

# SCREEN PLUS



**S|Y|N|T|A|X|S|O|E|T**

# SCREEN PLUS

SCREEN PLUS is a utility package that represents the ultimate in utility software for the Einstein. However, as with all sophisticated packages, it follows that the instructions are complex. Please read the following passages very carefully - all the information you need is contained within the pages of this instruction manual.

Once you have digested the rules you should have no difficulty creating wonderful and varied screen displays. If you cannot wait, load the program then choose DISC COMMANDS FROM THE MENU SCREEN. YOU CAN NOW "PEEK" ANY OF THE DEMONSTRATION SCREENS ON THE REVERSE SIDE OF YOUR DISC. This will give you an immediate idea of what is possible with this excellent utility.

## SCREEN PLUS

TATUNG VERSION  
CONCEPTION (MEMOSKETCH)  
CONCEPTION (GRAPHICS)  
PROGRAMMED BY  
ADDITIONAL ROUTINES  
PUBLISHED  
PRODUCED BY  
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**NOTE:** The utility contains a SCREEN DUMP TO PRINTER. This section will work on any EPSON compatible printers, and will automatically choose the correct bit-mapped graphic facility. Other printers may work with this option but may show unpredictable results. The best policy is "hook-up" and try it!

A JOYSTICK IS A MUST WITH THIS PACKAGE AND THE SOFTWARE WILL NOT RUN WITHOUT ONE.

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There are two program files on your disc: A) SCREEN B) GRAPHIC. SCREEN is the actual drawing utility and GRAPHIC is the character designer section.

SCREEN

Because we wished to keep the number of joystick movements to a minimum some of the commands use double keypresses which may seem strange to you at first, but you will soon realise that they simplify how many operations are required to perform a certain task.

Double keypresses are denoted, within the instructions, as: FIRE/UP, FIRE/DOWN etc.. To perform this type of instruction you need to carry out the following sequence:

- a) PRESS & HOLD DOWN FIRE BUTTON.
- b) MOVE THE JOYSTICK WHILE HOLDING DOWN THE FIRE BUTTON.
- c) RELEASE JOYSTICK.

The routine that senses joystick movement is very fast and only a flick is required to perform the actual operation.

Each section of the designer (SCREEN) program is confined to a separate screen see Diagram One. Each screen is described in detail later and their actual functions are listed below.

- MENU SCREEN ..... DISPLAYS ALL OPTIONS AVAILABLE
- COLOUR CHANGE SCREEN ..... USED TO CHANGE ONE COLOUR TO AN ALTERNATIVE COLOUR. COLOURS ARE SELECTED BY USING A PALETTE. COLOUR CHANGES AFFECT THE WHOLE DISPLAY SCREEN.
- FULL SCREEN ..... USED TO VIEW THE WHOLE GRAPHICS SCREEN.
- MAG 1/2/4 SCREENS ..... USED TO ZOOM INTO AN AREA YOU WANT TO EDIT.
- EDIT SCREEN (MAG 8) ..... ALLOWS AN EASY METHOD FOR ALTERING COLOURS & PATTERNS ON THE GRAPHICS SCREEN. EACH CURSOR BLOCK REPRESENTS ONE PIXEL ON THE FULL SCREEN.

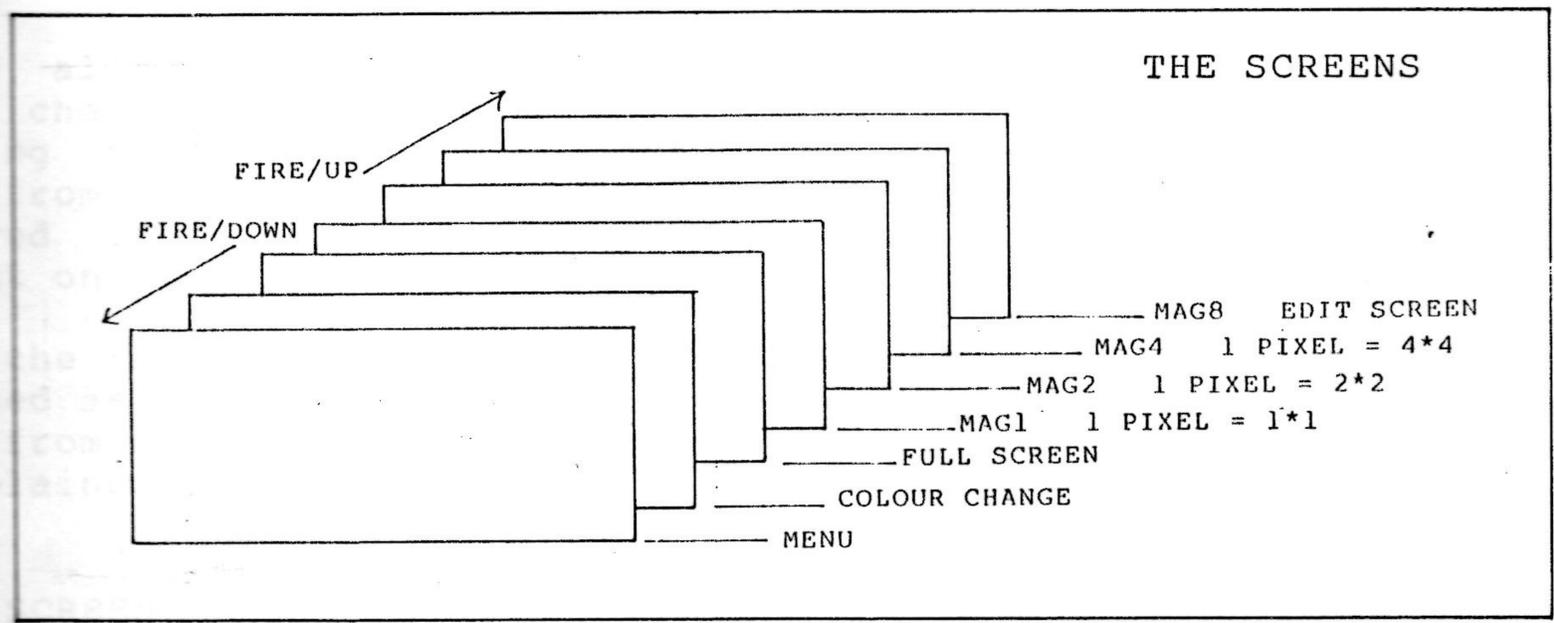


DIAGRAM ONE

Load the designer program by entering SCREEN followed by a carriage return. After a short pause for loading, your vdu should display the MENU SCREEN. This display offers five options.

F0	DISC COMMANDS
F1	CHARACTER SET COMMANDS
F2	FRESH SCREEN
F3	EDITOR
F4	PRINT DISPLAY

#### DISC COMMANDS

These are obtained by pressing F0 from the MENU SCREEN.

S = SAVE FILE  
L = LOAD FILE  
P = PEEK FILE

ANY OTHER KEY RETURNS TO MAIN MENU.

Once you have selected the desired function you must then select a FILE NUMBER in the range 0 - 9. You will then be prompted to PRESS "C" to confirm and if all is well the disc drive will start to function.

ALL FILE NAMES TAKE THE FORM: SC\*.MEM Where \* represents the FILE NUMBER 0 - 9.

The PEEK function allows you to view a SCREEN FILE on disc, without altering the screen currently in memory.

#### ERROR MESSAGES DISPLAYED WITH THE DISC COMMANDS:

FILE NOT PRESENT                      Caused by PEEKing or LOADING a file that is not present on the disc.

DISC FULL ERROR                      Saving has been terminated due to lack of space. Insert a new disc (which has been formatted) and SAVE again.

FILE EXISTS                          Triggered by trying to save to a file already present on the disc.

#### CHARACTER SET COMMANDS

SCREEN allows TEN CHARACTER SETS to be stored in memory at any one time. These character sets have been previously designed with GRAPHIC. Choosing the CHARACTER SET COMMAND allows you to load these character sets from disc. After pressing "L" to confirm the command you are then required to enter the CHARACTER SET NUMBER. The set chosen must be present on the disc to avoid the ERROR MESSAGE\* "FILE NOT PRESENT".

Once the file has been loaded into memory the new character set may be accessed as SET NUMBER n, where n is the character set number of the file read from disc. How to utilise, and change these character set numbers is explained a little later.

#### FRESH SCREEN

After choosing this function the PATTERN NAME TABLE is set to zero and the colours are set to BLUE PAPER with WHITE INK. The program then jumps to the COLOUR CHANGE SCREEN. The BLUE used as PAPER is the hue in the centre column of the palette.

This is the option you will choose to start your new MISTRAL masterpiece!

When you enter the EDIT SCREEN the cursor is in the left hand corner of the main screen, and the MODE is set to 1.

#### MODES

MODE 1 Only alters the pattern by TURNING PIXELS ON AND OFF.

MODE 2 ALTERS THE PATTERN AND COLOUR. The colours are changed to the current PAPER and INK colours which have previously been selected from the palette.

#### JOYSTICK FUNCTIONS ON EDIT SCREEN

UP : DOWN : RIGHT : LEFT - MOVE EDIT CURSOR AROUND SCREEN.

FIRE BUTTON - IN MODE 1 - WHEN PRESSED AND RELEASED WILL EITHER PLOT OR UNPLOT THE PIXEL BENEATH THE CURSOR.

FIRE BUTTON - IN MODE 2 - WHEN PRESSED AND RELEASED WILL PLOT OR UNPLOT A PIXEL AT THE CURSOR POSITION. THIS DIFFERS FROM MODE 1 IN THAT IF THE COLOURS DISPLAYED ABOVE "P I B" (The colours of the position you are editing) are different to the colours below "P I B" (The NEW current colours selected from the palette), the first keypress will change the colour only. Further keypresses will alter the pattern.

FIRE/DOWN  
(Double Keypress)

Exit from EDIT screen to MAG4. Subsequent sequences will back-track to MAG2 MAG1 etc.

FIRE/LEFT  
(Double Keypress)

This will cause the edit cursor to stop flashing and you may then press the letter or number that you want shown on the screen. The pattern of the character is taken from the current character set indicated by the set number on the edit screen. Obviously, if the set in use has not been loaded into memory, apart from SET 0, no characters will be displayed.

NOTE: It is important to realise that you must select the colour of ALL ROWS BEING AFFECTED before displaying a character: Change 8 rows to the colour required then go to the top of the area and display the character. Due to the way SCREEN performs this function it is only possible to position the cursor in the top left 4 squares of the edit area. However, by placing the cursor in the bottom right hand corner it is possible to print the character so that 90% is displayed in the next square down. Experimenting with this function will soon teach you what is possible.

FIRE/UP  
(Double Keypress)

This also stops the cursor from flashing. Pressing any key in the range 0 - 9 selects the appropriate character set for future use.



DOWN

The selected colour appears next to "COL2". This is the colour you are changing "COL1" to.

LEFT

Will store the present colours.

RIGHT

Will restore the colours to previous stored colours.

FIRE/RIGHT  
(Double Keypress)

Activates colour change. COL2 becomes COL1.

FIRE/UP

Returns to FULL screen.

FIRE/DOWN

Calls up MENU SCREEN.

One of the easiest ways of starting a new screen is to draw your design on squared paper and then relate the drawing to the CHARACTER & LINE NUMBERS displayed on the right of the EDIT screen. We, at Syntax, draw our designs on tracing paper, stick this over the Vdu then turn up the brightness so that the screen can be viewed through the tracing paper. However, after a little practice, you will soon develop your own techniques.

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## GRAPHIC

GRAPHIC is the second utility on the disc and is loaded into memory by typing GRAPHIC followed by a carriage return.

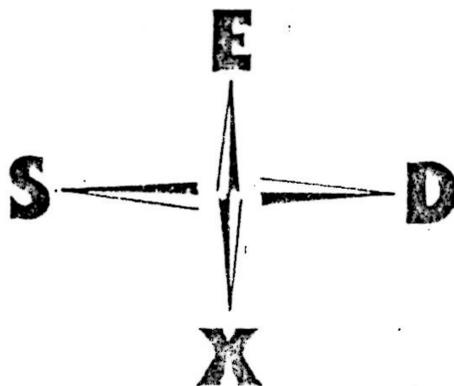
GRAPHIC allows you to design or re-design character sets, sprites, and user definable graphics. You can store ten different sets on one disc, and these can be utilised from within SCREEN or loaded into the computer and the modified characters can be used from within your own programs. At the end of this manual you will find explanations of how to do this.

Once GRAPHIC is loaded into memory you are faced with a OPTION MENU .....

### MENU

CREATE USER DEFINABLES  
CREATE SPRITES  
ALTER NORMAL ASCII CHARACTERS  
DUMP TO DISC  
LOAD FROM DISC  
TEST ANIMATION  
SELECT KEYBOARD/JOYSTICK

IN THE KEYBOARD MODE THE CURSOR KEYS ARE:



ESCAPE KEY RETURNS TO MAIN MENU.  
F7 TOGGLES BETWEEN KEYBOARD AND JOYSTICK MODES.

### JOYSTICK MODE

In the JOYSTICK MODE all functions operate in exactly the same way as when using the KEYBOARD with two exceptions:

- a) When editing a character on the grid to return to the MAIN MENU you must HOLD DOWN THE FIRE BUTTON AND PUSH THE JOYSTICK UPWARD. Releasing the joystick should then return you to the menu screen.
- b) To enter a new character HOLD DOWN THE FIRE BUTTON AND PULL THE JOYSTICK DOWN.

In all other situations the four directions of the joystick represent the keyboard keys: X S D & E. The FIRE button functions in the same manner as the SPACE BAR.

CREATE UDG'S	.....	ALLOWS YOU TO DESIGN CHARACTERS ASCII 128 -154.
CREATE SPRITES	.....	IN THIS MODE YOU CAN CREATE 32 SPRITE PATTERNS 0 -31.
ALTER NORMAL ASCII CHARACTERS	.....	THESE ARE THE EINSTEIN'S NORMAL CHARACTERS AND YOU CAN RE-DESIGN THEM. ASCII CODES 32(space) - 127.

### HOW TO CREATE OR RE-DESIGN CHARACTERS

At the MENU press the correct FUNCTION KEY to take you to the mode you require. In all modes except for the NORMAL ASCII mode you are faced with a set of white blocks on the top edge of your screen. These are the character blocks before they have been designed - of course, if you are re-editing a previously designed set, then the blocks will contain the actual characters.

Under these blocks is a cursor which can be moved with the cursor keys/joystick. When you are at the correct character press the space/fire to pull down the character into the graphics grid in the centre of your display.

You can now set or re-set pixels by pressing the space bar/fire button. And you can move the cursor around the grid with the cursor keys/joystick. A blank (off) square represents a background or OFF pixel and a red square represents an ON pixel.

Once the graphic is designed you can then carry out the following refinements:

- R KEY = ROTATE CHARACTER 90 DEGREES ANTI-CLOCKWISE.
- M KEY = MIRROR THE IMAGE ABOUT THE X AXIS ( --- ).
- I KEY = INVERSE. CHANGE ON PIXELS TO OFF AND OFF PIXELS TO ON.

When you are happy with your design PRESS ENTER to store the character in memory. The block at the top of your screen should now be an exact replica of your design.

Characters are displayed in blocks of TWELVE and to toggle to the next set PRESS " E ". Pressing " X " will display the previous twelve characters. In the joystick mode move joystick UP or DOWN.

To experiment with this function choose the CREATE ASCII CHARACTERS by pressing " F2 ". You will now see displayed the first twelve characters starting with CHR\$(32) space. Press " E " and your display will change to the next twelve patterns. Pressing " X " will return you to the original set.

IF YOU WANT TO RETURN TO THE MAIN MENU PRESS THE "ESCAPE" KEY.

#### TEST ANIMATION

When writing programs animated characters are normally composed of more than one character block joined together to build an overall graphic. Animation is then achieved by switching between different designs to give the effect of animation. Trial and error in selecting the correct sequence and designs is tiresome. In this mode GRAPHIC allows you to join together up to 9 patterns across by 9 patterns down. You can also select a sequence of up to 9 composite designs. Animation can then be tested and it is a simple matter to correct mistakes or alter sequences, and re-test.

On entry to this mode you are prompted .....

```
HOW MANY PATTERNS IN SEQUENCE ? (1-9)
HOW MANY CHARACTERS WIDE ?      (1-8)
HOW MANY CHARACTERS DOWN ?      (1-8)
```

Once you have returned an answer you are required to input the characters for each pattern. This done by selecting the character from those displayed at the top of the screen. To do this use the cursor in exactly the way as you did when designing your graphics and when the desired character is above the cursor press SPACE BAR/FIRE and the character will be transferred to the animation grid. You can toggle between sets of twelve characters in the same manner as described for designing a graphic.

Once you have filled the animation grid you are asked if the pattern is correct. "N" will allow you to re-enter data and "Y" will install the pattern in the animation sequence. This procedure is repeated until you have completed your animation sequence.

When you have entered the last pattern in your sequence animation begins. PRESSING "E"/UP INCREASES THE SPEED OF THE ANIMATION AND PRESSING "X"/DOWN SLOWS IT DOWN.

SPACE BAR/FIRE RETURNS YOU TO THE MAIN MENU.

THE DISC COMMANDS ARE FULLY ERROR TRAPPED AND ARE SELF EXPLANATORY.

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The following will allow the Basic user to load any one character set from disc and install it into memory so that it can be used with a Basic program. The code also caters for loading a screen - which may be required as a backdrop to a games program or a title screen etc. A full explanation of the program follows the listing.

```

10 CLEAR &C082
20 LOAD "DATA3.OBJ"
30 FOR F=&C082 TO &C381
40 VPOKE F-&A782,PEEK(F)
50 NEXT F
60 FOR F=&C382 TO &C481
70 VPOKE F-&AB82,PEEK(F)
80 NEXT F
90 FOR F=&C482 TO &C781
100 VPOKE F-&AB82,PEEK(F)
110 NEXT F
120 CLEAR &8000
130 LOAD "LOADER.OBJ"

```

#### THE BASIC PROGRAM

TO USE THIS PROGRAM YOU MUST FIRST TRANSFER THE GRAPHIC SET AND YOUR SCREEN DESIGN TO THE DISC YOU ARE GOING TO SAVE YOUR BASIC PROGRAM TO. AFTER THE DESIRED FILES HAVE BEEN TRANSFERRED RENAME THEM TO OBJECT FILES. REMEMBER OBJECT FILES ARE .OBJ. EG TEST.OBJ : DATA.OBJ etc ... If in doubt see your Einstein Basic manual.

CLEAR &C082 This is the first address usable following the area reserved for a SCREEN picture.

LINE 30 &C082 TO &C381 Standard Ascii data is stored in this area.

LINE 40 F-&A782 This aligns to the relevant VRAM area for the above data.

LINE 60 &C382 TO &C451 Sprite patterns are stored here.

LINE 70 F-&AB82 This is the VRAM position for sprite data.

LINE 90 &C482 TO &C781 Area used to store UDG data.

LINE 100 F-&A882 VRAM position for storing UDG's

LINE 120 CLEAR &8000 This sets the START address for SCREEN which is loaded with the command in LINE 130.

You can now start the rest of your programming beneath this code. When you want to display your screen a CALL &8000 will load it and display it to the VDU. If you are using the screen as a backdrop to a game you may during the course of the game cause to the screen display to alter. If you wish to return the screen to its starting state - when the game is over ... WANT TO PLAY AGAIN YES OR NO ? You can do so by a CALL &8052. There is no need to repeat any procedures for the graphic sets as once they are loaded, they remain in memory until you a) switch off the computer, or b) press the re-set button.

IF YOU WANT TO USE ANOTHER SCREEN YOU CAN ALTER THE SCREEN TO BE LOADED BY POKING &8128, 48+SCREEN NUMBER.

For those of you who like to get your hands dirty, the following is a machine code listing of the program that loads the screen into memory and displays it to the VDU.

ON THE DISC SUPPLIED YOU WILL FIND THE MACHINE CODE FILE & THE BASIC PROGRAM. TO USE THE BASIC PROGRAM ALL YOU NEED DO IS LOAD IT INTO MEMORY, CONTINUE YOUR PROGRAMMING AND SAVE THE FILE UNDER A DIFFERENT NAME.

1		ORG 8000H	61 807F 010018	LD BC,6144
2		LOAD 8000H	62 8082 3E00	LD A,0
3 8000 212581		LD HL,NAME	63 8084 D309	OUT (9),A
4 8003 113181		LD DE,FDSC	64 8086 3E60	LD A,96
5 8006 010C00		LD BC,12	65 8088 D309	OUT (9),A
6 8009 EDB0		LDIR	66 808A CD9B80	CALL COPY
7 800B 213D81		LD HL,FDSC+12	67 808D 3A0088	LD A,(8800H)
8 800E 3600		LD (HL),0	68 8090 E60F	AND 0FH
9 8010 113EB1		LD DE,FDSC+13	69 8092 F6F0	OR 0FH
10 8013 013000		LD BC,48	70 8094 D309	OUT (9),A
11 8016 EDB0		LDIR	71 8096 3EB7	LD A,87H
12 8018 11A580		LD DE,BUFF	72 8098 D309	OUT (9),A
13 801B 0E1A		LD C,1AH	73 809A C9	RET
14 801D CD0500		CALL 5	74 809B 7E	LD A,(HL)
15 8020 113181		LD DE,FDSC	75 809C D308	OUT (8),A
16 8023 0E0F		LD C,15	76 809E 23	INC HL
17 8025 CD0500		CALL 5	77 809F 0B	DEC BC
18 8028 3C		INC A	78 80A0 78	LD A,B
19 8029 C8		RET Z	79 80A1 B1	OR C
20 802A 0661		LD B,97	80 80A2 20F7	JR NZ,COPY
21 802C 110088		LD DE,8800H	81 80A4 C9	RET
22 802F C5	L1:	PUSH BC	82	DS 128
23 8030 D5		PUSH DE	83 8125 00534330	DB 0,"SCO OBJ"
24 8031 113181		LD DE,FDSC	83 8129 20202020	
25 8034 0E14		LD C,14H	83 812D 204F424A	
26 8036 CD0500		CALL 5	84	FDSC: DS 60
27 8039 D1		POP DE	85	END
28 803A 21A580		LD HL,BUFF		
29 803D 018000		LD BC,128		
30 8040 EDB0		LDIR		
31 8042 C1		POP BC		
32 8043 10EA		DJNZ L1		
33 8045 113181		LD DE,FDSC		
34 8048 0E10		LD C,10H		
35 804A CD0500		CALL 5		
36 804D 0E0D		LD C,13		
37 804F CD0500		CALL 5		
38 8052 3E00		LD A,0		
39 8054 D309		OUT (9),A		
40 8056 3E78		LD A,120		
41 8058 D309		OUT (9),A		
42 805A 0600		LD B,0		
43 805C 0E00		LD C,0		
44 805E 1603		LD D,3		
45 8060 79	L2:	LD A,C		
46 8061 D308		OUT (8),A		
47 8063 E5		PUSH HL		
48 8064 E1		POP HL		
49 8065 0C		INC C		
50 8066 10F8		DJNZ L2		
51 8068 15		DEC D		
52 8069 20F5		JR NZ,L2		
53 806B 3E00		LD A,0		
54 806D D309		OUT (9),A		
55 806F 3E40		LD A,40H		
56 8071 D309		OUT (9),A		
57 8073 210188		LD HL,8801H		
58 8076 010018		LD BC,6144		
59 8079 CD9B80		CALL COPY		
60 807C 2101A0		LD HL,0A001H		

MAKE SURE YOU COPY THE ORIGINAL DISC AND THEN USE ONLY YOUR WORKING COPY.