SGSCopy Utility

SOLAR GROVE
SOLUTIONS

Using SGSCopy to Program Solar Grove Players

Introduction

SGSCopy is a free software program provided by Solar Grove Solutions (SGS) to its customers.

SGSCopy makes it easy for you to load audio messages to any of the currently available line of Solar Grove players (and practically any USB mass storage device). Since many SGS players include a microSD card reader, SGSCopy is also a simple way to prepare microSD cards with audio for distribution with those players.

With SGSCopy, you can…

- Copy the contents of an audio message on disk to multiple players concurrently
- Copy the contents of an audio player to multiple microSD cards or USB thumb drives concurrently
- Duplicate the contents of one player to others
- Load a player by aggregating a new audio message "on the fly" from existing folders
- Compare player(s) contents to an audio folder on disk
- Compare a project or specific player's contents against other players or devices.
- Compare two audio folders on disk
- Quickly load batches of players using *Fast Copy Mode* with minimal user intervention
- Append audio to player(s) without overwriting their current contents
- Aggregate files from multiple folders (sources) on disk into a new folder (disk-to-disk)
- Replicate microSD cards faster, cheaper and more accurately than a hardware device
- And much more…

SGSCopy is supported in the following environments: Windows 10 and 11. SGSCopy *should* work on versions 7 or 8.1 but it is not recommended, as Microsoft no longer supports either platform.

For details on how SGSCopy can be implemented on Mac OSX, please see here.

This guide focuses on the specifics of using SGSCopy with Solar Grove players and typical needs of SGS customers.

Download the installation package

The currently supported version of SGSCopy is **6.1.0.5.**

Click here to download that version of SGSCopy.

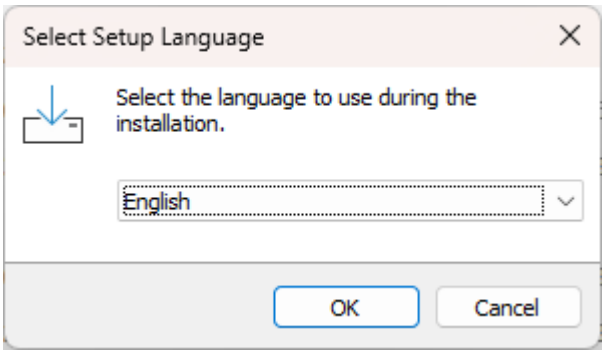
Save the file to your PC. It is recommended to use the default "Downloads" folder.

Install SGSCopy

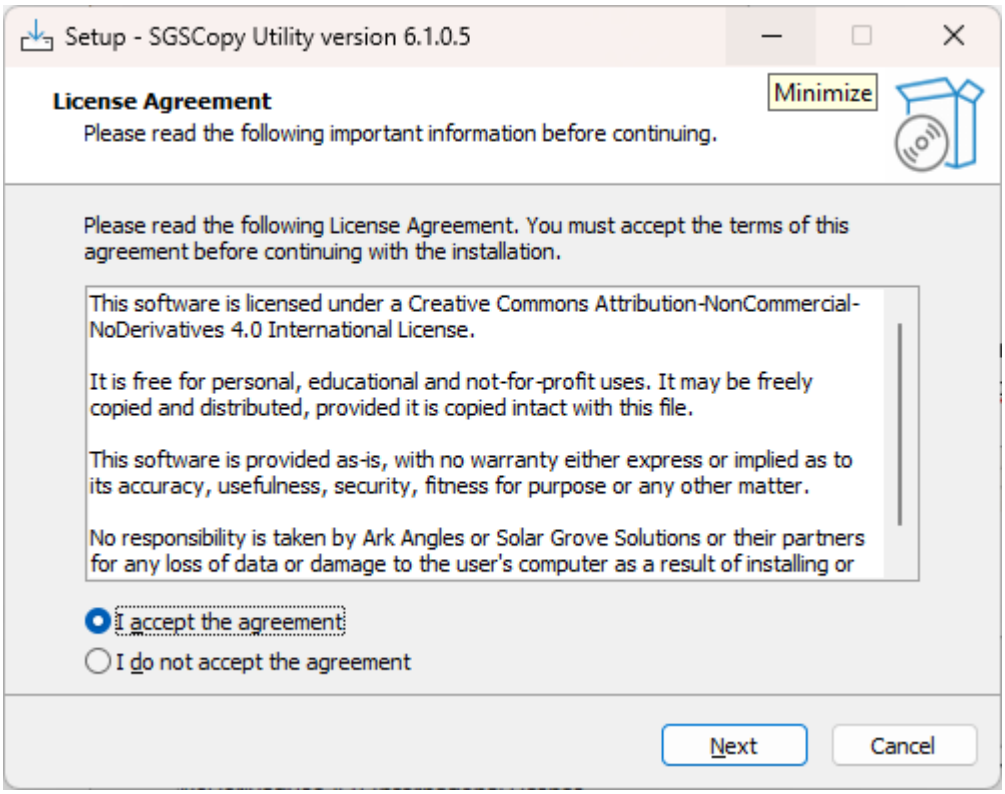
Recently, SGSCopy was converted to a 64-bit application. This will lay the framework for more robust enhancements in the future.
To facilitate the conversion, the installation must recreate the C:\ProgramData\SGSCopy folder. If your currently installed version is pre-6.0.x, and you have any custom templates or player images in that folder, you should back them up before executing the installation and restore them afterwards!

When the installation download completes, navigate to the location where the program was saved and double-click on it.

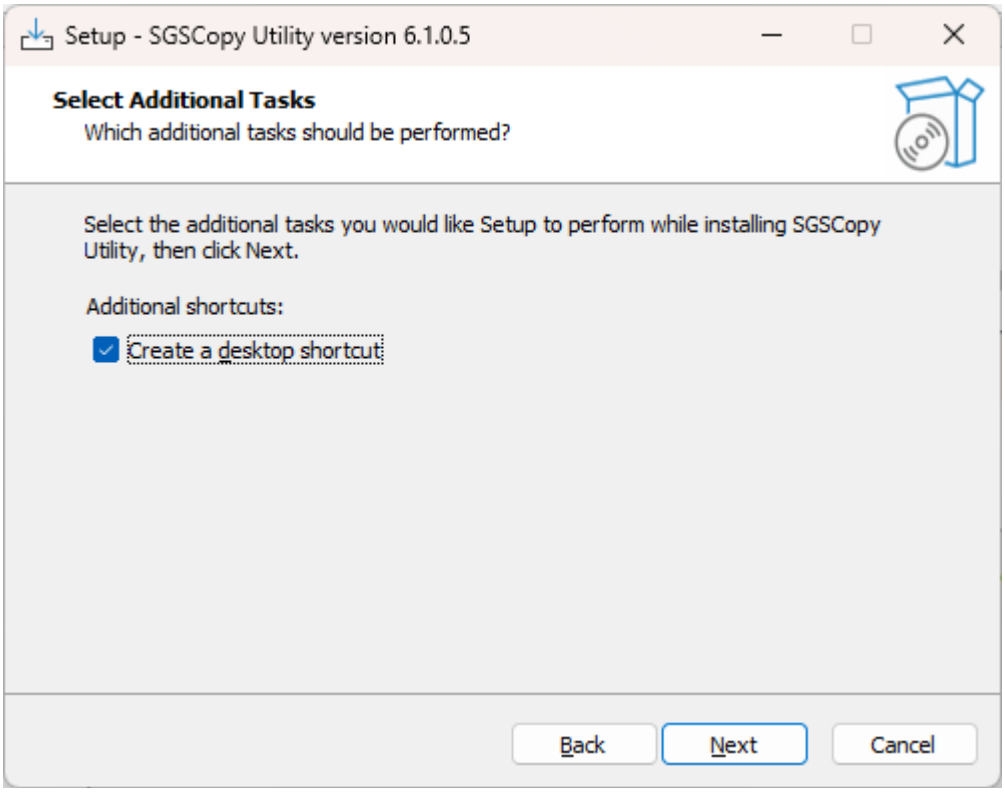
The application includes a language option. This also applies to the installation process. Choose the language you wish to use and click "OK". If this is a first-time installation this will also set that language as the default for normal SGSCopy operation but can be changed at any time. See Language option for more details.



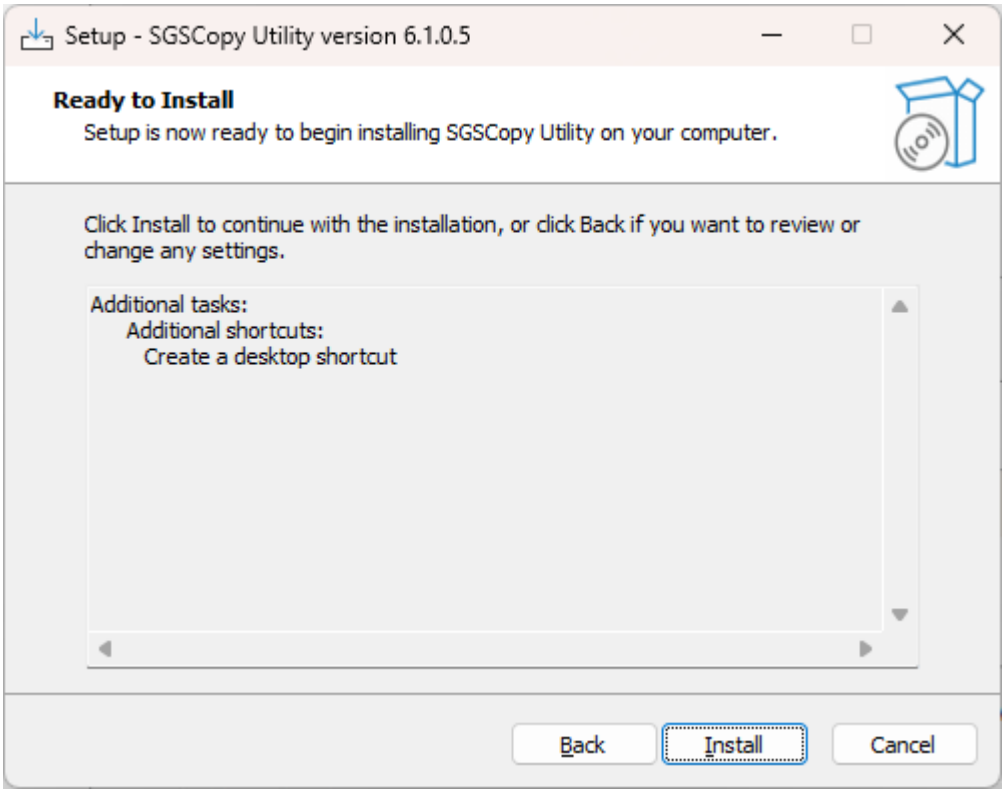
Next, you will get the initial screen below. This is the license agreement. Click on "I accept the agreement" and then click on "Next". If you don't agree to the license, you cannot install SGSCopy. If you agreed to the license, click on "Next"…



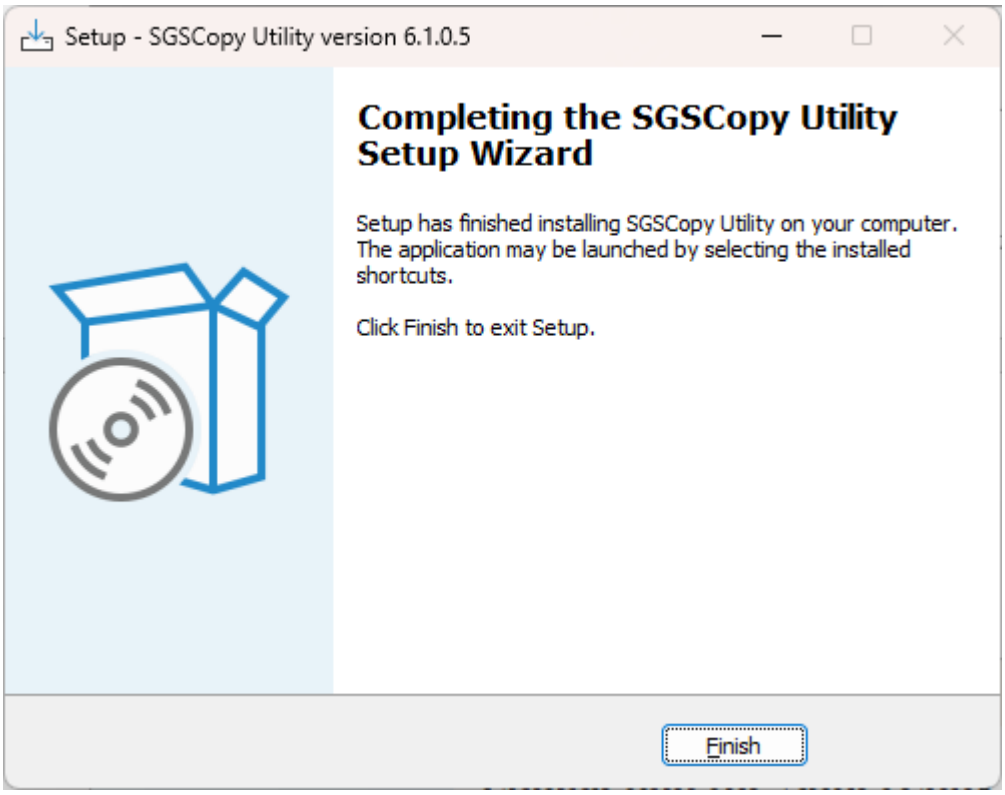
Select the options you want and click “Next” (it is recommended to accept the default)…



Click on “Install” and the installation will begin…



The installation is now complete. Click on “Finish” to exit.

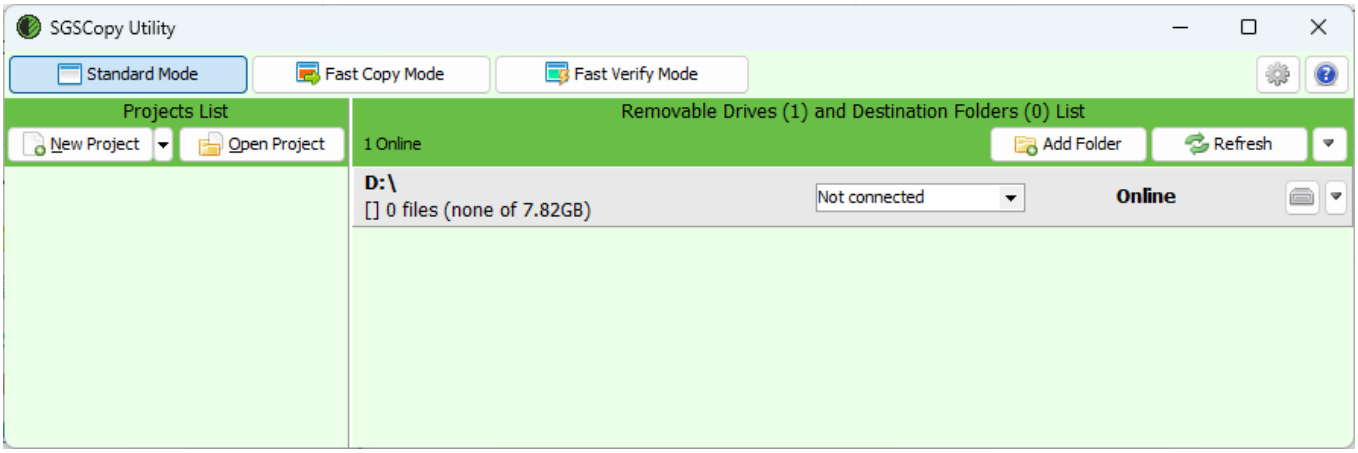


If you took the installation defaults, there should be an updated icon (versions 6.0.x and later) on your desktop like the one below. Double-click on it to start the application.

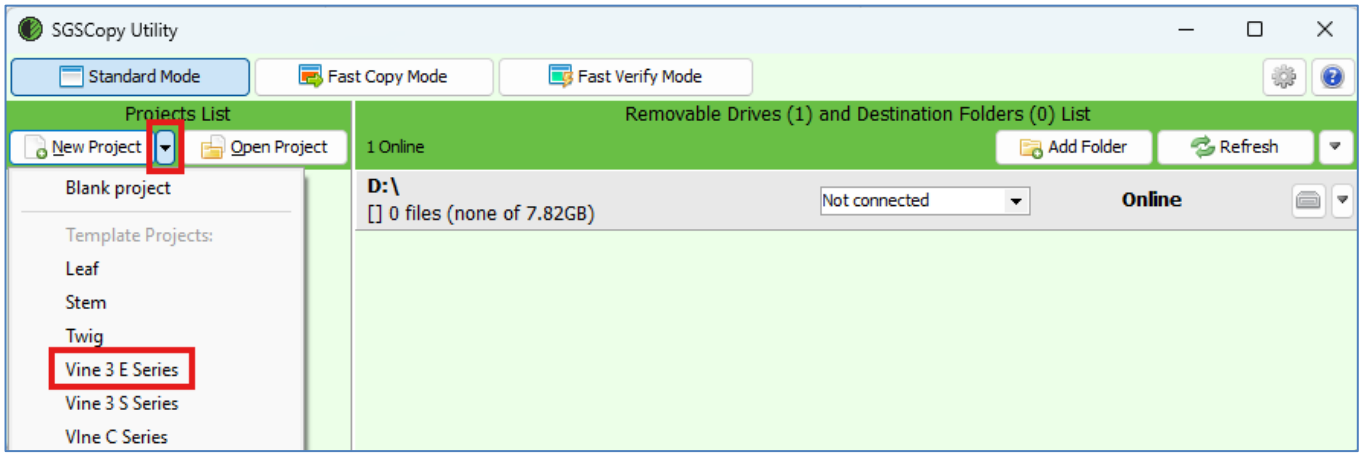
Quick Start!

This section will briefly describe the steps necessary to perform a typical audio load using SGSCopy.

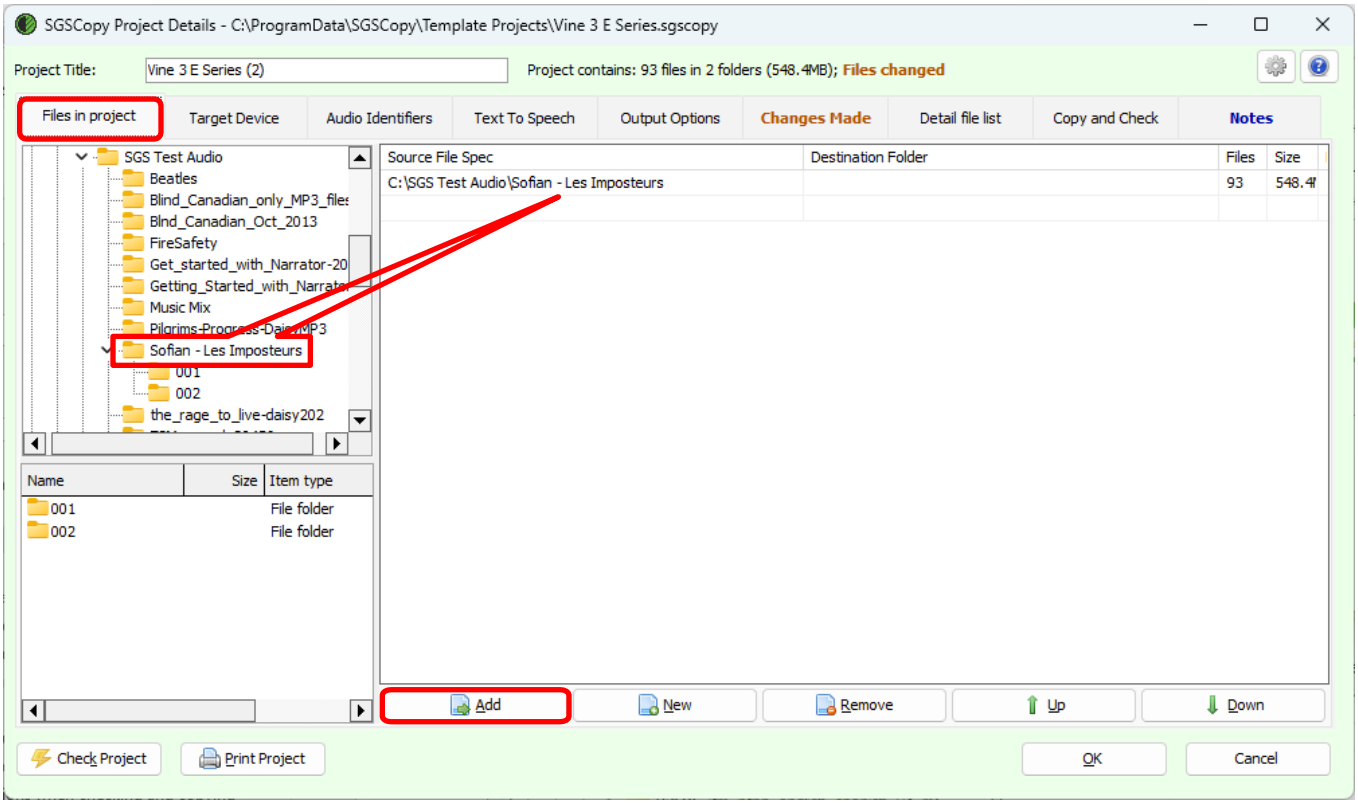
1. Open SGSCopy and connect your player(s) with the proper USB cable (SSU if required). For this example, we are using a Vine 3 E player. It is connected as **D:** .



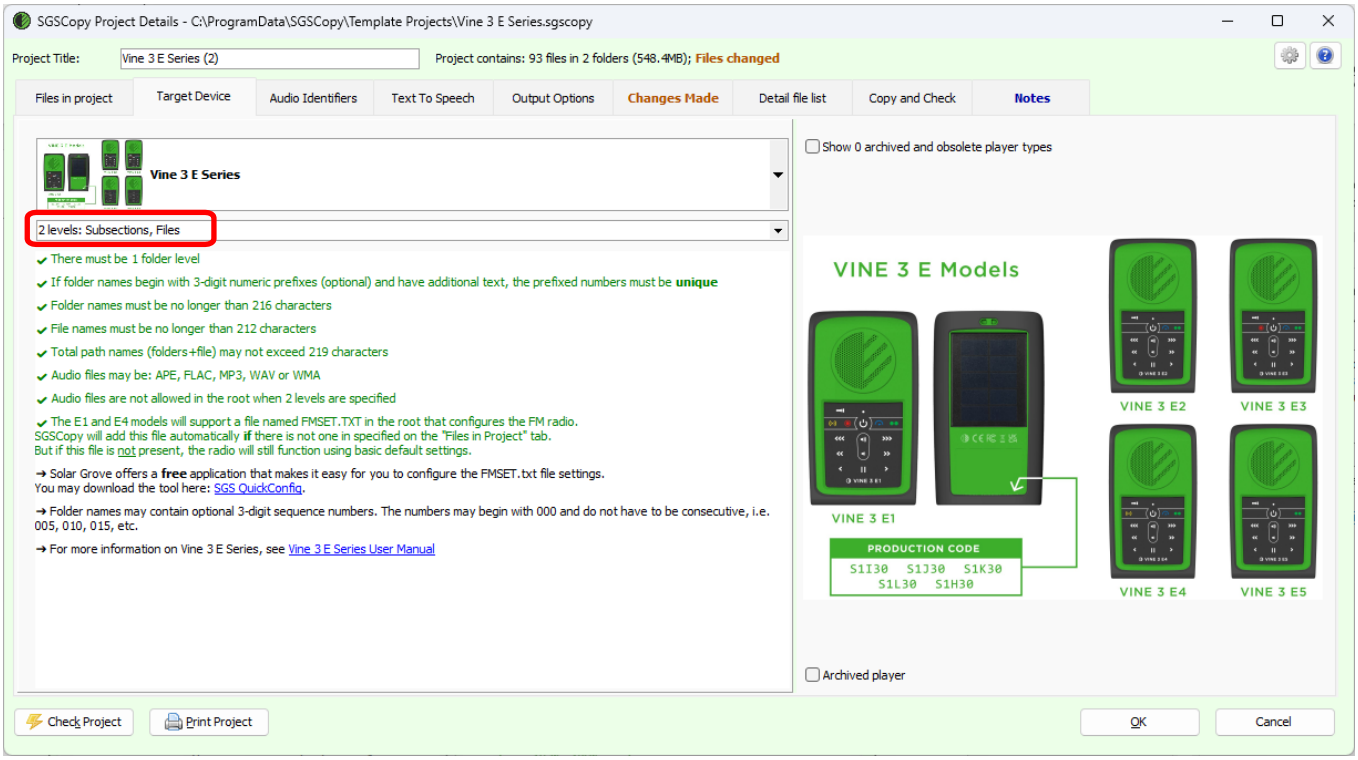
2. Click on the dropdown arrow (▾) next to “New Project” (circled in red), and choose the template project for “Vine 3 E Series” from the available list. This operation will both open that project and “Edit” it.



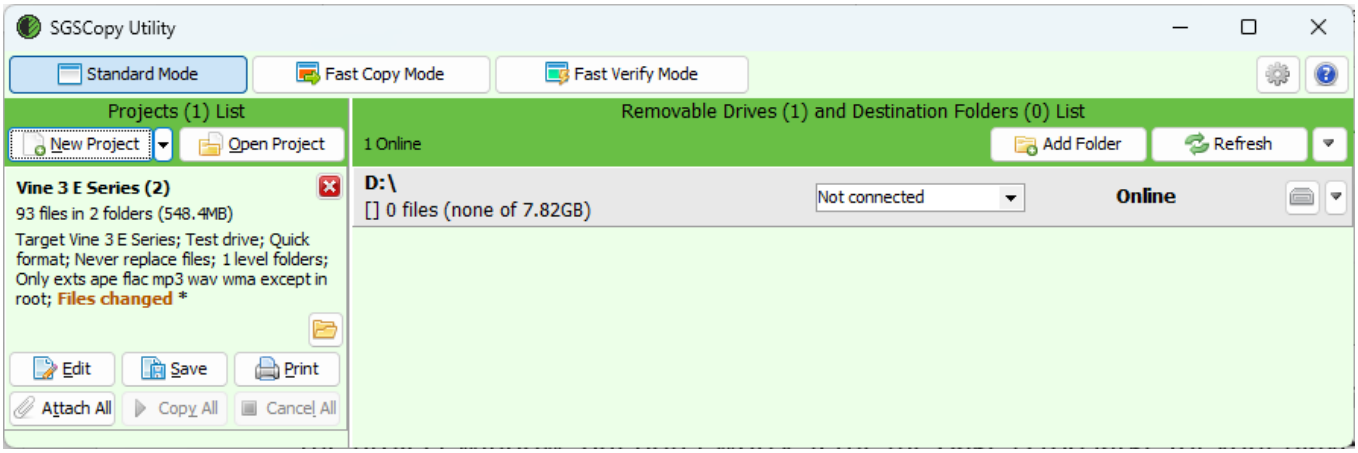
3. The project dialog will open, positioned to the “Files in Project” tab. Navigate to the folder(s) *containing* your audio and drag it to the right - OR - highlight it and click “Add”. For example, you may want to specify a special drive volume name on the “Copy and Check” tab.



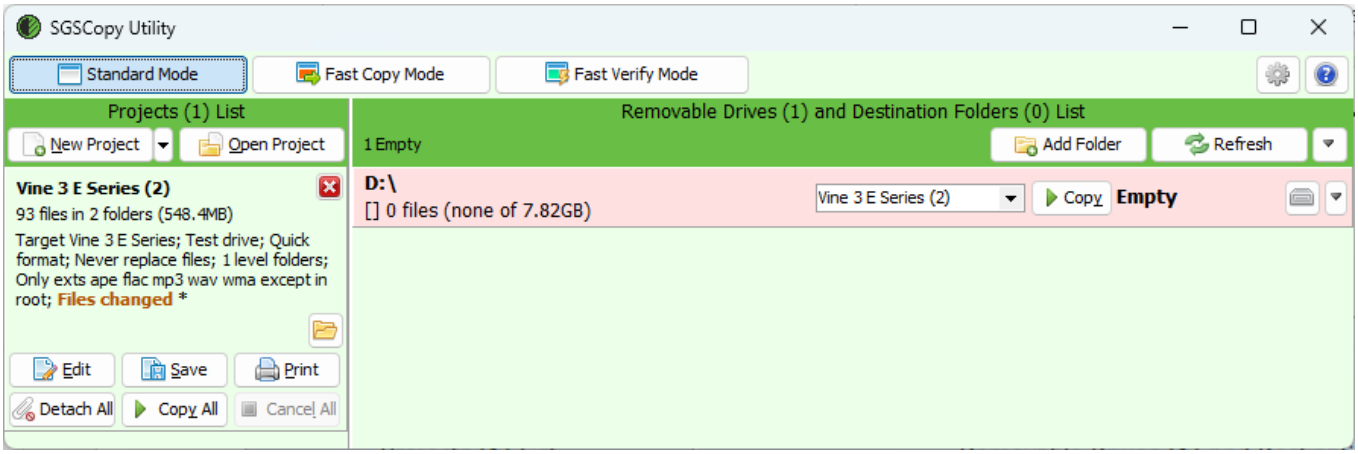
4. Click on the “Target Device” tab. Because our audio selection was 2 folders (Subsections), each with its own audio files, we need to change the folder structure setting to “2 levels”. Notice that SGSCopy has checked your audio folder against the rules defined for the Vine 3 E player. All rules have passed (colored in green with a green checkmark). Rules that failed would have been colored in red with an “X”. These should be addressed before continuing. See Device rules validation for more details. Click “OK” to save your changes and exit.



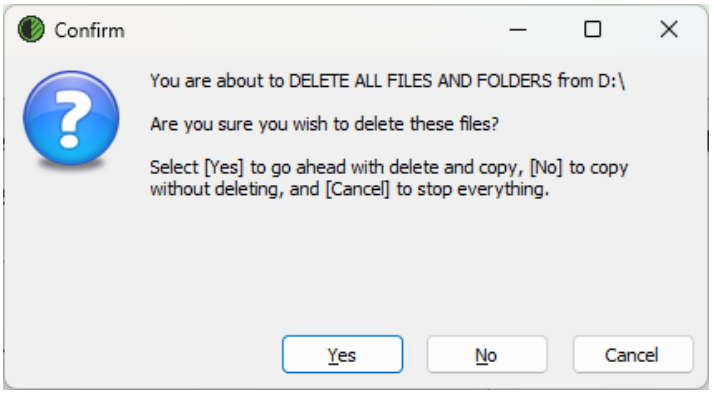
5. Take a moment and make sure *your audio* will fit on the target player. Then click “Attach All” in the project window. But don’t worry, if the message happens to be too large for your player, SGSCopy will not allow you to perform the copy. “Attach All” will fail when clicked, and the player line will turn purple with the “Oversize” warning.



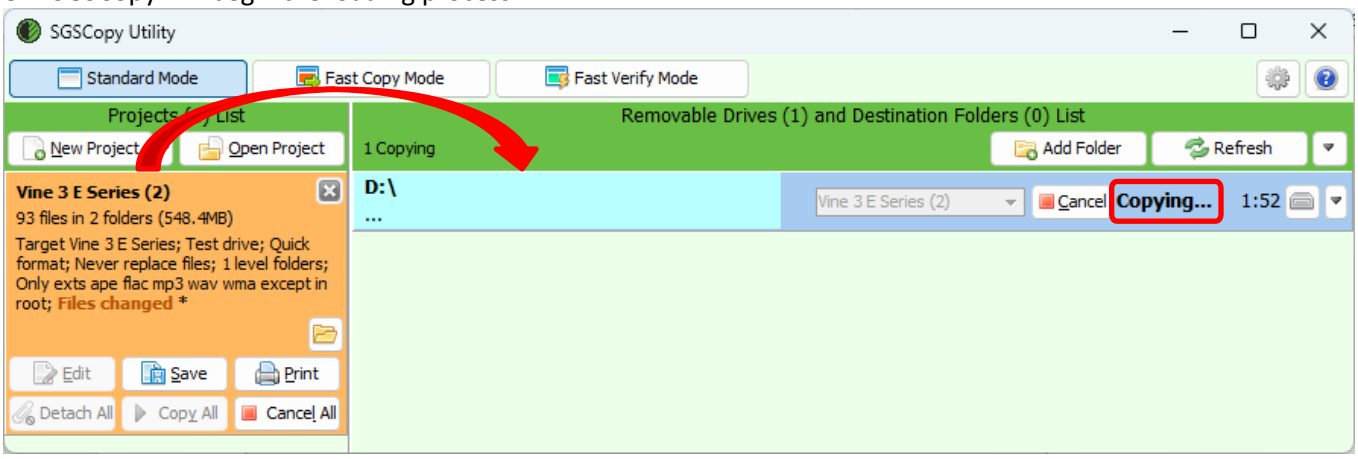
6. Our player is completely empty, but had there been previous contents, the “Unverified” message would be displayed. That simply means that there is content on the player and the “Don’t verify when project first attached” option on the “Copy and Check” tab was checked. There is no need to perform pre-verification since the intent is to format and load new contents. Now click “Copy All” in the project window.



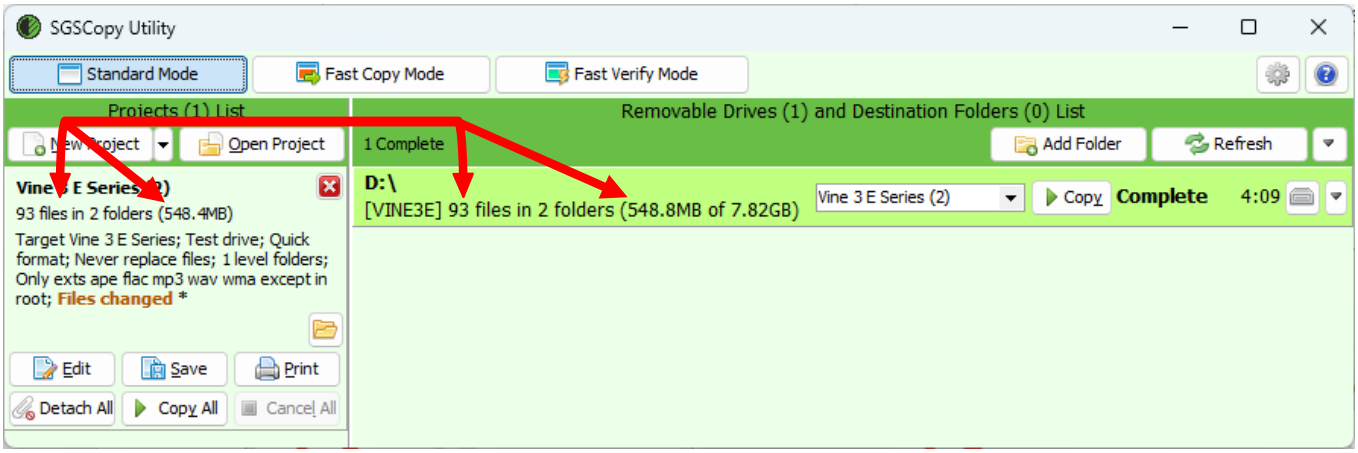
7. All of the template projects are set to perform a “Quick Format” on the target player and remove any current contents. Reply “Yes” to the *delete all files and folders* warning.



8. SGSCopy will begin the loading process…



9. Success! (the device line turns **green** and the "Complete" message is displayed)



**Note:* *If you notice a slight difference in overall message size as reported for the folder on the hard drive vs. on the player, it is due to the difference in the way file storage is calculated between the two devices – hard drive (NTFS) vs player (FAT32).*

10. In the vast majority of cases, the process described above is always successful. If for some reason the load was not successful (the player line turns red) try the following:

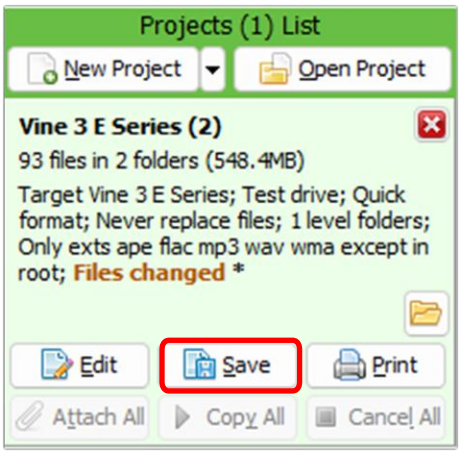
    a. Review all the settings on the different screens. If something looks amiss, please make the change and try again.

    b. If the completion message was "Unmatched", review section File verification.

    c. If you are still not sure what the problem is, click here to contact Solar Grove for assistance.

11. If the load was successful, but the player beeps and just turns off, or enters Pause Mode instead of playing, or does not work or navigate correctly, please review the rules on the "Target Device" tab as well as the "Detail File List" tab for any folders or files tagged in red.

    You could also open the user manual/guide (using the link in the rules) and review the folder structure and file rules and/or troubleshooting sections.



12. **Before you close SGSCopy!!!** If you need to repeat the above steps at a later date to load other similar players using the same configuration, you can save the project for easy re-use. SGSCopy will "remember" all the settings in the project file.

    First, re-edit the project and give the project a proper name (top left of the project dialog) and then click OK. Now, click on the "Save" button in the project window. Give the file the same name you named it internally (but leave the file type as ".sgscopy") and click "Save" again. Because the template projects are stored in a system folder, you must save your copy to a *different* folder on your computer ("My Documents" is typically used for this). To open the project later, click on the "Open Project" button, navigate to the folder and select it.

SGSCopy and SGS Players

In theory, SGSCopy is able to merge (insert) files into existing folders on the target (or folders into the folder structure). The problem is that Solar Grove players will not play them (or navigate to them) in the desired order once that is done. The added files will play (and browse) **after** pre- existing content - which is not necessarily the expected playback order on Solar Grove players.

This is because SGS players play files in the order in which they were copied to the memory. SGSCopy will guarantee that folders and files are copied in the same order they are displayed (as long as they sort in the desired order). Other copy methods cannot make this claim. Sometimes the copy occurs in that order while other times not, depending on what the O/S deems as the most efficient way to move the files.

For example, if folder A currently contains files 010, 020 and 030, and you wish to add (insert) files 015 and 025 by simply copying them to the SGS player, afterwards it will play them in this order:

010, 020, 030, 015, and 025!

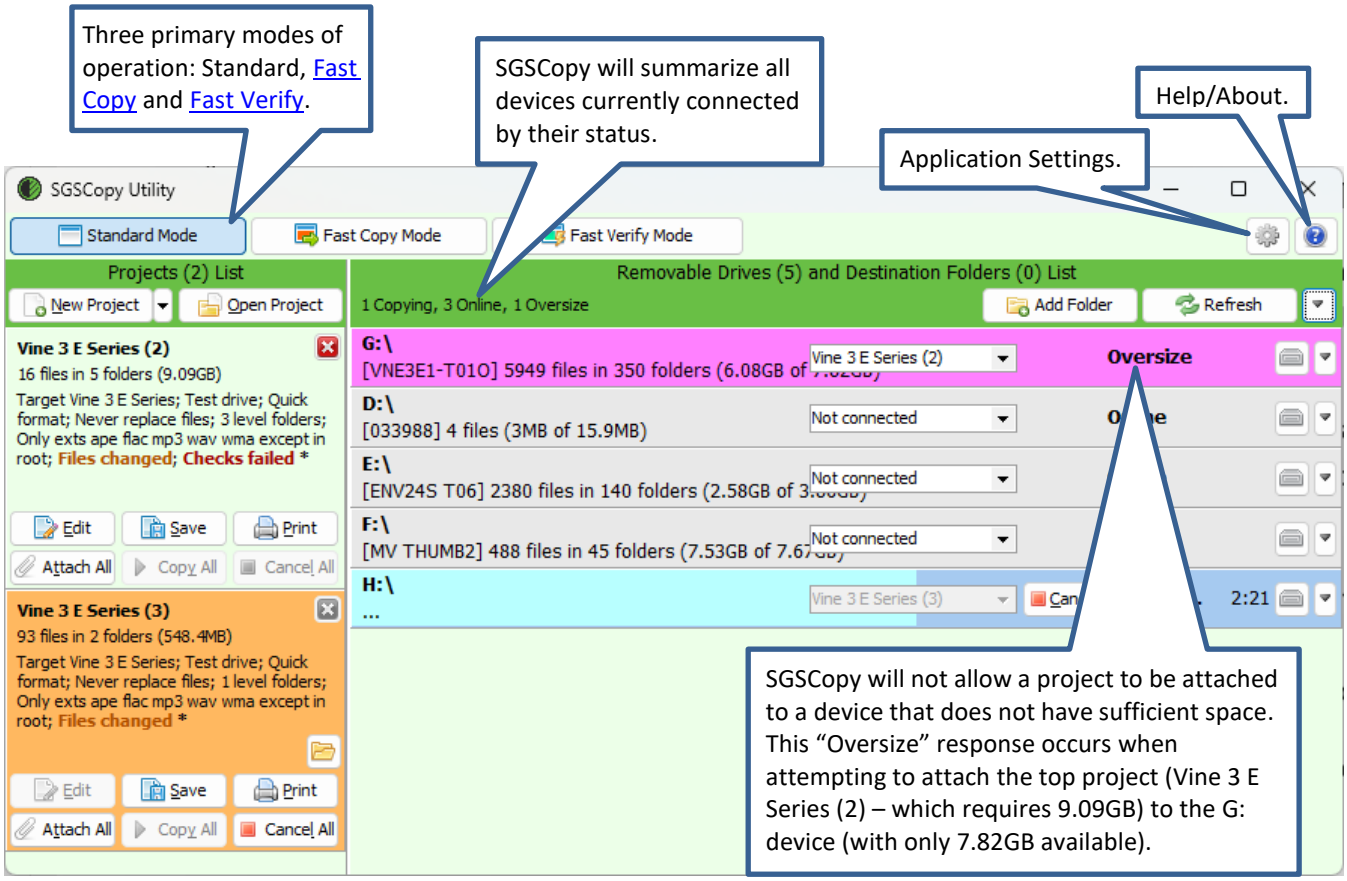
As is demonstrated in section Appending audio to a player, SGSCopy can successfully append new files or folders to the end of an existing structure. If the need is to add specific files and/or folders to existing audio on a player requiring insertion within the existing structure, it is recommended to reformat the device and reload the complete content.

For Solar Grove players, this is the only way to guarantee correct navigation and playback order.

The Main screen

This is the main screen for SGSCopy as it appears each time you start the application.

If there are players or USB drives connected to the computer when SGSCopy starts, they are automatically recognized and shown in the area on the right under “Removable Drives and Destination Folders List”.



SGSCopy allows you to work in the framework of “projects”. Projects provide you a way to define details regarding the loading of specific audio message(s) to specific player(s), save them and use them again without having to remember and reconfigure specific settings.

One of the nice features provided by SGSCopy is that it can compare a project against connected players. This feature is optional and is configurable within the project. If so configured, the compare can occur when a player is first attached to a project, but more importantly as the final step *after* the copy process.

You can save projects for future use (if this is helpful to you) or you can simply discard them when you close the application. You may also copy one project from another, using them as templates for new ones.

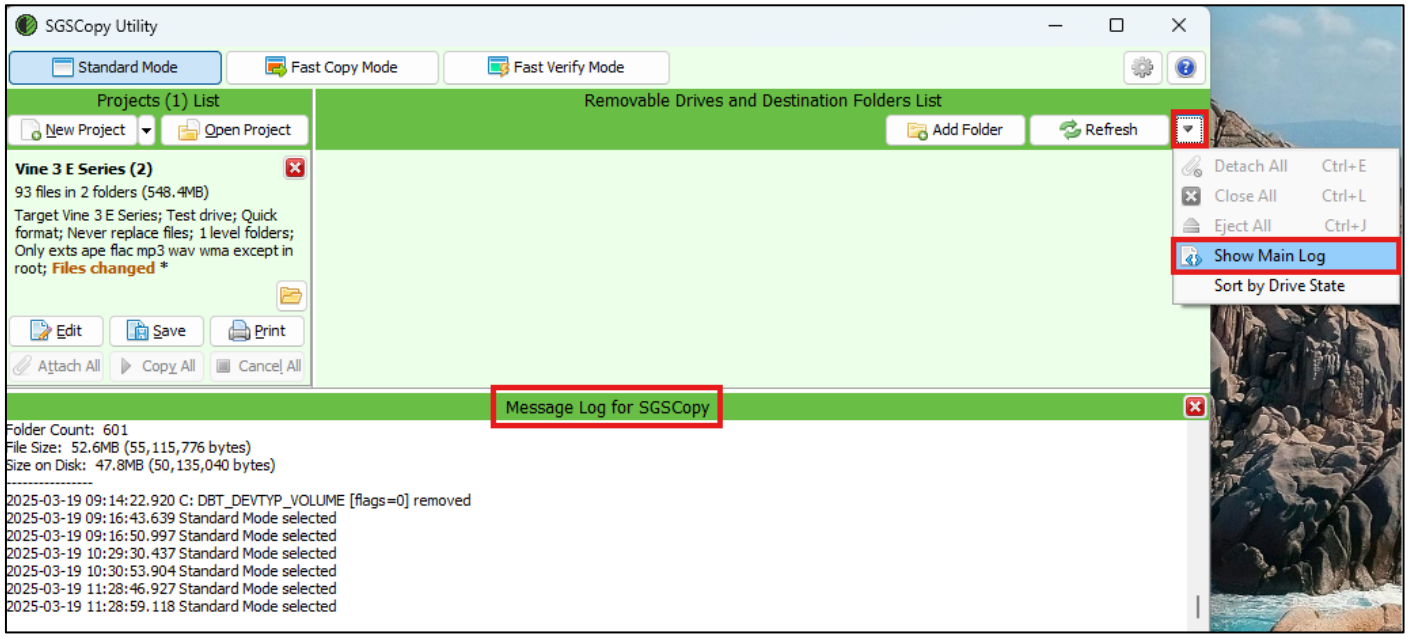
This guide will touch on *most, but not all,* of the features available in SGSCopy.

The Main program log

There is now an easy way to access the main program log for SGSCopy.

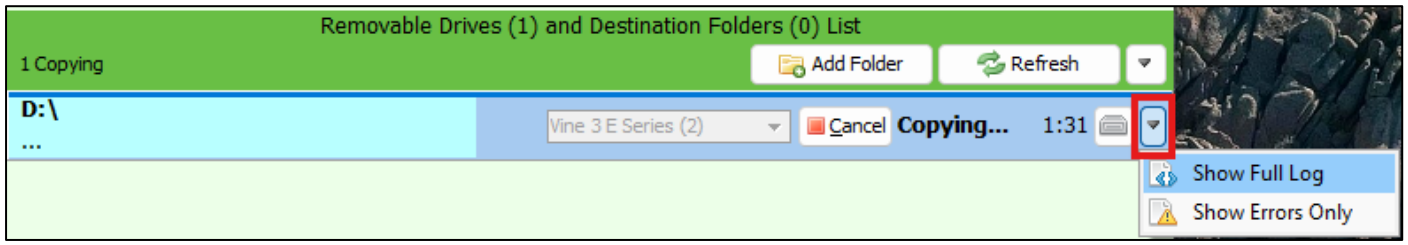
The drop list menu button (▾) to the right of the “Refresh” button will open a menu. A new item will appear that will display the main program log. It opens a window at the bottom of the Main Screen in the same way that an individual player log will display. See sample of Main log here.

SGS technical support may request you use this option in special situations, copy and save the content to a file (Notepad recommended), then send to us for diagnosis.



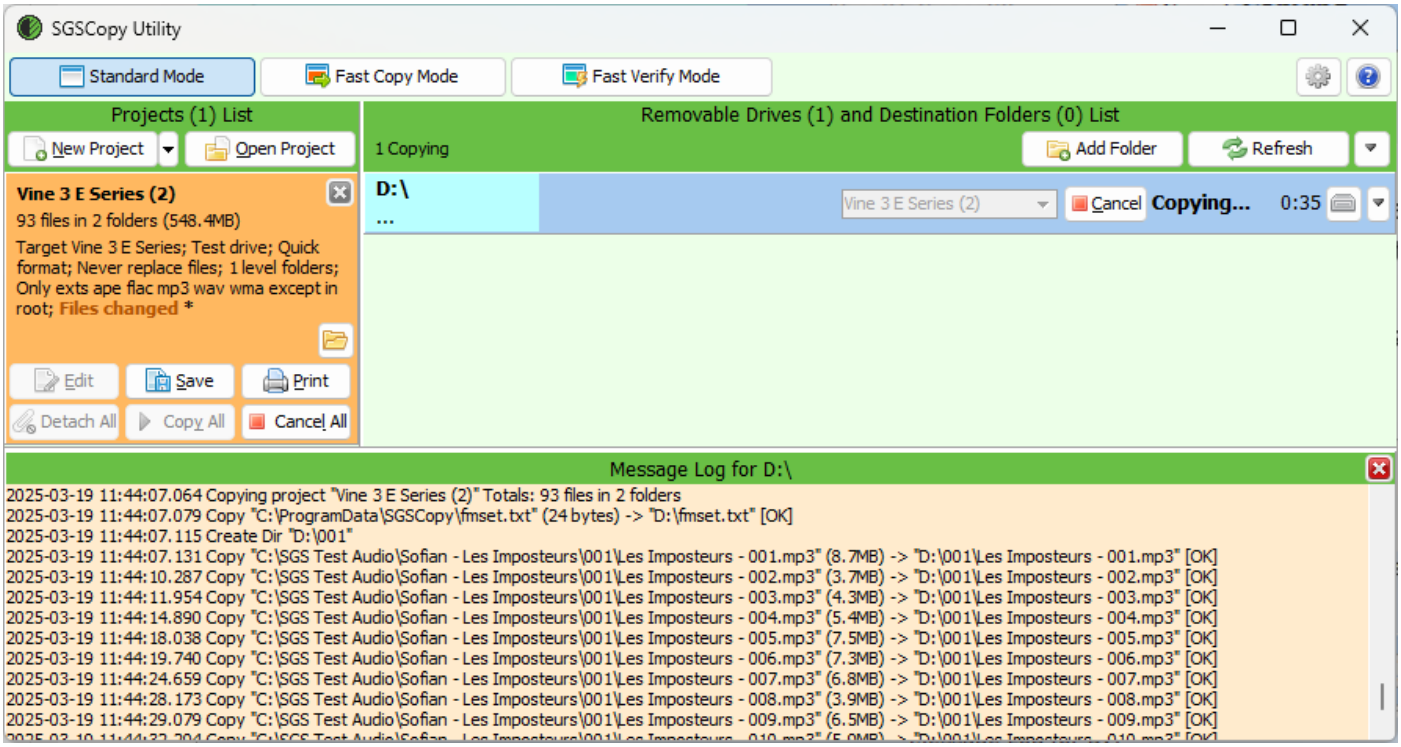
Individual device log

It is possible to view an individual device log while it is being processed. Click on the arrow at the end of the device line and chose one of the two drop-down menu items (full log or errors only):



If the device is actively being processed, the log messages will scroll. If you want to "freeze" the automatic scrolling, simply click in the log window. The background will turn beige and you can scroll at will throughout the full log.

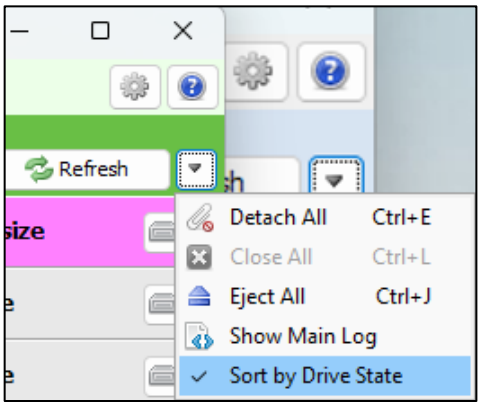
To resume scrolling with the most recent message always showing at the bottom, click somewhere outside of the log window. The background will turn white again and the message scrolling will resume.

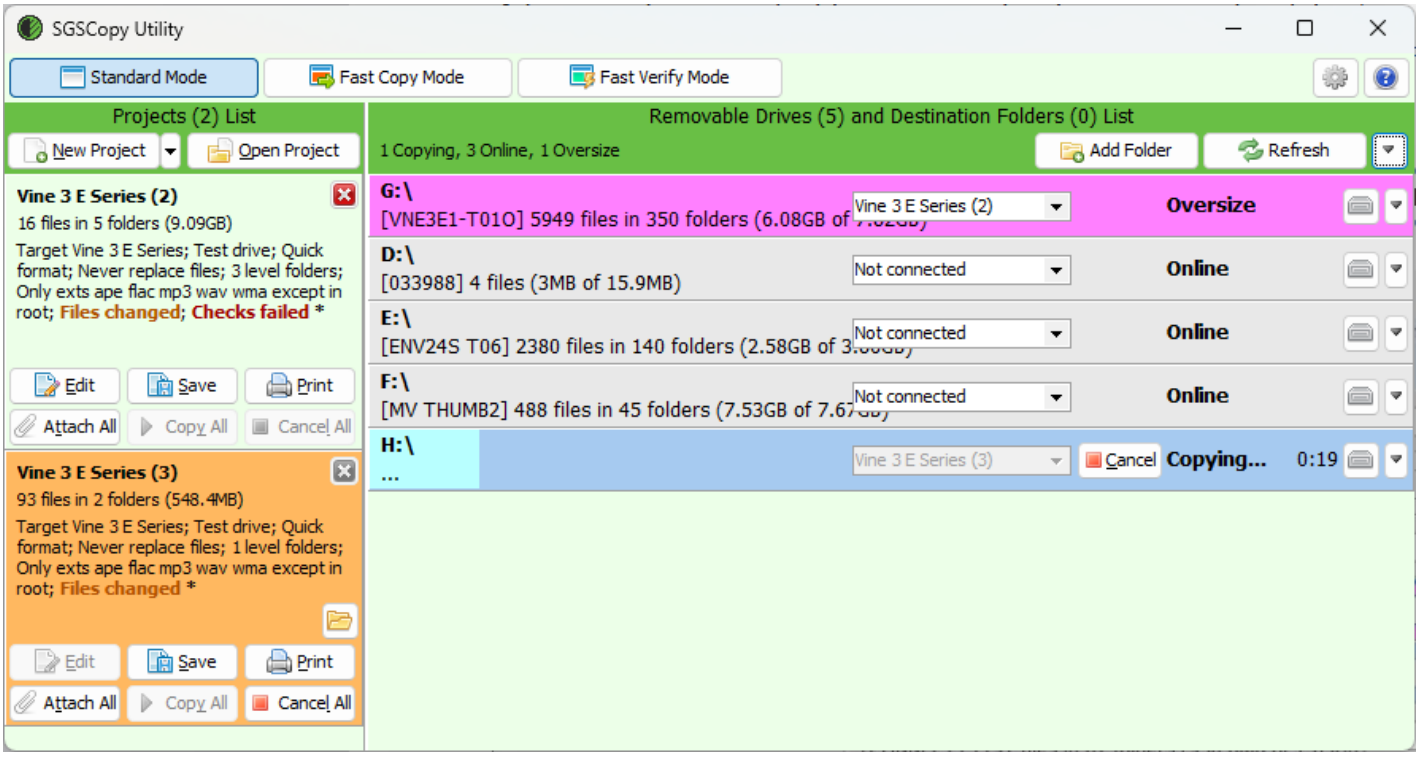


Sort by Drive State

There is now an easy way to sort all the connected devices by their current state. This is quite helpful when a large batch of devices is being processed together and you are interested in seeing all those in a specific state grouped together.

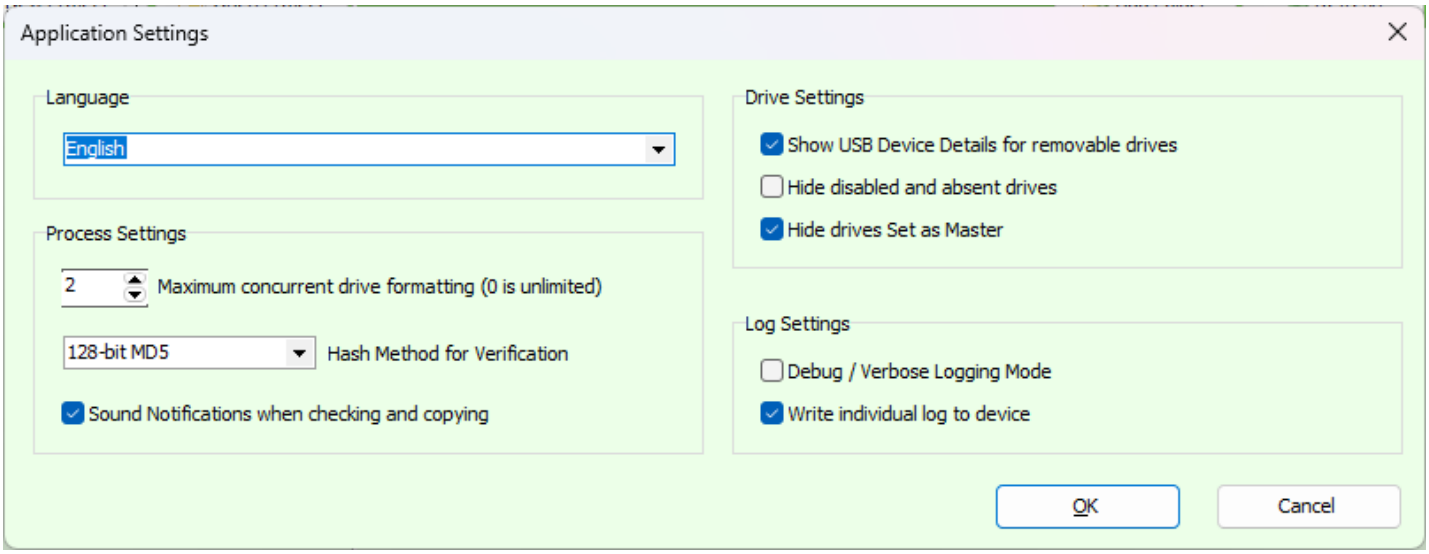
The default order is alphabetical, usually by Drive Letter. When sorted by drive state, similar “states” are grouped together, i.e. Copying, Online, Oversize, Removed, Failed, Complete, Cancelled, etc.



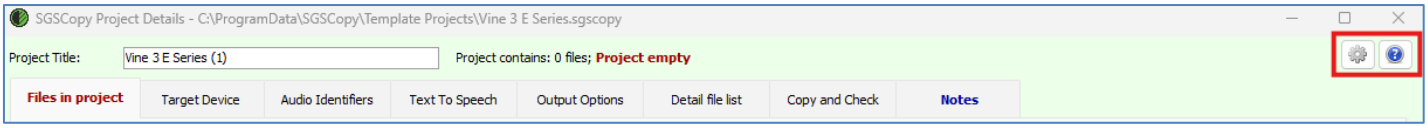


Application Settings screen

From the Main screen, if you click on the icon at top right, the Application Settings screen will be presented.



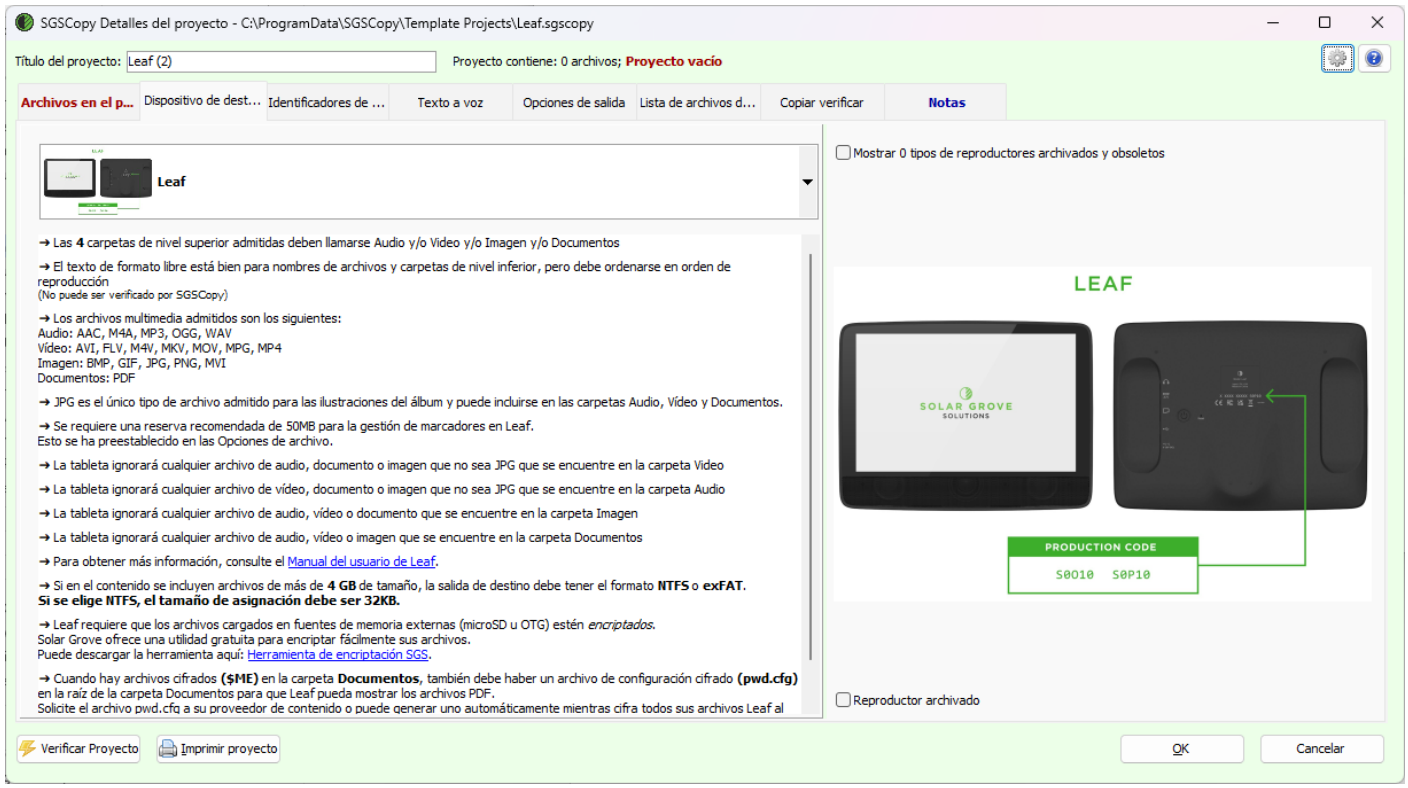
Access to Application Settings is available from both the Main Screen *and* the Project Details screen. The icon to access the Help/About dialog has also been added. (circled in red below)



Language

Besides the default language of English, SGSCopy can display operational text throughout the application in French, Spanish or Simplified Chinese. Typically, the text affected appears on button captions, tab captions, checkbox or radio button captions, tool tips, dialog boxes and the like.

Language support has been added for the rules text on the Target Device tab. All the included devices now have this translation available and the rules text automatically changes to the language chosen on the Application Settings screen.
The Language setting will persist until changed by the user.



Maximum concurrent drive formatting

This setting determines the number of concurrent format operations SGSCopy will execute on batches of many players when Quick or Full Format is requested for initialization. Depending on the size of your batch and your computer configuration, some systems may bog down with too many concurrent format operations. It is recommended to leave this set to ten or less, but you are free to experiment with your system to see what works best.

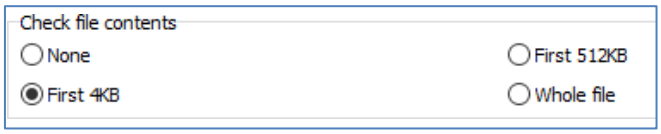
When using mapped folders, SGSCopy can now perform format on the mapped device.

A value of zero is unlimited. This means that SGSCopy will permit as many concurrent format operations as your specific system is able to perform simultaneously.

Hash method for verification

This setting determines the method used whenever “Check file contents” is requested on the “Copy and Check” tab. The four choices are:

- 32-bit Hash
- 64-bit Hash
- 128-bit Hash
- 128-bit MD5



Screen snippet from the Copy and Check tab

Once changed, it takes effect immediately. In testing, 64-bit Hash seems to be the fastest, but your mileage may vary!

Sound Notifications when checking and copying

Sound bites are available to alert the user when notable events occur like when device rules fail or pass.
When this option is checked, a sound bite is also played when each player completes. A different sound bite is played when the last player in the batch completes to signal that all copying for a project has completed.
If this option is unchecked, SGSCopy is muted and will work silently.

Show USB Device Details for removable drives

When checked, SGSCopy will also retrieve the USB Device Model and display it in the device tool tip when hovering over the device on the Main Screen. See here.

When checked, SGSCopy will retrieve the USB Serial Number assigned to the device and display it too in the device tool tip when hovering over the device on the Main Screen. See here.

If you are using SGSCopy with mapped folders, make sure to set this option **off (unchecked)**. When used with mapped folders the time to add and attach the folders is significantly increased when this option is activated.

Hide disabled and absent drives

If you check this box, any drives connected to the computer that are flagged disabled by SGSCopy (see 13: Teaching SGSCopy to ignore devices) or absent (devices that have a microSD card reader and no media is loaded) will be hidden from view (but not physically removed).

Hide drives Set as Master

If you check this box, any time you select a folder via the “Add Folder” button on the Main Screen, and then choose “Set as Master” to create a project from that folder, the original folder line will automatically be hidden once the project is generated. Typically, the folder lines in this case are no longer needed once the project is created.

Debug / Verbose Logging Mode

When checked, SGSCopy will open a window beneath the Drives List with additional debugging information (that is written to the main program log). This option should only be used under the direction of SGS technical support for special cases.

Write individual log to device

When checked, SGSCopy will write a log file (plain text file - TXT) to the root of each device that is processed. The file will be named "SGSCopy – " + name-of-your-project + ".log". The file will contain all messages pertaining to the initialization, copying and verification of all the files copied to your device along with any errors that may have occurred. See Sample player log file here.

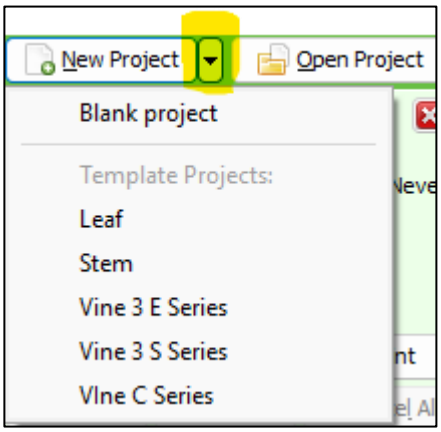
SGS recommends using this feature as it will assist us in problem diagnosis when support is requested. It only takes mere seconds to write this log file to the target device and typically the files are small.

All players that SGS prepares for shipment are loaded with this option set on because it can help when a support request is opened for a shipped device.

If any changes were made to the Application Settings screen, click "OK" to save them.

Template Projects

The SGSCopy setup will also install a full set of template projects – one for each SGS player or series.
It is easy to find and open a Template Project.
The available Templates show in the drop-list under the “New Project” button.

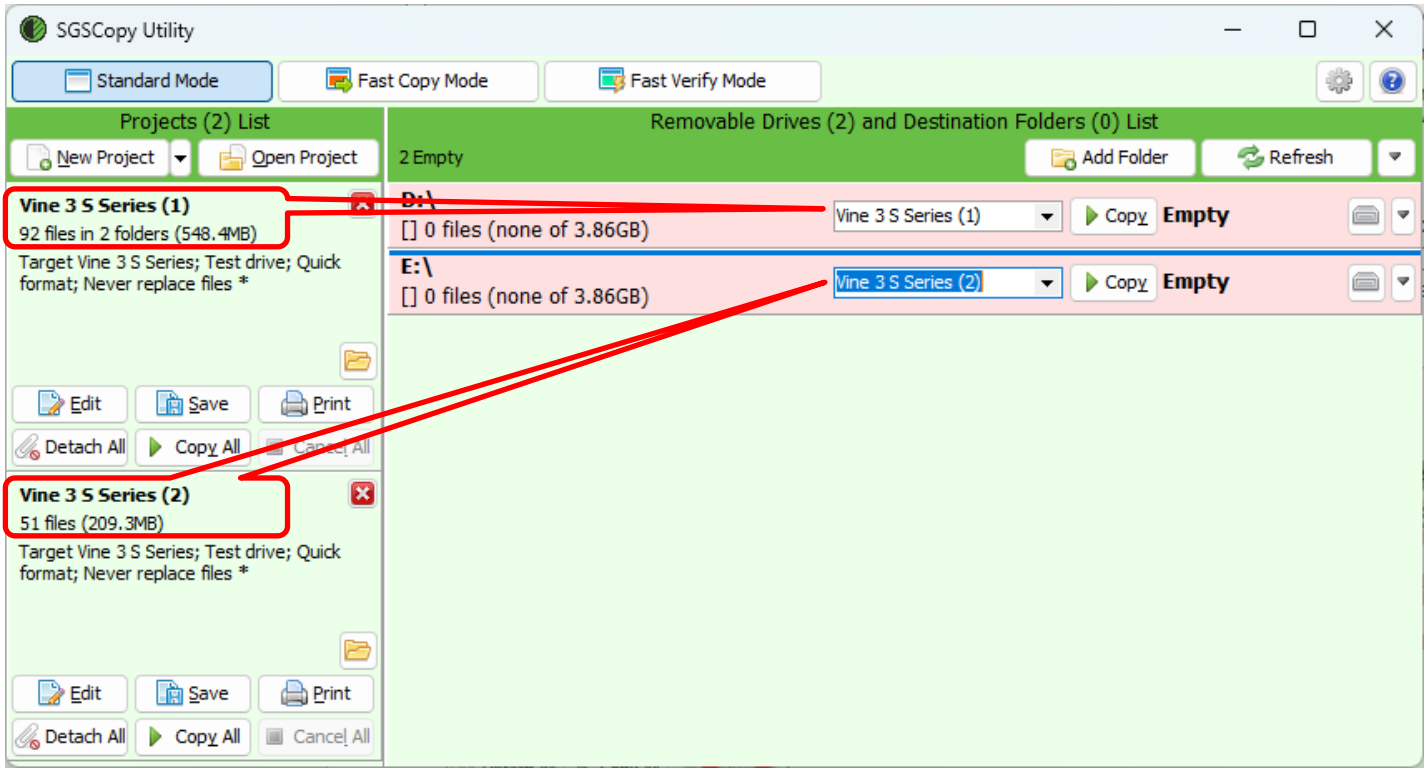


From here, you may

- Choose a blank project and build from scratch
- Choose any of the available Templates

Each project is pre-configured with the recommended settings for the device defined. All you really need to do is to provide the data content that will be loaded to the player on the “Files in Project” tab. However, feel free to change other settings as desired.

Whenever you open a Template Project (or a New Project), SGSCopy will automatically append a sequence number to the project name to make it unique (SGSCopy will not allow the same project [name] to be opened more than once). This way, you can open the same Template project twice to load two players of the same type (concurrently) but with different content for both from the individual projects.



Since these are templates, typically you would discard the projects when finished and not save them. However, if you do want to save the projects with your modifications, you may do so but **not** to the Templates folder as it is a system read-only folder. It is recommended to save your own custom projects to the “My Documents” folder but practically any folder is acceptable.

Examples and Features

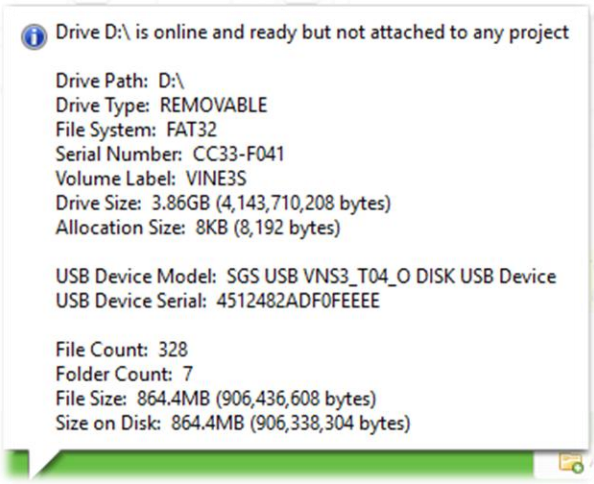
1: Loading Vine 3 S Players

Let's get started!

In this example, we will program 2 SGS Vine 3 S players with a small audio message.

1. Connect the players to the computer using the proper SLS cable. In most cases, SGSCopy detects players automatically when they are connected and disconnected. In some instances, it does not but all you have to do is to click the "Refresh" button (circled in purple) for them to be recognized.

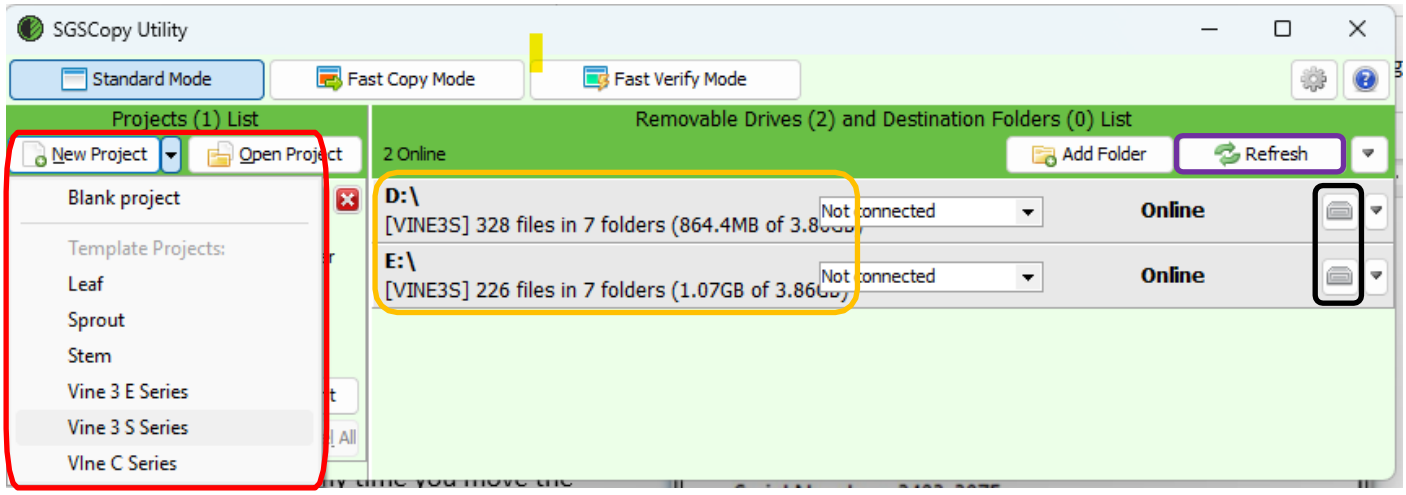
2. There are 2 MegaVoice players already connected and SGSCopy has identified them as volumes **D:** and **E:** providing a summary of current content for each (circled in orange).



SGSCopy will also provide you with a lot of technical information about each connected device that you cannot get from most applications. Any time you move the mouse over a player in the list, you will see a tool tip like that to the right:

3. One of the nice features SGSCopy provides is that you can always review the contents of a connected player by clicking on the "Open Explorer" icon at the very end of each player line (**circled in black**).

4. To provide the information for the load process we will need to create a new project. Click on the ▾ arrow next to the "New Project" button (circled in red) and choose "Vine 3 S Series".



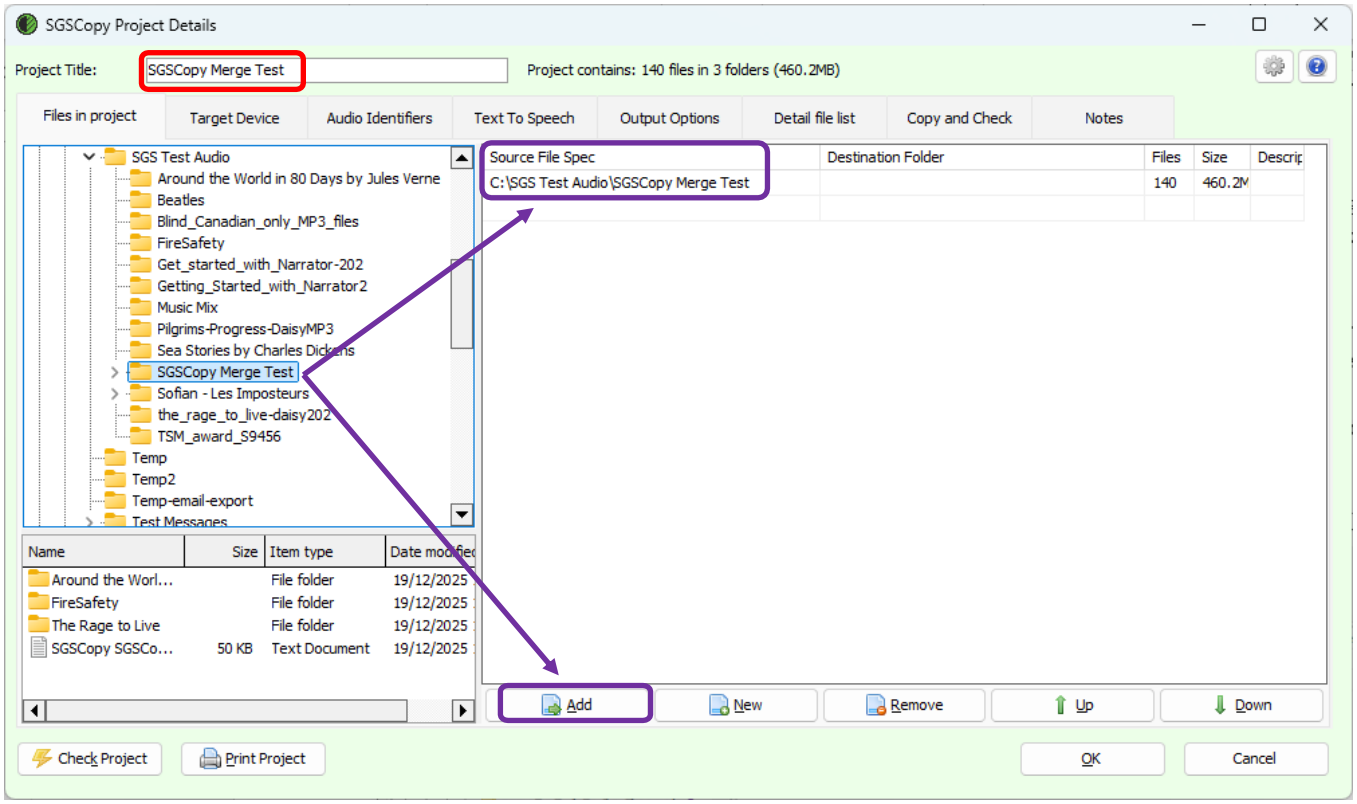
5. The screen image below shows the Project dialog. It consists of seven tabs, each containing various settings for the project. The first tab, “Files in Project”, is mandatory and is always the first to be displayed.

6. In this example, we want to use the message folder “SGSCopy Merge Test” that we created in disk-to-disk copy.

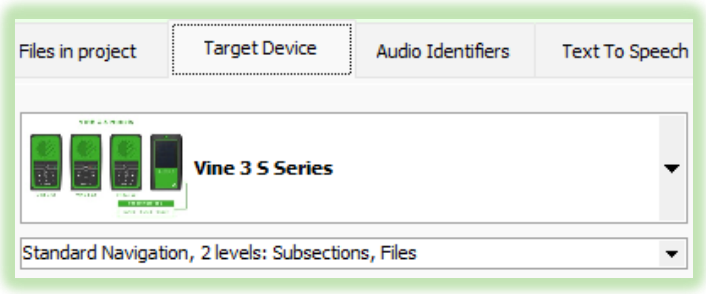
7. If you intend to save this project so that you can easily re-use it later, add a project title (circled in red). If not, leave the suggested name by SGSCopy.

   SGSCopy will use the Project Title as the default name for the project file when saving it. It is highly recommended to change it to something meaningful and use the same name for both the external project file name and project title.

8. On the “Files in Project” tab, we must specify the source for the copy operation. The easiest way to do this is to drag the desired folder onto the list on the right and drop it. SGSCopy populates the Source File Spec column for us (circled in purple).
   - Alternatively, you can highlight your audio message folder on the left and then click on the “Add” button (circled in purple) at the very bottom of the screen.

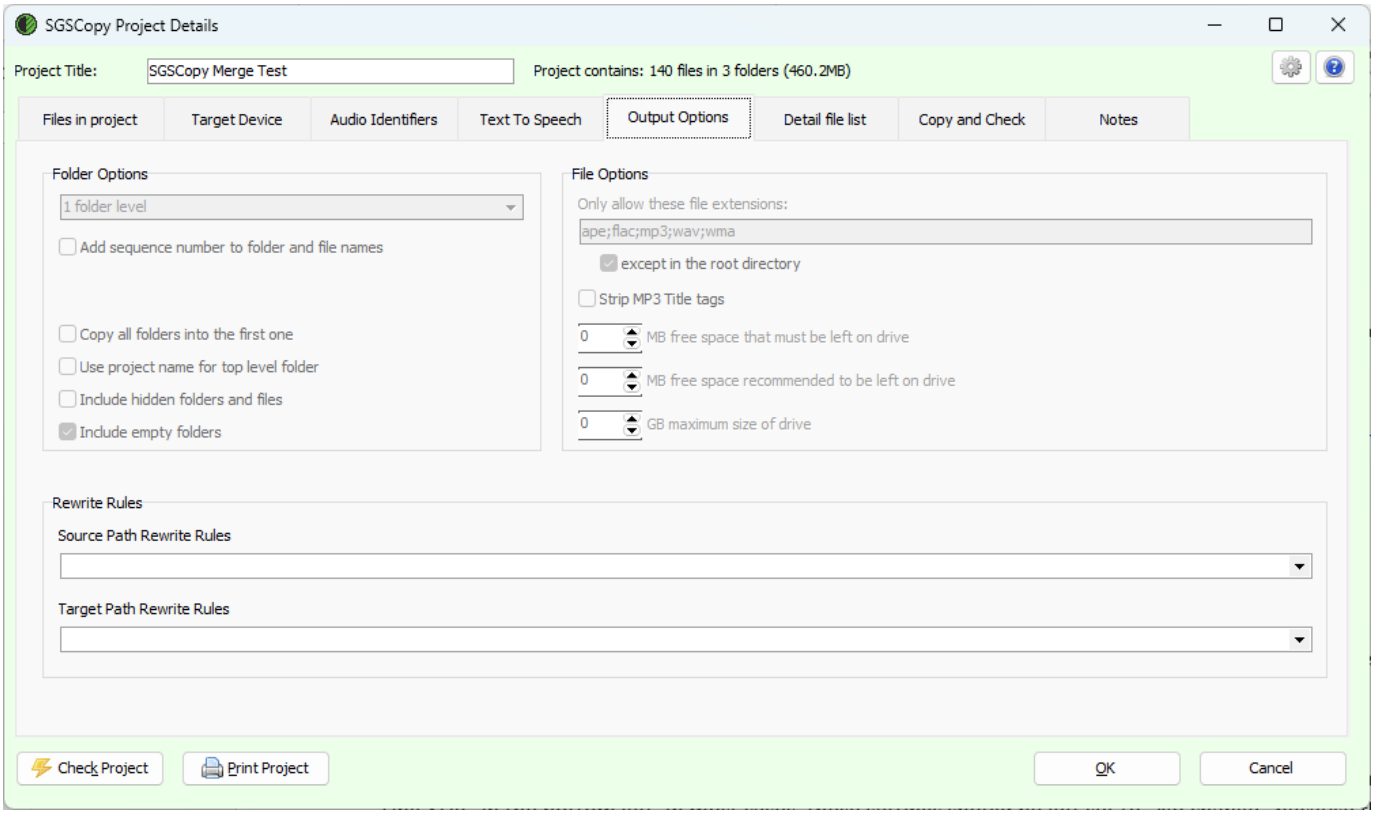


9. On the “Target Device” tab, we should set the structure option to “Standard Navigation, 2 levels: Subsections, Files” to correspond to our selected audio.



10. Next, click on the “Output Options” tab (circled in red). You will get a screen like that below.

Since we used the provided template project for Vine 3 S, practically all of the settings have been correctly assigned with recommended values, but it is a good idea to review them.



11. Now click on the “Copy and Check” tab. See screen image below.

12. Notice the project name was set automatically by the template.

13. In the top left, there are initialization options. “Quick Format” will be performed which will clear all current contents. Below that, it is set to the proper FAT32 File System with 8192 allocation unit size (standard for all SGS players).

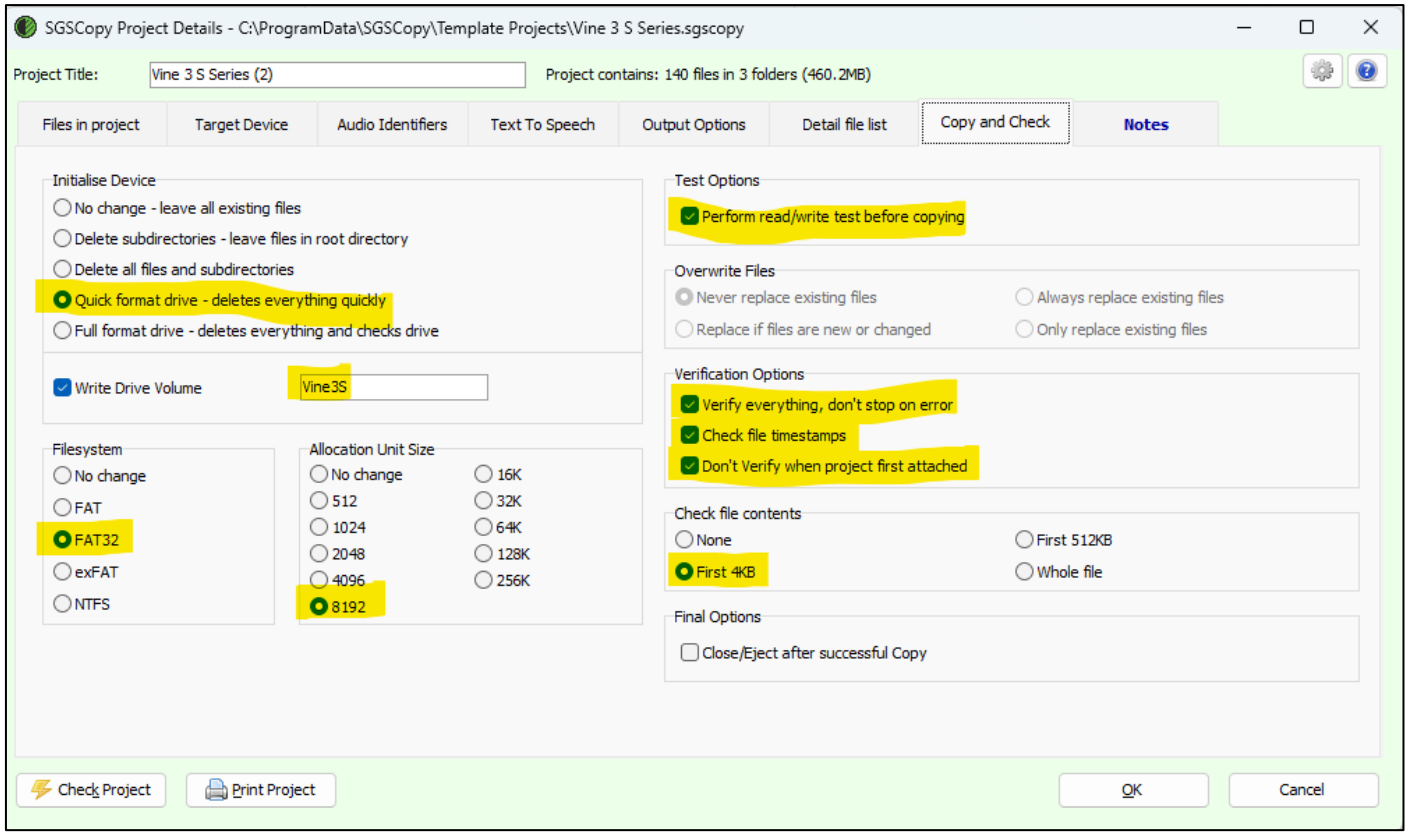
14. Also, the Drive Volume Name is set to “Vine3S”. You may change this if you like or remove it altogether.

15. Under “Test Options”, we want to execute the “Perform read/write test before copying”

16. Under “Verification Options” the basics are performed. Once the copy completes so we have checked “Verify everything, don’t stop on error”, “Check file timestamps”, “Don’t verify when project first attached” and to compare the first 4KB of each file on each player against the same in the source.

    Note that there are various sampling sizes available under “Check file contents” (None, First 4KB, First 512KB and Whole file). Keep in mind that the larger the sampling size, the longer the verification process takes – but more thorough. A minimum of 4K is recommended. See Hash method for verification for details on the file comparison methods available.

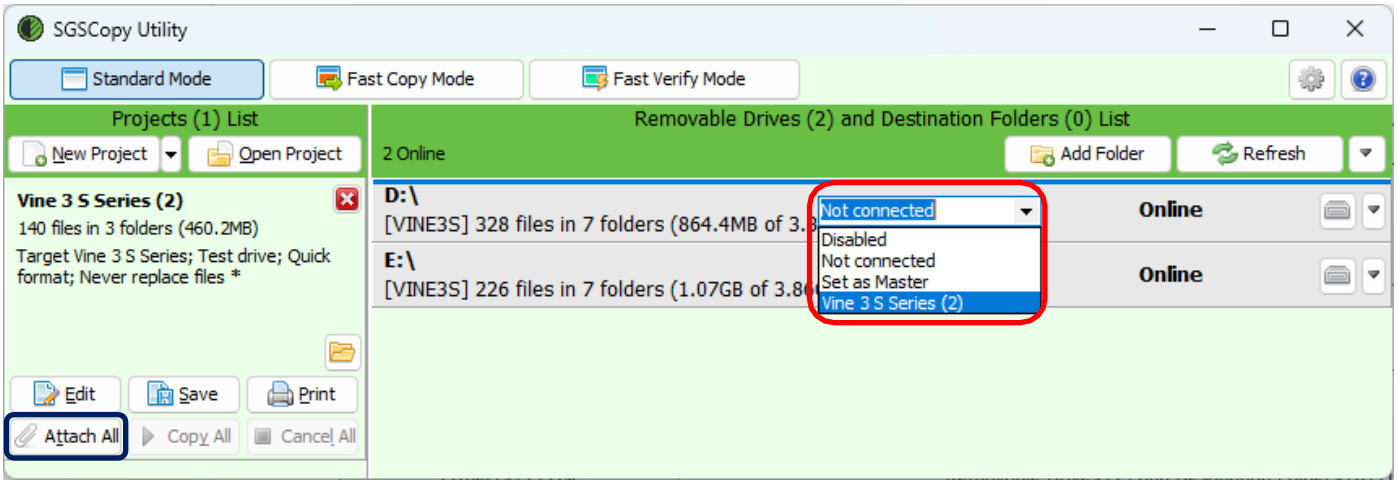
17. When finished, click the OK button to save the settings and close the Project Details dialog.



18. At this point, the main screen should look like the example below.

19. Now we need to set the "source" of the copy for each player. When all the players connected are being loaded from the same source, the easiest way is to click on the "Attach All" button in the project (circled in blue). SGSCopy will assign all of them (no matter how many) to the project.

20. Alternatively, within the line for each player, we could click on the drop-down list and change the setting for each individually to the project "Vine 3 S Series" (circled in red).

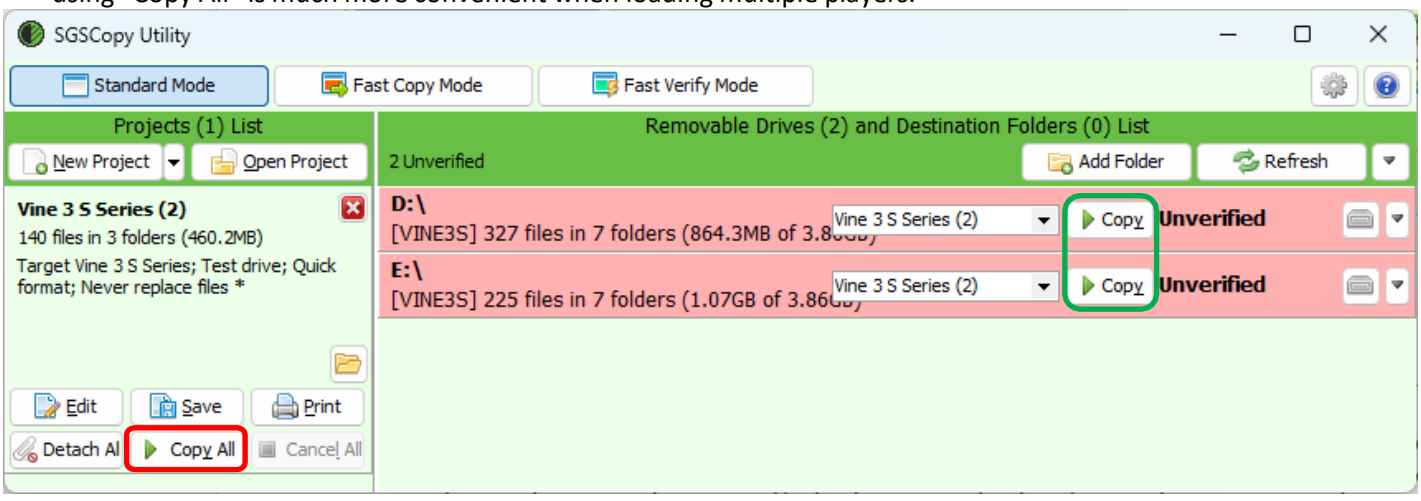


21. Notice that the rows containing the players turned pink with the message "Unverified". This is because SGSCopy we selected the option "Don't verify when project first attached" in the project definition. Since whatever is present on the players will be removed during format, there's no need.

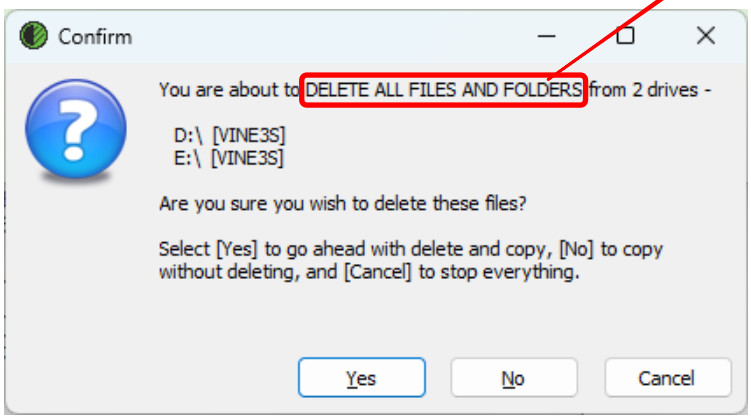
22. To begin the copy process, all we need to do now is click on the "Copy All" button (circled in red).

The "Copy All" button in the project will not be enabled until *at least one* of the players in the list is attached to it as the source for the copy process.

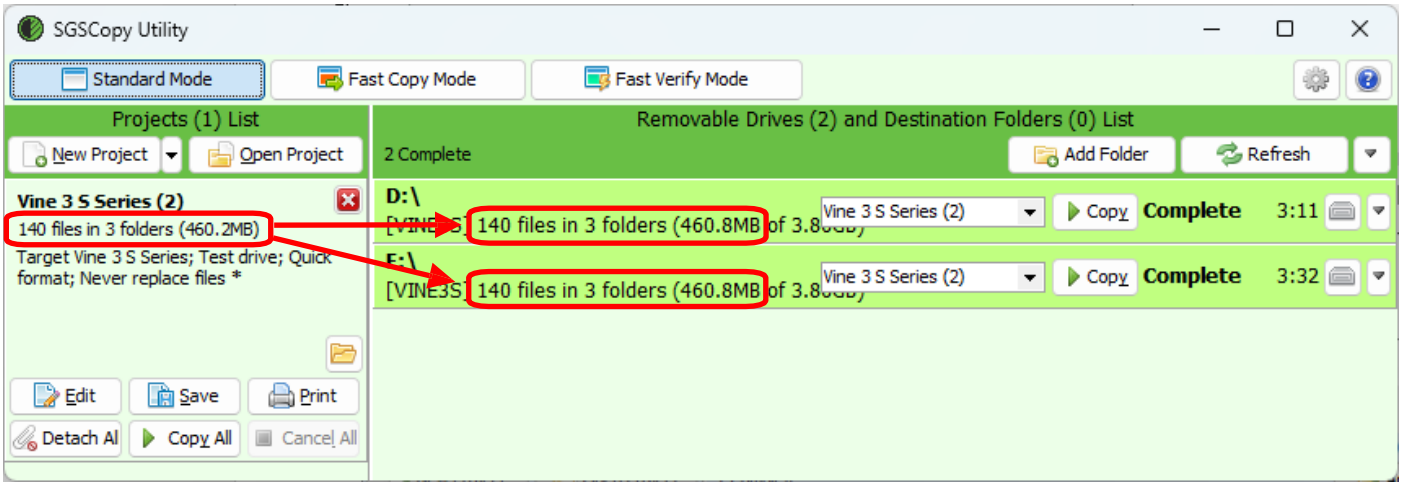
23. Note that you could also click on the "Copy" button appearing in each player line (circled in green) but using "Copy All" is much more convenient when loading multiple players.



24. When you use "Copy All", and you specified an initialization option that will erase *any* of the current contents, you will get a single pop-up confirmation dialog listing all the assigned players warning that the content specified on the Copy and Check tab will be deleted. If this is acceptable, click "Yes" to continue; otherwise, you can click "No" (don't delete anything but continue the copy – this not recommended), or "Cancel" (halt the process). When using the individual "Copy" button per player, a pop-up dialog is displayed for each player separately (another reason to use "Copy All"!).



25. Once the actual copy completes, if requested in the project, SGSCopy performs a compare of the project against the selected players. If they match, the line for that player will turn **green** and the final message will be "Complete". If they do *not* match (for some reason), the line for the player will turn red and the final message will be "Unmatched" or something similar. For details on researching the cause of "Unmatched", see File Verification.



**Note:* *the slight difference in overall message size as reported for the folder on the hard drive vs. the players is due to the difference in file storage methods between the two devices – hard drive (NTFS) vs player (FAT32).*

26. Disconnect the players and test each to see that the audio plays as expected

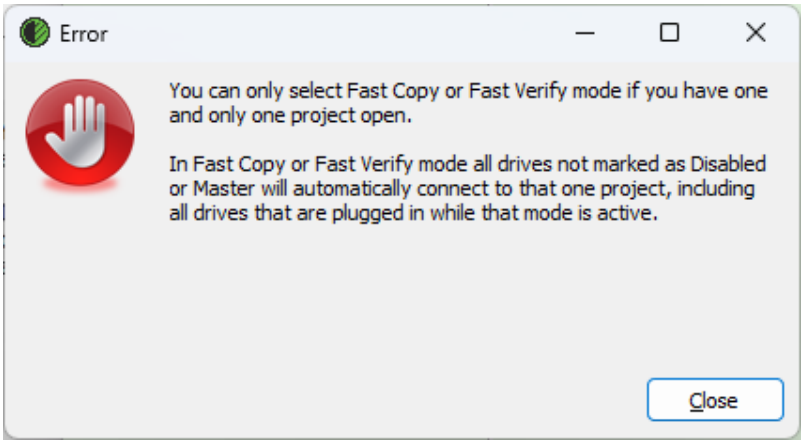
5: Fast Copy Mode for quickest loading

In this example, we will load players using **Fast Copy Mode**. Fast Copy Mode is a feature offered by SGSCopy that allows for semi-automated loading of players with minimal user intervention.

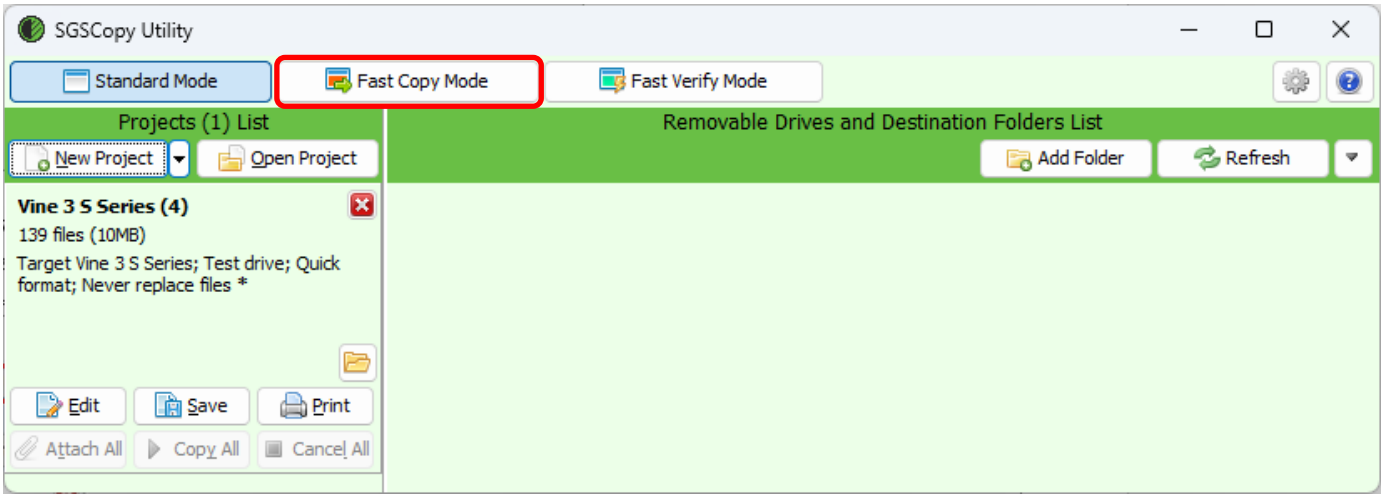
Be careful! Once you activate Fast Copy Mode, no additional warnings are issued before a player is cleared and loaded with the specified audio. Any player, or USB device for that matter, you connect while SGSCopy is open and Fast Copy Mode is active will automatically be loaded – no questions asked!

1. When SGSCopy starts, it defaults to "Standard Mode", which is the setting used in most examples.

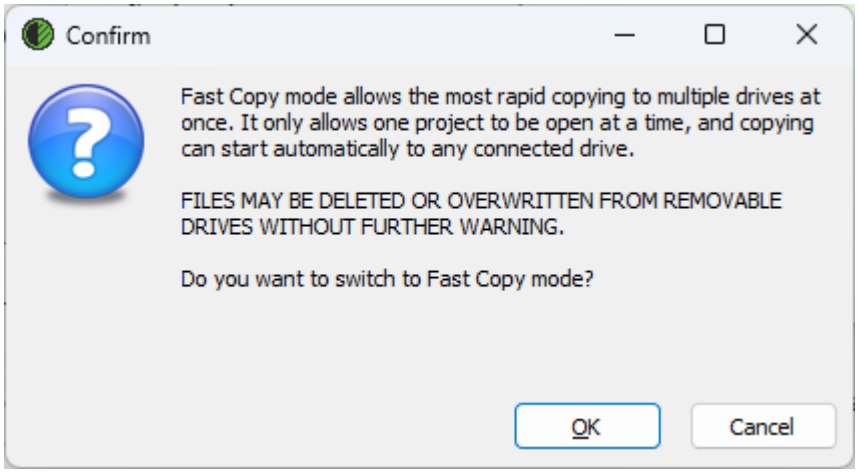
2. After starting SGSCopy, open the project you want to use for your fast copy session. Fast Copy Mode requires that one and only one project may be open. SGSCopy warns if this is not the case.



3. Once the project is open (and re-configured if necessary), you can turn Fast Copy Mode on by clicking on the "Fast Copy Mode" button (circled in red).

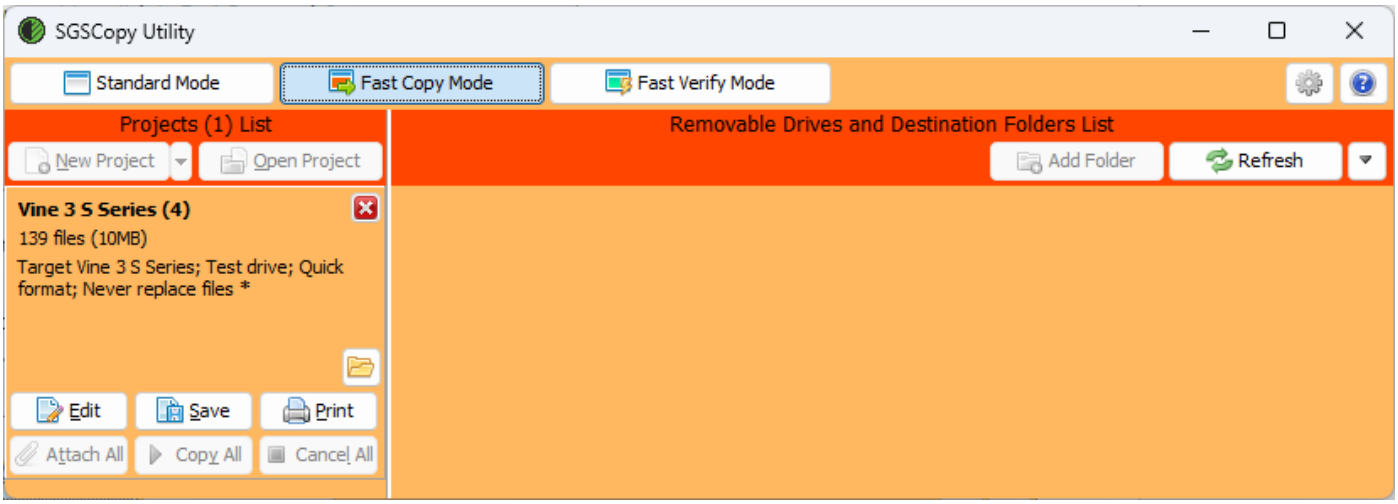


4. You will receive a pop-up warning like that below:

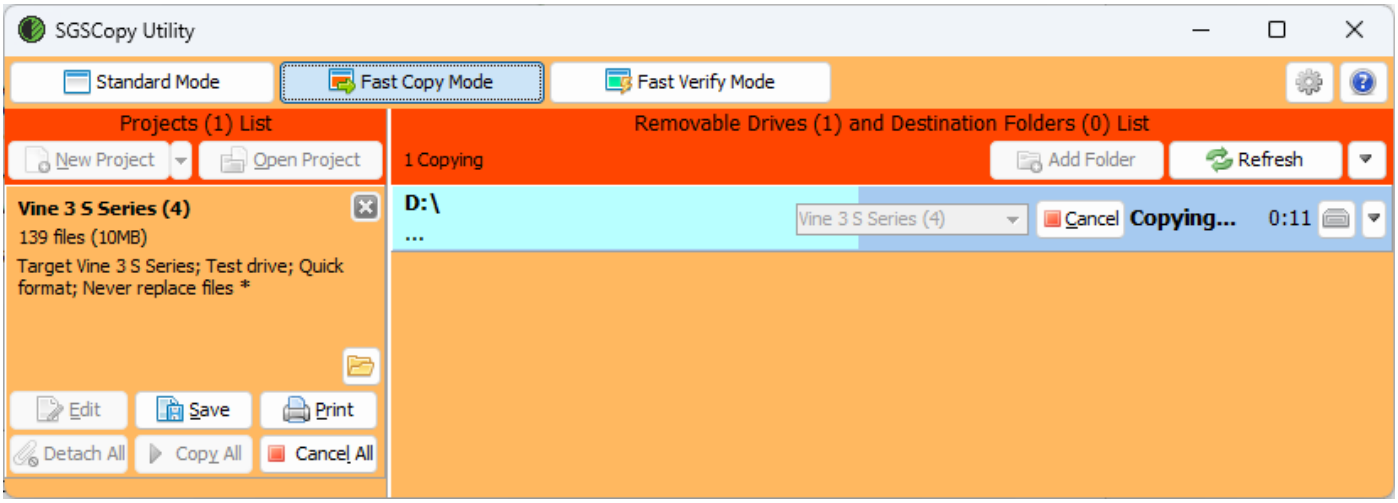


5. Click on “OK” to transition to Fast Copy Mode.

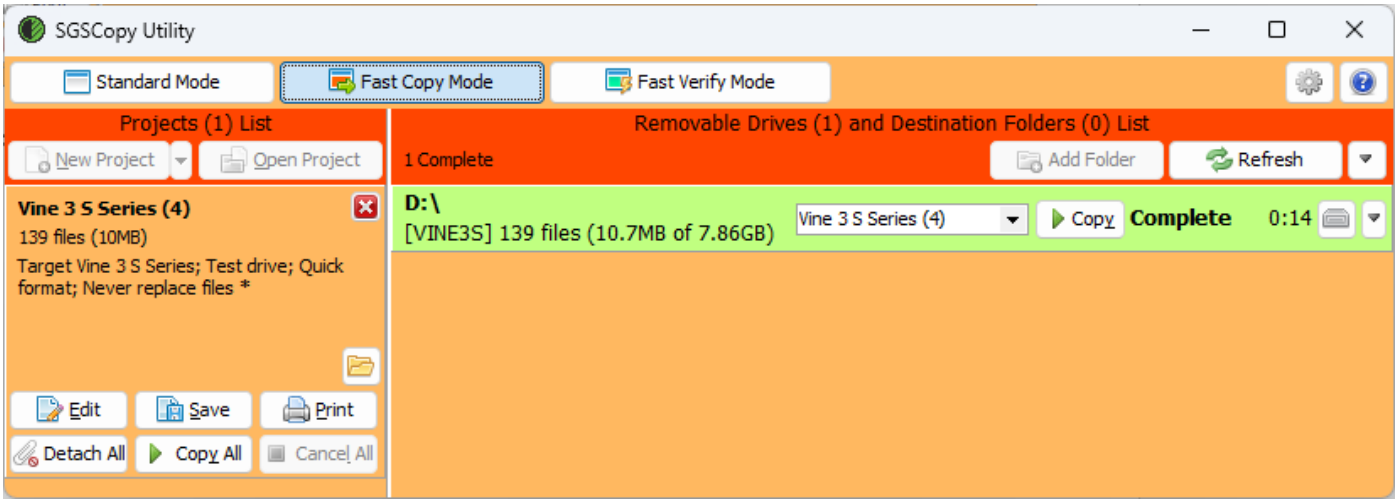
6. Notice that the button ribbon at the top of the screen and the screen background changes to a reddish-orange background color to alert you that the application is currently in Fast Copy Mode.



7. From this point on, once you connect players or USB devices, the moment SGSCopy recognizes each device it will begin to load it with no further intervention.



8. Once players have completed, you can disconnect them and connect others in their place. SGSCopy will automatically begin to load the new players as soon as they are recognized by the computer.



9. SGSCopy will remain in Fast Copy Mode until…

   - The SGSCopy window loses focus, i.e. you switch to a different application or screen.
   - You click on the "Standard Mode" button to turn it off.
   - You connect a device that is significantly different from the first (see explanation #2 below).
   - You close SGSCopy. When SGSCopy restarts, it always defaults to "Standard Mode".

Fast Copy Mode is an ideal solution when you don't have many USB ports available (or no hub) and need to quickly load a group of players with the same audio. It requires minimal intervention from you to achieve the quickest copies.

SGSCopy offers a safeguard to prevent unintended access to a device that is connected to the computer while Fast Copy Mode is active which could result in loss of data. The **first** device connected determines the point of reference for *all* devices connected during the session. If a subsequent device is connected that is less than half the capacity of the first, **or** more than twice the capacity of the first, **or** in any case, greater than 128GB, SGSCopy will ignore that device and automatically turn Fast Copy Mode off.

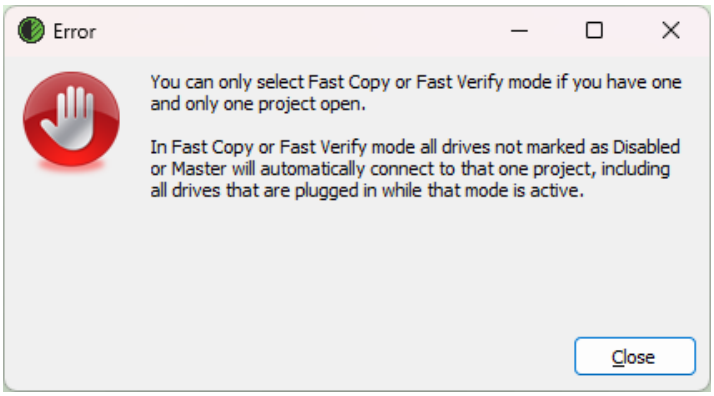
You may also want to configure SGSCopy to always ignore certain devices you keep connected to your computer. See Teaching SGSCopy to ignore devices for details.

6: Fast Verify Mode

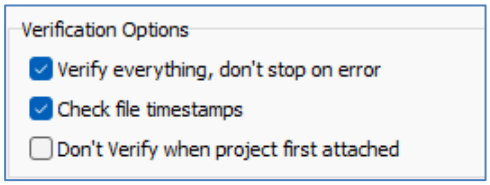
In this example, we will compare players to a project using **Fast Verify Mode**. Fast Verify Mode is a feature offered by SGSCopy that allows for semi-automated verification of players loaded using a specific project with minimal user intervention. For each player connected, it only executes the post-copy verification process as defined in the project, stops, and waits for more players to be connected. This is a great way to confirm that all players are loaded with a specific message without guessing.

1. When SGSCopy starts, it defaults to "Standard Mode", which is the setting used in most examples in this document.

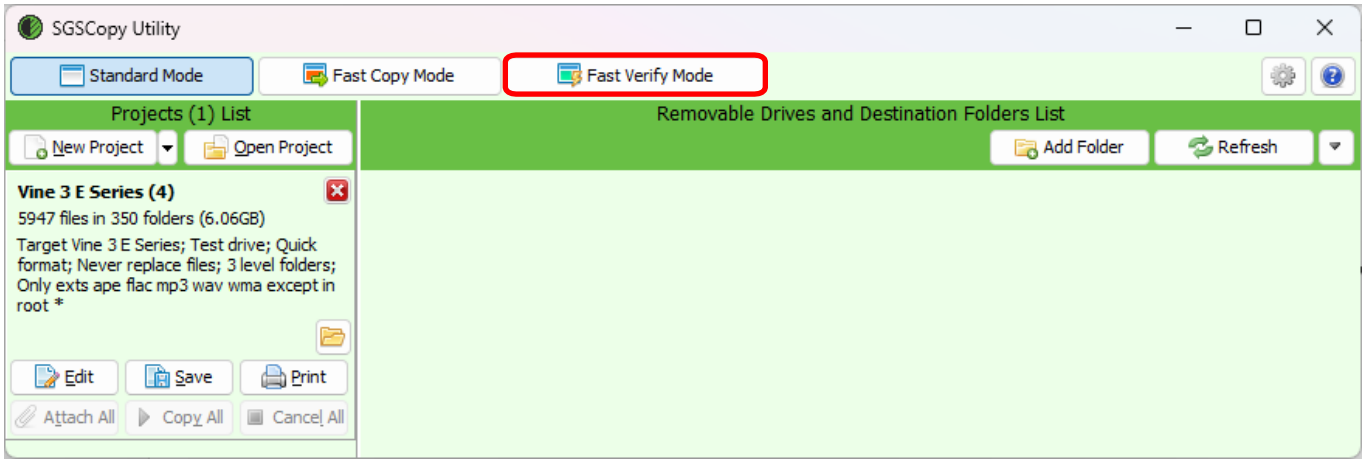
2. After starting SGSCopy, open the project you want to use for your fast verify session. Fast Verify Mode requires that one and only one project may be open. SGSCopy warns if this is not the case.



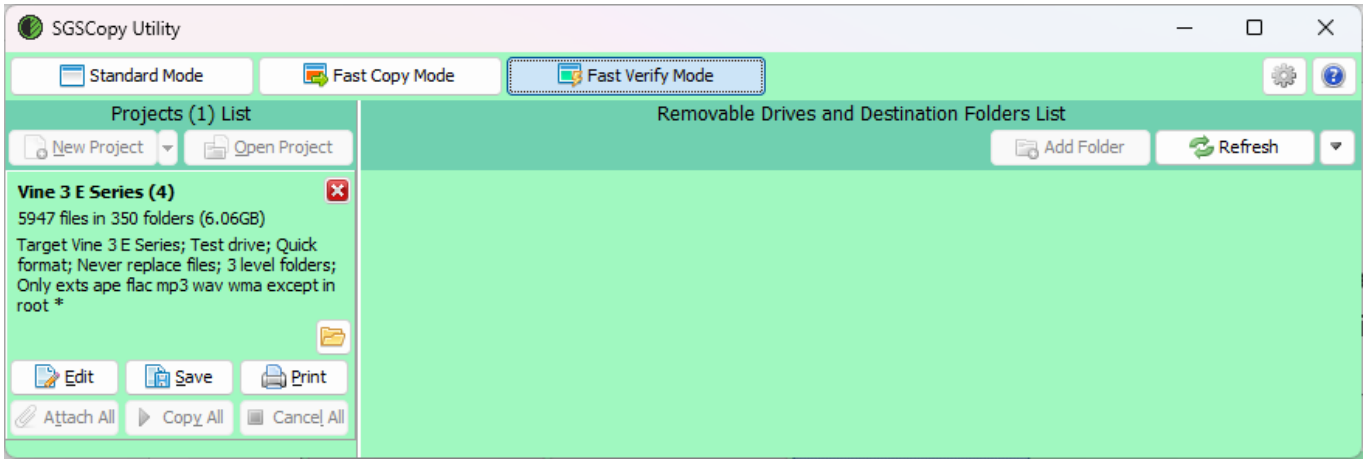
3. Once the project is open, make sure it is configured with the correct verification steps on the "Copy and Check" tab. The most important setting for Fast Verify is to NOT check the "Don't verify when project first attached" option, because this is what will trigger the verification.



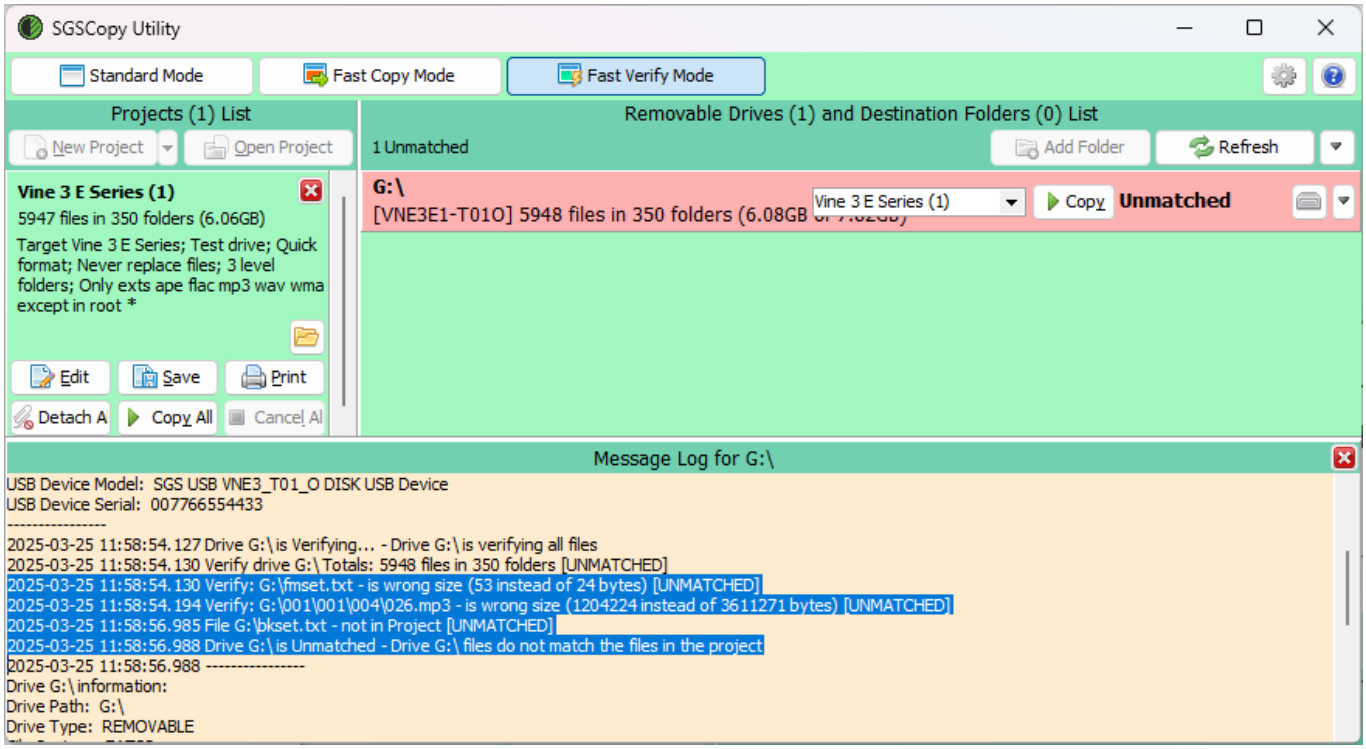
4. Now you can turn on Fast Verify Mode by clicking on the "Fast Verify Mode" button (circled in red).



5. Notice that the screen background changes to a greenish color to alert you that the application is currently in Fast Verify Mode.



6. From this point on, once you connect players or USB devices, the moment SGSCopy recognizes each device it will begin to compare the device contents against that defined in the project with no further intervention.
   When a player completes, the termination message will either be “Complete” (all files matched) or “Unmatched”. When the files don’t match, you can display the log by clicking on the ▾ button at the end of the device line, and choosing “Show errors only”. Then you can scroll to the errors and see what didn’t match (highlighted below in blue).
   In the example below, 3 files are identified: “fmset.txt” has changed since loading (may have been edited) and “bkset.txt” was added automatically by the player itself (used for storing bookmark info) so they can be explained. However, the “026.mp3” file poses a serious problem. The one on the player is much smaller than the one in the project (probably corrupted). This should be investigated and fixed!



7. Once connected player(s) have completed, you can disconnect them and connect others in their place. SGSCopy will automatically begin to verify the added player(s) as soon as they are recognized by the computer.

8. SGSCopy will remain in Fast Verify Mode until…

   - The SGSCopy window loses focus, i.e. you switch to a different application or Windows screen.
   - You click on the “Standard Mode” button to turn it off.
   - You close SGSCopy. When SGSCopy restarts, it always defaults to “Standard Mode”.

Fast Verify Mode is an ideal solution when you don’t have many USB ports available (or no hub) and need to quickly confirm that a group of players contains *exactly* the same audio. It requires minimal intervention from you to achieve the quickest method of verification.

You may also want to configure SGSCopy to always ignore certain devices you keep connected to your computer. See Teaching SGSCopy to ignore devices for details.

7: Duplicating players, microSD cards, etc.

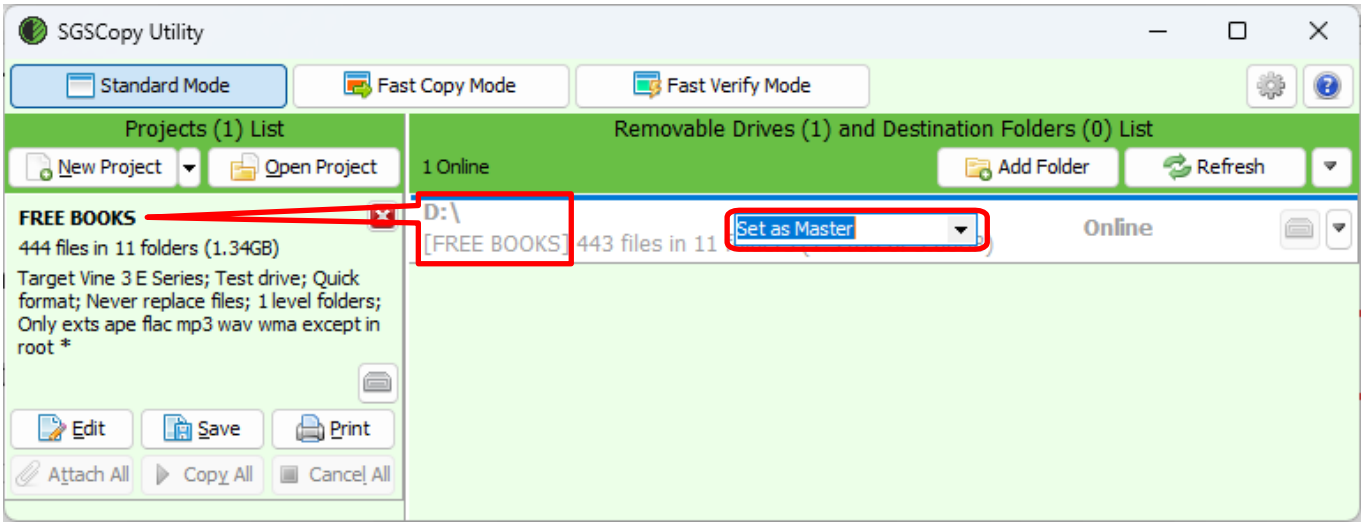
In this example, we will duplicate the contents of one microSD card to two other cards. In the same way, we could leverage SGSCopy to duplicate the contents of a player to microSD cards, a microSD card to players or even one player to others.

This is a great solution when you want to load players but don't have the audio source needed available on your computer but do have a player that can be duplicated. With SGSCopy is easy to accomplish, and it does not require you to copy the audio first from the player to the computer and then from the computer to other players!

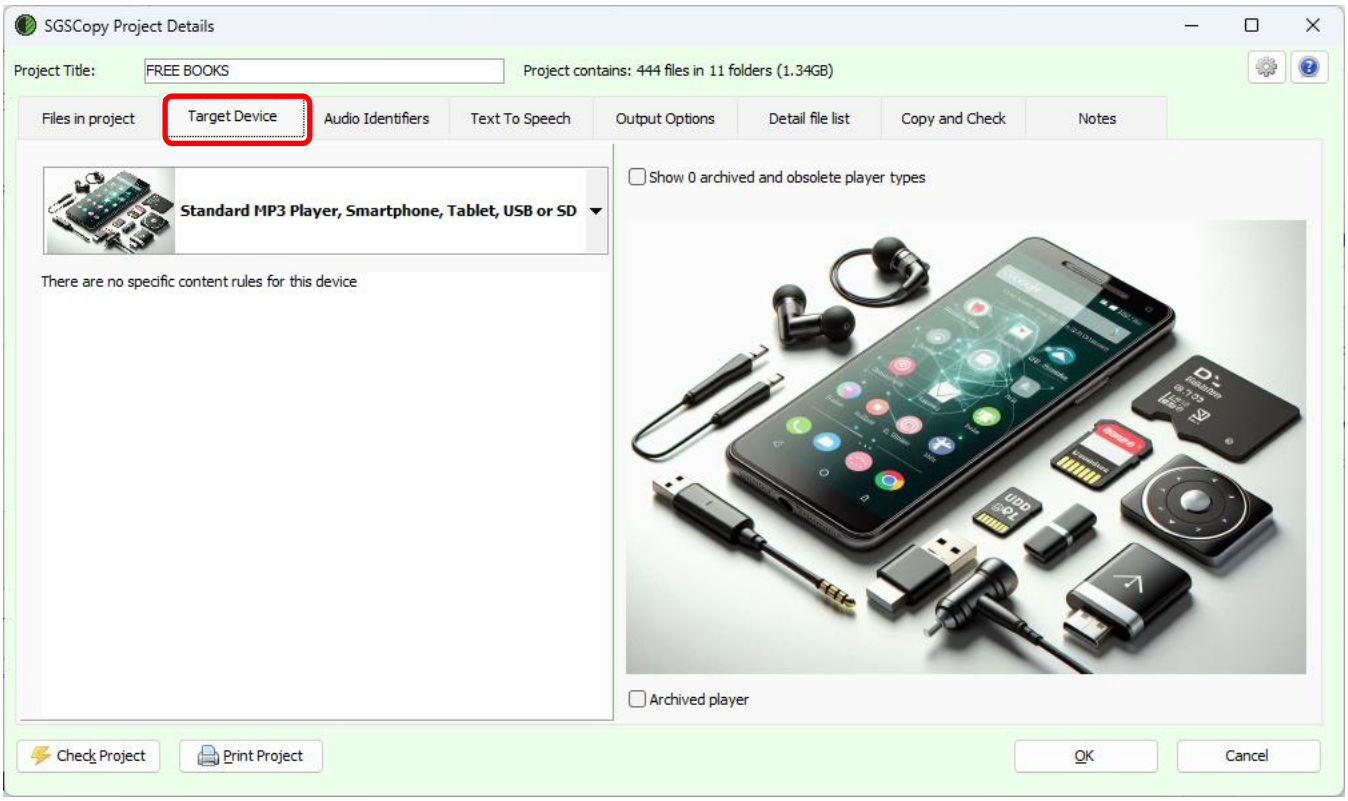
1. Open the Template Project for the device that most closely matches the format for the audio you wish to duplicate.

2. Connect the source microSD so it will appear *first* in the list and make it easier to track.

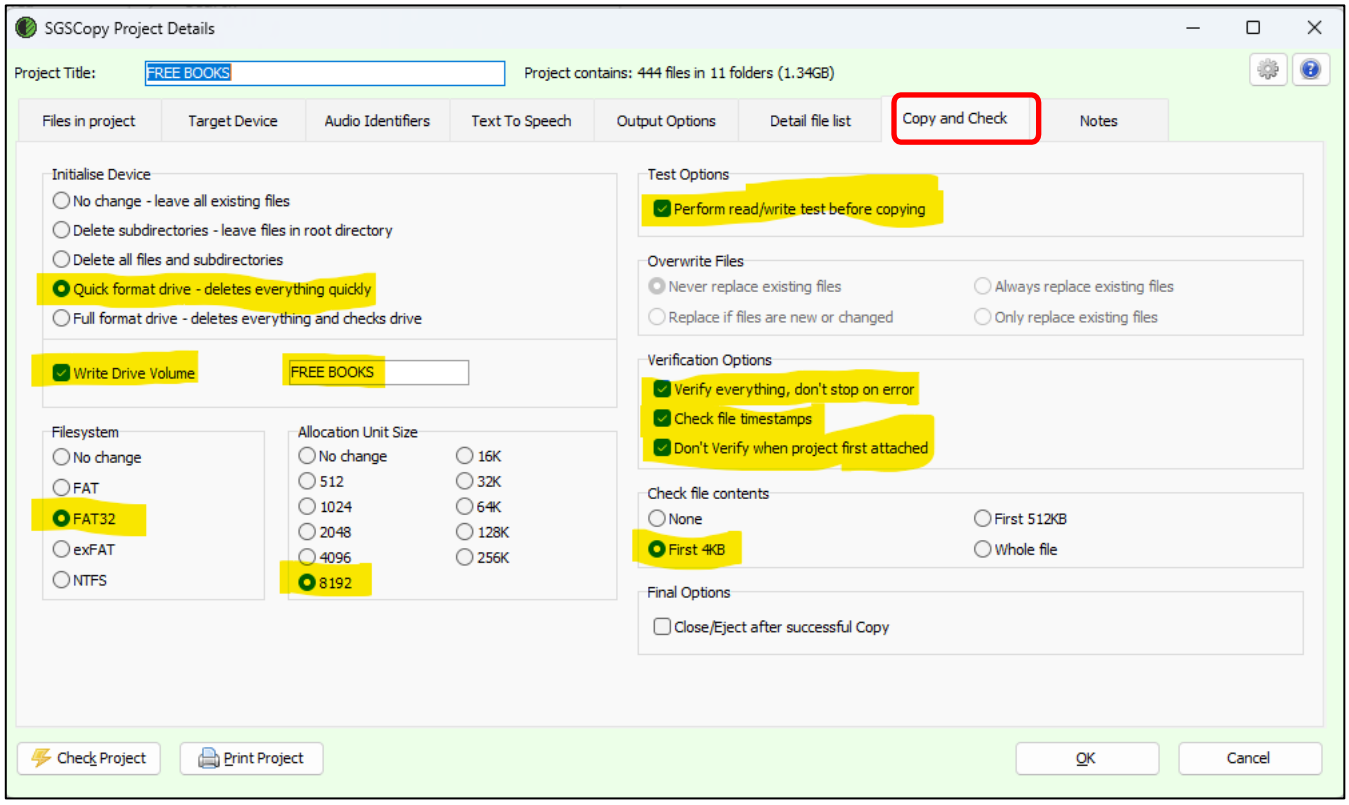
3. In the drop-down list for the source card, change it to "Set as Master" (circled in red). Once you do that, SGSCopy will turn the line white and automatically create a project definition for you using the volume label of that player as the name (under "Projects List"). See Hide drives Set as Master for details on how to hide this folder in the "Drives list" once it is "Set as Master" if you prefer that option.



4. Even though SGSCopy automated the project creation, you may still need to “edit” the project to make some additional changes. On the Target Device tab, set the device to “Standard MP3 Player,Smartphone,…”.



5. And on the “Copy and Check” tab make the recommended settings as highlighted in yellow:

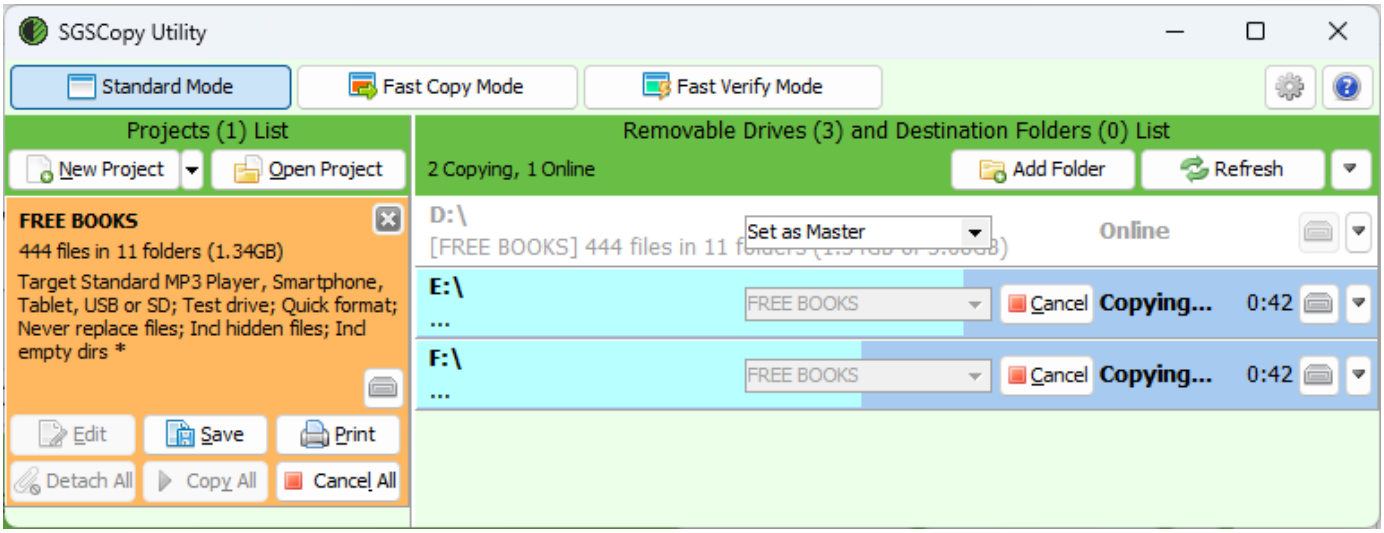


6. Connect the other microSD cards that you wish duplicate from the source card.

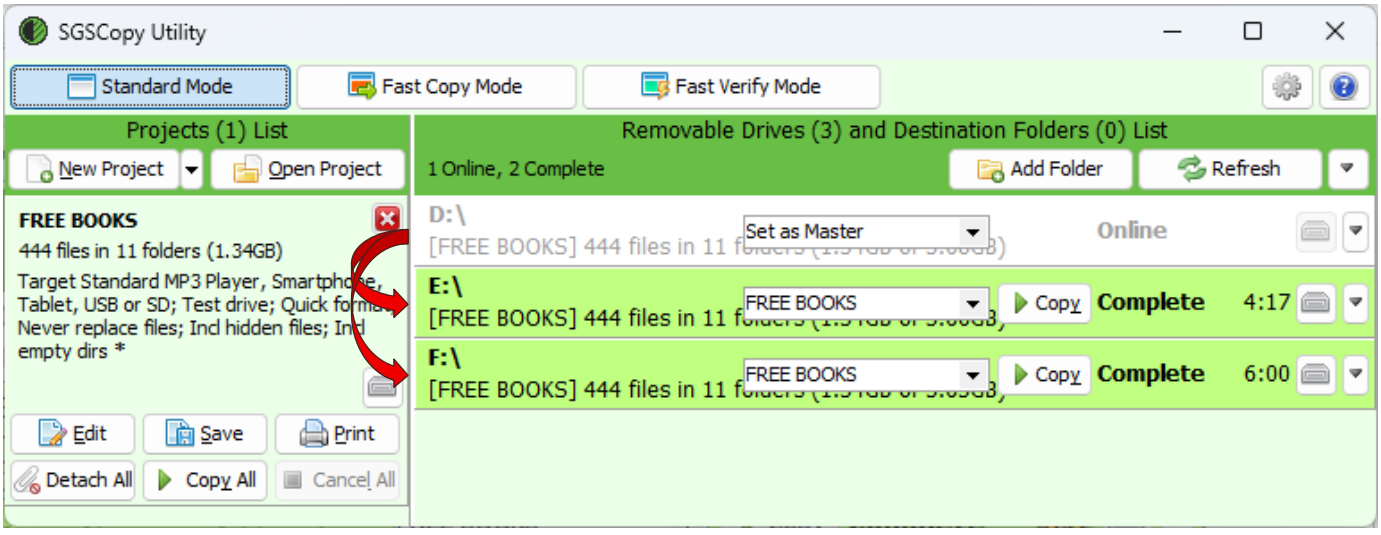
7. Click on the “Attach All” button to attach the target cards to the project.

8. Then click on “Copy All” to begin the duplication process…

9. Reply “Yes” to the file deletion warning since initialization was requested. The load process then begins…



10. Once completed, you have two additional microSD cards that are identical in content to the original!



Note:* *The difference in elapsed time is due to the quality of the cards. microSD cards can differ greatly from one another. In our example,* ***E:* *has a faster write speed than* ***F:*** *but they will perform identically when played.*

SGSCopy could be called “the poor man’s card duplicator”! Hardware duplicators can be very expensive (see here). All you need to leverage SGSCopy for card duplication is the following:

1. SGSCopy (free from SGS)
2. A (powered) USB hub with as many ports as the number of cards you wish to duplicate in a single batch
3. Enough* microSD card adapters for the number of cards you wish to duplicate at a time
4. The microSD cards

**Card adaptors can vary greatly in quality (and price) which directly impacts the efficiency of the copy.*

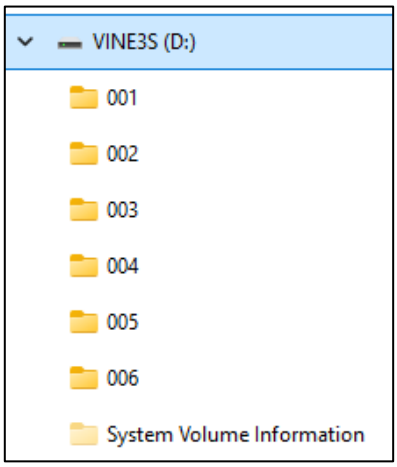
SGSCopy can either duplicate from a “master”, as shown in this example in the form of a master microSD card, another player or even a folder on disk. SGSCopy can also verify the copy afterwards. The entire procedure is quite fast as most microSD cards have high read/write rates

8: Appending audio to a player

In this example, we will append audio to the *existing* contents of a Vine 3 S player. This player already has six Subsection folders and we want to add one more.

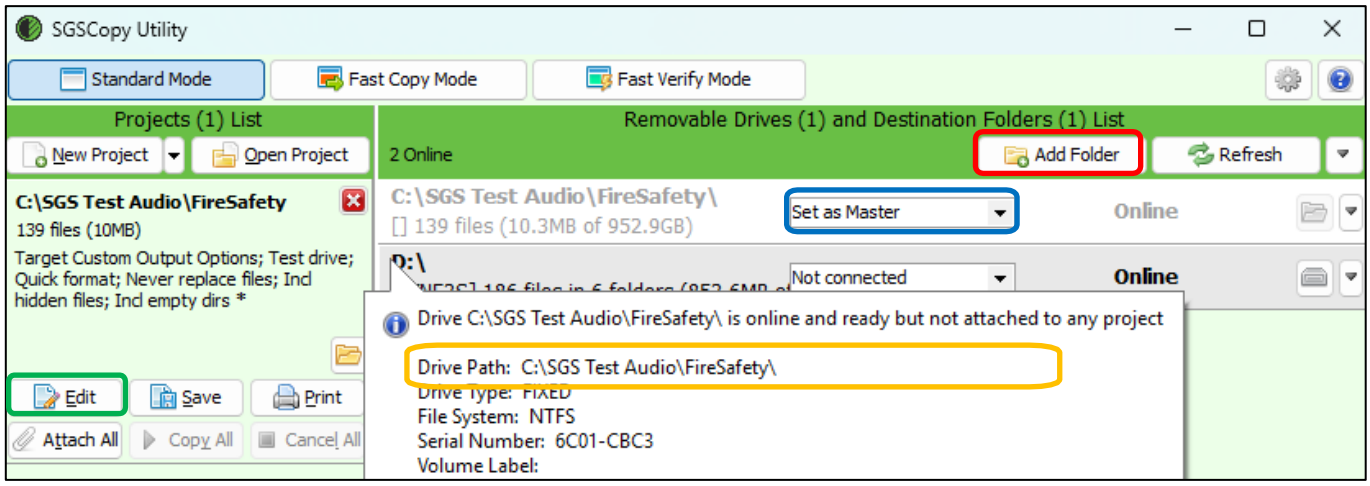
Appending data to an existing structure is not a problem. For an explanation regarding inserting data, see SGSCopy and SGS Players.

1. First, we connect our Vine 3 S player that contains the following folder structure:

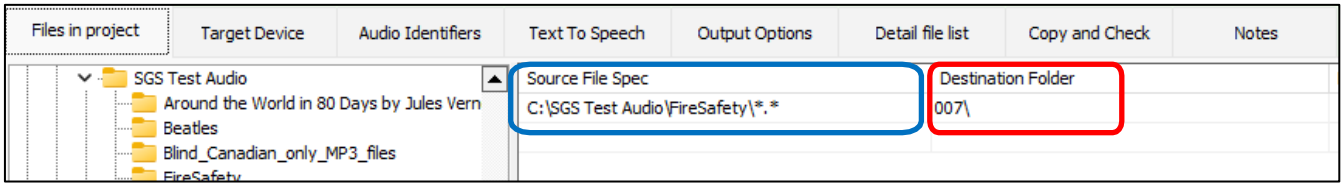


2. Next, we click on the "Add Folder" button below (circled in red) and navigate to the Subsection folder we want to add (not the parent folder – circled in orange) in a different audio message that we want to add to the player as Subsection "007".

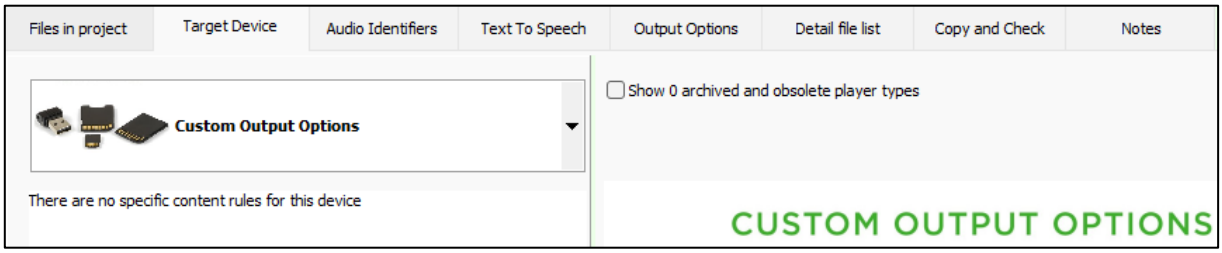
3. Then we change the setting of the folder to "Set as Master" (circled in blue). When we do that, SGSCopy automatically creates a project for us naming it with the path of the folder.
   See Hide drives Set as Master for details on how to hide this folder once it is "Set as Master".
   We need to make some changes in the project definition to end up with the desired results. Click on the "Edit" button (circled in green).



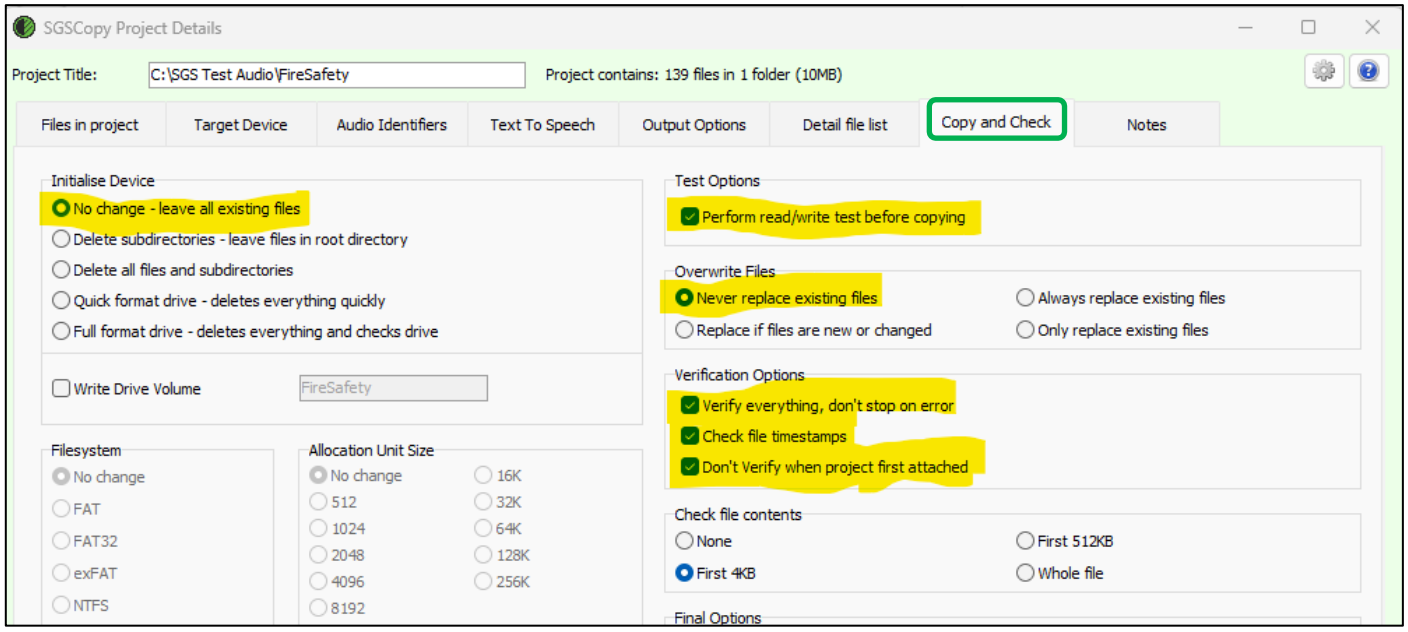
4. In the “Files in Project” tab below, we see that the value for “Source File Spec” (circled in blue) is correct (the “FireSafety” Subsection folder), but we need to change the destination folder to be “007” (circled in red) so that it will not overlay the 001 folder already present on the player.



5. Then we click on the “Target Device” tab and set the device to “Custom Output Options”.



6. Next, we click on the “Copy and Check” tab (circled in green) to make some important changes there as well.



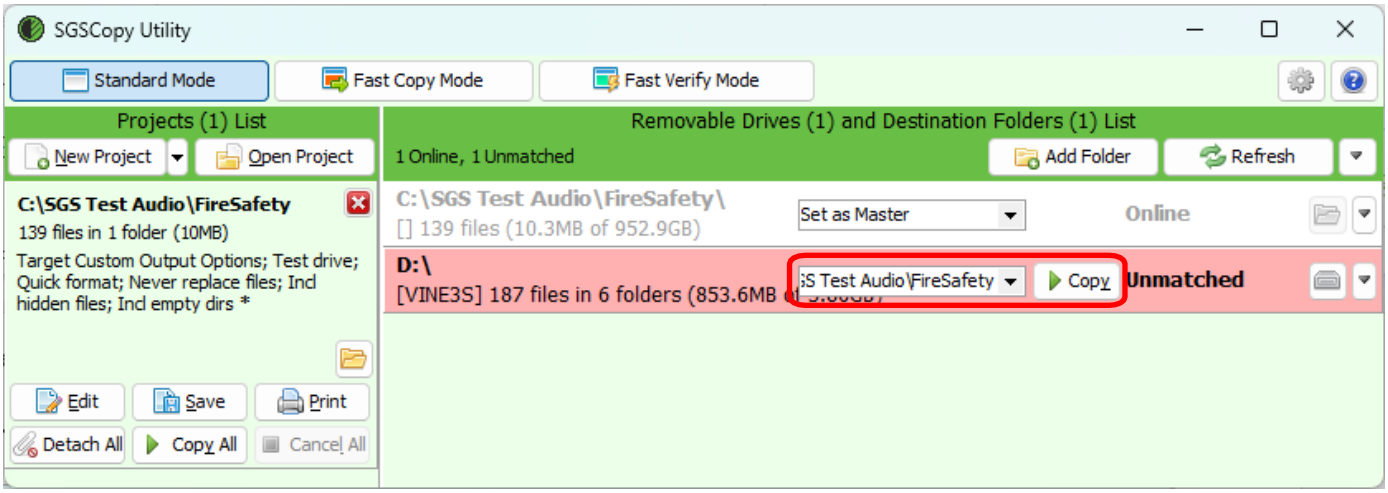
7. Here we need to set “Initialize Device” to “No change – leave all existing files” and “Overwrite Files” to “Never replace existing files” so that the current audio on the player will not be overwritten.

8. We’ll also set the following: read/write test, verify everything, checking the file timestamps and contents once the copy completes and “Don’t verify when project first attached” since there is no point to compare contents *before* the addition of the new Subsection folder.

9. Click on “OK” to save the changes and close the project dialog.

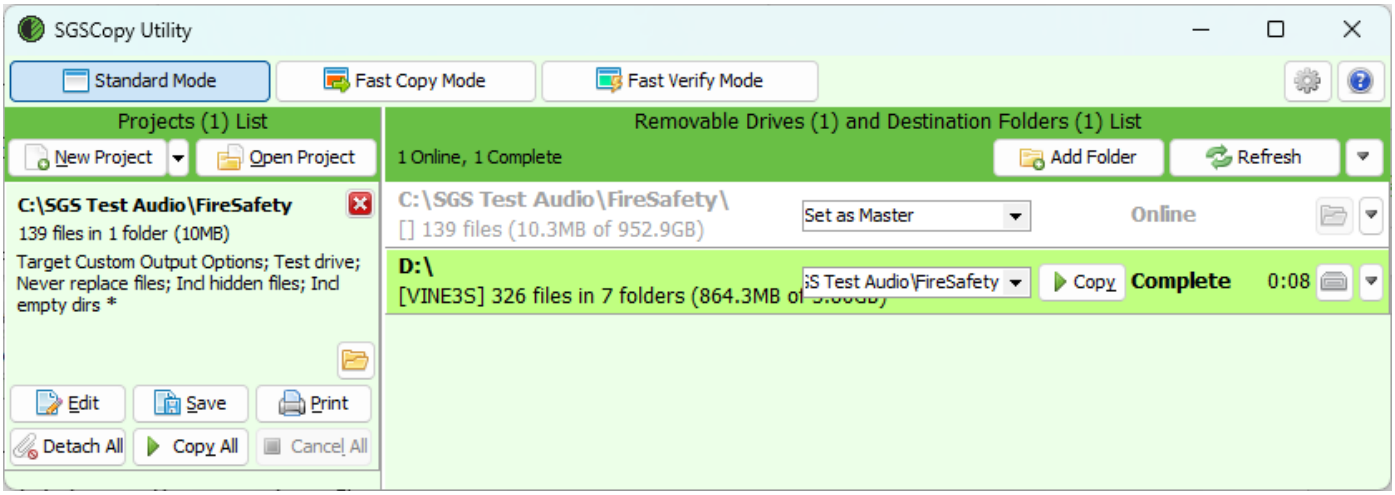
10. Now we assign the project as the source for the player in the drop-down list for the player (circled in red). In this case, we could just as easily use the "Attach All" button. Either way works the same.

11. Click on the "Copy" button (also circled in red) and the process begins.



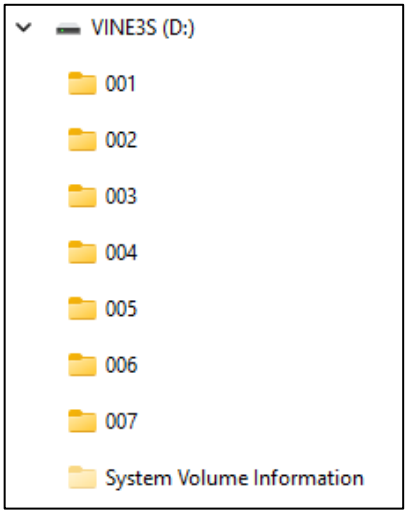
12. Since "No change – leave all existing files" was specified, SGSCopy performs the read/write test and immediately begins the copy phase.

13. Once complete, SGSCopy compares and reports "Complete" because it is smart enough to compare *only* the Subsection folder just added against the folder defined in the project.



SGSCopy's compare feature verifies that all the files in the project that were copied match the files on the target. If "No change" is specified under "Initialize Device", it ignores any other files that existed previously on the target player.

14. Looking more closely, we did indeed end up with the desired results! We created a hybrid message by adding a seventh Subsection folder to the player, without having to erase what was already there, and without having to create a temporary folder with the required the 7 folders and load from it.



15. After disconnecting the player and testing it, we see that the player navigates correctly between the Subsection folders.

For details on aggregating multiple sources into one, see Disk-to-disk copy.

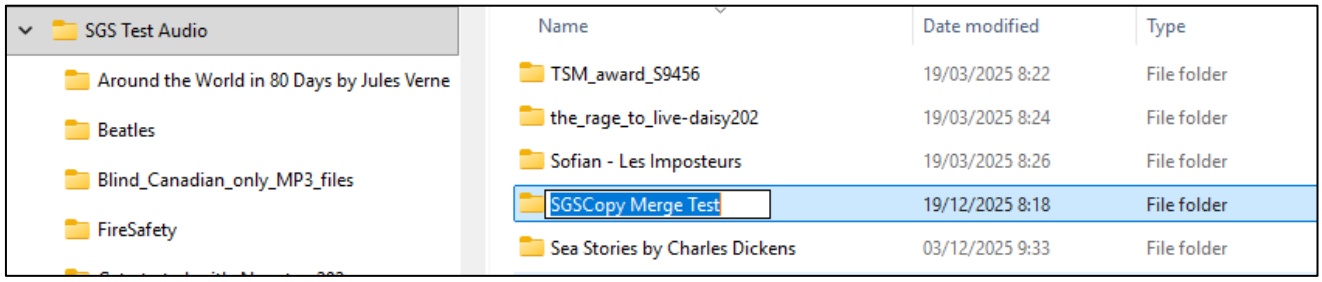
9: Disk-to-disk copy

In this example, we will create a new audio message on disk by merging folders from existing audio messages and multiple sources. This new audio message could be used as a source to populate other players or microSD cards.

SGSCopy has the ability to perform disk-to-disk copies. While it is true that we could do this manually, SGSCopy can…

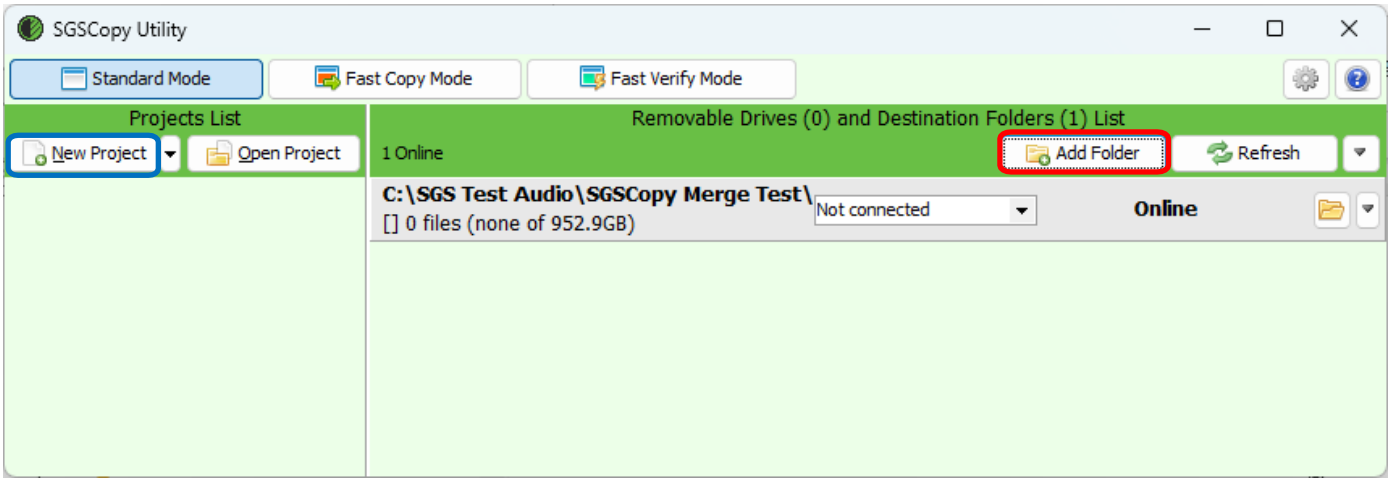
- Do it faster!
- Guarantee that the folders and files are copied in the correct order (very important for navigation and playback)
- Compare the source and target when done to verify they match
- Repeat the process exactly (as long we save the project)

1. First, we create the new folder on the hard disk in our messages folder. We'll call it "SGSCopy Merge Test".



2. Next, we open the new folder in SGSCopy by clicking the "Add Folder" button (circled in red).

3. Then, we create a new project to define the source folders and the project properties. Click on the "New Project" button (circled in blue).



4. Because we want to save this project for re-use, we'll give it a meaningful name (circled in red). When we save the project, the file name will default to the project name, which is best practice.

5. The new audio message we want to create will be comprised of 3 Subsection level folders from three different existing audio message folders.

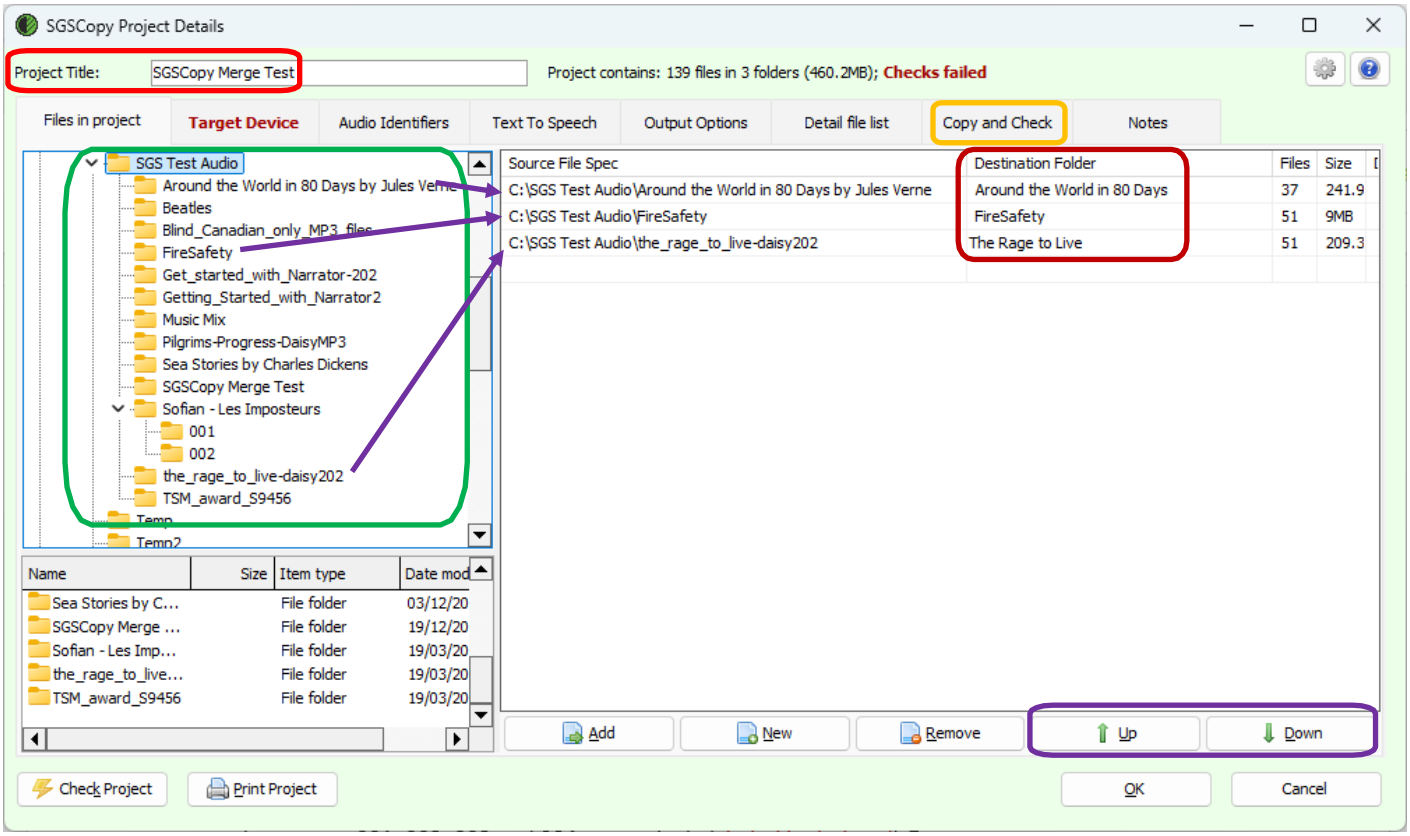
6. In the file explorer pane (circled in green), simply navigate to the desired folder, drag it to the right and drop it. By default, SGSCopy duplicates the source folder names in the "Destination Folder" field but we will change can change each of them a bit for better readability.

7. If, after adding the 3 source folders, they are not in the desired *playback* order (from top to bottom); we can rearrange the order by highlighting a line and clicking on the "Up" or "Down" buttons at the bottom of the screen (circled in purple).

   SGSCopy copies folders and files in the order they appear in the Source File Spec, from top to bottom – *not* necessarily the alphabetical order of the Destination Folder names.

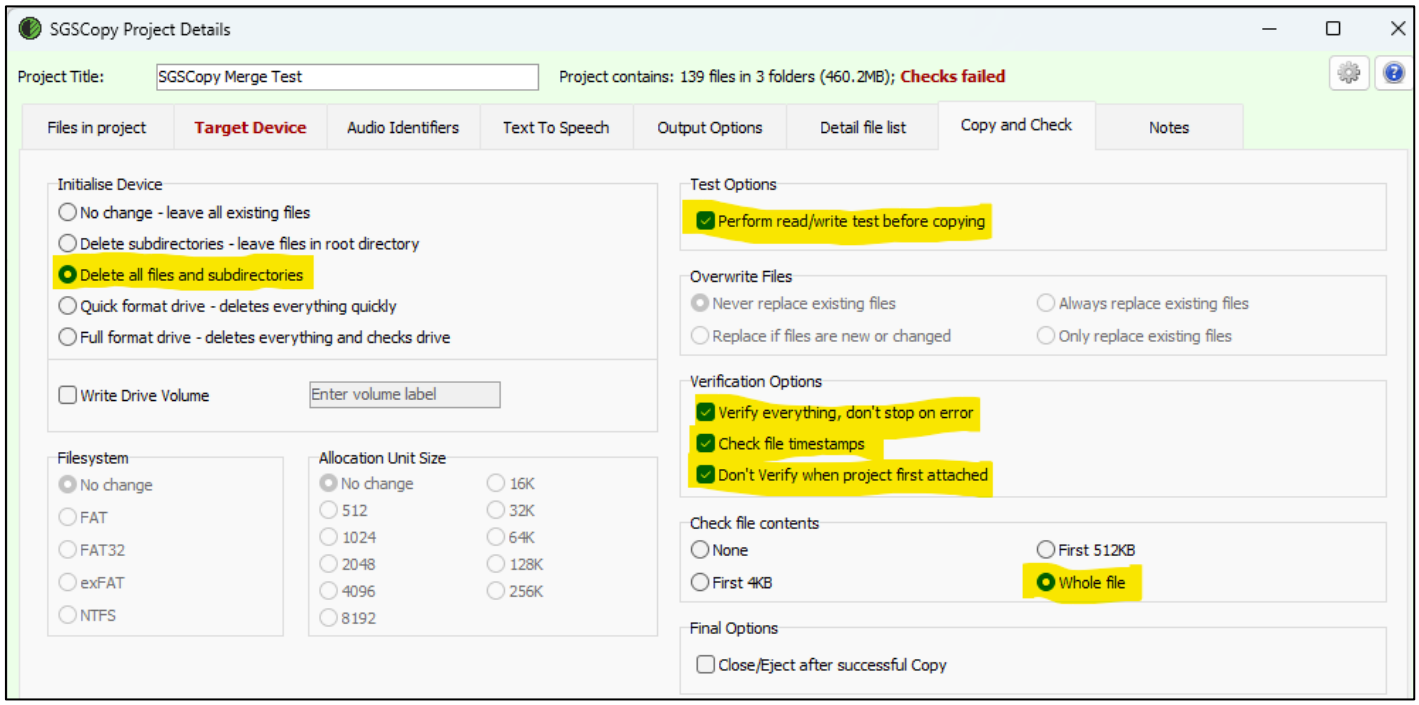
8. Once the folders are in the proper order, we change the Destination Folder field for each (circled in dark red).

9. Now we need to verify the remaining options. Click on the "Copy and Check" tab (circled in orange).

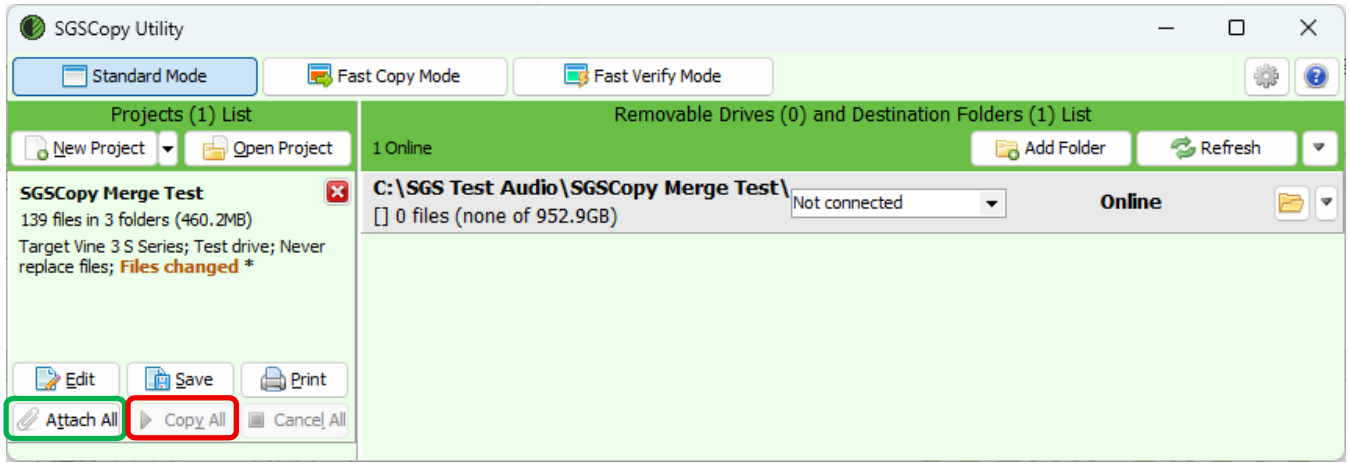


10. SGSCopy may not default to what we need, so let's review the "Copy and Check" tab.
    - Initialize Device: should be set to "Delete all files and subdirectories" to ensure the target folder is empty. We know it is empty now, but if we want to reuse this project in the future, it would be wise to clear the contents.
    - Perform read/write test before copying: is probably not necessary but it won't hurt and it is fast.
    - Verification Options: all three should be checked.
    - Check file contents: verify the copy afterwards. Whole file takes a bit longer but the most thorough check.

11. Nothing else should be necessary. Click "OK" to close the project details dialog. If you think you might this again, go ahead and "Save" the project at this time so that it won't be lost.



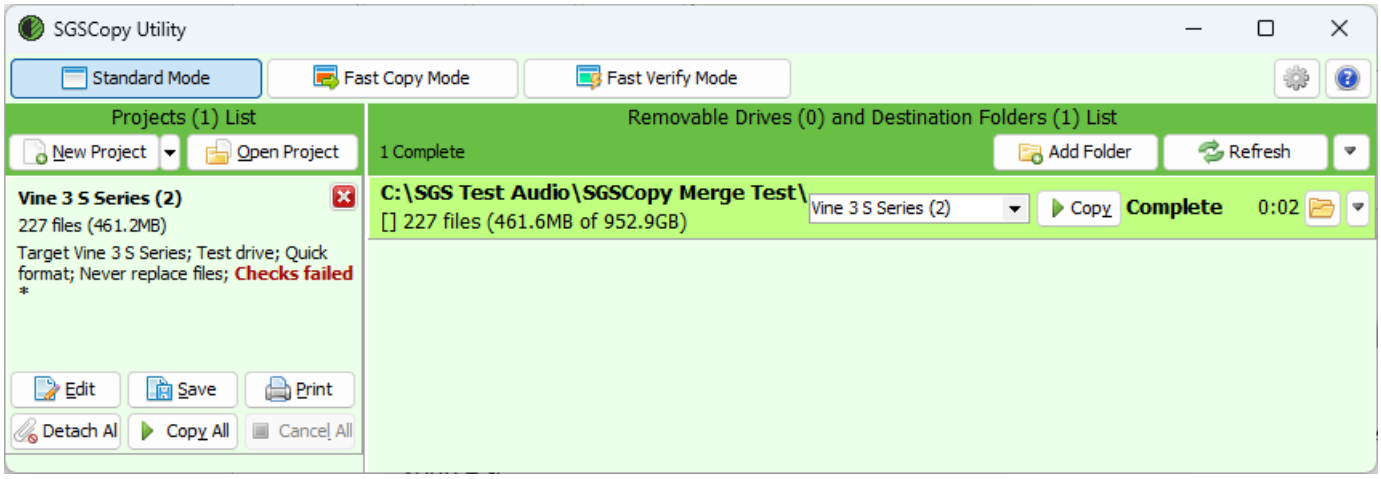
12. Attach the project to the folder by clicking on the "Attach All" button (circled in green), and then "Copy All" (circled in red) to begin the process. Because this is a disk-to-disk copy, it will be faster than typically loading a player.



13. When finished, SGSCopy performs the compare, and the line turns **green** to verify the target matches the source.

14. We can review the contents of our new message by clicking on the File Explorer button or from File Explorer itself.

15. This new message can now be used as a source for loading other SGS players.



10: File verification

While not very likely, it is indeed possible that files can be successfully copied but some of the contents of one or more of the files could be corrupted.

This is usually due to a very brief electrical "blip" between the computer and the player during the copy process. The interruption may not be significant enough to cause the file copy itself to fail but some of the data being transferred at that moment could become "scrambled".

Some of the causes could possibly be:

- If using a hub…
  - A problem with the USB cable that connects the computer to the hub
  - A problem with the hub itself or one of the ports on the hub
  - A problem with the power source the hub is plugged into
  - A problem with the power supply connected to the hub
  - Erratic/inconsistent power to the hub
- A problem with an individual USB cable connecting to the player
- A problem with certain sectors on the memory in the player
- A problem with the USB port on the computer the player is connected to
- A problem with the player's USB connector

Therefore, it is always a good idea to verify the condition of the files *after* being copied, and SGSCopy can help with that. Otherwise, you would never know if there were a corruption until much later.

SGS has *occasionally* encountered this phenomenon when programming batches of players concurrently. The types of problems we have seen were:

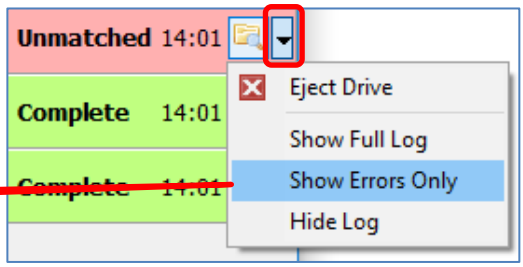
- File truncation
  - Playback did not begin from the very beginning of a file
  - Playback worked but suddenly terminated before the actual end
- File would not play at all on the player (it gets skipped)
- File played but was distorted or garbled

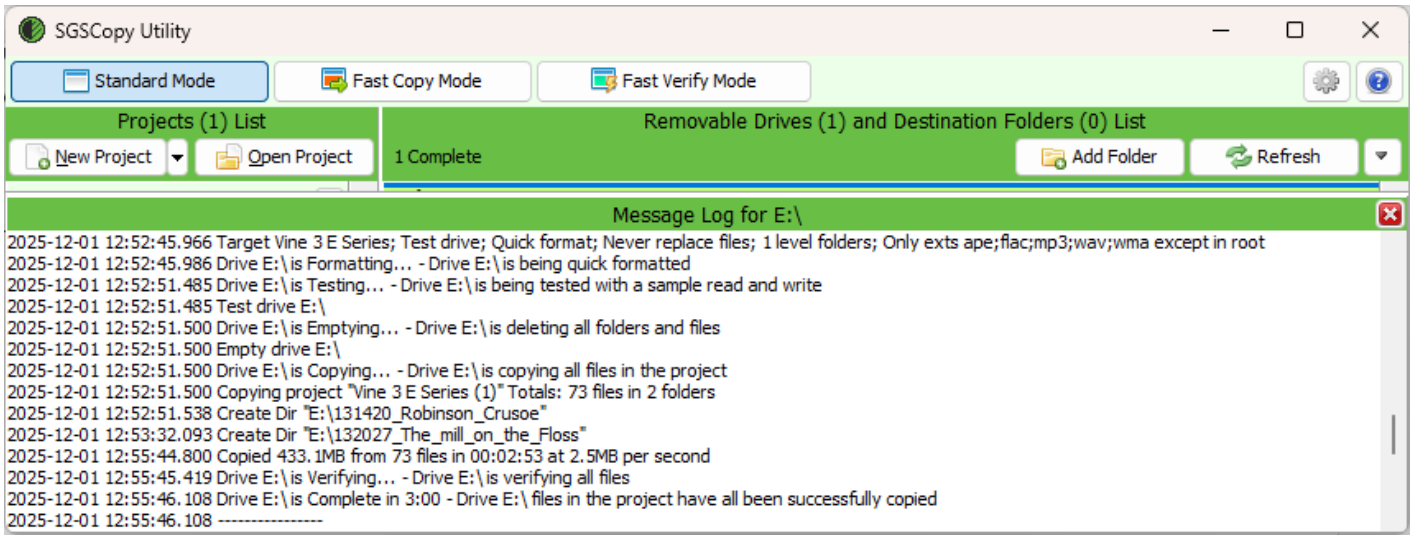
To be clear, this problem is *not* isolated to using SGSCopy. SGS has encountered the same problem when using other software and it could just as easily happen using copy/paste or drag/drop from Windows File Explorer (which is not recommended).

SGSCopy logs all activity for every player connected individually. The log persists *as long as* the player remains connected to the computer. To view the log, click on the drop list menu button (▾) at the very end of the player's line. It is also possible to write a permanent log file to each player. See here for details on how to do that or here to see a sample player log.

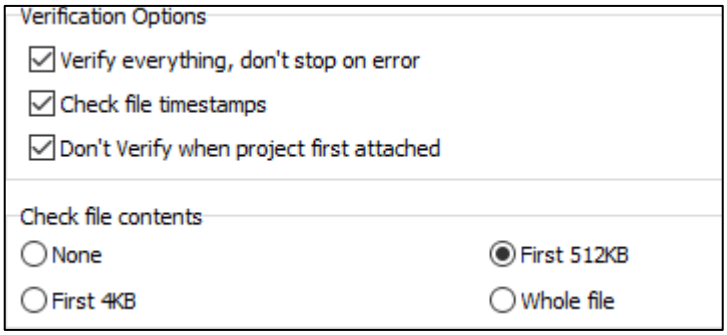
You will be presented with a small menu like that below. You can choose to view the entire log or only the errors. Because there are many messages logged, when problems are reported, it is easier to view the condensed version with only the important messages and any errors.

Choose "Show Errors Only".





Let's review the verification options that SGSCopy offers. They are on the "Copy and Check" tab of the project:



Screen snippet from the Copy and Check tab

Please note that regardless of the options above, SGSCopy will always perform a rudimentary verification by comparing the file sizes and number of folders and files.

Verify everything, don't stop on error: If not checked, SGSCopy will halt the verification once an error is encountered. If there are errors, it is recommended to detect all of them first, and then take steps for resolution.

Check file timestamps: If checked, SGSCopy will make sure that the file timestamps on the target match those of the source files (within 2 seconds of each other).

Don't verify when project first attached: By default, SGSCopy will perform the verification defined in the project when a player is attached to a project (*before* copy) and *after* the copy process occurs. If you don't want the pre-verification to take place, check this option. There is no point to pre-verification if the project is configured to format or delete the current contents.

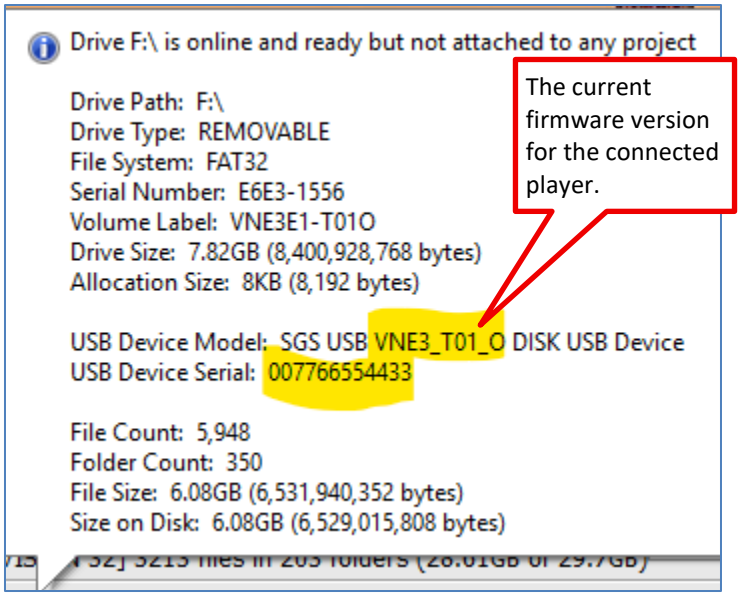
Check file contents: You may choose None, First 4KB, First 512KB or Whole file. The larger the sampling size the longer the verification will take. For peace of mind, it is worth it to take a little extra time to know for sure that the files copied match the source. See Hash method for verification for details on the various checksum methods available for file comparison.

11: USB Device information display

For players that have USB serial numbers defined, SGSCopy will display that for you. Also, if known, the USB Device Model will also be displayed.

This option is controlled by a setting on the Application Settings screen.

When you mouse-over a connected player on the Main Screen, the device details are displayed in a pop-up balloon (right). The USB device information, if defined, appears along with other information.



Solar Grove has also included the current firmware version in the USB Device Model ("Friendly Name") string (highlighted).
In addition to the feature of voicing the firmware revision that most of our players have, this makes for greater visibility to our customers.

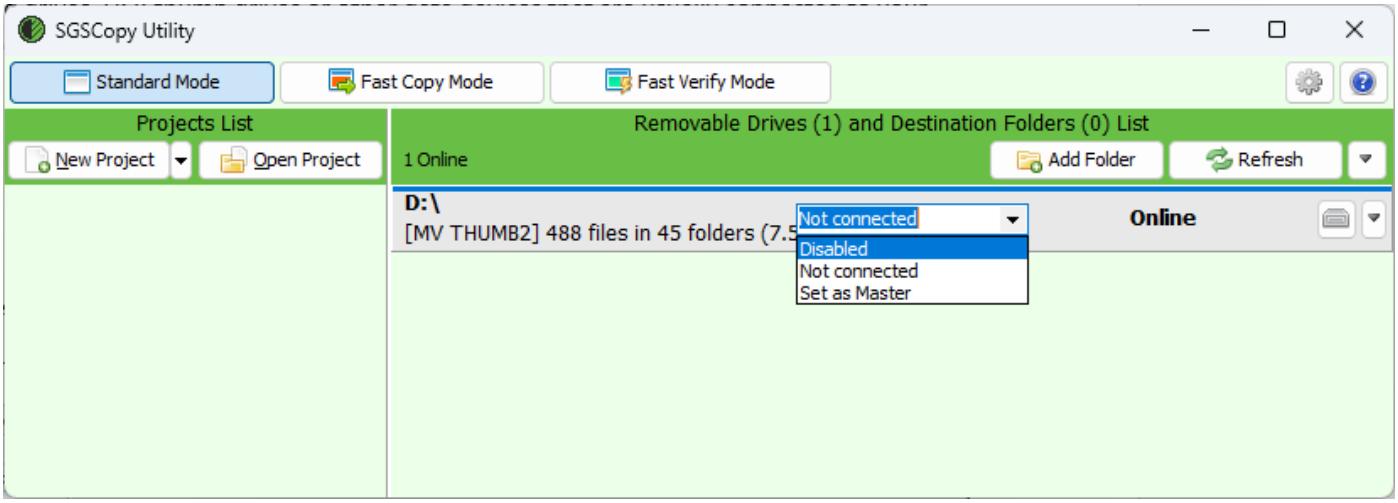
13: Teaching SGSCopy to ignore devices

If you have external hard drives, USB thumb drives or other data devices that are usually connected to your computer, you can "teach" SGSCopy to always ignore those devices when the program is active and thus prevent accidental access when loading players.

Here is how:

1. Start SGSCopy with *only* those devices connected to your computer (i.e., no other players or devices).

2. In the drop-list for each of those devices, change the setting to "Disabled".



3. Close SGSCopy and restart it. The drives still show in the device list, but they are grayed out and set to "Disabled". **If** these devices remain connected to the same USB ports, SGSCopy will remember them as "Disabled" and not touch them whenever players/devices are attached to a project.

4. If you also use the option to hide disabled and absent drives, the drive will be "hidden" the next time SGSCopy is started.

5. If you detach the device and later reconnect it, you will need to teach SGSCopy again to ignore it.

14: Comparing the contents of 2 players

What if we have two players that we *think* have identical contents but are not sure? The folder and file counts seem to match, as well as the data size, but that is not always enough to prove it. SGCopy can help with this!

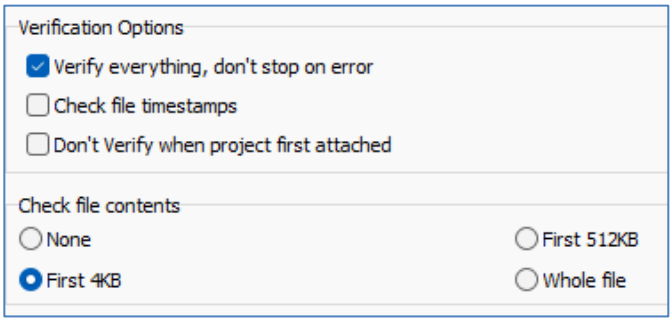
1. Connect both players to the computer.

2. Change one of them to be the Master (Set as Master) in the drop list of the player line. If you are more confident about one of them, choose that one as your "Master"; otherwise, it really doesn't matter which.

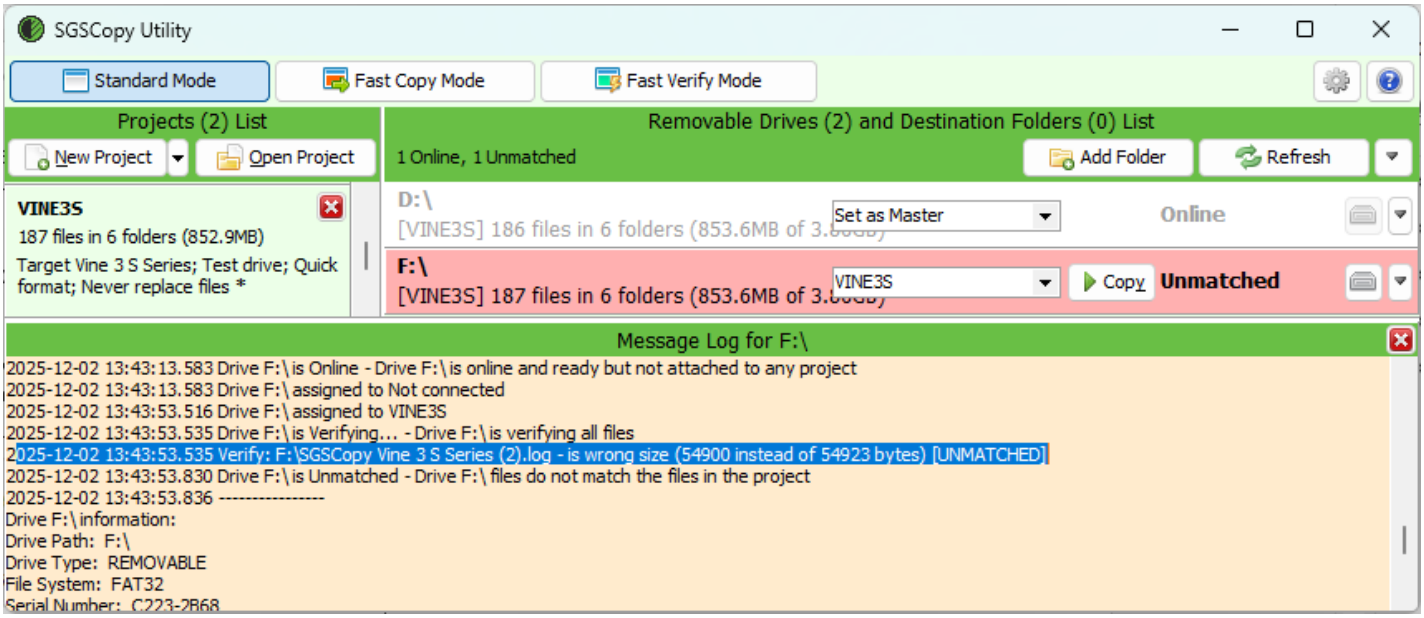
3. Edit the project that is created.

4. On the "Copy and Check" tab, make sure **Verification Options** are set exactly as in the example to the right. Select a "Check File Contents" value of *at least* 4K and then close the dialog with OK.

5. Click the "Attach All" button. SGSCopy will immediately begin to compare.



6. Once the pre-verification finishes it will either show as "Complete" (green) if they match or "Unmatched" (red) if not. Using the "Show Errors Only" option for drive F:, the unmatched file is identified.



7. To create this illustration, the only mismatch is the player log which makes sense since specifics on each individual player are logged and they would be different. This error can be ignored. No other content files are different, so these 2 players contain essentially the same content.

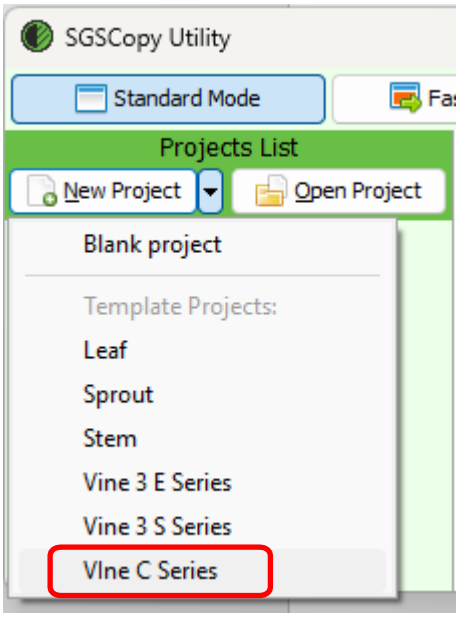
See also Fast Verify Mode for a method of checking an unlimited number players in one session!

15: Flattening a folder structure

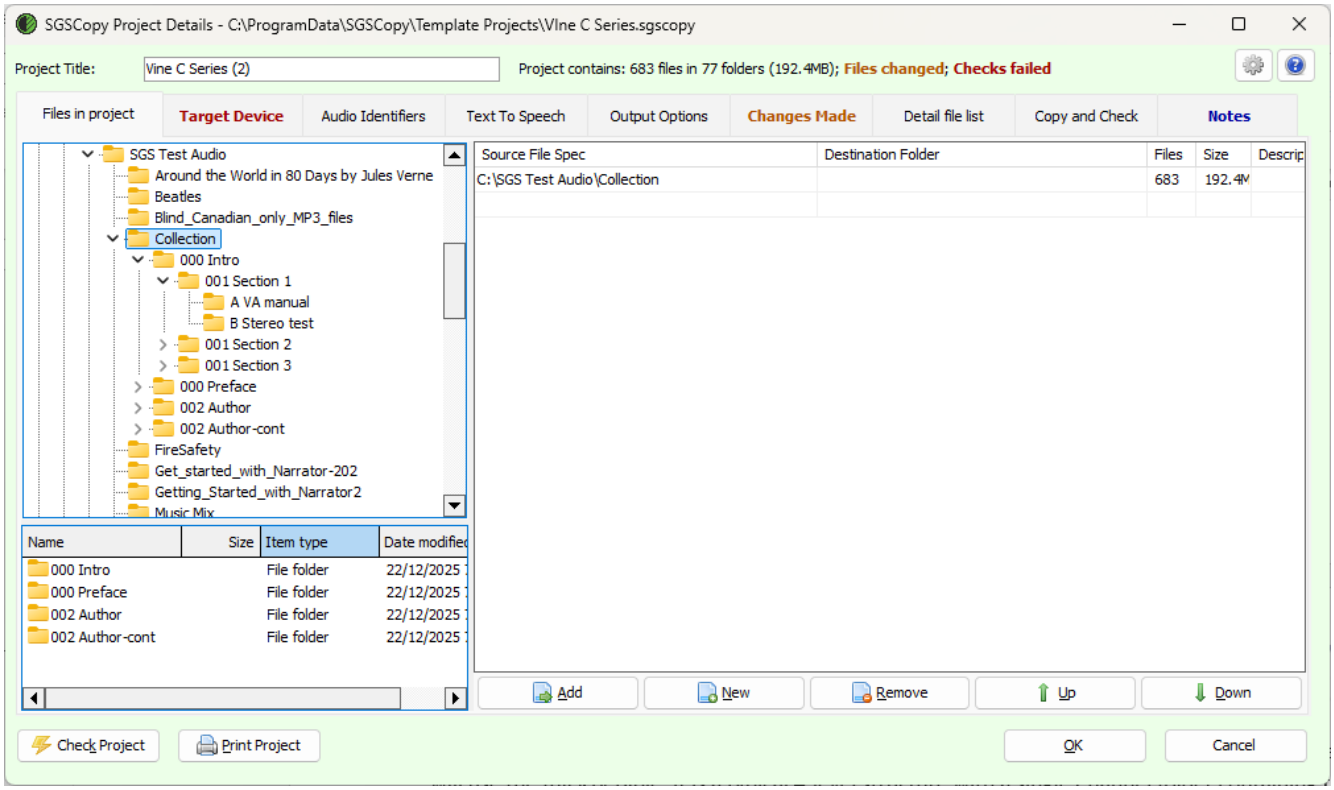
So, what do you do when you have an existing 3 or 4-level audio structure and would like to use it on a player like the Vine C1 or Vine 3 C2 that requires a 2-level structure (Subsections only)?

Typically, you would have to restructure the audio *manually,* make a second copy of it somewhere on your hard drive and then copy that new structure to the player. Fortunately, SGSCopy can do that for you *automatically* and you won't have to change anything in your original audio structure! Here is how:

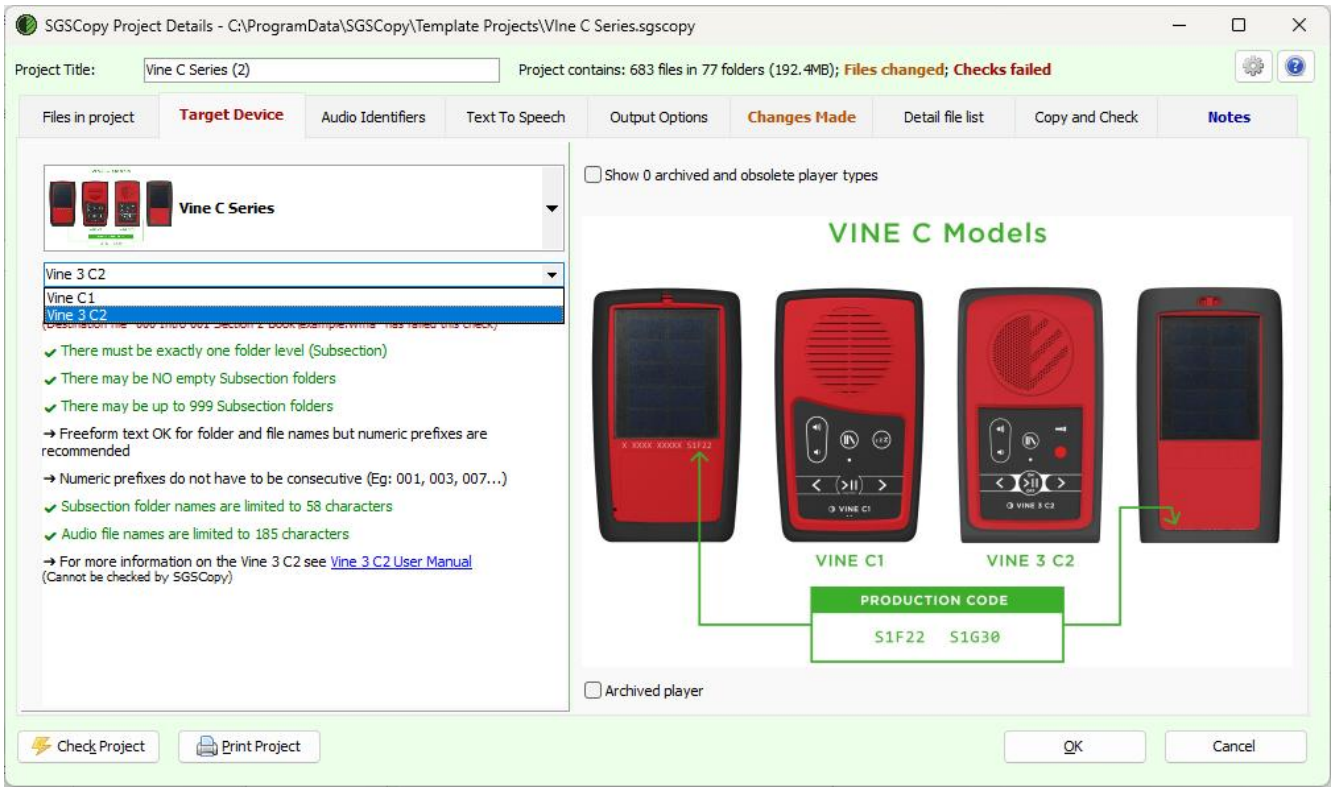
1. Open the Template Project for Vine C Series:



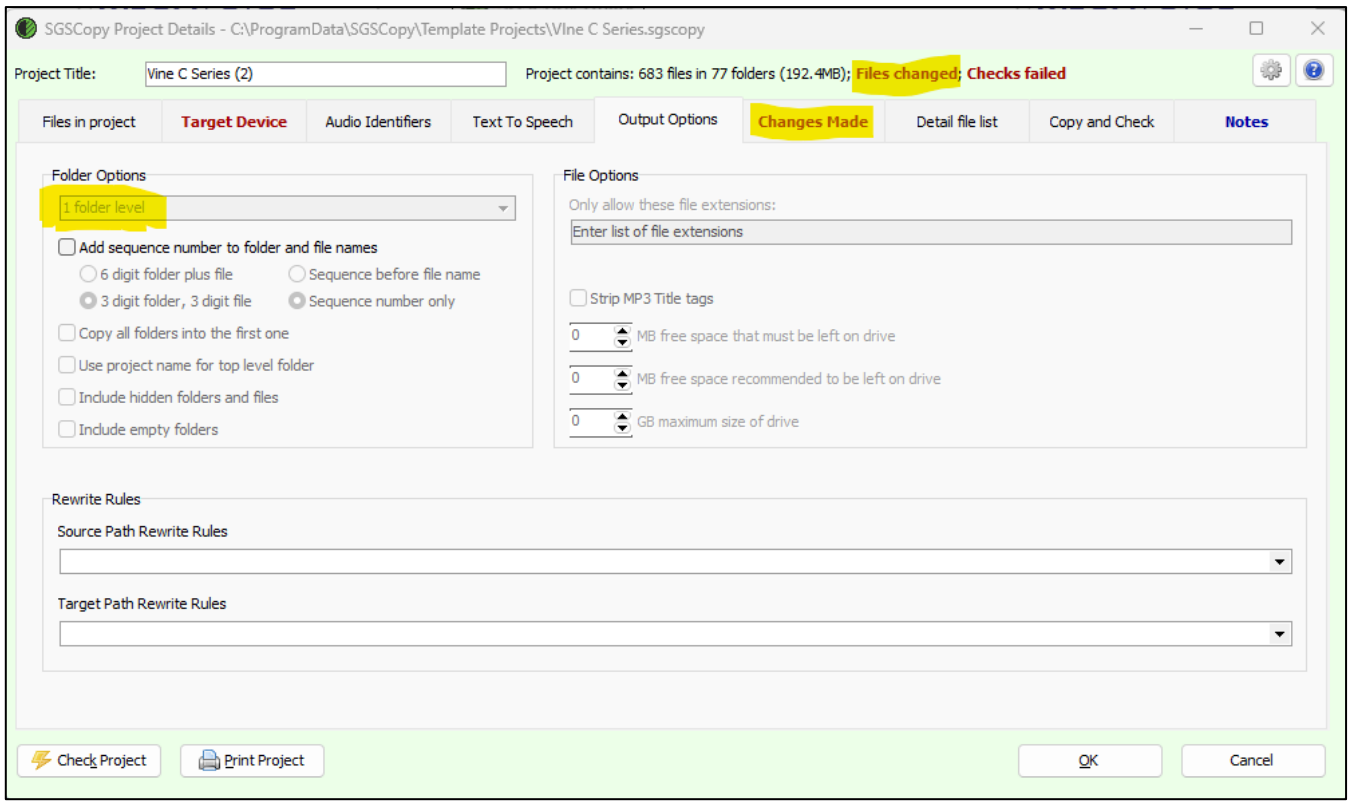
2. On the “Files in project” tab, navigate to audio folder you want to load to the player. For our example, we will use a 4-level Collection folder. It contains 4 Section folders where each of those contain Subsection folders. Within each Subsection are the related files.



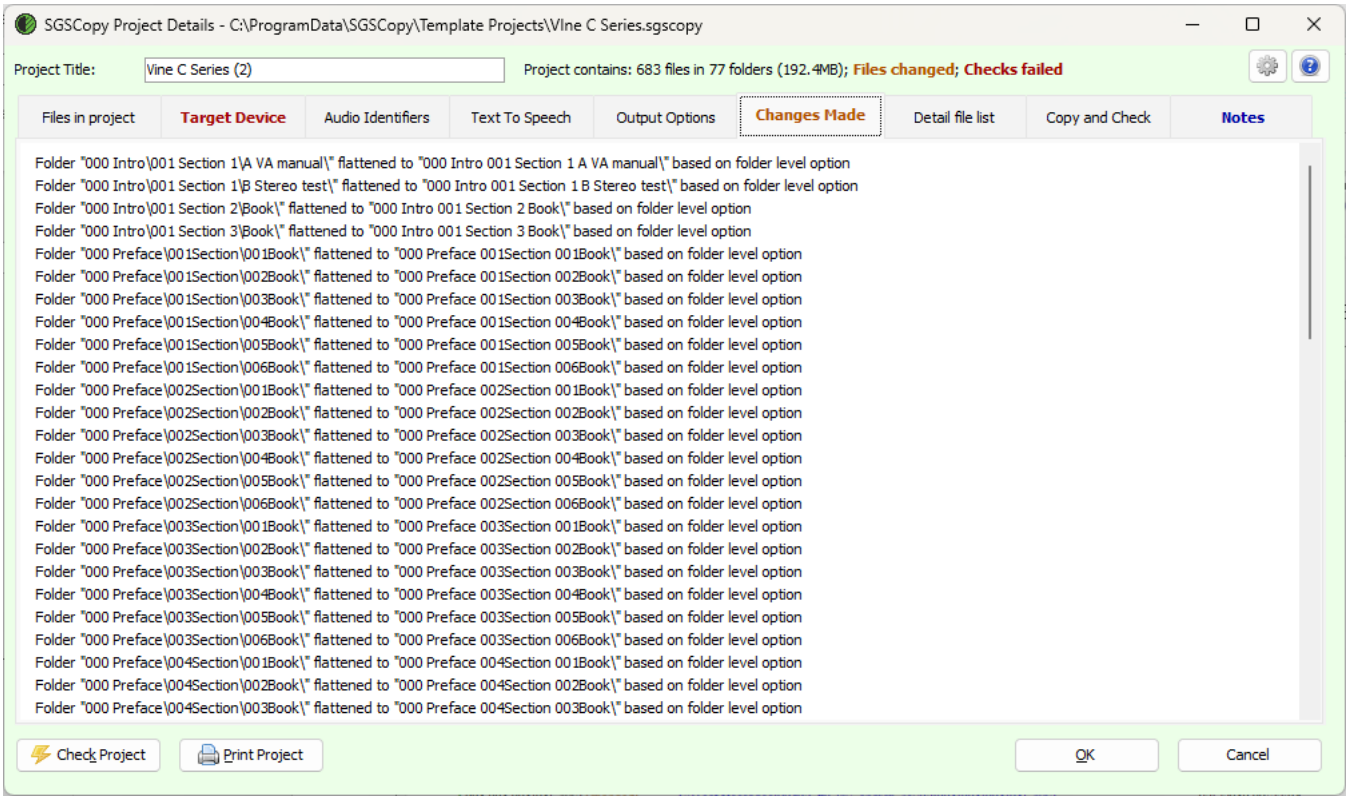
3. On the “Target Device” tab choose the desired Vine C Model. Note that SGSCopy has already scanned the selected folder and applied the rules. There is at least 1 file that is unsupported.



4. Now go to the Output Options tab. Note that the Folder Options are automatically set to “1 folder level”. Note also that the notification **Files changed** appears at the top of the screen along with the **Changes Made** tab. This is because SGSCopy automatically compressed the 3 folder levels down to 1 folder level.

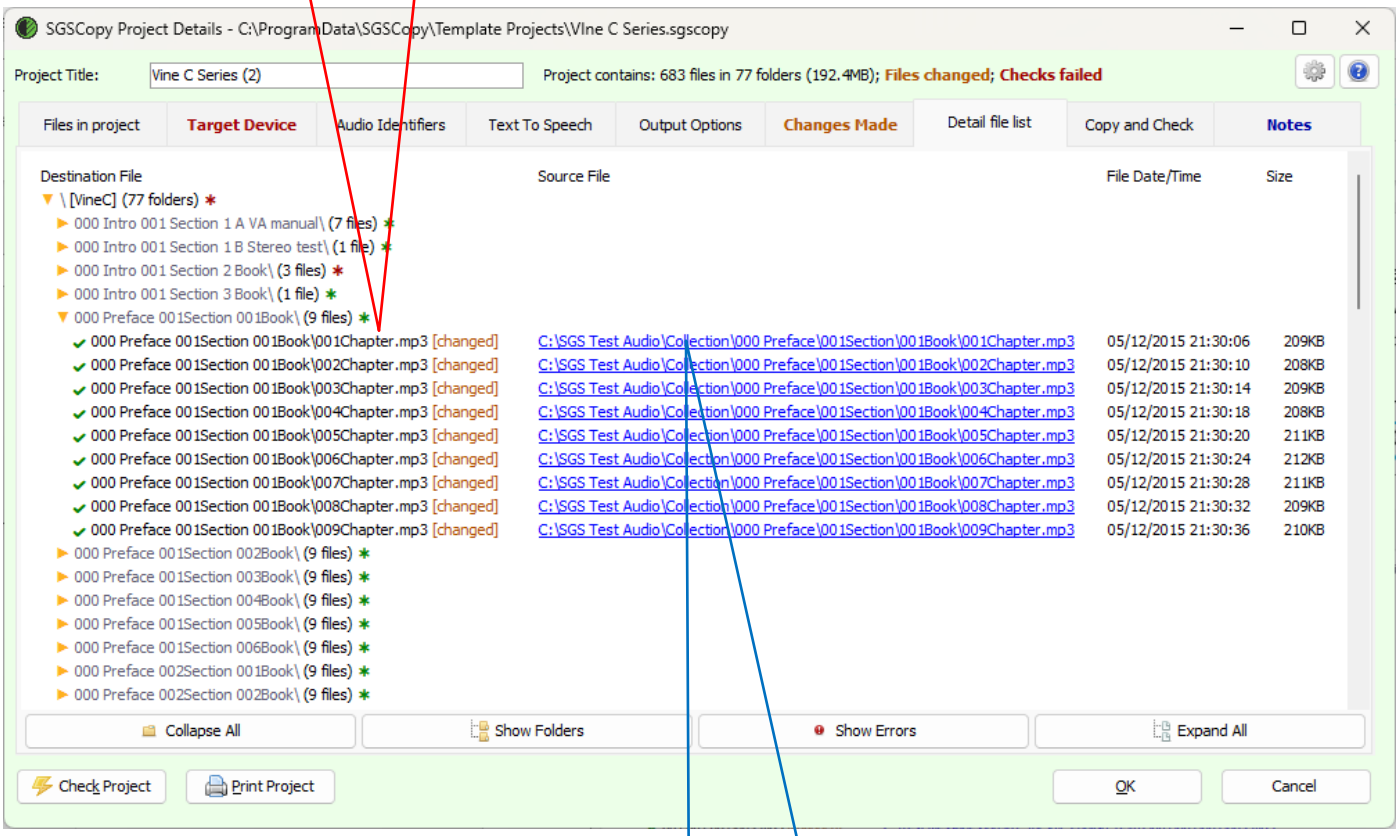


5. The “Changes Made” tab further explains how SGSCopy flattened each existing folder to comply to the rule.



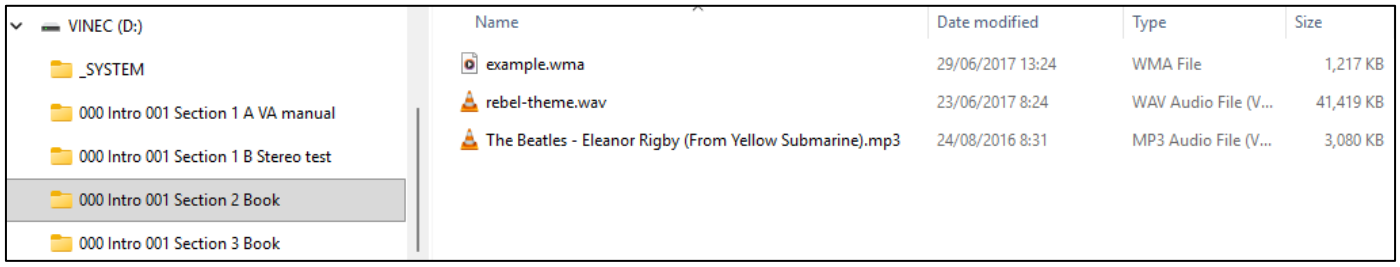
6. To see what SGSCopy will actually do, go to the "Detail file list" tab. Here you can preview the output to the player before the actual copy occurs. In this dialog, each file in the selected source with its full path is displayed and how it will appear on the target player. You can see how SGSCopy will compress the folders.

   SGSCopy generates the new folder name from the original names so you can still identify it.
   The new name "\000 Preface 001Section 001Book\" (1 level) …



   …was derived from the original "\000 Preface\001Section\001Book\" folder (3 levels).

7. After making appropriate settings on the "Copy and Check" tab, we can attach the player to the project and execute the copy process. A quick view of the target player contents afterwards shows SGSCopy delivered what it promised! There is a single level of folders with each containing their corresponding audio files. The Vine 3 C2 plays the folder and files in proper order!



17: Overcoming drive letter limitation with mapped folders

Using "mapped folders" (mount points) with SGSCopy is *briefly* outlined below to make our users aware.

When you connect players to a computer in the conventional way, Windows automatically assigns the device a "drive letter". On most computers, A, B, C and D are typically already reserved. There could also be other drive letters reserved per the installed hardware on the computer as well as mapped network drives.

In the *best case*, there are 22 (26 – 4) letters available for connected USB devices. Once all the letters in the alphabet are assigned, no additional devices can be recognized by SGSCopy (i.e. Windows).

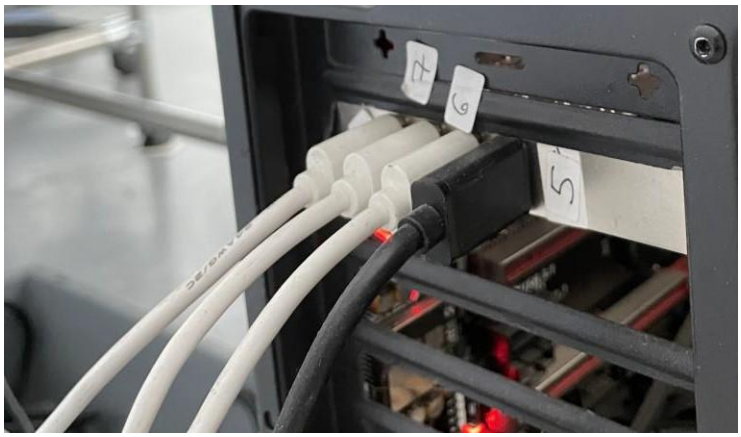
When there is a need to load large batches of players (assuming the computer has sufficient CPU power), this drive letter limitation poses a real problem. MegaVoice encountered this limitation in our production lab and overcame it by using a Windows convention for mapping USB ports to folders on the hard drive.

Since SGSCopy can copy to either USB devices or folders on disk, this is an ideal solution.
The SGS lab has one computer set up for 160 devices (10 hubs x 16 ports) and another for 96 devices (6 hubs x 16 ports)! To achieve this, hardware changes were required to the computer along with significant setup.

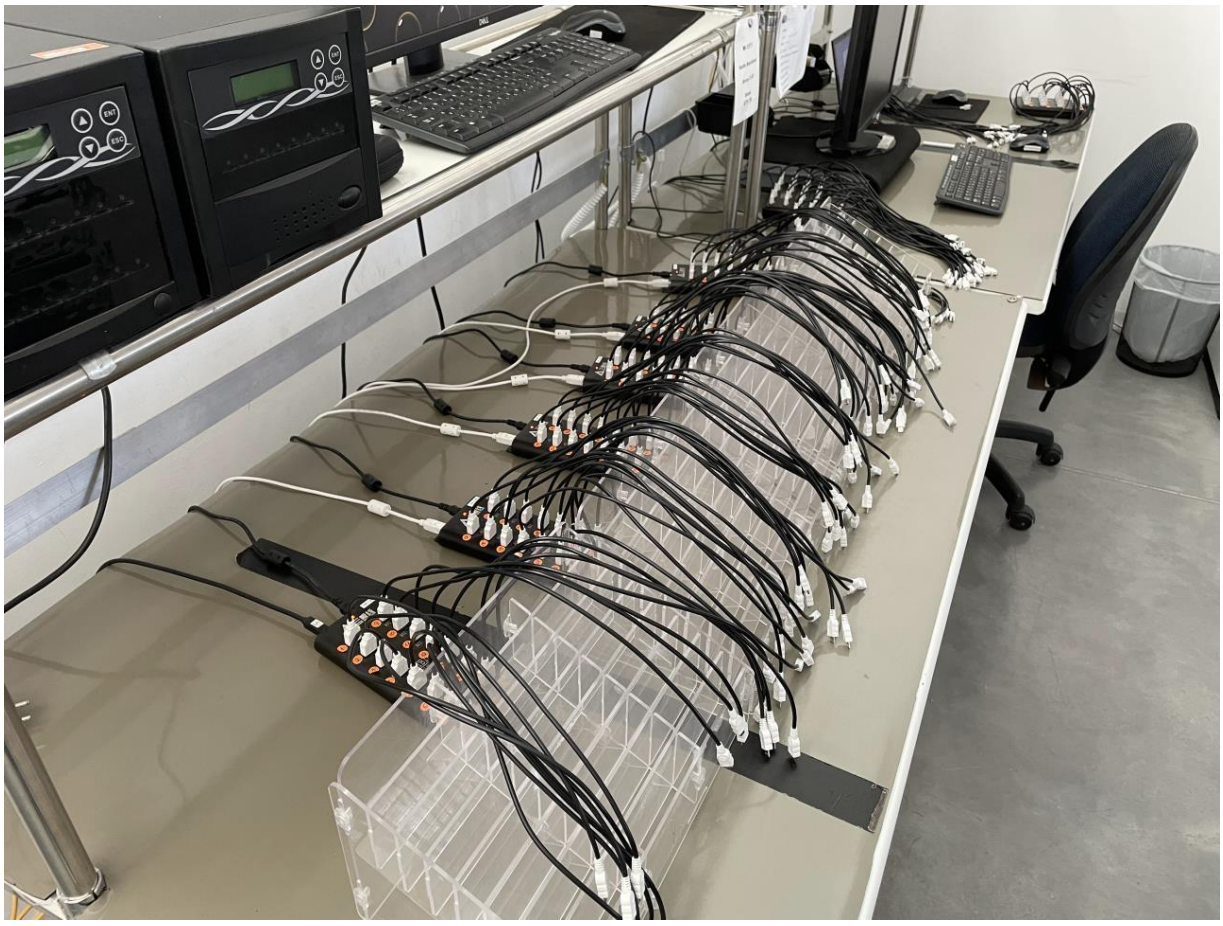
1. All available drive letters must be "blocked" by making dummy assignments so that Windows cannot assign a device to a drive letter when connected. This is easily accomplished using a start-up script.
2. Depending on the configuration of the computer, the USB host controller imposes a limitation for how many USB connections it can support. To overcome this limitation, a PCI Express USB expansion card must be added to the computer. If a multi-port card is chosen, it must be of the type where each USB port has its own separate USB controller (what SGS uses). Alternatively, multiple single-port cards may be used.
3. If any hardware changes are made, make sure the drivers for those devices are up-to-date.
4. Multi-port powered USB hubs must be used. SGS uses 16-port hubs.
5. The ports on all the hubs must be numbered consecutively from one to the maximum number being used.
6. A collection of folders, each with a number from one to the maximum must be defined on the hard drive.
7. One at a time, a target device must be connected to the hub's USB port beginning with the first. While connected, the Windows Disk Management tool must be used to do the following:
    a. Remove the assigned drive letter (if any)
    b. Assign the matching numbered folder to the port/device and save the definition
    c. i.e., port #1 is assigned to folder #1, port #2 is assigned to folder #2, and so on
8. Windows stores special system files in each folder so that it remembers these mappings.
9. Once the mapping is completed, from SGSCopy the target devices will be the mapped folders.
10. Connect all devices/players to the hubs beginning from port #1 and verify connectivity by the folder icons.
11. Depending on how many devices/players are connected, use the "Add folder" button to select (using multi-select) all the required folders, i.e., if you have 30 players connected select only folders 1 – 30.
12. Configure your project and attach it to the list of folders. Perform the typical copy process.
13. What happens during the copy is that the data "passes through" the mapped folder to the associated player. Nothing is actually written to the folder on disk, so available disk space is not a concern.

14. SGSCopy is able to perform a “format” on the devices mapped to the folders. Just make sure that “Quick Format” is specified in your project.

Close-up view of the StarTech PCI card (what SGS uses) from the back of the computer, with 4 different hubs attached to each of the USB connections. Each USB port is managed by a separate USB controller (see details in Windows Device Manager) providing maximum USB throughput.



One of the SGS computers is configured to use 96 mapped folders (6 hubs with 16 ports each). Each hub is connected to a USB port managed by a separate USB controller internally. The 6 USB ports in use are (2) from the motherboard and (4) from the PCI Express card shown above.
Notice the plastic “hives” in the foreground that hold the players upright for easy connection while keeping them separated for reduced chance of disturbance during loading which may lead to a disconnect.

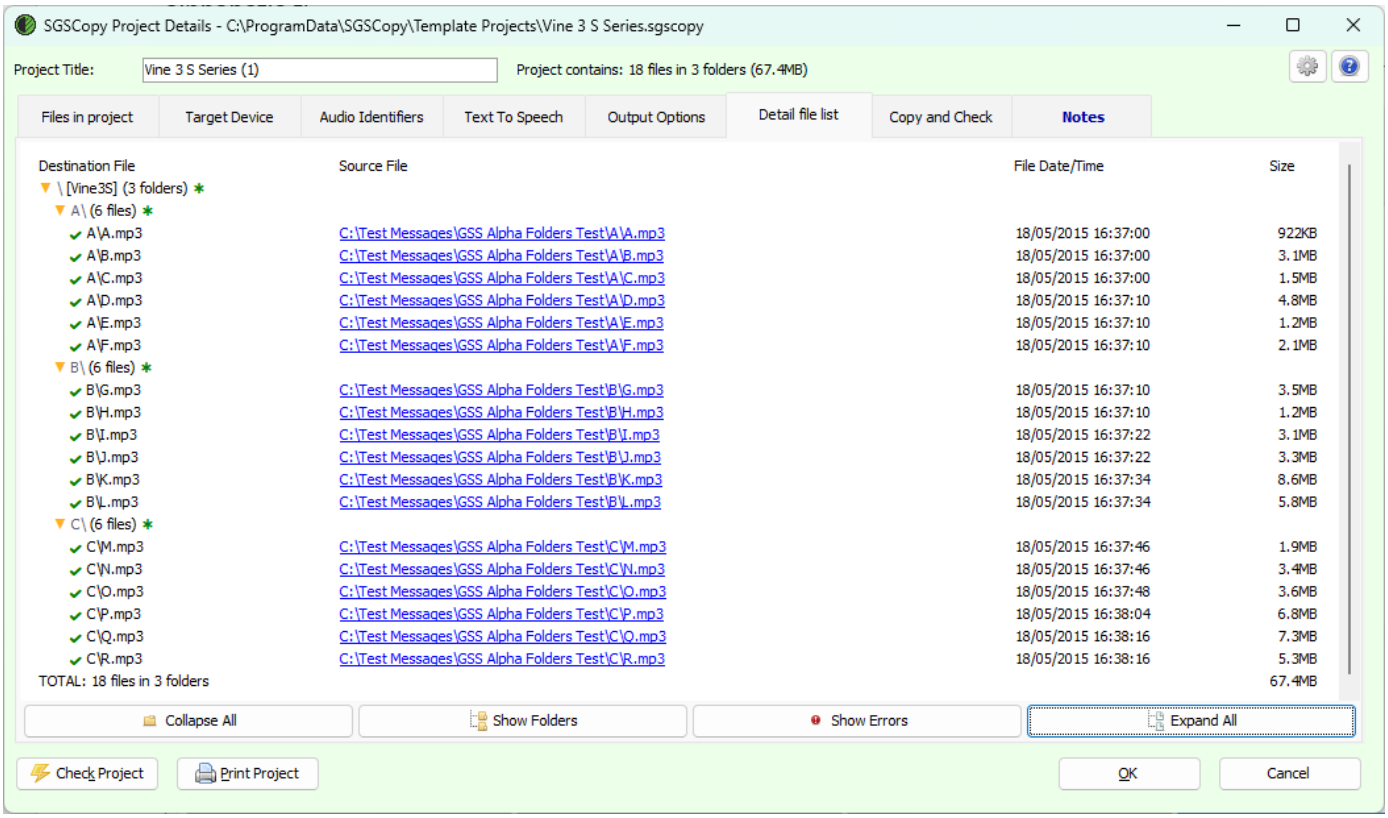


18: Using automated sequence numbers

SGSCopy offers a feature where it can append or replace sequence numbers to both folder and file names. This can be quite a handy tool if you have audio where the folders and/or file names are completely free text, or when there are existing sequence numbers, but not begin in desired playback order.

SGSCopy can do this for you automatically and without modification of the original audio message!

Consider the following audio collection that contains 3 Subsection folders where both the folder and file names are alphabetic.



Let's see how SGSCopy can modify these folder and file names with sequence numbers.

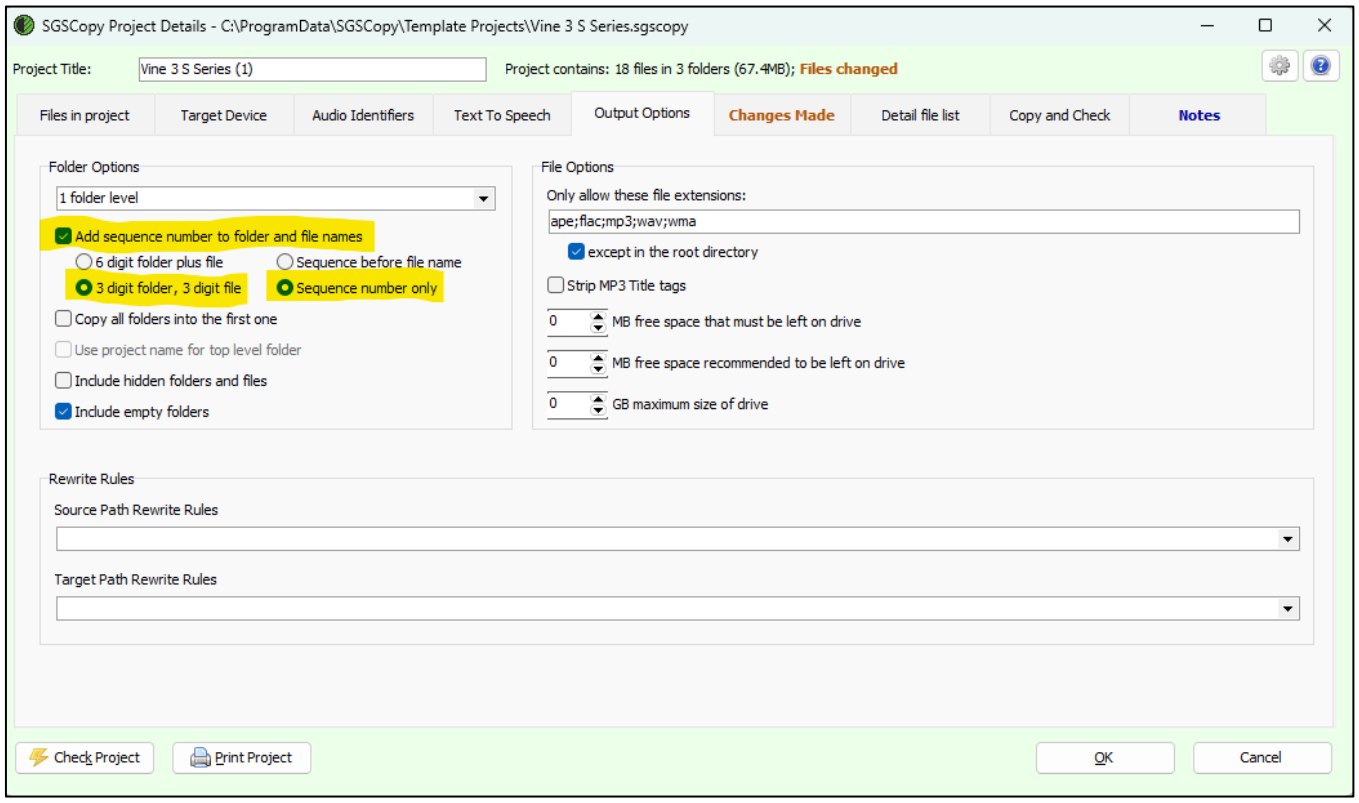
SGSCopy offers several sequence number options in the **Folder Options** section of the "Output Options" tab. After choosing your specific target device, *some* of the options on the bottom of the screen become enabled according to the device.

If you wish to change any of those options, choose the device "Custom Output Options", where there are no restrictions, and all settings may be modified.

In this example, we are using a Vine 3 S as our target device. To set the sequence number options, check the box "Add sequence number to folder and file names".

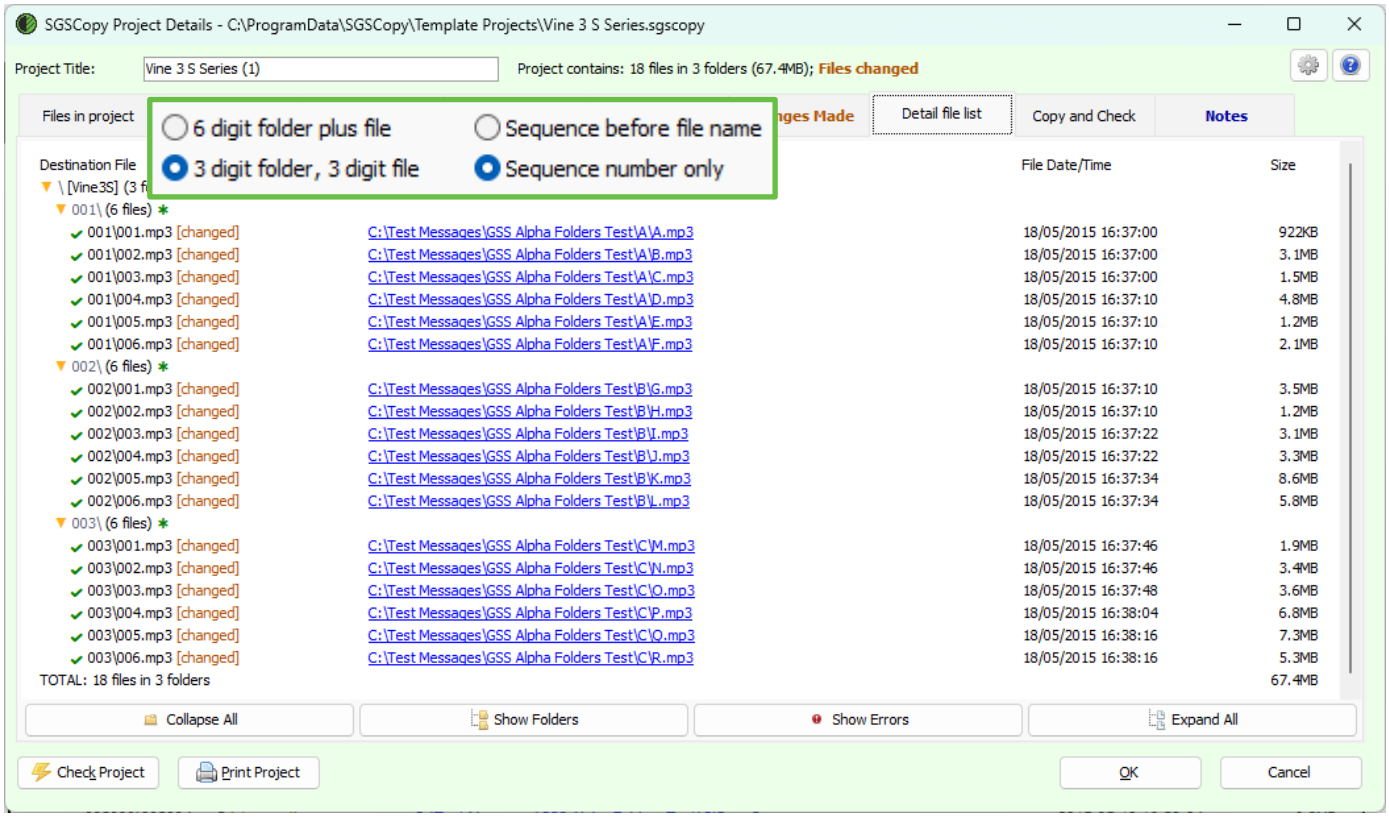
The options available are:

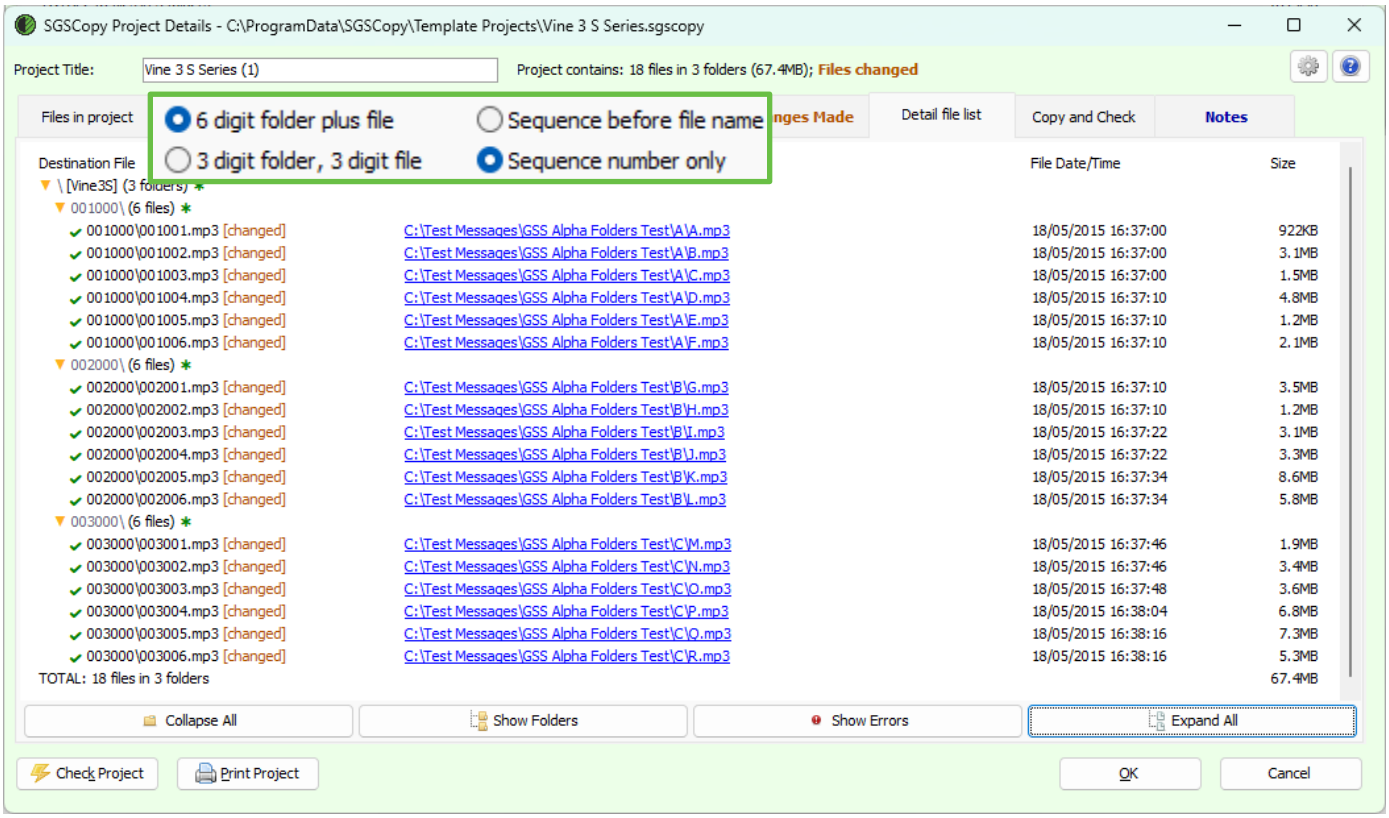
- 3- or 6-digit sequence numbers
- Prefix the sequence number to the existing name
- Replace existing names with sequence numbers only



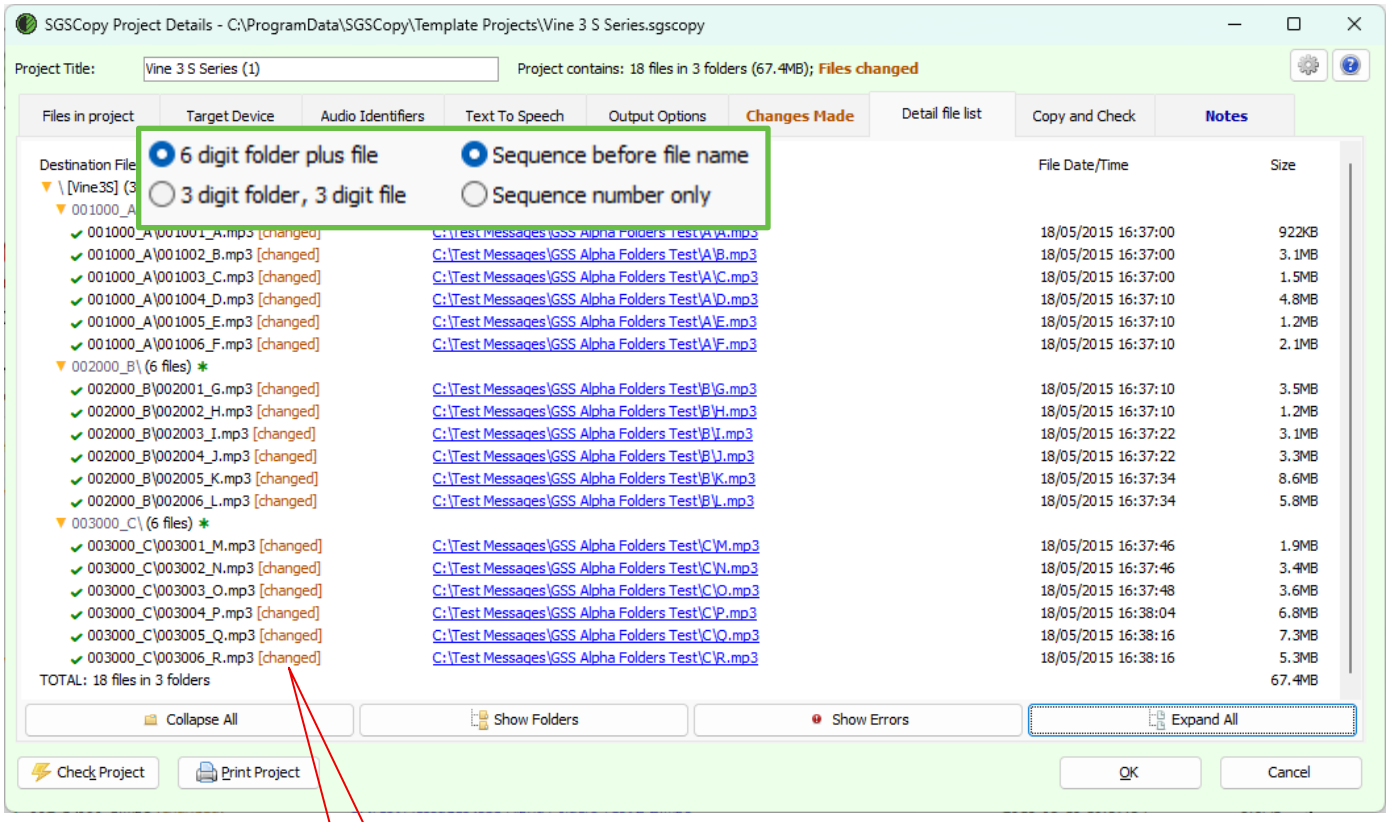
Let's look at examples of how SGSCopy implements the possible option combinations on the next page.

You can always preview setting changes on the "Detail File List" tab before the actual copy process takes place.

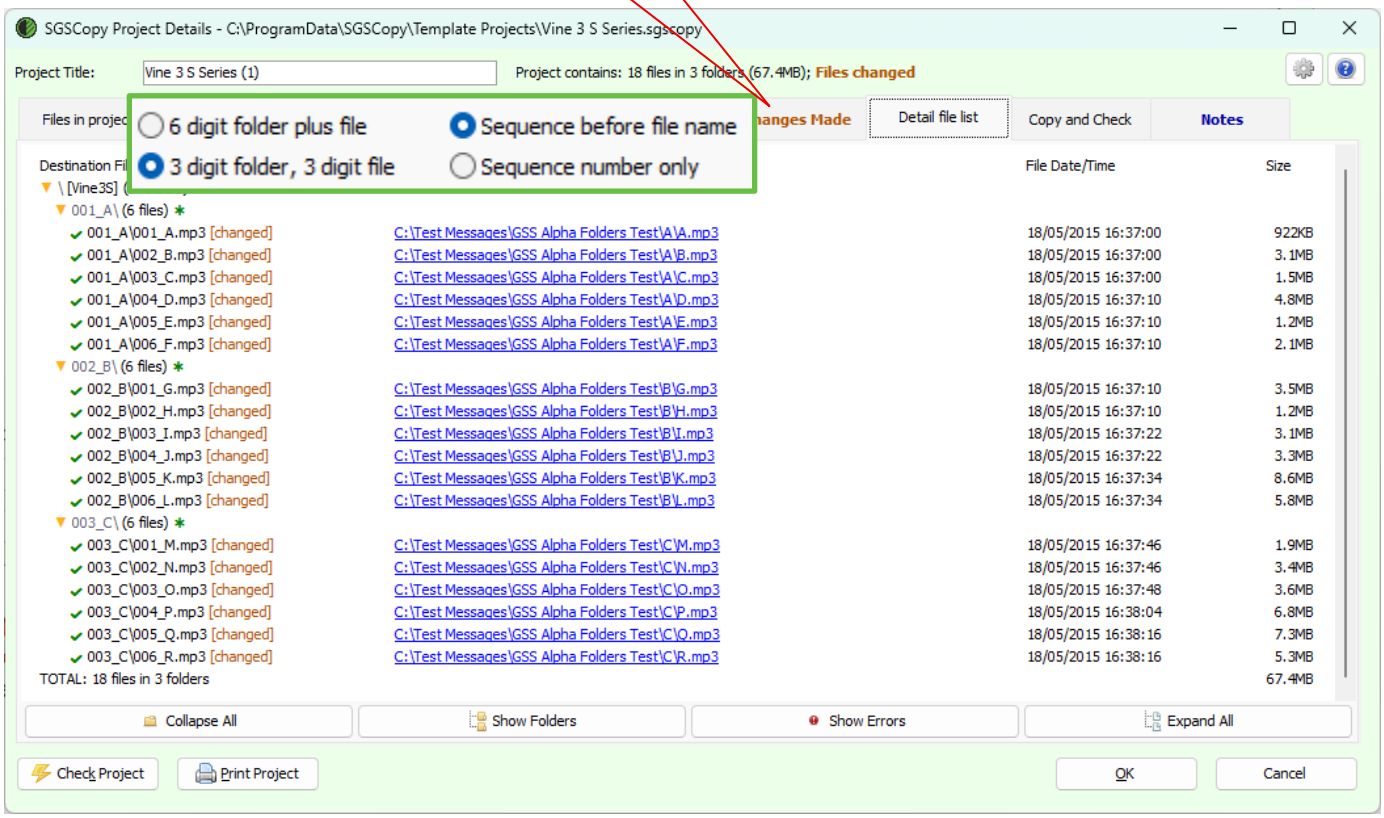




Note: When using the 6-digit sequence number option, notice that the file names reflect their folder name. This means that the file names are unique within the entire collection. When using the 3-digit option, every folder will contain a 001 file, etc. The 6-digit naming convention will prevent confusing similarly named files.



Note that SGSCopy flags each file or folder name that it modifies. All changes that SGSCopy makes to the original folders and files are also listed on the "Changes Made" tab.



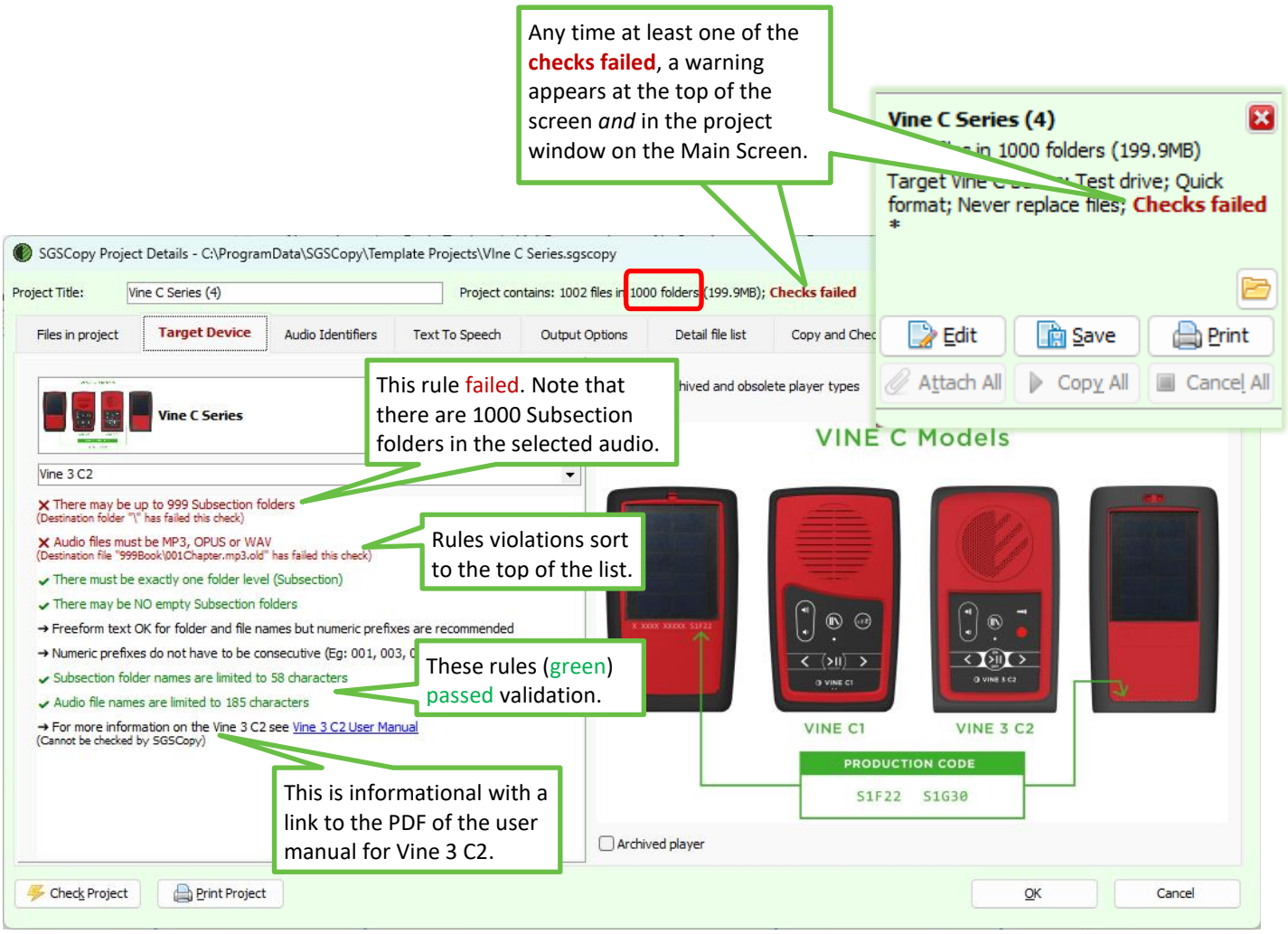
19: Device rules validation

Each device has its own definitions, each with its specific content rules. Once files are selected on the "Files in Project" tab, SGSCopy will immediately check the folder structure and files against the defined rules for the current device.

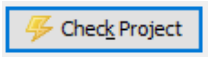
Refer to the example below illustrating how SGSCopy checks a message for the Vine 3 C2. Two of the defined rules for the player have failed.

On the "Target Device" tab, the rules are color coded with associated icons:

- ✖ Failed
  - Rule violations are actually *warnings* since they will not prevent copying files to a player.
  - ⚠ But, if violations are ignored, the target player may not navigate or play correctly.
- ✔ Passed
- → Informational (2 types):
  - A player rule that cannot currently be checked by SGSCopy (but may be in future versions).
  - An informational note, with an optional link to a file or web page.



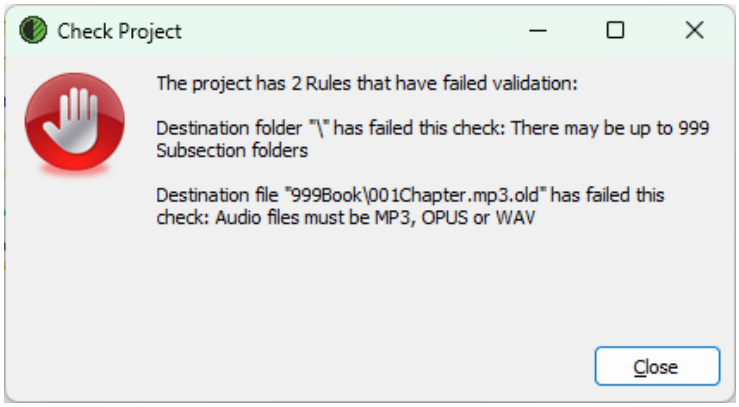
While on any tab of the project dialog, you can also get a quick list of rules that failed validation by clicking on the button at the bottom left of the screen.



Any unresolved rule violations will be recorded in the player log to allow for later review.

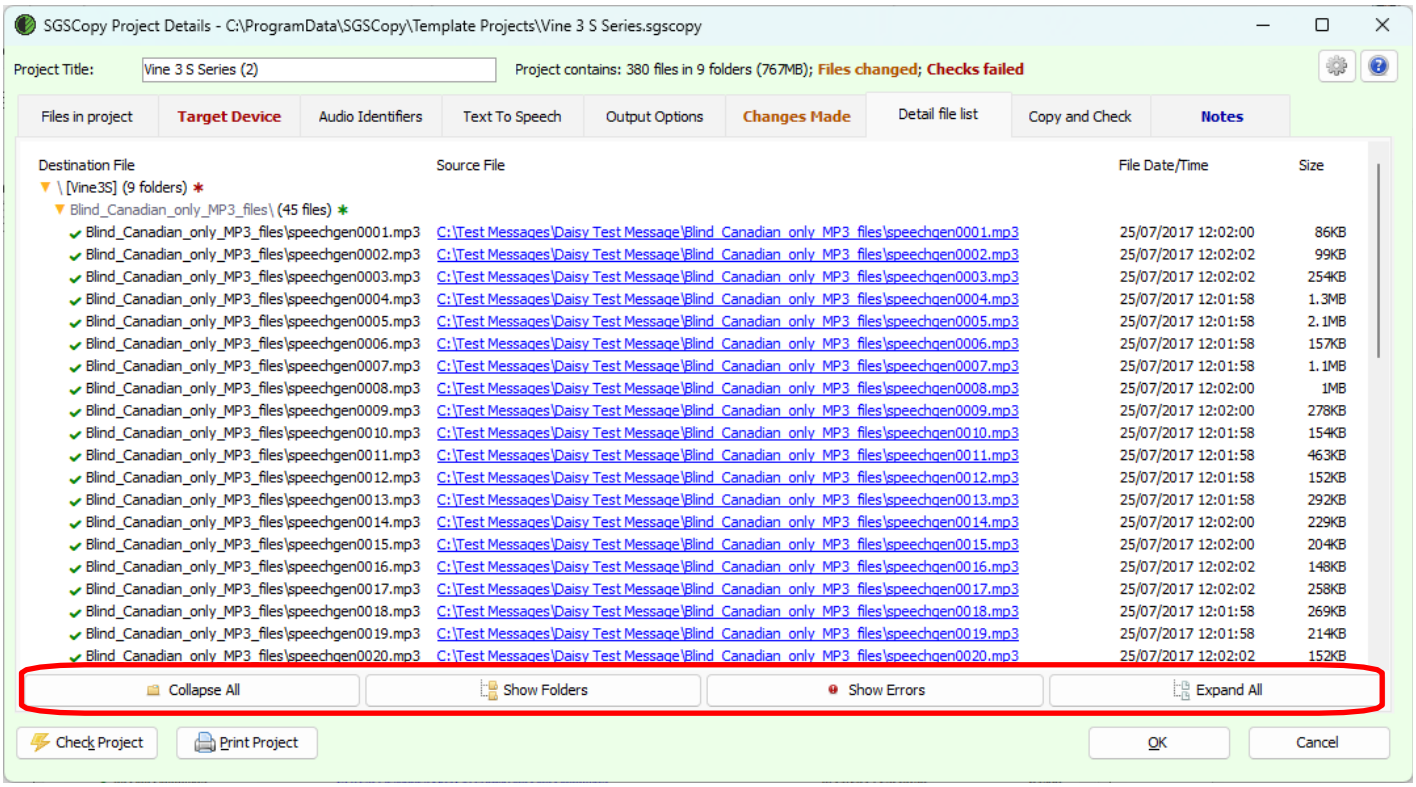
However, it would be best to re-work the selected content to pass all rules. In this case:

- Reorganize the number of Subsections to fit within the 999 limit.
- Remove the unrecognized file (if left, it would be skipped automatically by the player during playback).



20: Detail File List tab

The Detail File List display is in HTML-style where you can collapse and expand folder levels as needed.
Each (source) file can be listed as a hyperlink. You can click on it and SGSCopy will open that file in the associated application (if it has been defined to Windows) or a list of appropriate applications to choose from.

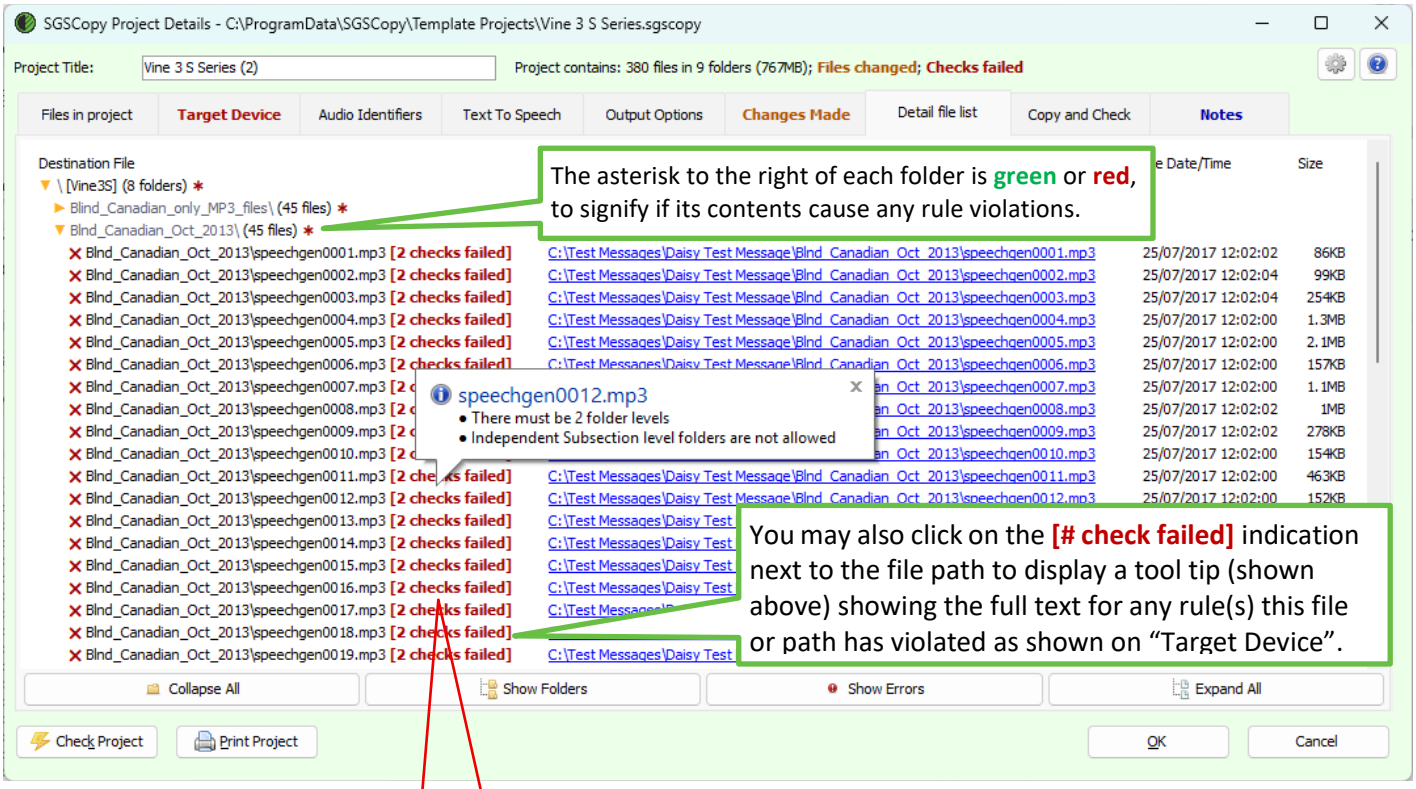


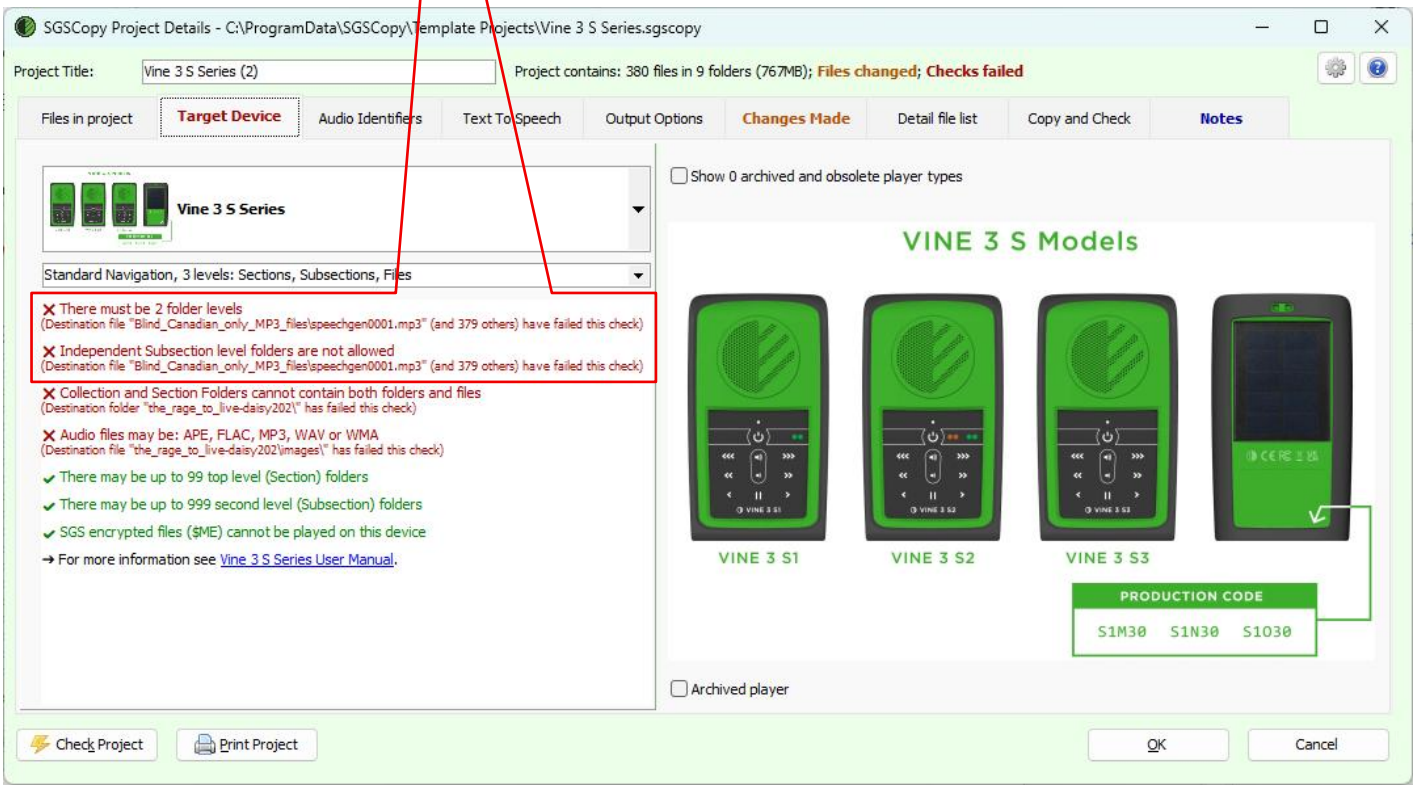
There are 4 buttons at the bottom which control the overall display:

- Collapse All — Collapses all folders to their highest level(s)
- Show Folders — Expands all levels of folders revealing the complete *folder* structure
- Show Errors — Expands only folders where rule violations occur for quick identification
- Expand All — Expands all levels of all folders showing all files in each folder

By clicking on the gold triangle icons ▶▼ preceding each folder, it is also possible to collapse and expand individual folders as needed.

Whenever a rule check fails, each folder and/or file is marked along with how many rules it violated. In the example below, the 2 rules violated are the number of folder levels and one regarding “Independent Section level folders…”.
These correlate to the rule validations on the Target Device tab.
The root problem here is that the audio selected on the “Files in project” tab is **2**-level but according to the option specified on the “Target Device” tab, SGSCopy was told to expect **3**-levels!

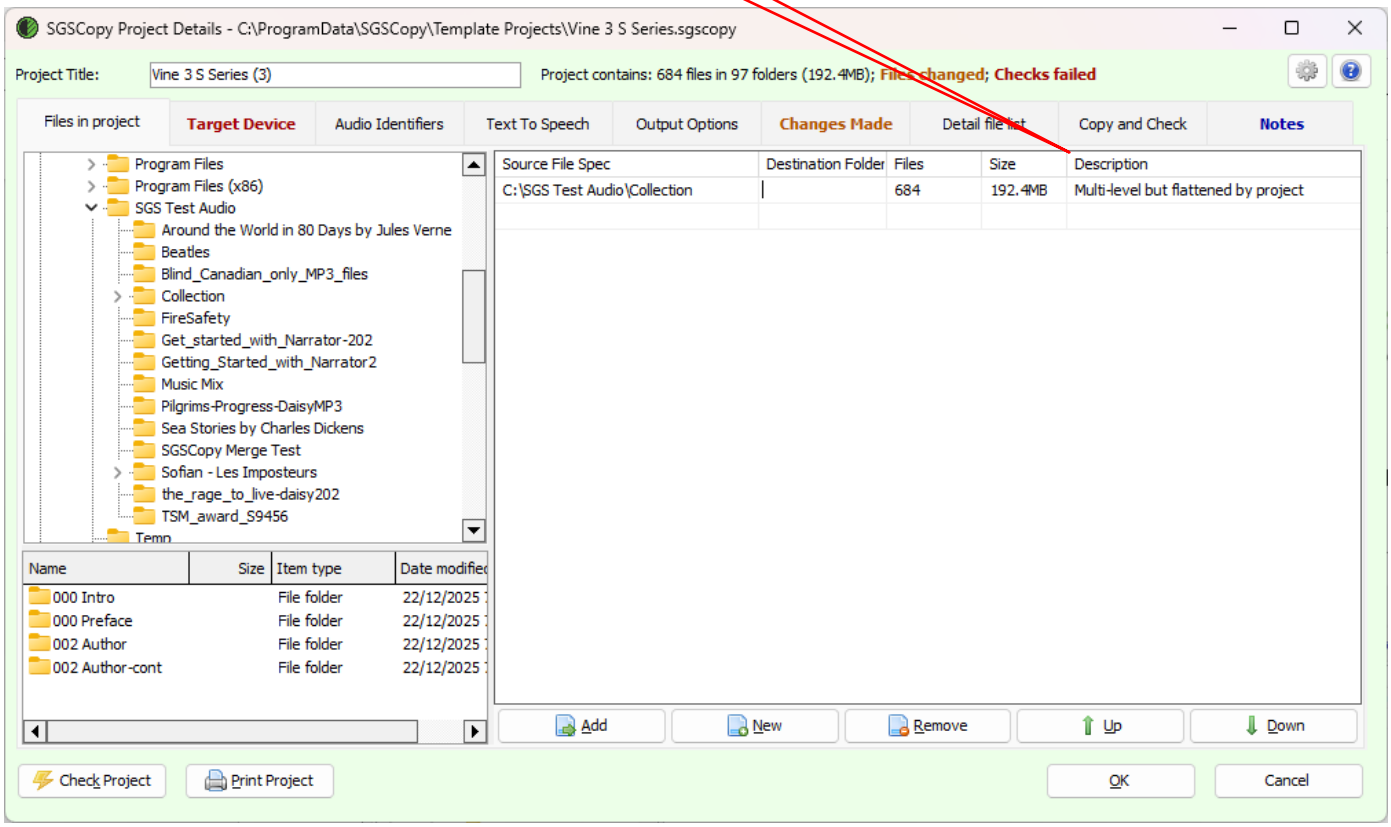




21: Adding notes to a project

You can store notes in any project that you save.

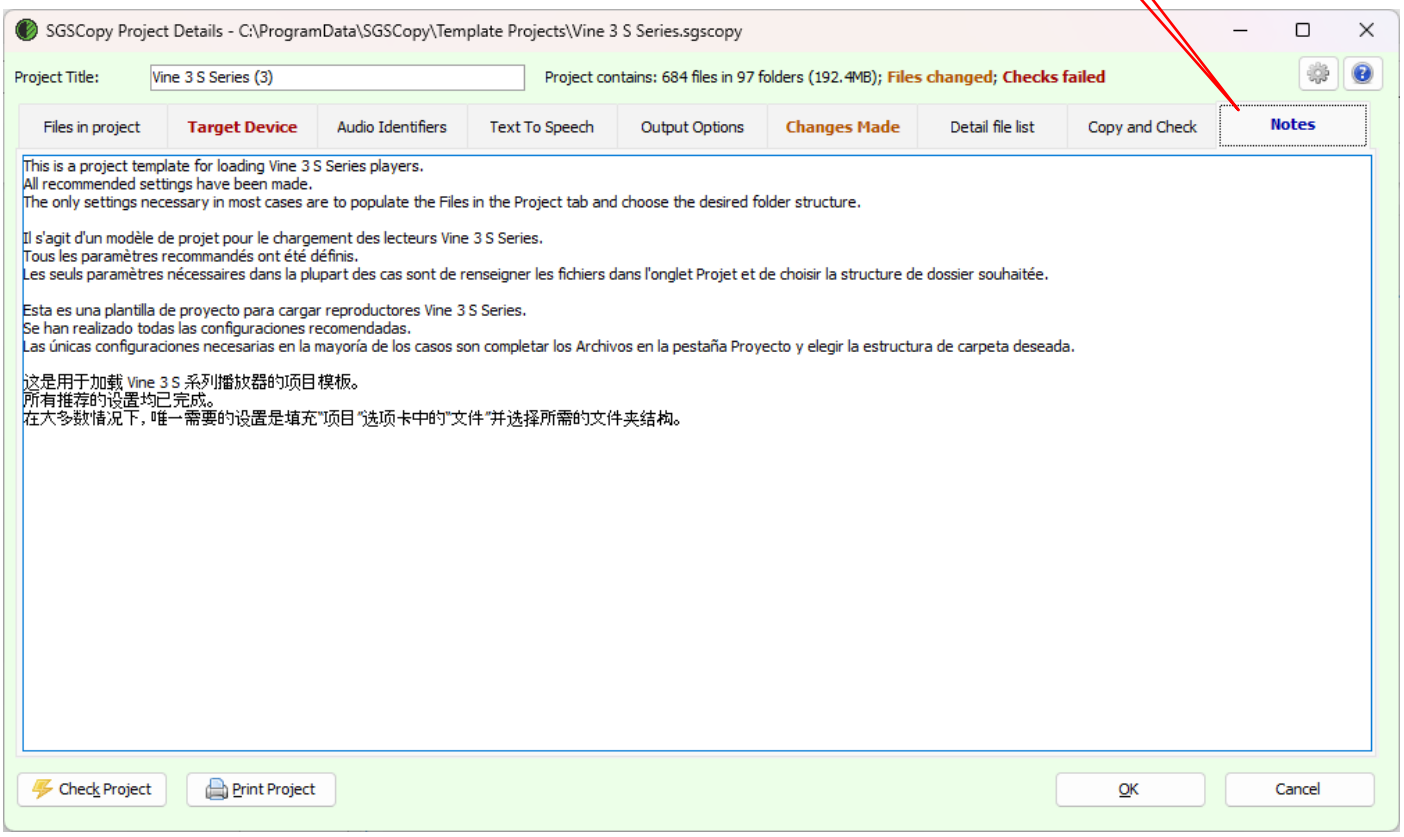
On the “Files in project” tab, you may add a “Description” to each line under “Source File Spec” which will be saved with the project.



You may also add a narrative describing the details of a project on the "Notes" tab. This is especially helpful when a project is only used occasionally and the specifics behind it may be difficult to remember.

When notes exist for a saved project, the tab text is in **bold blue** to alert the user.

The "Notes" tab supports foreign language characters (stored as UTF-8), so text in other languages may be displayed. The notes for all the Template Projects have had the English notes translated to the other languages supported by SGSCopy.



23: Automatic device model check

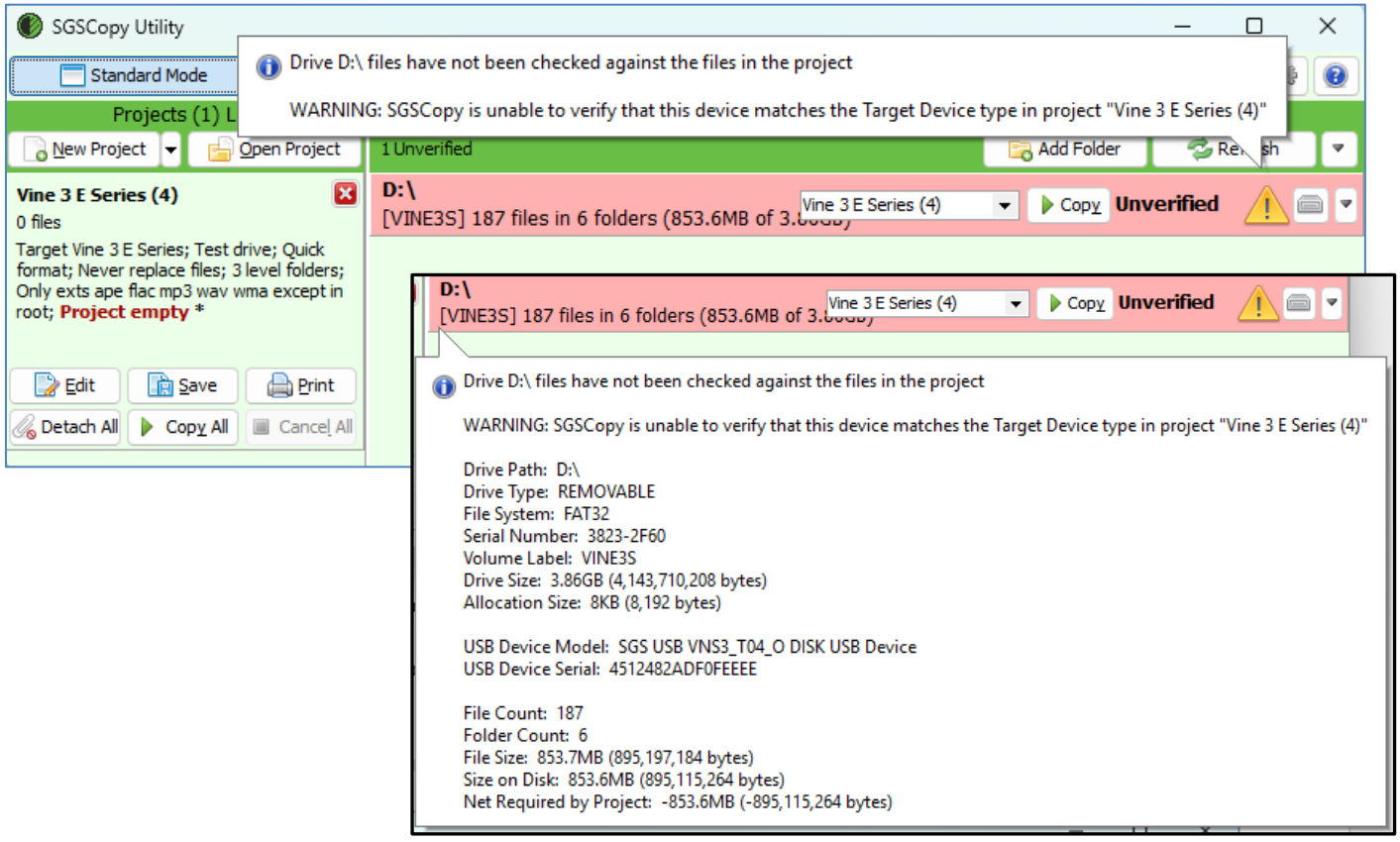
For *most* of the devices listed in the Target Device dropdown list, the corresponding USB device model has been defined.

When devices are attached to a project, if the selected device has its model name defined, it is compared to the devices that are attached to the project.

If any of the connected devices do not match, a warning icon and message is displayed. For devices where the model's name is unknown no comparison will be made.

In the screen example below, a **Vine 3 S** player is connected to the computer and is attached to the Template Project for **Vine 3 E**.

SGSCopy posts a yellow warning icon on the device line because it does not match the device type defined for Vine 3 E. When you mouse-over that icon, a tool tip is displayed with a complete message.

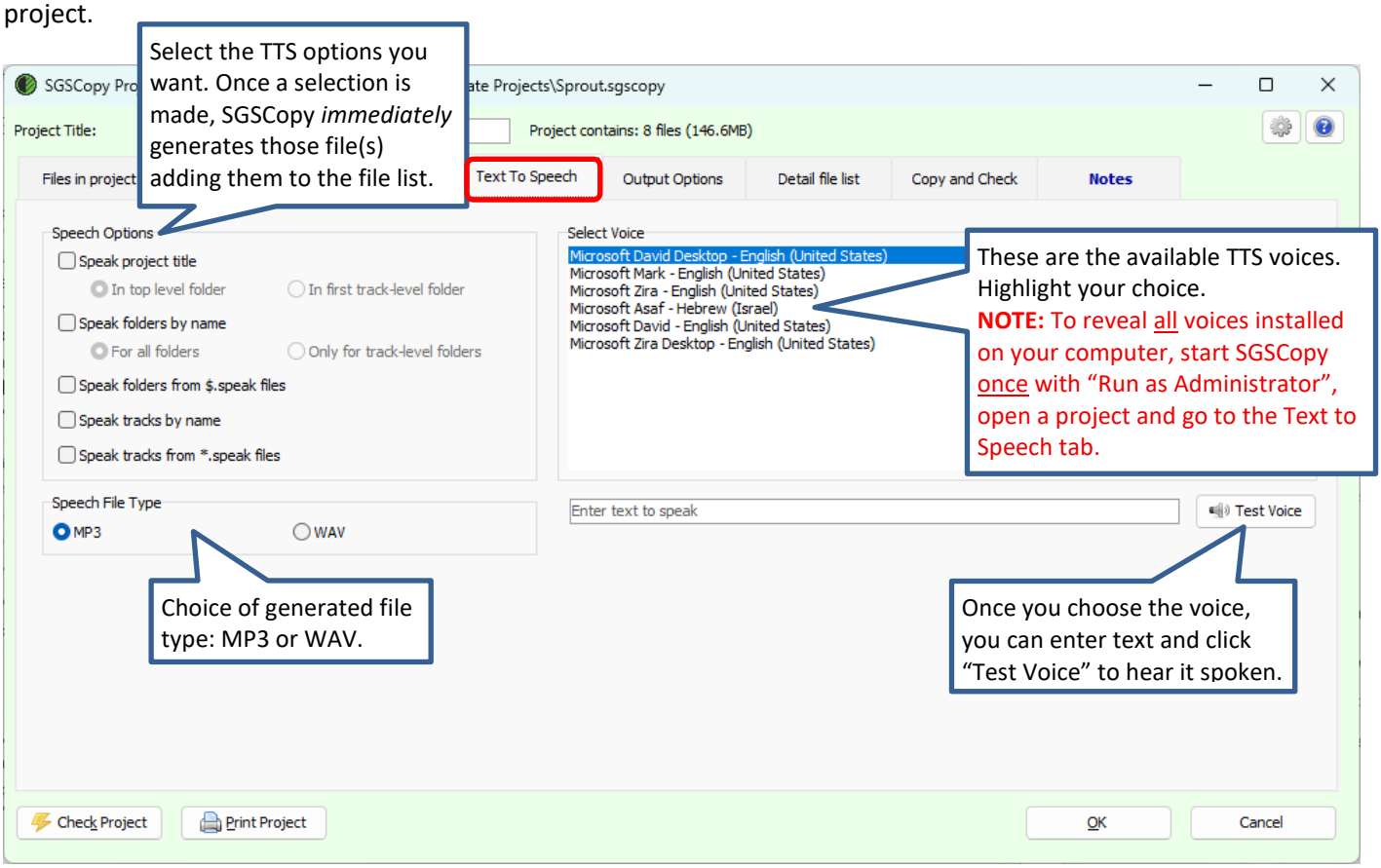


When you mouse-over an empty area of the device line, you get a robust tooltip (above) with the device specifics, which includes the model mismatch message. See USB Device information display.

The model check is simply a safety feature to help users make sure they are using the correct Template Project to load their players. It is only a warning and will not prevent copying to the device.

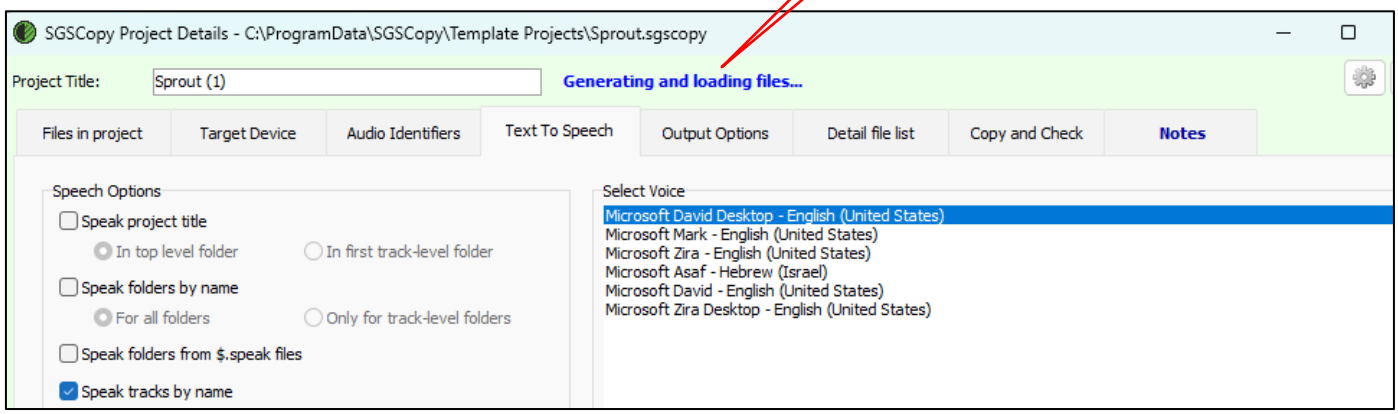
24: Text-to-speech options

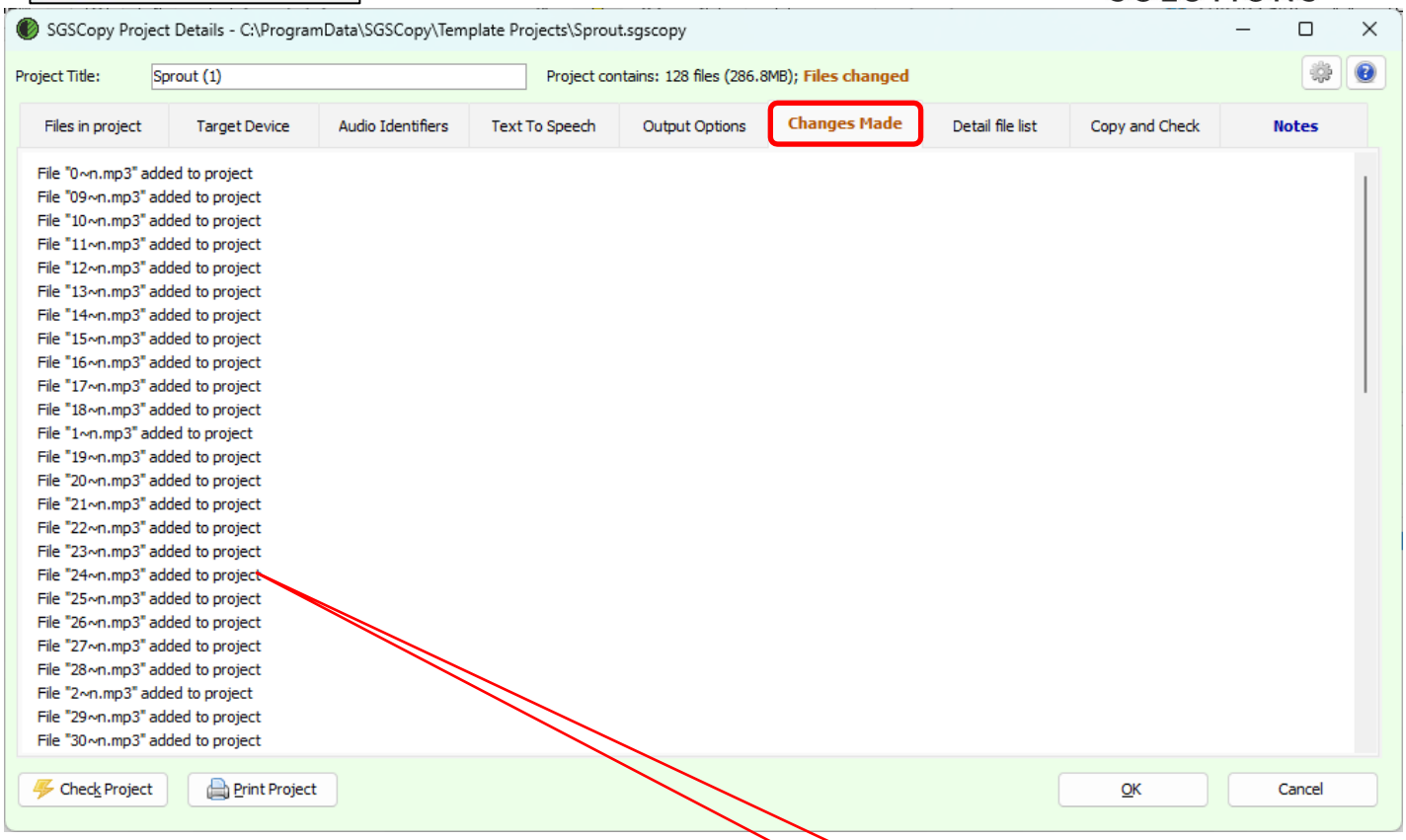
SGSCopy offers a number of text-to-speech (TTS) options. They are available on the "Text to Speech" tab of every project.



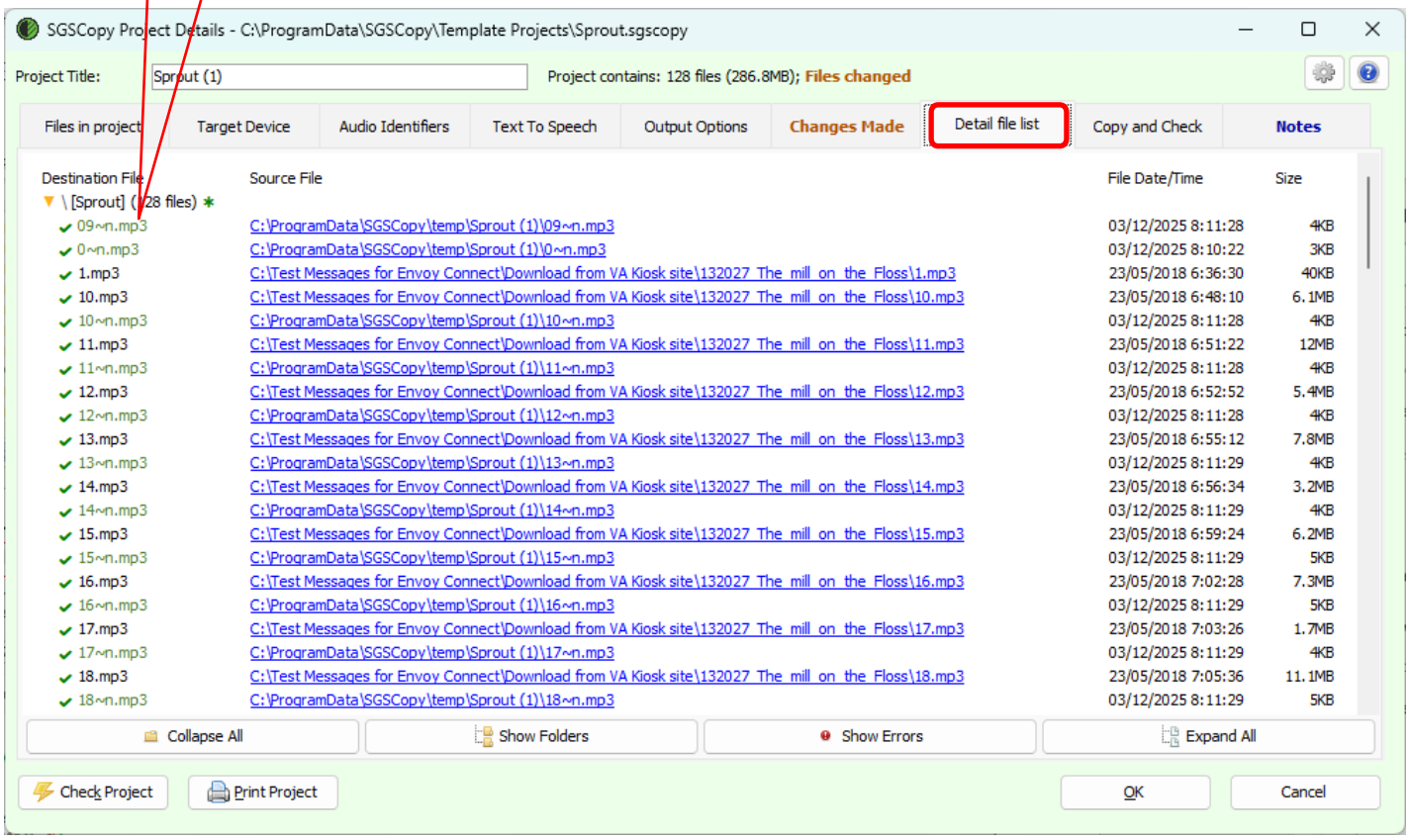
Once any of the "Speech Options" are selected, SGSCopy begins to generate them. A message in blue is displayed at the top of the window (with an optional percent complete) and disappears when finished. How long the process takes depends on the option selected and the number of files present in the audio message at the time.

Currently there is no way to interrupt this process once selected, so you must wait until it finishes to make changes on this or any other tab.





Once the TTS files have been generated, they are all listed in the "Changes Made" tab and highlighted in an olive color on the Detail File List tab. From here you may listen to them to make sure it's what you wanted *before* actually loading the player by clicking on the associated hyperlink.



Using SGSCopy on MacOSX

General

SGSCopy is a Windows application. There is currently no plan to create a version of SGSCopy that is a true Mac application; however, using any of a number of virtualization software packages, SGSCopy can be implemented on *most* Mac systems.

The following recommendations are based on our own testing from a few years ago and were all performed by SGS on a MacBook Pro (Retina, mid 2012) running macOS High Sierra with a 2.3 GHz Intel Core i7 processor and 8GB of DDR3 RAM.

Any type of virtualization or emulation software requires sufficient memory and CPU power to work well. If your Mac is a bare-bones system, the performance you experience with any of these solutions may be disappointing, even to the point that SGSCopy will not run.

While some of the virtualization packages yielded better results than others, we are listing them in order of our preference based on our testing experience. Most of the available options require the purchase of the software, but in our estimation, it is a worthwhile investment to allow for implementation of a true Windows environment on Mac where *any* Windows app may be run – not just SGSCopy.

SGS did not attempt to explore all the features offered by each tested item. In each case, this was the basic process:

1. Download and install the software (and any related packages) on the Mac
2. Using an installation CD/DVD, or ISO image copied to the Mac, install Windows as a VM (Virtual Machine) within the tested software*
3. Get Windows set up, i.e., install all necessary updates + basic configuration*
4. Install SGSCopy in the Windows VM*
5. Test SGSCopy in numerous ways loading multiple SGS players

** Not applicable to WINE*

SGS assumes no responsibility for any damage that may be caused by the installation of and/or use of any of the 3rd party software products discussed in this section.

The following details are published solely as examples of what SGS succeeded in doing to provide a platform for successful execution of SGSCopy on a Mac computer.

Details noted such as pricing, web site links, system requirements, potential bugs, and caveats, etc. are correct and verified as of the date of this publication but are definitely subject to change over time.

VMware Fusion

- VMware Fusion 10 was the most trouble-free of all the software tested. It is our top pick. As of this writing, Fusion 13 is the latest version!
- Now available for free for personal use! ~~Must be purchased – around 120 USD for a new license, less for an upgrade. A 30-day trial version may be downloaded and tested.~~
- https://blogs.vmware.com/teamfusion/2024/05/fusion-pro-now-available-free-for-personal-use.html
- Any Mac launched in 2011 or later. OS X version 10.11 El Capitán minimum is required. See details on the website.
- An installation CD/DVD or ISO image for a Windows environment is required (license not included) – Windows 10 is preferred.
- Installation and creation of a VM was simple. Multiple VMs may be installed under Fusion.
- Provides seamless integration and sharing of files and folders between Mac and Windows.
- Both Windows and SGSCopy performed excellently within the VM. Performance is great and no problems were encountered at all during testing. A batch of 7 players was loaded numerous times with different messages from a 7-port powered hub.
- When connecting SGS players to the Mac, Fusion automatically asks whether to connect the device to Mac or an active VM (this feature is customizable). No special configuration was required to recognize SGS players.

Parallels Desktop for Mac

- Parallels Desktop 13 for Mac is our next choice. Version 13 was tested but as of this writing, version 20 is the latest.
- Must be purchased – around 100 USD for a new license, less for an upgrade. A 14-day trial version may be downloaded and tested.
- https://www.parallels.com/products/desktop/
- OS X 10.10.5 Yosemite minimum required. See details on web site.
- An installation CD/DVD, or ISO image, for a Windows environment is required (license not included) – Windows 10 is preferred.
- Installation and creation of a VM was simple. Multiple VMs may be installed under Parallels Desktop.
- The (optional but recommended) Parallels Tools module provides seamless integration and sharing between Mac files and folders and Windows files and folders.
- SGSCopy performance is great, and no problems were encountered at all during testing. A batch of 7 players was loaded numerous times with different messages from a 7-port powered hub.
- When connecting SGS players to the Mac, Parallels automatically asks whether to connect the device to Mac or an active VM (this feature is customizable). No special configuration was required to recognize SGS players.

Oracle VM VirtualBox

- Oracle VM VirtualBox is also recommended -- but with a caution.
- This is free, open-source software from Oracle and is offered "as is". It is, however, being actively maintained by a group of developers so there is support.
- https://www.virtualbox.org/
- Also required is the VirtualBox extension pack: https://download.virtualbox.org/virtualbox/7.1.6/Oracle_VirtualBox_Extension_Pack-7.1.6.vbox-extpack
  - Once the extension pack is installed, the USB 3.0 stack should be used in the VM settings. If the installed Windows does not have the driver available, then the Intel 3.0 USB eXtensible Host Controller should be downloaded and installed.
- Requires 10.10 (Yosemite), 10.11 (El Capitán), 10.12 (Sierra) or 10.13 (High Sierra) – 64-bit.
- An installation CD/DVD or ISO image for a Windows environment is required (license not included).
- Installation and creation of VMs was simple. Multiple VMs may be installed under VirtualBox.
- Integration between Mac and Windows was not as seamless as other options.
  - PROBLEM! Sometimes when using one of the VMs under VirtualBox, a simple operation, like resizing or moving the VM window, would cause the VM to simply disappear and abnormally terminate. Windows had to be restarted and any work in progress was lost.
  - Because of the issues noted above we deem it undependable. Since the problems were sporadic and difficult to replicate, we did not pursue a fix with the developers. They may be able to fix this issue if someone is willing to spend time with them on it.
  - VirtualBox also required some additional configuration for it to recognize SGS players and connect them to the VM.
    - USB filters had to be specified: Use Vendor ID=10D6 and Product ID=1101.
- SGSCopy performed well within the VM. Performance is not quite as good as Fusion and Parallels and no problems were encountered at all during testing. A batch of 7 players was loaded numerous times with different messages from a 7-port powered hub.
- When connecting SGS players to the Mac, VirtualBox automatically asks whether to connect the device to Mac or an active VM (this feature is customizable).

WINE

- WINE is last in our list. We do not recommend it but wanted to make our users aware that it is an inexpensive, albeit time-consuming option to implement.
- Even though the claim is that WINE is *not* an emulator (**W**ine **I**s **N**ot an **E**mulator), it does provide a type of emulation and is described as "*a free and open-source compatibility layer that aims to allow computer programs (application software and computer games) developed for Microsoft Windows to run on Unix-like operating systems.*" It will simulate a Windows environment for execution of a single Windows application running on Mac OSX. It requires several other package installations to function correctly. It does not create a VM running Windows as all the other options do.
- All the software required is free to download and use.
- Here is a complete, easy to follow tutorial that will walk you through all the steps necessary for the installation and setup of all the software:

  https://winemakerscorner.com/wine-tips/how-to-install-wine-macos/
- Requires macOS 10.10 (Yosemite) or above.
- There is no special integration between Mac files and folders and the Windows application.
- SGSCopy performance was sluggish at best. Not all features of the SGSCopy program work the way they normally do in a true Windows environment. Regardless, we were able to successfully load several players, but it certainly wasn't seamless or efficient.
- When connecting SGS players to the Mac, it was cumbersome to get SGSCopy to recognize them. There was a process necessary for this, and it was one-player-at-a-time. Sometimes it would remember the USB connection and sometimes it wouldn't, and the process had to be repeated.
- Running SGSCopy from WINE will work, and the price is certainly right (free!), but it is unlikely that one would settle for it after experiencing the performance and features of the better virtualization choices.

macOS versions from Catalina forward cannot run SGSCopy with WINE. But see Crossover instead.

Crossover

- Crossover is a more advanced, easier-to-use version of WINE that we recently learned about. Their claim is that "CrossOver is the easiest way to run many Microsoft applications on your Mac without a clunky Windows emulator."
- Take note that they state "many" Microsoft applications and not "any". Some Windows applications may not work with Crossover but SGSCopy will.
- We have not tested Crossover ourselves but have received positive feedback from numerous partners that are using it successfully with SGSCopy on their Mac devices.
- You can download a free 14-day trial version or purchase it for 74 USD.
- https://www.codeweavers.com/crossover

Apple Boot Camp

Another utility that deserves mention is Apple's own Boot Camp software. Boot Camp is *free* from Apple and includes a *free* license for Windows 11.

From the Boot Camp webpage:

"Boot Camp is only officially supported in MacOS on Intel Macs running Big Sur or earlier (and partially Monterey). If you're not running one of these versions of MacOS or earlier, you will need to downgrade your MacOS in order to use Boot Camp."

If Boot Camp will work for you, go here to get started: https://machow2.com/windows-11-mac-boot-camp/

SGS did not test this option since it is a known solution that has been available from Apple for some time.

Unlike some of the other software we have reviewed, Boot Camp does not provide a virtual engine but rather is dual-boot software for your Mac computer. It partitions your hard drive into two parts – the current Mac O/S and a Windows O/S. When you turn your computer on, you choose the operating system from which to boot.

While this is a free utility, and is fully supported by Apple, there are disadvantages compared to virtual software:

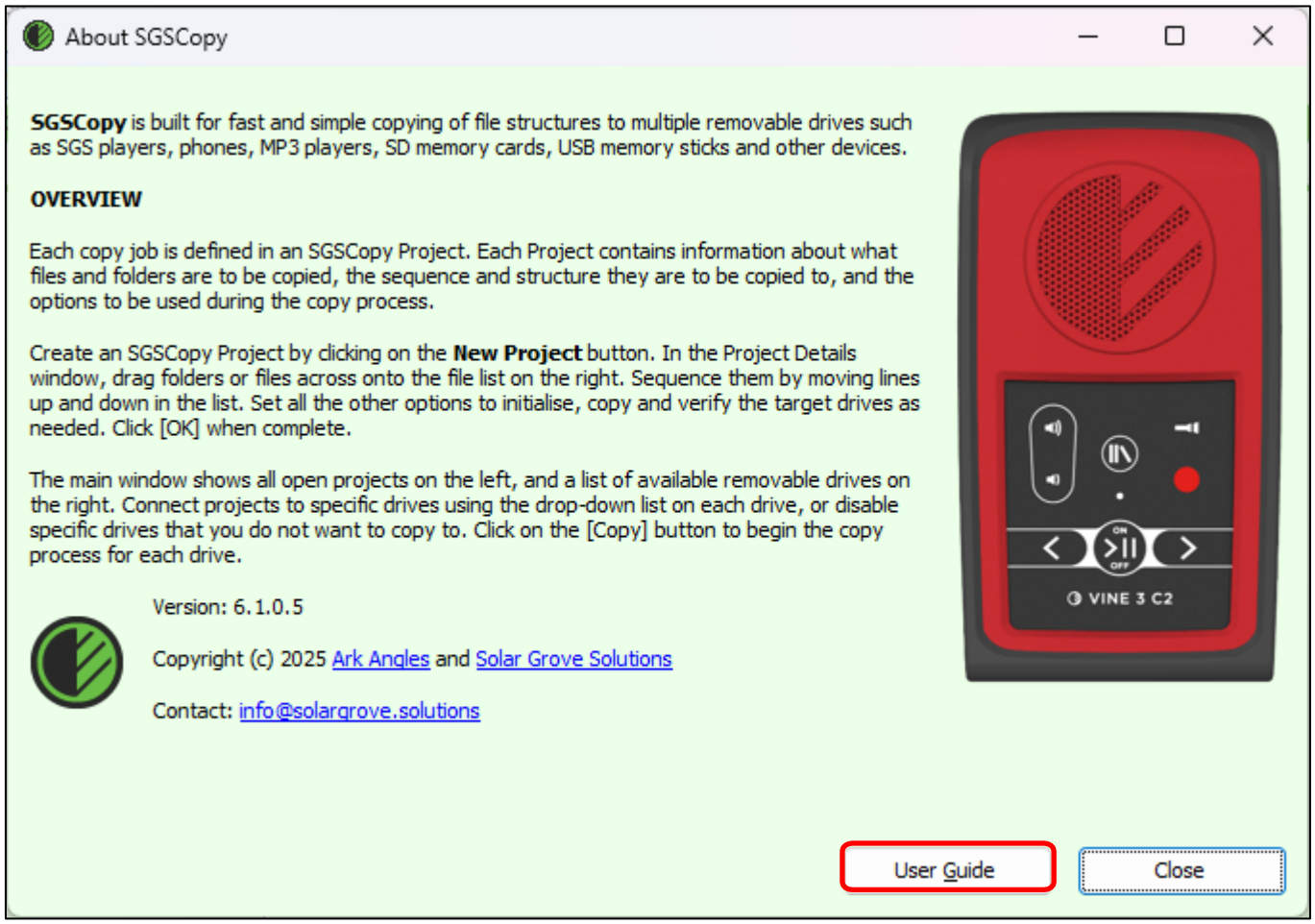
- You must boot your computer from either Mac or Windows.
- You cannot easily switch from Windows to Mac or vice-versa. One O/S cannot communicate with the other. To change to the other, you must reboot your computer.
- Data is also not "shared" between Windows and Mac, so if you need the same data accessible by both on the hard drive it will likely need to be duplicated or moved to a removable device.
- Since data cannot be shared across operating systems, this potentially reduces the amount of hard disk space available to the Mac O/S even more.

Technical Support

General

SGSCopy is offered “as is” from Solar Grove Solutions with no implied warranty.

If you need assistance with SGSCopy, please contact us by clicking here.



User Guide and Support

You may open this document on the SGS website directly from SGSCopy by clicking the “User Guide” button highlighted above.

Appendix

Sample player log file

**Coloring is for emphasis here and does not appear in the actual log since it is plain text file.*

```
2025-08-15 07:49:51.607 SGSCopy 6.1.0.5 device log
Drive Path:  D:\
Drive Type:  REMOVABLE
File System:  FAT32
Serial Number:  6A90-8B1B
Volume Label:  VINE3S
Drive Size:  3.86GB (4,143,710,208 bytes)
Allocation Size:  8KB (8,192 bytes)

USB Device Model:  SGS USB VNS3_T02_O DISK USB Device
USB Device Serial:  4512482ADF0FEEEE
----------------
2025-08-15 07:49:51.612 Drive D:\ is Unverified - Drive D:\ files have not been checked against the
files in the project
2025-08-15 07:49:51.612 ----------------
Drive D:\ information:
Drive Path:  D:\
Drive Type:  REMOVABLE
File System:  FAT32
Serial Number:  6A90-8B1B
Volume Label:  VINE3S
Drive Size:  3.86GB (4,143,710,208 bytes)
Allocation Size:  8KB (8,192 bytes)

USB Device Model:  SGS USB VNS3_T02_O DISK USB Device
USB Device Serial:  4512482ADF0FEEEE

File Count:  8
Folder Count:  0
File Size:  6.5MB (6,815,744 bytes)
Size on Disk:  6.5MB (6,774,784 bytes)
Net Required by Project:  171.8MB (180,117,504 bytes)
----------------
2025-08-15 07:49:53.594 Drive D:\ is Online - Drive D:\ is online and ready but not attached to any
project
2025-08-15 07:49:53.594 Drive D:\ assigned to Not connected
2025-08-15 07:49:54.472 Drive D:\ assigned to Vine 3 S Series (1)
2025-08-15 07:49:54.493 Drive D:\ is Unverified - Drive D:\ files have not been checked against the
files in the project
2025-08-15 07:49:54.493 ----------------
Drive D:\ information:
Drive Path:  D:\
Drive Type:  REMOVABLE
File System:  FAT32
Serial Number:  6A90-8B1B
Volume Label:  VINE3S
Drive Size:  3.86GB (4,143,710,208 bytes)
Allocation Size:  8KB (8,192 bytes)

USB Device Model:  SGS USB VNS3_T02_O DISK USB Device
USB Device Serial:  4512482ADF0FEEEE

File Count:  8
Folder Count:  0
File Size:  6.5MB (6,815,744 bytes)
Size on Disk:  6.5MB (6,774,784 bytes)
Net Required by Project:  171.8MB (180,117,504 bytes)
----------------
2025-08-15 07:49:57.227 Target Vine 3 S Series; Test drive; Quick format; Never replace files
2025-08-15 07:49:57.242 Drive D:\ is Formatting... - Drive D:\ is being quick formatted
```

```
2025-08-15 07:50:00.172 Drive D:\ is Testing... - Drive D:\ is being tested with a sample read and write
2025-08-15 07:50:00.172 Test drive D:\
2025-08-15 07:50:00.213 Drive D:\ is Emptying... - Drive D:\ is deleting all folders and files
2025-08-15 07:50:00.213 Empty drive D:\
2025-08-15 07:50:00.213 Drive D:\ is Copying... - Drive D:\ is copying all files in the project
2025-08-15 07:50:00.228 Copying project "Vine 3 S Series (1)" Totals: 15 files
2025-08-15 07:50:00.228 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\01_Berlin_Syndrome.mp3" (37KB) -> "D:\01_Berlin_Syndrome.mp3" [OK]
2025-08-15 07:50:00.260 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\02_Opening_Announcement.mp3" (77KB) -> "D:\02_Opening_Announcement.mp3" [OK]
2025-08-15 07:50:00.292 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\03_About_this_DAISY_Boo.mp3" (113KB) -> "D:\03_About_this_DAISY_Boo.mp3" [OK]
2025-08-15 07:50:00.340 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\04_Contents.mp3" (141KB) -> "D:\04_Contents.mp3" [OK]
2025-08-15 07:50:00.404 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\05_Cover_Notes.mp3" (301KB) -> "D:\05_Cover_Notes.mp3" [OK]
2025-08-15 07:50:00.496 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\06_About_the_Author.mp3" (98KB) -> "D:\06_About_the_Author.mp3" [OK]
2025-08-15 07:50:00.531 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\07_Dedication.mp3" (28KB) -> "D:\07_Dedication.mp3" [OK]
2025-08-15 07:50:00.563 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\08_I.mp3" (21KB) -> "D:\08_I.mp3" [OK]
2025-08-15 07:50:00.594 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\09_Page_3.mp3" (63.6MB) -> "D:\09_Page_3.mp3" [OK]
2025-08-15 07:50:18.542 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\10_II.mp3" (20KB) -> "D:\10_II.mp3" [OK]
2025-08-15 07:50:18.584 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\11_Page_95.mp3" (53.9MB) -> "D:\11_Page_95.mp3" [OK]
2025-08-15 07:50:33.586 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\12_Page_171.mp3" (59.1MB) -> "D:\12_Page_171.mp3" [OK]
2025-08-15 07:50:51.244 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\13_Acknowledgements.mp3" (394KB) -> "D:\13_Acknowledgements.mp3" [OK]
2025-08-15 07:50:51.356 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\14_Closing_Announcement.mp3" (90KB) -> "D:\14_Closing_Announcement.mp3" [OK]
2025-08-15 07:50:51.404 Copy "C:\Test Messages for SGS\Berlin syndrome - original MP3\Berlin Syndrome\15_Publishing_and_Copyr.mp3" (250KB) -> "D:\15_Publishing_and_Copyr.mp3" [OK]
2025-08-15 07:50:51.483 Copied 178.2MB from 15 files in 00:00:51 at 3.5MB per second
2025-08-15 07:50:51.556 Drive D:\ is Verifying... - Drive D:\ is verifying all files
2025-08-15 07:50:51.556 Verify drive D:\ Totals: 15 files [OK]
2025-08-15 07:50:51.556 Check Dir: D:\ [OK]
2025-08-15 07:50:51.556 Verify: D:\01_Berlin_Syndrome.mp3 [OK]
2025-08-15 07:50:51.565 Verify: D:\02_Opening_Announcement.mp3 [OK]
2025-08-15 07:50:51.565 Verify: D:\03_About_this_DAISY_Boo.mp3 [OK]
2025-08-15 07:50:51.565 Verify: D:\04_Contents.mp3 [OK]
2025-08-15 07:50:51.565 Verify: D:\05_Cover_Notes.mp3 [OK]
2025-08-15 07:50:51.578 Verify: D:\06_About_the_Author.mp3 [OK]
2025-08-15 07:50:51.578 Verify: D:\07_Dedication.mp3 [OK]
2025-08-15 07:50:51.578 Verify: D:\08_I.mp3 [OK]
2025-08-15 07:50:51.586 Verify: D:\09_Page_3.mp3 [OK]
2025-08-15 07:50:51.586 Verify: D:\10_II.mp3 [OK]
2025-08-15 07:50:51.586 Verify: D:\11_Page_95.mp3 [OK]
2025-08-15 07:50:51.586 Verify: D:\12_Page_171.mp3 [OK]
2025-08-15 07:50:51.594 Verify: D:\13_Acknowledgements.mp3 [OK]
2025-08-15 07:50:51.596 Verify: D:\14_Closing_Announcement.mp3 [OK]
2025-08-15 07:50:51.596 Verify: D:\15_Publishing_and_Copyr.mp3 [OK]
2025-08-15 07:50:51.610 Drive D:\ is Complete in 0:54 - Drive D:\ files in the project have all been successfully copied
2025-08-15 07:50:51.617 ----------------
Drive D:\ information:
Drive Path:  D:\
Drive Type:  REMOVABLE
File System:  FAT32
Serial Number:  D60C-B9C8
Volume Label:  VINE3S
Drive Size:  3.86GB (4,143,710,208 bytes)
Allocation Size:  8KB (8,192 bytes)
```

```
USB Device Model:  SGS USB VNS3_T02_O DISK USB Device
USB Device Serial:  4512482ADF0FEEEE

File Count:  15
Folder Count:  0
File Size:  178.3MB (186,925,056 bytes)
Size on Disk:  178.2MB (186,892,288 bytes)
```

Sample Main log file

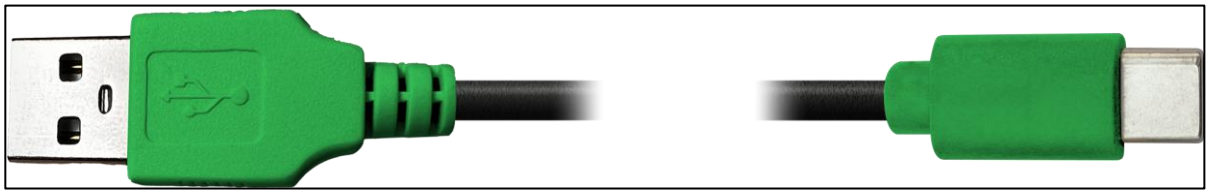
**Highlighting is for emphasis here and does not appear in the actual log since it is plain text file.*

```
2025-12-23 07:05:20.951 SGSCopy 6.1.0.5 started
2025-12-23 07:05:21.249 Application Settings - Language: English; Max Concurrent Formats: 2; Hash
Method: 128-bit MD5; Sound Notifications: On; Show USB Details: On; Hide Absent Drives: Off; Hide
Master Drives: Off; Debug Mode: 0; Log To Device: On
2025-12-23 07:05:53.845 F: DBT_DEVTYP_VOLUME [flags=0] inserted
2025-12-23 07:05:55.006 Drive G:\ is Starting... - Drive G:\ processing is getting started
2025-12-23 07:05:55.152 Drive G:\ is Online - Drive G:\ is online and ready but not attached to any
project
2025-12-23 07:05:55.163 ----------------
Drive G:\ information:
Drive Path:  G:\
Drive Type:  REMOVABLE
File System:  FAT32
Serial Number:  2EA0-8755
Volume Label:  VINE3E
Drive Size:  7.82GB (8,400,928,768 bytes)
Allocation Size:  8KB (8,192 bytes)

USB Device Model:  SGS USB VNE3_T05_O DISK USB Device
USB Device Serial:  112233445566

File Count:  75
Folder Count:  2
File Size:  433.5MB (454,524,928 bytes)
Size on Disk:  433.4MB (454,475,776 bytes)
----------------
2025-12-23 07:06:08.509 New Template Project "&Vine 3 E Series" selected
2025-12-23 07:06:08.563 Checking destination folder and file structure for project Vine 3 E Series (1)
2025-12-23 07:06:08.576 Edit Vine 3 E Series (1) selected
2025-12-23 07:06:09.370 Checking destination folder and file structure for project Vine 3 E Series (1)
2025-12-23 07:06:13.137 Checking destination folder and file structure for project Vine 3 E Series (1)
2025-12-23 07:06:18.203 Attach Vine 3 E Series (1) selected
2025-12-23 07:06:18.230 Drive G:\ assigned to Vine 3 E Series (1)
2025-12-23 07:06:18.230 Drive G:\ is Unverified - Drive G:\ files have not been checked against the
files in the project
2025-12-23 07:06:18.246 ----------------
Drive G:\ information:
Drive Path:  G:\
Drive Type:  REMOVABLE
File System:  FAT32
Serial Number:  2EA0-8755
Volume Label:  VINE3E
Drive Size:  7.82GB (8,400,928,768 bytes)
Allocation Size:  8KB (8,192 bytes)

USB Device Model:  SGS USB VNE3_T05_O DISK USB Device
USB Device Serial:  112233445566

File Count:  74
Folder Count:  2
File Size:  433.5MB (454,524,928 bytes)
Size on Disk:  433.4MB (454,451,200 bytes)
Net Required by Project:  -433.4MB (-454,451,200 bytes)
----------------
2025-12-23 07:06:48.818 Detach Vine 3 E Series (1) selected
2025-12-23 07:06:48.836 Drive G:\ is Online - Drive G:\ is online and ready but not attached to any
project
2025-12-23 07:06:48.836 Drive G:\ assigned to Not connected
2025-12-23 07:06:55.462 Add Folder selected
```

Images of SSU cables