



SATA Firmware Update Instructions Draft



Exos X24 SATA ISE 512E firmware update version **RE05**

This firmware update is for the Seagate **Exos X24 SATA** family only.

Backup all data contained on the drive prior to running the update.

See the End User License Agreement below for specific information about these software tools.

This firmware release only supports the following models:

Exos X24 SATA ISE 512E (SUMMIT)

Models	Part number	Firmware File
ST20000NM002H	3KV133	SummitExosX24SATA-ISE-512E-RE05.LOD
ST16000NM002H	3KW133	
ST12000NM002H	3KX133	
ST10000NM021H	3P3133	

Note: The firmware above does NOT support SAS, STD or any other default sector size other than 512E. It is only for the four models in the list above.

STD Standard (also known as Secure Download & Diagnostic (SD&D))
SED Self Encrypting Drive
FIPS Federal Information Processing Standard
4kN 4k Native sector size
5xxE Advanced Format (512 byte emulation from 4k physical)

If your current **Exos X24 SATA** firmware does not begin with the digits **"RE04"** then you have a configuration which is not compatible with **RE05**. Otherwise, you might have a

unique OEM version in which case please contact your OEM for firmware updates for these drives.

Warning, possible loss of data if this firmware is downloaded to unsupported models!

DO NOT run this firmware update on RAID systems.

DO NOT turn the power off during the firmware update procedure.

BEFORE YOU BEGIN:

1. Make sure you have backed up all of your important files and critical data.
2. Save any work in progress.
3. Close all other open applications.
4. Disconnect all external storage devices.

Always handle the drive carefully so you do not cause internal damage to the circuitry inside the drives. Drives are sensitive devices.

A warning about RAID

RAID systems are extremely sensitive to disruptions to individual drives. It is not uncommon for low level disk drive diagnostics to cause RAID management software to fault a drive that is slowed down by testing or firmware download. For this reason, we highly recommend that you use disk management tools provided by your RAID controller manufacturer if they are available. If these tools are not available, you might consider taking the RAID offline to a maintenance mode or rebooting the system to temporary bootable media and running diagnostics from there. Seagate recommends that you use disk utility tools provided by your RAID controller manufacturer.

Among others, RAID management software may be available from Adaptec and Broadcom (formerly Avago and LSI).

Here are the instructions for updating SATA firmware:

The method you choose to update the firmware on the drive will depend on your operating system, system utilities or work bench environment.

Bootable Tools

Windows operating systems do not tolerate firmware downloads to SATA drives while Windows is running. In this case, we recommend that you prepare the bootable bootable USB flash drive solution. Bootable tools are the obvious choices for new, unformatted drives.

- The bootable USB setup tool is a Windows EXE which formats the USB flash drive and copies all the necessary firmware files. (All previous data on the USB flash drive will be lost.)

Bootable tools are the best choice when downloading firmware to multiple drives. Attach the drive(s) to be updated to a non-RAID SATA controller (JBOD). An embedded SATA controller on the motherboard works best. Attach the first drive to Port 0 of the SATA controller. If doing multiple drives at once, we recommend no more than 4 drives at a time off one PC.

Command Line Interface Tools

Two command line interface tools are available for firmware download. Seaflashlin is for Linux only, and is the precursor to SeaChest_Firmware. SeaChest_Firmware is available for both Linux and Windows and they share the same command line structure. Therefore, there are two command line choices for Linux and one for Windows. All of these tools have extensive documentation available.

Note: Windows operating systems do NOT allow firmware download to SATA drives unless the drives support the Deferred Download mode.

SeaChest_Firmware is our most current tool. The Linux version is shown below. The Windows version does not reference devices as “/dev/sg” but rather as PDx. Please see the SeaChest_Firmware for Windows documentation for specific examples.

```
=====
SeaChest_Firmware - Seagate drive utilities - NVMe Enabled
Copyright (c) 2014-2023 Seagate Technology LLC and/or its Affiliates, All Rights Reserved
SeaChest_Firmware Version: 3.4.0-4_1_1 X86_64
Build Date: Mar 27 2023
Today: Wed Mar 29 12:24:46 2023      User: tyler
=====

Usage
=====

    SeaChest_Firmware [-d <sg_device>] {arguments} {options}

Examples
=====

    SeaChest_Firmware --scan
    SeaChest_Firmware -d /dev/sg2 -i
    SeaChest_Firmware -d /dev/sg2 --fwdlInfo
    SeaChest_Firmware -d /dev/sg2 --downloadFW fwfilename
    SeaChest_Firmware -d /dev/sg2 --fwdlConfig configfile.cfs

Utility Arguments    (partial listing)
=====
    -d, --device deviceHandle
    -F, --scanFlags [option list]
    -i, --deviceInfo
    -s, --scan
    -S, --Scan
    --SATInfo
    --testUnitReady
    --activateFW
    --calculateFileHash [file]
```

```

--downloadFW [firmware_filename]
--downloadMode [ full | segmented | deferred ]
--firmwareSlot/--fwBufferID slot#
--fdwlConfig [config file]
--fdwlDryRun
--fdwlSegSize [segment size in 512B blocks]
--fdwlInfo
--switchFW      (NVMe Only)

```

Utility Options (partial listing)

=====

```

-h, --help
-V, --version
--license

```

First, run the `--scan` option to determine what `/dev/sg#` assignment lines up to your disk drive. This option also will show you other details about the drive including the current firmware revision. Like this:

Vendor	Handle	Model Number	Serial Number	FwRev
ATA	/dev/sg0	ST94813AS	3AA043KP	3.03
SEAGATE	/dev/sg1	ST1000NM0011	ZAA15VAS	SN03

The typical ordinary command line looks something like this:

```
SeaChest_Firmware -d /dev/sg2 --downloadFW fwfilename
```

`--modelMatch` is a model number verification based on the device Inquiry response. `--modelMatch` scans all sg devices on the system.

The tool has two batch modes, which can be used thusly:

```
SeaChest_Firmware -d all --modelMatch <model_number> --downloadFW fwfilename
```

Note: Use of `-d all --modelMatch` mode is preferred for batch processing of sg (SCSI generic) SAS disk drives. The `--modelMatch` mode may also be used on Enterprise SATA disk drives. Desktop and notebook SATA drives firmware is usually combined with a Seagate-prepared CFS firmware configuration file.

The `<cfs_file>` noted above is a Seagate-prepared compatible firmware selector file which is used to match up the right firmware for a particular SATA drive.

```
SeaChest_Firmware -d /dev/sg2 --fdwlConfig configfile.cfs
```

Note: Batch processing of SATA drives should use a Seagate prepared CFS file.

Both of these modes assume that the relevant firmware files are located in the current working directory.

See the `SeaChest_Firmware.-Lin.txt` file for a complete description of the software.

Raw Firmware Data Files

You will need the Seagate firmware file to run the simple command line Linux tool. This file will have the .LOD filename extension and should be located in the current working directory. This firmware file should never be used outside of the specific product family models and part numbers listed with the firmware release. Incorrect usage of the .LOD may result in data loss or even product failure. Seagate Technology is not responsible for lost user data. See the End User License Agreement below for specific information about these software tools.

Using Traditional Linux Firmware Tools

For SATA drive firmware downloads you might use the Linux "hdparam" command.

Support

Seagate offers technical support for disk drive installation. If you have any questions related to Seagate products and technologies, feel free to submit your request on our web site. See the web site for a list of world-wide telephone numbers.

Seagate Support: <http://www.seagate.com/support-home/>
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This software uses open source packages obtained with permission from the relevant parties. For a complete list of open source components, sources and licenses, please see our Linux USB Boot Maker Utility FAQ for additional information.

Linux USB Boot Maker FAQ:
http://support.seagate.com/firmware/usbbootmaker_faq.html

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