

Audio Cassette Tape to a ADAM DDP Pack!!

v2.2

-Mark (Dec 21 2019)

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-INTRODUCTION-

Unfortunately at the time this was originally written (2010) there was no program to ADAM Format a blank audio cassette. The digital format was proprietary and the preformatted tapes could only be bought from Coleco.

!!\ READ THIS ENTIRE MANUAL BEFORE DOING ANYTHING /\!

-STEREO & SETTINGS-

To begin, you must have a Stereo System with Dual Tape Decks. Make sure it does not have an always on type of audio "auto leveling" function. This needs to be OFF at all times while making a new DDP Pack. Also "Dolby noise reduction" should mostly likely be off if your stereo is equipped with it. (if you can't turn these off you may have a problem since these screw up the final recording drastically).

- You need to set your Stereo equipment's full band EQ just slightly above normal (if you have a one of those "preset EQ button" you may have an issue with getting a decent recording, try setting it too Classical or OFF if possible).
- You may have a "Manual Recording Level knob", its said to be set into the "red" but I'm not sure, you would have to experiment, try setting it at 7.5 out of 10. It needs to be real "pitchy" and "tinny" for ADAM to recognize it, but the sound can't be distorted at all.

NOTES:

- An old basic portal Walkman (typical an 80's type) with volume set to about 55% on playback hooked up to a recording cassette machine (with EQ and no auto level control) works to produce successful DDP Packs.

- I also had good luck with an old (1980's) dual cassette York stereo that had a full-band EQ, with no auto-leveling feature. It was a cheap system but worked for making DDP packs.
- I have been told that you don't necessarily need a "stereo" system to copy the DDPs. A mono system should work equally as well.

-CASSETTE TAPE-

Back in the mid 1980's the blank audio tape of choice for the poor man that makes DDP Packs on a stereo system was the Sony HF-60 min cassette. Most audio tapes weren't designed to run at the high speed the ADAM Digital Data Drive runs at and they didn't last very long. The actual tape material would come off the reel inside the cassette housing. The Sony tapes seemed really dependable. They worked really well and a lot of people used them. (I think a company called Data Backup started using them first and it spread like wildfire).

- Other Brands used where BASF 60 and Maxell XLII-60 High Bias tapes. (I even used a Blue label Kmart (KMC) 60 min tape, and the recording worked well, it was noisy though as it rattled in the drive.)

NOTES:

- You can use Sony HF-90 min tapes too but I wouldn't go any higher since the thickness of the tape is thinner the more mins a tape has, thinner means more likely to stretch. EX: 60 min tape is more durable than a 90 min tape.
- All these tapes mentioned above are High Fidelity/Low Noise/Standard "TYPE I (iron oxide) (NORMAL) POSITION NORMAL BIAS 120 μ s EQ. This information isn't terrible important, but is present to show that the audio tapes are not of an expensive variety.

-METAL OR CHROME TAPES-

Since ADAM was made JUST BEFORE metal and chrome tapes became popular, I'm hesitant to use them, but I do know they produce better sound. I'm concerned cause:

- The ADAM doesn't have a Metal Tape type selector to activate the better quality.
- Maybe the metal or chrome would wear out the ADAMs data drive head.

NOTES:

- If you do use one of these types, Chrome has better compatibility, if I remember correctly, these tapes didn't require a special button.
- These tapes are "TYPEII (chrome) and TYPEIV (metal). They both use 70 μ s playback equalization, however later in the 1980's chrome tapes where 120 μ s EQ and do not require a chrome button.) I would wait till you perfect your dubbing skills before trying to a chrome tape.

-REALLY BLANK TAPE-

Make sure your using a brand new blank audio tape, since simply recording over an existing pre-recorded tape will produce poor quality, be it if audio or noise is recorded on it.

- If you must use a prerecorded tape use a "Bulk Tape Eraser" (Radio Shack #44-232) that magnetically scrambles the particles on the tape to give you a better recording base.

NOTES:

- Use this bulk tape eraser **AWAY** from your ADAM computer and any DDP's and Disks as it will weaken or even erase the media.
- **READ** the instructions of the Bulk Tape Eraser before using. Remember to cover the write-protection indentations on the top of the used cassette with a piece of tape so it will record again!

-DRILL HOLES IN A DDP-

Unfortunately you will have to drill a hole (5/32 drill bit) in either side of one of your Coleco Digital Data Packs. This would be where the capstan is located on your stereo.

- You will find that these areas are pre-marked on the Coleco DDP's, near the bottom. One on the front left side and one on the back left side. (compare it to a standard audio cassette to understand better).



- This is so the Coleco DDP will fit in your Stereo system. I recommend that you use one of the DDP tapes that you least often use (preferably a genuine blank DDP; center position catalog, but not required),
- Rewind it manually all the way before starting to add the holes to avoid damaging the tape mylar.
- After Drilling make sure all the plastic debris are blown away and not trapped in the cassettes casing. Usually holding the tape upright and tapping it will free any debris.

-DRILL HOLES IN A TAPE-

You also have to drill two holes (5/32 drill bit) in the back side of the cassette's casing, near the top on the left and right sides. This is where the ADAM DDP Drive has two ant-shake pins.

- These holes can be drilled without exposing the interior of the cassette casing.



- This is also so you always put the DDP in the correct way with side one facing out.
- I came across someone that clipped out the pins on their ADAMS DDP drive. This is NOT a good idea. Its best to spend the time on the drilling.

-START TO RECORD-

Before you put the Blank Audio Tape in, you should first advance the tape forward just past the clear mylar leader, this is so you don't miss any of the DDP digital tones.

- A genuine DDP has a 7 sec of clear mylar and at about 26 secs the tones will start. So its best not to miss any of these tones.
- You can use a pencil to manually turn the tape to get it just passed the clear mylar leader. (Note: Most Audio cassettes have about a 3 sec clear mylar leader, shorter than a DDP's, if this is the case with your Audio cassette you can forgo the manual advancing of the tape.)

When you put in the source DDP pack, you must of course make sure its in the "Play" side of the dual tape decks on your stereo and that side one (label side out) is rewind all the way.

- Begin the recording tape first then hit play on the source DDP. After about 20 mins of recording I would go near your Stereo and listen to the DDP's tone sounds, when they end (28 mins and 28 secs) you should wait a few more seconds(26 sec more,) till the source DDP stops then stop the recording tape. Then flip both tapes over and finish the recording.

*All this waiting had to be done cause the DDP tapes are about 56 mins and 52 secs long and the regular tapes are 60 mins long and the DDP's 2 tracks have to line up. If they where not lined up within reason then while the new DDP tape is in the Data Drive, you may notice an excess amount of seek times, the newly created DDP tape will function however. Too much and you'll get an I/O error.

**Also according to Syd Carter's MEGACOPY documentation, it tells us that a minimum of one minute of blank tape was required at the beginning and end of the formatted tape in order for the completed product to function properly. This is normally taken care of if your duplicating from a genuine Coleco DDP.

-WRITE YOUR STEREO SETTINGS-

I have successfully made backups of my Blank ADAM DDP's including a filled DDP, like Dragons Lair (Center Directory) by writing down my stereo settings. I have happily made many standard audio cassettes into formatted DDP's this way. If you write down your procedure you use for your specific Stereo System, I'm sure you'll make perfect copies each time. This includes your EQ settings and any other "advance" settings your stereo may have.

-TIGHTEN UP SLACK-

Before inserting a DDP into ADAM's DDD, you should take up any slack the tape has after being handled outside of its Drive. Use a finger or pencil to tighten it up, this will prevent the tape from slapping and stretching. Once inside the drive, the DDD will prevent slack by constantly tightening while idle. When in motion it will be under controlled speed and braking.

-VIEW CATALOG-

A fast way to see if your new DDP works is to load up SmartBasic and Catalog the newly created DDP.

CATALOG

-RESET CATALOG-

If you made a copy of a DDP that was full and you want to make it a blank DDP, you must load up SmartBasic and Initialize the newly created DDP.

INIT <volumename>, D#

After doing this you can use any DDP to DDP program to make backups of your software onto the Newly Initialized DDP! Such as Unreal Software's PACKCOPY, but there are many others. OR you can continue to use your stereo system.

NOTES:

- This won't work on a copy of SmartBasic. (See your SmartBasic Manual)
- Initializing a DDP does NOT erase the programs on the DDP, it resets the CATALOG. The

CATALOG is the space on the DDP that holds all the information for the files, EX: there names...etc...

-RESTORE BAD COPY-

On some occasions if the duplication seemed to have failed, try INIT the DDP and see if this will restore it to a blank DDP. I tried this myself after failed attempts of copying a filled DDP, and it worked, of course the data was lost.

But since the duplication process didn't produce a working copy, I'm can only assume the newly INIT tape isn't completely formatted. (you will be able to save some work on it however, in the future an I/O error will occur) You'll want to do a full block check to see if your new tape is 100%. You can use AJM Software's FILEMANAGER 3.0 or BACKUP 3.0+ to check and verify for missing/bad blocks.

If you find missing blocks you can try to use AJM Software's FILEMANAGER 3.0 to use the "format" function. This MAY Restore the tape to 100%. This method also works on non functioning weakened DDP's as well.

-COPY A COPY-

If you decide to make a copy from a copy, It will work. Its simply best to copy from a genuine Coleco (or LORAN) DDP. The signal will be stronger and last longer if its weakened by magnetic radiation which playes apart in formatting an accessibility loss. However it will work. Set aside a genuine blank DDP for just this purpose, if you can spare one.

-REFORMATTING A BAD DDP-

If you need too reformat by way of a stereo a magnetically damaged genuine Coleco DDP or even a copied DDP, remember to use a Bulk Tape Eraser first to completely erase the recording, even if it has been "erased" by an electromagnetic charge from the ADAM, cause the erasure is most likely an uneven type.

DDP INFO:

Coleco sold these high quality tapes specifically made for the ADAM, capable of withstanding the high-speed 20 ips (inches per second) read/write and 80 ips rewind/forward search speeds and stops, with minimal wear. They were similar to standard cassettes except the casing was made of Lexan to withstand the high levels of heat that a heavily-used Data Drive can generate. Coleco added some holes that were used to align them and hold them in alignment during high speed operation. Apparently during testing, Standard cassettes without the holes had too much movement to keep the tape in contact with the head.

The DDP's magnetic particle material is made from uniform Gamma Ferric Oxide (this is what

standard audio tapes are made with ironically), Coleco used higher quality tape - basically "first run" tape to minimize defects in the magnetic media. First run means the first batch of tape coming off a line, similar to high quality video tape. The bath they use to coat tape degrades as it is used which eventually produces drop-outs. The DDP tape is shorter in length than a standard 60 min tape (supposedly 51 mins), The tape is not any thicker like you would think a shorter tape would be too withstand stretching better, none the less Coleco/Loran claimed they are better at preventing stretching. These tapes are low-bias type apparently because it worked better. These Genuine Tapes seem to be all made from Loranger Manufacturing Corp or LORAN, even perhaps the Coleco Silver Label versions.

The Digital Data Pack tape cassette holds 256 KB.(500K half a megabyte) (about 250 typed pages that's: Two Mono tracks, 128 blocks per track, 1 block = 1K) But most of the information is systematically repeated several times to help speed up seek and load times. When the ADAM saves information too the DDP, ADAM will first fill up side two before putting information on side one. Another interesting fact is that the computer catalog is in the center of the tape for faster searches. (Note: Super Games use a different format called: right directory.) Its best not to use a right directory DDP to create a Blank DDP because the load and search times would increase an incredible amount.

Coleco told reviewers back in the early 80's that they plan to release a special Formatting Program for DDP's and they also where going to release a higher capacity DDP (twice the capacity.) Of course these never where issued.

MEGACOPY:

There was a hardware/software combination equipment/interface that allowed end-users to format audio cassetes. It was called MegaCopy designed by Syd Carter for Trisyd Video Labs/Games. There where three versions of this hardware/software combo, of course MegaCopy Type III was the best. Two DDD drives where used for the duplication process.

This used the built-in signal generating capabilities of the Adam, as on the DDD drives. You needed a genuie DDP to copy from to use as a master. Apperantly the first released model had some faults; it's very reluctant to read and copy block 64 properly so it can be necessary to go over it a couple of times, or maybe use a block copier to reinforce it later, and it is dreadfully slow. The Highlights; the software is flexible, allowing the copying of regular center-directory, floppy tapes or right-directory game tapes. There was also a second model that was built, with improved duplicating, there would be no more missing blocks.

Later (1989) an introduction of "Extended format" digital data packs for the Adam was announced. A standard DDP, (C-60 length) can now hold up to 306K(later to 320K) instead of just 256K. No changes are needed for EOS to access such a tape. A small patch would be required for CP/M to use the extra storage space though. These 320K Extended Data Packs can be copied with Syd's updated MegaCopy software, too. I assume this was MegaCopy III.

Testing was under way to see how much capacity a tape can hold and still be 100% reliable. C-90 tapes would be able to hold 400K or more! Syd says it's theoretically possible to put 500K or more on a tape, but the drive would have to be slowed down to keep the computer from continually backing the tape up as it would have passed the next block on the tape, by the time the previous block was all loaded into memory, so staying with the 300+ capacity for C-60s is ideal.

*From what I understand Coleco had a small unit that duplicated the DDP's, or even

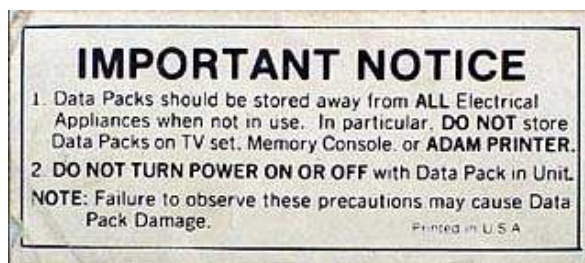
reformatted them built into a Module #3 casing. This would be something that was used not for mass reproduction of the DDP's...

FLIPPY TAPES:

These are the same as regular ddp except that the storage is divided so that instead of 256k you have two sides of 128k each. Many programs take up only a few blocks on your tape, but must be kept separate. With flippies, you could put say, Adalink II on one side and MEX on the other, for convenience and to save storage.

DATA PACK DAMAGE

The Adam generates a surge of electromagnetic energy on startup and shutdown, which could erase the contents of your DDP media left in the drive accidentally. Some of the early Coleco manuals told the user to put the tape in before turning the computer on. This should NOT be done, you should turn on your system first, then insert the tape, then pull the reset switch.



- Always keep your tapes at least four feet from your system to prevent weakening or erasure of the DDP's.
- Keep them away from Hot and Cold areas, maintain them at room temperature.
- NEVER Eject a tape while it is moving, this will help to destroy the drive.
- NEVER leave a DDP in the drive if its not needed, cause when the data pack is sitting in a data drive, the motors have some power applied to them to take up the slack of the tape. Its good practice to remove them when your done with them.

CLEANING DDD HEAD:

For an old and unused ADAM Digital Data Drive, wet a cotton swab by spraying on WD-40 and vigorously press down and wipe the entire head. Pay special attention to the center where the "cross" is located. Metallic particles build up there and over time may rust covering the audio/record head, especially if your Drive has been sitting for years on end. Once you have cleaned the surface of the head so no more "dirt" appears on the swab then allow the WD-40 to evaporate.

Next repeat the cleaning process with a new swab and this time spray on(or drip on) Isopropyl Alcohol (usually you can find this furnished with a cassette tape head cleaner or a CD cleaner, if not try the drug store.) You may even clean the plastic tape guides on either side of the playback/record head, including the speed-transducer wheel(rubber wheel). Do this by holding the cotton swab against the rubber wheel and turn the wheel with a clean

finger.

Next you can TRY to use a normal cassette head cleaner, by turning on ADAM and insert the head cleaner and pull the reset, ADAM should run the head cleaner back and forth for a little bit hopefully cleaning and polishing the areas you missed.

Its a good idea to clean your stereo system once in awhile before making a new DDP. You don't have to do this every time but every 20 hrs of use.

Just For Fun:

What if you could make a USB port from the ADAMs DIGITAL DATA DRIVE, by inserting a Tape Deck Adapter that has all the necessary hardware to act as a DDP? You could either have a port on the Tape Deck Adapter or make the Adapter the Thumb Drive itself. But where do you get the power from...

Or maybe remove the DDD entirely and plug in a USB port to the A and B locations on the ADAM DDD ports? Then mount the hardware where the DDD was.

A good idea! Have a 8 gig thumb drive with all your ADAM and ColecoVision software/games and room to save too. It would be only as fast as the DDP port could go (1.4K bytes per second) but its better than having all these tapes.

It would have to act like an oversized DDP, with a catalog of course to index the files. The drive might have to be separated(or partitioned) to allow specific files to be written from programs that require there own format.

How about inputting the DDP tones into a PC via the sound card input jack(or line in) and then clean up all the hiss and other unwanted noise, then replay the tones to the output jack of your sound card to a tape decks input(or cassette adapter) and there you have a crystal clear playback base, and its saved on a PC. This could be done with all the DDP library. 51 mins each would be huge file however...

A cassette adapter slides into your cassette player just like a tape, but they have a wire that connects to your headphone jack and there is no tape, just a steel playback head.



Just a thought and for the fun of writing it.

ABOUT This Manual:

This manual was created to help individuals along with my self to have guidelines on how to format a new DDP. As of version 1.xx of this manual I have not done any modern day formatting or test of my newer stereo system. I do plan to to address this when I have a fully functional ADAM micro computer. Most of the information here is from memory; 25 years ago and some from research.

As of version 1.69 of this manual I have done modern day(2010) testing on a 1998 Sharp Stereo platform Model CD-C422, with dual tape decks and a built in 4-mode preset electronic equalizer; Flat , Heavy, Vocal, Soft or X-Bass. My attempts on Vocal, Heavy, Flat and X-Bass setting failed... It must be the preset EQ that's preventing me from getting a good copy. It doesn't say anywhere if it has automatic leveling or noise reduction.

The system I used in the 1980's was York Stereo platform Model M2409, with dual tape decks and a full band equalizer. With a High-Speed dubbing selection button. But I don't think I used the High speed dubbing. From what I'm told High speed dubbing will work. Unfortunately this system doesn't work anymore.

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