RESEARCH MACHINES

RELEASE NOTE

Extended BASIC for Stand-alone 480Z Disc Systems and Chain Network Systems

This release note gives information about the two versions of the BASIC interpreter on the distribution discs supplied with your stand-alone 480Z disc system, with your Chain network system, or with your upgrade kit.

Also, there is information about running the demonstration programs supplied on these discs as well as other important information.

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Configurations of the two Versions of BASIC

The version numbers of the two interpreters supplied to you are:

- Extended BASIC, Version 6.3B*

- Extended BASIC, Version 5.3G

The BASIC6 interpreter has more facilities and uses more memory space than the BASIC5 interpreter. Consequently, you have the choice of running more advanced programs with BASIC6, or less advanced but larger programs with BASIC5.

For each interpreter there are three configurations; each configuration contains a different level of high resolution graphics and needs a different amount of memory:

- BASIC6.COM   -   Extended BASIC, Version 6.3B* without high resolution graphics.

- BASIC6G.COM   -   Extended BASIC, Version 6.3B* with level 1 high resolution graphics.

- BASIC6G2.COM   -   Extended BASIC, Version 6.3B* with level 2 high resolution graphics.

- BASIC5.COM   -   Extended BASIC, Version 5.3G without high resolution graphics.

- BASIC5G.COM   -   Extended BASIC, Version 5.3G with level 1 high resolution graphics.

- BASIC5G2.COM   -   Extended BASIC, Version 5.3G with level 2 high resolution graphics.

The memory requirements for these configurations are given in a later section of this release note.

Where the Files are Held (Stand-alone 480Z Disc Systems)

Your 5.25-inch, double-density master system disc contains all six configurations of the interpreters on the reverse side (side C). The level 2 high resolution graphics configuration of BASIC6 (a file called BASIC.COM) is also present on the first side (side A).

The 5.25-inch, double-density welcome disc contains a copy of the BASIC5G2.COM file on its first side (side A).

Where the Files are Held (Release 2.0 and later Networks, double-density)

All six configurations of the interpreters are contained on the reverse
side (side C) of your BASIC distribution disc. The first side (side A)
contains a file, BASIC.COM (BASIC 6.3B* with level 2 high resolution
graphics), and a number of example programs.

If you have just recieved a new network:

●   In non-winchester systems, your network server disc contains a copy
     of the BASICSG2.COM file and a demonstration file (DEMO.BAS) on its
     first side (Side A).

●   In winchester systems, your network server disc contains the
     BASICSG2.COM and DEMO.BAS files on side A. In addition there are
     copies of these files on side A of your winchester maintenance disc.

Where the Files are Held (Networks prior to Release 2.0, single-density)

All six configurations of the two interpreters are contained on the BASIC
distribution disc.

If you have 5.25-inch system, the configurations are distributed on both
sides of the disc. No demonstration programs are provided with this
system.

If you have an 8-inch system, all six configurations are on side A of the
disc. In addition, there is a BASIC.COM file (BASIC 6.3B* with level 2 high
resolution graphics) and a small number of demonstration programs on
side A.

How To Run Demonstration Programs

If you have a stand-alone 480Z disc system, your welcome disc contains some
demonstration programs that can be run by following the instructions on
page 4.3 of the manual: Link 480Z Disc System Users Guide.

Purchasers of a new 480Z disc system can also run a demonstration program
held on the master distribution disc. This is in the file called
MEMBER.BAS on side C of the disc. Assuming that you are logged on to side
C, enter:

        BASIC6 MEMBER<RETURN>

and a random access file program will run.

If you have a Chain network system, your BASIC distribution disc contains
some demonstration programs (not 5.25-inch, single-density systems). To
find out how to load the CP/NOS operating system and run programs, consult
the manual: Network Release 2.1 Users Guide.

To run the demonstration programs, ensure that your BASIC disc is in the correct logical drive, and enter at your station:

>   BASIC START <RETURN>

The demonstration programs will now start running. Each program will start automatically when the previous one has finished. If you want to interrupt a program and move to the next one, enter <CTRL/Z>.

Manual to be used with these Versions of BASIC

You will have been supplied with the BASIC manual:

Extended BASIC Versions 5 & 6 for Disc and Network Systems Reference Manual, PN 11006.

The descriptions of those features and commands of Extended BASIC, Version 6 that are not implemented in Extended BASIC, Version 5 are shown in half tone.

Some points should be noted:

BASIC 5 and 6

1)   Saving files in internal format

Having saved a program in internal format (with FSAVE), reloading it using a version with different graphics support will give problems. The program will not run or list correctly.

If this does happen, change to the version that you were using when you saved the program, reload the program, and save it with the SAVE command.

Also, when editing a program saved in internal format, edited lines or newly entered lines may appear at the end of the program on listing, rather than in the correct sequence. In this case, the program will not execute correctly.

To overcome this, save the program with the SAVE command, then reload it.

2)   The RENAME command

This command gives the wrong error message ("Write Error") when it cannot find the file to be renamed. The message should be "File Not Found".

BASIC 5 ONLY

If you have an Anadex printer attached to your 480Z or network, there is a problem with the <CTRL/P> facility (printer echo) that produces output to both screen and printer. With an Anadex printer, the output is in condensed typeface.

If you do not want condensed typeface, use the LPRINT command instead of the printer echo facility.

BASIC 6 ONLY

There are points concerning functions, random access files, and the RENUMBER command.

1)   Functions

- If you try to return a string from a numeric function, or vice versa, no type mismatch error is given and unpredictable results can be obtained.

- consider an expression that includes array references and function calls, such as:

      W$(I) = W$(I) + FN RN$()

   If a new variable is created inside the function, the returned value from the expression will not be the expected one.
   To avoid this problem, you can do the evaluation in two or more stages to avoid mixing array references and function calls. Or you can ensure that no new variables are created inside the function; do this by initializing the variables before calling the function. Array elements perform correctly if passed as arguments to the function.

- If you have a program that contains a statement like this:

      A = FNA(FNB())

   a "type mismatch" error will be given on return from function FNA. The error occurs only if FNB has no arguments. This problem can be solved by using two statements instead of one:

      T = FNB()
      A = FNA(T)

2)   Random access files

- When using random access files in lock mode on a Chain network, it is possible for an error to occur during an open operation.

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For example, a station may receive the error message:

File locked

when this happens, other stations cannot access that file, unless they are in lock mode. To allow access by stations that are not in lock mode, a RESET command should be issued.

● If you try to open a random access file when in read mode, and if that file does not exist, an error message is displayed:

File open for reading only

even though the file does not exist.

● If you try to open a random access file on a channel containing another open file, problems can occur. Wherever possible, close a file before opening another one.

Peculiar effects will occur if you open any files on channel 34.

3)   The RENUMBER command

If you use the RENUMBER command more than once, incorrect errors will be reported. To avoid problems, save your program and restart BASIC before a second renumbering exercise.

Memory Requirements of the three Configurations of each BASIC Interpreter

Below are details of memory requirements of the versions of BASIC provided:

BASIC6
- File name BASIC6.COM
- BASIC version 6.3B*
- Start address 100
- Restart address 103
- Memory address limits . 100 - 5221 hex

BASIC6G
- File name BASIC6G.COM
- BASIC version 6.3B*
- HRG (level 1) version . 2.0 D
- Start address 100
- Restart address 103
- Memory address limits . 100 - 5E43 hex

BASIC6G2
- File name BASIC6G2.COM
- BASIC version 6.3B*
- HRG (level 2) version . 1.1 Z
- Start address 100
- Restart address 103
- Memory address limits . 100 - 6D3F hex

BASICS
- File name .... BASICS.COM
- BASIC version 5.3G
- Start address 100
- Restart address 103
- Memory address limits . 100 - 3805 hex

BASICSG
- File name .... BASICSG.COM
- BASIC version 5.3G
- HRG (level 1) version . 2.0 B
- Start address 100
- Restart address 103
- Memory address limits . 100 - 4416 hex

BASICSG2
- File name BASICSG2.COM
- BASIC version 5.3G
- HRG (level 2) version . 1.1 J
- Start address 100
- Restart address 103
- Memory address limits . 100 - 5312 hex

Adding Machine-Language Routines

The start of BASIC contains a number of jumps and vectors. These will be
of interest if you wish to add machine-language routines to the
interpreter. This listing contains the values of all the symbolic
locations mentioned in chapter 18 of the Extended BASIC, Versions 5 & 6
manual. The addresses of the routines themselves will vary from version to
version, and are represented here as zeros.

```
0100  C30000    0165  BASIC:      JP    INIT       ;INITIALIZE ENTRY POINT
0103  C30000    0167  REST:       JP    ERR.RC     ;RECOVERY ENTRY POINT
0106  C30000    0167  USR:        JP    ERR.FC     ;USR DEFINED JUMP
0109  C30000    0168  USRVF:      JP    CVRLIN     ;USR SUBROUTINE TO GET VAR
010C  C30000    0169  USRVT:      JP    CS 16R2    ;USR SUBROUTINE TO PASS VAR
010F  C30000    0170  SAVVAR:     JP    SAVINT     ;SAVE INTEGER IN VAR
0112  C30000    0171  OUTMX:      JP    .OUTM      ;PRINT MESSAGE
0115  CD0000    0172  E.ERR:      CALL  ER.EXT     ;EXTERNAL ERROR
0118  0000      0173  BBUFV:      DEFW  ENDIT      ;END OF BASIC
011A  0000      0174  SUBPTR:     DEFW  0          ;POINTER TO SUBS
011C  0000      0175  ENDMEM:     DEFW  0          ;END OF MEMORY
011E  0000      0176  BRFCB:      DEFW  RFCB       ;READ FCB
0120  0000      0177  BWFCB       DEFW  WFCB       ;WRITE FCB
0122  424153    0178  DEFEXT:     DEFM  'BAS'      ;DEFAULT EXTENSION
0125  C9        0179  INITSUB:    RET              ;USER INITIALISATION VECTOR
0126  00        0180              NOP
0127  00        0181              NOP
0123  000000    0182  CH.INPUT:   CALL  CHARIN     ;GET BYTE FROM SPECIFIED
                                                   ;INPUT CHANNEL
012B  000000    0183  CH.OUTPUT:  CALL  CHAROUT    ;PUT BYTE TO SPECIFIED
```

It should be noted that CH.INPUT and CH.OUTPUT did not exist in previous
versions of Extended BASIC, Version 5.