

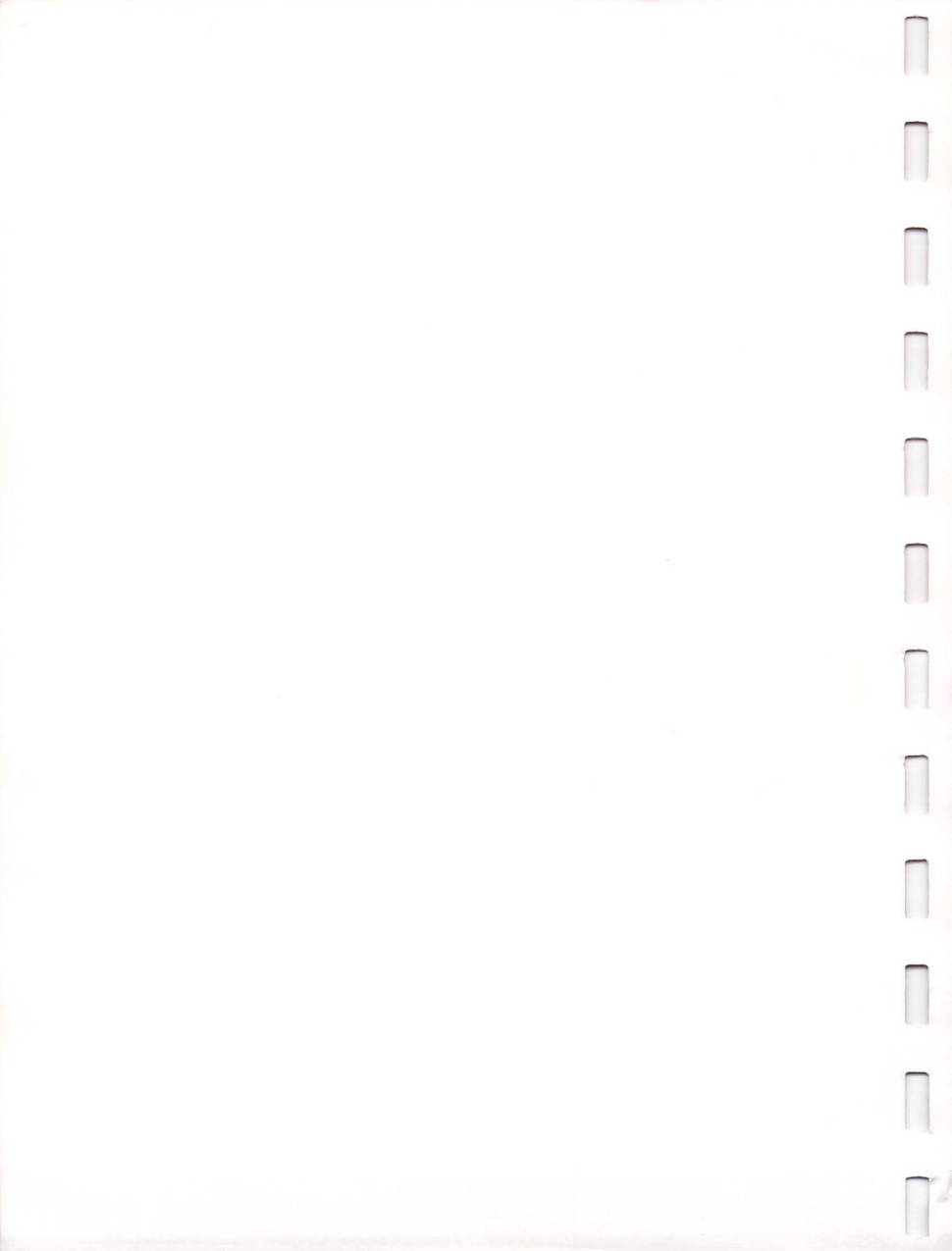
# THE ULTIMATE GAME BUSTER

## ACTION REPLAY

# PC



# Instruction Manual



## Action Replay PC

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## **Introduction**

Welcome to the world of PC Action Replay. We hope that you will find a great deal of enjoyment using our freezer board and if you are prepared to put that extra bit of time reading the instructions you may save yourself some time with incorrect installation. Remember we have already set the Action Replay up on many machines and have got some useful advice. The installation is split into two sections, the quick installation and the Advanced installation. The quick installation is designed to get you started as quickly as possible with as little fuss as possible and not bother with any of the technicalities. The Advanced installation is there for the more technically minded or those of you who may have problems. The safest bet is try the Quick installation first, in 95% of situations this will be all you need.

## **System Requirements**

The Action Replay will work on an 80286, 80386 and 80486 IBM-PC 100% compatible system. A free 8 or 16 bit expansion slot is required for the Action Replay expansion card. The Action Replay is compatible with EGA and VGA video systems (not a CGA card however). Both mono and colour are supported. A hard disk is required for installation of the supplied software.

ROM Address C800H  
IO PORT 0280H  
IRQ Quick Installation 3

With the power to your computer off place the Action Replay expansion card into a free 8 or 16 bit expansion slot in the back of your computer. If you are not sure on how to do this, or encounter any problems, refer to your computers documentation which should include a detailed explanation on inserting expansion cards. Connect the Flylead from the freezer controller into the socket on the Action Replay expansion card and place the freezer controller somewhere accessible near to your computer keyboard. Never connect any device apart from the freezer controller to the Action Replay card. Switch the power on to your computer and boot DOS as normal.

Place the supplied INSTALL DISK into a floppy drive and type the following:-

```
[sdrive:]INSTALL [sdrive:] [ddrive:]  
sdrive is the source drive to copy from  
ddrive is the destination drive to copy to
```

e.g.

#### **A:INSTALL A: C:**

Once the files have been copied the setup program will run showing the set up for your machine and the Action Replay board. If there is a problem and the program cannot find Action Replay it will show some suggestions for the new jumper settings. You should switch the machine off, remove the Action Replay board and try the new settings. For more information on this see the advanced installation section. If all is well you should simply move the highlighted cursor to the 'EXIT' option and press 'ENTER'. Two further questions will appear asking first to save a configuration file and second to modify your AUTOEXEC.BAT. You should allow setup to do both of these things for you. When setup finally lets you exit it will ask you to re-boot your machine to install Action Replay. You should do this by either pressing the Ctrl-Alt-Del key combination or pressing reset on your computer. If all is well when your machine has finished rebooting a message will be displayed stating that Action Replay is installed and the LED on the freezer pod will be flashing. Action Replay is now installed. If you press the freezer button within a couple of seconds you should be presented with the DATEL screen within Action Replay. If this has not happened then you need to see the advanced installation guide later in this manual.

## The Trainer

### The trainer concept

The trainer consists of two parts, the first is a system of finding so called parameters or cheats, and the second is a method of entering or using these parameters to allow such features as infinite lives, level select, unlimited energy etc. These two features combine together as the trainer. The trainer is invoked by typing the command 'Trainer' on the freeze screen of Action Replay. This will then activate a completely new interface. Parameters can be either generated using the in built trainer or obtained from magazines or your friends. The parameters are of a form that is completely universal, so making it very easy to transfer codes from machine to machine. We hope this system will become a standard for transferring cheats as have the Action Replays on other machines.

### The Action Replay parameter (cheat code)

The goal of the Trainer and the cheat codes is to enhance the game play of a particular game, help you through a difficult part of a game that you may never have completed and also see parts of a game that you would not normally have seen (secret levels, bonus levels). Generating your own cheat codes gives you a great sense of achievement and is tremendously addictive (try it and you'll see what we mean), plus it has the ability to enhance old games that you have in your collection and give them a completely new lease of life.

An Action Replay parameter (often called a cheat or cheat code) will look something like the following.

FRONTIER18330905

These parameters are found using the trainer and to have an effect are entered into the parameter table. The effect of a parameter (cheat) can be varied and could be anything at all but the more common effects are infinite lives, unlimited energy etc. An Action Replay code is independent of the machine you are running the game on (so you can use the same codes as your friends) however a parameter is totally dependant on a game, you can not use a parameter found on one game on any other game! If you follow the procedure below you should be able to find many

different codes for many different games. Simply take your time and do not try to rush anything.

### **Entering Cheat Codes into the Parameter Table**

Cheat codes don't have to be generated by you, they may have been created by a friend or found within the pages of a computer magazine. As the codes for each game are the same for every machine, they can be used by anyone owning the same copy of the game with an Action Replay.

To use the Trainer for simply entering cheat codes, follow the steps below. The game that we use in this example is PCMAN which is included with the install disk and is a simple demo program written by one of our programmers. We use this as an example because it is a game we know you have got. If you wish to enter parameters for other games you should go to the following section on finding cheats first.

- 1) Start the game by typing the following.

```
CD \AREPLAY  
PCMAN
```

With the game running activate the Action Replay and type 'trainer' or 'tr'. A menu with four selections will be displayed on the screen.

- 2) Use the cursor keys to navigate up and down through the menu and select item 2 (Enter Parameters) or press the number 2 and then press ENTER.

3) A blank table will appear on the screen, with a table of addresses to the right of it that should all be zero (0000:0000). Use the cursor keys to navigate up and down the table and press ENTER at any one of them.

4) A flashing cursor will appear inside the table where the cheat code will be placed. Type the following cheat code 'PCMAN0020E02' into the table and press ENTER to accept. This code is for the game PCMAN if you have a different game you will of course need a different code so see the later section on how to find parameters (cheats). If you press ESCAPE while entering the cheat code then any changes that are

made to that particular location within the table will be discarded and its previous contents replaced.

5) The memory address that the cheat code is pointing to will be shown in the address table on the right of the cheat code you have just entered. If you don't have the game running in memory then it will read '0000:0000' because you have to have the game in memory for the cheat code to work. If you do have the game running in memory then an address will be displayed. This address can be ignored by most people, it can be used simply as a guide to show whether you have typed a parameter in correctly or not. If the parameter is correct and there is a game in memory then an address other than 0000:0000 will be displayed if all 0's are displayed then check your code, pay particular attention to differences between the number 0 and the letter O.

6) After entering the parameter, press ESCAPE to exit the parameter table and go back to the Main Menu, where you can load or save a parameter table or exit from the Trainer back to the Action Replay's command line where you can use any of the other Action Replay commands. When you enter back into the frozen game the parameter will take effect (assuming of course that the parameter does something!), in our example for PCMAN you will have unlimited lives.

### **Using the Trainer to Generate Parameters**

The Trainer can be used to generate your own parameters (cheat codes) for use by yourself and others. You don't have to be a technically minded person to achieve this, reasonably good results can be had by all. We will use the game PCMAN again as an example and search for lives. You can of course use this procedure on any other game you like.

1) With the game running and your man able to move around the screen activate the Action Replay freezer button and type 'trainer' or 'tr' (you should have three lives at this point. If you are using a different game this value may be different). A menu with four selections will be displayed on the screen.

2) We are interested in the Select Trainer Type menu, so select that item and press ENTER. The Select Trainer Type menu will be displayed on the screen with a list of the currently available Trainer types.



3) This version of the Action Replay supports the Lives or Countable Value type. Select the 'Lives or Countable Value' type and press Enter. Another menu will be displayed allowing you to exit if you don't want to go any further.

4) Select the item 'Enter Start Value' and press ENTER. The characters current lives will be 3 so type '3' (if not use the correct value, if you had 5 lives type 5 etc.) and press ENTER.

5) The Trainer will search through memory for all occurrences of the number 3 and remember where they are, there are of course a lot of occurrences of the number 3. When the Action Replay has finished scanning memory it will give you an idea of how many possibilities are left. We need to get down to just a few possibilities obviously thousands are far too many.

6) List Possibilities will show the first 10 possibilities found from the buffer and is most useful when only a few possibilities are left. At its current stage these parameters will be useless and would do nothing if we entered them into the parameter table, we need to do a few more passes with the trainer.

7) Select the option 'Exit to Frozen Program' as this sends us back to the game. Now lose a life so you only have 2 left (or how ever many you have in the game), then activate the Action Replay freezer.

8) Select Continue Trainer. We now have to enter the new value of our characters lives which is 2, so type 2 and press ENTER (again if you froze with a different number of lives/energy use this value instead). The Trainer will again search through memory, but this time it will be looking for any values that were originally set at 3 that have changed to the new value you just entered which is 2. The possibility count after this search on our machine was 6, so it is still worth doing another pass so go to step 7 and lose another life. If you lose all the characters health points and he dies, don't 'Clear Trainer' just start the level again and enter 3 as the next value to search for (you will have 3 lives as that is how many you start the game with).

9) After several passes of steps 7 and 8 my machine was left with just one possibility which was as follows.

PCMAN00200E02

10) Go to the enter parameter screen and press the INSERT key. The remaining parameter (as long as you have only one parameter) will automatically be inserted. If you go back to the game by whatever means, selecting the return to game option or the 'X' command from the Action Replay command line you will have unlimited lives.

PLEASE NOTE: While using any Trainer types to search through memory for cheat codes, none of the other Action Replay commands can be used at the same time. This is because the Trainer uses large amounts of the Action Replay's own internal memory leaving little or no free memory for use by anything else. Exiting the Trainer Mode back to the Action Replay command line will clear the contents of the current Trainer types buffer. Use the 'Exit to Frozen Program' option to go back to the game. The parameters (cheats) however are remembered.

### Saving Parameter Tables

The cheat codes can be saved to disk. The files are only small so very little disk space will be used up. The files saved are in a format recognised only by the Trainer and cannot be altered using a text editor.

To save a Parameter Table, enter Trainer mode by typing 'tr' at the Action Replay command line. Select item 3, Load/Save Parameter Table, and the Load/Save menu will be displayed. Select item 2, Save Parameter Table, and an input box will appear on the screen where you will enter the filename for the save file. Enter a name that will hint at the files contents, such as the name of the game that the cheat codes relate to and press ENTER to accept or ESCAPE to exit. You do not have to supply a file extension as the Trainer will append your filename with the extension '.PMT', making it easy to find and manage the saved files. A filename could be of the format.

**C:\areplay\pcman.pmt**

A useful tip when saving files is to remember that the file will be saved to the current directory unless you supply a path. This will in most cases be the directory in which the game is running.

### **Loading Parameter Tables**

To load a Parameter Table, enter Trainer mode by typing 'tr' at the Action Replay command line. Select item 3, Load/Save Parameter Table, and the Load/Save menu will be displayed. Select item 1, Load Parameter Table, and an input box will appear on the screen where you will enter the filename of the saved file. Enter the filename and press ENTER to load it or ESCAPE to exit. You do not have to supply the files extension as the Trainer will search for any files with the extension '.PMT'. When the file has loaded, the Parameter Table will be displayed on the screen automatically, where you can edit any cheat codes or exit back to the Main Menu. If we saved a cheat table using the above example in the Saving parameter table section, to reload it we would use the exact same name.

**C:\lareplay\cheat**

## Advanced Installation

With the power to your computer off place the Action Replay expansion card into a free 8 or 16 bit expansion slot in the back of your computer. If you're not sure on how to do this, or encounter any problems, refer to your computers documentation which should include a detailed explanation on inserting expansion cards. Connect the Flylead from the freezer controller into the socket on the Action Replay expansion card and place the freezer controller (the device which resembles a mouse with a button and a switch) somewhere accessible near to your computer keyboard. Never connect any device apart from the Action Replay freezer controller to the Action Replay board. Switch the power on to your computer and boot DOS as normal. Place the supplied INSTALL DISK into a floppy drive and type the following:-

```
[sdrive:]INSTALL [sdrive:] [ddrive:]
```

sdrive is the source drive to copy from

ddrive is the destination drive to copy to

e.g.

**A:INSTALL A: C:**

A subdirectory called \AREPLAY will be created on your hard disk where all the files from the INSTALL DISK will be placed.

After all the files have been transferred to your hard disk, the supplied SETUP program will be run. SETUP will auto detect your computers hardware configuration, create a configuration file for use by the Action Replay and update the AUTOEXEC.BAT file to include the AREPLAY control program. The program will correctly identify the various major parts of your system, such as the video, disks and mouse, but allow you to override any incorrect detections should the need arise or if anything changes at a later date. If the Action Replay is found not to be functioning, you will be presented with a suitable set of IRQ, ROM address and IO port settings to configure the expansion card to your machine and the appropriate jumper settings to configure them. The following checklist includes the steps necessary to successfully install the Action Replay expansion card and software:-

- 1) With the power off to your computer place your Action Replay expansion card in a spare slot and connect the freezer controller.

2) Boot DOS and insert the supplied floppy diskette and type [sdrive:]INSTALL [sdrive:] [ddrive:], where sdrive is the disk to copy from and ddrive the hard disk that you want to install to.

3) All the program files will be copied to the directory \VAREPLAY on your hard disk. If you don't like this directory name, you can rename it after installation.

4) The program SETUP will be automatically activated. Check that the options are correct in the CURRENT CONFIGURATION window and save the configuration file to disk using the appropriate option.

5) The SETUP program will ask you if it's okay to update the AUTOEXEC.BAT file with the line \VAREPLAY\VAREPLAY.COM. Let SETUP do it for you or manually insert it yourself. Then select the Exit to DOS option.

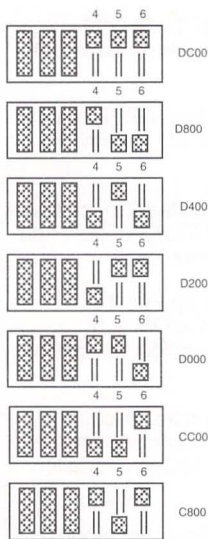
6) Reboot the machine for the above changes to take place. The LED on the controller will flash when the Action Replay is active, and can be brought to life by simply pressing the freeze button on the controller.

### **Configuring the Expansion Card**

The Action Replay expansion cards default configuration should be suitable for most computers, but can be altered using the jumpers if any hardware or software conflicts occur. Following are the jumper settings for the ROM address, IO port and IRQ. The values given are useful for comparing with any other cards that you have. If you do not understand what significance the values have do not worry, just remember that you can not have two devices at the same ROM address or two devices at the same IO address but you can have two devices on the same IRQ setting. For example if you have a cache controller at address CC00 (sometimes called CC000) then you can not put the Action Replay at the same address.

### **Jumper Settings for the ROM Address**

Only DIP switch numbers 4,5 and 6 are used for the ROM address. If you do not understand the concept of ROM addresses then don't worry, if asked to change the address by the SETUP program simply try the first option in the following list then the next and so on until you find one which works.

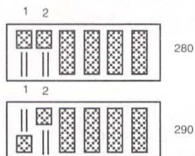


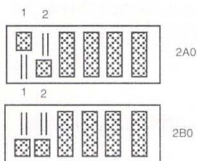
C800

### Jumper settings for the IO port

Only DIP switch numbers 1 and 2 are used for the IO port. We have encountered very few problems with the IO address of the Action Replay so it is unlikely you will need to change these but if you do get a message telling you to change the IO value simply try one of the other settings in the following list.

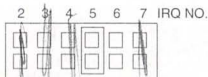
280





### Jumper Settings for the Interrupt Request (IRQ)

The jumpers for the IRQ are different from the IO port and ROM address. There are 6 horizontal pairs of pins placed out in a row. Placing a connector across one pair of the pins changes their status to ON. The leftmost pins are for IRQ2, the next for IRQ3 and so on up to IRQ7. As a general rule if you have any problem with the IRQ settings try them in the order 2,7,3,4,5,6 the diagram below shows the position of the connector for IRQ5:-



### The SETUP program

Due to the many possible combinations of PC's available, the Action Replay card needs to be configured to run on your particular computer. The supplied SETUP program will allow you to create a configuration file which holds information on the hardware set up of your computer.

The supplied SETUP program (which is in the AREPLAY directory) will, when run, auto detect your computers hardware configuration and create a configuration file that holds information on your computer. The program will correctly identify the various major parts of your system, such as the video, disks and mouse, but allow you to override any values should the need arise. When a new configuration file is saved to disk, any changes take effect immediately, so rebooting the computer is not necessary.

When running the SETUP program, in the top right hand corner of the screen you will see the current configuration of your computer. If any of these hardware items have been incorrectly detected or have

changed since you installed Action Replay, then you can select the right one using the main menu. Following are the options listed in the main menu:-

***Select drives.***

Select this option if you want to re-configure the hard and floppy drives.

***Select mouse port.***

Select this option if you want to change the port that your mouse uses. NOTE that if you are unsure about which port to select, then either refer to the mouse documentation that came with your computer, or choose the option 'Not installed'.

***Select video.***

If your computer has a mono monitor then select 'mono', if not select the 'colour' option.

***Auto sense.***

If for any reason you have selected all the wrong hardware items, or you are unsure about an item you have just selected, then choose this option.

***Save Configuration.***

Select this option to save the configuration file. NOTE that a configuration file must be created for the Action Replay to function. The file AREPLAY.COM must also be mentioned in your AUTOEXEC.BAT file, and if you have not already done so, can be done for you by SETUP. NOTE that AREPLAY.COM must be loaded in to memory every time you use your Action Replay if not the Action Replay will not function.

***Read README.TXT file.***

Allows you to view the README.TXT file, which holds information on installation and troubleshooting.

***Exit to DOS.***

Allows you to exit the SETUP program and return to DOS.



## Using Action Replay

There follows an outline on how to use Action Replay with a few examples on what you might like to do. These are only examples to give you an idea of the power and usefulness of Action Replay. Only you are going to work out how to use the Action Replay to its full effect.

On the Action Replay install disk is a small PD game called PCMAN written as a Demo by one of our programmers, the game is basic in design but it serves as a good example. The game should work OK on VGA equipped machines.

### Freezing to disk

The following steps explain how to load and save a frozen image to disk, for more information on the individual commands you should look at the section on Action Replay Commands. You should however follow these steps so you understand the principles involved. We will now show how to freeze a copy of the program to disk at the moment it was frozen, and also how to save a frozen screen to disk.

1) Install Action Replay as explained in the installation sections so the LED is flashing on the Action Replay.

2) Load the game PCMAN by typing in the following.

```
cd \areplay  
pcman
```

making sure of course you press enter after each line. The game PCMAN will run.

3) Play the game for a minute and press the freezer button while the game is playing. At this point you could use the trainer to find infinite lives (see the trainer section for more information on this). We will first save a copy of the screen.

4) On the DATEL screen type the line as follows if you wish to use a different drive or directory you may of course do so.

```
save screen c:\areplay\pcpic.pcx
```

5) You have saved a copy of the screen to disk. You can view this with any graphics program and do any of the things you could with a normal PCX file including printing it out.

6) Type the following  
**view**

you will notice the screen you pressed the freeze button on. None of the normal game controls work because you have not restarted the game you are simply looking at the screen of the frozen program. The one in fact that you have just saved.

7) We will now save and restore the frozen program. Make sure you have several high density floppy disks to hand (I needed 3 x 1.44MB). They must be high density, if they are not formatted then format them as follows.

**format a: 1.44**

If you want to use B drive or 1.2M disks of course you should change the line as necessary. For more information see the Command Description for FORMAT. On my machine I am using 1.44M disks.

8) Insert the first of your disks into the drive and type the line that follows.

**frz a:pc man game**

A message will be displayed asking you if you are sure that you want to overwrite the information on the floppy disk. You should answer yes and follow the on screen prompts.

9) After a while the Action Replay will finish saving all the information to your disks. On my machine with some Extended and expanded memory it took 3 disks. I could have reduced this down to one if I did not use any Expanded or Extended memory. We now have a complete copy of our frozen game so reboot your machine using either reset or switch your computer off, then after a few seconds switch it back on.

10) When the computer has rebooted activate Action Replay. Please note you are ready to restore memory from the floppy disks it is important that your hard disk is safely backed up, even though we have made every attempt to ensure there are no problems with Action Replay's UNFREEZE facility it is always possible however that there is a

problem in circumstances we had not foreseen and could cause the loss of files. It may also be helpful if you run the DOS MIRROR program.

11) Insert disk 1 of the frozen program and type. Type the line

**unfrz a:**

Action Replay will then proceed to restore the frozen contents of memory.

12) When memory has been restored simply type 'X' and restart the game. You will notice that the game is at the EXACT point you froze it, NOT at the beginning.

You will agree I am sure that this is a powerful feature of Action Replay if a little slow. The hard disk save and restore REQUIRES 1MB OF EXTENDED MEMORY free to save and load a frozen file. You must not have any disk cache controllers installed like smartdrv or speed cache. If you change the frz command in step 8 of the above procedure to something like the following.

**frz c:\areplay\game**

Action Replay will save the frozen image to hard disk and the corresponding line in step 11 would be

**unfrz c:\areplay\game**

you do not need to specify a file extension (.frz is automatically added). You will notice that save and restore is much faster than using floppy. Apart from the hard disk freeze requiring 1MB of XMS (Extended memory) the hard and floppy disk versions of freeze produce the same end result.

### Important points on Freezing

There are a few important points to remember when saving and loading a frozen image from disk.

1) Never change any hardware setup between saving the frozen image and restoring it. This includes changing any jumpers on Action

Replay or trying to restore the program on a different machine. (chances are the machines will NOT be identical).

2) If you change your hard disk significantly between freezing and unfreezing, for example running defrag or compress, your frozen files may not work as when Action Replay restores memory the hard disk data is not where the program expects it to be.

3) Do NOT use any cacheing programs like smartdrv or speedcache they will not work with the hard drive save and restore. We hope to offer this facility as an upgrade in the future. Cache controller cards however should be OK.

4) Make sure you back up your hard disk! If you have important data that you can not afford to lose do not use the Freeze feature the chance of a hard disk crash is, however slight, still there. You have been warned!

5) You must have 1MB XMS (Extended memory) free for Freezing and Unfreezing to hard disk. So your CONFIG.SYS file should contain the following line.

**DEVICE=C:\DOS\HIMEM.SYS**

Or something very similar. If you still do not have enough Extended memory then check that you have not used it all up as expanded. For example if you have the following line in your CONFIG.SYS file

**DEVICE=C:\DOS\EMM386.SYS 2048**

You could try changing the 2048 to 1024.

### More Features

From the Action Replays Frozen screen you can get a directory of any valid drive but remember to specify a path.

**dir c:\**

Will do a directory of the root directory of drive C. You may decide you do not like the colour the Action Replay freeze screen is displayed in so try typing the following.

**attr 1f**

This will produce Bright white on a blue background. This is my favourite configuration. If you would like a different colour combination look up the ATTR command.

### **The slomo feature**

The slomo command is very useful for games that are too fast or so difficult that they would benefit from a slight slow down in pace. If you take a game, in our case we used PCMAN and load the game in. Make sure Action Replay is installed properly and start the game playing. The game need not be PCMAN, there are many games which will work. Once the game is running move the slomo switch on the controller to the right and the flashing rate of the LED on the freezer controller will start to flash faster. The game will slow down. If you wish to slow the game down any more you must use the slomo command. For example if you now press the freezer button on Action Replay. Type the following

#### **slomo 80**

And then restart the game using the 'X' command. The game should have slowed right down. The value corresponds to how much the game should slow down as a percentage. i.e. a value of 01 will slow the game by about 1% a value of 99 will almost stop the game. If the light is not flashing faster you have made a mistake somewhere. If the light is flashing faster but the game does not slow down then the slomo is not going to work on this game. For more information on this feature see the slomo command.

### **Memory Commands**

These commands are of more use to the experienced PC user, however there are one or two that may be of interest to the casual PC user. If you load a game in and make sure Action Replay is installed as mentioned elsewhere in this manual. Type the following at the Action Replay command line (after Action Replay has been frozen).

#### **MS**

A list of the memory structure of your computer will be displayed.

On my machine there is a program at 00D170 which is named PCMAN. You can view the memory within this program by using the dump command try the following

### **DUMP 0:D170**

will dump the memory at the start of the program in memory. This address can be changed to suit your program. This feature is one that you may never use, look at the DUMP command for more details. There are several more commands which are useful for examining and modifying memory. These are mentioned in detail in the command section. Ones to look at are 'Enter byte', 'Unassemble', 'Memory Watch' and 'Byte watch'.

One further command that is worth a mention here is the VS command. At the Action Replay command line (press the freeze button on the Action Replay controller to get here) type the following

### **VS**

Action Replay will search through memory for any viruses.

## Action Replay Commands

Following is a list of all the Action Replay commands, followed by a detailed description of each one. Each command has a description of the command, the syntax and a brief explanation of the level required to use the command. This level is split into 3 groups Novice, Intermediate and Advanced. Novice is for all users and anyone should be able to grasp these commands without any information apart from a basic knowledge of DOS and this manual. Intermediate should still be possible for most people to understand with a bit of patience although some information outside the scope of this book may be useful. Advanced is only for people with some technical knowledge and requires information far outside the scope of this book, if you wish to understand how to use these commands there is a wealth of information available at computer bookshops. Please do not expect to understand these commands just by taking a brief look at them they really do require some patience and understanding.

PLEASE NOTE: Hexadecimal notation (base 16) will be used in the next and following sections. If you are not familiar with this number system then take a look at APPENDIX A - Hexadecimal Notation.

<u>Full Command Name</u>		<u>Abbreviation</u>
address convert	-	ac
attr	-	n/a
base convert	-	bc
byte watch	-	bw
cls	-	n/a
dir	-	n/a
dump	-	d
enter byte	-	e
format	-	n/a
freeze memory	-	frz
interrupt vectors	-	iv
memory monitor	-	mm
memory structure	-	ms
parameter convert	-	pc
print echo	-	pe
save memory	-	sm
save screen	-	ss
search	-	s

slomo	-	n/a
trainer	-	tr
unassemble	-	u
unfreeze memory	-	unfrz
view screen	-	view
virus scan	-	vs
x	-	n/a
?	-	n/a

### Detailed Description

When entering the Action Replay commands you will find that backspace will delete the previous character. Pressing escape will clear the line you are entering and pressing F3 will enter the last command you entered.

### ADDRESS CONVERT

Command ... **address convert** or **ac** (Advanced)

Syntax ... **address convert [segment:offset]**.

The ADDRESS CONVERT command converts a 32 bit segmented address into an Action Replay parameter for use by the trainer. The address will only be converted if there is a program currently running in memory at the time. Trying to convert an address when you have pressed the freeze button on the controller from the DOS prompt will generate an error. This command is useful both on it's own and in combination with other commands such as BYTE WATCH, MEMORY MONITOR and SEARCH. This command is useful for the more technical of users who may find cheats by traditional hacking methods such as disassembly or maybe using the memory monitor and wants to produce a parameter he can save or send to magazines etc. for other games players to be able to use

Example:- Using the MEMORY MONITOR, you have found a byte at an address in memory (in our example address 1F23:003B) that is lives for a game and you wish to produce a parameter to send in to a magazine so that other Action Replay owners can use your code.  
Example:-

**AC 1F23:003B**



and an Action Replay Parameter will be returned (e.g. GAME29840Bxx). The 'xx' at the end of the parameter is the value at that particular memory address (e.g 03 for 3 lives), so place the value on the end of the parameter. The value will always be 2 digits, so any leading zeros must be entered.

### **ATTR**

Command ... **attr** (Novice)  
Syntax ... **attr [background|foreground]**  
background = 0 to F, foreground = 0 to F.

The ATTR command changes the screen colours used on the Action Replay freeze screens. There are 16 background and 16 foreground colours to choose from. The values for each are entered in hex format, so they will be 0 to F.

Example:-

### **ATTR 1F**

will make the background dark blue and the foreground bright white. Here is a list of all available 16 colours for both the background and the foreground. Mono monitors will produce shades of grey:-

<u>Value</u>	<u>Colour</u>
0	Black
1	Dark blue
2	Dark green
3	Cyan (blue-green)
4	Dark red
5	Magenta
6	Brown (dark yellow)
7	Light grey
8	Dark grey
9	Light blue
A	Light green
B	Light cyan
C	Light red
D	Light magenta
E	Light yellow
F	Bright white

## **BASE CONVERT**

Command ... **base convert** or **bc** (Intermediate)  
Syntax ... **base convert [number]**  
number is a decimal or hex not greater than 65535 (FFFFh)  
a hex value must have a trailing 'h'.

The BASE CONVERT command converts a decimal number to hex, and a hex number to a decimal value. It is an easy and convenient way to convert from one number system to another, especially when used in combination with other commands such as DUMP, SEARCH and ENTER BYTE.

Example:-

### **BASE CONVERT 16**

will return the hexadecimal value of 10h, and

### **BASE CONVERT FFh**

will return the decimal value of 255.

## **BYTE WATCH**

Command ... **byte watch** or **bw** (Intermediate)  
Syntax ... **byte watch [OFF] [segment:offset]**  
OFF switches the byte watch off  
segment:offset is the memory address.

The BYTE WATCH command allows you to monitor a byte value at an address in memory for any activity. If the byte value changes then the Action Replay will be automatically activated and inform you of the change, displaying both the previous and the current values. Action Replay will not inform you the instant the byte is changed but as soon as Action Replay notices that the value has changed (about 1/10th of a second)

Example:- Using the TRAINER, you have found a number of bytes in memory that appear to be the number of lives remaining in a game that you are playing. The exact memory address of the lives counter is not very clear, so you can monitor any one of the bytes to see what is happening e.g.

## BYTE WATCH 134F:300A

will monitor the byte at memory address 134F:300A.

PLEASE NOTE: BYTE WATCH can be used in conjunction with MEMORY MONITOR, which provides a similar function, but if any of the TRAINER types are used then BYTE WATCH will be turned off.

## CLS

Command ... **cls** (Novice)  
Syntax ... **cls**

The CLS command simply clears the Action Replay screen and positions the cursor at the top left of the screen.

## DIR

Command ... **dir** (Novice)  
Syntax ... **dir [drive:][path][filename]**  
to pause the listing press SPACE.

The DIR command will display a disk directory listing similar to that of the one supplied with DOS. The listing can be paused while scrolling up the screen by pressing the SPACE bar. Pressing space again continues the directory listing.

## DUMP

Command ... **dump** or **d** (Intermediate)  
Syntax ... **dump [segment:][offset] [offset].**

The DUMP command will allow you to dump a section of memory on to the screen and to the printer if the PRINT ECHO has been enabled. By default, DUMP will display 128 bytes from the memory address supplied. The following formats of the DUMP command are allowed:-  
DUMP [segment:offset] [offset] will dump the area of memory between the two offsets in the supplied segment.  
DUMP [segment:offset] will dump 128 bytes of memory from the supplied address.  
DUMP [offset] will dump 128 bytes of memory using the last supplied segment, or 0 if the first time.  
DUMP will dump the next 128 bytes from the last dump, or from the address 0000:0000 if the first time.

Example:-

Type

**DUMP 1234:488F**

to dump 128 bytes of memory from address  
1234:488F.

Type

**DUMP**

or

**D**

to carry on from the last memory dump.

PLEASE NOTE: The output from the DUMP command can be echoed to the printer. See the PRINT ECHO command for details.

### **ENTER BYTE**

Command ... **enter byte** or **e** (Intermediate)

Syntax ... **enter byte [segment:offset] [byte1] [byte2]**

[.....]

... **enter byte [segment:offset] 'enterstring'.**

The ENTER BYTE command will allow you to enter a single or number of bytes at an address in memory. The byte values in hex format, are separated each by a space. A string of characters may also be entered. After the value or string has been entered, 128 bytes of memory from the address supplied will be dumped to the screen.

Example:- Type

**E 8012:0023 0A**

to enter the hex value 0Ah at the memory address 8012:0023.

### **FORMAT**

Command ... **format** (Novice)

Syntax ... **format [drive:][size]**

size must be one of the following:- 360, 720, 1.2 or 1.44.

The FORMAT command will format any one of the following floppy diskette

sizes:-

360KB 5.25" Low density

1.2MB 5.25" High density

720KB 3.5" Low density

1.44MB 3.5" High density.

This command is very useful when you want to save something to a floppy diskette in the middle of a game and you can't find a formatted floppy or you wish to use the memory freeze facility.

example:-

### **FORMAT A: 720**

will format a 720K disk in the A drive. Please note that the usual constraints on the disk type apply i.e. you cannot format a 1.2M disk in a 1.44M drive. If for any reason Action replay does not let you format the right kind of disk make sure the SETUP program has the right kind of drives installed.

### **FREEZE MEMORY**

Command ... **freeze memor** or **frz**(Novice-Intermediate)  
Syntax ... **freeze memory [drive:][path] [description]**  
The maximum length for the description is 25 characters.

The FREEZE MEMORY command will allow you to save the current contents of the computers memory to one or across a number of floppy diskettes or even to your hard disk. This command comes in useful when you are playing a game that usually will not let you save your current position when you want to, or the game levels are entered using a password instead of a saved game file. The frozen image can then be reloaded into memory at a later date and continued from it's frozen state.

The frozen memory image is saved to one or more floppy diskettes depending on the contents of your AUTOEXEC.BAT file. If you don't have EMS installed, and XMS is not being used, then one floppy will be enough. Any allocated EMS or XMS memory will also have to be saved to floppy, so don't allocate unnecessarily large amounts of memory. If you are saving to hard disk you MUST have 1MB of free XMS (Extended memory).

The memory is saved out in the following order:-

- Base 640K
- High Memory Area (HMA)
- Upper Memory Blocks (UMBs)
- Graphics (If in graphics mode)
- XMS Memory (Which includes any EMS allocated)

As you can see from the above list, it is possible to save out large amounts of memory, spread across multiple disks. Obviously, the more

diskettes you save to, the longer it will take, so bear this in mind when freezing memory.

Example:-

You are playing a game that requires you to play through a couple of levels before you can save your position, or the level is a particularly large one. By typing

**FRZ A:Game 1**

or preferably replacing 'Game 1' with a description of the actual game in memory, you can effectively freeze the current contents and state of your computer and reload and continue play at a later date.

PLEASE NOTE: It is important that either you keep a record of the contents of your AUTOEXEC.BAT and CONFIG.SYS files, or are at least aware of what drivers (e.g. EMS, XMS) are loaded into memory at the time you freeze it, because when you come to reload the image, the memory must have a similar configuration to that of the frozen image.

## **INTERRUPT VECTORS**

Command ... **interrupt vectors** or **iv** (Advanced)  
Syntax ... **interrupt vectors**

The INTERRUPT VECTORS command will display the contents of the interrupt vectors on the screen and to the printer if the PRINT ECHO has been enabled. This command comes in useful when used in combination with the UNASSEMBLE command, allowing you to look at the code for the interrupt routines.

PLEASE NOTE: The output from the INTERRUPT VECTORS command can be echoed to the printer. See the PRINT ECHO command for details.

## **MEMORY MONITOR**

Command **memory monitor** or **mm** (Advanced)  
Syntax ... **memory monitor [OFF] [segment:offset] [count]**  
OFF switches the monitor off  
segment:offset is the memory address  
count is a byte count in decimal from 1 to 256

The MEMORY MONITOR command is used to monitor a section of memory covering an area of 1 to 256 bytes. It only produces the same information as a DUMP command but produces it in a form that is more convenient for following changes. After setting the monitor address and

number of bytes to monitor, the monitor will be enabled so that the next time the Action Replay is activated by pressing the freeze button on the controller, the contents of the monitored section of memory will be displayed on the screen in a single byte column, along with up to 8 previous freezes. If the byte at any of the displayed memory locations has changed from the initial values, then they will be shown, otherwise '-' will be displayed in it's place.

This command displays the contents of the computers memory in a format that makes it easy to see what it going on, especially when searching through games for areas of memory that hold data for cheat generation. The following text will show you how to make the most of the MEMORY MONITOR but you must understand a few basic rules on searching for cheat codes:-

1. A program in memory is usually set out in a certain format, placing program code and data separately. When looking for locations in memory that hold the data that defines the current settings of the game (i.e. lives, money, missiles etc.), we will be looking in the data part of the program, and you will find that most memory locations suitable for cheat code generation are bunched together, making it easy to find what you are looking for.
2. The MEMORY MONITOR needs an address to monitor, but how do you know where to start looking? If you already have Action Replay Parameters (cheat codes) for the game you are currently playing, either generated by yourself using the TRAINER or from someone else, then use the PARAMETER CONVERT command to convert the parameter into a valid memory address or enter the parameters into the Parameter Table, where the memory address will be shown next to it. Pass the memory address to the MEMORY MONITOR with a byte count and then you can monitor that section of memory as many times as you like, with a maximum history of the last 8 freezes. If nothing appears to be happening in that section of memory, then look higher up or lower down in memory by increasing or decreasing the memory address.
3. While analysing the output from the MEMORY MONITOR, there will be a lot of garbage shown along with some values that appear to change in set amounts, or changing to a sequence of repeating numbers. It is these patterns that will mostly interest you, and produce rewarding results.

Example:-

Using the TRAINER on a game you are currently playing, you have found an Action Replay Parameter that points to the location in memory where the lives for your character are stored. You enter it into the parameter table and the memory address 1000:B3F4 appears next to it. You use this address as a suitable starting position to monitor with a count of perhaps 256 bytes

(e.g. MEMORY MONITOR 1000:B3F4 256). Your character within the game has a health points bar that is slowly shrinking the more you get hit, but shows no countable indication as to what health points are left and so would normally be very difficult to find. Each time your health points decrease, activate the Action Replay and the MEMORY MONITOR will display the original, current and a history of the values at the set address, and also store the current values in a buffer. The next time you come in, the previous current values will move to the right one place to the 1 column, and the new current values displayed in the C column. After you have done this a few times, patterns begin to emerge and perhaps the memory location that holds the counter for the health points will be clearly visible. You activate the Action Replay and the following output from the MEMORY MONITOR is displayed on the screen:-

Monitor now set at address 1B3F:0004 for 16 byte(s). Results follow:-

O = Original values. C = Current values. -1 to -8 = Previous history.

Address	O	C	-1	-2	-3	-4	-5	-6	-7	-8
1B3F:0004	03	--	--	--	--	--	--	--	--	--
1B3F:0005	02	--	--	03	--	--	--	--	03	--
1B3F:0006	31	--	--	--	--	--	67	--	--	--
1B3F:0007	FF	65	88	96	A3	B8	DE	E7	--	--
1B3F:0008	01	--	--	--	--	--	--	--	--	--
1B3F:0009	23	--	--	--	--	--	--	--	--	--

Note that the address that you passed it at the start looks slightly different to that on the screen. The addresses are actually the same but can be rearranged slightly for ease of use. Refer to the section at the back of the manual entitled 'APPENDIX B - Memory Addressing' if you want to know more about it. Remember that the top address of 1B3F:0004 (actually you entered 1000:B3F4, but it is the same address) holds the lives value which is currently set at 3. All the positions that hold '--' have not changed from the leftmost original value, so only changed values will be shown. Look closely at the values shown at address



1B3F:0007. When you initialised the monitor, the original value was FFh (a hex number), and has slowly decreased from E7h to it's current value of 65h. The value at this memory location might possibly be the counter for your characters health points, and the easiest way to find out is to either enter a higher value than the current one into the memory address using the ENTER BYTE command or pass the address to the ADDRESS CONVERT command where an Action Replay parameter will be returned. Replace the 'xx' at the end of the parameter with a high value e.g. FFh and enter it into the Parameter Table. Exit the Action Replay, continue the game and watch the health points indicator or bar. Sometimes it will increase instantaneously, or you may have to wait until the next time you get hit. If it does increase, then you have generated your own cheat code that can also be used by other people with the same game. This example may be simplified, but it really is quite simple to find some very useful and interesting cheat codes for your games using the above method. Some values may take a lot more searching to find, but any patterns will almost certainly grab your immediate attention. PLEASE NOTE: The output from the MEMORY MONITOR command can be echoed to the printer. See the PRINT ECHO command for details. MEMORY MONITOR can be used in conjunction with BYTE WATCH, which provides a similar function, but if any of the TRAINER types are used then MEMORY MONITOR will be turned off.

### **MEMORY STRUCTURE**

Command ... **memory structure** or **ms** (Intermediate)  
Syntax ... **memory structure**

The MEMORY STRUCTURE command displays the programs currently running or are resident in the computer's memory. Program code, environment blocks, additionally allocated blocks and free space are displayed on the screen and echoed to the printer if the PRINT ECHO is enabled. This command provides a very useful map of the memory contents, making it easy to look for specific programs or areas of memory that most interest you. This command is similar to the DOS MEM command.

PLEASE NOTE: The output from the MEMORY STRUCTURE command can be echoed to the printer. See the PRINT ECHO command for details.

## PARAMETER CONVERT

Command ... **parameter convert** or **pc** (Advanced)  
Syntax ... **parameter convert [ARParameter]**

The PARAMETER CONVERT command is the exact opposite to the ADDRESS CONVERT function described earlier. It will convert an Action Replay Parameter (cheat code) into a memory address for your computer. The reason Action Replay uses its own form of parameters and not standard addresses is simple and is as follows. Each time you run a game on different machines and even the same machine but different memory configurations the address of your cheat (lives etc.) will change. The Action Replay parameter system is designed so that the same game will always use the same parameters no matter what machine you are running your game on.

If the parameter relates to the game or program currently in memory (i.e. don't try using one game's parameters with another completely different game) then an address will be returned (e.g. 2000:234F), and that can be used by the DUMP, MEMORY MONITOR, ENTER BYTE and other commands.

## PRINT ECHO

Command ... **print echo** or **pe** (Novice)  
Syntax ... **print echo [ON][OFF]**

The PRINT ECHO command enables certain commands to echo their output to the printer as well as the screen. This enables you to keep a hard copy of useful information.

The following commands can echo their output to the printer:-

Dump  
Interrupt Vectors  
Memory Monitor  
Memory Structure  
Search  
Unassemble

## SAVE MEMORY

Command ... **save memory** or **sm** (Intermediate)  
Syntax ...

**save memory [drive:][path][filename] [seg1:off1]  
[seg2:off2]**

seg1:off1 is the start address  
seg2:off2 is the end address.

The SAVE MEMORY command will save the memory between the start address and the end address to a disk file, the size being anywhere between 1 byte and 1MB.

Example:-

Save an 8K block of memory from 2000:1000 up to and including 2000:1FFF

**SM c:\areplay\test.mem 2000:1000 2000:1FFF**

### **SAVE SCREEN**

Command ... **save screen** or **ss** (Novice)  
Syntax ... **save screen [drive:][path][filename]**  
recognised formats are PCX

The SAVE SCREEN command will enable you to save a standard EGA/VGA graphics screen to a disk file. The file is a PCX file which is a widely recognised format for graphics images, and so can be loaded into almost all graphics packages for you to view, alter or chop about as you wish. The beauty of this command is that some very nice pictures can be pulled out of various games that would normally just fly past without really getting enough time to appreciate them, and now you can look at them whenever you want like and even of course print them out.

Example:-

**SS C:\AREPLAY\XWING.PCX**

PLEASE NOTE: Certain games use non-standard video techniques that are not currently supported by this command, these will produce PCX images that appear stretched or otherwise distorted in some way. It is not the fault of Action Replay and the graphics data is saved out completely correctly! The problem comes when the graphics package you use to display the image does not support the mode it was displayed in during the game.

## SEARCH

Command ... **search** or **s** (Intermediate)  
Syntax ... **search** [**segment:offset**] [**byte1**] [**byte2**] [.....]  
... **search** [**segment:offset**] '**searchstring**'.

The SEARCH command can be used to search through memory for single or multiple bytes, and also for strings. The command will search only up to the end of the supplied segment, so no count or destination address is needed.

Example:- Perhaps you are looking for the string 'HELLO' in memory.

Typing

**SEARCH 1000:0 'HELLO'**

will search through the 64K segment at address 1000:0000 up to the end address of 1000:FFFF for any occurrences of the string.

## SLOMO

Command ... **slomo** (Novice)  
Syntax ... **slomo** [**value**]  
value is a number between 1 and 99

The SLOMO command will slow down most games, once it is activated it is switched on and off by using the switch on the freezer controller. A value of 50 will slow the game to about half speed. A value of 10 will slow the game down by about 10% i.e. 90% of normal speed. This command is especially useful on tricky games which involve precise timing so you can effectively increase your reaction time when you need it. The default setting for the slomo switch is 25. When the slomo is active the LED on the freezer controller will flash at a faster rate than normal.

Example:-

**SLOMO 50**

To start the slomo

**X**

To enter into the game. Now switching the slomo switch backwards and forwards will slow the game down then speed it back up. This does not work on all games!

PLEASE NOTE: The slomo is not a smooth slow motion, in the design of this command there was a trade off between smoothness and other factors so the slowmo may appear somewhat jerky.

## TRAINER

Command ... **trainer** or **tr** (Novice)  
Syntax ... **trainer**

The TRAINER command is effectively a separate part of the Action Replay, typing 'trainer' or 'tr' will present you with a different user interface and put you into TRAINER MODE where there are various utilities to help you generate and manage Action Replay Parameters (cheat codes). For more information on the TRAINER see the separate section earlier in this manual.

## UNASSEMBLE

Command ... **unassemble** or **u** (Advanced)  
Syntax ... **unassemble [segment:][offset] [offset]**

The UNASSEMBLE command will unassemble 8086 program code at the supplied address to the screen and to the printer if the PRINT ECHO is enabled.

The following formats of the UNASSEMBLE command are allowed:-

**UNASSEMBLE [segment:offset] [offset]** will unassemble all the code between the two offsets in the supplied segment.

**UNASSEMBLE [segment:offset]** will unassemble the next 32 bytes of code from the supplied address.

**UNASSEMBLE [offset]** will unassemble the next 32 bytes of code using a previously supplied segment, or 0 if the first time.

**UNASSEMBLE** will unassemble the next 32 bytes of code from a previously supplied address, or 0000:0000 if the first time.

Example:-

Type

**U 1234:488F**

to unassemble 32 bytes of code. Type

**U**

to carry on from the last address.

PLEASE NOTE: The output from the UNASSEMBLE command can be echoed to the printer. See the PRINT ECHO command for details.

## UNFREEZE MEMORY

Command ... **unfreeze memory** or **unfrz** (Intermediate)

Syntax ... **unfreeze memory [drive:][path]**

path is only used for hard disk unfreeze

The UNFREEZE MEMORY command allows you to reload (unfreeze) a previously frozen image from floppy diskette or hard disk. When you next exit from the Action Replay you will continue execution at the point the game or program was frozen to disk the first time.

PLEASE NOTE: There are a few points to remember when unfreezing an image

from disk, and they are as follows:-

1. If the HIMEM (XMS) driver was installed at the time the image was frozen to disk, then it must also be installed when you unfreeze the frozen program.
2. If the Expanded Memory Manager (EMS) driver was installed at the time the image was frozen to disk, then it must also be installed when you unfreeze the same image with a similar configuration (i.e. if there was 800K allocated, then at least that figure must be available when you unfreeze the image).
3. When using a hard disk to freeze and unfreeze you need at least 1MB of XMS (Extended memory) and you should have no software cache programs in memory e.g. smartdrv or speedcache. Whatever else is in the freeze image (e.g. CD-ROM driver, MOUSE driver), or in what order they are in doesn't matter, because all of the memory's contents will be replaced when the image is unfrozen, and anything that you have in memory at the time will be replaced.

## VERSION

Command ... **version** or **ver** (Novice)

Syntax ... **version**

This command displays information about the Action Replay board and its associated programs.

### VIEW SCREEN

Command ... **view screen** or **view** (Novice)

Syntax ... **view screen**

The VIEW SCREEN command will let you look at the contents of the screen at freeze time, whether it is in text or graphics mode. This command lets you look at the screen without having to exit back to the program, which is useful for example when the information currently displayed is being used for finding cheat codes and you don't want to proceed any further into the game.

### VIRUS SCAN

Command ... **virus scan** or **vs**

(Novice)  
Syntax ... **virus scan**

The VIRUS SCAN command will search through memory for approximately 100 virus signatures. Hopefully, the message 'No viruses found' will be displayed after the memory scan, but if a virus signature is found then it's name will be displayed on the screen along with the steps you need to take to secure your system and dispose of it.

### X

Command ... **x** (Novice)

Syntax ... **x**

This simple one letter command will exit the Action Replay and return you to the frozen program.

### ?

Command ... **?** (Novice)

Syntax ... **?**

This command will display multiple pages of command listings and a brief description of what each one does. Also by typing a commands name and placing a '?' after it will display that particular commands syntax.

Example:-

**U ?**

will display information on the unassemble command.

## Troubleshooting

Listed below are the most common problems users will encounter when setting up, installing or using the Action Replay and it's associated files. Pay particular attention to the output from the AREPLAY.COM program that will have been placed into your AUTOEXEC.BAT file. If any problems are encountered then it will display an appropriate error message after the computer has been rebooted and help you to fix the problem.

### **Problem:**

After installing the software and rebooting the computer for the changes to take place, the Action Replay button does not work and the LED does not flash.

### **Solution:**

1) Check that you have physically installed the Action Replay expansion card properly.

2) Check that the line '\AREPLAY\AREPLAY.COM' is in your AUTOEXEC.BAT file. It must also be a line that is executed for example you may have the lines

**MENU.BAT**

**\AREPLAY\AREPLAY.COM**

where MENU is a menuing system and it never runs the AREPLAY.COM program. You can test this by typing the line

**\AREPLAY\AREPLAY**

and seeing if this installs the Action Replay for you.

3) Check that you have correctly installed all the software and followed the steps the SETUP program told you to. Change to the \AREPLAY directory and type SETUP. This program will tell you if any of the hardware settings on the expansion card are incorrectly set and suggest a suitable configuration for your machine. Pay particular attention to any error messages the AREPLAY.COM program displays after the machine has been rebooted. Write this down and compare it with the AREPLAY.COM error messages that follow later in this section.

### **Problem:**

Sometimes pressing the freeze button on the Action Replay does not seem to have any effect.

**Solution:** Press the freeze button on the hand controller once, it has recognised that you have pressed the button but it waits for your



computer to be in a valid state before freezing so sometimes there may be several seconds delay before producing the Action Replay screen.

**Problem:**

While using the Action Replay, I tried to do a directory listing of my B: drive, but it came back with an error message saying 'drive not installed' (the following solution covers any configuration errors that may occur).

**Solution:** A configuration file is created after all the installation steps have been completed. The hardware configuration of your computer is recorded by the SETUP program and stored in a configuration file, which the Action Replay uses to correctly initialise itself. If the SETUP program has incorrectly sensed any of your drives, or other parts of your computer, then they will probably become inaccessible. Change to the \VAREPLAY directory and type SETUP. Take a close look at the Current Configuration window at the top right of the screen. If any of the settings are incorrect then you can change them using the options in the Main Menu and save out the modified configuration file. Any modifications made to the configuration file will take effect instantly.

**Problem:**

I don't understand some of the commands available, or they seem very complicated. Am I missing some documentation?

**Solution:**

As much information has been placed into this manual to help you understand and make the most of the Action Replay commands as possible. Some of the commands will be of use to users who know more about the inner workings of the computer and will probably be the ones who use these commands to the full. This does not mean that if you do not understand a command straight away you will never understand it. Remember we have 30 or so reference manuals at DATEL and they still do not cover all there is to know about the PC so the secret is patience, persistence and plenty of reading.

**Problem:**

While using the Trainer to generate my own cheat codes, I keep ending up with zero possibilities (no cheat code found). Why is this?

**Solution:**

You are probably making a mistake, if you give the trainer one wrong piece of information you could do 1000 passes and you would still not find the right code. You must try again making sure you make no

mistakes making sure that when you go back to the game you use the 'Exit to game' option and not the X command. Remember that it is not always possible to find a parameter.

**Problem:**

When booting my machine the AREPLAY file produces one of the following error messages.

**Message:**

ERROR: This program cannot be loaded into the Upper Memory Area. Do not use the LOADHIGH command to load AREPLAY.COM high.

**Solution:**

You are trying to load this program high, up into the Upper Memory Area. This program will not work from there, it must be in the base 640K of memory. Make sure the last line of your AUTOEXEC.BAT reads as follows

`\AREPLAY\AREPLAY.COM`

and not as follows

`LOADHIGH \AREPLAY\AREPLAY.COM`

**Message:**

ERROR: Action Replay configuration file not found.

Use the supplied SETUP program to create a configuration file.

**Solution:**

Change to the \AREPLAY directory and run SETUP. Create a configuration file and then exit. Run AREPLAY again from the DOS command line and the Action Replay will work.

**Message:**

ERROR: Action Replay IO port not found.

Try changing the Action Replay IO port address.

**Solution:**

Run SETUP. It will suggest an IO address suitable for your machine and then turn off the computer, remove the expansion card, change the jumper settings and put the card back in as mentioned in the installation section.

**Message:**

ERROR: Action Replay ram not switchable.

Try changing the Action Replay base address.

Try running your BIOS setup routine at bootup and make sure that the Action Replay base address is not being shadowed.

**Solution:**

The Action Replay uses an amount of banked switchable ram. Some parts of the expansion ROM area in the computer can be shadowed with any memory you have above the 1MB boundary. If the Action Replay's ROM address is being shadowed then it will not be able to switch the ram.

Change the ROM address to something else higher up, say D800 or DC00. If that doesn't work then try the following:- The shadowing of the expansion ROM area is controlled by the BIOS setup program. Reboot the machine and the message 'Press [a key] to start Setup' should be displayed. This Setup program is the BIOS Setup program and not the SETUP program we supply. Hit the key shown (usually delete) and select 'Advanced CMOS Setup' from the menu. A screen of hardware settings will be shown. We are looking for something like the following line:-

Adaptor ROM Shadow C800, 16K: Enabled.

The 'Enabled' could also read 'Disabled'. When you have found this line, search through the list until you find one that points to the ROM address of the Action Replay. If it is enabled then disable it. If it is already disabled then you will have to eliminate the one that is causing a problem. To do this, write down all the addresses that are being enabled, disable them all and save the settings and exit.

Wait for the machine to finish rebooting and the Action Replay should work. Now you will have to reboot the machine, enter the BIOS setup program again and re-enable the addresses that you disabled one at a time, eliminating the offending address range. Note that the addresses may be shadowed in larger quantities than 16K shown above, it could also be 32K. Shadowing areas of the expansion ROM speeds up certain parts of your computers operation, mainly the video BIOS routines.

**Message:**

ERROR: Action Replay interrupt IRQ not found.  
Try changing to a different interrupt IRQ.

**Solution:**

Run the SETUP program in the VAREPLAY directory and it will come up with some suggestions as to what IRQ value to set the Action Replay card to. Turn the computer off and change the jumper setting on the expansion card, put it back in the machine and reboot. If need be, repeat the above actions until an IRQ is found that works.

**Message:**

Action Replay already resident in memory.

**Description:**

You are attempting to run the AREPLAY.COM program when it is already resident in memory. You need not run it a second time.

## Appendix A - Hexadecimal Notation

The computer uses a number system called binary. Binary (base 2) would be difficult to work with by people so we use a number system called hexadecimal (base 16) which can quite easily be converted to binary. If you have used the DOS program DEBUG then you will already have had some experience in using hexadecimal arithmetic. Whereas the decimal system we use counts from 0 to 9, the hexadecimal (hex) system counts from 0 to 9 and then carries on from A to F. The digits A to F represent the decimal numbers 10 to 15. We usually distinguish between decimal and hex numbers by placing a 'H' or 'h' at the end of a hex number. The next number after Fh is 10h, not 10 decimal but 10h hex (16 decimal). Listed below are some hex numbers and their decimal equivalents:-

<u>Hex (h)</u>	<u>Decimal</u>
9	9
A	10
F	15
10	16
15	21
1A	26
30	48
80	128
FF	255

If you have an idea of how the hexadecimal number system works it will help with some of the features of Action Replay, for example the Action Replay parameters which you find using the trainer are made up partly of hexadecimal numbers for example the following code.

GAME21351315

may have the effect of freezing your lives at 21 (The last two digits 15 are 21 in decimal). It may be useful for this value to be something higher for example if we found a code for radioactives in Elite II (Frontier™) we may have at the end of the code 03. Simply always having 3 radioactives may not be of much use but if you change the 03 at the end of the code to FF you will always have 255 radioactives.

## Appendix B - Memory Addressing

The computers memory is addressed using a 20 bit binary value. The largest hex number we can get with 20 bits is FFFFFh or 1MB-1. But computers (8086) work with word values (16 bits) and the largest number we can get from 16 bits is FFFFh or 64K-1. So how do we address the whole of the memory when we are obviously 4 bits or 1 hex digit short? What we do is use 2 words, and put them together like this:-

2000:1000

The address is made up of a segment (the word on the left) and an offset (the word on the right). The above address is converted to a 20 bit address by the computer as follows:-

$$2000h \times 10h (16) = 20000h + 1000h = 21000h$$

The equation is (SEGMENT x 16) + OFFSET.

Look at this address:- 20FF:0010

$$20FFh \times 10h (16) = 20FF0h + 0010h = 21000h$$

We have got the same result as the previous example. Is this right? Yes, using this technique creates apparently different segmented addresses that really point to the same physical address. You will see this happen when using the Action Replay. It is sometimes easier to work with the address 2000:3450 than 2345:0000, or vice versa, so don't be suprised to see an apparently different address being used by certain Action Replay commands than the one you entered. If you find this difficult to understand, then use the DUMP command to look at the above segmented addresses and you will see that they point to the same section of memory.

Here are a few more examples:-

0100:0000	=	0000:1000
0000:F0B8	=	0F0B:0008
F012:0012	=	F013:0002
1234:1234	=	1357:0004

## Appendix C - Files Description

Here is a description of the files included on the INSTALL DISK:-

### **AREPLAY.COM**

AREPLAY is a small memory resident program that communicates various information with the Action Replay. It is also responsible for initialising the configuration file created by SETUP. Any problems encountered by the Action Replay expansion card at boot up will be displayed by the AREPLAY program.

### **SETUP.EXE**

The SETUP program is used to create a configuration file that is used by the Action Replay. It will also suggest suitable settings for the expansion card if it doesn't function properly.

### **INSTALL.BAT**

This batch file is responsible for installing the software onto your hard disk.

### **README.TXT**

This text file holds important information on installing the Action Replay, as well as the jumper settings for the expansion card. You can read it while using the SETUP program. Any last minute additions or changes will also be noted in here.

### **ACTION REPLAY PARAMETER TABLES (.PMT)**

There will also be a selection of cheat codes for various games held in Parameter Table save files with the '.PMT' extension. Remember that the 2 digit hex value at the end of the cheat code can be changed to any number you want. If you replace FFh (255) with 63h (99) you will get 99 instead of 255 whatever the cheat is for. See the README.TXT file for more details.

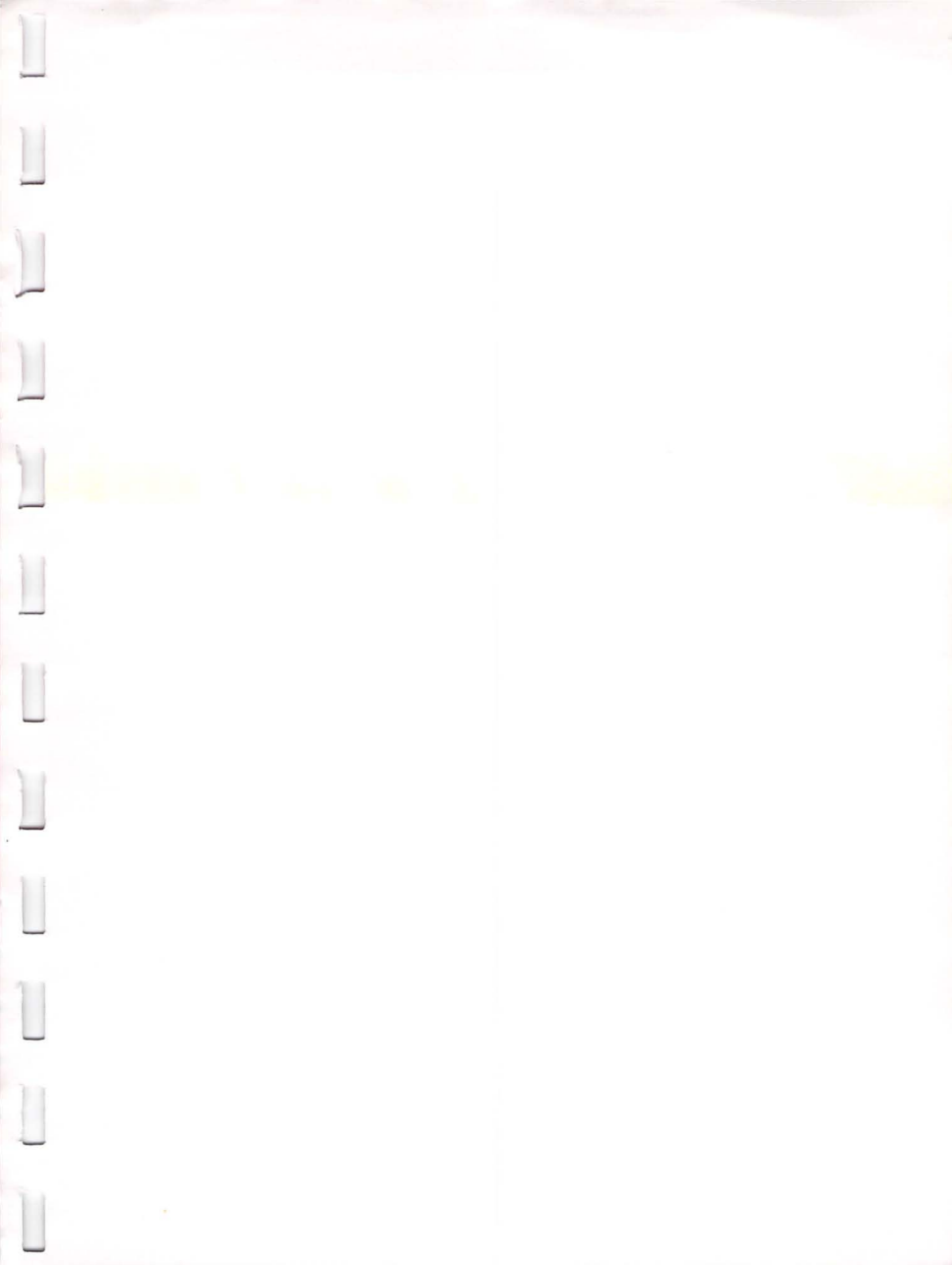
### **PCMAN.COM**

This is a simple game which is used as an example in several sections of this book, it is not meant as a rival for Day of the tentacle™.

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Goyan Road, Fenton Industrial Estate,  
Fenton, Stoke-on-Trent, ST4 2RS, England.  
Tel: 0782 744707 Fax: 0782 744292