



User Reference Manual

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INSTALLATION

First make a copy of the CRITICAL CONNECTION disk. Save the original in a safe place as a master copy and use the new copy.

AUTOMATIC INSTALL MENU

To install the CRITICAL CONNECTION for your system, you will put the disk in your CPM system and type INSTALL. The INSTALL program will then give you a menu of computers from which you can chose. If your computer is on the menu, you can select that option and be done with the installation. If you select a menu option you can skip the next 3 pages in this manual and go straight to the "first time use" section.

If your computer is not in the menu, enter N for none and proceed to the next page.

NON-AUTOMATIC INSTALL MENU
(for installs #1,#2,#3)

If your computer is not in the menu, there are three methods to install the CONNECTION for your system. After you have entered N (for none of the computers listed in the menu), the program will give you a menu of the 3 installs. The three installs are described below. To find the information required in these installs look under SERIAL PORT in your CPM system's documentation.

1 SEMI-AUTOMATIC

This is the easiest install. To use the SEMI-AUTOMATIC install, you only need to know the following.

- 1) How to initialize the serial port to 19,200 baud.
- 2) The address of the DATA port.
- 3) The address of the STATUS port.

The SEMI-AUTOMATIC install will only work with a port that is a typical or normal port. It will not work on a few systems. Serial ports that require a write to some port before a read of the status or data port must be installed using the manual install, option 3.

2 ASSISTED INSTALL

The second install needs a little more information than the SEMI-AUTOMATIC install. The information you need to use this install is as follows.

- 1) How to initialize the serial port to 19,200 baud.
- 2) The address of the DATA port.
- 3) The address of the STATUS port.
- 4) Are your ports used as port numbers or memory locations.
- 5) How to use the STATUS port. This means knowing the byte used to check if ready to transmit and the byte used to check if ready for receive. The byte is ANDed with the status to check if a certain bit is on. For example if bit 2 (bits go from 0 to 7) was the ready to transmit bit then the byte to AND with the status would be 04H. If bit 3 was ready to receive, the byte to check for input would be 08H.

3 MANUAL INSTALL

The third install just tells you how to install the Critical Connection using DDT. This install gives you the locations of a jump table for all of the 5 routines needed to use the port. These 5 routines are initialization, output status, input status, output, and input.

PREPARATION FOR NON-AUTOMATIC INSTALLS

If you have a configure program to initialize your serial port, you should use it so that you do not have to figure out how to initialize your port.

Now you need to plug everything in. The RS-232 connector at the end of the long cord goes into your CP/M system. The 13 pin connector goes into the right hand side of the ATARI. Check that both are plugged in.

For the semi-automatic install the port must have been initialized and the connectors must be plugged in.

The serial port needs to be set up for 19,200 baud, 8-bit, 1 stop bit, no-parity, no interrupt operation. The connection only uses 3 wires pins 2,3, and 7. The RS-232 connector for your computer should have pins 2 and 3 wired for a terminal, as opposed to a modem. This means pin 2 is input to your computer and 3 is output from your computer. Pin 7 is ground.

PROCEDURE FOR NON-AUTOMATIC INSTALLS #1.#2.#3

Select the type of install that you want and then answer the questions the program asks. The install makes the file ATARI.COM which is the installed and ready to use program. The last thing it does is ask you if you would like to run ATARI.COM. You can answer Y for yes and it will run the program. In the future you will need to type ATARI, but not have to do the install.

Now you turn the ATARI off and on once. The CP/M system should say it has sent the 3 boot sectors. If the CP/M system did not display the 3 messages saying "I am sending boot sector 1", then "2" then "3" it did not work. If it works then skip the next page and go to the section titled FIRST TIME USE.

INSTALLATION HINTS

What to do if it does not work after you installed it.

If your computer or card is in the menu try that option and read carefully the message printed right after you select the option. It may be that you need to do something special for your system.

If your computer is not in the menu you should next use the semi-automatic install. This install will give you a lot of help. It will figure out some things so that you don't have to, and if it does not work it will suggest possible problems based on what happens.

If automatic and semi-automatic do not work then try the assisted install or the manual install. The following is for the assisted install and the manual install.

- 1) Check that everything is plugged in.
- 2) Check that you have the right information about the port.
- 3) If you have checked that everything is plugged in and tried turning the ATARI off and on again and it still does not work you can use a diagnostic command that takes what is coming into the CP/M system on the serial port and displays it on the screen. The command is Z. It is not in the menu because you will not normally use it, but you should now. To use this, you type ATARI on the CP/M system, then any key to get into command mode, and then Z. Now turn the ATARI off then on. After doing this certain results may mean certain things:

A) If you have only a few characters, the CP/M system is at a slow baud rate.

B) If you get the IS repeated 27 times you are very close to working. You may want to try turning the ATARI off and on when the CPM system says "I am serving the ATARI." If this still does not work then it means that the byte to check for send (output) is not right, but everything else is.

C) If you get only IS and then an occasional I and S with other characters in between, then the stop bits may not be right.

D) If nothing happens:

- 1) The status port number or byte to check for receive is not right.

- 2) Something is not plugged in.

- 3) Your RS-232 connector is wired so that a modem can be plugged in, not a terminal. Check your manual. If this is the problem reverse the wires going to pins 2 and 3 in the RS-232 connector either on your system or the Critical connection.

If you have any real problems call (408) 997-0264 on weekends and (415) 643-1671 from 2:10 to 3:30 or after 7:00 pm weekdays. Ask for technical support (Vincent).

FIRST TIME USE

To illustrate the use of the connection, and to reward yourself for getting the connection installed, lets play CHICKEN. Check that everything is plugged in. The RS-232 connector at the end of the long cord goes into your CP/M system. The 13 pin connector goes into the right hand side of the ATARI.

1) Type ATARI on the CPM system (or Y if you are in the install program where it asks you if you want to run ATARI now).

2) Put the basic cartridge in the ATARI.

3) Next turn the ATARI off and on.

4) Check that you got the message on the CP/M screen that says the ATARI is booting. If you did not get this message then either something is not plugged in or the connection is not installed correctly.

5) Next, on the ATARI type, ENTER "D:CHICKEN.AIR.

You should then hear lots of beeps on the ATARI's T.V. as the program comes across the line.

6) When the ATARI says READY type RUN on the ATARI.

Joystick number one controls the chicken and the other three control the three cars. The object for the chicken is to cross the road. The object for the cars is to hit the chicken.

To test if the printer will work do the following.

1) Turn on your CPM printer.

2) Hit the SYSTEM RESET on the ATARI to exit chicken.

3) Type LISI "P on the ATARI.

There will be a lot of noise on your TV as the data is sent to the CP/M system and the printer should start to go. If it does not check that the printer is plugged in, turned on, and "on line". If the printer was "on line" and it did not work then the printer status check may not have been installed correctly. You can look up the port the printer is connected to in your manual and figure out how to check the input status or you can install the connection with non-buffered printing.

ATARI COMMANDS

Now you are ready to use the ATARI. There are several standard ATARI basic commands you need to know. To use these commands the CP/M system must be serving the ATARI. If you are in the command mode (see next page) you must use the N command to get out of command mode and back to serving the ATARI.

The ATARI BASIC disk commands have the form command "D:FileName.Typ". The disk commands can also have a drive number, like D1:. Without a number it defaults to the logged disk. The logged disk is the CP/M disk you started on or the one you logged using the L command. If you have a drive number it indicates a certain CP/M drive. D1: is drive A:, D2: is B:, and so on. FileName is a maximum of 8 characters. Typ is the 3 or less character extension such as ATR or IQK.

(1) LIST "D:FileName.Typ

This saves an ASCII file to the disk. This file can be edited using a CP/M editor. Files saved with this command can only be loaded into the ATARI with the ENTER command.

(2) ENTER "D:FileName.Typ

This enters the ASCII file to the ATARI. This does not erase what was in memory so you may want to do a NEW before you use this command. This is used with files entered under CP/M or saved with the LIST command. All of the ATARI programs that I have included are in ASCII form. Use this command to load them the first time. You could then save the program with the SAVE command.

(3) SAVE "D:FileName.Typ

Saves a tokenized form of the program to the disk. The file this creates is not one that can be edited with your CP/M editor.

(4) LOAD "D:FileName.Typ

Loads a tokenized file. This file must have been created with the SAVE command. The load command is significantly faster than the ENTER command since it does not need to tokenize the program as it is loaded.

(5) RUN "D:FileName.Typ

This is equivalent to the two commands LOAD "D:FileName.Typ and then RUN.

(6) LIST "P

This does an ASCII list of the program in memory to the printer. This will be buffered by the CP/M system so you can play a game while it prints. As it prints you can load or save programs or whatever you want.

COMMANDS

Once the Connection has been installed, you usually will not do anything special to use it. You will simply type ATARI on the CP/M system, turn on the ATARI, and then the normal ATARI printer and disk commands will work. However, there are instances where you will want to do something more. The following information is for those situations.

There are two major modes in the Critical Connection. One is the command mode and one is the mode where the CP/M system is serving the ATARI (see preceding page). To enter the command mode you just hit any key on the CP/M system. You will see a menu of commands and then be prompted to enter a command. The following commands are done in the command mode.

N command: go back to Normal mode

Use this command when you do not want to enter a command. After a key is hit you will get a menu and be asked for a command hit N to go back to serving the ATARI in normal mode without entering a command that does something.

X command: eXit to CP/M

The X command exits to the system. When you are all done you get out of the ATARI program with this command.

L command: change Logged disk drive

This changes the logged disk drive to the drive of your choice. The currently logged disk is the only one the ATARI will use. This sets the drive that will be used when no drive number is given in an ATARI disk command. See preceding page.

U command: Upload a file from a virtual disk to a CP/M file

The file on the virtual disk must be in an ATARI DOS directory. It will be copied to a regular CP/M file. This can be used to do what the D command is used to do as far as transferring files from DOS format to CP/M format.

I command: copy a CP/M file Into a virtual disk

This is the opposite of the U command. It will copy a normal CP/M file into the ATARI DOS format. It will make a new but small virtual disk that only contains that file. Using DOS the file can then be copied to another virtual disk. The small virtual disk will say that it is full even though it only has one file on it. You should delete the small virtual disk after copying the file onto another virtual disk.

F command: list Files on a CPM disk

The F command is like DIR in CP/M. You can type F return to get a list of all files. You can also type things like F *.ATR or F B:*.BAS.

The last four commands toggle between an on and off option. If the command is not activated and you hit that option then it will be activated, if it was activated it will be deactivated. Here we will just explain what happens when it is activated.

D command: Divert printer output to a file.

This will take what the ATARI sends to be printed and put it into the file you specify. If you want to transfer programs from the ATARI disks to a CP/M disk you can use this command. This command is also useful if when the ATARI was turned on it did not boot from the CP/M system for some reason and you have entered a program you want to save.

Here is how you use this command.

- 1) Plug the CRITICAL CONNECTION into the back of your 810 disk drive.
- 2) Plug the 810 disk drive plugged into your ATARI.
- 3) Use the D command on the CP/M system entering the FileName you want.
- 4) Use the V command to enter virtual mode and make virtual drive 1 on the CP/M system off. This is so that the 810 can be drive 1.
- 5) Turn the ATARI on to boot from the ATARI 810 disk drive.
- 6) You can now load a program into the ATARI and then type type LIST "P.
- 7) Wait for the ATARI to say ready.
- 8) Now use the D command on the CP/M system to save the program.

If you have ATARI DOS there is another way to transfer files from ATARI disks to regular CP/M files. It is the same as the first way up through step 5. Here are the new steps.

- 6) You type DOS on the ATARI.
- 7) Next you use the ATARI DOS command C to copy a file. What you want to do is copy a file from the disk to the printer.
- 8) So after you type C it will say FROM,TO? and you would enter the FileName,P:. So you might type D1:GAME,P:.
- 9) Wait for the atari to say it is done.
- 10) Use the D command on your CP/M system.

S command: Strip off high bit when printing

There are some characters that can be displayed on your ATARI screen that will be garbage on your printer. The reverse video characters can be made into normal characters with this command.

V and C commands: Virtual ATARI disk drives

This makes the CP/M system exactly like some ATARI 92K disk drives. It will ask what drive you want to change, and then for a file name to be used as a diskette. You can have the CP/M system be any number of drives from 0 to 4. You can at the same time have any number of real ATARI disk drives. You should of course not have two drives with the same number. After entering virtual mode you change the status of the 4 virtual drives with the C command and the V command ends virtual mode.

For example lets copy an ATARI disk that has DOS on it onto the CP/M system.

- 1) Use the V command.
- 2) Say that you want to change the virtual diskette in drive 2.
- 3) For a file name lets use DOS.DSK.
- 4) Plug an ATARI 810 disk drive into the ATARI.
- 5) Plug the CRITICAL CONNECTION into the back of the 810 disk drive.
- 6) Now put the DOS diskette in the ATARI 810 drive 1.
- 7) Take out all cartridges and turn the ATARI off and then on to boot DOS from the ATARI 810 drive.
- 8) Now to copy this disk onto the CP/M system use the ATARI DOS command to duplicate a disk.
- 9) Say you want to copy from drive 1 to drive 2.
- 10) Wait for it to copy the disk in your ATARI drive to the file DOS.DSK.
- 11) Now you can use the C command and say you want to change the virtual diskette in virtual number drive 1.
- 12) Entering DOS.DSK for the file name of the virtual diskette. Note that you have one virtual diskette DOS.DSK in two virtual disk drives but don't let it bother you.
- 13) Now turn off the ATARI 810 disk drive.
- 14) Next turn off and on the ATARI and it will boot ATARI DOS from the CP/M system DOS.DSK just like it was a diskette in your real ATARI drive.

This command does not make files that can be edited with CP/M editors. This is usually used only for copying disks with machine language programs.

This command is also used to load machine language programs created on the CP/M system into the ATARI. The file should be 6502 code with the 6 byte header ATARI uses for boot files. The first byte must be a 00H, second the number of sectors, the next two bytes in low-high order make up the address that you want the first byte (the 00H) to be loaded into, the next two in low-high order make the address you want the system to call on a system reset.

To use this command you must have CP/M 2.0 or later.

K command: change the ATARI Keyboard.

If the ATARI was using its own keyboard, it will now use the CP/M system keyboard and viceversa. Whenever you change you will have to turn the ATARI off and then on so it can boot in the right program. The boot that uses the CP/M keyboard is 5 sectors, the boot that uses the ATARI keyboard is 3. When the ATARI is using the CP/M keyboard, there are several important keys.

Control E is ATARI up arrow.

Control D is ATARI right arrow.

Control X is ATARI down arrow.

Control S is ATARI left arrow.

The DEL or RUB OUT key is an ATARI DELETE.

BACKSPACE is an ATARI left arrow.

This command can not be used in virtual mode because it takes a special driver in the ATARI that can only get there during the 5 sector boot.

When using this command the CP/M keyboard replaces the ATARI device E. To use the regular atari keyboard at the same time one can open device K, say from basic.

When using this command the CP/M keyboard now has a 255 character type ahead buffer. Because of the type ahead buffer you can type several commands at one time and the ATARI will execute each of the commands one at a time until it is finished. For example you can all at once type the commands to lead, list, assemble, and then execute a program, and it will execute the commands one at a time.

COPYING PROGRAMS ONTO CP/M

COPYDISK.OBJ

This is a machine language program to copy disks from an ATARI disk drive onto the CP/M system. Like all machine language programs, it is booted into the ATARI using the V command.

1) Plug the CRITICAL CONNECTION into the back of the ATARI B10 drive with the ATARI drive plugged into the ATARI.

1) First you use the V command

3) When CP/M system asks what drive, enter 1.

4) then say you want to use the file COPYDISK.OBJ.

5) Next turn the ATARI off and on to boot.

It will boot the copy program and the program will then tell you to turn on ATARI B10 disk drive 1.

6) Use the C option and change drive 1 to off.

7) Use the C option again and select drive 2.

8) Enter the name you want the virtual disk to have.

9) Then hit return on the ATARI.

After you hit return it will copy the disk into the file you chose drive 2 to use with the C command.

If the disk you copied is a boot disk you may want to try it out. Here is how you would do it.

1) Turn off the ATARI B10 drive. 2) Use the C command again selecting drive 1 and the new virtual disk file.

3) Turn the ATARI off and then on to boot the new virtual disk.

TAPEDISK.ATR

This is used to copy boot tapes onto the CP/M system. This program requires you to have enough memory to hold the BASIC program and the whole machine language program in memory on the ATARI. You load and run the BASIC program and it will tell you to plug in the tape. To do this you will have to unplug the CRITICAL CONNECTION first. Next plug in the tape and hit return. When it is done reading the tape it will ask you for the name of the file you want to use on the CP/M system. You should plug the CRITICAL CONNECTION back in and enter a file name on the ATARI. At this point the CP/M system is just in the regular disk mode, not the virtual mode. Hit return when you are ready. After the program is done it will tell you. Now you go into virtual mode and using drive 1 and the name of the file just created you should be able to boot the program by just turning the ATARI off and on.