

HYPERCROSS II

TRS80 to IBM PC and CP/M

File interchange program

Instruction Manual



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INSTRUCTIONS for HYPERCROSS II
CP/M and PC FILE TRANSFER for
the TRS-80 and MAX-80

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Notice

Hypersoft and the Author offer this program on an as-is basis only and assume no responsibility for any loss or consequential damage resulting from its use or misuse. If you have a problem, please submit a report using the standard form provided at the end of this manual and we will exert our best efforts to resolve it for you. You must be the original purchaser and have submitted a registration form if you did not buy it directly from us. In addition we will be pleased to add additional formats to the repertoire of this program. For this we need a sample disk of the format in question, properly formatted with a few arbitrary files placed on the disk to establish the sector interleave sequence and other parameters. Please use the form provided and submit it with the disk and specified remittance.

Program Overview

This manual describes one program that comes in several different versions. It is designed to allow you to move data and program files freely between your own TRS-80 or MAX-80 disks and those of a number of other computers. You do this using only the hardware in your TRS-80 or MAX-80 and the supplied program thus eliminating the need for modems, terminal programs and access to a second non TRS-80 computer.

The program runs as a /CMD file under your own TRS-80 DOS and will allow you to COPY files to and from the foreign DOS, and also to DIR, KILL and FORMAT. You can therefore format a blank disk and move files to it that can subsequently be read by, for example, a Kaypro or an IBM PC. Note that you cannot run Z80 machine language programs on, for example, an IBM PC which uses an 8088 microprocessor. The same is true in reverse except that many CP/M computers use 8080 or Z80 microprocessors and the TRS-80 uses a Z80 which is compatible with 8080 code. CP/M code would need some modification before it could be used on a TRS-80, particularly with regard to I/O.

You can however copy a BASIC, PASCAL, FORTRAN, C or other high level language program and run it with very little modification unless it makes extensive use of memory mapped graphics or has system machine language calls. You can even move an assembly language source file to a new machine where you can translate it to be compatible with the code of the

microprocessor using one of the translator programs now available. Data and text files of many types can also be usefully moved between machines. Medical records for example, could be prepared using a TRS-80 and sent to another department which uses IBM PCs. Manuscripts could be prepared on a TRS-80 and sent to a publisher who only has Sanyo CP/M computers in his office. Machine code for a 68000 CP/M computer could be generated on a TRS-80 using our XAS6BK cross assembler and then put on a disk readable by the target machine.

The program comes in four versions: SX1/CMD, SX3/CMD, SX4/CMD and SMAX/CMD for TRS-80 Models I, III, 4/4P and the MAX-80 respectively. SX1/CMD will also run on the Genie I and the LNWS0 I and II. With the program itself is a database file HPRX/DAT which includes definitions of the formats of the alien disks (NOTE: on the MAX-80 this file is called HXX/DAT). HPRX/DAT will be different depending on whether you have purchased the PC only, CP/M only, or combined CP/M and PC version. The model III version will run on a Model 4 or 4P in model III mode under an appropriate model III DOS. Except for this, each version will only run on the model specified provided with the minimum hardware as given in Section 1.

Also included on your disk is a BASIC program CFGMAKE/BAS, to create customized configuration files for Hypercross. This makes a custom tailored configuration file called SXCFG0/DAT which tells Hypercross what the default settings should be at startup. It even allows you to start with predefined alien formats.

You will need a TRS-80 type DOS system disk in logical drive 0 except when doing alien to alien file copying (XFER). With LDOS, DOSPLUS and TRSDOS 6.x you can redefine logical drive 0 to be any physical drive, hard disk, or RAM disk. Apart from that you will be able to transfer files between a TRS-80 disk in any drive and an alien disk in any drive except logical drive 0. Hypercross uses your own DOS to handle transfers to and from your TRS-80 disks and its own internal routines when accessing the alien disk. Therefore if your system is set up to use double sided, 80 track, RAM or hard disks then these features should continue to work. The only restriction is if you have program drivers in high memory. Hypercross II honors the high memory limit set by your DOS. If you use high memory then the available space for the file transfer buffer will be decreased and copying speed will be reduced because it will be done in more, smaller blocks.

TRS-80	is a registered trademark of Tandy Corp
CP/M	" " " " " Digital Research, Inc.
Z80	" " " " " Zilog
MAX-80	" " " " " Lobo Systems
MS-DOS	" " " " " Microsoft Corp.
IBM PC	" " " " " International Business Machines

1.0 Getting Started

To run the program you will need the following hardware as a minimum: TRS-80 Model I, III or 4/4P with 48k of memory (64k model 4/4P) and two disk drives. Model I users also need a doubler and a DOS which should preferably be double density although this is not essential. The program tests for the type of Model I doubler in use if any and adapts itself accordingly. This includes the doubler made by Radio Shack.

Some users have special driver routines in high memory. Hypercross will automatically check the high memory vector and adjust for it. Provided your high drivers do not exceed 2048 bytes (HIMEM is greater than F7FFH) then you will have 8192 bytes for your transfer buffer. If your high memory is less than F800H then you will be allowed only 4096 bytes and copying speed will be reduced. If your high memory limit is below E800H then Hypercross will not run at all.

The model I version also runs on the LNW80 models 1 and 2 provided the clock speed is set at standard 1.77 MHz.

Among the formats you can read and write to are a number of double sided types. For this you will need a double sided drive as drive number 1, 2 or 3 (or 0 with some DOSs). On Model I's drive 3 is not permitted with double sided drives as the drive 3 select line is used for side selection. Similarly to use the 80 track CP/M formats you need an 80 track drive, double sided if appropriate.

If you have the capability of reading 8 inch disks, i.e. an 8 inch drive and a disk controller to match you may also be able to use the 8 inch standard CP/M ss sd option. A suggested controller for the Model III or 4/4P is the DX3D from Holmes Engineering in Salt Lake City. Owners of a newer Model 4 or 4P will not be able to take advantage of this because the disk controller is integrated on the main board and you cannot replace it with an 8 inch capable one.

TRS-80 DOS formats

The following TRS-80 disk operating systems are supported:

Model I / LNW80:

LDOS	Single/Double density
NewDos/80 V 2.0	Single/Double density
DOSPlus 3.4,3.5	Single/Double density
MultiDos 1.6	Single/Double density
TRSDOS 2.3	Single density only. *
TRSDOS 2.7 or 2.8	Double density only.

* Note DIR and TAB of TRS-DOS not available.

Model III:

DosPlus 3.4,3.5
LDOS
MultiDos
NewDos/80 V 2.0
TRSDOS 1.3

Model 4 and 4P

All above Model III DOS's in III mode
TRSDOS 6.x
DosPlus IV

MAX-80:

LDOS

The program is supplied as a command file (/CMD) on a data disk and to run it you will need to move it to your system disk. This will usually be in drive 0 but, in some cases can be in another drive. Assuming your system disk is drive 0, insert your DOS disk in that drive and reset the computer. Insert your Hypercross disk in drive 1 and type:

For the Model I:

COPY SX1/CMD:1 :0
COPY HPRX/DAT:1 :0

With NewDOS/80 you will have to set the PDRIVE for drive 1 appropriately (also applies to Model LII NewDos).

For the Model III with TRSDOS 1.3: use CONVERT

For other DOSs on the Model III:

COPY SX3/CMD:1 :0
COPY HPRX/DAT:1 :0

For the Model 4/4P:

COPY SX4/CMD:1 :0
COPY HPRX/DAT:1 :0

For the MAX-80:

COPY SMAX/CMD:1 :0
COPY HXXM/DAT:1 :0

In case of difficulty with the master files, backups of each are provided as SXn/BAK and HPRX/BAK. Note that on the model I the program will be supplied on a single density TRSDOS 2.3 35 track data disk, on model III it will be on a single density 35 track data disk and on the 4/4P it will be on a 40 track Model 4 double density data disk. For the MAX-80 it will be on a 40 track double density data disk readable by MAX-80 LDOS.

On some systems and some DOSs it is possible to redefine the system disk as another drive. This is true for LDOS on the Model III and TRSDOS on the Model 4/4P. For instance, suppose you have a hard disk as drive 5 you can redefine it with the command:

```
SYSTEM (SYSTEM=5)
```

This swaps drive 5 and drive 0 logically and then will make all system calls to drive '0' which is now the hard disk. If you wish to do this then you should place a copy of Hypercross and the format data file on whatever drive you have selected as your system drive.

To run the program, type the filename - excluding the /CMD i.e. type, for instance:

```
SX1
```

The program will load and run. The first thing that will be done is it will try and load a configuration file called SXCFG0/DAT. This file, if found will automatically configure Hypercross for your DOS type, your disk drive configuration, two predetermined alien disk formats and some other default settings.

If the configuration file can't be found then Hypercross will ask what DOS you are running and what density (model I only). The program will then offer you a menu of formats. You must choose one at this point although you may change it later using the Change Configuration option.

Hypercross maintains a table of your drives showing how many tracks are on each drive and which of two alien formats is allocated to that drive. Once Hypercross II is running, you may place a disk in a drive and copy files to and from it, DIR it, FORMAT it and KILL files on it. You can copy alien to TRS-80, TRS-80 to alien, and alien to alien. If you specify a drive by number (0-7) then Hypercross knows it is a TRS-80 type disk and relies on your DOS to know what kind of drive it is (density, sides, no of tracks, size etc.). If you use a letter for the drive number (A-D corresponding to physical drives 0-3) then Hypercross knows it is an alien disk in that drive and goes to its own drive table to see which alien format is to be used.

When accessing TRS-80 disks (copying to or from them getting a directory etc.) you MUST retain a disk in the system drive with a minimum operating system. The selected alien formatted disk can be in any other drive but the system drive (logical drive 0).

Note that if you put a disk in a drive and then you try and access it and it is not in the expected format it may hang the system. This is true if the disk is TRS-80, CP/M or PC. In general it should not hurt anything if this happens as the first operation is to access the directory of the disk which is a read operation. At that point, if the directory is on the wrong track or the correct number and type of sectors are not found then the program will either abort or hang, trying to find a sector that doesn't exist.

Hypercross II has a special feature which checks the format of the disk first to see if it is the expected one. If not it will not proceed. If you are trying to read a PC format disk it will tell you that the format is incorrect and what it most probably is. A common mistake is to try and access a double sided format disk in a single sided drive or with a single sided format selected.

Type HELP or H to see a summary of available commands. These will be described in more details in Chapter 3. For the most part they must be typed exactly as shown although you may insert extra spaces between words.

2.0 The Main Menu

When Hypercross II has loaded and initialized itself it will display the main menu screen. The menu screen looks like this:

```

TRSB0 <--> PC & CPM      HyperCross V 2.0A      Copyright 1985
  Hypersoft, PO Box 51155, Raleigh NC, USA    (919) 847 4779
-----
Drive - B C D is format F1 Kaypro II          40 SS DD  USER1 0
Drive A - - - is format F2 PC/MS DOS 1.1     40 SS DD
-----
Enter command or select from menu:
DA Directory of alien disk      TA tag alien default disk
DT Directory of TRS-80 disk     TT tag TRS-80 default disk
T  Copy TO alien from TRS-80   F  Copy FROM alien to TRS-80
FA Format default alien drive   C  Set configuration
H  Help                         X  Exit to DOS

```

>>

Below the heading, separated by dividing lines, are two lines showing the two currently selected alien formats, F1 and F2 and which drives they are allocated to. You can copy between your TRS-80 disks and either of these two alien formats or directly alien to alien.

Below the format lines is a menu of 10 quick command options and a '>>' prompt where Hypercross is waiting for you to type something. If you type anything but a valid command, Hypercross will repaint the screen.

At the >> prompt you can either type a command or a quick entry from the menu. The commands are fully typed commands just like DOS commands. These are described in detail in the next chapter.

The Default Drives and changing the configuration

Before you can use these commands you must understand about the default drives and formats allocated to them. Any drive can contain an alien disk and any drive can contain a TRS-80 disk. Hypercross normally knows what kind of disk is in a drive because when you type a command you must use a digit (0 to 7) to signify the drive if it is a TRS-80 disk and a letter (A to D, corresponding to 0 to 3) if it is an alien disk. However when you use a quick menu command, Hypercross goes to a table and looks up which drive is the 'default' TRS-80 drive and which is the 'default' alien drive and uses them in any operation.

To see which drives are the default drives, go to the 'Set configuration' page by pressing C and <enter>. You will see a screen like this:

```
Drive - B C D is format F1 Kaypro II      40 SS DD  USER1 0
Drive A - - - is format F2 PC/MS DOS 1.1  40 SS DD
```

```
Drive Tracks Format Skip Default
A   0   40   2   N   TRS80
B   1   40   1   N   Alien
C   2   40   1   N
D   3   80   1   Y
```

Choose from one of the following:

```
A,B,C or D Set drive config.      X Exit to command level
1 Select new format F1             3 Select default TRS80 drive
2 Select new format F2             4 Select default alien drive
```

>

The first two lines are the same as shown on the main menu and tell you the two alien formats currently selected. Next is a table showing, for each of your four floppy drives, A to D (corresponding to physical drive numbers 0 to 3), how many tracks are on each drive and what alien format is allocated to that drive. If you select drive C, in the example shown, this would be physical drive 2 which has 40 tracks and is allocated to format F1 which is KAYPRO II (40 track, single sided, double density). The skip flag is N for No skip. If you had selected the 80 track drive D then the skip flag would be Y for Yes skip because you have selected a 40 track format in an 80 track drive.

In the Default column of the drive table you will see 'TRS80' against the A (0) drive and 'Alien' against the B (1) drive. This indicates that whenever you use the quick menu commands the default TRS80 drive will be logical drive 0 and the default alien drive will be physical drive 1. Note that logical drive 0 means the drive your TRS-80 type DOS thinks is drive 0 from its own internal drive table. With some DOSs you can reassign drive numbers, even assigning a RAM disk or hard disk as drive 0.

You can redefine the default drives, the selected formats and the drive format allocations all from the short menu shown at the bottom of the Set Configuration screen. To return to the main menu type X.

Note that all the parameters in the set configuration menu can be predefined in a configuration file SXCFG0/DAT which is loaded automatically when Hypercross runs. You use the BASIC program supplied on your disk to make a configuration file. See Chapter 6 for details on running this program and making your own configuration files.

The Quick Menu

At the bottom of the main menu screen is the quick menu. The following items are shown in the quick menu:

```
DA Directory of Alien disk      TA Tag Alien default disk
DT Directory of TRS-80 disk     TT Tag TRS-80 default disk
```

T	Copy TO alien from TRS-80	F	Copy FROM alien to TRS-80
FA	Format Default alien drive	C	Set Configuration
H	Help	X	Exit to DOS

By typing the code for the item desired and pressing the enter key the option selected is executed immediately. The default drives are always assumed. If you want to change the default go to change configuration option C.

Most of the quick menu commands are short versions of the full commands shown in the next chapter. Here is a brief description of each one. Note that the equivalences assume, for the sake of example, that the default TRS-80 drive is 0 and the default alien drive is B (:1).

DA Directory of Alien disk

Equivalent to: DIR :B

DT Directory of IRS-80 disk

Equivalent to: DIR :0

T Copy ID alien from TRS-80

Equivalent to: COPY filename:B filename:0 -switch
- you will be asked for the filename and switch

FA Format default Alien drive

Equivalent to: FORMAT :B

H Help

Displays help page.

TA Tag Alien default disk

Equivalent to: TAG :B

TT Tag IRS-80 default disk

Equivalent to: TAG :0

F Copy FROM alien to TRS-80

Equivalent to: COPY filename:0 filename:B -switch
- you will be asked for the filename and switch

C Set Configuration

Displays Set Configuration Screen at which time you can enter a sub command to change the drive specifications, the default drives and the selected alien formats. Sub Commands are:

A,B,C or D - set drive specification for drive 0,1,2, or 3 respectively. Allows you to redefine the number tracks and allocate alien format F1 or F2 to the drive.

- 1 Select new format F1 - allows you to change the alien format F1.
- 2 Select new format F2 - allows you to change the alien format F2.
- 3 Select default TRS-80 drive - allows you to redefine which drive will be used as the default TRS-80 drive in the quick menu commands.
- 4 Select default alien drive - allows you to redefine which drive will be used as the default alien drive in the quick menu commands.
- X Exit the configuration set up screen and return to the main menu screen. .

X Exit to DOS

Causes Hypercross to stop and returns control to DOS. Make sure you have a system disk in drive 0.

The Program Commands

The program commands are described in the next chapter. You can type a command any time you see the '>>' prompt. If you mistype a command or just hit the enter key the main menu screen will be redisplayed.

3.0 Program Commands

This section gives detailed information on the use of each of the available commands in your program. In each command, if the disk is a TRS-80 disk you must use a number from 0 to 7 for the drive. If the disk is a CP/M or PC disk you must use a letter for the drive. Thus drive 1 would be called drive B, drive 2 drive C and so on. This is how the program knows whether to expect a TRS-80 or alien disk in any drive at any time. Don't forget that drive 0 must contain a DOS system at all times if you are executing commands which access TRS-80 type disks. With some DOSs drive 0 can be assigned to any physical drive, even a RAM based disk emulator such as MEMDISK. If you do this then you must refer to the TRS-80 DOS disk by the logical drive number that the DOS thinks it is in and to the alien disk by a letter A-D corresponding to the true physical location of the drive.

DIR

This command allows you to view the directory of one of the disks in your drives. Note you must have selected the correct format before you start or the program may hang trying to find sectors that don't exist on the disk. When you try and read the directory of an alien disk, Hypercross will test to see if the disk format matches the one specified for the drive that the disk is in. If it does not it will give an error message. In the case of MS-DOS formats the program will tell you what the format actually is so you can reselect the correct one.

Example:

```
DIR :1
```

Explanation:

```
Read the directory from the TRS-80 disk in drive 1.  
Requires a system disk in drive 0 always.  
Note: the colon (:) is mandatory.
```

Example:

```
DIR :B
```

Explanation:

```
Read the directory from the CP/M or PC disk in  
drive 1. The format assumed will be the one  
specified in the drive table.
```

COPY

This command allows you to transfer files between your own TRS-80 type DOS disks and an alien DOS disk. The direction of transfer is determined by the sequence of drives. The source drive is defined first and the destination second. The drive containing your TRS-80 DOS disk is referred to by number (0-7) and the drive containing the alien disk is referred to by letter.

Three types of copy are possible. ASCII for text files, IMAGE for most other kinds of file, and for fixed record length TRS-80 data files the -R transfer. With ASCII transfer the file is assumed to be an ASCII (text) file and is converted so that it reads properly on the target machine. This includes fixing the carriage-return line-feed differences, the end of file mark and the non standard TRS-80 characters. Use this for files created with a text editor, BASIC files saved with the -A ASCII option and assembly language source files. See the Section 3 for more details on this.

With IMAGE transfer the file is copied over exactly as is, with no changes whatsoever. Use this for binary files and data files including special record length ASCII files. Also use this mode if in doubt.

The -R transfer is like IMAGE transfer except that it is for files of fixed record length, not the normal 256 byte logical record length (LRL) TRS-80 records but some other lesser length. To use it type -R80 for instance where the LRL of the file to be transferred is 80 bytes. This mode is only useable going from TRS-80 to alien DOS.

You can type the command in full together with a valid switch option. If you omit the switch the currently selected default will be used. If you omit the destination file name the source name will be used but with a '/' substituted for a '.' or a '.' for a '/' as appropriate.

A switch option tells Hypercross which copy mode to use on the file as it is copied. If you type -I then an exact image is copied across without any changes. If you type -A then the file will be transferred in ASCII mode with appropriate corrections for differences in ASCII file formats on the different computers. If you type -R followed immediately by a number then the file will be transferred in IMAGE mode but will be opened on the TRS-80 source disk as a file where the LRL=number. The number may be anywhere from 1 to 255.

Note that if you want to move BASIC programs they should have been saved in ASCII format first. On the TRS-80 for instance, you do this by, from BASIC, typing SAVE "filename",A. If you don't do this then some ~~some~~ of your programs may not be readable as when BASIC is saved to disk in the ordinary way, all the commonly used BASIC keywords are stored as one byte codes called tokens. These are different on CP/M, PC and TRS-80 computers even though Microsoft probably wrote them all!

If you are copying files to IBM PC type disks you will probably want to ensure the date gets set correctly. Some TRS-80 Dos's allow you to boot up without setting the date so set it first before you run this program. For example in most DOSs you simply type DATE 03/30/84 to set the DOS date register to 03/30/84.

If you are working with CP/M disks then the default USER number is 0 unless you select another value. See the USER command below. Also note that you can only specify filenames that use legal ASCII characters. Some CP/M systems use the high bit of the letters of the extension (for instance the COM in BASIC.COM) to signify some special parameter. These are masked off by the directory read so that they are printable on the screen.

Certain characters are legal in CP/M file names but not in TRS-80 names. Copying from TRS-80 to CP/M or MS-DOS is no problem but going the other way you must observe the following rules: Only the letters A-Z and numbers 0-9 are allowed in TRS-80 names. The name and any extension must each start with a letter. You cannot have embedded hyphens or slashes. For instance SIG/M.DIR is not permitted. If a slash occurs in a name you must precede it with a ! escape character.

Example:

```
COPY TEXT/DOC:0 TEXT.DOC:B -A
```

Explanation:

Copy the file TEXT/DOC from TRS-80 DOS in drive 0 to the alien DOS in drive 1 using ASCII transfer mode. The same name is used.

Example:

```
COPY TEXT.DOC:B TEXT/DOC.XYZ:0 -A
```

Explanation:

Copy the file TEXT.DOC on the alien disk in drive 1 to the TRS-80 DOS disk in drive 0 using ASCII mode and adding the password XYZ.

Example:

```
COPY MYFILE/TXT:0 :B
```

Explanation:

Copy the file MYFILE/DOC from TRS-80 DOS in drive 0 to the alien DOS in drive 1 using the default transfer switch. The destination name will be MYFILE.TXT

Example:

```
COPY SIGesc!/M.COM:2 SIGM/CMD:1 -I
```

Explanation:

Copy the machine language program SIG/M.COM from the the disk in drive 2 to the disk in drive 1 making an exact image copy. If it runs without changes it will be a miracle!. Notice the ! escape character.

Example:

```
COPY MEDIC/DAT:0 MEDIC.DAT:B -R80
```

Explanation:

Copy the file MEDIC/DAT from TRS-80 dos in drive 0 to the alien DOS in drive 1 using IMAGE transfer mode but open the source file on the TRS-80 disk using a Logical Record Length of 80.

Note that in the quick menu there are two options for quick copying between a TRSDOS disk an alien disk in drive B. The same name is used for source and destination file. Just type 3 to transfer to the alien DOS or 8 to transfer from the DOS and follow the prompts. Just give the filename, no drive numbers. The drives used will be the defaults shown in the drive table.

ERA or ERASE or KILL or REMOVE

This command is allowed in four forms corresponding to the same functions on CP/M, PC's and TRS-80's respectively. Again, use a number for a drive containing a TRS-80 disk and a letter for a drive with an alien disk.

Example:

```
ERASE BIGONE.COM:C
```

Explanation:

Delete the file called BIGONE.COM from the alien disk in drive 2.

Example:

```
KILL MYFILE/BAS:0
```

Explanation:

Delete the file MYFILE/BAS from the TRS-80 DOS disk in drive 0.

FORMAT

This command allows you to put a blank disk in drive A, B, C or D (physical drives 0, 1, 2 or 3 respectively) and format it so that it will be readable on a non TRS-80 computer. Drive 3 is not permitted on Model 1s if you have double sided drives.

On the command `FORMAT <drive no.>` the computer will prompt you for a disk in the selected drive and remind you of the currently selected alien format for that drive. After each track is formatted it will be verified before proceeding. If an error is found you will be asked if you want to Retry, Skip or Abort. Type the appropriate letter to select your choice. If you skip over the error i.e. ignore it then this information will NOT be recorded anywhere on the disk and you may subsequently get errors on a file that spans the bad area. In general it is unwise to use disks that consistently exhibit bad formatting characteristics.

Note that `FORMAT` does not duplicate the code often found in the boot sectors of PC or CP/M disks as this might infringe copyright. Because of this some disk checking programs may indicate that the disk is not initialized. However this is not a serious problem as the disks can still be accessed and files copied on the PC or CP/M machine in the normal way. In general it is probably safest to use disks formatted by Hypercross as data disks only. This is particularly true for CP/M where some machines format the system tracks differently from the user area.

A few computers use checking of the boot sector to determine what kind of disk is inserted. If this is the case then they may reject disks made using Hypercross. In that case it is suggested you will have to format the disk on the target machine and then use Hypercross to transfer the files.

Hypercross does NOT check to see if the target disk is already formatted. If it is then the original data will be destroyed. In general it is good practice to use new blank or bulk erased disks to prevent residual data from previous use interfering with the new recording. This is particularly important when using disks in an 80 track drive with a 40 track

format selected.

Example:

```
FORMAT :B
```

Explanation:

Format the disk in physical drive 1.

HELP

This command displays a short summary of commands as an aid to memory.

Example:

```
HELP
```

Explanation:

Display help page.

LOAD

This command allows you to load a pre-existing file from a TRS-80 disk. The file is in ASCII format and contains a tagged file listing as produced by the 'S' subcommand of the TAG command. This is useful if you want to repeatedly copy the same list of files.

Example:

```
LOAD TAGLIST/DAT:0
```

Explanation:

Load the tagged list of files from the TRS-80 disk in drive 0 and go to the TAG display mode.

R

This command returns you to the tagged display mode if you wish to repeat the copying of a tagged list or if you inadvertently exited the TAG mode using the X sub-command.

Example:

```
TAG :B  
X  
R
```

Explanation:

Tag the list of files in drive B, exit to the main menu (X) and return to the tagged list (R).

SELECT1 and SELECT2

These commands allow you to directly select a new alien format from the main menu without going through the set configuration option. SELECT1 sets a new Format F1 while SELECT2 sets a new F2. You may type the command alone in which case the menu will be displayed or you can type a number-letter combination specifying the menu page and item on that page. This command is useful if you want to run Hypercross from within a DO file.

Example:

```
SELECT1 3B
```

Explanation:

Replace the current format F1 with format 3B (Item B on page 3 of the format menu).

TAG

The TAG command allows you to read a disk directory into memory and to tag or mark all the files you want to copy or delete and then to copy or delete them all in one go. The TAG command puts you into the tag mode and displays a menu of subcommands which allow you to do various things with the directory of the disk you have just read. After typing the TAG command the directory of the specified disk will be read and you will see the following:

Tag Commands:

```
-----
A      Tag for ASCII copy           I      Tag for image copy
Rlrl  Tag Random, lrl<256         */ext-sw Tag all /ext files
U      Untag (remove tag)          #U     Remove all tags
K      Kill file on source         S      Save tag list in file
:D     Copy files to D or Kill     -      Step back one entry
?      Display this list          X      Exit (no action)
-----
```

```
-----
Files on source drive :B user number 0
File      Tag  User
filename.ext      0-->
```

Each time you hit the enter key the next file in the directory will be listed, together with any existing tags and the '-->' prompt, until you get to the end when it will display the first filename again. If you have selected a drive with a disk in a CP/M format you will be shown the current user number selected for that format (see the USER1 and USER2 commands) and against each filename you will see the user number for that file. Remember, you can only copy or delete files which have a user number matching the currently selected one.

At the '-->' prompt you can type a tag command from those shown in the tag menu. This allows you to tag the files you want to copy or delete and to issue other commands described in detail below.

Example:

TAG :B

Explanation:

Get directory of alien disk in drive B

The TAG subcommands

At the --> prompt you can type any of the following subcommands. They will be executed immediately without waiting for the enter key to be struck.

A Tag for ASCII copy

At the --> prompt, simply type an A and the filename will be tagged for copy in ASCII mode. If you step back using the '-' command and look at the file name again you will see the tag:

```
filename.ext A -->
```

I Tag for image copy

This puts an 'I' against the filename marking it for image copy mode.

Rlrl Tag Random, lrl<256

This allows you to tag the file for copy as one whose logical record length (LRL) is not 256. Example: R80 would indicate that the file has a LRL of 80. This applies only to files on TRS-80 disks. CP/M and MS-DOS disks have no way of recording the LRL in the directory.

*/ext-sw Tag all files having extension 'ext' with tag 'sw'

This allows you to tag all the files in the directory that have the same extension. For example */BAS-I would tag all the files which have the extension /BAS with the I tag. As in regular tagging 'sw' is a switch which can be A, I, or Rlrl (where lrl is a number from 1 to 255).

U Untag (remove tag)

This allows you to remove the tag from the filename currently being prompted.

*U Remove all tags

This removes all tags from all files.

K Kill file on source

This marks the file with a 'K' tag which indicates that the file is to be killed from the source directory when you give the :drive command.

S Save tag list in file

This allows you to save the names of all the tagged files in a file for later recall and re-use. You can only save to a TRS-80 type disk and you must have one in drive 0 when you give this command. You will be asked for a filename to save into. See the 'LOAD' command to get the filename list back.

:D Copy files to D or Kill

When you issue the :D command you must put a figure 0 to 7 or letter A to D in place of the 'D'. This indicates the destination drive for copying. Thus if you had tagged files on drive B and then given a :0 command Hypercross would start executing a copy of all tagged files from the alien disk in drive B to the TRS-80 disk in drive 0. If it encounters any K tags these will be used to remove files from the source disk (B in this example). If you had typed :A instead then Hypercross would execute an alien to alien file transfer (XFER) from the alien disk in drive B to the alien disk in drive A. No TRS-80 system disk is needed while this is happening.

- Step back one entry

At any time you can step backwards through the file list by pressing the '-' key. To step forwards use the Enter key.

? Display this tag menu list.

At any time, pressing the '?' key will reprint the menu of TAG commands. You will also restart at the top of the file list.

X Exit (no action)

The 'X' command returns control to the main menu without any action on the tagged list. The list is still in memory unless you execute another TAG command and you can return to it with the 'R' command.

USER1 and USER2

This command, only available in CP/M allows you to change a file flag called USER1 or USER2. At any time you will only be able to copy or kill files for the USER number you are currently set to. Permissible values for user are 0 to 15. The default value is 0 and most files will have this as their attribute. The current user number is always shown when you have

selected a CP/M format. You will see it shown as a single hexadecimal digit to the right of the selected format on the main command screen.

USER1 specifies the user number in force when accessing any drive which is allocated to format F1. Similarly USER2 is for format F2. This allows you to allocate different user numbers for two drives and to copy files allocated to one user to another user.

Note that under CP/M a DIR will only show the files for the particular USER setting you are using. In this program all files are shown together with their USER parameter so you can select which ones you want to transfer or delete.

Example:

```
>>USER1 7
>>USER2 3
```

Explanation:

Set USER1 attribute to 7 and USER2 to 3
the result will be displayed thus:

```
Drive - B C D is format F1 Kaypro II 40 SS DD USER1 7
Drive A - - - is format F2 Kaypro II 40 SS DD USER2 3
```

In this case both format F1 and F2 happen to be the same but the user numbers are different. This would allow you to copy files from a Kaypro disk in drive A with user # 3 to a Kaypro disk in drive B with user # 7.

XFER - alien to alien file copy

This command is similar to the COPY command except it is for copying files from one alien format to another. A switch is not necessary and will be ignored. All files are copied in -I mode - that is exactly, without modification. If XFER is called from the TAG command then files will be copied -I whether they are tagged with an A or an I.

Hypercross will use the drive table to determine the source and destination formats. They may be the same if you wish. If the format is CP/M then the user number will be that set by USER1 for format F1 and USER2 for format F2.

Example: Let us assume that drive A has been assigned
format F2 with user number 1 and drive B to
format F1 with user number 0

```
XFER OLDNAME.XYZ:B NEWNAME.ABC:A
```

Explanation:

Copy the file called OLDNAME.XYZ from the disk
in drive B with format F1, user number 0 to
the disk in drive A, format F2, user number 1,
renaming the file NEWNAME.ABC

Example:

```
XFER MYFILE.DOC:A :C
```

Explanation:

copy the file called MYFILE.DOC on drive A
to drive C using the same name MYFILE.DOC

4 Technical Information

Bytes, Sectors, Grans, Blocks and Clusters

File sizes are described by different disk operating systems using different units of measurement. Among the more important to us are:

Byte almost the smallest unit of measurement, in fact a byte is an 8 bit binary number which can take on 256 different values sufficient to describe all the text characters plus some for graphics and other purposes. A text file usually uses one byte per character of text.

Sector - a sector is a portion of a track of recorded data on a floppy disk and consists of a number of bytes, typically 128, 256, 512 or 1024. A sector is the minimum amount of information that can be read from, or written to, a disk. A sector on a standard TRS-80 DOS is 256 bytes.

Grans - TRS-80 operating systems always read and write sectors in groups called granules. Files are therefore always multiples of the granule size. Consult your DOS manual for definite information on the size of a granule in your case. Typically, however, granules are three, five or six sectors, each sector being 256 bytes.

Blocks or Clusters - another name for a group of sectors. MS and PC DOS uses the name 'cluster' which is only 1 sector in size on single sided and two sectors on double sided disks. CP/M uses 'blocks' which are usually 1024, 2048 or 4096 bytes long. Files on CP/M and PC DOS's are multiples of blocks or clusters long.

End of File Markers

The end of a file can never be guaranteed to end exactly at the end of a sector, gran, block or cluster so some other means is used to show where the end actually is. On the TRS-80 the directory information contains an EDF value which says which byte in the final sector is the last byte. Also there is a number given showing the total number of records (=256 byte sectors) in the file. There is some inconsistency in this with some DOS's counting sectors from 0 and some from 1.

On CP/M files are always multiples of 128 bytes long. The directory contains an entry defining the number of 128 byte records in the file and nothing else is available. So users have to resort to some other means within the file. Text files are terminated with a Control-Z character (hex 1A) and, if the ASCII file transfer mode is selected, this is used by Hypercross to determine the proper end of file.

IBM PC files have a four byte directory entry defining the exact length which can be used for data files. On text files however this is not always exact and may be rounded up to the nearest whole sector or cluster. In this case the exact end of file is marked by a Control-Z as with CP/M.

Some TRS-80 text editors use a 00 byte to mark the end of the files they create. To allow for this, when copying from PC or CP/M files in ASCII transfer mode, the program automatically puts at least one 00 byte on the end instead of the CTRL-Z mark.

ASCII File Differences

There are some differences between the way text (ASCII) files are stored on disk by the TRS-80 and CP/M or PC disk systems. Apart from the end of file mark as described above a major difference is the way the end of each line is marked. On the TRS-80 a single carriage-return code (hex 0D) is used. In CP/M and PC files a line feed is added (hex 0A). If you were to copy a text file from say CP/M to TRS-80 without making any changes you would find your printer double line spacing if you were to try and print it. The ASCII file copy switch takes care of this for you automatically removing the 0A's when copying to TRS-80 formats and inserting 0A's in the right places when copying from TRS-80 to CP/M or PC.

Another problem with the TRS-80 is that four of the ASCII codes are used in a non standard way. These are the codes:

Hex	True ASCII for	TRS-80 uses it for Model I	TRS-80 uses it for Model III/4
5B	[Up arrow	Up arrow
5C	\	Down arrow	
5D]	Left arrow	
5E	^	Right arrow	

To correct for this the -A switch will cause the copy program to change any occurrence of 5B hex in a TRS-80 text file to a 5E when copying to a PC or CP/M disk. The reverse will be done when copying the other way. If you want to use ASCII transfer but do not want this substitution to take place you can select this as an option when you run CFGMAKE/BAS to customize Hypercross at run time. You can also elect to convert TAB characters to space characters when copying from alien to TRS-80 format since the TRS-80 does not recognize TABs.

Load File Formats

Apart from differences in ASCII file formats there are differences in the way other types of files are stored on disk by different computer operating systems. In particular the TRS-80 stores /CMD files using a scheme which indicates where each section of the file is to be loaded in memory and the address where the program execution is to start.

By contrast CP/M load format is pretty dumb. All machine language files load and start running at 0100 Hex and must contain some kind of relocater if they are to run elsewhere in memory. Since CP/M programs are written for 8080 or Z80 microprocessors they should, in many cases, be adaptable to TRS-80 operation.

Spread sheet file formats

If you use VISICALC on your TRS-80 you will be able to transfer these to the PC using the COPY or TAG command. VISICALC VC files are in ASCII format so use the -A switch when copying them. You can then read them straight into VISICALC on your PC or compatible. If you prefer Lotus 123 then Lotus has a Visicalc to 123 translation program VCWKS.EXE which allows you to translate Visicalc .VC files to Lotus .WKS file format. You can also go back from WKS to DIF format using Lotus's file translator.

Using JCL DD control files

Most TRS-80 operating systems allow you to build a file of text commands and then to execute it as if the commands had been typed directly from the keyboard. These files generally have the extension /JCL (for Job Control Language) and are executed with the DD command. You can use this to automate a sequence of operations with Hypercross. For instance, suppose you want to format a blank disk in drive 1 as an IBM PC disk and then copy a file to it and return to DOS you could make a JCL file such as this:

```
HYPERCROSS
FORMAT :B
COPY FILE/DAT:0 FILE.DAT:B -A
X
```

If this file was called say MAKEPC/JCL you would execute it by typing DD MAKEPC from DOS command level. It would first load and run Hypercross and then it would format the disk in drive B (:1). Note the blank line in the file corresponding to the <enter> key being pressed when Format asks you to insert a disk. It would then do a file copy and exit to DOS.

5 Formats Supported

This section details the formats that are available. Not all will be on your disk. (If you ordered the PC version only PC/MS-DOS formats will be on your disk.) Those marked with a # are included with the MAX-80 XT version of Hypercross. The formats marked with an asterisk (*) are available in a supplementary format package if you did not order it originally.

Note SS = single sided, DS = double sided, SD = single density, DD = double density, 35,40,80 etc = number of tracks.

Note: Model I users need a doubler for DD formats.
 All users need 2 sided drives for DS formats.
 You need 80 track (96 TPI) drives for 80 track formats.
 The 8 inch format needs an 8 inch drive and supporting hardware.

IBM_PC_(PC-DOS, MS-DOS)_formats:

Type	Sides	Dens	Tracks	Sectors	Bytes
PC/MS-DOS 1.1	SS	DD	40	8	512
PC/MS-DOS 2.x	SS	DD	40	9	512
PC/MS-DOS 1.1	DS	DD	40	8	512
PC/MS-DOS 2.x	DS	DD	40	9	512
PC IBM 5550 Japan	DS	DD	80	8	512 *
DEC Rainbow	SS	DD	80	10	512 *
Tandy 2000	DS	DD	80	9	512
Televideo 1603	DS	DD	80	9	512 *

CP/M_formats:

Aardvark	SS	DD	40	10	512
Access Matrix	SS	DD	40	9	512
Access II	DS	DD	40	9	512
Alertext	SS	DD	40	18	256 *
Altos	DS	DD	80	9	512
Ampro Little Board	SS	DD	40	10	512 *
Ampro Little Board	DS	DD	40	10	512 *
ATR 8000	SS	DD	40	10	512
Avatar	SS	DD	40	10	512 *
Avatar	DS	DD	40	10	512 *
Avatar	DS	DD	80	10	512 *
CCS	SS	DD	35	5	1024
Cifer 2683	DS	DD	40	10	512 *
Columbia	DS	DD	40	8	512 *
Cromemco Z-2	SS	SD	40	18	128
Cromemco Z-2	SS	DD	40	10	512
Cromemco	DS	DD	40	10	512
Cromemco CDOS	SS	DD	40	10	512 *
DEC VT180 Robin	SS	DD	40	9	512

DEC Rainbow	SS	DD	80	10	512
Eagle	SS	DD	80	5	1024
Epson	DS	DD	40	16	256
Epson QX10	DS	DD	40	10	512
Florida Graphics	DS	DD	80	16	256 *
Gemini	DS	DD	80	10	512 *
Groupil III	DS	DD	40	4	1024 *
HP 125	DS	DD	40	16	256
IBM PC CP/M-86	SS	DD	40	8	512
IBM PC CP/M-86	DS	DD	40	8	512 *
Idea Bitelex	SS	DD	40	16	256 *
Kaypro II	SS	DD	40	10	512
Kaypro 4 & 10	DS	DD	40	10	512
LNW80/Team	SS	DD	40	18	256
LNW80/Team	DS	DD	40	18	256 **
Lobo Max-80	SS	DD	35	18	256 **
Lobo Max-80	SS	DD	40	18	256
Lobo Max-80	DS	DD	40	18	256 **
Lobo Max-80	DS	DD	80	18	256 **
Lobo Max-80 CP/M 3.0	SS	DD	40	10	512 **
Lobo Max-80 CP/M 3.0	DS	DD	40	10	512 **
Micral 9050	DS	DD	40	16	256 *
MicroBee	DS	DD	40	10	512 *
Monroe 2000	DS	DD	80	8	512 *
Morrow uDecision	SS	DD	40	5	1024
Morrow	DS	DD	40	5	1024
NCR Decision Mate	DS	DD	40	8	512 *
NEC PC-8001	SS	DD	40	16	256
NEC PC-8801	DS	DD	40	16	256 *
Northern Tel 803	DS	DD	80	10	512 *
Octopus	DS	DD	40	5	1024 *
Octopus	DS	DD	80	5	1024 *
Olympia ETX II	SS	DD	40	9	512 *
Olympia EX 100	DS	DD	40	9	512 *
Osborne-I	SS	SD	40	10	256
Osborne-I / Exec.	SS	DD	40	5	1024
Osmosis	SS	DD	40	10	512 *
OSM Zeus	DS	DD	80	8	512 *
Otrona	DS	DD	40	10	512
Pied Piper	DS	DD	80	10	512 *
PMC-101 CP/M 3.0	SS	DD	40	5	1024 *
PMC-101 CP/M 3.0	DS	DD	40	5	1024 *
Reynolds TC1000	SS	DD	40	5	1024 *
Sanyo 1000	DS	DD	40	16	256
Sanyo 2000	SS	DD	80	16	256
Sanyo 1250	DS	DD	80	16	256
SD Computers	SS	SD	40	18	128
Sharp YX3200	DS	DD	40	16	256 *
Superbrain	SS	DD	35	10	512
Superbrain D	DS	DD	35	10	512
System II	SS	DD	40	9	512 *
Teletek System Mstr	SS	SD	35	18	128
Teletek System Mstr	SS	DD	35	18	256
Teletek System Mstr	DS	DD	35	18	256

Televideo 802	DS	DD	40	18	256
Televideo 1603	DS	DD	80	9	512
Texas Instruments	SS	DD	40	8	512 *
Toshiba 100/200	DS	DD	35	16	256 *
TRS-80 Model I CP/M formats:					
Lifeboat CP/M 1.4	SS	SD	40	18	128
FEC	SS	SD	40	18	128 *
FEC	SS	DD	40	18	256 *
Omikron	SS	SD	40	18	128
Omikron	SS	SD	80	18	128 *
Omikron	SS	DD	40	28	128 *
TRS-80 Model III CP/M formats:					
Holmes VID-80	SS	DD	40	10	512
Hurricane Compactor	SS	DD	40	5	1024
MM Shuffle Board	SS	DD	40	10	512
TRS-80 Model 4 CP/M formats:					
Montezuma Micro CP/M 2.2:					
1.30	SS	DD	40	18	256
1.30	DS	DD	40	18	256
1.32 the odd one	DS	DD	40	18	256 *
1.4x	SS	DD	40	18	256
1.4x	DS	DD	40	18	256
2.2x system disk	SS	DD	40	18	256
2.2x " "	DS	DD	40	18	256
HA — 2.2x " "	SS	DD	80	18	256 *
2.2x " "	DS	DD	80	18	256 *
2.2x data "	SS	DD	40	18	256 *
2.2x " "	DS	DD	40	18	256 *
2.2x " "	SS	DD	80	18	256 *
2.2x " "	DS	DD	80	18	256 *
Radio Shack 3.0 Plus	SS	DD	40	8	512
Xerox 820-II	SS	DD	40	18	128
Xerox 820-II	SS	DD	40	17	256
Xerox 820-II	DS	SD	40	18	128
Xerox 820-II	DS	DD	40	17	256
XOR-100	SS	DD	40	10	512 *
Zenith-Heath H89	SS	SD	40	10	256
Zenith-Heath H89	SS	DD	40	16	256
Zenith-Heath H89	DS	DD	40	16	256
Zenith-Heath H89	DS	DD	80	16	256
Zenith-Heath Z90	SS	DD	40	16	256
Zenith Magnolia	SS	DD	40	9	512 *
Zenith Magnolia	SS	DD	80	9	512 *
Zenith Z100	SS	DD	40	8	512
Zenith Z100	DS	DD	40	8	512
Zenith Z100 alt.	DS	DD	40	8	512
Zorba	DS	DD	40	10	512
Zorba Z2000	DS	DD	40	5	1024
Zorba Q	DS	DD	80	10	512
HA Zorba Z2000Q	DS	DD	80	5	1024
8 inch CP/M std.	SS	SD	77	26	128

We are always on the look-out for new formats to add to the list. If you have access to a format not listed here, format a disk and put some files on it and send it to us together with a completed copy of the New Format Submission form and we will endeavour to include it. If possible we will return your original disk with a new copy of the file transfer program containing all new additions to date including yours. If the disk is double sided, we need it to be more than half full with files so that we can determine how the back side is recorded. There are many ways this can be done and we need a disk with something written on the back to be certain.

6 Making a configuration file

Included on your Hypercross disk is a program CFGMAKE/BAS for making configuration files for Hypercross. If a configuration file is present on the disk when Hypercross runs, it will be loaded and it will set the following parameters:

- o The type of DOS you are running under.
- o The default file transfer switch.
- o The initial alien formats F1 and F2.
- o The default Alien and TRS-80 drives.
- o The number of tracks on each drive.
- o The alien format allocated to each drive.
- o The drive stepping rate.

You can have more than one different configuration file - or none at all. If there is no file SXCFG0/DAT on your disk or if you hold down the Enter key Hypercross will start and ask you for your DOS type and the principal alien format F1. All drives will be set to 40 tracks and assigned to alien format F1. The drive stepping rate will be 40/30 μ S and the default drives will be 0 (TRS-80) and B (Alien).

The configuration file loaded will be SXCFG0/DAT if it is present. However, if you hold down one of the keys 1 to 9 while Hypercross is loading, Hypercross will try and load an alternative file SXCFG1/DAT to SXCFG9/DAT depending on the key held down. Thus you can have up to 10 different configurations loaded automatically according to which key you hold down.

If you have the file SXCFG0/DAT present on your disk and you want to bypass it, simply hold down the Enter key while Hypercross is loading. You can also hold down a key from 0 to 9 corresponding to a non-existent SXCFG file. For example, if SXCFG9/DAT is not on your DOS then holding down the 9 key will force Hypercross to try and load SXCFG9/DAT and, not finding it, it will bypass the configuration file.

Running CFGMAKE/BAS

CFGMAKE/BAS is a BASIC program so you will have to load basic to run it. First, transfer CFGMAKE/BAS to a DOS disk which has Disk BASIC on it. Then you must run BASIC and load CFGMAKE/BAS. The exact form of the command depends slightly on the DOS you are using. For most BASICs you can simply type:

```
BASIC          to load and run BASIC
```

RUN "CFGMAKE/BAS" to run CFGMAKE/BAS

CFGMAKE uses one disk file, and some DOSs require you to specify how many files are to be allowed. With Dos Plus you will have to run Basic thus:

BASIC -F:1

Once CFGMAKE/BAS is running it will ask you a series of questions. From your answers it will create the configuration file. At any time you can type B to step back to the previous question if you want to revise your answers. CFGMAKE gives you detailed explanations for each question and needs no separate step by step discussion here. When you are done it will ask you for a file number from 0 to 9. This allows you to create up to 10 different configuration files. Which one is loaded will depend on which key 0-9 is held down while Hypercross loads. If no key is held down at load time then SXCFG0/DAT will be loaded if present.

New Format Submission

If you have a CP/M disk format that is not included in the data base provided and would like to see it added, please complete the information in the form below and mail it together with a formatted disk to us. Please place some arbitrary files on the disk, preferably text files so that we can determine sector interleave factors. If the format is double sided please put on enough files to fill more than half the available disk space. We will return your disk when we are done with an updated copy of the program. Please also include your original disk together with \$10 to cover handling and shipping costs.

New Format Submission

I am submitting the enclosed CP/M [] PC [] formatted disk. Please analyze it and, if possible, add it to the data base of formats in my copy of the file transfer program.

The disk was made on the following computer:

Make: Model:
.....

Other comments:.....
.....

Name:
.....

Address:
.....

City: State: Zip:
.....

Program: PC [] CP/M [] CP/M+PC []

For model: I [] III [] 4 [] Max 80 []
.....

Where purchased:
.....

Serial No:
.....

Mail to: HyperSoft,
PO Box 51155, Raleigh N.C. 27609, USA

Please feel free to copy this page.