

Creating a Master Disk 2

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Introduction

The TANDOS MASTER disk contains 12 TANDOS disk and file management programs, 1 PROGRAM (DBASIC) and 1 disk utility (DZAP). A copy of the disk and file management programs needs to be held on disk called the SYSTEM disk (normally in Drive 0:) to enable the user access to the TANDOS operating system. This presents a chicken and egg situation when attempting to create a MASTER disk from scratch. One procedure using the disk sector editor tool has been written. This document describes an alternative simpler procedure to achieve this.

Requirements

As a minimum, the Microtan system needs to comprise MT65 CPU, TANEX and TANDOS boards. Also a 5.25” Floppy Disk Drive (40 or 80 Tracks) or a 3.5” 720K capacity Floppy Disk Drive (80 Tracks) with power supply and connecting 34 way ribbon data cable to the Microtan system. The Floppy Disk Drive must be configured as Drive 0:. For a 5.25” drive this is normally achieved by placing its drive selection jumper on the DS0 pins. For a 3.5” drive, a special 34 way cable needs to be used – refer to this [document](#). Not least, a Double Density Floppy Disk is required. (If using a 3.5” drive, a High Density (HD) Floppy Disk may also work).

A PC/Laptop connected to the internet is required to download the MASTER disk programs and play the audio WAV files via a headphone output socket. A suitable application to play the audio file is Audacity. An audio cable is required from the PC/Laptop to the Microtan Audio Tape input on the TANEX board.

Procedure

Download the MASTER Disk Files

The TANDOS MASTER disk files are listed on this [web-page](#):

Right-click on each file and 'Save' at a suitable location on the PC/Laptop.

Also one of the 2 Master disk format tools FMAT40 or FMAT80 needs to be downloaded, depending on whether a 40 or 80 Track Master disk is required. In either case, the program SAVS2D is also required.

Set-up Microtan System

Connect the Microtan to the Floppy Disk Drive using the 34 way data cable.

Connect the audio cable from PC/Laptop headphone socket to the Microtan Tanex Tape input.

Power up PC/Laptop, Microtan and Floppy Disk Drive. Press Reset on the Microtan.

Format the Disk

The first task is to format/initialise the floppy disk. This is done using the FMAT40 (or FMAT80) program.

Step 1 – Fetch FMAT40

On the Microtan:

Enter **F** to set 'Fast' tape speed

Enter **F,FMAT40** to fetch the file named FMAT40

On the PC/Laptop:

Run Audacity, open the file FMAT40.WAV and play the file

The cursor will reappear on the Microtan screen when the transfer has been completed. Provided there were no errors, the FMAT40 program will have been downloaded into RAM starting at location \$400 and ending at location \$7E6.

Step 2 – Run FMAT40

On the Microtan:

Enter **G5A0** User is prompted to 'Load disc 0 and press RETURN'. Load new disk.

Press RETURN. User is prompted to enter Disc name:

Enter **MASTER**

The program will proceed to format and initialise the disk. The track being formatted is displayed on the screen. When finished, provided there have been no errors, the program will display 'Disc now ready for use'.

If errors are encountered, they could be due to Disk Drive hardware or cable problems. If persistent, try if possible with alternative drives or cables.

Save TANDOS Commands

Generally, to save TANDOS commands and any other files onto the disk, one of two TANDOS commands may be used. These are DSAVE or S and are described in the TANDOS Commands [document](#). The preferred program here is S as this includes a facility to relocate the code.

Unfortunately it is not possible to run S to save itself onto the formatted disk. A small program called SAVS2D (Save S to Disk) is required to first modify its code and then execute it. This is a hack which relies in the Microtan system being in a known state, hence the RESET at the beginning of Step 3. Also, there must be no other operations in between steps 3, 4 and 5.

Step 3 – Fetch SAVS2D

On the Microtan:

RESET

Enter **F** to set 'Fast' tape speed

Enter **F,SAVS2D** to fetch the file named SAVS2D

On the PC/Laptop:

Run Audacity, open the file SAVS2D.WAV and play the file

The cursor will reappear on the Microtan screen when the transfer has been completed. Provided there were no errors, the SAVS2D program will have been downloaded into the RAM at location \$400 and ending at location \$42C.

Step 4 – Fetch S

On the Microtan:

Enter **F** to set 'Fast' tape speed

Enter **F,S** to fetch the file named S

On the PC/Laptop:

Run Audacity, open the file S.WAV and play the file

The cursor will reappear on the Microtan screen when the transfer has been completed. Provided there were no errors, the S program will have been downloaded into the Transient Program Area starting at location \$B960 and ending at location \$BBFC.

Step 5 – Run SAVS2D

On the Microtan:

Enter **G400**

The program will modify the code in the Transient Program Area and save the modified S program to disk.

To test the presence of the modified program S on the disk,

Enter **DLOAD S DN**

The display should show B960 BBFC B9A7 indicating its start, end and transfer addresses.

Step 6 – Save unmodified S to Disk

The next task is to use the modified S program to overwrite the version held on the disk with an unmodified version.

Repeat step 4

Next, move the unmodified S program out of the Transient Program Area to make room for the modified version when it is loaded and run from the disk.

On the Microtan:

Enter **CB960, BBFC, 1960** to copy the unmodified version of S to User RAM

Enter **S S 1960 1BFC TB9A7 RB960** to save this unmodified version of S to disk

Because there is already a program named S on the disk, the user is prompted “DEL/BAK (Y/N/B)?”

Enter **Y** to delete the version on the disk and replace it with the unmodified version.

To test the presence of the program S on the disk,

Enter **DLOAD S DN** to show B960 BBFC B9A7 indicating its start, end and transfer addresses.

Step 7 – Save Remaining TANDOS Command Programs

The procedure for the remaining programs is as follows:

Fetch the command file as described in Step 4.

Relocate the file from the Transient Program Area into User RAM using RELOCATION instruction in the table below.

Save the relocated file to disk using the SAVE instruction in the table below.

File	RELOCATION	SAVE
BACKUP	CB960, BB9B, 1960	S BACKUP 1960 1B9B TB960 RB960
COPY	Not required	S COPY 400 B10 T530
CREATE	Not required	S CREATE 400 7E6 T5A0
DBASIC	CB960, BA38, 1960	S DBASIC 1960 1A38 TB960 RB960
DEL	CB960, BBDC, 1960	S DEL 1960 1BDC TB980 RB960
DIR	CB960, BB9A, 1960	S DIR 1960 1B9A TB988 RB960
DSAVE	CB960, BB8C, 1960	S DSAVE 1960 1B8C TB9AF RB960
DZAP	CB960, BB89, 1960	S DZAP 1960 1B89 TB960 RB960
FORMAT	Not required	S FORMAT 400 697 T542
INIT	CB960, BB46, 1960	S INIT 1960 1B46 TB9CB RB960
KILL	CB960, BBAE, 1960	S KILL 1960 1BAE TB970 RB960
REN	CB960, BA69, 1960	S REN 1960 1A69 TB985 RB960
SYS	CB960, BB7F, 1960	S SYS 1960 1B7F TB9A1 RB960

Conclusion

If the above procedure has been completed without error, then a TANDOS MASTER disk has been created.

Optionally the individual files may be protected using the REN command. Refer to the TANDOS Commands [document](#) for instructions.

Optionally a second copy of the MASTER disk may be made on side 2 of the disk (provided both the drive and disk are double-sided) using the BACKUP command. Refer to the TANDOS Commands [document](#) for instructions.

The whole disk should then be Write-Protected by sticking a label over the notch on the right hand side of the 5.25" Floppy Disk or moving the plastic tile in the write protect cutout of the 3.5" Floppy Disk.

The disk should be identified as the MASTER disk on a label. It should also show the number of tracks it has been formatted with (ie 40T or 80T).

Note that the system definition on this disk defines a minimum configuration Microtan system ie one single-sided 40 Track (or 80 Track) disk drive, 8K of User Ram and no Tanram paged memory available. Any system disks created using this MASTER disk will have this same system definition. If the actual system in use is different, the system definition on those disks should be updated using the SYS command.