

## Change log for MMBasic Ver 2.4

- Fixed an issue which caused glitches or noise on the video output while a BASIC program was running. This particular issue caused random horizontal lines of pixels to be intermittently shifted 8 pixels to the right when MMBasic was running a program (ie, not waiting for user input).
- A bug which caused the unary negation function to fail has been fixed. For example, PRINT -SIN(2) now works.
- Fixed a bug which caused the RENUMBER command to miss renumbering a GOSUB embedded in an IF...THEN...ELSE command.
- Fixed a bug which caused negative numbers in DATA statements to be returned as positive numbers. As a side result you can now use numeric expressions (eg, 8 \* 60) in DATA statements.
- The RUN "file" command now checks if "file" exists before clearing the program currently in memory. This means that if used with OPTION ERROR CONTINUE you can recover from an error when trying to run one program from within another.
- The semicolon character (;) is now optional between expressions in the print statement. For example, you can now use: PRINT "Voltage is " x "mV"  
This was added to improve Microsoft compatibility.
- Updated the "Maximite User Manual" to V2.4 to include the new features listed above

## Change log for MMBasic Ver 2.3

- Fixed a timing error which caused all timed functions (date, time, pause, etc) to run fast.
- Fixed a bug in the SOUND function which caused a greater than usual error in the frequency of the sound.
- Fixed a bug where UNTIL was not recognised in the LOOP command.
- Fixed a bug which in some circumstances could cause an exception (a reset) when loading a program that was too large for the program space.
- Fixed a bug which occasionally caused the EXIT FOR command to fail.
- Fixed a bug which caused IRETURN to fail when returning from an interrupt which had interrupted a PAUSE command.
- The internal mechanism for tokenising keywords (ie, command names, etc) has been changed to allow more keywords to be added to the language in the future. As a side effect the rules for naming variables has been relaxed (See the "Maximite User Manual V2.3" for details). In particular, it is now valid to have a variable name which is the same as a command name.
- Added the function PIXEL(x,y) to find the value of a pixel on the VGA or composite screen and the statement PIXEL(x,y) = to turn a pixel on or off. This supersedes the PSET and PRESET commands that are now only included for Microsoft compatibility.
- Added the command SAVEBMP file\$ which will save an image of the current VGA or composite screen as a BMP file on the SD card.
- Added the command RENUMBER which will renumber the program currently held in memory including all references to line numbers in commands such as GOTO, GOSUB, ON, etc.

- Added the ability to use a line number with the RUN command to start the program at a specified line number (this was documented in V2.2 but not implemented).
- Added the question mark symbol (?) as a shortcut for the PRINT command/keyword.
- Updated the “Maximite User Manual” to V2.3 to include the new commands and other changes.

## Change log for MMBasic Ver 2.2

- An error is now thrown when concatenating two strings with a combined length of greater than 255 characters (previously this would cause the interpreter to crash).
- MMBasic now throws an error when presented with an input line of greater than 255 characters (previously it just discarded the extra characters).
- Fixed a bug in the PRINT command which caused an intermittent crash on the construct:  
PRINT #n (ie, no following comma)
- On an internal crash (caused by a bug in MMBasic) the Maximite will now restart with a suitably apologetic error message.
- The keyboard is now checked every 20 $\mu$ S (previously it was every 25 $\mu$ S) to improve reliability in detecting keystrokes.
- The MEMORY command has been added. This will list the three memory segments used by MMBasic and the amount of space used in each.
- The Maximite User Manual has been updated to version 2.2. This contains minor updates to clarify some parts of the text and add the MEMORY command. Other than this there has been no significant change to the description of the commands or functions used in MMBasic.