



Safety monitor for flash media

It is important that you register Lifespan if you require technical support or wish to be notified of updates and upgrades. Online registration is the preferred way to register. It immediately places your information into our user base and saves you the inconvenience of filling out, stamping, and mailing in the registration.

Lifespan Registration

To register online go to:
<http://www.micromat.com>

Micromat Inc.
5803 Skylane Blvd.
Suite C
Windsor, CA 95492

©2019 Micromat Incorporated. All rights reserved.

This manual, as well as the software described in it, is furnished under license and may only be used or copied in accordance with the terms of such license. The information in this manual is furnished for informational use only, is subject to change without notice and should not be construed as a commitment by Micromat Inc. Micromat assumes no responsibility or liability for any errors or inaccuracies that may appear in this book.

Except as permitted by such license, no part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, recording, or otherwise, without the prior written permission of Micromat Inc.

Trademarks

TechTool is a registered trademark of Micromat Inc. TechTool Protogo and TechTool Pro are trademarks of Micromat Inc. Apple and Macintosh are trademarks of Apple Inc.

Table of Contents

| | |
|------------------------------------|---|
| About Lifespan | 1 |
| Getting Started..... | 3 |
| System Requirements | 3 |
| Installation | 3 |
| Using Lifespan | 4 |
| The Lifespan Interface | 4 |
| Enable Monitoring | 4 |
| Lifespan Menu | 5 |
| Device Life..... | 6 |
| Menu Items..... | 7 |
| Contacting Technical Support | 8 |
| About Micromat Inc..... | 9 |

About Lifespan

Lifespan is a flash media utility for the Apple Macintosh. It utilizes ongoing research and development to identify the factors which contribute to the useful life of a flash-based storage device, and to track how much useful life remains in simple percentage terms.

Flash-based storage devices include Solid State Drives (SSDs), Compact Flash cards, and CFast cards. These devices utilize flash memory to store data. Flash memory is a non-volatile computer storage medium that can be programmed and erased electronically rather than using physical rotating disks and read/write heads found in traditional hard drives.

Every solid state drive or memory card that utilizes flash-based memory has a finite life. Each cell in flash memory has a limited number of p/e cycles

(program erase cycles), and each cell must be erased before it can be programmed again. As these cycles increase, it requires more and more voltage to program the cells, and eventually they cannot be programmed reliably.

In order for flash media to function properly, these cells must wear at roughly equivalent rates. As a result, flash-based media devices tend to wear out suddenly, resulting in data loss. Lifespan tracks the useful life remaining in your flash media so that you can replace it before data loss occurs.

Getting Started

System Requirements

- A Macintosh capable of running OS X 10.10 or later
- 4 GB RAM or higher recommended.

(Specifications subject to change without notice.)

Installation

Lifespan is a self-contained application which does not require a traditional installer application. To install, simply drag the application icon to the Applications folder. When running the Lifespan application for the first time, you will be prompted to install the Lifespan Agent. Monitoring will only occur when the agent is installed, which will be indicated by the menu bar item being visible in

the menu bar. When the application and agent are installed, additional files will be installed as well.:

```
/Library/PrivilegedHelperTools/com.micromat.LifespanHelper
```

```
/Library/LaunchDaemons/com.micromat.LifespanHelper.plist
```

```
/Library/LaunchAgents/com.micromat.LifespanAgent.plist
```

```
~/Library/Application Support/Lifespan
```

```
~/Library/Preferences/com.micromat.LifespanAgent.plist
```

Uninstalling Lifespan

Rather than including an old-fashioned uninstaller, Lifespan includes a menu item in the application to remove the extra files created by running Lifespan. To uninstall, simply choose Uninstall Lifespan... from the Lifespan menu in the application. Lifespan will remove all of its components and then quit.

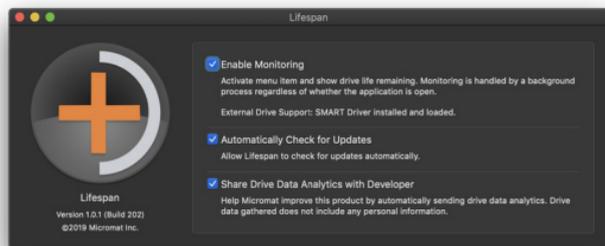
Using Lifespan

The Lifespan Interface

Lifespan runs from an installation on your hard drive. To launch the program, either double-click the Lifespan application icon found in the Applications folder or choose Open Lifespan from the Lifespan menu item. After the program has launched, you will see the main Lifespan window.



Lifespan



The window is a simple set of preferences, with the primary functions being provided by a background agent, which is represented by the menu bar icon.

Enable Monitoring

The main window of Lifespan includes simple checkboxes to configure Lifespan. The first, and most important, is the Enable Monitoring checkbox. When this checkbox is enabled, Lifespan installs a background agent which monitors supported flash-based storage devices. When enabled, a menu bar icon is added on the right side of the macOS menu bar. Clicking on this menu will display the drive health data for any available supported drives.

Below this checkbox, you will find text indicating External Drive Support status. External drive support is enabled by loading a third-party SAT SMART Driver. To install this driver and access health data from flash-based media connected via USB (and Firewire on older Macs), choose Open SAT SMART Driver Installer from the Lifespan application menu.

Automatically Check for Updates

The second checkbox configures the Check for Update mechanism in Lifespan. When selected, Lifespan will auto-

matically check for updates every week. If the checkbox is not checked, product updates must be checked manually by using the Check for Updates... menu option either in the Lifespan application or Lifespan menu bar item.

Share Drive Data Analytics with Developer

The third checkbox configures whether Lifespan will upload drive data analytics to Micromat servers. If enabled, Lifespan will upload data about drive usage so that future versions of Lifespan will be able to more accurately define and predict the useful life of supported drives.

Lifespan Menu

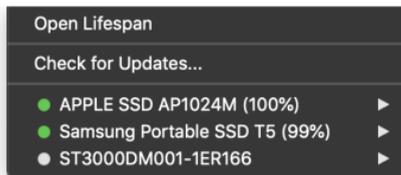
The primary functionality of Lifespan is contained within the menu bar item.



If one or more of your drives are reaching the end of their

lives, the icon will begin to pulse a yellow glow to draw your attention.

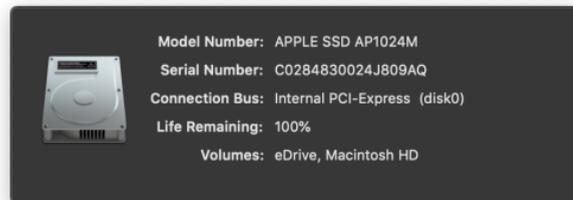
When clicked, the Lifespan menu bar item displays several traditional menu items, as well as device items which represent the primary functionality of Lifespan.



Device Life

There will be one device life menu item for each flash-based drive visible to your Mac. Each menu item consists of the drive model identifier, a percentage of life remaining, and a colored dot to indicate if the drive still has useful life remaining. A green dot indicates that there is sufficient life remaining. A green dot indicates that there is sufficient life remaining, while a yellow triangle indicates that the drive

is reaching the end of its useful life. A white dot indicates that a device is not supported. When any one of the drives is below this threshold the Lifespan icon in the menu bar will also begin to glow yellow.



When a device life menu item is selected for a given drive, additional information about that drive will be displayed:

Model Number: The model number of the device. This value will match the drive life menu item title.

Serial Number: The unique serial number of the device. This number can be useful in identifying a device if there are multiple drives with the same model number.

Connection Bus: The method of connection for the drive.

Life Remaining: The percentage of life remaining on the device.

Volume(s): Any volumes present on the device. This can also help in identifying which device is represented.

Menu Items

The remaining menu items found in the Lifespan menu perform ancillary functions. *Open Lifespan* will open the Lifespan application in order to change settings or to stop monitoring devices. *Check for Updates...* will also open the Lifespan app, which will then check with the update server for any available updates. If updates are found, a dialog will appear to prompt an installation of the update.

Contacting Technical Support

Micromat provides technical support to its customers via email. Technical support email is answered during business hours: Monday through Friday (excluding public holidays), from 9:00 AM to 5:00 PM Pacific time.

- Email: help@micromat.com

This information is subject to change. For our current contact information, please visit our website at www.micromat.com.

Please provide the following information for our technical support staff, and be sure to include it in any email you send to Micromat.

- A brief description of the problem.
- Version number of your Lifespan software.
- Type of Macintosh and configuration, including Processor and RAM installed. (Example: MacBook Pro 3 GHz Intel i7, 4 GB RAM, 2 TB internal hard drive.)
- Version of macOS installed.

About Micromat Inc.

Micromat Incorporated has been developing Macintosh diagnostic utilities since 1989. As the first company to offer diagnostic products for Macintosh, Micromat has pioneered many new technologies for helping Macintosh users bring their computers back to life and to keep them running their absolute best.