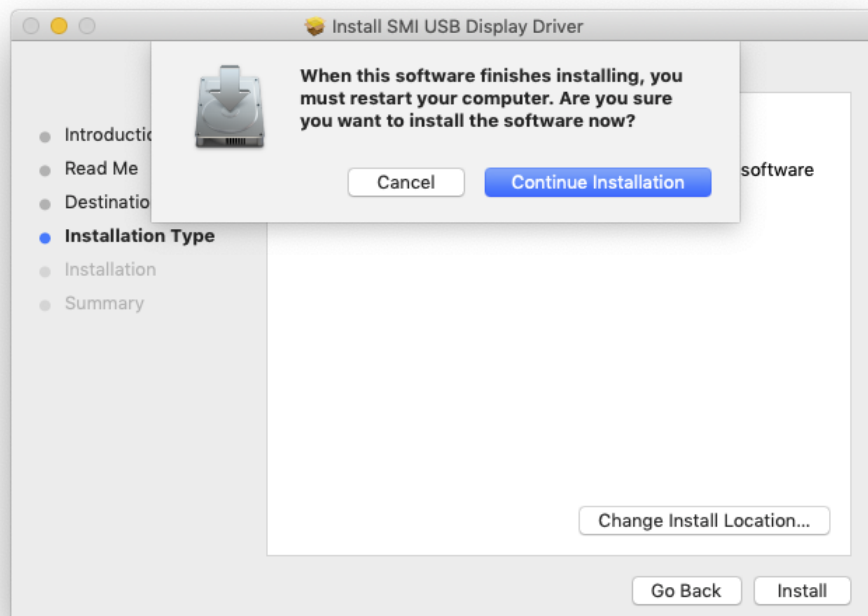




Figure 4-10 Confirm restart computer

f) After install the software successfully, you will see the following page:

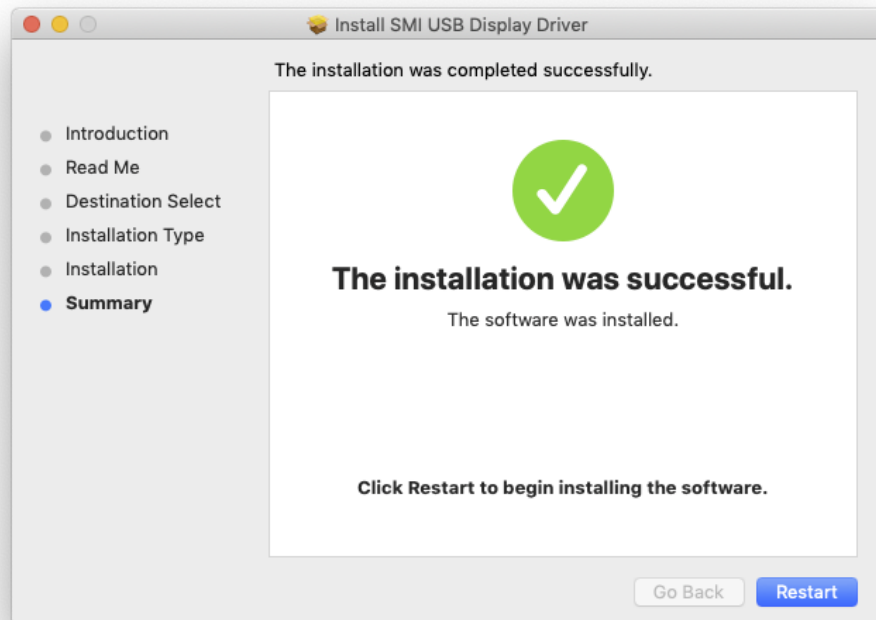


Figure 4-11 Summary

g) In order to successfully install the software, please restart the system.

4.2 Troubleshooting on macOS driver

4.2.1 The resolution of monitor is not available

macOS might hide by default some resolutions depending on the monitor and the connection type.

To show additional resolutions:

- Open the Displays system preference
- Find the preferences window for the screen you want to adjust
- If not already selected, choose the "Default for display" resolution setting
- While keeping the option (alt) key pressed, choose the "Scaled" resolution setting

The complete list of resolutions accepted by macOS should now be visible.

The above information is documented in the following link of Apple tech note

<https://support.apple.com/en-us/HT202471>

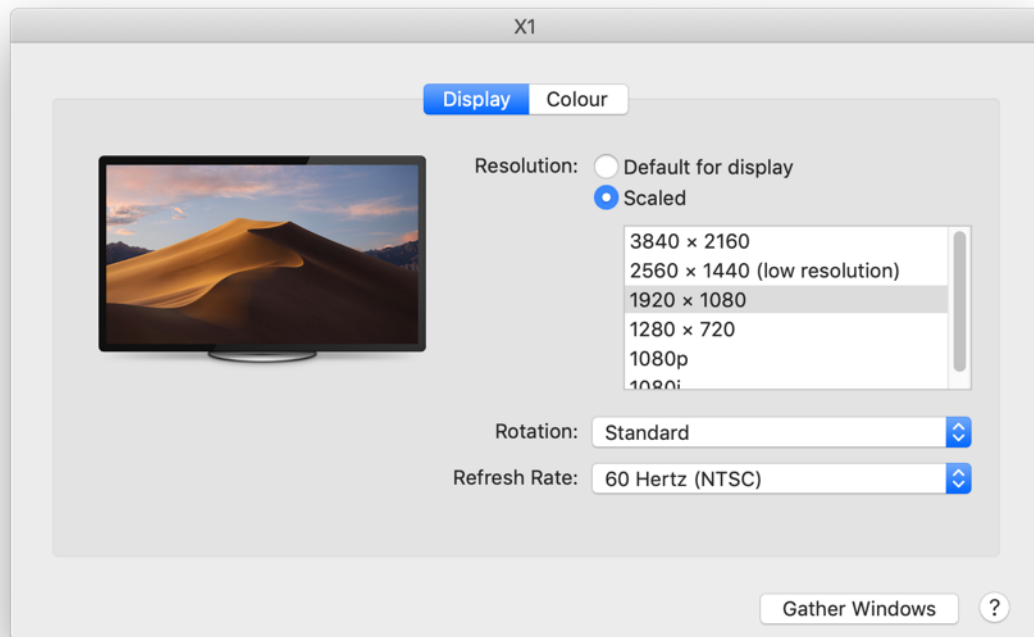




4.2.2 "Retina mode" 1920x1080 resolution

MacOS is choosing scaled 1920x1080 resolution as default. Please check it in "System Preferences".

For "1920x1080" line, Monitor draws with 4K resolution and scaled desktop.



For "1920x1080(low resolution)" line, monitor draws with 1920x1080 resolution and the same available desktop area.

If user prefer real 4K mode, choose "3840x2160".

4.3 Important Notes on macOS High Sierra 10.13.x and 10.14.x

4.3.1 Mirror mode supporting

SMI USB Display can't support Mirror Mode on macOS 10.13.x High Sierra

When the display layout is set to mirror, the Window Server will crash terminating all open applications. The layout will be reset to extended screens and the user brought to the login screen. In some cases it's then possible to mirror after logging in, but subsequent device unplugs can trigger further crashes.

The operating system decides when a set of displays will mirror, for example when connecting a projector or when a saved layout contains mirroring screens.

When the crash occurs, please unplug the SMI USB Display Adapter and login the OS.

Then please uninstall the SMI USB Display driver and install the driver again.



This mirroring issue needs to be resolved by Apple.

4.3.2 Kernel Extension driver blocked by OS

macOS High Sierra 10.13 and above macOS introduce a new feature that requires user approval before loading new third-party kernel extensions

This feature enforces that only kernel extensions approved by the user will be loaded on a system. When a request is made to load a KEXT that the user has not yet approved, the load request is denied.

SiliconMotion USB Display Driver installation includes a system extension (kext) that is affected by the new policy.

At the end of the installation, the operating system should display a "System Extension Blocked after installation" warning shown in Figure 4-12.

This warning is not always shown. Even if it is not shown, for new installations the user must enable the kernel extension to use the SiliconMotion USB product.

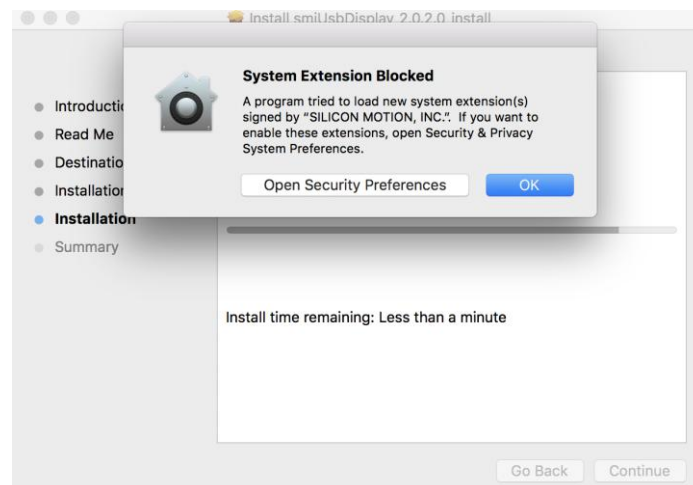
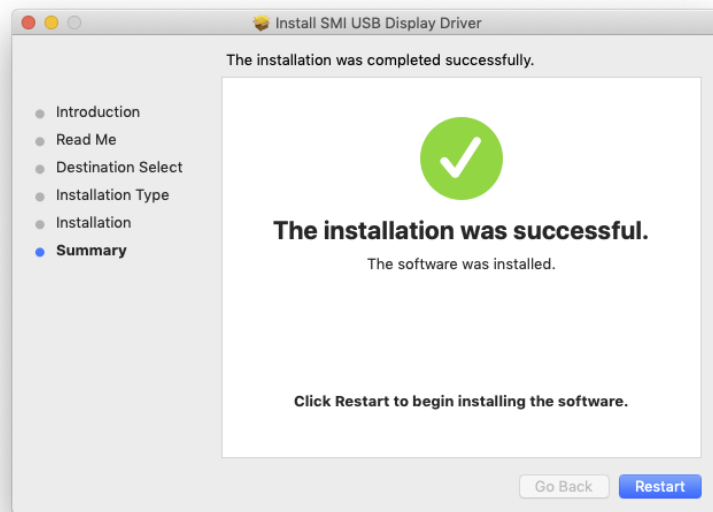


Figure4-12 Blocked kernel extension

Please do the following steps before you click the restart button to reboot the system.





This prompts the user to approve the KEXT in System Preferences > Security & Privacy as shown in Figure 4-13 and Figure 4-14

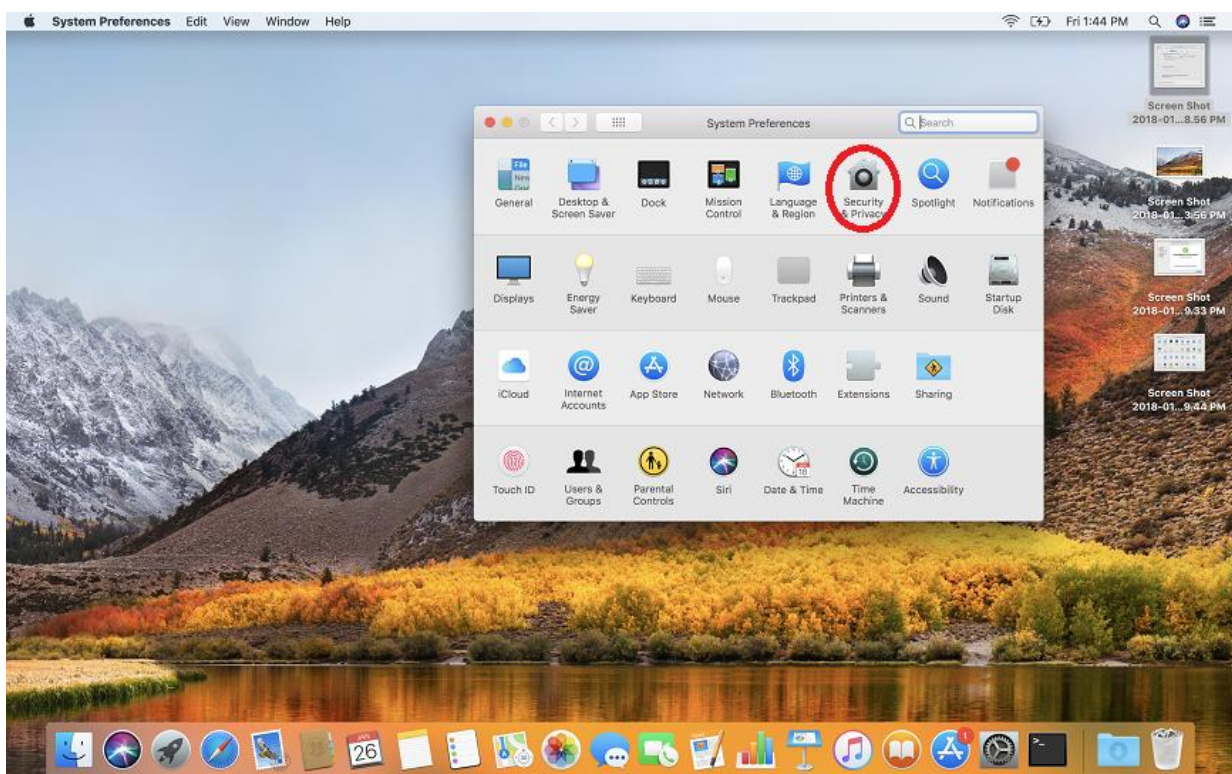


Figure4-13

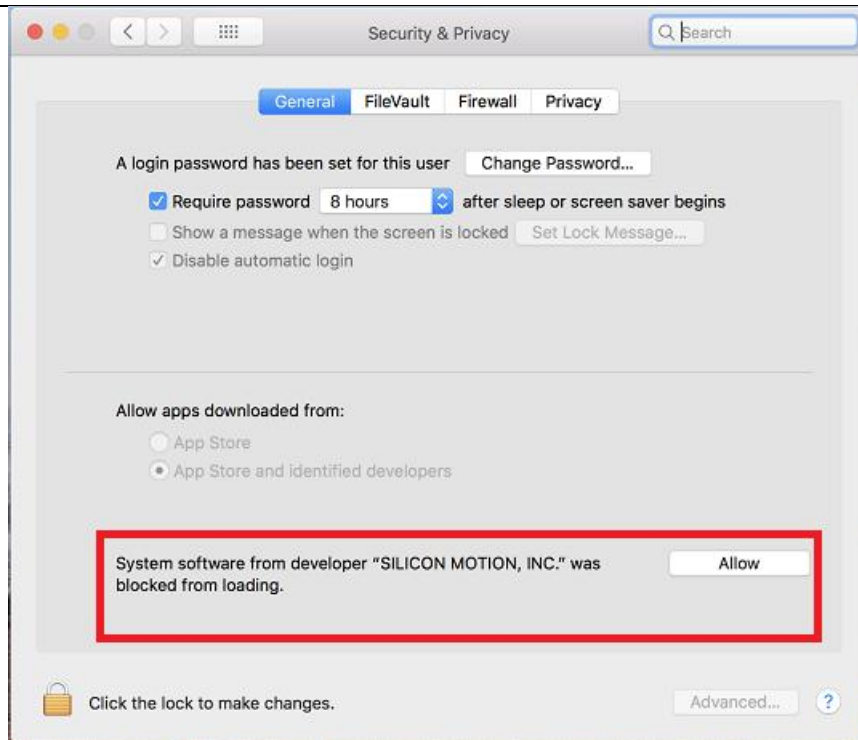


Figure4-14

Then you can reboot the system to use the SiliconMotion USB Display.

This approval UI is only present in the Security & Privacy preferences pane for 30 minutes after the alert. Until the user approves the KEXT, future load attempts will cause the approval UI to reappear but will not trigger another user alert.

On some systems, the security clearance may not take automatically effect and the SiliconMotion USB Display Software will still not be functional after rebooting. In this case, simply run the installer process again to ensure all the software is correctly started.

The above information is documented in the following link of Apple tech note

<https://developer.apple.com/library/content/technotes/tn2459>

4.4 Important Notes on macOS Catalina 10.15.x

4.4.1 Screen turn black

MacOS Catalina 10.15 Beta required user to provide more admission for record screen. In some case, the screens of SM768 will turn black. To fix the behavior, we listed the steps below.

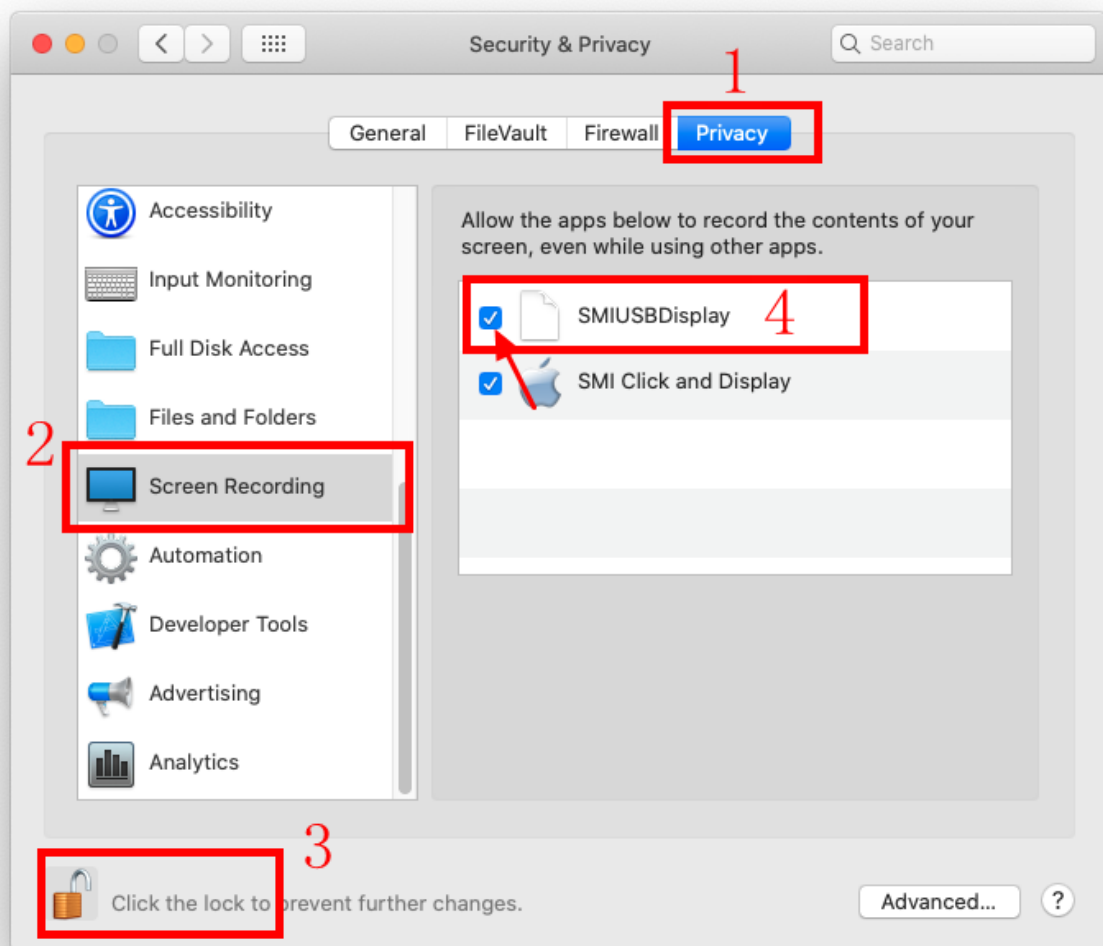




After "Install" and "Restart system", open the "System Preferences".

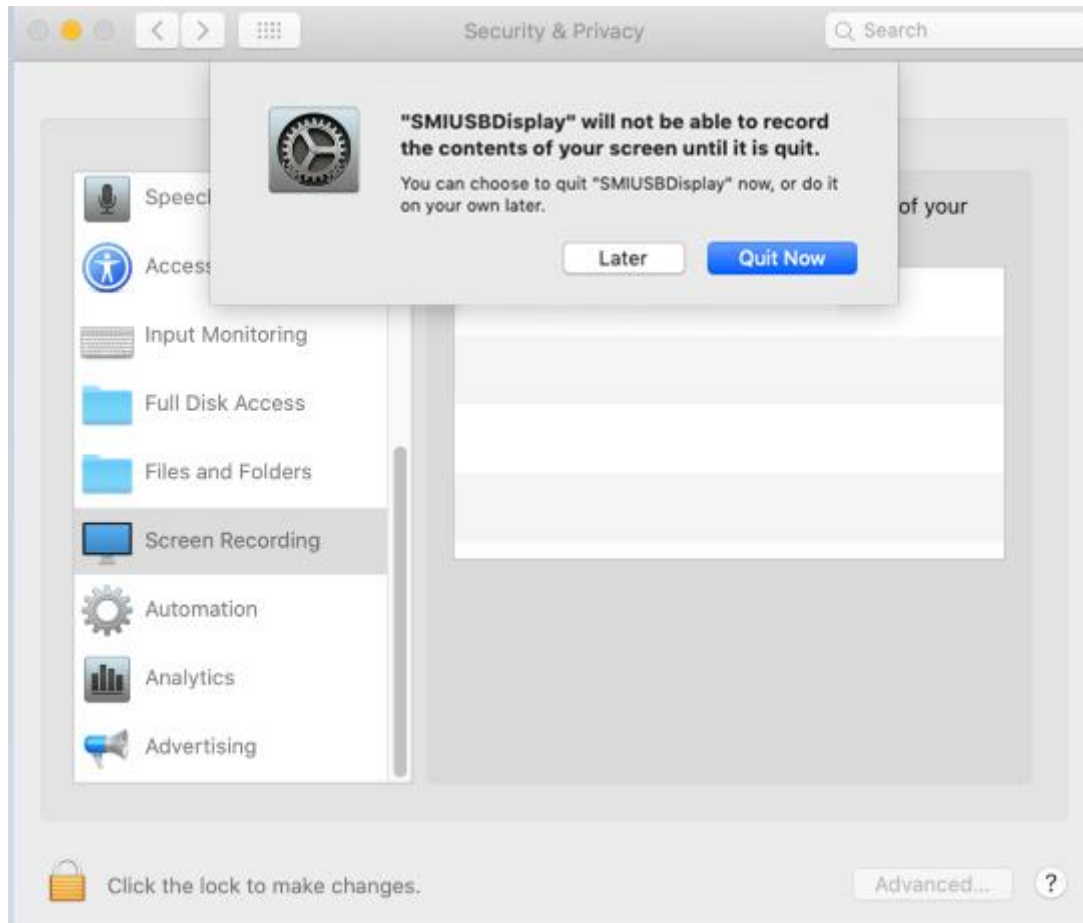


Open "Security & Privacy". Choose Tag of "Privacy". Click "Click the lock to" and enter password for management authority.
Enable "SMIUSBDisplay".





Click "Quit now" and Reboot system.



4.5 USB display driver

After restart system, you can connect SMI USB device to Mac, the desktop will show in extend screen. You can check it out through Displays setting:



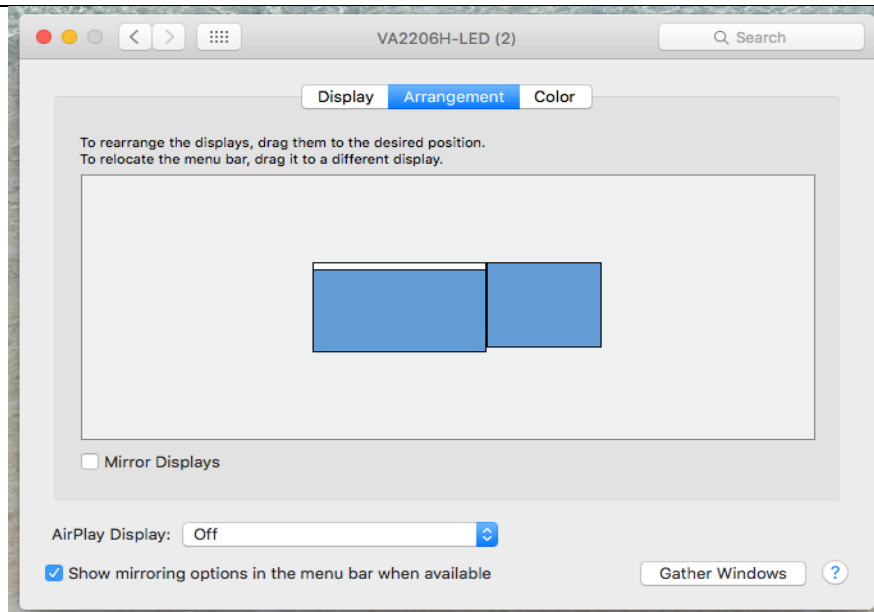


Figure 4-12 Display setting

The extended desktop will be shown as following:

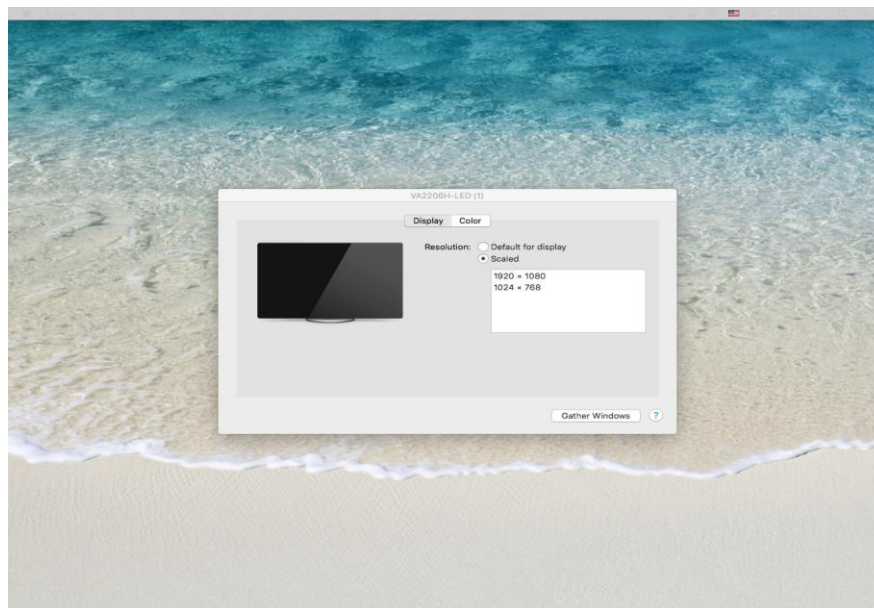


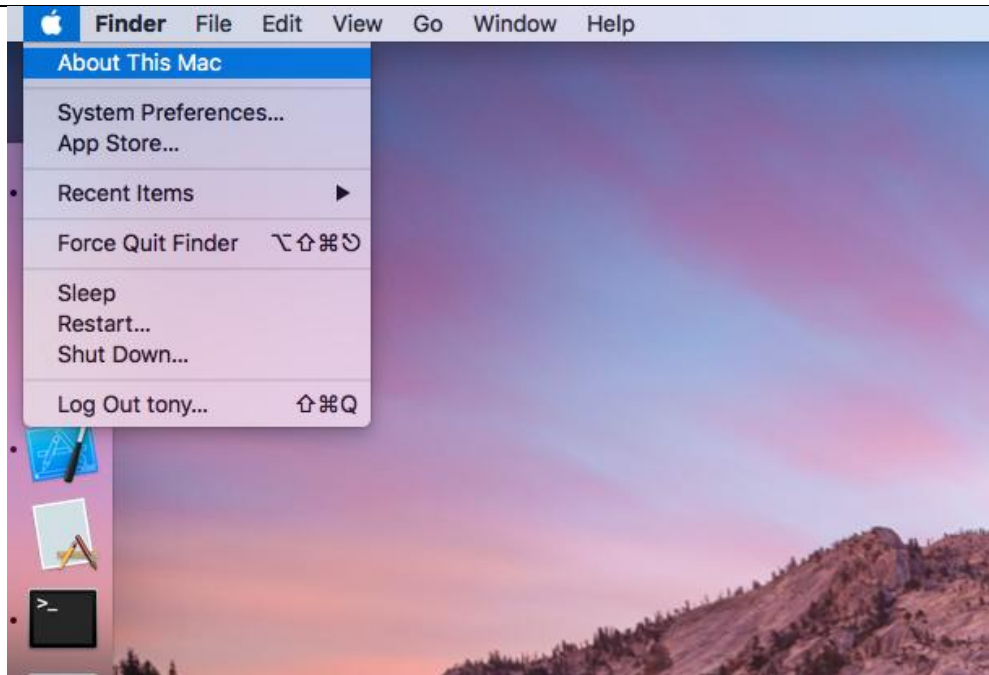
Figure 4-13 Extended desktop

4.6 How to check the version of the driver

You can use the following steps to check the version number of the driver:

- a) Choose "About This Mac" from the Apple menu:



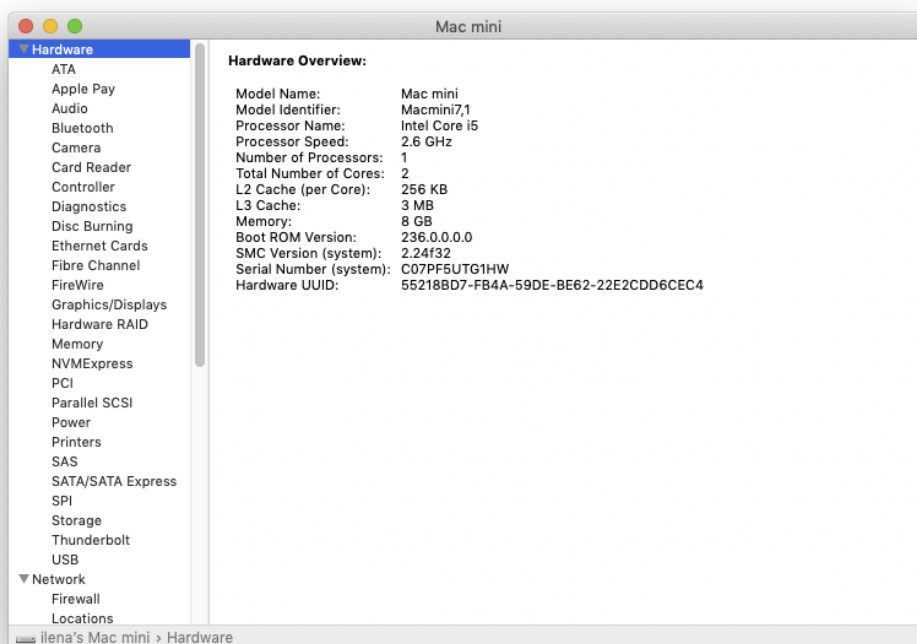


b) Click on “System Report...” :

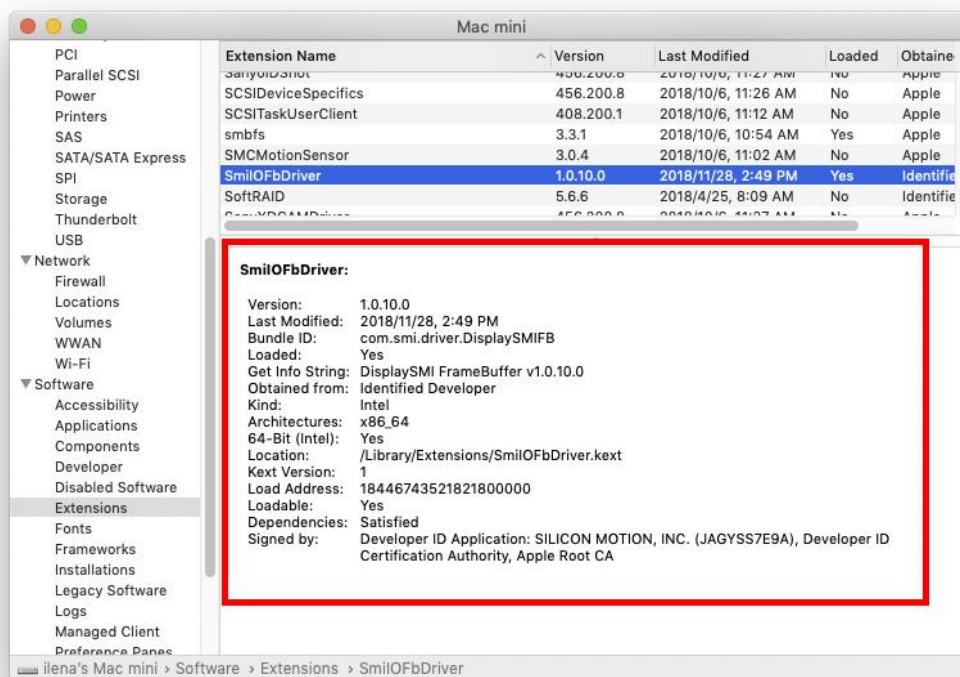


c) In the Contents sidebar select Extensions from the Software section:





d) Scroll the list to reveal the “SmiOFbDriver” extension information:





4.7 Uninstall USB display driver

a) Double-click the uninstall package which named “SMI USB Display Driver Uninstaller”. Then Click “Open” to confirm open this application. The introduction page will show as following, then click “Uninstall” button:



Figure 4-14 Uninstall introduction

b) In order to uninstall the driver, also need type user's password to allow system to do this operation:

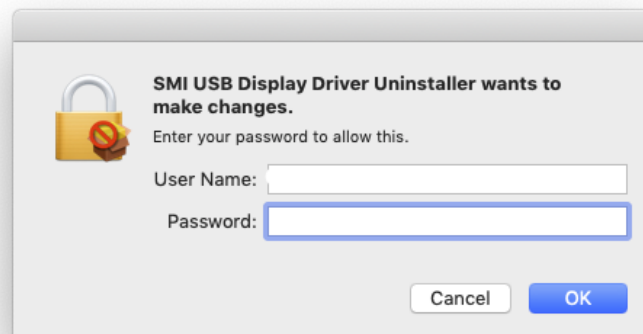




Figure 4-15 Uninstall authority

c) After uninstall succeeded, you can see the blow window. In order to complete the uninstall, you can restart the computer immediately or later.

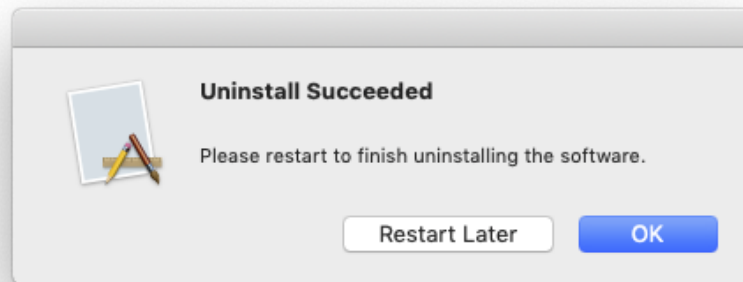


Figure 4-16 Uninstall complete