Upcoming VCF Events

Need some help with 8 inch floppy drive...

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Adventurer

February 1st, 2017, 09:12 AM

Need some help with 8 inch floppy drive...

3 Attachment(s)

I'm about to aquire an IBM Displaywriter, with double floppy drive and no software. I do need to setup my old 286 PC to be able to read 8 inch floppies, so I guess I need some help.

First - if I understand correctly, I can use (or create) and adapter from 34 pin floppy cable to 50 pin cable for 8 inch drive. I ordered this adapter:

Attachment 35828

So far so good. Next, I do need 50 pin cable. Can these SCSI cables be used? Attachment 35829

Next - which drive can you reccomend? I need to be able to write both - DS/DD and SS/SD floppies, at least judging from IBM displaywriter specifications. I'm thinking about getting a Shugart SA 851.

Attachment 35830

Last - as I understand, the drive motor is directly powered with AC power, and control board needs 24V and 5V DC?

Thanks in advance for any advice or help!

fritzeflink

February 1st, 2017, 10:32 AM

1st

The adapter is best. I have the older one. For SD format the floppy controller I prefer is

Adaptec AHA-1522A then Adaptec AHA-1542B

Look at Registry of mainboards/floppy controller results

in http://classiccmp.org/dunfield/img/index.htm

In the CP/M FAQ are some answers, here is a link as I don't want to post it all.

Q14: Can I read my 8" disks with my PC?

http://oldcomputers.dyndns.org/publi...ls/cpm-faq.txt

What drives you may use ? I hope somebody other has an answer.

2nd

SCSI cable?

I believe so.

modem7

February 2nd, 2017, 10:59 AM

Quote:

Originally Posted by Adventurer

First - if I understand correctly, I can use (or create) and adapter from 34 pin floppy cable to 50 pin cable for 8 inch drive. I ordered this adapter:

I use the D Bit FDADAP adapter as well. Note that it needs to be powered via the 4-pin connector.

Quote:

Originally Posted by Adventurer 120

So far so good. Next, I do need 50 pin cable.

To cater for the data connector on my TM848-02 drive, I use the FDADAP-to-drive cable shown at [here].

Quote:

Originally Posted by **Adventurer**

Last - as I understand, the drive motor is directly powered with AC power, and control board needs 24V and 5V DC?

My TM848-02 drive only needs +24 Vdc and +5 Vdc. I power it via the setup shown at [here].

If you do not buy a tested drive, then do not be surprised if the drive is faulty. I had faulty capacitors in both of the drives that I purchased (separately).

Having technical documentation for the drive is good as well (e.g. for jumper configuration, for repair).

Don't accidentally buy a single-sided drive when you are after a double-sided one. That is what I did.

Adventurer

February 2nd, 2017, 06:45 PM

Quote:

Originally Posted by modem7

If you do not buy a tested drive, then do not be surprised if the drive is faulty. I had faulty capacitors in both of the drives that I purchased (separately).

Having technical documentation for the drive is good as well (e.g. for jumper configuration, for repair).

Don't accidentally buy a single-sided drive when you are after a double-sided one. That is what I did.

Thanks, a very useful information it is! I have bought (ordered) Shugart SA-851, which I guess is a double sided drive after all. Still, getting it to work might be an interesting task, since usually no one lists them as "working", at least for the fair price not. I know how to replace the capacitors, and do have a soldering station, however, I hope there might not be some mechanical damage to drive heads or something, which can not be repaired unless having one more drive.

At least, so far:

FDADAP adapter - ordered, on the way
50 pin SCSI cable - ordered
8 inch drive - Shugart SA-851 - ordered
8 inch floppies - to be ordered
DC adapter for 8 inch drive - to be bought
286 PC with 5/14 floppy cables - in my possesion
All available software images for an IBM Displaywriter already downloaded, including

ImageDisk software as well

Last, but not least - IBM Displaywriter, ordered, on the way, however, no documentation, no software provided.

Am I missing something in order to transfer the data?

Malvineous

February 19th, 2017, 02:53 AM

I would be interested to hear how this ends up working for you.

I have successfully used the KryoFlux (USB floppy interface) to read 8" disks with a Shugart SA-800 single-sided drive and it worked fine. I haven't tried connecting the drive to a real PC though.

You will likely need to adjust jumper settings on the Shugart drive to put it in PC-

compatible mode (the factory default) if it has been changed to work with another type of computer. Some drives were made with soldered wire instead of jumpers so hopefully if you have one of these then it is already configured for PC operation.

If you're using it with a standard PC floppy controller, make sure you get the right 50Hz/60Hz version for your local mains power. Where I live the mains is 50Hz and most drives for sale are 60Hz, likely because someone imported the wrong drive and is trying to sell it again when they discovered it didn't work. If you get the wrong drive then the motor will run at the wrong speed (assuming the voltage is compatible) but I think the KryoFlux might be able to compensate for this. A real PC controller can't, though.

The FDADAP with SCSI cables works fine, as long as you can get the 50-pin edge connector at one end. The ones in your photo look fine. As well as +5VDC, +24VDC, and 240VAC @ 50Hz, my SA-800 also needs -5VDC to operate. The manuals can be found online and helpfully give part numbers for the various power connectors, along with current requirements for each voltage.

Shadow Lord

February 20th, 2017, 07:40 PM

I went a bit over board with my setup but given that most of my drives are external it has proven to be quite versatile:

FDADAP

Adventurer

February 21st, 2017, 09:11 PM

Thanks everyone for advices and tips, and here are the news - I 4 Attachment(s) finally got all the components I needed, so I started to do some soldering/connecting job. The only problem - I had to use two power adapters for the drive, since local electronics shop did not have one with +24 and +5 V.

At the beginning things looked pretty well...Attachment 36356

Later when the main connections and adapters were connected, it was time to connect FDDAP adapter and time to test the drive.

Attachment 36357

Brand new old stock DS/DD floppies for testing: Attachment 36358

Test results:

Motor working - OK
Drive set up as 5.25 1.2 MB in BIOS - OK
Access light lits when switching on the PC, drive solenoid makes a click - OK
No errors on starting PC - OK

Drive access, format: fail Attachment 36359

I did notice, that the rails are not moving - I can manually adjust them, and they just stay where they are. It seems there is a problem either with electronics, or the rail motor itself. Maybe I can not use it with an MS-DOS format? Even then I would expect the rails to move at least...

Adventurer

February 21st, 2017, 09:19 PM

Forgot to write, that FDADAP adapter shows no progress when accessing drive - instead of track number there is "- -"

archeocomp

February 21st, 2017, 09:22 PM

I had one 8" drive which did not move head assembly. One 74 TTL on board was dead. I would double check step pulses are there and are wide/slow enough for your particular drive. When that's OK it is time to study the schematics. At least make sure there is TTL high level on pin 36 - the STEP signal of the drive when it is powered on and idle.

EDIT: FDADAP staying in unknown state indicates there might be problem with Track0, STEP and DIRECTION signals. Check Track0 levels when you move head assembly by hand.

sciencedude100

February 21st, 2017, 09:39 PM

What would be a good 8" drive that's cheap.
Building one might be a possibility if I can get the circuits.

MikeS

February 21st, 2017, 10:02 PM

Ouote:

Originally Posted by **Adventurer**

..

Test results:

Motor working - OK Drive set up as 5.25 1.2 MB in BIOS - OK Access light lits when switching on the PC, drive solenoid makes a click - OK No errors on starting PC - OK Drive access, format: fail The drive light should not light, nor should the HL solenoid engage until the drive is actually selected. Check the cable.

What drive number is the drive jumpered as?

m

modem7

February 22nd, 2017, 11:04 AM

Ouote:

Originally Posted by Adventurer

Drive set up as 5.25 1.2 MB in BIOS - OK

Note for later when you get the drive operational.

1.2M drives have 80 tracks. Like my TM848, the SA-851 has 77 tracks.

From memory:

- * When I used an XT-FDC card, and DOS tried to format/access tracks beyond 77 (because DOS thought there were 80), I would hear a very nasty sound from the drive.
- * When I used an FDADAP, and DOS tried to format/access tracks beyond 77, the FDADAP appeared to keep the drive at track 77.

So with the FDADAP, when I formatted a floppy via DOS, track 77 on the floppy ended up being formatted four times, first as track 77, then as 78, then as 79, then as 80. The result was that the last six tracks ended up being marked as ..., 72, 73, 74, 75, 76, 80.

This meant that only 76 tracks on the floppy were usable, and I had to hope that DOS would not try to put anything beyond track 76.

archeocomp

February 22nd, 2017, 12:52 PM

Quote:

Originally Posted by sciencedude100 [32]

What would be a good 8" drive that's cheap. Building one might be a possibility if I can get the circuits.

Building only the electronics you mean?

Chuck(G)

February 22nd, 2017, 02:40 PM

I'm sure you know this already, but I'll say it anyway. On 8" floppies, unlike 5.25" floppies, you need a write **enable** tab over the write-protect slot. 5.25" are exactly the opposite.

Also, 3M produced a line of floppies packaged with transparent **red** write-enable tabs. Apparently, they're **too** transparent for some drives. That one took a bit of work to discover...:)

sciencedude100

February 22nd, 2017, 07:25 PM

Quote:

Originally Posted by archeocomp

Building only the electronics you mean?

I can build (most likely) the mechanics of a drive and (definitely) the electronics. All I would need are the components and schematics. I could even make my own board if needed.\

So, is there anyone with schematics of a DS/DD 8" floppy drive? Also, what's a good reference on it's standards? (Such as speed, timings, data flow, etc.)

MikeS

February 22nd, 2017, 07:27 PM

Quote:

Originally Posted by modem7

The result was that the last six tracks ended up being marked as ..., 72, 73, 74, 75, 76, 80

This meant that only 76 tracks on the floppy were usable, and I had to hope that DOS would not try to put anything beyond track 76.

An interesting bit of info; thanks!

Chuck(G)

February 22nd, 2017, 07:41 PM

Quote:

Originally Posted by sciencedude100 [30]

I can build (most likely) the mechanics of a drive and (definitely) the electronics. All I would need are the components and schematics. I could even make my own board if needed.\

So, is there anyone with schematics of a DS/DD 8" floppy drive?

Also, what's a good reference on it's standards? (Such as speed, timings, data flow, etc.)

A good place to start are the Shugart OEM documents on bitsavers. Shugart drives did tend to be the standard for 8" in the 70s.

Good luck on making those heads...

Shadow Lord

February 22nd, 2017, 08:27 PM

Quote:

Originally Posted by modem7 >>>

So with the FDADAP, when I formatted a floppy via DOS, track 77 on the floppy ended up being formatted four times, first as track 77, then as 78, then as 79, then as 80.

The result was that the last six tracks ended up being marked as ..., 72, 73, 74, 75, 76, 80.

This meant that only 76 tracks on the floppy were usable, and I had to hope that DOS would not try to put anything beyond track 76.

Modem7,

Could this be bypassed using the DOS driver "driver.sys" to give formatting info to programs like format?

Also can't you can define format parameters on the command line for format.com:

https://technet.microsoft.com/en-us/...(v=ws.11).aspx

So IIRC this should work: format d: /a:1024 /t:77 /n:8 where d is your 8" drive. Since you specify /n: I don't BELIEVE you need the /8 switch. Please note this is for MS-DOS version of the format.com and not the windows version.

Adventurer

February 22nd, 2017, 08:56 PM

Glad to see more info coming in - I believe there should be something like a "using 8 inch floppy drive for dummies guide".

3 Attachment(s)

Anyway, I spent a rather sleepless night, working with the drive. Replaced some bad caps, had a long, but finally eventful fiddling with jumpers - finally I did get a seek operation when turning on the PC. However, it was not seeking when trying to acces/format the drive

Attachment 36396

Later, more jumpers, two more added, and finally heads started to work as expected.

What a relief!.

Next, some of you are already laughing, and well, I was not even reading the forum posts, so I got "Drive protect error". Instead of looking in forum (or google), I thought it must be the jumper configuration (indeed - it is possible to disable write protect on this drive, by soldering two connectors). Only after this operation I found out, that all I had to do is put a piece of tape on the floppy side. Oh well.

DOS 5.0 format - started to work, but the drive was making weird noises, heads jumping over sectors, so I simply aborted the operation. My main goal was to restore a floppy image to test with an IBM Displaywriter. After some trials and errors with ImageDisk software, I was finally making some progress:

Attachment 36397

However, IBM Displaywriter acted as if I had inserted a blank floppy disk. I decided to test making an image of the disk, and here the picture was not that happy - basically the program was unable to read anything that was written.

Attachment 36398

I strongly suspected this might had to do something with writing SD image on a DD drive/DD floppy (the only speed I could write was 250k, however, the image was written with 500K speed - maybe this also could cause some compatibility problems). Then, when I thought that very soon I will have everything under control, came the unexpected - I was transfering CP/M image for a Displaywriter, which was DS/DD format, and in the middle of the process, the 40MB hard drive of my system crashed, together with MS_DOS 5.0, and images to be tested. The fact that I had no floppy drives connected to it (except an 8 inch drive) did not help me at all.

While I work with fixing my system, may I ask some questions I really need answers for:

- * Is DS/DD drive compatible with SS/SD floppies in terms of writing/reading the disk? I'm starting to think that there might be a problem.
- * Has anyone successfully restored and run any of the floppy images for IBM Displaywriter on bitsavers?

Time to rest now, to be continued tomorrow...

Chuck(G)

February 22nd, 2017, 08:59 PM

Or you could simply use ImageDisk for testing--there's a custom formatting dialog there.

The link produces a 404, BTW. But I believe that the article refers to the standard NEC PC98 formatting, which is, a double-sided format (i.e. won't work with a single-sided drive). This format is shared among all PC 98 media types; 8" 5.25" and 3.5" (eminently sensible). However, I'm not clear if later versions of non-PC 98 MS-DOS support the 8x1024 track format.

Al Kossow

February 22nd, 2017, 09:17 PM

Quote:

Originally Posted by Adventurer

* Has anyone successfully restored and run any of the floppy images for IBM Displaywriter on bitsavers?

The single-sided disks have been tested, the recently added double-sided disks have not.

As Chuck says, you really should be using Imagedisk for testing.

and.. be EXTREMELY careful with the disk that was sent to you. Like I said, no double-sided disk images have been verified

to work and it would be really bad if the one you were given was destroyed.

also, the diagnostic disks require one track to be completely blank, which requires you to bulk-erase the diskette before copying to it.

MikeS

February 22nd, 2017, 10:33 PM

Pictures on the web seem to suggest that the Displaywriter uses single-sided disks (Type 1); if the drives are in fact single-side drives then they will not normally be able to read double-sided disks (Type 2 or 2D) such as the SA-851 might create, because the index holes are in different locations.

Chuck(G)

February 22nd, 2017, 11:19 PM

I gotten them (DW data disks) in both single- and double-sided varieties.

Adventurer

February 23rd, 2017, 06:47 AM

Quote:

Originally Posted by Al Kossow 120

The single-sided disks have been tested, the recently added double-sided disks have not.

As Chuck says, you really should be using Imagedisk for testing.

and.. be EXTREMELY careful with the disk that was sent to you. Like I said, no double-sided disk images have been verified

to work and it would be really bad if the one you were given was destroyed.

I wil, first thing I will do - make a backup of the contents on the Displaywriter itself. However, the floppy has not arrived yet, and I'm afraid it might be lost in transit...

Adventurer

February 23rd, 2017, 06:52 AM

Quote:

Originally Posted by MikeS >>>

Pictures on the web seem to suggest that the Displaywriter uses single-sided disks (Type 1); if the drives are in fact single-side drives then they will not normally be able to read double-sided disks (Type 2 or 2D) such as the SA-851 might create, because the index holes are in different locations.

I think there might be a problem - it is possible, that Displaywriter will not take DS/DD floppies, only SS/DD. At least drive doors have marks 1/2D. I should have been more careful with purchasing 8 inch floppies, and should not have bought DS/DD format at all, which I think will have no use for me now.

Besides, it was probably not the best idea to write single side images on a double sided floppy - I'm not sure if it works that way at all. Whatever, now it is time to order SS/DD floppies for further testing and troubleshooting...

Chuck(G)

February 23rd, 2017, 07:28 AM

Or get yourself a hand punch and punch the proper aperture holes for single-sided media.

modem7

February 23rd, 2017, 11:01 AM

Quote:

Originally Posted by Shadow Lord

Modem7

Could this be bypassed using the DOS driver "driver.sys" to give formatting info to programs like format?

Also can't you can define format parameters on the command line for format.com: https://technet.microsoft.com/en-us/...(v=ws.11).aspx

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My use of an 8" drive in DOS was short-lived; the novelty wearing off quickly. Maybe others here (for whom the novelty has yet to wear off) will experiment and report results.

If it does not work, the impact may be low. I seem to recall that DOS keeps data together as much as possible, for performance reasons. If that is the case, then post format, a problem may only be experienced if someone tries to fill the floppy to near capacity.

Quote:

Originally Posted by Adventurer

However, the floppy has not arrived yet, and I'm afraid it might be lost in transit...

I posted it almost three weeks ago. It does seem hard to believe that a large envelope would take that long to get from Australia to Europe. Maybe customs intercepted it and stuck the floppy on their wall as a reminder of the good old days when they used CP/M systems. Maybe the kangaroo got lost.

Adventurer

February 23rd, 2017, 04:21 PM

Ouote:

Originally Posted by modem7 >>>

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I posted it almost three weeks ago. It does seem hard to believe that a large envelope would take that long to get from Australia to Europe. Maybe customs intercepted it and stuck the floppy on their wall as a reminder of the good old days when they used CP/M systems. Maybe the kangaroo got lost.

Too bad about the floppy, I still hope it might arrive, since I'm not making great progress so far with Displaywriter images on Bitsavers...

As for format with line "/a:1024 /t:77 /n:8", the problem is that switch "a" has been implemented starting with Windows 2000, it can not be run on MS-DOS 5.0 I have now. Still, I'm trying third party utilities, the results are coming in.

Adventurer

February 23rd, 2017, 04:55 PM

I'm still getting nowhere.

5 Attachment(s)

ImageDisk - I can successfully format/verify/read in DS/DD format, that is, until I have to write an image.

Attachment 36468

As a matter of fact I can successfully write only SS/SD format, SS/DD is not working - do not really understand now.

It seems that ImageDisk starts to write SS/DD image first as SS/SD, then, after track 6 it tries to switch to SS/DD format with no success - see attached picture:

Attachment 36469

As for writing SS/SD image - at first, everything seems to be good, no errors, disk seems to be written correctly:

Attachment 36470

However, when I try to copy disk image to hard drive, nothing works: Attachment 36471

I started to think that there might be a drive head alignment problem, however, freshly formated disk shows no errors in Imagedisk, when testing read/write/seek, I manually tested all tracks:

Attachment 36472

Adventurer

February 23rd, 2017, 05:32 PM

Here are the results of testing format/writing in MS-DOS mode. So far the only uility, which seems to work on formatting this disk, is Fdformat. It can format it as 620K disk, or 1.2 MB:

2 Attachment(s)

Attachment 36474

Both formats allow read/write/copy with no problems. Even sys.com works on 8 inch drive.

Attachment 36473

However, this is where the fun ends - if I do one of the following:

- * Take out the floppy
- * Restart/Switch off the PC

Then it is no longer readable, and I get either "sector not found" error or generic drive failure error. Actually it seems that as soon as the drive stops spinning, my data is gone. Only once I could get the contents of the floppy with one retry, and there were two small files on it. In all other occasions I had to format the floppy again to get it to work. Could there be a problem with a drive seek unable to return to exactly the same position when they are moved away?

MikeS

February 23rd, 2017, 05:43 PM

Quote:

Originally Posted by **Adventurer**

I think there might be a problem - it is possible, that Displaywriter will not take DS/DD floppies, only SS/DD. At least drive doors have marks 1/2D.

That sounds like it can handle all three types; 1 or 2 is no. of sides, D=double density: https://en.wikipedia.org/wiki/List_o...y_disk_formats

Chuck(G)

February 23rd, 2017, 06:41 PM

Open up the drive box, look at the top of the drive. Single-sided drives have only a pad instead of a head on top.

Adventurer

February 23rd, 2017, 09:01 PM

Quote:

Originally Posted by Chuck(G)

Open up the drive box, look at the top of the drive. Single-sided drives have only a pad instead of a head on top.

I will do that, but first I need to be able to write and read the Displaywriter images, so far - one big FAIL.

So far I can only read/write DS/DD format:

Heads: 77

Sectors per track: 8 Sector size: 1024

Sides: 2

Data rate: 500K MFM

Low level format - PASS

Write - PASS Read - PASS

Other formats tried, but failed:

DS/SD

Cylinders: 77

Sectors per track: 26 Sector size: 128

Sides: 2

Data rate: 250K FM

Low level format - PASS

Write - PASS

Read - FAIL, can read only first sector of each track

SS/SD

Cylinders: 77

Sectors per track: 15 Sector size: 256

Sides: 1

Data rate: 250K FM

Low level format: PASS

Write: PASS

Read: FAIL, can read only first sector of each track

What even more puzzles me, is that SS/SD images of Displaywriter software seem to be written with 500K instead of 250 - I have to use translation to 250 in ImageDisk settings to be able to write the image, but still - it fails with the same problem - can read only first sector of each track.

Could anyone help me with this issue? It seems I am stuck right there...

Al Kossow

February 23rd, 2017, 09:24 PM

Quote:

Originally Posted by Adventurer

I will do that, but first I need to be able to write and read the Displaywriter images, so far - one big FAIL.

So far I can only read/write DS/DD format:

Heads: 77

Sectors per track: 8 Sector size: 1024

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Data rate: 500K MFM

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Could anyone help me with this issue? It seems I am stuck right there...

many PC floppy controllers cannot reliably write single-density format. there is a test program on Dave's Imagedisk site which can be used to verify if your controller can write SD

8" disks always write at 500K

MikeS

February 23rd, 2017, 09:38 PM

Quote:

Originally Posted by Al Kossow 1991

...

8" disks always write at 500K

Is that correct? I was under the impression that 8" FM was 250K @360RPM...

Chuck(G)

February 23rd, 2017, 09:39 PM

What Al says is correct--don't confuse the clock rate with the bitrate. All 8" diskettes

are written at 500KHz clock (high density), whether they're FM or MFM (or MMFM, but that's a different subject). The **bitrate** of FM is half that of MFM, but the clock is the same.

What are you using for a floppy controller? Has it passed the FM test of [url=http://www.classiccmp.org/dunfield/img54306/testfdc.zip]TestFDC{/url]?

Mike	eS	February 23rd, 2017, 09:41 PM
	Quote:	
	Originally Posted by Adventurer	
	Could anyone help me with this issue? It seems I am s	stuck right there
Do they only fail on the DW, i.e. can you reliably read back the disks on the PC that created them?		
Mike	eS	February 23rd, 2017, 09:45 PM
	Quote:	
	Originally Posted by Chuck(G)	
	What AI says is correctdon't confuse the clock rate we diskettes are written at 500KHz clock (high density), we (or MMFM, but that's a different subject). The bitrate but the clock is the same.	vhether they're FM or MFM
	So, you're saying that the "data rate" in the OP's setting talking about) means "clock rate" and not "bit rate" and regardless of density?	
Chu	ck(G)	February 23rd, 2017, 09:49 PM
	Very likely yes, but I don't have his program, so it's har usual convention.	d to say for sure. But that's the

http://www.vcfed.org/forum/printthread.php?t=56058&pp=40

Quote:

MikeS

February 23rd, 2017, 09:58 PM

Originally Posted by Chuck(G) [33]

Very likely yes, but I don't have his program, so it's hard to say for sure. But that's the usual convention.

Kind of counter-intuitive; I'd think "data" would refer to bits and not the clock, sort of like "baud" and "bps" in the modem world...

Clock rate and/or transfer rate would certainly make it a little less ambiguous.

Learn something new every day.



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