# MicroGraph

## Business Graphics for Amstrad CP/M 2.2

## Soft 1014

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**IF YOU ARE GOING TO RUN MicroGraph WITHOUT READING THE MANUAL PLEASE AT LEAST READ GETTING STARTED ON PAGE 1.1 FIRST.**

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# 1. OVERVIEW

## Getting Started

1. *MicroGraph* runs under CP/M not AMSDOS so first make sure you have loaded CP/M into your computer. If you are unsure as to how to do this consult the relevant section of your Amstrad disc drive or computer operating manual.

## First steps using the CP/M disc

2. If you haven't already done so for goodness sake make a security copy of your *MicroGraph* disc. See APPENDIX A of this manual if you need details of how to do this. Your copy of *MicroGraph* is on a vendor format disc.

3. Put a working disc containing the *MicroGraph* programs into the disc drive. If you are not already in CP/M type:

   `ICPM` **[ENTER]**

   If you are already in CP/M make sure the disc is 'logged in' by typing **[CTRL] C.**

   At the '**A>**' prompt type:

   `GRAPH` **[ENTER]**

4. A spreadsheet of the default size will be set up for you so press the **[SPACE BAR]** to start the program. If you want to change the number of ROWS and COLUMNS or to start a new protected worksheet use the `NEW` command by pressing the **[CTRL]** and **[N]** keys at the same time.

5. For a list of the COMMANDS available to you press **[CTRL]** and **[H]** or to enter DATA onto the sheet simply start typing.

6. If you are using *MicroGraph* for the first time do yourself a favour and work through the examples in this manual.

# INTRODUCTION

*MicroGraph* is a disc based graphics program using spreadsheet generated data for your Amstrad microcomputer and DDI-1, 3 inch disc drive. The program runs under the CP/M operating system supplied with your disc drive - it will NOT run under AMSDOS.

Before you do anything else please make at least one back up copy of *MicroGraph* then put the original disc somewhere safe. We strongly recommend that you only use the original disc for the purpose of making working copies. See APPENDIX A of this manual for details of how to do this.

The *MicroGraph* program comprises 54K of machine code and can handle data files of approximately 14K. So how does a total of 68K of program and data fit into the 38.5K of free space available on the Amstrad computer when running in the CP/M 2.2 operating system. The answer is the use of OVERLAYS - the name given to storing parts of your program on disc and only reading them into the computer when those parts are needed (OVERLAYING the program segments which were already there).

By using overlays it is possible to run a much larger and more powerful program into a given space than would otherwise be the case. There are, however, several points which arise from this form of design which you should be aware of:

1) If you are using a SINGLE disc system then both the PROGRAMS and DATA FILES must be on the same disc.

2) Once you have started the program running you MUST NOT remove the disc from the drive(s) until you QUIT or you could lose your valuable data.

3) As the program runs you will occasionally hear the disc drive running as program segments are loaded when needed.

4) the program can NEVER be run as a cassette based program even if you transfer all the overlay files to cassette.

In addition to drawing graphs and charts from data entered via the keyboard, *MicroGraph* will also read files created by the *Microspread* program so that you can create business graphics from your calculated figures. Once drawn your charts can be output to a printer through the built in SCREEN DUMP or saved to disc as an electronic SLIDE. Such SLIDES can be called back at a later time by using the SLIDESHOW program, which is part of the *MicroGraph* package, giving you a powerful display tool for illustrating meetings and presentations. (See APPENDIX B for details of SLIDESHOW operation).

# 2. HINTS, TIPS, DO'S & DONT'S

**DO** work through the written examples at the keyboard of your computer as this will quickly familiarize you with the commands and structure of *MicroGraph*.

**DO** make regular back up copies of your data discs (see APPENDIX A for precise instructions on how to do this). Remember discs are cheap - your time isn't.

**DON'T** keep your back up copies with the originals.

**DON'T** expose your discs to

HEAT
MOISTURE
MAGNETS
STICKY FINGERS

**DON'T** Close the write protect hole shutter on the original program disc.

**DON'T** Remove your disc from the drive after loading the program until you exit using QUIT. This could result in a program crash or loss of data.

**DON'T** Turn off the power to the computer or disc drive whilst the program is running or with a disc still in the drive.

**DO** Make sure that your disc has enough room to store any NEW spreadsheet file you may create BEFORE you start an important new worksheet. If the disc hasn't enough room then you could lose data. Note - a full size spreadsheet uses about 15K of disc.

**DON'T** Try to cram too much information onto a single chart. Remember that the object is to convey a clear message which can be easily understood.

**DON'T** Resave a file generated by MicroSpread, otherwise the file will no longer be readable by MicroSpread.

# 3. PRACTICAL EXAMPLES

In order to familiarize yourself with the features of *MicroGraph* it is a good idea to work through the examples given here before starting to use live data of your own. To minimise the amount of preparatory work which you need to do the data and some slides have been saved onto your distribution disc so that you can start producing graphs and charts right away. PLEASE DO NOT USE YOUR DISTRIBUTION DISC WHEN USING THESE EXAMPLES BUT MAKE A WORKING COPY AND USE THAT. For instructions on making security copies please refer to APPENDIX A.

For an easy introduction to *MicroGraph* we will start with the SLIDESHOW program and six ready saved SLIDES. Put your working copy disc into the drive (drive A if you have two disc drives). If you are not already in CP/M type:

```
ICPM [ENTER]
```

If you are already in CP/M make sure the disc is logged in by typing **[CTRL] C**.

At the '**A>**' prompt type:

```
SLSHOW [ENTER]
```

After the program has sorted out which files on the disc contain slide information start the program off by pressing the **[SPACE BAR]**. Next select option A on the short menu and you will be shown a list of available SLIDES. To select a SLIDE for viewing simply type in its number (in the range 01 to 40) and the chart saved as a slide will be redrawn on the screen. Note that for slide numbers below 10 you must use a leading zero but there is no need to press the **[ENTER]** key.

The colour combinations in the six example slides are all different to show off just some of the possibilities but there are many other effective combinations just waiting for you to discover them. If you want to take a hard copy of any of the slides then simply make a SCREEN DUMP by pressing -

**[A]** if you are using an Amstrad DMP-1 Printer, or
**[P]** if you are using an Epson type Printer.

If you get this selection the wrong way round your Printer will produce garbage.

These slides were produced by *MicroGraph* from the data stored in the file called RAIN which is also on your distribution disc. To produce more slides QUIT the SLSHOW program by pressing **[Q]**uit then type:

```
GRAPH [ENTER]
```

to start the main *MicroGraph* Program. Data entry is through a spreadsheet type format except that *MicroGraph* cannot handle formulae. You move the CURSOR around the spreadsheet by using the CURSOR KEYS on the upper right section of

your Amstrad keyboard. Whenever you press any other grey key then the character is printed to the screen at the current CURSOR position. Before LOADING the RAIN file from disc experiment a little with both text and number entry so as to get a feel for the way it works. If you want to enter a vertical column of figures press the keys **[CTRL]** and **[V]** together then enter your numbers via the numeric keypad, pressing **[ENTER]** at the end of each one. In this mode *MicroGraph* behaves rather like a till roll adding machine which is a very fast way of entering a lot of numbers. Pressing **[CTRL] V** again returns you to the normal 'electronic typewriter' mode. (Note that you can enter numbers in either mode - it's just the automatic CURSOR movement that's different.)

Should you enter a decimal number and find that only the INTEGER part is displayed it is because you have not specified the number FORMAT for the CELL in which the number has been entered. You can do this GLOBALLY by using BLOCK FORMAT or individually by using FORMAT (**[CTRL] F**).

LOAD in the RAIN file by using the following sequence of keystrokes -

**[CTRL] [L]**
**[Y]**
**[R] [A] [I] [N] [ENTER]**
**[Y]**
**[A] [M] [S] [T] [R] [A] [D] [ENTER]**
**[N]**

You are now ready to draw the first chart; start by using the command TYPE which is invoked by pressing -

**[CTRL] T** then continue with

**[A]** selects single series bar chart.

You then proceed by using the CURSOR to point to the start and finish CELLS from which the graph X AXIS LABELS are to be taken. This process is called FIXing. Note that the label is taken as the first FIVE characters of each CELL in the ROW or COLUMN which you have indicated.

To FIX a series of CELLS move the CURSOR to the desired point by using the CURSOR KEYS then press **[ENTER]** or you can, optionally, substitute a JOYSTICK and use the FIRE button instead of **[ENTER]**.

After FIXing the LABEL ROW COLUMN use the CURSOR to point to the ROW COLUMN start and finish points for the graph data by FIXing them in the same way. You will be prompted by the computer throughout this process and your actions checked for errors. However, making a mistake is not at all serious and you cannot harm your data in any way by this process.

Complete the operation by entering TITLES for the whole graph and for the Y AXIS and entering a SLIDE TITLE.

This last item will only be used if you should SAVE the SLIDE after DRAWing the chart on the screen. Note here that the slide title will not appear on any CP/M disc directory but only on the internal SLIDE DIRECTORY composed by the SLSHOW program.

Next enter the values for the TOP and BOTTOM of the Y AXIS scale. The value range encompassed by these values must be EQUAL to or GREATER THAN THE DATA to be plotted (i.e. you can't chop data off at the edge of the Plotting area).

To view your graph press **[CTRL] D** whereupon you will have the following key options -

| | |
|---|---|
| **[A] or [P]** | Screen dumps as described above |
| **[S]** | Saves this screen as a slide |
| **[Q]** | QUIT return to spreadsheet |

If you want to experiment with different colours then use the COLOUR command invoked by **[CTRL] C**, You do NOT have to use the TYPE command again after changing colours.

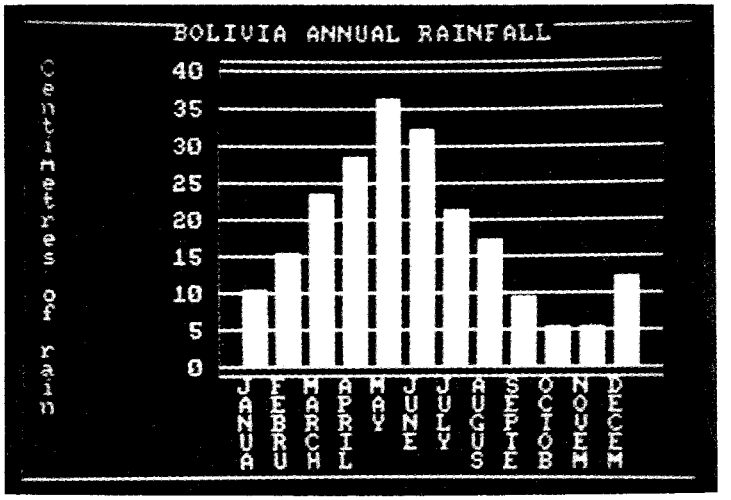
You can also change your data and re-draw without re-using TYPE but if any of the revised values fall outside the range of your original Y AXIS values then the program will automatically re-scale the graph so that all of the data fits on the screen.

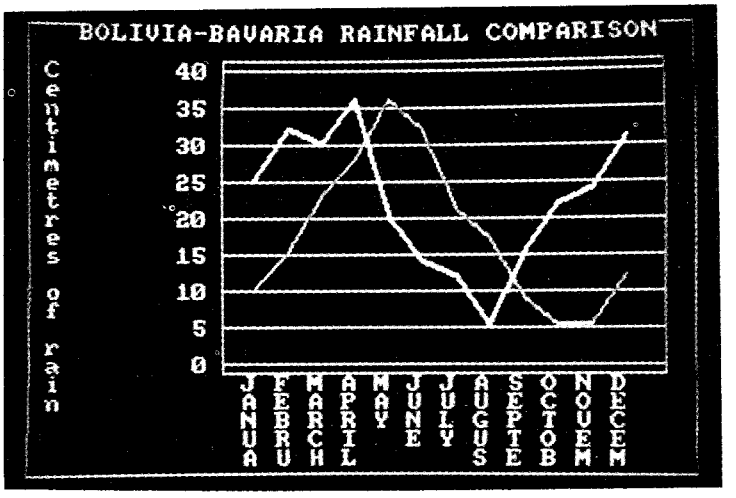
The data editor has been designed in a way which will allow you to use it much like an electronic typewriter (we won't claim that its proper Word processing) and so, with selective use of the PRINT command, you can print text, tables of numbers and high resolution graphs and charts all on the same page.

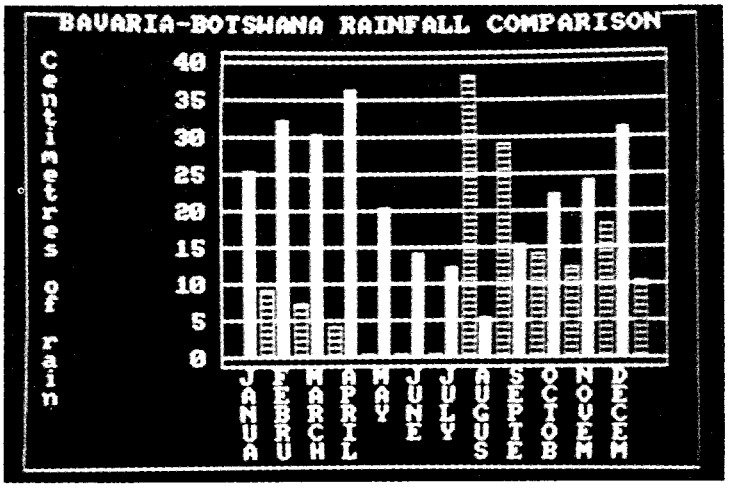
# DATA USED IN EXAMPLE SLIDES

| | BOLIVIA | BAVARIA | BOTSWANA |
|---|---|---|---|
| JANUARY | 10 | 25 | 9 |
| FEBRUARY | 15 | 32 | 7 |
| MARCH | 23 | 30 | 4 |
| APRIL | 28 | 36 | 0 |
| MAY | 36 | 20 | 0 |
| JUNE | 32 | 14 | 0 |
| JULY | 21 | 12 | 38 |
| AUGUST | 17 | 5 | 29 |
| SEPTEMBER | 9 | 15 | 14 |
| OCTOBER | 5 | 22 | 12 |
| NOVEMBER | 5 | 24 | 18 |
| DECEMBER | 12 | 31 | 10 |

# EXAMPLE SCREENS



# 4. REFERENCE SECTION

## COMMAND — BLOCK commands.

## ACTIVATED BY — [CTRL] B

## ACTION

Many commands can be made to work throughout a defined rectangular BLOCK of cells. The BLOCK may be as small as one cell or as large as the whole spreadsheet. To define a block you must FIX the TOP LEFT HAND CORNER and the BOTTOM RIGHT HAND CORNER of the rectangle. FIXing is achieved by placing the CURSOR in the cell to be FIXED then pressing the **[ENTER]** key.

## NOTES

1. Commands which may operate on a BLOCK of cells are:-

   **[CTRL] B C** Copy cells.
   **[CTRL] B E** Erase cells.
   **[CTRL] B F** Format cells.
   **[CTRL] B M** Move cells.
   **[CTRL] B Z** Zero cells.

2. Block commands are not available to LEVEL ONE users.

## COMMAND — BLOCK COPY

**ACTIVATED BY** — **[CTRL] B C**

**ACTION**

Copies a user defined BLOCK of CELLS to a chosen area of the spreadsheet leaving the original BLOCK intact. The COPY is completed in that TEXT, VALUES, and FORMAT are reproduced in the BLOCK.

## COMMAND — BLOCK ERASE

**ACTIVATED BY** — **[CTRL] B E**

**ACTION**

ERASES the contents of all the CELLS throughout a user defined BLOCK. This process sets all those CELLS to the original state when the program was first loaded i.e.

| | |
|---|---|
| TEXT of | 9 spaces |
| FORMAT | 0 decimal places |
| VALUE of | 0 |

This command should be used with care as its effects cannot be easily reversed.

**COMMAND** **BLOCK FORMAT**

**ACTIVATED BY** **[CTRL] B F**

**ACTION**

Performs the FORMAT command (see page 4.7 ) on every CELL in a user defined BLOCK. This eliminates the need for you to set each CELL format individually.

**COMMAND** **BLOCK MOVE**

**ACTIVATED BY** **[CTRL] B M**

**ACTION**

A user defined BLOCK of CELLS is COPIED to a chosen new location and then the original area occupied by those cells is ERASED. The copy action is complete in that TEXT, VALUES, and FORMAT are all MOVED. The CELLS originally occupied will be left completely blank with no VALUE. The MOVE may be made in ANY direction and the new BLOCK location may overlap the original.

**COMMAND** **BLOCK ZERO**

**ACTIVATED BY** **[CTRL] B Z**

**ACTION**

Performs the ZERO command (see page 4.17 ) on every CELL in a user defined BLOCK. FORMAT of the CELL is unaffected by ZERO.

## COMMAND — COLOUR

## ACTIVATED BY — [CTRL] C

## ACTION

Sets the colours to be used when drawing graphs on the screen. Separate
colours can be used for
BACKGROUND
LABELS and TITLES
MAJOR PLOT COLOUR (used for positive values)
MINOR PLOT COLOUR (used for negative values)

## EXAMPLE:

| KEYSTROKES | COMMENTS |
|---|---|
| **[CTRL] C** | Invokes COLOUR command |
| **A** | Select BLACK background |
| **Y** | Confirm OK |
| **C** | Select BRIGHT BLUE lettering |
| **Y** | Confirm OK |
| **S** | Select BRIGHT GREEN as major colour |
| **Y** | Confirm OK |
| **G** | Select BRIGHT RED minor colour |
| **Y** | Confirm OK |

## NOTES

1. You cannot use a plotting colour which is the same colour as the background.
2. The BORDER changes colour to indicate the colour you have chosen.
3. Colours may be changed without re-specifying the graph TYPE.
4. Screen colours will NOT be reproduced on a colour printer.

## COMMAND — DRAW

## ACTIVATED BY — [CTRL] D

## ACTION

Draws a graph or chart on the screen according to the settings which were last made using the TYPE and COLOUR commands. When the chart is completed you have four options activated by four separate keys.

**[A]** performs a SCREENDUMP to an Amstrad DMP-1 printer.

**[P]** performs a SCREENDUMP to an Epson type printer.

**[Q]** releases the screen and returns you to the spreadsheet.

**[S]** Saves the chart currently on the screen onto disc as a SLIDE using the SLIDE TITLE declared in the TYPE command.

## EXAMPLE

| KEYSTROKES | COMMENTS |
|---|---|
| **[CTRL] D** | Invokes DRAW command |
| **A** | Prints the chart onto Amstrad DMP-1 printer. |
| **S** | Saves the chart as a SLIDE |
| **Q** | Quit this chart. |

## NOTES

1. The chart may be redrawn without using the TYPE command again provided that TYPE has not been used to set up another chart.
2. To re-draw the same chart in different colours the COLOUR command may be used.
3. Saving the same chart to disc, say, twice under the same title, will produce two slides, i.e. the second SLIDE will NOT overwrite the first.
4. If you try to SCREENDUMP to an Amstrad DMP-1 printer using the Epson **[P]** command, or vice versa, the result will be a mess.

## COMMAND — ERASE

## ACTIVATED BY — [CTRL] E

## ACTION

Resets the cell under the cursor to its original state, i.e.

1. text is 9 blank spaces
2. numeric value of zero

This command may also be used over a user defined block (see BLOCK COMMANDS-page 4.2)

## EXAMPLE

| KEYSTROKES | COMMENTS |
|---|---|
| | Move cursor to cell which is to be ERASED. |
| **[CTRL] E** | Invokes ERASE command and erases cell contents. |
| **Y** | Confirms that you want to erase the CELL. |
| **[ENTER]** | Returns you to the 'READY' state. |

## NOTES

1. This command will only work for level one users in an UNPROTECTED CELL.
2. If you press N when asked 'Are you sure you want to erase?' control returns to the READY state leaving your data intact.

## COMMAND — FORMAT

## ACTIVATED BY — [CTRL] G

## ACTION

Allows you to fix the number of decimal places to which any value appearing in the cell will be displayed. You can choose any number of decimal places between 0 and 8. The format will only be set for the cell under the cursor when the command is invoked but FORMAT has a BLOCK counterpart (see page 4.3)

## EXAMPLE

| KEYSTROKES | COMMENTS |
|---|---|
| | Move the cursor to the cell to be FORMATTED. |
| **[CTRL] G** | Invokes FORMAT command |
| **2 [ENTER]** | Format this cell to 2 decimal places. |
| **[ENTER]** | Return to "READY" state. |

## NOTE

1. You can change the format of a cell at any time by re-using the command.
2. The default format is zero decimal places.
3. Formatting a cell containing text has no effect.

## COMMAND — JUMP

## ACTIVATED BY — [CTRL] J

## ACTION

Allows you to direct the CURSOR to any cell on the spreadsheet without using the usual cursor direction keys. This facility is useful when you want to move to a cell some considerable distance away from your current position.

## EXAMPLE

| KEYSTROKES | COMMENTS |
|---|---|
| **[CTRL] J** | Invokes JUMP command |
| **BB** | New column is BB |
| **14[ENTER]** | New row is 14 |

## NOTES

1. The JUMP command is available when using the cursor to 'point' to a cell furing formula enter and when using the BLOCK commands.
2. If you enter an invalid row or column then the entry will be ignored and you will be prompted to enter the value again.,

## COMMAND — LOAD

## ACTIVATED BY — [CTRL] L

## ACTION

Loads a previously SAVED spreadsheet from disc into your computer. After loading you will be prompted to enter your password which will determine whether you are a LEVEL ONE or LEVEL TWO user. More than three unsuccessful attempts at entering the password will abort the program.

## EXAMPLE

| KEYSTROKES | COMMENTS |
|---|---|
| **[CTRL] L** | Invokes LOAD command |
| **Y** | Answers YES to 'ARE YOU SURE?' prompt (N returns you to the current spreadsheet). |
| **FRED [ENTER]** | Filename is FRED |
| **Y** | Confirm filename correct |
| **ABC1 [ENTER]** | PASSWORD IS ABC1 |
| **Y** | Answers YES to 'DO YOU WANT TO CHANGE PASSWORD?' |
| **DEF2 [ENTER]** | New PASSWORD is DEF2. |
| | You can now proceed to work with new spreadsheet. |

## NOTES

1. This command clears any data held in the spreadsheet at the time it is invoked.
2. Please note that the password system is case sensitive and that a password of 'ABC123' is not the same as 'abc123'.

## COMMAND NEW

## ACTIVATED BY [CTRL] N

## ACTION

Creates a new spreadsheet which conforms to the specifications which you enter:

1. number of rows
2. number of columns
3. spreadsheet name
4. LEVEL TWO PASSWORD
5. LEVEL ONE PASSWORD

A new file is created on the disc.

## EXAMPLE

| KEYSTROKES | COMMENTS |
|---|---|
| **[CTRL] N** | Invokes NEW command |
| **Y** | Answers YES to 'ARE YOU SURE?' |
| **20 [ENTER]** | There are 20 rows |
| **25 [ENTER]** | There are 25 columns |
| **FRED [ENTER]** | Spreadsheet name is FRED |
| **ABC1 [ENTER]** | LEVEL TWO PASSWORD is ABC1 |
| **DEF2 [ENTER]** | LEVEL ONE PASSWORD is DEF2. |

You can now start to work with new spreadsheet.

## NOTES

1. A password may contain up to nine characters.
2. Please note that the password system is case sensitive and that a password of 'ABC123' is not the same as 'abc123'.

## COMMAND PRINT

## ACTIVATED BY [CTRL] P

## ACTION

Prints an area of the spreadsheet onto your printer. You define the area as a rectangular block using the CURSOR to point to the TOP LEFT CORNER and BOTTOM RIGHT CORNER of the BLOCK. There is no limit to the length of report but the width is limited to the maximum width of your printer.

## EXAMPLE

| KEYSTROKES | COMMENTS |
|---|---|
| **[CTRL] P** | Invokes PRINT command |
| **80 [ENTER]** | Maximum printer width is 80 characters. |
| **N** | Answers NO to "DO YOU WANT TO USE CONDENSED CHARACTER PRINTING" |
| **[ENTER]** | Use the CURSOR keys to position the cursor then press ENTER - this defines the TOP LEFT CORNER. |
| **[ENTER]** | Define BOTTOM RIGHT CORNER |
| **[ENTER]** | Press enter when paper is aligned and printer is ready. |
| **[ENTER]** | When printing is finished press **[ENTER]** to return to "READY" state. |

## NOTES

1. If you are using an Amstrad DMP-1 printer then you should answer 80 to the prompt ENTER MAXIMUM PRINTER WIDTH - If you exceed this you will get a very untidy report. Please note also that the DMP-1 does NOT support condensed printing.

## NOTES continued

2. If you are using an Epson compatible printer then you can invoke CONDENSED CHARACTER PRINTING from within the spreadsheet. This will normally give the following maximum widths -

   10 inch carriage 120 characters
   15 inch carriage 233 characters

   and these are the figures which should be entered to the prompt ENTER MAXIMUM PRINTER WIDTH.

   If your printer has other character pitch options then in order to use these you must set up your printer using the appropriate codes BEFORE running MicroGraph. When you do this ALWAYS answer NO to CONDENSED PRINTING.

## COMMAND — PROTECT a cell

## ACTIVATED BY — [CTRL] Y

## ACTION

Designates a CELL as one which may only be accessed by a LEVEL TWO USER. This allows you to PROTECT the contents of a cell from accidental or deliberate alteration unless you, as the creator of the spreadsheet, desire it.

Such a facility is useful where, say, price quotations are being prepared and you wish to prevent unauthorised changes to key prices or rates.

## EXAMPLE

| KEYSTROKES | COMMENTS |
|---|---|
| | Move the cursor to CELL AD3. |
| **[CTRL] Y** | Invokes PROTECT command |

Returns you to the READY state.

Cell AD3 may now be changed by LEVEL TWO USERS only.

## NOTES

1. The PROTECT command has a BLOCK counterpart.
2. Protection may be removed only by a LEVEL TWO user with the UNPROTECT command.

## COMMAND — QUIT

## ACTIVATED BY — [CTRL] Q

## ACTION

Terminates execution of the program. The current spreadsheet will be lost unless it has previously been SAVED. So that you do not inadvertantly QUIT and lose your data you will be prompted by 'ARE YOU SURE'. If you press Y then the QUIT command will work. Press N to return to the spreadsheet.

## COMMAND — REPLICATE

## ACTIVATED BY — [CTRL] R

## ACTION

Reproduces the text content of the cell immediately to the left of the cursor. The value of the cell and any formula will be REPLICATED along with the cell FORMAT and TEXT content.

## EXAMPLE

| KEYSTROKES | COMMENTS |
|---|---|
| | Position cursor in cell AA2 |
| **[CTRL] R** | ----$---- appears in cell AA2 |
| **[SHIFT]→** | to move the cursor to next cell |
| **[CTRL] R** | ----$---- appears in cell AA3 |

## NOTES

1. The REPLICATE command obviously will NOT work when the CURSOR is in column AA1 because there is no cell to the left.

## COMMAND — SAVE

## ACTIVATED BY — [CTRL] S

## ACTION

Saves your spreadsheet onto disc under the current filename.

## EXAMPLE

| KEYSTROKES | COMMENTS |
|---|---|
| **[CTRL] S** | Invokes SAVE command |
| **[ENTER]** | Returns you to the "READY" state. |

## NOTES

1. If you are saving a sheet which has been constructed WITHOUT using NEW you will be prompted for a filename before the SAVE is carried out. Under these conditions the passwords will both be AMSTRAD until you change them.

## COMMAND — TYPE (of graph)

## ACTIVATED BY — [CTRL] T

## ACTION

Sets the TYPE of graph to be drawn and FIXES the source locations of the data on the spreadsheet. This routine is also used to control the overall dimensions of the graph and to enter TITLES.

## EXAMPLE

| KEYSTROKES | COMMENTS |
|---|---|
| **[CTRL] T** | Invokes TYPE command |
| **[A]** | Select SINGLE BARCHART |
| **[ENTER]** | Move CURSOR to start point for LABELS then FIX. |
| **[ENTER]** | Move CURSOR to endpoint for LABELS then FIX. |
| **[ENTER]** | Move CURSOR to startpoint for data then FIX. |

| | |
|---|---|
| **[ENTER]** | Move CURSOR to endpoint for data then FIX. |
| **100[ENTER]** | Top of graph value. |
| **0 [ENTER]** | Bottom of graph value. |
| **DEMO BAR CHART [ENTER]** | Graph TITLE |
| **UNIT SALES [ENTER]** | X AXIS TITLE |
| **CARSALES [ENTER]** | Enter SLIDE TITLE |

## NOTES

1. The maximum number of DATA points for each graph type are:

   BAR CHART 60
   LINE CHART 60
   PIE CHART 12
   CLUSTER BAR CHART 30 of each series.
   TWIN LINE CHART 60 of each series.
   BAR & LINE CHART 60 of each series.

2. The TOP of graph value must be equal to or greater than the highest value to be plotted.
3. The BOTTOM of graph value must be equal to or less than the lowest value to be plotted.

## COMMAND — UNPROTECT

**ACTIVATED BY** — **[CTRL] U**

**ACTION**

Reverses the effect of the PROTECT command on a CELL and makes it accessible by LEVEL ONE users. The command has no effect if you had not previously PROTECTED the CELL.

**NOTE**

1. This command has a BLOCK counterpart.
2. This command may only be invoked by a LEVEL TWO user.

## COMMAND — Enter VALUE

**ACTIVATED BY** — **[CTRL] V**

**ACTION**

Allows you to enter numeric values in a way similar to using a printing calculator - i.e. each entry is made in successive CELLS down a column. This means that you can enter a column of figures very quickly. Return to the normal editing mode by pressing [CTRL] V a second time.

**EXAMPLE**

| KEYSTROKES | COMMENTS |
|---|---|
| **[CTRL] V** | Invokes VALUE enter. |
| **123.456 [ENTER]**<br>**456.798 [ENTER]**<br>**891.234 [ENTER]**<br>**[CTRL] V** | Enters the values down a column. Note that if the cells are FORMATTED to, say, 0 decimal places only 123 will be displayed even though 123.456 is stored. |

## COMMAND ZERO

**ACTIVATED BY** **[CTRL] Z**

**ACTION**

Sets the VALUE of the CELL currently occupied by the CURSOR to ZERO. Any FORMULA or FORMAT associated with the CELL are unaffected by the command. ZERO also has a BLOCK command counterpart.

# 5. Glossary of Terms

## BACKGROUND

The plain base upon which all the other images comprising the chart are laid.

## BAR CHART

A method of graphically displaying numeric information where each value is represented by the length of a coloured BAR. A BAR CHART is almost the same as a HISTOGRAM which, in the strictest sense, only applies to frequency distributions in statistics.

## BLOCK

A rectangular collection of CELLS, defined by reference to the CELL in the top left corner of the rectangle and the cell in the bottom right corner. The rectangle may contain only one cell or cover the whole spreadsheet.

## BOTTOM OF GRAPH

The lowest value on the Y AXIS scale. In *MicroGraph* this value must be equal to or less than the lowest value to be plotted. The BOTTOM OF GRAPH value may be positive or negative (See also TOP OF GRAPH).

## CELL

The basic building brick of a spreadsheet which is composed of cells. A cell is a single location defined by its ROW and COLUMN address. (eg. AA1 is the cell at the top left corner of the spreadsheet).

## CELL REFERENCE or ADDRESS

The location of a CELL on the spreadsheet defined by the COLUMN and ROW on which it lies. These give a unique address at the intersection. It is a convention that the COLUMN is noted first then the ROW. (eg. AG12 denotes the CELL in COLUMN AG and ROW 12).

## CLUSTER BAR CHART

A method of charting two different series of data by showing the BARS representing the values side by side in different colours or shading patterns. Often used for multiple data sets but, whilst these can be visually impressive, are usually confusing or difficult to read.

## COLUMN

A series of single CELLS arranged along the vertical axis of a spreadsheet. Columns are labelled sequentially by letters of the alphabet (eg AA.....BZ).

## COMMAND

An instruction to *MicroGraph* to perform a task. (eg SAVE the current FILE to disc).

## CURSOR

The CELL which is currently available for data entry is highlighted on the screen by being displayed in reverse video (ie. background and foreground colours are reversed). This highlighted area is the CURSOR.

## CURSOR KEYS

Four keys on the keyboard marked which, when pressed, will move the cursor either UP, DOWN, LEFT or RIGHT.

## ENTER KEY

A BLUE key towards the right side of the keyboard which is marked **[ENTER]**. Used to indicate to the computer that an input data item is complete and send it into the memory.

## FILE

Information stored on a disc is kept in discrete packets called files.

## FILENAME

A unique label by which each FILE on a disc can be identified. Refer to your Amstrad DDI-1 instruction manual for guidance on legal filenames. Please don't use filename extensions for your spreadsheet.

## FIX

Many *MicroGraph* commands use the CURSOR to point to a CELL in order to identify it as a component in a BLOCK command or FORMULA. This pointing is called FIXing and is achieved by moving the CURSOR to the required CELL and pressing the enter key. This action will be preceded and followed by a PROMPT.

## FORMAT

You can control the number of decimal places to which VALUES are displayed on the worksheet. This is called the FORMAT of the VALUE and each cell can be FORMATTED individually.

## FUNCTION

The type of calculation performed by a FORMULA (eg. MEAN and TREND).

## LABEL

A short description of a data value which is printed on the chart. In *MicroGraph* X AXIS LABEL may be up to 5 characters long. Y AXIS LABELS are calculated by the program.

## LINE CHART

The classic GRAPH where values are represented as points joined together by lines. An effective representation can sometimes be made when mixing BAR and LINE CHARTS.

## MENU

A series of choices, which are open to you at a particular time, listed on the screen. You may select only one of the options by pressing the appropriate key.

## NUMBER

See VALUE.

## PASSWORD

A user defined series of up to 9 characters which must be entered correctly before the spreadsheet can be accessed. Each spreadsheet has two PASSWORDS - level one and level two. Users who enter the level one password have only limited access to PROTECTED CELLS and can only use certain commands. This system gives considerable security to important parameters of your worksheets.

## PIE CHART

A very effective method of representing the way in which proportional parts of a total value make up the whole, by appearing as different sized segments of a circle. The general appearance is that of a PIE cut into slices - hence the name.

## PROGRAM DISC

Any disc which contains the *MicroGraph* program.

## PROMPT

A message which is displayed at the bottom of the screen, telling you what action to perform next.

## QUIT

The COMMAND to exit from *MicroGraph* and return control to the operating system of your computer.

## READY

The PROMPT which is displayed when *MicroGraph* is waiting for you to enter either data or a COMMAND.

## ROW

A series of CELLS along the horizontal axis of the SPREADSHEET. ROWS are referenced or addressed by number. (cf. COLUMN).

## SCALE

A line whose length is proportional to a value which it describes - usually divided into equal parts marked by 'tick marks'. The highest (TOP) value lies at one end of the line and the lowest (BOTTOM) value at the other end.

## SCROLLING

The act of moving around the worksheet by using the CURSOR KEYS to change the position of the CURSOR. When the cursor reaches an edge of the screen the whole sheet will SCROLL to reveal a new area of the SPREADSHEET.

## SHIFT KEYS

Located on the lower row of the keyboard at each end of the row of alphabet keys. Marked **[SHIFT]**. Used to activate the upper set of symbols where a key is marked with two symbols.

## SCREEN DUMP

A computer screen comprises images made up from small dots known as PIXELS (short for PICTURE ELEMENTS) . The process of copying a screen PIXEL by PIXEL onto a printer is known as a SCREEN DUMP. Because of the way in which the character shapes are formed on the paper screen dumps can only be performed by DOT MATRIX type printers - never by DAISY WHEEL types.

## SLIDE

A sort of electronic SCREEN DUMP onto a disc so that the image may be rapidly recalled onto the screen.

## TEXT

Data entered directly onto the spreadsheet via the keyboard. Although TEXT may contain numeric characters these will NOT be regarded as NUMBERS or VALUES for calculation purposes.

## TOP OF GRAPH

The highest value on the Y AXIS scale. In *MicroGraph* this value must be equal to or greater than the highest value to be plotted. Note that this value can be negative. (See also BOTTOM OF GRAPH).

## VALUE

A numeric value which has been entered into the worksheet occupying a CELL without any TEXT OR calculated by a FORMULA. It is also possible to enter numeric characters as ordinary TEXT.

## X AXIS

The horizontal axis of a graph or chart. LABELS may be assigned to values plotted on the X-axis.

## Y AXIS

The vertical axis of a graph or chart. In *MicroGraph* the Y axis LABELS are calculated by the program, and the complete AXIS may be described by a title.

# 6. APPENDIX A

## Making Security Copies

You should NEVER use the distribution disc containing *MicroGraph* to run your worksheets. Please make a security copy and then put the original disc in a safe place. To do this work through the following procedure:

1. Switch on your DDI-1 disc drive.
2. Switch on your computer.
3. Put your CP/M master disc in the drive.
4. Type I CPM **[ENTER]**
5. Type FORMAT **[ENTER]**
6. When prompted, put the destination disc in the drive and press any key.
7. When complete, put your CP/M back in the drive
8. Type FILECOPY *.* **[ENTER]**
9. Remove the CP/M master disc from the drive.
10. Check the write protect notches on the discs, the SOURCE (copy from) disc should be protected and the TARGET (copy to) disc should not. A disc is NOT protected if the plastic slide is visible and covers the write protect hole.
11. Put the SOURCE disc in the drive.
12. Swap the SOURCE and TARGET discs as directed by the program.

NOTES:

The working copy made in this way is capable of 'booting' CP/M directly without the need to use your CP/M utilities disc first.

If you are backing up data discs, ie. not the distribution disc, the utility programs DISCCOPY (if you only have one disc drive) or COPYDISC (if you have two) can be used instead.

# 7. APPENDIX B

## MicroGraph Slideshow program

Your *MicroGraph* disc contains a program called SLSHOW.COM. This program will recall any screens saved as SLIDES by the main GRAPH program and display them in any random order as directed by you. SLSHOW is very simple to operate having only three functions:-

1. VIEW SLIDES
2. KILL SLIDES
3. QUIT

SLSHOW operates under the CP/M operating system. Load your working copy of *MicroGraph* into your disc drive (drive A if you have two drives). If you are not already in CP/M type:

|CPM **[ENTER]**

If you are already in CP/M make sure the disc is 'logged in' by pressing **[CTRL] C**.

To run the program, at the '**A>**' prompt type:

SLSHOW **[ENTER]**

The program begins by searching through the disc to find out how many slides are available and composes a DIRECTORY of them. You may then choose, from the short menu, to either VIEW, KILL or QUIT. Unlike a real slide projector, where slides must be viewed in a set sequence, SLSHOW will display your electronic slides in any order. This can be very useful if you wish to re-examine a chart part way through a presentation.

The slides are stored on the disc as a set of coded instructions so as to save disc space and time in re-drawing the images on the screen. In this way up to 40 slides can be stored on a single disc (if true screen copies had been stored, each 16K long, then only 10 slides could be accommodated on one disc). With the exception of PIE CHARTS this method also results in a faster re-draw of the images on the screen.

When the slide has been completely re-drawn then a SCREEN DUMP may be made by pressing **[A]** if you are using an Amstrad DMP-1 printer or **[P]** if using an Epson type (or a true Epson compatible).

Press **[Q]** to return to the menu

Slides stored on disc may be removed by use of the KILL feature when they are no longer needed.

# 8.APPENDIX C

## Using MicroSpread files with MicroGraph

MicroGraph will read disc files which have been prepared and saved by MicroSpread. There are, however, certain restrictions on file compatibility which have been imposed through shortage of working program space.

MicroGraph will read a MicroSpread file but this file once read into MicroGraph should not be saved to disc using the same filename it was saved under. If you do save such a file from MicroGraph, then the file will be converted into a MicroGraph file.

Files saved by MicroGraph definitely will not load into the MicroSpread program. This is because MicroGraph files contain no provision for calculations or storing formulae.

# 9. INDEX