

SAMSUNG

Samsung Portable SSD X5

User Manual

MU-PB500B MU-PB1T0B MU-PB2T0B

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Samsung Portable SSD X5

User Manual

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Introduction

Samsung Portable SSD X5 is a revolutionary external storage with integrated cutting-edge NVMe™ and Thunderbolt™ 3 technologies. The X5 is designed for content creators and high-tech professionals who need fast and secure access to data in a lightweight and compact storage solution. The X5 also leads the industry with a 2TB capacity option.

Its lightning-fast speed, high capacity and data protection allows content leaders to handle high-resolution contents faster and more securely on-the-go workplace

Unrivaled Speed

Samsung Portable SSD X5 leverages technological synergies between NVMe™ and Thunderbolt™ 3 technologies, offering a remarkably fast interface of up to 40Gbps bandwidth.

X5 delivers read/write speeds of up to 2,800/2,300MB/s respectively, which is more than five times faster than current USB 3.1 PSSD (SATA-based) and more than twenty-five times faster than an external HDD¹⁾.

Revolutionary Design and Well-Engineered Reliability

Inspired by a supercar, the X5's dynamic design is optimized for performance and reliability. Using a durable yet light magnesium full metal body and internal structure, the X5 withstands drops of up to two meters (6.6 feet)²⁾.

The X5 integrates the latest thermal management technologies. The Dynamic Thermal Guard technology safeguards against overheating by automatically maintaining optimal operating temperatures, while a heat sink - a mechanical solution - minimizes the overall heat generation internally.

Strong Data Protection

The X5 offers powerful data protection through Samsung Portable SSD software. You can conveniently manage access to your X5 using password protection based on AES 256-bit hardware encryption.

¹⁾ Based on internal test results (Read performance)

²⁾ The internal free fall shock test was conducted under controlled conditions.

※ The NVM Express® design mark is a registered trademark of NVM Express, Inc.

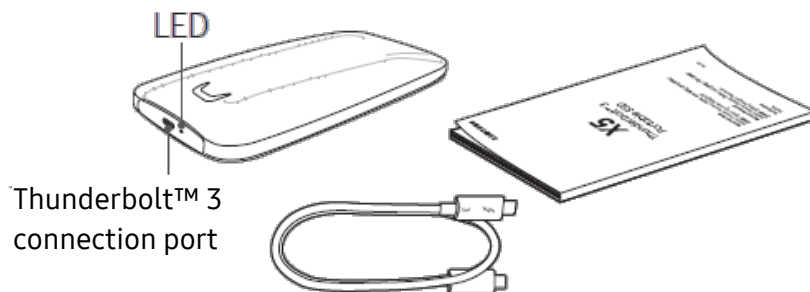
※ Thunderbolt and the Thunderbolt logo are trademark of Intel Corporation in the U.S. and/or other countries.

Getting Started

Before using the Samsung Portable SSD X5 (referred to as “X5”), please read this User Manual thoroughly so that you may know how to use the product in a safe and appropriate manner.

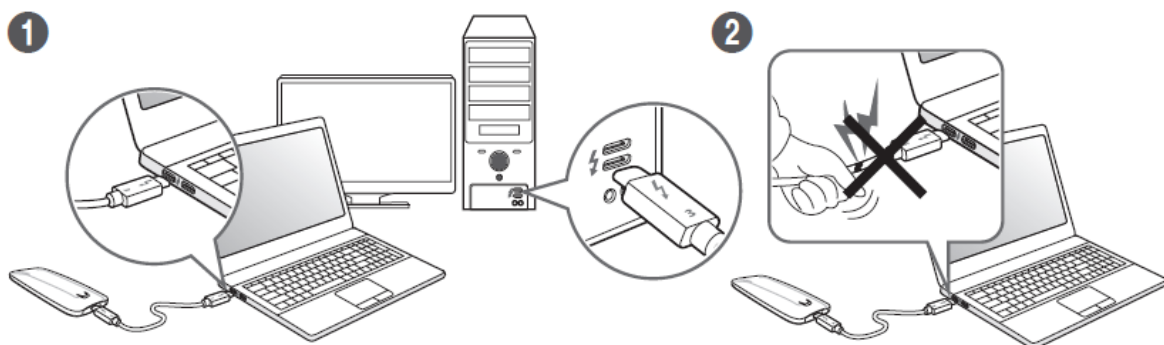
What’s In the Box

- Samsung Portable SSD X5
- Thunderbolt™ 3 (40 Gbps) USB-C cable
- Quick Start Guide & Warranty Statement



How to Connect / Disconnect

- ① Connect the drive to the Thunderbolt™ 3 port on your Mac or Windows PC.
- ② Always use “Eject”, “Unmount” or “Safely Remove Hardware” when disconnecting the X5 to protect your data.



System Requirements

Mac and Windows PCs with Thunderbolt™ 3 ports^{3) 4)}


※ Thunderbolt™ 3 Interface Support

Thunderbolt™ 3 is a hardware interface that enables high-speed data transfer of up to 40Gbps bandwidth which is two times faster than the previous Thunderbolt™ 2 and eight times faster than USB 3. By integrating USB-C connector⁵⁾, Thunderbolt™ 3 delivers the most convenient versatile connection to data devices, docks, displays, etc.

Operating System Requirements

- macOS Sierra (version 10.12) or higher
- Windows 10 64bit RS2 or higher

※ How to find OS information in Windows 10⁶⁾

1. Go to **Start** , type about, and then select **About your PC**.
2. Look under **PC** for **Version** to find out which version of Windows 10 your PC is running.
Or press **Windows logo key + R**, type **winver**, then select **OK**.
→ RS2 (Redstone 2) is identified as “Version 1703” on Windows 10 systems.
3. Look under **PC** for **System type** to see if you're running a 32-bit or 64-bit version of Windows.

³⁾ Not backward compatible/does not work on PCs that only support USB.

⁴⁾ Always update the system bios, driver, and performance measurement tool to the latest version.

⁵⁾ Thunderbolt™ 3 has a USB-C connector, but the X5 must be used on a Mac or Windows PC with a Thunderbolt™ 3 port and does not work on USB-c ports that do not support Thunderbolt™ 3.

⁶⁾ Source: Microsoft™ website (Support)
(<https://support.microsoft.com/en-us/help/13443/windows-which-operating-system>)

File Formats

X5 is pre-formatted in using exFAT file system which is supported by Windows OS and Mac OS. Whether data formatted to a certain format may be read or written to your computer vary depending on the OS, as specified in the table below. If you use X5 on a single OS, it is recommended that you format the X5 using the appropriate file format for that OS. (e.g.) Read/write restrictions for file systems by each operating system

File Formats	Windows OS	Mac OS
exFAT	Both read and write	Both read and write
NTFS	Both read and write	Read only
HFS	Not recognizable	Both read and write

* When using exFAT across multiple operating systems, data writing may become locked and you may only be able to read data. If such problem occurs, you can restore write access by following the instructions below.

- Mac OS: Connect X5 to your Mac again, and perform Eject.
- Windows OS: When the notice pops up saying that write access is disabled, click "Scan and fix" to perform Check Disk (CHKDSK). If you did shut down the notice without performing Check Disk, you may do it by selecting the drive → Right-click → Properties → Tools → click Check.

Capacity of X5 Displayed on the System

The capacity reported by the system to which X5 is connected may differ from the labeled capacity, due to the difference between the decimal and binary systems of measurement and other factors including the drive's partitioning and blocking.

* e.g.: Windows OS: 1 GB = 1024MB, Mac OS: 1GB = 1000MB

Labeled capacity uses decimal system and is convertible as below:

1 GB=1,000,000,000 bytes, 1 TB=1,000,000,000,000 bytes

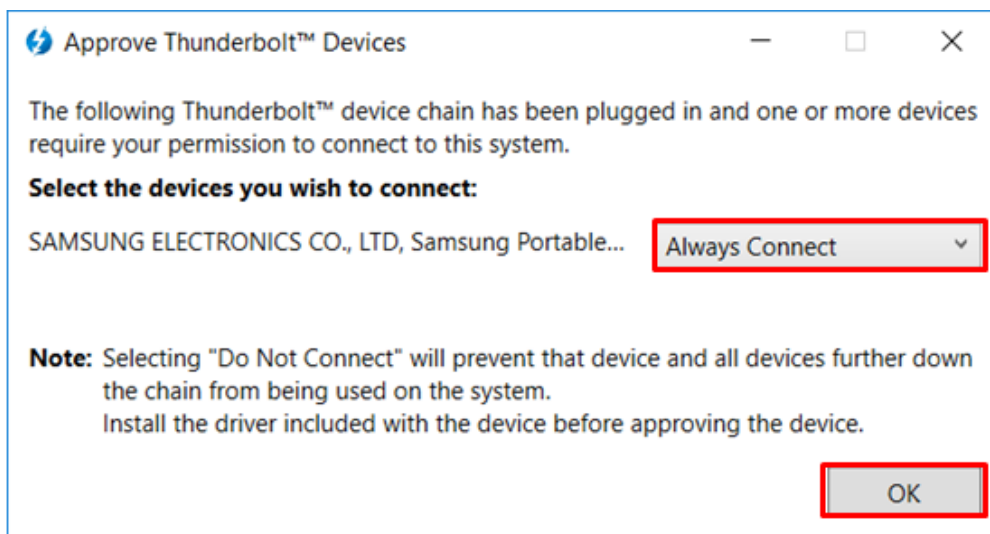
Lower capacity may be demonstrated by your computer due to use of a different measurement standard.

Using X5

Connecting X5

Select the cable compatible with your device. Connect one end of the cable to the device and the other end to the X5.

When using the Thunderbolt 3 storages (X5) for the first time in the Windows OS, you need to “Approve” Thunderbolt 3 devices. Select “Always Connect” then “OK”.



Disconnecting X5

Be sure to use Safely Remove Hardware feature for every disconnection of X5. Unplugging from computer without performing Safely Remove Hardware feature may cause data losses or damages to the X5.

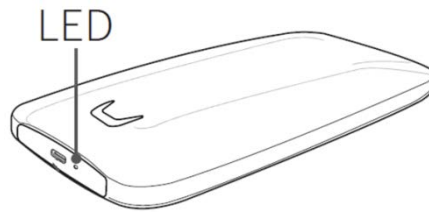
* Samsung shall not be liable for loss of user data or product damages caused by user’s failure to comply with this instruction.

How to Safely Removing Hardware under each OS

Computer OS	Description
Windows OS	Once Safely Remove Hardware is selected from the tray, select the device you wish to remove and click Eject. Once the device is removed safely, you will be notified by the OS.
Mac OS	Right-click on the T5 icon, and select Eject or drag the icon to the Trash to safely remove the product. Remove the cable after the activity indicator LED on the product turns red and then turns off.

LED behavior by product status

The following table describes LED behavior by X5 Status.



Product status	LED Behavior
Plugged in / Idle	Solid White
Read / Write	Blinking White

Installing Samsung Portable SSD Software

(For Password protection and Firmware update)

Connect the X5 to a PC/Laptop, find the below installation files in the device folder, and install the appropriate one.

- Windows OS: SamsungPortableSSD_Setup_Win.exe
- Mac OS: SamsungPortableSSD_Setup_Mac.pkg

* X5 works on PCs (Mac / Windows PC) that support Thunderbolt™ 3. Only PC versions (macOS version/Windows OS version) of Samsung Portable SSD Software support X5, while the existing Android version (App) does not.

* If you format partition of the X5 after purchase, Samsung Portable SSD Software stored in the drive will be deleted. In such case, please download the “Samsung Portable SSD” application from Samsung website (<http://www.samsung.com/portable-ssd>)

* Installation of Samsung Portable SSD Software for X5 will automatically remove previous version, if remaining in your computer.

1. Running Samsung Portable SSD Software

Select “Samsung Portable SSD” application icon on Desktop.

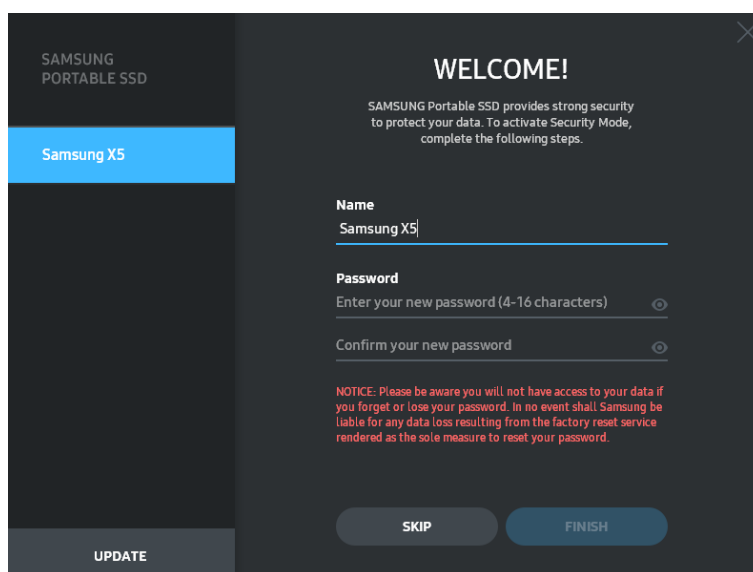
* Samsung Portable SSD Software may not operate without device (driver) enabled.



Samsung Portable SSD Software Icon

2. Setting Password (Optional)

Please follow the instructions that appear on each screen of the Samsung Portable SSD Software. Once you agree to the terms and conditions of the Samsung Portable SSD Software while it is being installed, you can set a password through the following steps. (Certain elements of Samsung Portable SSD Software will be installed on the user’s computer for password protection.)



* Samsung shall not be liable for loss of user data caused by forgotten or stolen passwords. In an effort to keep the device as secure as possible, there is no password recovery option. If the password is forgotten, users need to have X5 to be restored to factory setting through online service rendered by our customer service centers. Please keep it in mind that all user data placed in X5 will be lost by factory reset. Please be cautious not to forget or misplace your password.

* **Only Mac OS**, “Samsung Portable SSD” driver is required for the security functionality. If the kernel extension is not installed, complete the installation by following the sequence on the package installation. Once installed, disconnect and reconnect X5 to confirm that the installation was successful.

* **Only Mac OS**, “Samsung Portable SSD” driver and some of 3rd party drivers, including SATSMARTDriver are mutually exclusive. If you wish to work with SATSMARTDriver, please remove Samsung Portable SSD driver and install SATSMARTDriver as following instruction.

* When both Samsung Portable SSD Driver and SATSMARTDriver are installed and conflict is detected, the instructions like the following will be available:

How to remove Samsung Portable SSD Driver and install SATSMARTDriver

```
#sudo kextunload /System/Library/Extensions/SamsungPortableSSDDriver.kext
```

```
#sudo kextload /System/Library/Extensions/SATSMARTDriver.kext
```

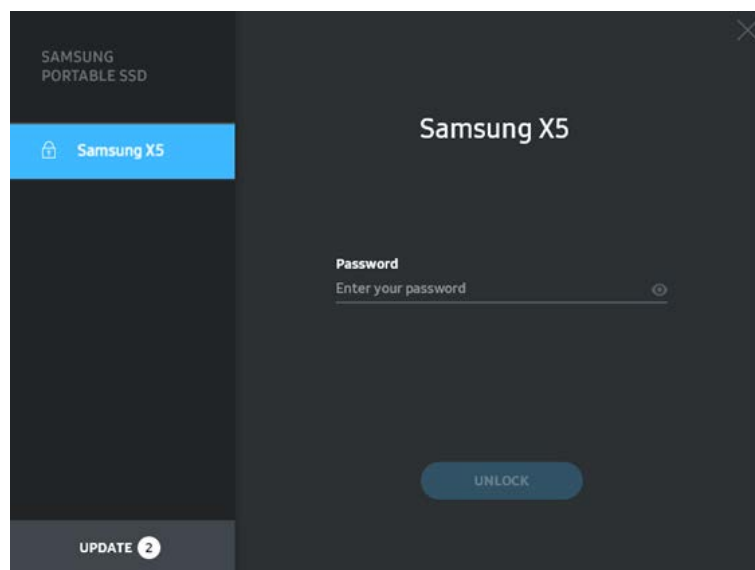
How to remove SATSMARTDriver and install SamsungPortableSSDDriver

```
#sudo kextunload /System/Library/Extensions/SATSMARTDriver.kext
```

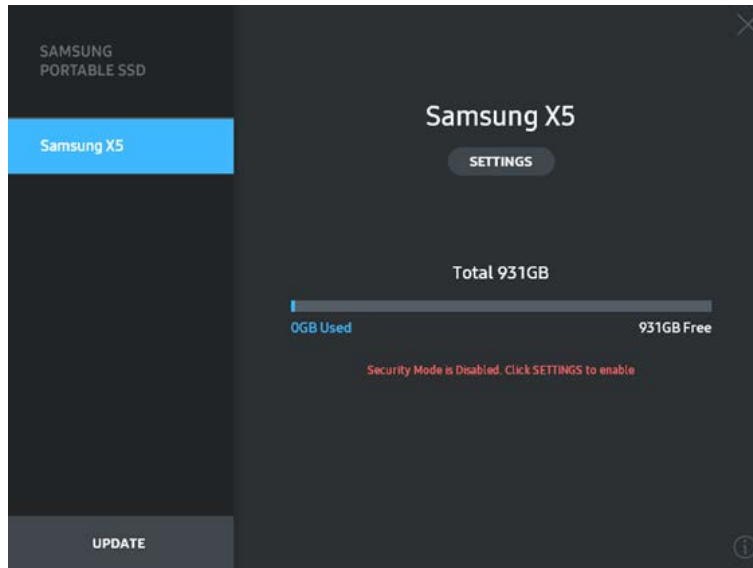
```
#sudo kextload /System/Library/Extensions/SamsungPortableSSDDriver.kext
```

3. Unlock

If you've enabled password protection, every time you connect X5 to your computer you need to enter your password and click the "UNLOCK" button before getting access to the data in X5. If you fail to type correct password, your access will be confined to capacity of about 128MB allocated to SamsungPortableSSD.exe which means that you will be locked out of the data protected by password.



Unlock screen



Home screen

- * Depending on the user environment, the “SamsungPortableSSD Software” may not be executed automatically. In such case, please double-click the “SamsungPortableSSD Software” icon in Explorer on Windows or the Desktop on Mac.
- * Password protection may be supported by certain version of each OS (or higher) only. Please check whether your OS meets the system requirements and supports password protection.
- * If password protection is enabled, only the capacity of security partition in the X5 will be initially displayed. This security partition is approximately ~128 MB. Once you enter your password and unlock successfully, the full capacity of X5 will be displayed in your system.
- * You may choose another Samsung Portable SSD by clicking X5's name on left panel. Samsung Portable SSD Software lists the entire host devices (up to 6) to which Samsung Portable SSD is connected.



4. Change in Settings

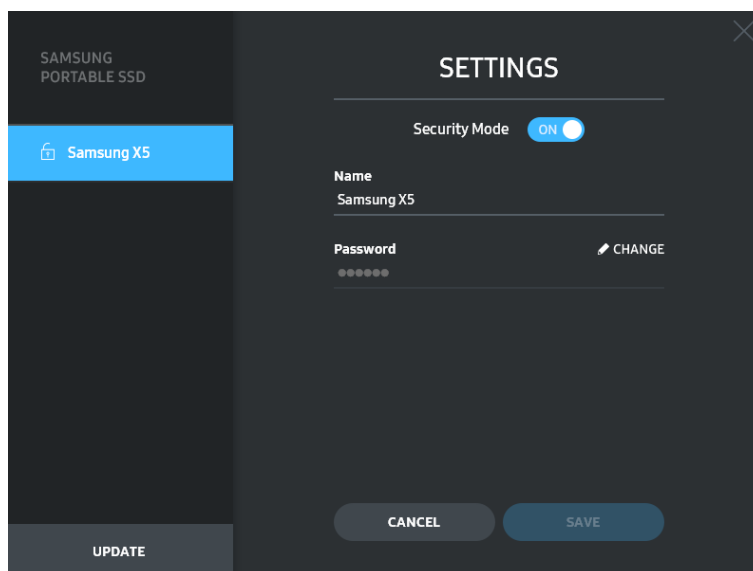
You can change your security mode/user name/password of the X5 by clicking “SETTINGS” button on the main page. When using a computer without the security software, you can download installation file (“SamsungPortableSSD_Setup_Win.exe” for Windows OS, “SamsungPortableSSD_Setup_Mac.pkg” for Mac OS) from the Samsung website (<http://www.samsung.com/portable-ssd>) and install it to change the settings.

- **Security Mode**

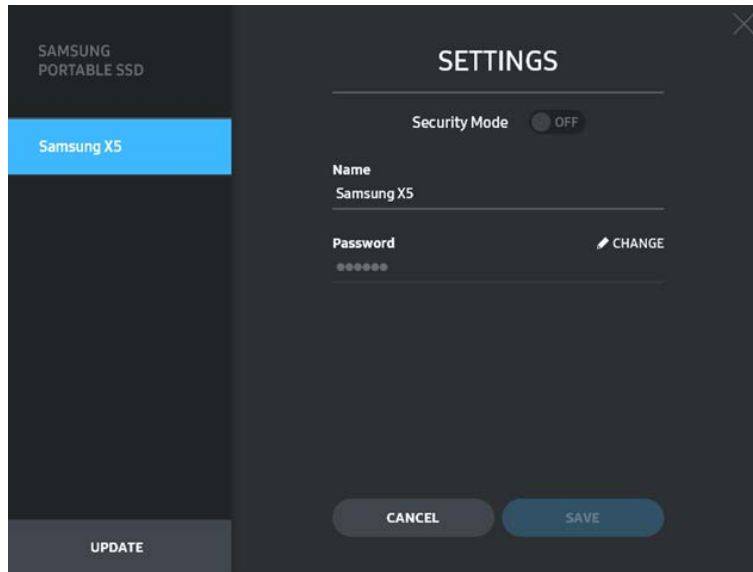
For making a change in security mode between ON and OFF, please click toggle button and enter correct password.

Refer to the table below for a description of X5 security status indicator.

Status		Description
	Locked	This signifies that security mode is on, but user has not unlocked X5. You can unlock X5 on unlock page.
	Unlocked	This signifies that security mode is on and user has already unlocked X5. You can see the storage capacity on main page and change settings.
No icon	Security mode OFF	This is when security is OFF. You can see the storage capacity on main page and change settings.



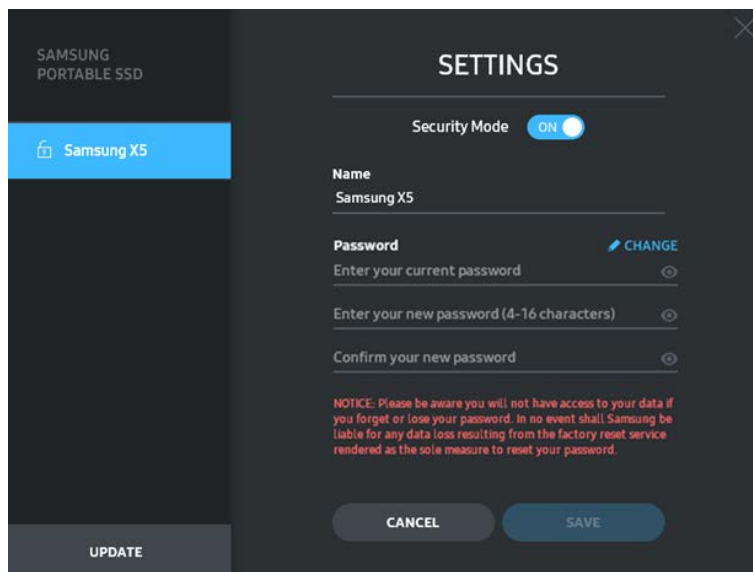
Settings screen (Security Mode ON)



Settings screen (Security Mode OFF)

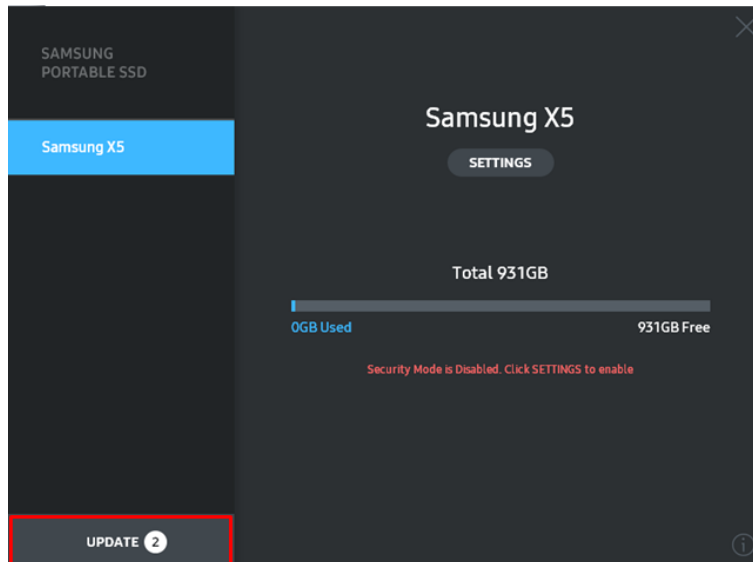
- **Name /Password**

You can change Name and Password. For changing password, please click “CHANGE” button.

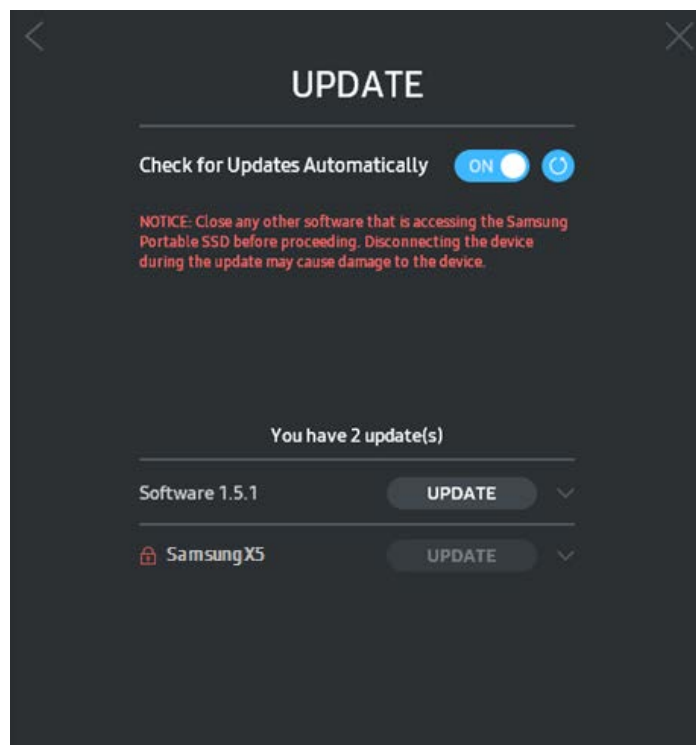


5. Update Software and Product firmware


If your computer is connected to the internet, the number of Software/Firmware updates available will show on the bottom of left panel.




By clicking “UPDATE” button (), you may go to update page.




Update screen

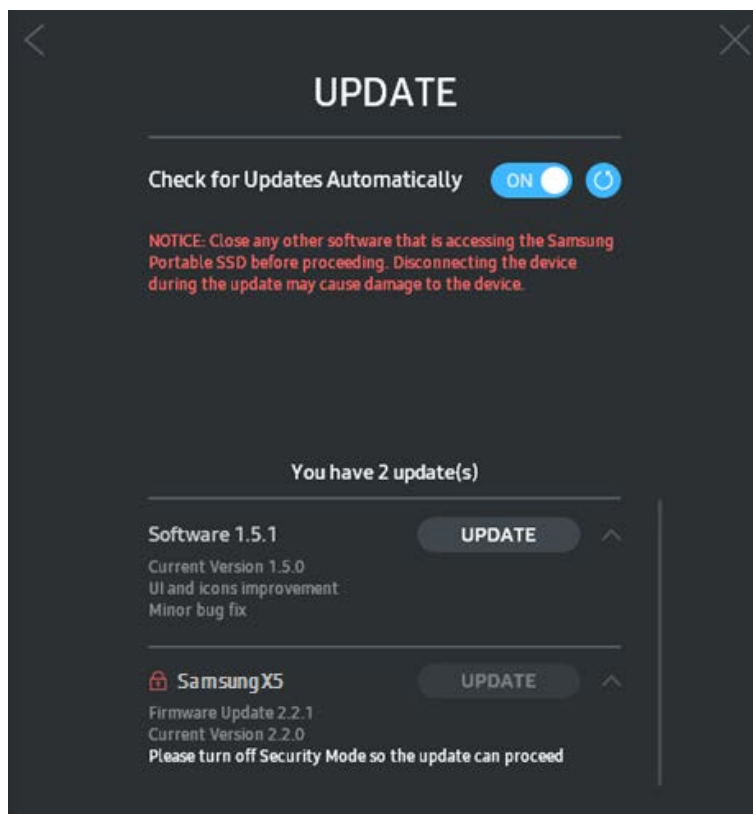
By clicking “UPDATE” button (), you can download the latest software (“SW”) or firmware (“FW”) and update it.

By clicking “Check for Update Automatically” toggle button (), you can choose whether to have SW and FW automatically updated whenever Samsung Portable SSD is connected.

By clicking refresh button (), you can refresh update status.

By clicking arrow down button (), you can see detail information on the applicable update.

* When user changes “Check for Update Automatically” from OFF to ON, SW does not refresh update information immediately. Update information is refreshed when either user clicks refresh button or Samsung Portable SSD is connected to the computer.



In case of X5, Samsung Portable SSD Software update is available for both macOS and Windows OS versions. But X5 FW update is available for Windows OS version only.

* For FW updates, security mode needs to be OFF. Any access to PSSD, including copying/deleting/formatting partition, while FW is being updated, may cause abnormal behavior of or damage to the PSSD.

* Once FW has been updated, please disconnect and reconnect PSSD to ensure that the FW update was successful.

X5 works on PCs (Mac / Windows PC) that support Thunderbolt™ 3. Only PC versions (macOS version/Windows OS version) of Samsung Portable SSD Software support X5, while the existing Android version (App) does not.

In case of X5, Samsung Portable SSD Software update is available for both macOS and Windows OS versions. But X5 FW update is available for Windows OS version only.

6. Delete “Samsung Portable SSD Software”

Deleting software on each OS

Computer OS		Description
Windows OS	If user installed SW using SamsungPortableSSD_Setup_Win.exe	Software can be uninstalled via “Uninstall or change a program”. Go to Control panel → Programs → Programs and Features → Uninstall or change a program → Double-click “Samsung Portable SSD Software” and select “Yes”
	If user installed SW using SamsungPortableSSD.exe	Software need to be deleted manually by executing PSSD_Cleanup.bat in application installation path. (Normally c:\ProgramData\Samsung Apps\Portable SSD\PSSD_Cleanup.bat) Please refer to FAQ in the Samsung website (http://www.samsung.com/samsungssd) for more details.
Mac OS		Application need to be deleted manually by executing CleanupAll.scpt in SW installation path. (Normally #osascript ~/Library/Application Support/PortableSSD/CleanupAll.scpt) *Third party cleaner such as AppCleaner may not delete “Samsung Portable SSD” SW completely. Please refer FAQ in the Samsung website (http://www.samsung.com/samsungssd) for detail information.

7. Select SW Default Language

Default language may be selected under Regional Setting.

8. Open Source License Announcement

<http://opensource.samsung.com/opensource/PortableSSD/seq/0>

Caution

Failure to follow the instructions and cautions in each section of this manual may result in injury, damage to the product or data loss. Please read thoroughly before using the product.

Back Up Important Data

No computer system can be absolutely secure. Samsung does not provide any kind of guarantee and/or warranty against data loss on the X5 under any circumstances. Samsung disclaims any and all liabilities for emotional distress and/or physical and/or monetary damages or losses of any kind caused by loss and/or restoration of data stored on the X5. Be sure to back up important data at all times.

Safeguard User Password

Because X5 utilizes advanced encryption technologies, user data cannot be accessed if password is lost or forgotten. Please write down your password and store it in a safe place. If the product cannot be used due to user's failure to enter correct password, the only way to restore product is to have it reset to factory settings via an online service by a Samsung Service Center. However, restoring the device to factory settings will result in a complete loss of all user data. Please be sure to backup important data on a regular basis.

Connect to Certified Devices; Compliance with Safety Standards

This product has been designed to comply with power consumption limitations according to safety standards. Please use devices and interface ports that comply with related standards.

Avoid Shock, Vibration

Please have the product avoid any strong shock or vibration that may cause malfunction or data loss.

Do Not Disassemble, Damage, or Remove Label

Do not disassemble the product or damage or remove the stickers or labels on the product. If the product has been disassembled, damaged, or if the label has been removed by the user, all warranties will be void. For the purpose of repairs, please contact a Samsung Service Center only or such other service providers designated by Samsung.

Use Genuine Accessories

Always use genuine parts and accessories certified by Samsung. Samsung shall not be liable for damages to the product or loss of user data caused by use of non-genuine parts or accessories.

Use in Appropriate Temperature and Humidity

Use the product in appropriate environment: temperature between 5°C - 35°C and humidity between 10 - 80%.

Use No Excessive Force in Unplugging the Cable

Do not pull or unplug the cable using excessive force. It may cause an unstable connection or damage to the connector.

Perform Virus Scans and Updates

Please follow the following safety guidelines to prevent virus infections.

- Install an anti-virus program on the computer to which the X5 is connected, and perform virus scans on a regular basis.
- Always update the operating system and the anti-virus software with the latest version.
- After downloading files to X5 perform a virus scan before opening the file.

Clean the Product

It is recommended that you clean the product by wiping gently with a soft cloth. Do not use water, chemical substances or detergent. They may cause discoloration or corrosion in the product's exterior, and may also cause fire or electric shock.

Keep Away from Children, Infants and Animals

Small parts pose risk of suffocation. Please keep the product away from children, infants or animals to prevent them from putting the product or parts in the mouth.

Product Specifications and Certifications

Product Specifications

Samsung Portable SSD X5			
Interface	Thunderbolt™ 3 (40Gbps)		
Compatibility	H/W) Macs and Windows PCs with Thunderbolt 3 ports (Not backward compatible/ does not work on PCs only support USB) OS) macOS Sierra (10.12) or higher / Windows 10 64bit RS 2 or higher		
Hardware Information	Capacities	500GB/1TB/2TB ⁷⁾	
	Dimensions	119 x 62 x 19.7 mm (4.7 x 2.4 x 0.8 in)	
	Weight	150 grams (5.3 oz) ⁸⁾	
Performance	Sequential Read	Up to 2,800 MB/sec ⁹⁾	
	Sequential Write	Up to 2,300 MB/sec ⁹⁾ (500GB: Up to 2,100 MB/s)	
Security	Encryption	AES 256-bit hardware encryption	
	Security	Password protection (Optional)	
Reliability	Temperature	Operating	0°C to 60°C
		Non-Operating	-40°C to 85°C
	Humidity	Non-Operating	65°C, 95%
	Shock	Non-Operating	1,500G, duration: 0.5ms, 3 axis
	Vibration	Non-Operating	10~2,000Hz, 20G
Certifications		CE, BSMI, KC, VCCI, C-tick, FCC, IC, UL, TUV, CB	
RoHS Compliance		RoHS 2	
Warranty		Three (3) Year Limited Warranty	

⁷⁾ 1 GB=1,000,000,000 bytes, 1 TB=1,000,000,000,000 bytes. Lower capacity may be demonstrated by your computer due to use of a different measurement standard.

⁸⁾ Exact weight of product may vary by capacity.

⁹⁾ Max data transfer speed is measured based on Samsung's internal testing standards with the enclosed Thunderbolt™ 3 cable. Performance may vary depending on host configuration, cable and user system environment.

Certifications



Waste Electrical and Electronic Equipment

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service, or the shop where you purchased the product.

CANADA COMPLIANCE STATEMENT

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.



FEDERAL COMMUNICATION COMMISSION (FCC) STATEMENT

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device complies with Part 15 of the FCC Rules.
 Operation is subject to the following two conditions:
 1) this device may not cause harmful interference, and
 2) this device must accept any interference received, including interference that may cause undesired operation of the device

Indoor use only

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.



MANUFACTURER'S DECLARATION (T) FOR CE CERTIFICATION

Hereby declares that this/these product(s) is/are in compliance with the essential requirements and other relevant provisions of Directive 2014/30/EU, 2014/35/EU and 2011/65/EU.

In door use only.

Samsung Electronics

Blackbushe Business Park, Yateley, GU46 6GG. UK



KC (Korea Certification)

식별부호: 하기 참조

상호명: 삼성전자(주)

제조사/제조국가: 삼성전자(주) /한국

제조연월: 별도표기

모델명: 하기 참조

정격: 하기 참조

제조 업체명: Samsung Electronics Co., Ltd.

모델명	정격		식별부호
MU-PB500B	5V	2.5V	R-REM-SEC-MU-PB2T0B
MU-PB1T0B	5V	2.5V	
MU-PB2T0B	5V	2.5V	

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