

WinDAC32 Version 1.41

Christoph Schmelnik's
Digital Audio Copy
for Win32

Sorry about my terrible English. If my teachers could read this, they would get Nightmares.

This Program is SHAREWARE.

You can test it for a period of 30 days, after that you must register it.

You are allowed to copy the Shareware Version of this program and distribute it on all medias.

Registered Users are not allowed to copy their Version except to make a personal Backup.

THE AUTHOR (Christoph Schmelnik) DOES NOT UNDERTAKE ANY LIABILITY FOR ANY DAMAGE CAUSED BY THIS PROGRAM. THERE IS ALSO NO GUARANTEE OF AN ERROR FREE PROGRAM EXECUTION.

This is new !!!!!!!!

If someone has protected the name 'Digital Audio Copy' or have used it before me (I found nothing like this during my searches) they should write me before running to a lawyer. I am sure that we could solve any problems without applying for an injunction or claiming damages.

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1. Functions

- Copy Audio Tracks from CD

- Save Data in Wave files
- Convert Audio Data from 44kHz 16 Bit Stereo to
 - 11 or 22 kHz Samplefrequency
 - 8 or 16 Bit per Sample
 - Mono (even separate Channels)
- Kill Zero-Samples at the beginning and end
- Copy selected tracks in different Wave files
- Use all recognized CDROM drives simultaneously
- Show information on all tracks
- Full drive control (eject, play ...)
- Show main drive status
- Copy selected sectors of the CD(*)
- Execute a script after copying a track
- Compress audio data directly using the windows audio compression manager
- Select the copy speed

(*) only available for registered users

Changes since Version 1.04

- Bugfix: converting waves: There was an error while writing mono/mixed wave files
- Added: Statusbar: The actual track is displayed in the Statusbar
- Added: ASPI: For Windows NT an ASPI manager is no longer needed, because now WinDAC is able to work with the special NT interface for SCSI device access. This results in some changes in the GUI and the program logic

Changes since Version 1.10

- Bugfix: Copy: Use of less than 3 Sectors per Read causes a protection failure.
- Changed: Copy: The polling for the Burst-Mode is modified to take less CPU time,
- Changed: Copy: Any read command on Audio Data times out after 12 seconds, without this the applications can hang on some drives.
- Added: Copy: Now ATAPI CDROM drives are supported. This does not mean that this program will work with all ATAPI CDROM drives.
- Changed: CD Access: The TOC of the CD is read in a different way to avoid a bug in the Philips Firmware.
- Changed: Drive Detection: If a SCSI drive response with an illegal value for the supported memory window, a valid value is assumed.
- Bugfix: Configuration: In the Wave format configuration the "Kill zero samples" tab couldn't detect changes.
- Added: Scripting: Now it is possible to create and edit scripts, which are executed after copying each track.
- Added: Statusbar: If more than one track is selected, the required disc space for the selection is displayed in the statusbar.
- Added: Configuration: Now you can configure the default filename.

Changes since Version 1.20

- Changed: Copy: Up to 5 read retries on errors in Normal- and Synch-Mode.
- Changed: Copy: Prevents the disc from being ejected during copying.
- Changed: Copy: The message box indicating low disk space can be ignored.
- Added: Copy: New drive types are supported (new TOSHIBA drives, TEAC, MATSHITA, RICOH, PLASMON, KODAK).
- Added: Copy: Select the copy speed for most drives, if possible.
- Added: Copy: Display actual copy speed during copy process.
- Added: Converting waves: Support for the installed Audio CoDecs over the Windows Audio Compression Manager.
- Changed: Toolbar: The toolbar is displayed in the "97" style if possible.
- Added: Drive window: Display Pre-Emphasis flag for each track.
- Added: Drive window: Configure displayed columns in drive window.
- Bugfix: User Interface: General Protection Fault in Context Menus and during maximize/restore fixed.
- Added: Extras: Tool added to strip the wave header from wave files to get RAW files (or to make a pure MP3 file out of a MP3 encoded Wave file).

Changes since Version 1.31

- Bugfix: Copy: Ricoh drives doesn't swap the low and high Bytes as i thought, so i reversed this.
- Changed: Copy: Computation of required disk space make use the actual compression factor.
- Changed: Copy: Matsushita (Panasonic) supports doesn't work. I have changed this but it is still untestet.
- Bugfix: Copy: Computation of required disk space doesn't work on partitions over 2 GB.
- Bugfix: CD Access: Some drives (Philips) detects a new CD while opening or closing the tray.
- Bugfix: CD Access: The speed selection for Philips CD-Writer doesn't work.
- Bugfix: User Interface: General protection failure while adding a new drive.
- Bugfix: User Interface: The error message regarding the unsupported formats has been displayed much to often. This causes that the other settings could only be done on certain circumstances.
- Bugfix: User Interface: After adding or removing a SCSI controller from the system no drives are displayed.
- Bugfix: Everywhere: Some additional initialisations and checks have been added to prevent possibles program failures.

Changes since Version 1.33

- Bugfix: Everywhere: Some SCSI-Flags has been wrong. this has caused some problems with some ATAPI CDROMs and with Windows NT.
- Changed: Copy: Matsushita (Panasonic) will now work (i hope so).
- Bugfix: Copy: A handle is now correctly used and so there should be at least a lower CPU utilisation.
- Added: Copy: The Digital Audio Compatilby test can be disabled.

- Added: Copy: The drive can be spinned up before copying data.
- Bugfix: CD Access: Some drives has opened the tray immediately after closing it.
- Added: CD Access: The speed selection for Plextor drives is implemented.
- Bugfix: User Interface: Under some circumstances the programmes caused an error in the copy dialog, some more security checks should fix this.
- Bugfix: User Interface: The window state and position of the drive windows are correctly saved, even if the window is minimized or maximized.
- Added: User Interface: The file names can be edited directly in the drive window.
- Added: User Interface: The file names can be read from the CDPLAYER.INI.
- Added: User Interface: The configuration has been extended and modified.
- Added: User Interface: The auto play function can be disabled while WinDAC32 is running.
- Added: User Interface: The files can be written directly to the RAW (or MP3) format.
- Added: User Interface: Buffer Underruns while copying in Burst copy mode can be displayed.
- Added: User Interface: The wave files can be written to subdirectories depending on the CD.
- Added: User Interface: General information about the CD like the Bar-Code could be displayed.
- Added: User Interface: The drive configuration has some additional error checks.
- Added: User Interface: If a wrong configuration of the ASPI manager is detected, WinDAC32 tries to correct it and prompts the user to reboot.
- Added: User Interface: Detailed error messages are displayed if the drive could report it (the messages are only in english language).

Changes since Version 1.40

- Bugfix: User Interface: The check of the ASPI configuration has been corrected.
- Bugfix: User Interface: Working with Windows NT without an ASPI manager caused an program failure in drive configuration.

2. System requirements

- Installed Windows 95 or Windows NT (Version 4.0 an above)
- Installed 32 Bit ASPI Manager (included in Windows 95). Not needed for Windows NT
- SCSI CDROM drive, which is able to read digital audio data and is supported by DAC. Currently drives from the following vendors are supported: Toshiba, NEC, Hitachi, Sony, Pioneer, Plextor, Yamaha, IBM, Matsushita, TEAC, Philips, Grundig, HP, Mitsumi, Plasmon, Kodak, Ricoh (the last 7 are CD-Writers)
- ATAPI CDROM drives are supported with the help of an ASPI Manager in Win95 and in WinNT even without it.
- Hard disc with much of free space

3. Installation

You can start the program without installing (even from write protected drives like CD's), because all required information is detected during the first start and is stored in the windows registry. So you will need to clean up the registry if you decide to stop using this program. To make this easy i included two installation scripts, one for Winows 95 and one for NT 4.0. To install DAC click with the right mouse button on "INST95.INF" for Win95 and on "INSTNT.INF" for Windows NT, then choose "install" from the pop-up menu. This will create a new directory named DAC32 on the Program directory, all needed files will be copied to it. The program is also added to the start menu. The uninstall works similar Windows.

4. Using WinDAC32

This is a Windows program and therefore use it like a Windows program.

This means:

- This program uses a MDI (Multiple Document Interface) user interface. Each recognized drive is displayed in its own window. In the drive window is a list of all tracks on the CD. Music and data tracks have different icons. All menu and toolbar commands works in the context of the active window.
- The title in the drive window shows the drive name and the SCSI configuration. Drives identified with Windows NT are shown with their drive letters.
- In the drive window it is possible to select more tracks than one track. For the CD-player function only the highlited track is played, but for the copy function all selected tracks will be copied in order. The right mouse button will display a options menu which allows you to play or copy a track.
- In the DAC menu it is possible to configure the CDRom drives and the general copy parameters. The copy method is configurable for all drives, so one drive could copy in Burst-mode and one in Sectorsynchronisation. The settings for the Wave file are global for all drives. You can also manually add or remove drives.
- The Actions menu contains all functions for direct CD access. These are CD-Player and copy commands. The eject and reload commands only work with drives that have a tray. Caddy drives can only eject CD's. There are also some tray drives which are not able to reload the CD by Software command.
- In the View menu you'll find the well known functions from windows to arrange the windows. The special funktion here is that you can select the drives which are displayed in DAC. This is very useful with CD-Changers, because checking these drives can take a lot of time. With the Refresh command DAC rereads the TOC of the actual drive.
- The Help menu is not worth of decribing. There is no online help.
- The Toolbar contains all functions for CD-control. The forward and reverse command results in a change of start position by 2 seconds.
- The Statusbar shows three things: is a CD inserted or not, the current track and the current play position. Please note that even the first track doesn't start at second 0 but normally at second 2.
- The Copy dialog for copying selected sectors is an extended system dialog. Here you can choose the range by time index or by sector number. You are also able to play the selected range.

- Before several selected tracks are copied a dialog showing the current settings is displayed. Here you are also able to change the settings.
- In the window displayed during the copy progress there is a detailed progress report. The animated icons indicate the current action (reading from CD, writing to disc and synchronize sectors). The status field displays error messages and which track is being currently copied. The button aborts the copy process or if finished closes the window.

Special notes

- If there is an ASPI manager installed under Windows NT, all drives are detected twice, once from the ASPI manager, and once from the NT interface. To show only one of them, disable the unwanted drives in the "view/drives" dialog or remove the ASPI drives in the DAC Menu
- The NT detected drives couldn't be removed, added or configured (regarding the drive letter, etc.)
- Don't configure a drive with a hostadapter number greater or equal than the number of your installed hostadapters
- For the NT detected drives it isn't possible to use the burst-copy mode.
- Besides the problem that some SCSI drives return 0 for the supported Memory window, there are some drive/driver combinations reporting a legal but incorrect value (mostly too high). The first problem should be solved in the actual version, but for the second one there is no chance to detect this by the program. This problem could be found on NT with some older SCSI Hostadapters and also with Windows 95 and some exotic Cards (e.g. PCMCIA). To solve this, decrease the value for the "Sectors per Read" in the drive settings. In most cases it is enough to replace the default value of 27 with 26.
- Some ASPI drivers cannot detect ATAPI drives by default. See the ASPI Setup instructions on my homepage to fix this.
- Some Audio CoDecs couldn't be selected, because they don't support audio data in CD quality for input.
- The Pre-Emphasis flag is displayed, but it is totally ignored during copy.
- For the speed selection the same drive mappings as for the copy command is used. This may not be correct, but I don't have information about this.
- For some drives the selectable speeds are detected automatically by the time the type is selected. This only works with a CD inserted.
- The displayed speed in the drive configuration is not always correct for the speed to be copy audio data. Some drives are able to read data sectors at faster speeds, but are limited to a predefined speed for audio data.
- The speed displayed in the copy window is not the pure read speed, it indicates the effective copy speed including converting and writing data.
- If there are any problems with the drive configuration caused by the speed selection, the complete speed selection function can be disabled by adding the DWORD-Value "DisableSpeed" with the value of 1 at "HKEY_CURRENT_USER\Software\CASH\WinDAC32\Settings" in the Registry.
- Note that not all drives which are not SCSI have to be an ATAPI drive! Only ATAPI drives are supported by the ATAPI setting!

The copy modes

Here is a little graphic showing how the modes are working:

Mode: Normal

Time	:	1	2	3	4	5	6	7	8	...	N
Read	:	x		x		x		x			
Synch	:										
Write	:		x		x		x		x		x

Mode: Sectorsynchronisation

Time	:	1	2	3	4	5	6	7	8	...	N
Read	:	x	x			x			x		
Synch	:			1-2		2-5					
Write	:				x		x				x

Mode: Burst

Time	:	1	2	3	4	5	6	7	8	...	N
Read	:	x	x	x	x	x	x	x	x		
Synch	:										
Write	:		x	x	x	x	x	x	x		x

This means:

In normal mode data is read alternating from CD and written to the hard drive. This results in slight pauses between each read.

The second mode is used to correct the problems of some drives with these pauses, because these drives have to reposition the laser each time, and they are not able to do it exactly. This is done by overlapped reading of the sectors to find the end of the first block at the beginning of the second one. This mode is rather slow.

The burst mode tries to prevent these pauses by writing the data of the last sector read while reading the next one. This is the fastest and best method and therefore the default setting for all drives.

Converting

The conversion of the read data could be done in several ways. The selectable formats are displayed in a drop down list. If there are none Audio CoDecs (Compressor/Decompressor) installed in the system only the internal functions for uncompressed wave formats are available. The settings for these functions are available over the configuration button and are the same as used in older WinDAC32 (1.20 and lower) versions. For the installed CoDecs the available subformats are displayed in a drop down list. Additionally a flag for high and low quality is available. This option is not available for all CoDecs and indicates if the Compressor is working in real time mode (low quality) or not. I could only recognize an effect using the Fraunhofer MPEG Layer 3 CoDec, and this even on a P166 is far away from real time (0.8X against 0.3X at high quality). Although my ears are not the best, I recommend you to wait a little bit longer for the results. Unfortunately this CoDec is only in a version with very low

bitrates available for free (included in Microsoft Netshow), but as a test to see if the professional version is worth the large amount of money it should be enough. Let me say some words about the relationship between compression and copy modes. Because of the fact that compression takes a lot of CPU time it should be clear, that this couldn't always be done in the time the data is read (especially at high reading speed >4X a 80486 has a hard job with even simple CoDecs like ADPCM). This could cause pauses between each read command and therefore the Burst-mode is only usable if the drive has no problems finding the exact read position after a break. So the Normal- and Burst-mode are nearly the same. The Synch-Mode has by definition no problems with breaks, because it restarts for each read command at a new position. To convert the data in other audio formats the script interface should be used (see the next section). This also applies to the produced MPEG wave files, which could be converted to real MP3 files with the included StripHdr tool, by deleting all wave headers. This tool could also be used to produce RAW files (used by some CD-Writer programmes), because these files are nothing but uncompressed wave files without a header.

5. Scripting

I will describe this new function in more detail, because it is very complex (yet still easy to use).

The main reason to use the scripting is the possibility to execute almost all commands after copying each track. One application is the conversion of the resulting Wave Files in other formats.

Before you can use a script, you have to create or load one. This could be done with the "Edit Script" dialog. The program keeps the last edited script, so you don't have to load one each time you start WinDAC.

The scripts could be saved and loaded in the script editor, but this is so easy that i don't have to explain it. The script editor could be also used - yes really - for editing scripts. To create a new script command, click with the mouse on the matching button (look at the tool tips), or press the "INS" Buttons. After that you can write your command in the edit field, or select a file to execute with the browse button.

To change a command click on the command in the list and edit it in the edit field.

It is also possible to change some attributes for the execution:

First you can choose if the application should wait for the new process to exit. The second attribute is the choice between executing the command through the system command processor ("COMMAND.COM", or "CMD.EXE") or not.

Even more interesting are the parameter that can be used. Currently the following parameters are supported:

- %L : Last filename of the wavefile in the long format with file-extension
- %l : Last filename of the wavefile in the long format without file-extension
- %S : Last filename of the wavefile in the short format with file-extension
- %s : Last filename of the wavefile in the short format without file-extension

There are problems mixing long and short filenames. It is not sure that there is no file with a short filename and a new file-extension. So it is possible that you overwrite the

old file.

As an example have a look at the popular conversion to the MPEG 1 Layer 3 format. The encoder only supports short filenames, so the the script would look like the following:

```
1:L3enc %S %s.mp3
2:ren %s.mp3 "%l.mp3"
3:del %L
```

This means: Encode the file, restore the long filename and delete the wave file.

The first file will be: WaveDump01.wav (WAVEDU~1.WAV)

This results to (WAVEDU~1.MP3) and after renaming WaveDump01.mp3

The second file is WaveDump02.wav (WAVEDU~1.WAV)!

The short filename is selected by the system, because there is no longer a file matching this (remember: we have deleted the last wave). And so the last MP3 file will be overwritten.

I solved this in the supplied script by moving all files to a subdirectory.

It is recommended to create for all programs you use in the script a PIF file, because otherwise, depending on the system settings, you have to close it manually after termination.

6. Where can you download the latest versions?

The latest versions of DAC are always available at the following sites:

- In the Fidonet you can request the DOS-Version with the Magic DAC and the Windows Version with the Magic WINDAC at the following Addresses:

2:2448/2010 +49 201 8535024 33.600 V.34+/ISDN X75

2:2448/2011 +49 201 8535023 ISDN X75

2:2448/2012 +49 201 8535023 19.200 Zyx

You could also download the latest version as a Online-User.

- In the Internet from my homepage:
<http://members.aol.com/schmelnik/dac.html>

7. Problems

It is possible that DAC will refuse to copy a Track (especially the first on a disc). Here you have to increase the start sector until DAC starts (only available for registered users). Similar problems are possible at the last Track. My Toshiba refuses to read the last sector on a disc, but it is definitely present.

If you want to try a new and unknown drive and the the copy progress doesn't work, try to change the drive type in the settings. Unknown drives are mapped as SONY by default. You can also try one of the other default types: TOSHIBA, NEC, PHILIPS, TOSHNEW, RICOH, MATSHITA.

New drives are only detected if you have installed an additional SCSI controller, so you have to rescan the SCSI Bus with the Command Reset in the DAC menu.

You can't use this program with NT 3.51, because the copy dialogs are extended System dialogs and have the explorer style which is not available under normal NT 3.51

installations. But if there are many who want to use DAC with this old version of NT and don't want to upgrade to 4.0, i will fix this problem in a later version.

Here are some open problems:

First there are some drives (exactly said: this problem was reported only for some older ATAPI models of Toshiba) WinDAC32 starts at the wrong position of the track. It starts at about one minute to late and copies into the beginning of the next track. I have no idea what causes this, but i'm wondering why there are no problems like this with similar DOS tools.

Some other drives report after some time a read error (ASPI reports an error). This seems to be a timing problem. If you configure the drive to normal- or synch-mode, WinDAC32 tries to reread the sectors several times. If this has no success the copy process is aborted. In the burst-mode this is not possible. To ignore this error was also no solution for this problem, because you would get a long dropout in the resulting wave file. If anyone could determine exactly at which point in the playtime of the CD this problem starts email me this information.

The next problem appears also after some time and applies to the Philips CDD2600, which is known to have some problems with reading audio data. One drive will have no problems with this, but another one will have the problem mentioned before. And a third one has the following problem: After copying the first few tracks without any problem it begins to read from all over the CD and so the results are rather funny. Even here I'm interested in the exact starting point of this behaviour and the length of each resulting passages.

I often get the following question from some people that report that the ASPI manager couldn't be initialized, although it could be found in the Windows system directory. I don't know how to solve this but i could say that it isn't wrong to reinstall Windows from time to time.

If you encounter other problems, E-Mail me.

Speed

High reading speed could cause some read problems, so i have integrated the possibility to select the reading speed depending on the drive capabilities. But this is not possible with all drives and with others only restricted. I couldn't test all drives, so i can't say which drives will work. The autodetection of the possible speeds done by WinDAC32 for some drives could cause some problems. Let me say it again: this autodetection will detect the speed for reading data sectors. The audio speed may differ from these values. Some drives doesn't support other speeds, so don't write me about this. If you are sure that the speed is wrong and you have technical information about this, write me with details.

There seems to be a problem with some of the older versions of the newer Toshiba models recognized by WinDAC32 as TOSHNEW and reading faster than 1X. Configure such drives as TOSHIBA or limit the speed to 1X. This problem could be caused by the firmware version. I am very interested in the firmware version and SCSI controllers used.

8. List of tested drives

I will no longer be keeping this list because i don't release many updates to keep the list accurate. Generally I recommend the drives from Toshiba, which can read Audio with single speed (the 12x and faster drives could read faster, currently at 4X), the drives from Pioneer, which read with drives maximum speed (it seems that the DR-A24X is not so fast - i got only 2.7x - 3.1x) and the drives from Plextor (until the 12Plex) reading at the maximum speed of 8x (even with the 12x drives).

I think i should add a remark for the Mitsumi FX400. These drives couldn't read audio data (it's really funny how much of these drives have been sold). Since the Mitsumi FX800/810 these drives could read audio data, but not so good.

For those who want to see the experience of others i suggest to have a look at Stewart Addisons CDDA Page

(<http://www.tardis.ed.ac.uk/~psyche/pc/cdrom/CDDA.html>).

9. Registering

For registration please fill out the form in the File REGISTER.TXT and send it along with the registration fee to me.

Bank transfers from outside germany cost a lot of fees, please note this when you register.

No student editions or versions for free are available (think about the problem what to do with a P7-1300MHz machine and having no money to buy software).

Updates are available: all updates for WinDAC32 1.x are for free, but only on request. If you do not want it by email, send me a disk with an adressed and prepaid envelope (if you don't have german stamps add 3 dollars).

And remember that any donations are welcome.

Adress:

Christoph Schmelnik
Stolzingweg 29
D-45307 Essen
Germany

Oh! STOP!!!!!!

=====

Before you write me a mail with a question, make sure that you have done the following:

1. Use the latest official version from my homepage
2. Read carefully the documentation
3. Read the FAQ on my Internet homepage
3. Try it again
4. Do the last steps once again
5. Repeat this
6. If you are still thinking i can help you: write a detailed description (used WinDAC32 version, Operating System, SCSI Controller, CDROM-drive , ...)

7. Send this description to me, but DON'T attach any files to it
The last point is rather important, i don't want any Mega Bytes of wave files, or other files (even Screenshots). If I think I need a special file, I will you write this.
Please think of this, because otherwise i cannot answer the large amount of emails.
Allmost 95 percent of the answers could be found on this way.

Email:

Fido: 2:2448/2010.4

Internet: christoph@kali.rhein-ruhr.de

Compuserve: INTERNET:christoph@kali.rhein-ruhr.de

10. The tool StripHdr

New to this version and has the simple function to strip all headers from a wave file and write the pure data to a new file.

The syntax is "StripHdr InFile.wav OutFile.RAW".

What is this tool use for:

You could use this to convert the data into the RAW format for some CD Writer programs, or to make "real" MP3 files out of MPEG encoded wave files.

11. Notes

Some of the terms i used here are registered trademarks like Windows 95, Windows NT, Win32, Toshiba, Plextor, Pioneer, ...

So that's all, Enough is enough