ROMANTIC ROBOT

present

multiface two

MANUAL

CONTENTS

INTRODUCTION

Congratulations on having bought Romantic Robot's MULTIFACE 2.
This truly multi-purpose interface for CPC 464, 664 and 6128
1) will completely automatically   back up any program once
   loaded into RAM, incl. restoring of all screen parameters.
2) uses an 8k RAM extension, which can also be accessed and
   used for any purpose that you may choose.
3) has a comprehensive toolkit enabling you to inspect and
   alter memory contents, jump to any address to run code at
   that point, and check and alter   the contents of the Z80
   registers and 6845 (the CRTC) registers.
4) incorporates a true reset button which clears the entire
   RAM but leaves the MULTIFACE's own 8K RAM unaffected.

GUARANTEE

This guarantee is in   addition   to and does not affect any
statutory or   other   rights   of consumers or purchasers.
ROMANTIC ROBOT guarantee that if within 6 months of the date
of purchase, the MULTIFACE proves to be defective by reason
of faulty design, workmanship, or materials, it will be
repaired or replaced free of charge, provided that:-
 *1) It has not been in any way misused, used with unsuitable
 equipment or subjected   to   deliberate,   accidental or
 consequential damage.*
 *2) No unauthorized modifications, repairs or adjustments
 were made to the MULTIFACE TWO.*
 *3) The purchaser shall within 10 days complete the enclosed
 slip and send it to ROMANTIC ROBOT UK Ltd for registration.*
The purchasers sole and exclusive remedy under this guarantee
is for MULTIFACE repair or replacement. No other remedy incl.
but not limited to, incidental or consequential damage or
loss of whatsoever nature shall be available to the purchaser.

1.1   Switch off and unplug your computer and any peripherals
       which have independent power supplies.
1.2   Remove any peripherals attached to the expansion port.
1.3   Firmly push the MULTIFACE connector onto the expansion
       port with the MULTIFACE buttons facing upwards.
1.4   Attach the other peripherals, if any, making sure they
       are pushed well home. Check all connections carefully.
1.5   Plug in the computer & peripherals again and switch on.
1.6   Test that all is well by pressing the Red STOP button.
       If a 2-line menu comes up at the bottom of the screen,
       all is well and you can explore MULTIFACE further or
       press r to return and carry on with whatever you wish.
1.7   If you get random coloured squares, or other garbage,
       switch off, disconnect everything from the mains, clean
       both sides of the expansion port and repeat 1.3-1.6.
1.8   In the unlikely event that the screen remains corrupted
       or menu does not come up, switch off, remove all other
       peripherals, reread the instructions and retry 1.3-1.6.
1.9   If you still get no success, switch off again, remove
       MULTIFACE and contact Romantic Robot. Please note that
       repairs under guarantee are only carried out free of
       charge if the guarantee was registered.

THE SOFTWARE INVISIBILITY SWITCH

This is a brand new MULTIFACE 2 + with a built-in software invisibility switch.
There are a few vital points to note about the ON/OFF switch:

1) The only reason for MULTIFACE being ON is to enable you to reload a
program previously saved by the MULTIFACE. To turn the MULTIFACE ON,
press the RESET button on the MULTIFACE BEFORE loading a program.
MULTIFACE is also automatically turned ON when you switch ON the CPC,
but by using RESET on the MULTIFACE, the CPC is also properly CLEARed
so that MULTIFACE SAVES the least amount of bytes each time.

2) MULTIFACE is automatically turned OFF and INVISIBLE upon re-loading
a program it saved or upon pressing R to RETURN from MULTIFACE to CPC.

3) You can always activate the MULTIFACE by pressing the red STOP button,
irrespective if it was ON or OFF before. The MULTIFACE is always READY!

4) The only mistake you can make is to leave MULTIFACE ON when loading
a program which finds the MULTIFACE offending - the CPC will then crash, or,
on the other hand, to forget to switch MULTIFACE ON before reloading a
program saved by the MULTIFACE, in which case the program will NOT load.

When the Amstrad is switched on or reset with CTRL/SHIFT/ESC
this does not uniformly clear all unused memory locations to
zero, as one might have expected. The MULTIFACE 2 Reset
button - the one on the left - does exactly this and can
therefore save a lot of space when saving. In fact, it is
good practice to press the Reset buttom every time you are
about to load a program, to make sure that the program is
being loaded into a clean and properly initiated computer.

MULTIFACE 2 does not save programs as such, it saves an image
(in a compressed form) of the computer memory, frozen at the
instant the red button was pressed. It saves this in 5 blocks
(more with the 6128) either to disc or to tape at normal or
high speed. Upon reloading, the blocks of memory are
rearranged to form a running program by a short piece of
machine code, saved along with the main blocks of code.

2.1   At the instant you wish to save a program or screen,
        press the RED button. Never press the left hand reset
        button unless you want to reset the computer.

2.2   The screen will change and possibly quite drastically;
        this is perfectly normal, and all will be restored in
        due course. The main menu will appear at the bottom of
        the screen with 4-5 main options:
        Return _Save_ _Tool_ _Jump_ and - on 6128 only - _clear_.
        If saving 64K programs on 6128, press first c to clear
        the 2nd unused 64K RAM block (see 2.7). Then press S.

2.3   The prompt will change by asking for a filename. Unlike
        normal disc files, UP TO 7 LETTERS ONLY can be used.
        This is to allow MULTIFACE to put a series of suffixes
        on each part of the file. Usual rules for filenames
        apply, with the exception that you cannot use
        extensions. The following are all legal filenames:-
          DISC   never_m   Wriggle
        These are not:-
               Disc.bin   (no extensions)
               Never m   (no spaces)
               Wriggler   (too long)
               my,prog   (commas are never allowed)
2.3.1 If you suddenly decide NOT to save the program at this
        stage, pressing ESC will take you back to the Main
        Menu, whence R will return you to the program.

2.4   Once you have chosen the filename, press <ENTER> (464)
        or <RETURN> (6128). The display will change again and
        you will see the following prompts:-
            ESC _hypertape_ _disc_ _screen or program_
2.4.1 Once again, you can back out with ESC. Pressing P and S
        toggles between saving the whole program or the screen
        only. As a default, the whole program is saved.
2.4.2 If saving to disc, press d; please ensure the disc is
        formatted and has sufficient space: theoretically up to
        128k on the 6128 with all banks active - see 4.1 - but
        the automatic compression should always reduce the
        amount of RAM to be saved. MULTIFACE has a thorough
        error-trapping combined with on-screen prompts - thus,
        for instance, DISC MISSING will be displayed if the
        disc is not formatted or inserted, DISC FULL if there
        is not enough space for the program to be saved. You
        can abort or just swap discs and continue.

2.4.3 If saving to tape, make sure that you are using a long enough tape, and that it is in position. You can choose between the normal tape (1000 baud) and hypertape save (2000 baud). Press Play and Record on your cassette recorder, then any key on the computer as usual.

2.5 When saving is complete, you will be returned to the Main Menu and you can then either return to continue the program or use any other function of MULTIFACE 2.

2.6 *Saving Screens*
At stage 2.4 press S for Screen. Screens are saved with a special code to restore the mode/colours/windows — a screen saved with particular colours in Mode 0 would look pretty odd if reloaded into mode 2 with a window set up as stream 0! The screens are not compressed.

2.7 *Clearing Banked Ram (6128 ONLY)*
The clear option in the Main Menu will set the contents of the second 64k bank to zero and make the compressing more effective. You can clear any time, but if your program uses these banks for data (ie. using Bankman), that data will be destroyed. Also, NEVER clear under CPM+ as banks 4 to 7 are always in use.

3 # LOADING

3.1 *Reloading Programs*
Just type RUN"filename, the program will load and carry on from the instant at which it was saved. MULTIFACE MUST be attached for reloaded programs to run.

3.2 *Reloading Screens*
3.2.1 *Loading and Viewing*
Type in the following and run it:-
```
10 MEMORY 16384
20 LOAD"filename"
30 CALL 32768
40 WHILE INKEY$<>" ": WEND
50 MODE 1
```
Irrespective of what screen mode you are in (0,1,2), the saved screen will appear properly with all parameters, colours, etc, because the CRTC chip is set directly by the special code that was saved along with the screen and is called by CALL 32768. The CRTC and the firmware may, however, not agree over which screen mode they are in, and hence line 50 is to make them agree again! You may find it necessary to set inks as well in that line, for example if inks 0 and 1 are both set up to be black, before you can use further Basic.

3.2.2 *Extensions to Call Hard Copy Routines*
If you want to print the screen, using your own special print routines, you have to load them into a convenient memory location outside the range 16384 to 33000. You could then modify line 40 to call the print routine, or add a new line 45 to do this — for example with Utopia:
45 :GDUMP.

3.2.3 *Other Extensions*
You might like to set up your Basic to load and display other screens saved from other games. Any screen may be redisplayed any number of times with CALL 32768 as long as the area of memory used has not been corrupted.

4.2   *Jump*
You can Jump to execute code in onboard ROM, RAM or
MULTIFACE RAM or ROM at any specified address. You can
do so either from the main menu by pressing j - we call
this indirect jump, or by programming MULTIFACE to jump
directly upon pressing the red button and by-passing
the standard MULTIFACE menu driven operational system.

4.2.1 *Indirect Jump*
The address to jump to is poked into &2000 and &2001
HEX. Poke the low byte into &2000, the high byte into
&2001. A value &80 - &8E is poked into &2002 to select
screen mode and ROM setting (see 5.9 for details). On a
6128, poke &2003 with a value &C0 - &C7 to select which
bank of RAM you wish to jump to. Having set up these
values, pressing J from the 1st menu will cause the
code to execute from the address selected with all
parameters as set up.

4.2.2 *Direct Jump*
If you wish to jump directly to an address set up in
4.2.1 as soon as the RED button is pressed, the keyword
RUN (&52 &55 & 4E) must be poked into &2005-&2007.
To give an example of how this might be used, poke
zeroes into &2000-3 and RUN into &2005-7. Pressing the
red button will freeze the screen, pressing any key
will then allow the program to continue again.
If you want to disable direct jump, the addresses
&2005-7 can contain anything OTHER than RUN. At any
time you can exit by pressing any key before or at the
same time as you press the RED button: this will over-
write the R of RUN in &2005 and the MULTIFACE 2 main
menu will re-appear. Once this has happened things go
back to normal and pressing the RED button will
initiate normal MULTIFACE operation.

5   TOOLKIT

5.1   *Accessing the Toolkit*
Press t from the main menu to obtain the toolkit menu:
ESC   <ESCAPE> key   Back to main menu
RET   <ENTER> or <RETURN> key   PEEKing & POKEing
SPC   SPACE key   Alter current address
hex   'H' key   Toggle display hex/dec
reg   'R' key   Display Z80 registers
win   'W' key   Open a display window
pal   'P' key   Inspect colour palette
info   'I' key   Information
sel   'S' key   Select RAM bank

5.2   *ESCAPE key*
Pressing ESC at any time brings you to the main menu.

5.3   *<ENTER> (6128 <RETURN>) key*
Pressing the RETURN key on 6128 or large 464 ENTER key
shows the value of the current address in Decimal or
Hex (see 5.5). If you enter 0-255 in decimal, &00-&FF
in hex, it will be POKEd into the current address.
Illegal values or upper case letters in hex are
ignored. If you wish to inspect only, do not enter any
number, just <ENTER> again and the contents of the next
consecutive address will be displayed, and so on.

5.4   *SPACE key*
Pressing the space key enables you to enter an address
(in Hex or Decimal — see 5.5) which you wish to inspect
or alter. You will now be able to alter and inspect
successive addresses as detailed in 5.3 above.

5.5   *'H' key*
This toggles the bottom display and input line between
Hex and Decimal. When you input a number please ensure
which mode you are in: MULTIFACE has no way of knowing
whether a number was meant to be in hex or decimal.

5.6   *'W' key*
Pressing W opens a window with 7 lines of 8 bytes each
centred on the current memory address. The original
display can be recovered intact by pressing 'w' again.
The current address is shown with an inverse cursor.
Addresses in the window are always in Hex, irrespective
of the setting of the hex/decimal flag. On the right
hand side you can see the ASCII equivalents making it
easy to inspect or alter text.
The left and right cursor keys move the cursor as you
would expect, but the up and down cursors move the
display up and down through memory, keeping the cursor
in the middle line. This means that pressing the up
cursor effectively moves- the display DOWN a display
line and vice versa. The cursor position is reflected
in the bottom line where the address automatically
changes as you move the cursor around. Similarly if you
change the value, it will be altered in both sides of
the window — in hex and ASCII.

NOTE: When using window in conjunction with the P, R or I
commands (see below), the inverse cursor will NOT necessarily
be in the left most column. It will, however be over the 1st
memory location used by the commands to store information.
P, R and I commands point you to where the MULTIFACE stores
relevant information and as with the rest of the Toolkit
functions, this information is presented in bytes, not, for
instance with pallette, in true colours, etc.

5.7   *'R' key*
At the moment of pressing the red button, MULTIFACE 2
stores the contents of all the registers in its own
RAM. Pressing the r key allows you to inspect and alter
them at will. Each successive location stores the
contents of a single 8 bit register or of half a 16 bit
register. In all cases, registers are stored in Intel
format with the low byte first, followed by the high
byte. The order in which- they are stored is as follows:
     IY IX BC' DE' HL' AF' BC DE R- I- HL AF SP
The program counter is stored at the address pointed to
by the Stack pointer (SP).
Thus, on pressing 'R', you will see the memory location
16102, its contents and letter 'Y' — the low byte of
the IY register pair. Press <ENTER> to see the next
address (16103), its value and letter I, i.e. the high
byte of the IY register pair.
Please ensure that you always look at the right RAM
Bank (found in INFO).

5.8 *'P' key*
Just as with the Z80 registers, the toolkit saves the
border colour and the 16 currently selected palette
colours in successive memory locations. Pressing 'P'
will allow you to inspect and alter these values. You
should note that as this information is derived from
the CRT video controller, they are shown as hardware
colours, as described in Appendix A below and in
Appendix page 5.1 in the firmware guide, Soft 968.

Many programs use completely non standard screen handling and
set ink colours permanently. With these programs, altering
the palette colours may allow you to make a permanent change
to the inks displayed. Other programs, however make use of
the standard screen pack or a variation of it and with these,
if you try altering colours using this feature, you will
notice a brief flash of the new colour only. This is caused
by the way in which the Amstrad displays all its colours. In
effect, ALL colours are flashing colours, but with steady
colours, the two components are the same. The net result of
this, is that under normal operation, the palette colours are
reset at every flash, the frequency of which is set from
BASIC by SPEED INK.

If you wish to make a permanent change to your colours, and
altering the palette directly is ineffective, you will have
to alter either the program or system variables which control
ink colours. On the 6128 and 664, the ink colours are
normally stored in 32 successive bytes from &B1DA, each ink
taking two bytes, one for each component. These values are
the normal software grey scale colours.

Be warned, however, that direct use of the system variables
is not allowed for by Amstrad and that the 464 and possibly
later versions of the ROM may well use different absolute
addresses. Furthermore, there is no guarantee that any
particular program either preserves, or uses the system
variables. Under normal operation the firmware entry vector
SCR SET INK at &BC32 will always set a particular ink colour
for any CPC. See Soft 968 page 15.107 for further details.

The matter of screen handling can vary enormously from
program to program and it is impossible to make
generalisations as to how a particular program controls
colours. If you are unable to work out for yourself how to
change the colours in any particular program, please DO NOT
contact Romantic Robot as they will not be able to help you!

5.9 *'S' key*
This is used to select the MULTIFACE 2 RAM by pressing
the */: key (key no 29). You will notice that a *
appears in front of the bank number. This shows that
the MULTIFACE 2 RAM is paged in (over the lower half of
the 16k block 0). If you want to return to the Amstrad
RAM, just press the */: key again.
In addition to paging in the MULTIFACE 2 RAM, pressing
S will allow you to page in a particular bank of RAM on
the 6128. Beneath the display on the bottom line, you
will see the number of the currently selected RAM bank.
Pressing S followed by a number 0-7 will page in that
RAM bank and you will see the RAM select number alter.

TOOLKIT (contd)

5.10 *'I' key*

Pressing i displays a series of bytes relating to the status of the computer at the moment the red button was pressed. In particular, you can find out crucial information about the CRTC and some system variables. 23 bytes contain the information and the first 16 of these show the contents of registers R0 to R15 of the 6845 chip as follows. N.B. Be warned that random alteration will give some VERY odd results.

R0 Total No. of horizontal char. spaces available (0-255)
R1 Number of characters displayed horizontally (0-255)
R2 Horizontal synch (position 0-255)
R3 Length of synchronisation (0-15)
R4 Total number of rows available (0-127)
R5 Vertical synch (0-31)
R6 Number of characters displayed vertically (0-127)
R7 Vertical synch (position. 0-127)
R8 Interlace mode (0-3)
R9 Scanning (0-31)
R10 Start line of cursor scan (0-31)
R11 End line of cursor scan (0-31)
R12 Most significant byte of starting address of video RAM, offset from 16383. (0-16383)
R13 Least significant byte of video RAM from 16383 (0-16383)
R14 Most significant byte of cursor position
R15 Least significant byte of cursor position

Byte 17 Screen start address in the system variables (LSB)
Byte 18 Screen start address as above (MSB)
Byte 19 Mode and ROM setting. This is bitwise information, with Bit 7 always set, Bits 6 & 5 always reset, Bit 4 should contain 1 (reset interrupting device to 0) Bit 3 controls the selection (0) or deselection (1) of upper ROM, Bit 2 as Bit 3 but for lower ROM and Bits 1 & 0 being mode control bits.

Bit 1	Bit 0	Mode
0	0	Mode 0
0	1	Mode 1
1	0	Mode 2
1	1	Illegal- do not use.

Byte 20 Information as to RAM page selected (C0-C7)
Byte 21 Interrupt mode (0-2)
Byte 22 Interrupts enabled (1) or disabled (0)
Byte 23 Basic ROM type.

APPENDIX A

CPC Colours Software and Hardware Colour Numbers

Colour	Soft	Hard	Colour	Soft	Hard
Black	0	20	Pastel Blue	14	31
Blue	1	4	Orange	15	14
Bright Blue	2	21	Pink	16	7
Red	3	28	Pastel Magenta	17	15
Magenta	4	24	Bright Green	18	18
Mauve	5	29	Sea Green	19	2
Bright Red	6	12	Bright Cyan	20	19
Purple	7	5	Lime	21	26
Bright Magenta	8	13	Pastel Green	22	25
Green	9	22	Pastel Cyan	23	27
Cyan	10	6	Bright Yellow	24	10
Sky Blue	11	23	Pastel <ellow	25	· 3
Yellow	12	30	Bright White	26	11
White	13	0			