PAINTBOX AND NEOS MOUSE
INSTRUCTION MANUAL.

INTRODUCTION.

Congratulations, you are now the owner of an extremely powerful graphics package. The NEOS mouse represents the state of the art in mouse technology and 'PAINTBOX' probably the best multi mode graphic software available for any 8 Bit home computer to date.

GETTING STARTED.

Along with the mouse in the package you will find a mouse interface. This consits of two parts: the main interface (containg the 9 pin D connector) and a small signal lead. To connect up the mouse simply push the main interface into the port marked 'CONTROL 1' at the back of the ENTERPRISE and the signal cable into the 'SERIAL/NET' port. A jack plug on the end of this cable then plugs into the main interface. The mouse can now be connected to the 9 pin D plug on the main interface.

LOADING PAINTBOX.

To load 'PAINTBOX'. Rewind the cassette supplied to the beginning of side A. Press 'START' or type LOAD "PAINTBOX" from BASIC or press 'LOAD' in the 'WP'. Then press 'PLAY' on your tape recorder, 'PAINTBOX' will then automatically load. If you have problems loading, check the introduction booklet supplied with your Enterprise on the loading procedure.

USING THE MOUSE AND PAINTBOX.

Once PAINTBOX has been loaded you will be presented with a screen divided into two main sections. The top half is the 'COMMAND' area and the bottom the 'CANVAS'. When you move the MOUSE around you will notice a small arrow moving around in sync with you, this is known as the 'POINTER'. Pressing the right hand button on the MOUSE and then releasing it is known as 'CLICKING' virtually every function is activated by clicking.

As stated above, the screen is divided into two main areas; the 'COMMAND' and 'CANVAS'. To move between the two simply move the pointer either to the top or bottom of that area and on into the next (depending where the border is). The CANVAS can be any size from 42*27 to 2*2 charactors. Obviously, not all of it can be displayed on the screen with the command screen present, so to get round this, the CANVAS can be scrolled up and down. To do so, move the pointer to the bottom of screen, the CANVAS will then automatically scroll up. Continualy moving the pointer to the bottom of the screen `will scroll all the CANVAS up until the bottom is reached. Likewise moving the pointer to the CANVAS/COMMAND border will scroll the CANVAS back down, until, the top is reached, where upon you will once again enter the COMMAND screen.

The COMMAND screen can be divided into 4 main areas looking from the top to the bottom 'PALETTE', 'STIPPLE', 'BRUSH' and 'COMMAND' icons.

THE PALETTE is at the top of the 'COMMAND' screen and consists of a bar divided into 1,2,4 or 16 sections. Each section displays a colour from the 256 available. To select a colour from the palette bar move the pointer under the desired colour an 'CLICK', the colour will then be highlighted, and this colour becoming the current 'INK'. To change a pallete colour, 'CLICK' the colour twice and you will be presented with a display of all 256, a small flashing cursor can now be used to select the colour desired, by 'CLICKING' on that colour you then automaically   return   to the main command screen with the colour selected now in place on the palette bar.

THE STIPPLE section contains 20 predefined stipple patterns. To select a pattern 'CLICK' under the desired box, That box will then be highlighted. To facilitate other colours to be used, the colour of the stipples change with the current ink colour. To obtain a stipple in the colour displayed, select the far left colour on the palette bar.

THE BRUSH patterns are selected in exactly the same way as the STIPPLES. When painting the chosen shape is put down in the current STIPPLE and INK.

THE COMMAND icons are all selected by CLICKING the pointer over the appropriate icon. These icons and their actions are listed below.

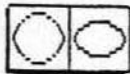Plots single dots with each individual CLICK.

Plots single dots continuously for as long as the mouse button is depressed.

Draws thin straight lines. Position the pointer at the start of the line, depress the mouse button and drag the line out. Releasing the button lays the line down.

Free hand thin line drawing. Depress the mouse button and draw.

Circle and ellipse. Depress mouse button with pointer at centre and then drag circle/ellipse out to desired size, releasing the button to lay down the line.

Box/rectangle. Place pointer at one corner, depress mouse button and drag other corner out to desired position. Release the button to lay down line.

Restores the contents of the CANVAS to the condition it was it upon leaving the command screen last. NOTE as the canvas is saved every time you leave the COMMAND screen a very small delay is some time noticed before the pointer re-appears on the CANVAS.

Enables you to define a window on the CANVAS. To create a window, depress the mouse button and drag the window out over the desired area, releasing the button will lay—down a dotted outline of the window. When you leave the CANVAS the line will disappear to remind yourself of its position use INVERT.

Clears window.

Inverts window (equal to XORing area with 255).

XOR's, AND's or OR's window with current ink colour.

Window copy. To use, depress mouse button, a box will then be drawn the same size as the window, drag that about to the desired position and release the mouse button, the contents of the window will then be copied into the positioned box.

Select line style. Click icon and choose new style from the selection offered.

Save or load CANVAS. When clicked you will be prompted to Enter the name of the picture you want to save or load. NOTE Save and load uses the default DEVICE but could quite easily be re—directed in the normal EXOS fashion with NET—2:demo.pic for example. Also note, when you try to load a picture file the canvas is cleared. If you do not find or cannot load the file press STOP to return to command area and then UNDO.

Dumps CANVAS to printer. Clicking the bottom half will invert the print out. NOTE, before using select printer type with SETP ?. See Technical Section for correct indentifier.

Sends Exos call string. Same as ':' from BASIC but you don't need to add ':' before the command.

Plots thick points with current pen, stipple and colour.

Free hand thick line drawing. Depress mouse button and draw with current pen, stipple and colour.

Draws thick straight lines. Position pointer at the start of the line, depress the mouse button and drag the line out. Releasing the button lays the line down in the current pen, stipple and colour.

Sprays a random pattern on screen with current pen.

Erases under pointer with current pen.

Textured fill any area with current stipple. Select different colour to area you wish to fill and CLICK when pointer is in right position. The area is then filled. The filled area is only textured when pointer leaves the canvas. NOTE. To fill in a solid colour press STOP before leaving CANVAS.

Text input. Depress mouse button and position pointer. Once satisfied with your position release button and enter text via keyboard. To re-enter position and display pointer press ESC.

Shows whole of screen. When clicked displays and allows you to work on all of CANVAS at once. Also when clicked, toggles display status, when active, moving out of command area will show all of CANVAS.

Effects the way the thin line functions are laid down on the CANVAS.

Magnify area of CANVAS. Presents you with section of magnified CANVAS and allows you to work in detail on that area. To return to the command screen move pointer to bottom of magnify area. The palette bar is retained to allow you to change colour without having to return to the command screen.

Selects area of canvas to magnify. depress mouse button and position rectangle over area to be magnified.

Edits current brush in simular fashion to magnify.

Edits current stipple in simular fashion to magnify

Loads pre-saved stipple and brush patterns. Simular name input to save and load.

```
EDIT
SAVE
```
Saves stipple and brush patterns. Simular name input to save and load.

```
CLS
```
Clears screen. Requires two clicks to activate.

```
NEW
MODE
```
Selects new mode. Click twice and select new CANVAS mode, colour, size etc. Note. The Attribute modes have been added just as secondary options, Paintbox does not have all the features required to take full advantage of those Modes.

SPECIAL KEYS

Extra commands can be activated from the keyboard; they are listed below.

STOP   Returns you to COMMAND area from anywhere.
ESC   Returns pointer to COMMAND screen when on CANVAS.
:   Automaticaly enters you into the ':' COMMAND screen.
X   Locks any drawing functions X co-ordinate to that of the pointer when 'X' was pressed.
SHIFT X   Releases X lock.
Y   Locks any drawing functions Y co-ordinate to that of the pointer when 'Y' was pressed.
SHIFT Y   Releases Y lock.
1 – 8   Memorises pointers current position.
SHIFT 1–8 Returns pointer to the position it was when number was pressed.
ERASE   Performs an UNDO while on CANVAS.

SCRATCH PAD

Due to the extremely flexible nature of the brush, stipple and colour combinations, a "scratch pad" has been added to enable you to try them out. To enter the scratch pad, simply click a brush icon twice,

you will then be displayed a screen simular to that of the magnify. Once entered into the scratch pad, thick free—hand drawing is automatically selected and you can start to doodle. To change the current colour, stipple or brush patterns press the space bar, you will then enter the command screen. From here you can select a new brush, stipple etc. To re—enter the scratch pad move the pointer to the bottom of the command screen. To leave the scratch pad altogether press ESC or STOP.
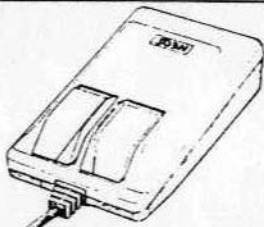
DEMO PICTURES.

After the mouse driver on side two of the tape supplied are a couple of demo pictures: DEMO1.PIC and DEMO2.PIC.

AN EXAMPLE PRINTOUT OF A CANVAS.

THE MOUSE AND HOW TO USE IT IN YOUR OWN PROGRAMS.

Using the mouse is not just retricted to within 'PAINTBOX', it can be very easly incorporated within almost any program. The first file on side two of the tape included, is the "MOUSE DRIVER". This device driver will place a pointer on any graphic screen and by monitoring the movements of the mouse it will move the pointer around the screen in sync with it.

The Mouse Driver can be instructed to do various commmands and functions, for example turning the pointer on and off. There are two ways to communicate with the Mouse Driver, the first is by reading and writing to it and the second is by system variables.

LOADING.

The Mouse Driver can be loaded by all methods ie: 'START' from Basic or load "MOUSE.XR". It can also be loaded from the 'WP' or any other language (check appropriate language for details).

COMMUNICATING WITH THE MOUSE.

As stated above there are two ways in which you can communicate with the Mouse Driver. To demonstrate the two methods and their actions, we shall first look at all the commands, functions and variables then demonstrate their use within a program.

PRINTED COMMANDS AND FUNCTIONS.

The first and most important action is to open the Mouse channel ie OPEN €?:"MOUSE:" (? being a channel number).

Commands issued by printing characters to Mouse channel.
'O' Turn pointer on.
'o' Turn pointer off.
'P' request X & Y position.

Results or status obtained by reading a character from Mouse channel
X Low—byte.
X High—byte.   These four bytes are only read after sending 'P'.
Y Low—byte.
Y High—byte.

Fire. = '1' if fire button depressed '0' if not.

SYSTEM VARIABLES.
180 Video channel, pointer required on. (default = 101)
181 Position of X,Y co—ordinate on status line. (default =30)
182 Status co—ordinate display 1 on 0 off. (default = 0)
183 Colour of pointer (check tech section). (default = 255)
184 Low byte of X co—ordinate.
185 High byte of X co—ordinate.   check demo prog for co—ordinate conversion.
186 Low byte of Y co—ordinate.
187 High byte of Y co—ordinate.
188 Status of fire button 0 off, 255 on.
189 Input device. '0' Internal joystick, '1' Control—1, '2' Control—2, '3' Mouse. (default = 3)


```
100 PROGRAM 'ms_test.bas'
110 NUMERIC X,Y,MAX_Y,X_COUNT
120 GRAPHICS
130 CALL MOUSE_SETUP
130 OPEN €1:'mouse:' ! Open a channel to the Mouse
140 DO
150   CALL MOUSE_POS
```

```
160    LOOK   1:FIRE   ! Check the fire button
170    IF FIRE THEN
180      PRINT £1:'o'; ! Turn the pointer off
190      PLOT LASTX,LASTY;X,Y
200      PRINT  1:'O'; ! Turn the pointer on
210    ELSE
220      PLOT X,Y,
230    END IF
240    LET LASTX=X:LET LASTY=Y
250 LOOP
260 END
270 DEF MOUSE_SETUP
280    LET CHAR_Y=20 ! No of characters screen high
290    LET X_COUNT=2 ! Pixel calc no
300    SET 180,101 ! Video channel to put mouse pointer on
310    SET 181,30 ! Position of co-ordinates on status line
320    SET 182,1 ! Show co-ordinates
330    SET 183,255 ! Colour of pointer
340    LET MAX_Y=CHAR_Y*36-2 ! Convert char_y to co-ordinates
350 END DEF
```

Note X_COUNT is = to '2' in 2 colour mode '4' in 4 colour mode
'8' in 16 colour mode and '16' in 256 colour mode. All these values
double when in lores.

Reading the pointer co-ordinates by reading from Mouse channel.

```
  DEF MOUSE_POS
    PRINT £1:'P'
    LOOK £1:XL
    LOOK £1:XH
    LOOK £1:YL
    LOOK £1:YH
    LET X=XL+256*XH
    LET Y=YL+256*YH
  END DEF
```

Reading the pointer co-ordinates from the system variables.

```
DEF MOUSE_POS
  ASK 184 XL
  ASK 185 XH
  ASK 186 YL
  ASK 187 YH
  LET X1=XL+256*XH
  LET X=X1*X_COUNT
  LET Y=YL+256*YH
  LET Y=Y*2
  LET Y=MAX_Y-Y
END DEF
```

Setting the Mouse co-ordinates by the system variables.

```
DEF POS_MOUSE
  LET X=INT(X/X_COUNT)
  LET XL=X-256*INT(X/256)
  LET XH=INT(X/256)
  LET Y=MAX_Y-Y:LET Y=INT(Y/2)
  LET YL=Y-256*INT(Y/256)
  LET YH=INT(Y/256)
  SET 184,XL
  SET 185,XH
  SET 186,YL
  SET 187,YH
END DEF
```

This program is a very simple art program; simply drawing a line to follow the movement of the mouse when the 'Mouse Button' is pressed. A call is made to MOUSE_POS on line 150, depending on how you want to read it you should add into the program the appropriate procedure from the two listed. There is another procedure listed, that routine enables you to set the position of the pointer. Simply call it with the desired position in variables X and Y, experiment with the different routines, and try and add them into your own programs, it won't take long to get the feel of them and

after a very short while you will discover just how easy it is to incorporate the mouse into existing programs and to write mouse specific programs.

TECHNICAL INFORMATION SECTION

PAINTBOX.

Selecting Printer codes for printer dumping CANVAS.
Enter ':' command screen and type SETP ?. Where ? is a letter between A and T. Check with your printer manual to select code from list below.

IDENTIFIER.	LINE FEED CODE.	BIT IMAGE CODE.
A	27,"A",8	27,"K"
B	27,"A",8	27,"L"
C	27,"A",8	27,"Y"
D	27,"A",8	27,"Z"
E	27,"A",8	27,"*",1
F	27,"A",8	27,"*",2
G	27,"A",8	27,"*",3
H	27,"A",8	27,"*",4
I	27,"A",8	27,"*",5
J	27,"A",8	27,"*",6
K	27,"1"	27,"K"
L	27,"1"	27,"L"
M	27,"1"	27,"Y"
N	27,"1"	27,"Z"
O	27,"1"	27,"*",1
P	27,"1"	27,"*",2
Q	27,"1"	27,"*",3
R	27,"1"	27,"*",4
S	27,"1"	27,"*",5
T	27,"1"	27,"*",6

USING PICTURES CREATED USING PAINTBOX WITHIN YOUR
OWN PROGRAMS.
All Paintbox picture files are fully compatible with BOXSOFT'S
"SCREEN UTILITIES", thus any program using "SCR_SLC.XR" (on
side one of SCREEN UTILITIES) can load and use any Paintbox
picture file.

MOUSE DRIVER

Values for EXOS variable 183 to change mouse pointer colour.

SETTING	RESULTANT INK COLOUR

2. COLOUR MODE.

SETTING	RESULTANT INK COLOUR
0	0
255	1

4 COLOUR MODE.

SETTING	RESULTANT INK COLOUR
0	0
240	1
15	2
255	3

16 COLOUR MODE.

SETTING	RESULTANT INK COLOUR
0	0
192	1
12	2
204	3
48	4
240	5
48	6

240	7
3	8
195	9
15	10
207	11
51	12
243	13
63	14
255	15

256 COLOUR MODE.

0-255	0-255

MOUSE.

JOYSTICK MODE OF THE 'NEOS' MOUSE.

The NEOS Mouse is not just restricted to acting as a mouse, it can be made to simulate a joysick. To activate this mode first remove the mouse interface signal lead and then whilst holding down the left hand fire button, power up your Enterprise. Alternativly whilst holding down the left fire button, insert the mouse's 9 pin D socket into the mouse interface. The mouse will then send movement signals like that of a joystick. NOTE. The fire button is now the left hand button on the mouse, to make use of the right hand button use the routines shown in the section on the mouse interface.

CARING FOR YOUR MOUSE.

Whilst the NEOS Mouse is very robust, a few simple points must be observed to ensure a long trouble free life.

1. Never drop or mis-handle the mouse or its control cord.
2. Regularly dust the top and keys with a lint free cloth.
3. Always ensure that the table top or surface on which mouse is to be used is clean and dust free.

After a while the rubber coated ball in side the mouse will pic up
dust and debris, when this occrurs it must be removed and cleaned.
Firstly unplug mouse from the computer and follow the procedure
listed below.

1 Place mouse face down on a clean surface.

2 Take off the lid by giving a strong pull at the edge of the hole in
the direction of the arrow. Fig 1.

3 Remove ball. Fig 2.

4 Clean ball by rubbing of dust etc with fingers.

5 Check ball spindles for excess dirt build up, removing if neccesary
with careful use of a fingernail.

6 Replace the ball in the hole.

7 Lay the lid on mouse parallel to base. Fig 3.

8 With you finger tip in the hole of the lid, pull the in the dirction
of the arrow. Fig 4.

1.   2.   3.   4.
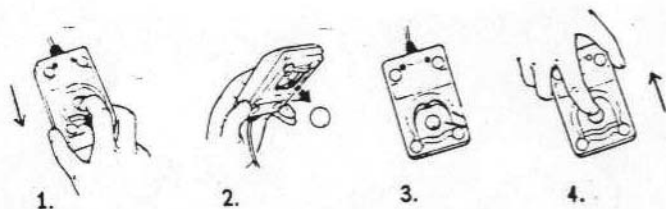
NEOS Mouse specifications.
Size: 34mm/103mm/63.3mm. (Hight/Lenght/Width)
Weight: 200 grams. (Incl cord)
lenght of cord: 1.2m
Mechanism: Mechanical mouse. (Optical encoder used)
Processor: 4—Bit CPU.
Power: +5V (From control port)
Power consumption: 25mA.
Working temprature: 0c — +40c.

NOTE. NEOS is the trademark of the NIHON ELECTRONICS CO.,
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MOUSE INTERFACE.

The BOXSOFT Mouse interface will not only work as a mouse
interface but as an Intelligent Joystick interface. To utilise it in this
way, first remove interface signal lead and then insert into either the
Control one slot or the Control two slot at the back of the
Enterprise. Any ATARI style Joystick can then be inserted into the 9
pin plug at the back of the interface board.

Reading the interface.
All normal methods of reading the port work. The only extra code
required is to read the second fire button. An example of the code
is listed below.

```
100 PROGRAM "JOYFIRE2.BAS"
110 ALLOCATE 40
120 CODE FIRE=HEX$("7C,F3,D3,B5,DB,B6,FB,A5,28,04,21,00,00,C9,
21,01,00,C9" )
130 DO
140   LET FIRE=USR(FIRE2,4)
150   IF FIRE THEN PRINT "FIRE 2 PRESSED"
160 LOOP
```

Pinouts of Mouse Interface in joystick mode.

Pin NO on 9 pin D.	Function.
1	UP
2	DOWN
3	LEFT
4	RIGHT
5	N/C
6	FIRE 1
7	+5v
8	0V/COMMON
9	FIRE 2

PAINTBOX Written by Andy Burnham.
Brush, Stipple routines by Andrew Richards.
Mouse Driver by D Rabson, Andrew Fitter and
Andrew Richards.
Scrdump by D Rabson.

Box soft

P R O G R A M S

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