



USER GUIDE

Solidigm Synergy™ Toolkit

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SOLIDIGM™

Revision History

Document Revision	Description	Revision Date
001	<ul style="list-style-type: none">Initial Release	April 2023

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1 Introduction

This document supports customers in enabling, configuring, and evaluating Solidigm Synergy™ Toolkit software.

1.1 About Solidigm Synergy™ Toolkit

The Solidigm Synergy™ Toolkit is available in two interfaces:

- Graphical User Interface (GUI), available in Windows 10 and 11.
- Command line interface (CLI) tool, available in Windows 10, 11, and WinPE.

This document focuses on usage of the GUI interface version.

1.2 Overview

The two main screens of the toolkit are System and Drives, which contain relevant information for each level of your PC hardware, respectively. The Drives screen also contains a variety of useful tools. The default screen when you launch the toolkit is Drives.

1.2.1 System Screen

System information consists of system name, operating system, motherboard manufacturer and model, CPU details, and high-level information on the drives installed in your PC.

1.2.2 Drives Screen

The Drives area consists of several tabs: Dashboard (the tab that appears by default), Firmware, Driver, Diagnostic Scan, Secure Erase, Fast Lane, and SMART.

1.2.3 Solidigm SSD-Specific Features

Most features in the toolkit are available to all SSDs, regardless of manufacturer. The below features are specific to Solidigm SSDs.

- Firmware Update
- Driver Update
- Fast Lane (including Clear Write Cache function)

2 Toolkit Architecture

2.1 Solidigm Synergy™ Software Package Components

The Solidigm Synergy™ package available for download on solidigm.com/synergy includes the joint installer, which allows you to install the toolkit, driver, or both; the CLI, which is available separately in the package and not installed via the joint installer; and related documentation, including licenses.

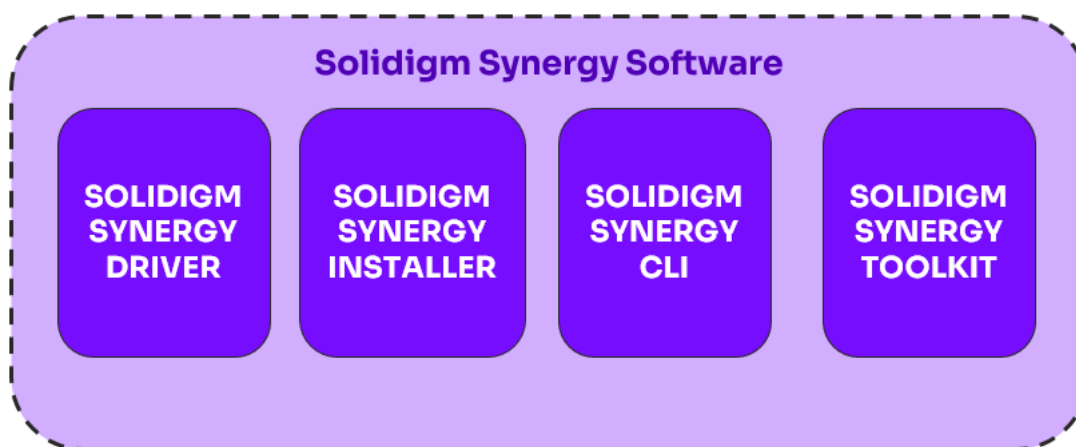


Figure 2: Solidigm **Synergy™** Software Package Components

2.2 Solidigm Synergy™ Software Package Structure

- F6
 - NVMe
 - X64
 - Solidnvm.cat
 - Solidnvm.inf
 - Solidnvm.sys
- Installer
 - SetupSolidigm.exe
- License
- Synergy CLI
 - SynergyCLI.exe
 - Synergy.SSDFeatures.dll

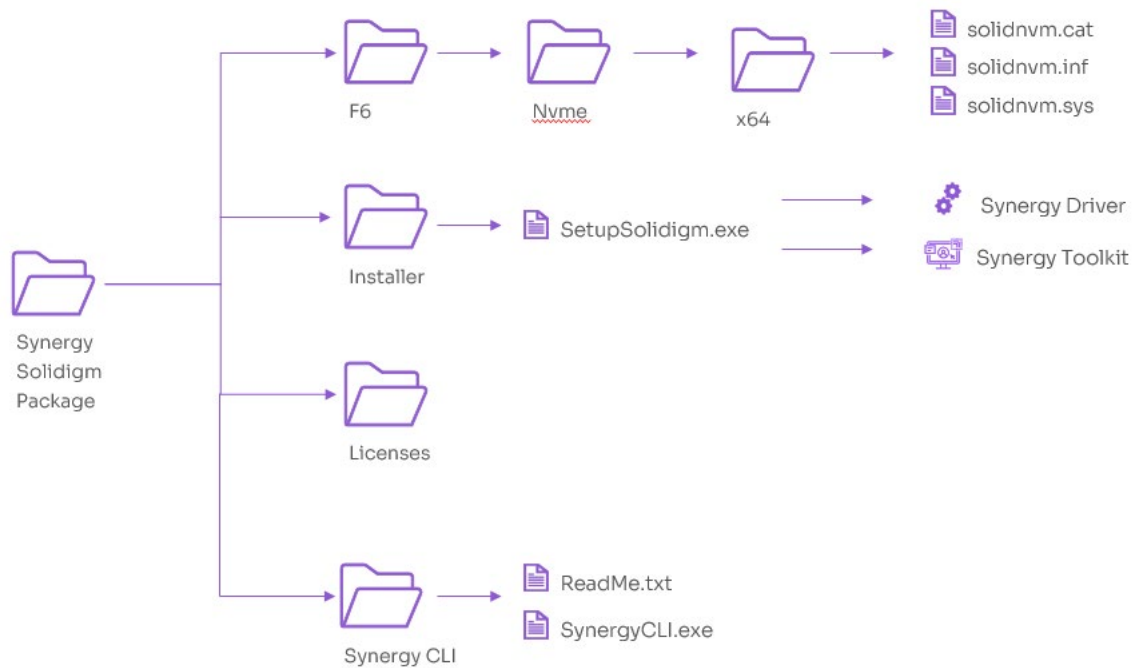


Figure 1. Solidigm Synergy™ Software Package

3 Toolkit Features

3.1 General Features

The features in this section are available to all SSDs, regardless of manufacturer.

3.1.1 System Screen

The System screen lists all drives connected to the platform on the right side of the GUI.

The left side of the GUI provides basic platform information, including operating system version, motherboard manufacturer and model, and CPU details.

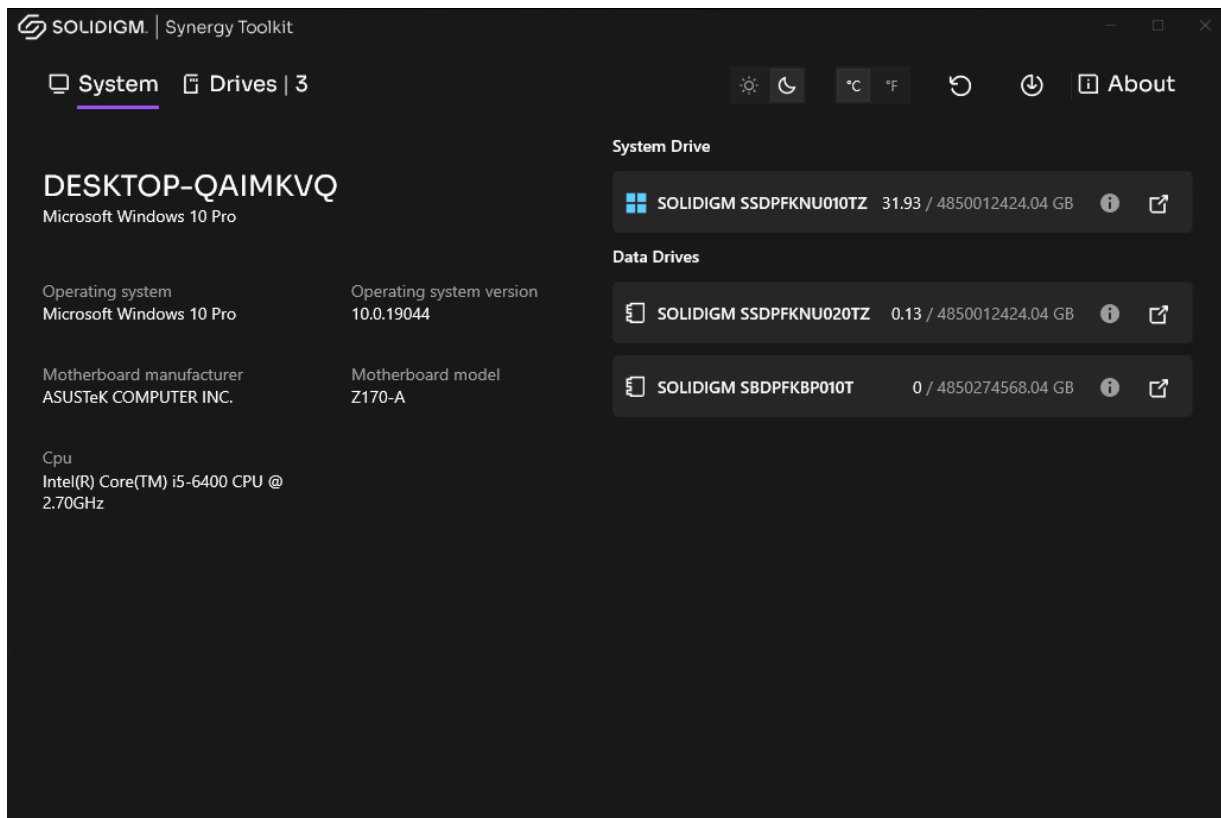


Figure 2. Solidigm Synergy Toolkit™: System Screen

3.1.2 Dashboard

The Drives screen's Dashboard tab presents information about chosen SSD, including:

- Health
- Estimated Life Remaining
- Real-Time Temperature
- Real-Time Usage (Read and Write Activity)
- Capacity by Partition (Used and Total)
- Summary Information

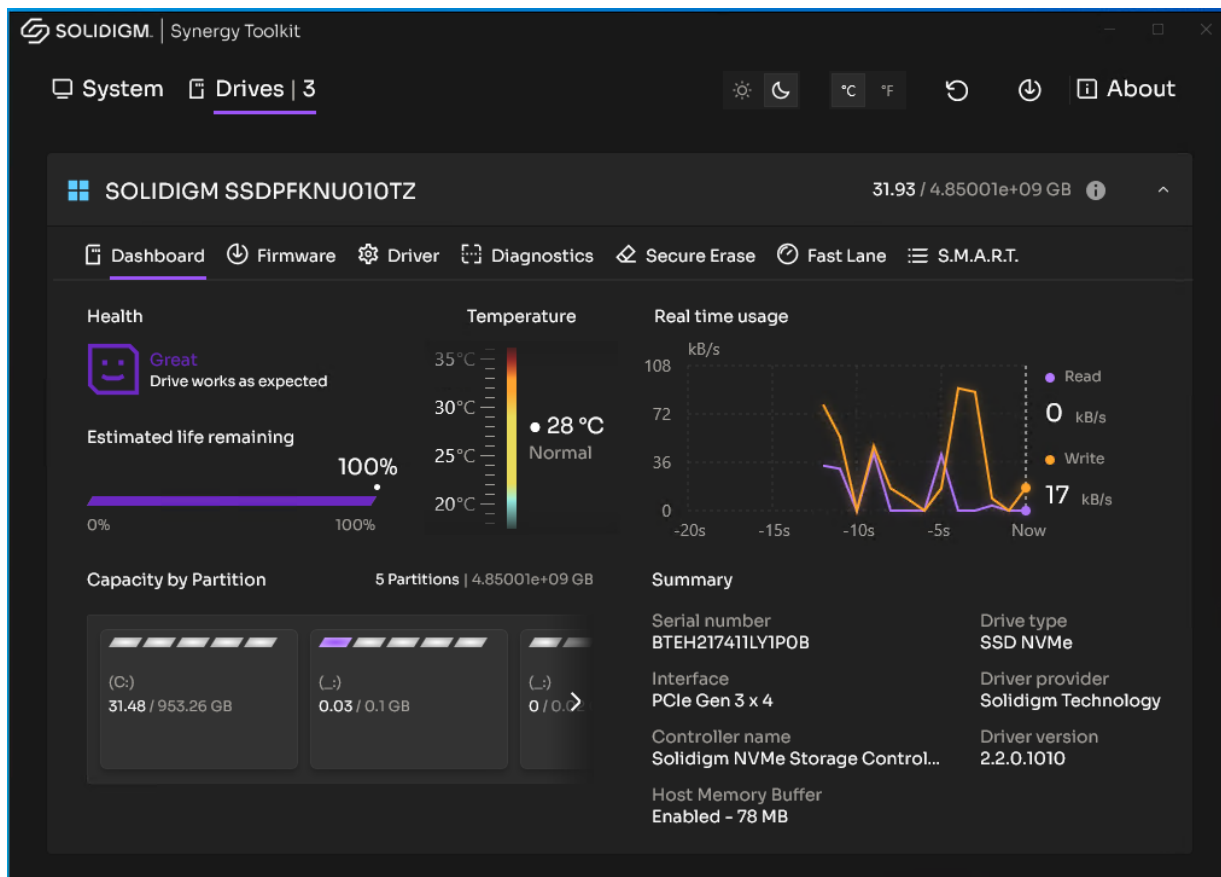


Figure 3. Solidigm Synergy™ Toolkit: Dashboard Tab

Health

On the Dashboard screen, the drive health information of the SSD as measured by supported [SMART](#) attributes is displayed.

- Great (green): All SMART attributes are above their threshold levels.
- Warning (orange-red): One or more SMART attribute has moved beyond the threshold level and reached the final value. Solidigm recommends you back up all data and consider replacing the SSD.
- Critical (red): A SMART critical warning has been triggered, or the drive has encountered a critical error related to drive degradation. Solidigm recommends you back up all data and try to cool down the system.

Estimated Life Remaining

The estimated life remaining of the selected SSD is displayed.

Endurance calculations are estimated and may vary. The estimate shown is based on the applied workload and is not accurate if the workload changes. Estimates are based on your usage to date and will not extend or reduce the SSD warranty period.

Estimated Life Remaining is reported for SSDs only with SMART enabled or with a SMART health log available.

Temperature

Temperature of the drive is displayed in real time. The units reported can be changed between Centigrade and Fahrenheit using the temperature buttons at the top of the GUI.

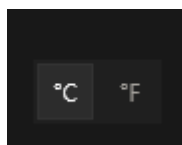


Figure 4. Solidigm Synergy™ Toolkit: Temperature Buttons

The temperature features includes the following status reports:

- Cold
- Normal
- High (Warning)
- Critical

By default, the Cold state is reported when the disk temperature is lower than or equal to 15°C. Above 15°C, the state is set to Normal. If the disk does not provide additional threshold levels, then default thresholds for High (65°C) and Critical (70°C) are used. When a drive provides a threshold only for the Critical level, the High level is set to Critical minus one degree Celsius.

The temperature gradient bar uses four static gradients, depending on state. When the state changes, the gradient bar also changes to match the current state color.

Temperature is updated every 1 second. When there is a change in temperature value, the scale is redrawn.

The feature will report "N/A" when state or temperature cannot be read.

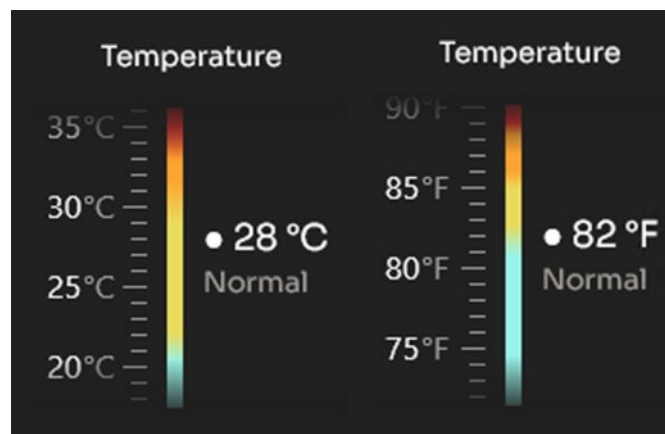


Figure 5. Solidigm Synergy™ Toolkit: Temperature in Centigrade and Fahrenheit Modes

Real-Time Usage

The toolkit presents real-time performance data (read and write activity) in a form of a chart:

- X-axis: Time
- Y-axis: Transfer speed in kB/s or MB/s (reads and writes as separate lines)

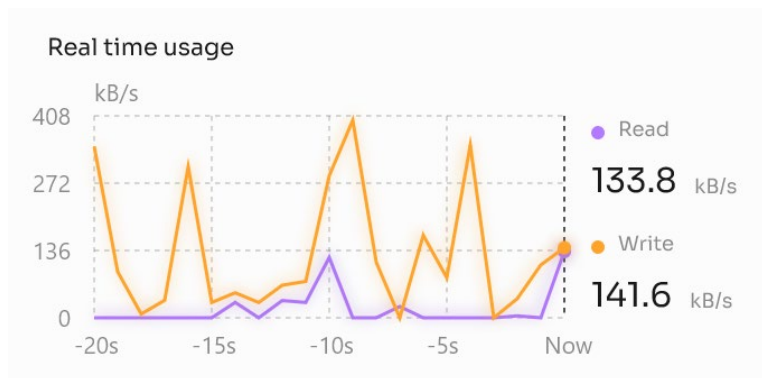


Figure 6. Solidigm Synergy™ Toolkit: Real-Time Usage

The scale is automatically changed from kB/s to MB/s when values visible on the chart (write or read speed) are equal to or higher than 1,000 kB/s. Likewise, the scale reverts to kB/s when the values drop below that threshold. The scale also changes when a transfer speed exceeds the current max value on the Y-axis.

The chart is refreshed every 1 second. Real-time reporting is available on SATA and NVMe drives.

Capacity by Partition

All partitions on the drive are presented with the following information:

- Capacity (Used and Total)
- Partition Letter (If One Exists)
- Partition Label (If One Exists)
- Partition Type

The report includes unallocated space in the partitions area if it's greater than 0.01 GB.

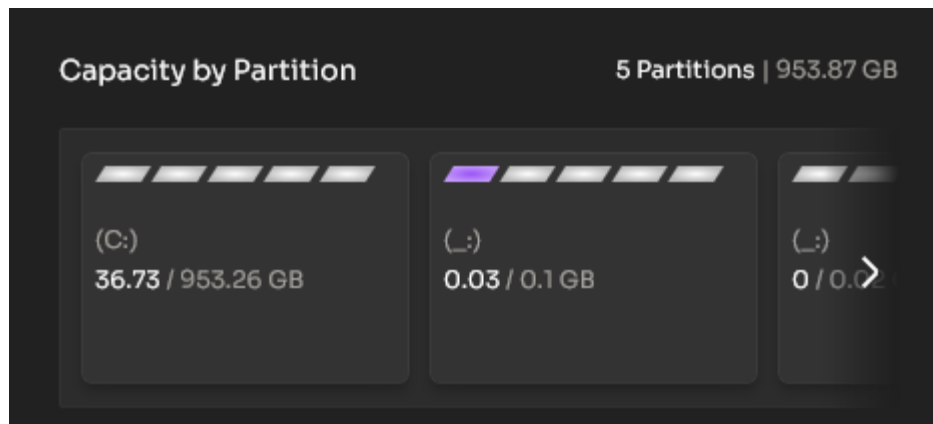


Figure 7. Solidigm Synergy™ Toolkit: Capacity by Partition

Summary

The Summary area of the Dashboard consists of drive details including serial number, drive type, interface, driver provider and version, controller name, and host memory buffer configuration (if the drive supports this feature).

3.1.3 Secure Erase

Secure Erase permanently delete all data on the selected drive. This operation cannot run on boot drives or drives with a partition.

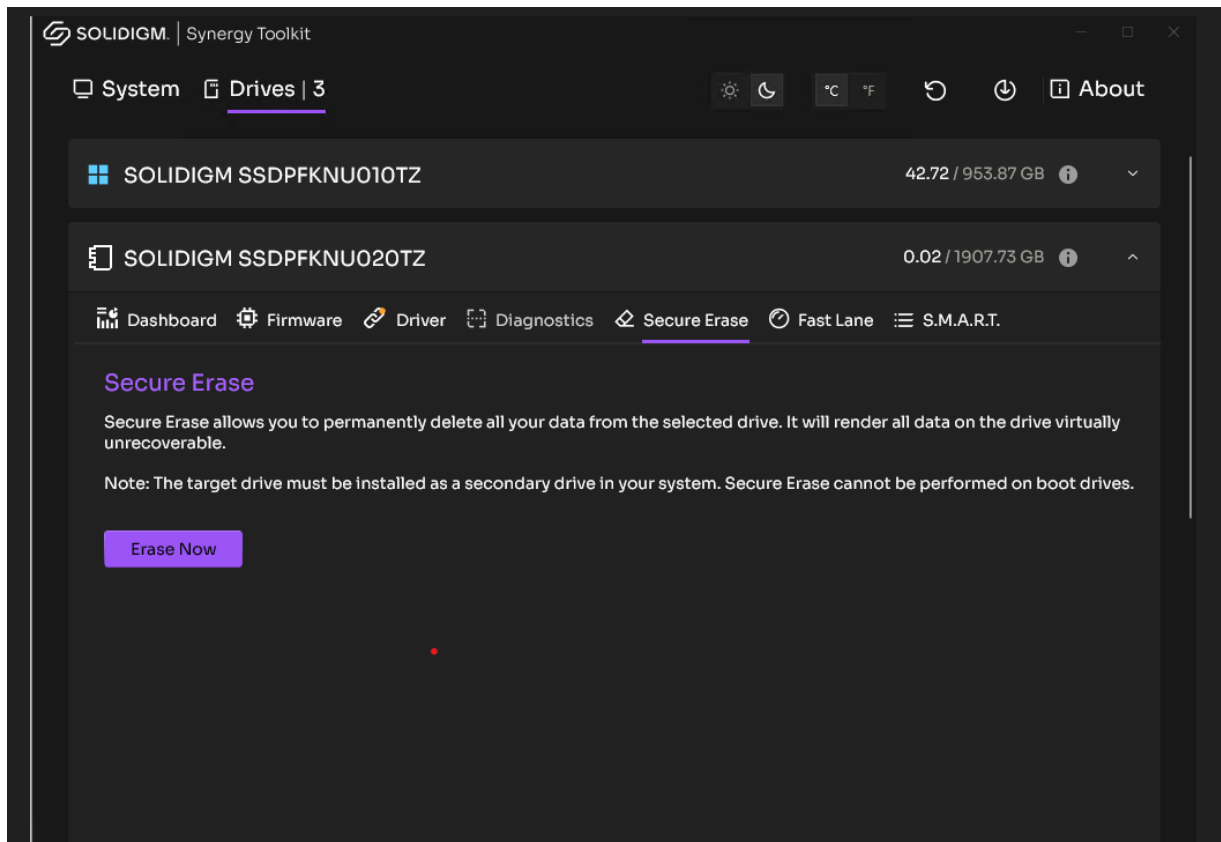


Figure 8. Solidigm Synergy™ Toolkit: Secure Erase Tab

3.1.4 Diagnostics

A device self-test operation is a diagnostic testing sequence that tests the integrity and functionality of the controller and may include testing of the media associated with a namespace.

The following device self-test operations are defined:

- Quick Diagnostic Scan (Short Device Self-Test Operation)
- Full Diagnostic Scan (Extended Device Self-Test Operation)

Quick Diagnostic Scan

Run the Quick Diagnostic scan to test the basic functionality of the selected drive. The scan takes approximately three minutes to complete and performs two tests:

- Read Scan: Checks 1.5 GB of the SSD for read errors.

- Data Integrity Scan: Creates 1 GB of random data, writes the data to unused areas of the SSD, and then compares it for data integrity.

Full Diagnostic Scan

Run the Full Diagnostic scan to perform an overall health evaluation on the selected drive. The scan performs two tests:

- Read Scan: Checks every logical block address (LBA) for read errors.
- Data Integrity Scan: Uses free space to write random data and read it back to ensure data integrity.

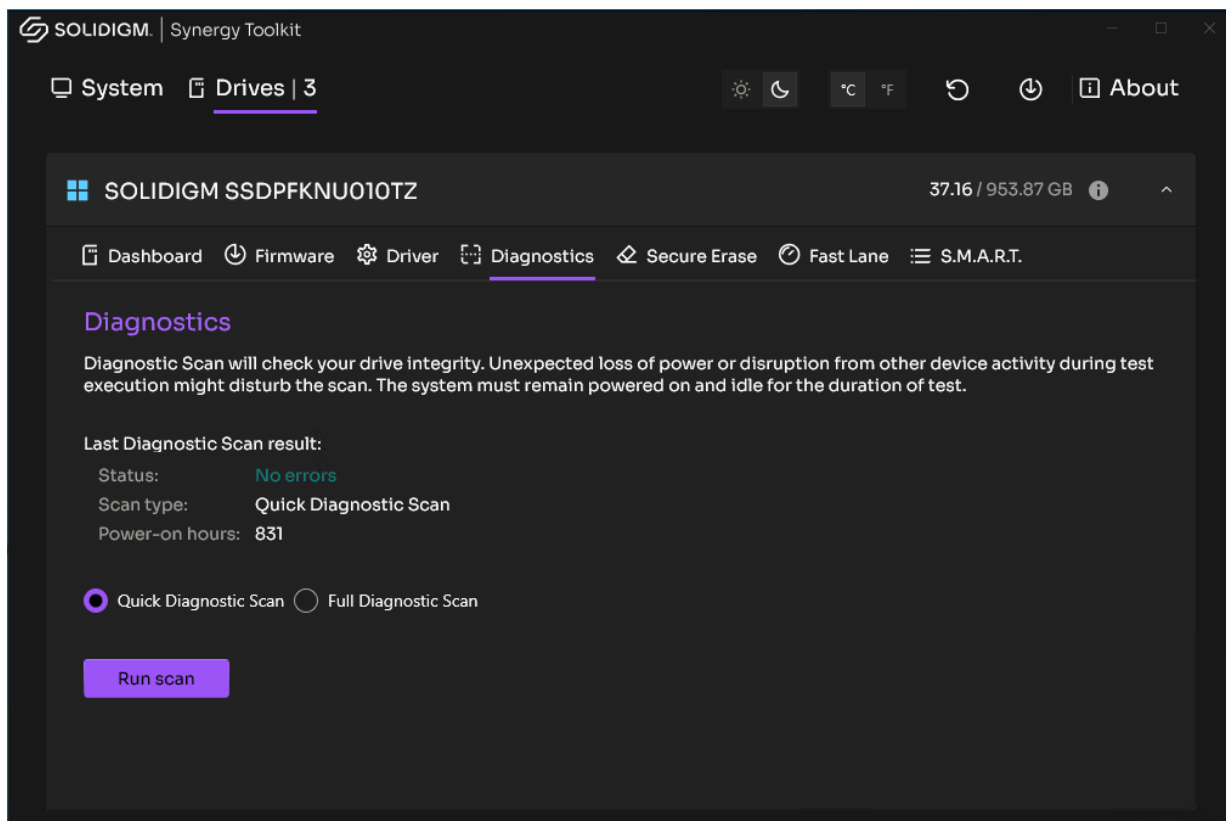


Figure 9. Solidigm Synergy™ Toolkit: Diagnostics Tab

Power-on hours reported on this tab are calculated only when disk is on. Hours when the disk is in sleep or powered-off states don't count.

3.1.5 SMART

SMART stands for Self-Monitoring, Analysis and Reporting Technology. It allows the user to monitor drive parameters such as temperature, amount of spares available, how much data has been read and written by the drive, and more. The toolkit can retrieve and display searchable SMART Health Info Log Page (02h) as defined in the NVMe specification (no vendor-unique fields are shown).

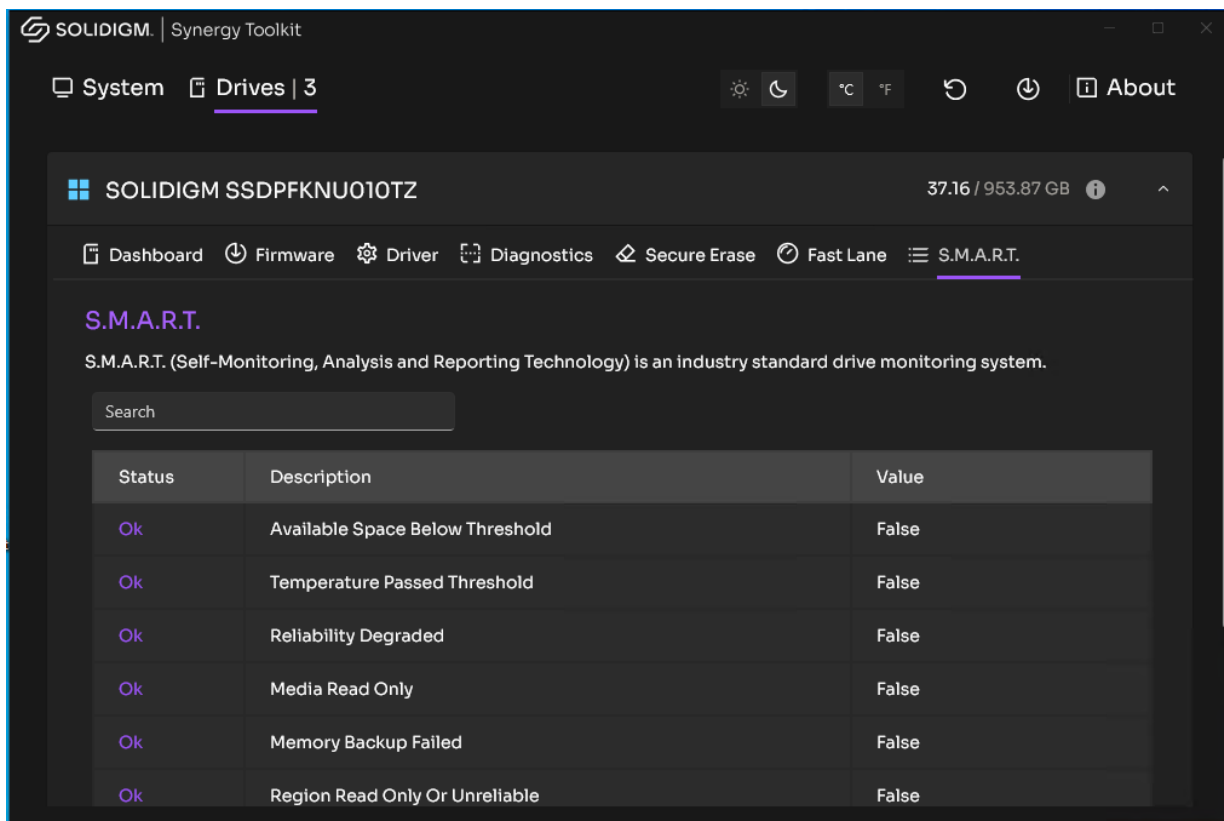


Figure 10. Solidigm Synergy™ Toolkit: SMART Tab

3.1.6 Toolkit Update

The toolkit automatically detects when a new version is available. The user is notified with a popup, where they can click the “Update and restart” button.

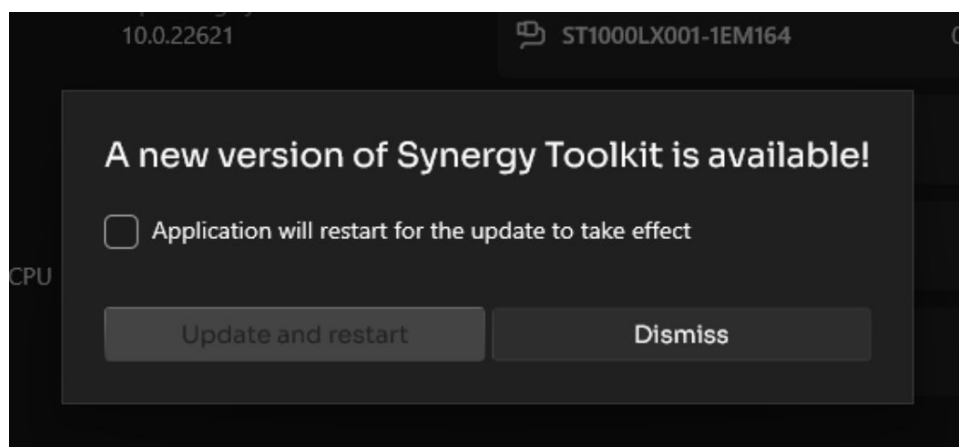


Figure 11. Solidigm Synergy™ Toolkit: Update Dialog

3.2 Solidigm Features

The features in this section are uniquely available to Solidigm SSDs.

3.2.1 Firmware Update

The firmware update feature checks if a Solidigm drive is due for a firmware update. If a new version is available, it can be updated on the drive here.

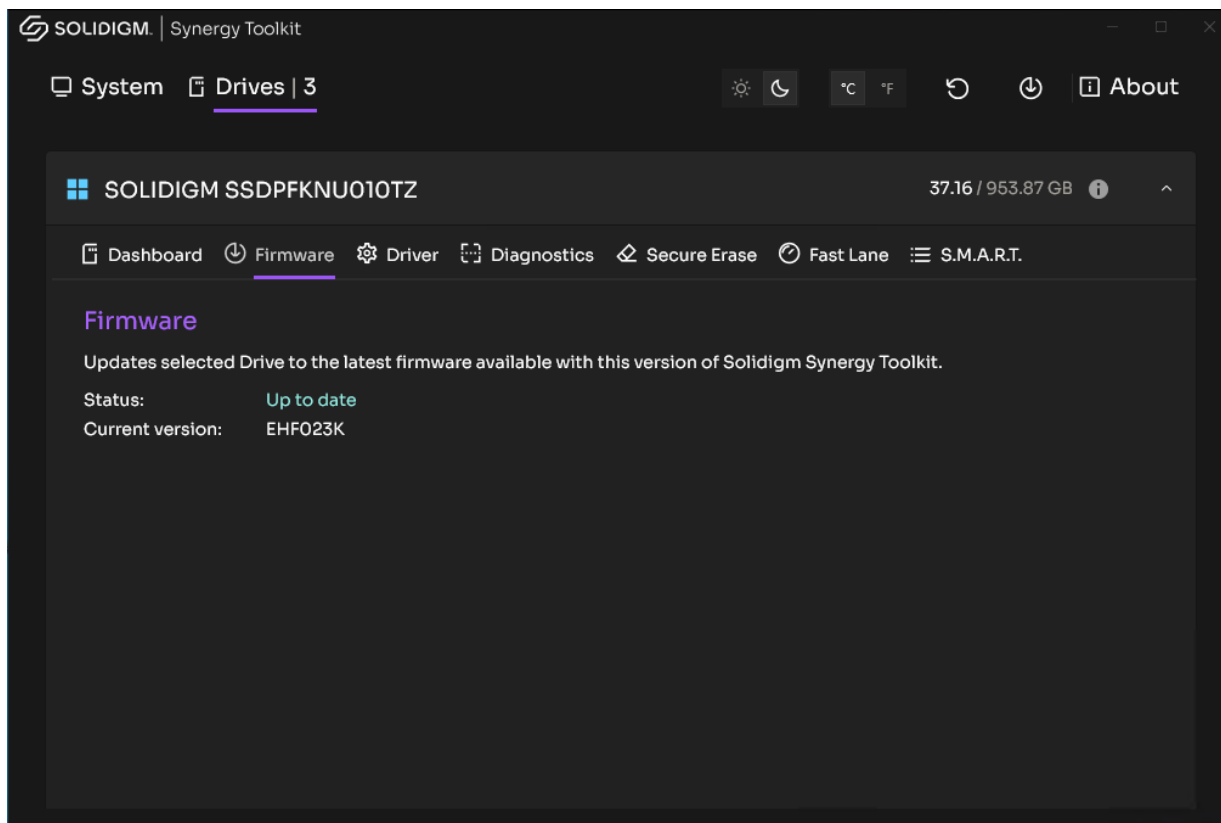


Figure 12. Solidigm Synergy™ Toolkit: Firmware Tab

This tab does report firmware version for third-party drives, but does not provide an update capability for them.

3.2.2 Driver Update

The driver update feature checks if a system with the Solidigm Synergy™ Driver is due for a driver update. If a new version is available, it can be updated here. This feature also enables users to install the driver on systems with Solidigm SSDs if it's not already present.

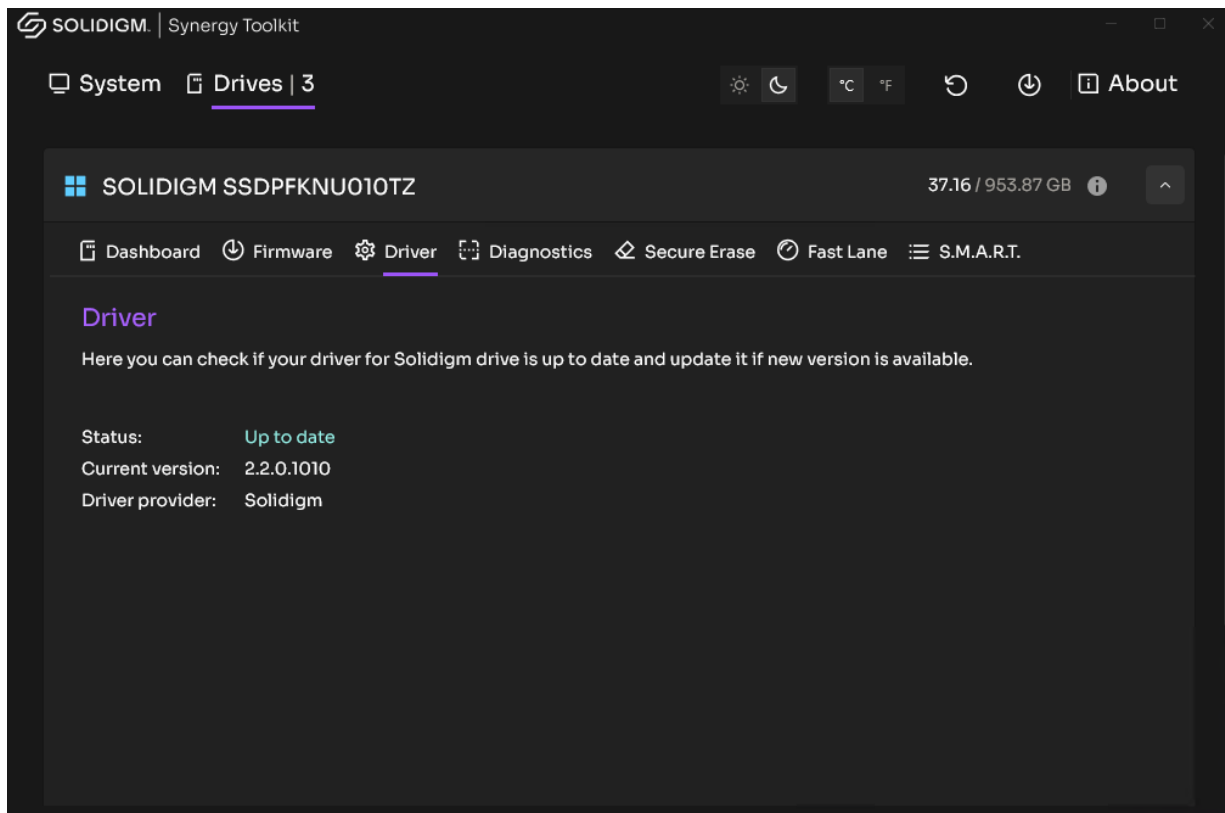


Figure 13. Solidigm Synergy™ Toolkit: Driver Tab

This tab does report driver version for non-Solidigm drivers but does not provide an update capability for them.

3.2.3 Fast Lane

The purpose of Fast Lane (previously known as Host-Managed Caching) is to maintain performance consistency as the drive fills up. It does this by keeping the most frequently accessed data (aka "hot" data) in the higher-performing SLC cache area of the drive, while the rest of the data (aka "cold" data) resides in the slower, non-cached storage.

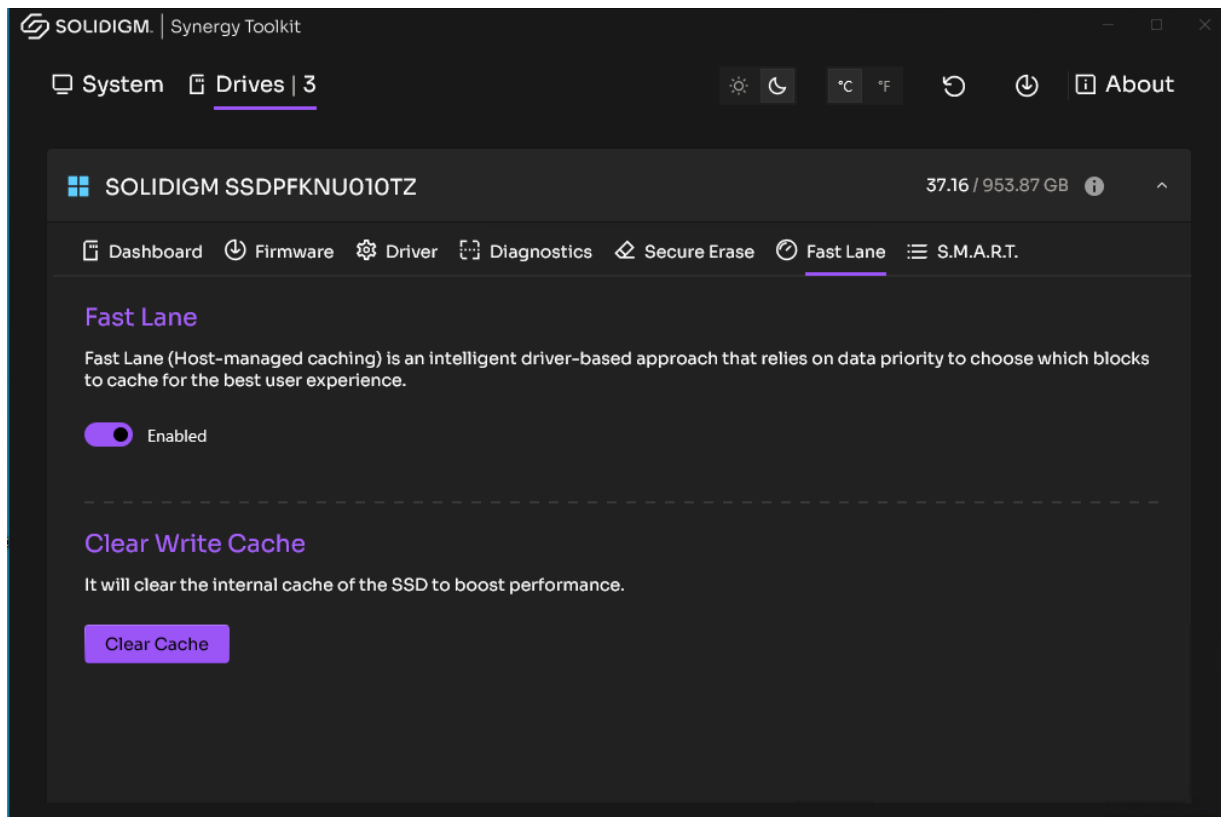


Figure 14. Solidigm Synergy™ Toolkit: Fast Lane

Fast Lane enabled by default on drives that support this feature. It can be disabled using the switch in the Fast Lane Tab.

Clear Write Cache

Clear Write Cache will clear the SLC internal cache of the SSD. This is not recommended unless you need it for a specific purpose, such as ensuring consistent benchmarking results.

3.3 Additional Information

This section contains additional information about the usage and capabilities of the Solidigm Synergy™ Toolkit.

3.3.1 Light and Dark Modes

The toolkit display buttons at the top of the screen to that enable the user to switch between light and dark themes (sun icon for light, moon icon for dark). By default, the toolkit uses the user's selected Windows theme settings.

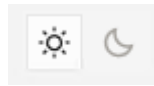


Figure 15. Solidigm Synergy™ Toolkit: Light and Dark Mode Buttons

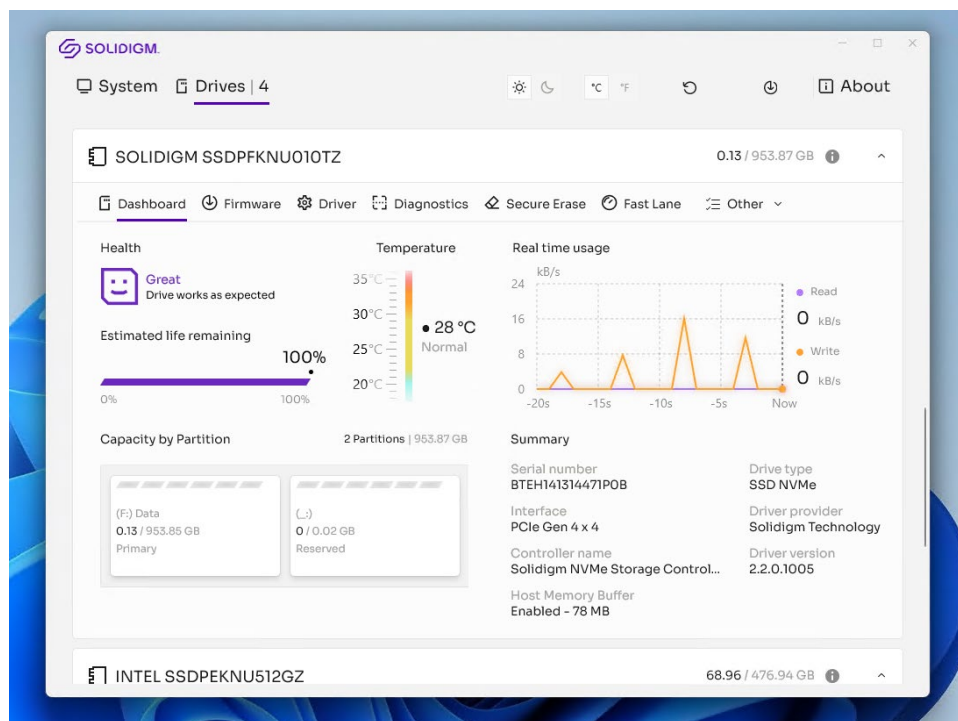


Figure 16. Solidigm Synergy™ Toolkit: Light Mode

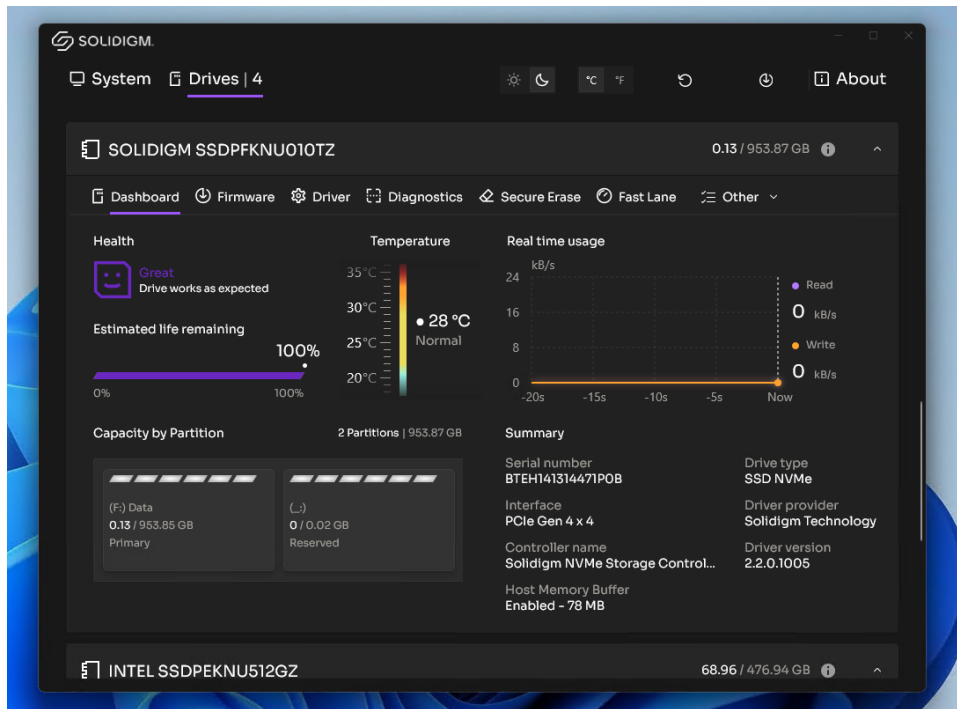


Figure 17. Solidigm Synergy™ Toolkit: Dark Mode

3.3.2 Refresh

The Refresh button forces the toolkit to reload all system and drive information.

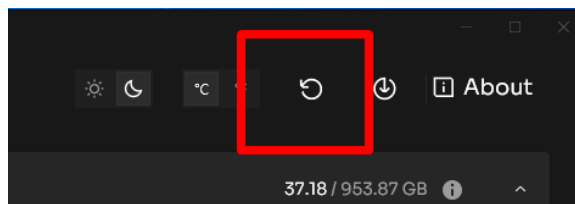


Figure 18. Solidigm Synergy™ Toolkit: Refresh Button

3.3.3 Localization

The Solidigm Synergy™ Toolkit displays a localized GUI version based on the regional settings of the operating system.

Supported languages:

- English
- Korean
- Chinese (Simplified)
- Japanese
- German
- Russian

The GUI is displayed in English if the local language is not supported.

3.3.4 Accessibility

The toolkit UI design follows MSFT accessibility guidelines: <https://www.microsoft.com/en-us/accessibility/windows>. The toolkit also supports Windows Narrator for all its tabs and flows.