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User Manual

# MicroBoards

By Microgate S.r.l.

*MicroBoards v2.03*



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# General

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## Basics

The MicroBoards program makes it possible to manage Microgate's alphanumeric and graphic displayboards, microTab (uTab) and microGraph (uGraph) respectively, using a personal computer and a serial connection.

The program is designed for use with:

- Windows 98 and 98 Se;
- Windows NT 4.0;
- Windows 2000;
- Windows Me;
- Windows XP.

When started, the program's *menu bar*, *toolbar* and *command bar* appear, together with a work area composed of two parts: the *displayboard viewing area*, the *area for entering commands* and the *status bar*.

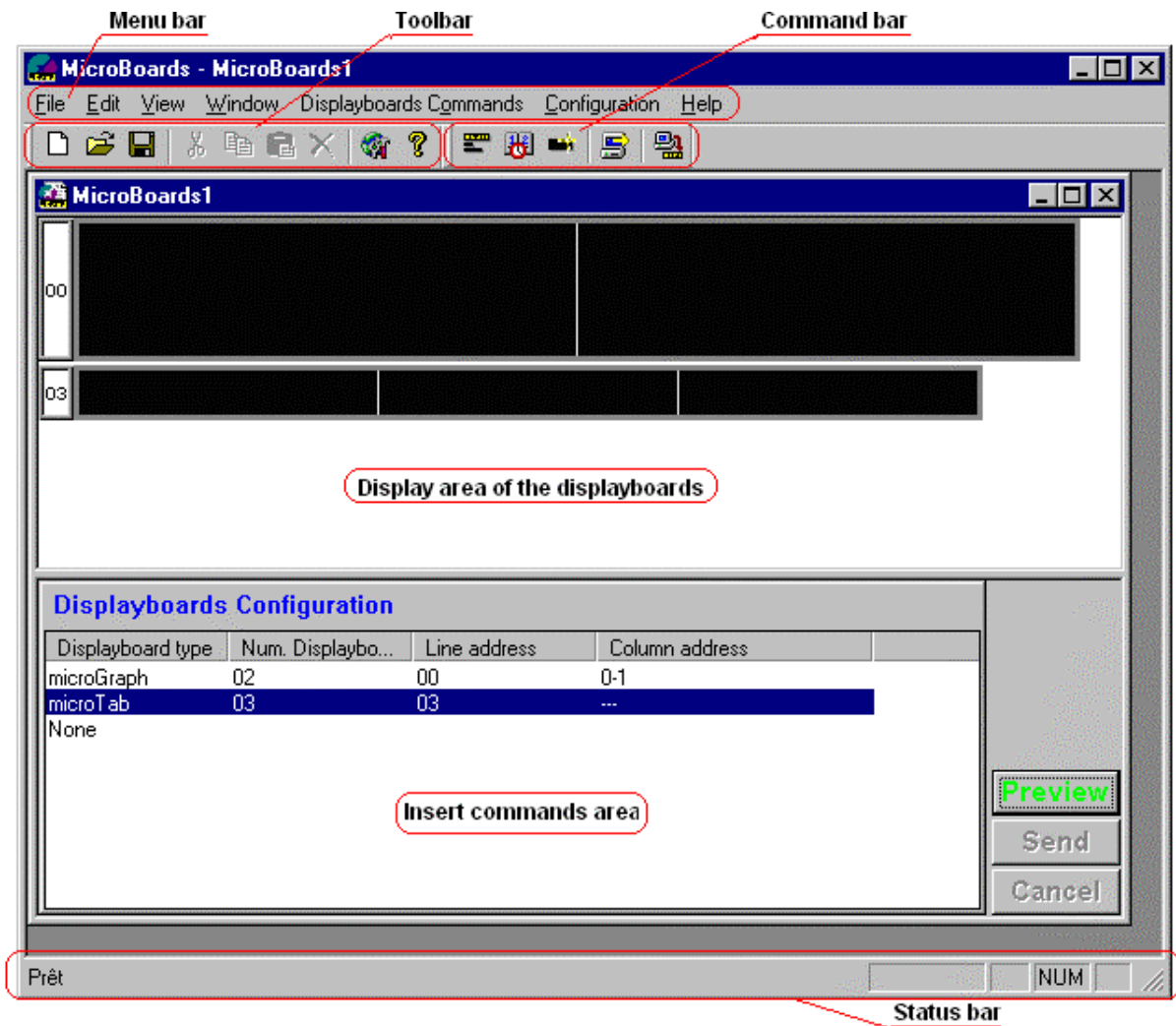


Figure 1 - Program layout

The *menu bar* contains the standard commands of all the Windows programs, like *File*, *Edit*, *View*, and specific commands for the MicroBoards program.

The *toolbar* cannot be configured and contains all the most frequently used commands in the program, giving more rapid access to the commands than the *menu bar*. All the commands in the *toolbar* are also contained in the *menu bar*.

Similarly the *command bar*, which is also unconfigurable, contains all the most frequently used commands for the uTab and uGraph displayboards. These commands are, however, also available in the *menu bar*.

The *status bar* gives information about the current status of the program.

The database files of the MicroBoards program have the extension *mbf* and in them a displayboard configuration and also a configuration of displayed objects such as strings, clocks, etc., can be saved.

# To start

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## System requirements

The following system is necessary for the correct functioning of the Optojump program:

- Pentium Intel processor or compatible with a minimum speed of 200 MHz;
- at least 16 Mbytes of RAM;
- hard disk of at least 1 Gbyte;
- a standard DB9 or DB25 serial output (with DB9 adaptor) or USB - serial adaptor;
- Windows 98 or 98 se operating system, Windows NT, Windows Me, Windows 2000 or Windows XP.

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## Software installation

The software can be installed in two ways depending on the form in which it has been supplied:

### Installation from CD-ROM

If you have the installation CD-ROM, insert it in the CD drive. If the auto-run is enabled, the installation program will start up automatically when the disk is inserted. If the auto-run is disabled, you will have to run the program *Setup.exe* in the root folder of the CD-ROM. This operation can be made by following these steps:

1. Start->Run ...
2. In the *edit* space enter:
3. D:\Setup.exe
4. Then press the OK button.

Note: the letter used to identify the CD-ROM (D:) can change according to the configuration of the computer being used.

As soon as it has started, the installation program checks the type of computer on which the program is being installed. If the system is compatible, the user is



asked to make a number of confirmations and finally the MicroBoards program is installed.

The installation program proposes as default a connection to the MicroBoards program in:

- Start->Programs->Microgate-> MicroBoards;
- And on the user's desktop.

If you do not want these connections, they can be eliminated after installation.

## Installation from WEB

If you have the installation file of the MicroBoards program from WEB, all the installation files are contained in a single file called *MicroBoards.exe* with the standard icon of the *self-extracting* installation programs.

Run the program, which starts the installation procedure. This operation can be performed by following these steps:

1. Start->Run ...
2. In the *edit* area enter:
3. C:\...<path containing installation file path>\ MicroBoards.exe
4. Then press the OK button.

The installation procedure is the same as from CD-ROM, so see Installation from CD-ROM for further information about this phase.

When installation is terminated, the *MicroBoards.exe* file can be canceled as it is no longer necessary.

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## Hardware installation

The MicroBoards program can function with or without the displayboards connected. In the second case, the use of the MicroBoards program is limited only to screen display of the text entered and can be a useful tool for acquiring familiarity with the display potential of the microTab and microGraph displayboards in the most diverse configurations.

### Installation of the uTab and uGraph displayboards

To allow the MicroBoards program to send commands to the displayboards, it is necessary to connect the latter to the personal computer on which the program is installed with the serial cable supplied with the displayboard (Microgate codexxx) and to configure the displayboards correctly.

The two fundamental parameters for hardware installation of the displayboards are:

- line and column configuration: for each line of microTab displayboards it is necessary to use the rotating selector to set the line number it will cover, while for each microGraph displayboard it is necessary to set the line number and column number it will cover;
- serial communication speed: the serial speed set on the MicroBoards program with the Serial configuration dialog box must coincide with the serial speed set on the displayboards with the appropriate *dip-switch*.

The installation phase of the displayboards depends on the number and type of displayboards to be used.

Here is the procedure to follow:

- run the MicroBoards program;
- open a new document with the command *File->New* or the rapid key combination *Ctrl+N*;
- the new document automatically proposes insertion of the displayboard configuration to be used;
- then enter the number of uGraph and/or uTab displayboards as described in:  
Object: displayboards configuration;
- send the command by pressing the 'Preview' button;
- in the *viewing area* the selected displayboards configuration will appear. If the configuration is not correct, modify it and send the command again;
- when the configuration is correct, it is possible to see the setting the MicroBoards program has automatically assigned to the various displayboards. See Figure 2 for an example;
- the uTab displayboards must be configured (with the rotating selector) with the same configuration assigned by the program and be set to program 0;
- the uGraph displayboards must be configured (with the rotating selector) by line and column exactly as they have been configured in the MicroBoards program and be set to program 0;
- select the serial communication speed of the MicroBoards program with the same speed set with the *dip-switches* on the command panels of the displayboards;
- for connections between the various displayboards and connection to the PC and further information about displayboards configuration modes, see the *Reference manuals* supplied with the displayboards;
- now the displayboards are ready to receive commands from the MicroBoards program.

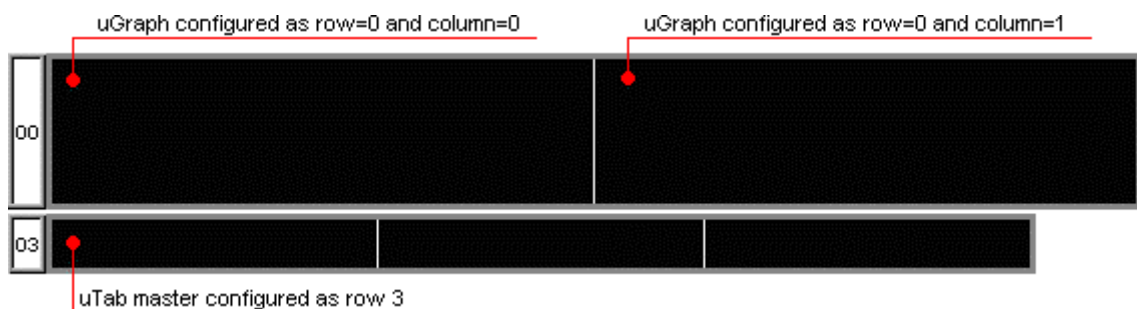


Figure 2 - Example of displayboard configuration

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## Initial configuration

The first time the MicroBoards program is started, the general configurations of the program are set to default values. If you want to customize any configurations you can call up the general configuration dialog box and modify their parameters. The new configuration will be automatically saved when you quit the program.

See Basic configurations for a more detailed explanation of the general configuration dialog box.

# How to begin

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## Introduction

This chapter describes how to create a simple document with just one alphanumeric displayboard or a graphic displayboard and how to send the first simple commands. However you are advised to read the chapters General and To start before going on to read the present chapter.

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## uTab Alphanumeric displayboard

**First of all start the MicroBoards program.** The program will appear as in Figure 1.

The typical sequence for managing a single alphanumeric displayboard is as follows:

### Creating or selecting a document

The first step is to open a new document with the command:

*File->New* or with the rapid selection keys *Ctrl+N*.

or to use the empty one automatically created by the MicroBoards program the first time it is run. Alternatively, if a document with the same configuration has already been created and saved previously, to call up the document with the command:

*File->Open* or with the rapid selection keys *Ctrl+O*.

In this case it is possible to skip the following section as the displayboards configuration has already been set. So go on to Inserting a fixed string.

### Setting displayboards configuration

When a new document is created, the MicroBoards program automatically proposes the dialog box for inserting displayboards configuration. Afterwards this dialog box can be called up at any moment with the command:

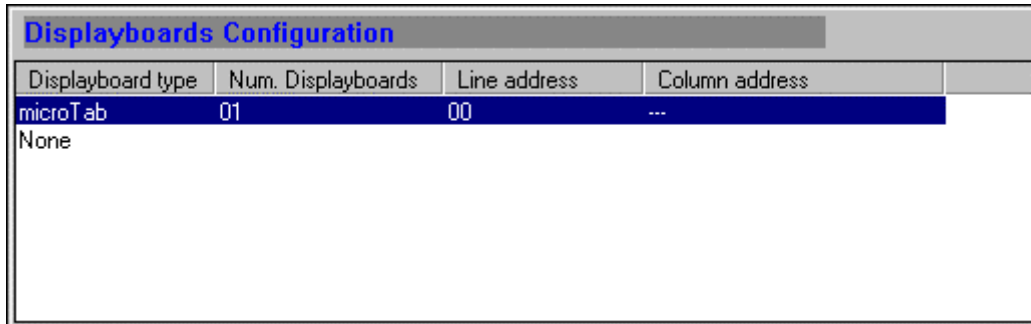
*DisplayboardsCommands ->Setting Displayboards ->Displayboards Configuration* or the corresponding button in the menu bar.

In this case, with only one alphanumeric displayboard it will be enough to select the microTab displayboard in the column *Displayboard type* and to enter 1 in the

column *Num. displayboards* (this value is proposed automatically by the program when the displayboard type is selected).

To activate the fields *Displayboard type* and *Num. displayboards* double click with the left button of the mouse on any point in the fields, then press enter to confirm the modifications or press ESC to annul.

The configuration dialog box will appear as in this figure:



Displayboard type	Num. Displayboards	Line address	Column address
microTab	01	00	---
None			

Figure 3 - Single microTab displayboard configuration

Now press the 'Preview' button to update the window.

Now the program is ready for a command to be inserted.

## Inserting a fixed string

This example will explain how to insert a fixed string in the alphanumeric displayboard:

- Go with the mouse into the black area of the alphanumeric displayboard.
- As soon as you enter the displayboard area, the mouse pointer changes appearance and becomes a cross. The centre of the cross represents the pixel where the object will be inserted. The status bar displays in real time the coordinates of the mouse pointer in displayboard pixels.
- In this case, as the displayboard is alphanumeric the coordinates will be expressed in lines and columns.

Go with the mouse pointer to the top left of the displayboard area so that the status bar shows the coordinates *R: 0,C: 0*. At this point press the right button of the mouse. A menu will appear where the mouse pointer is positioned.

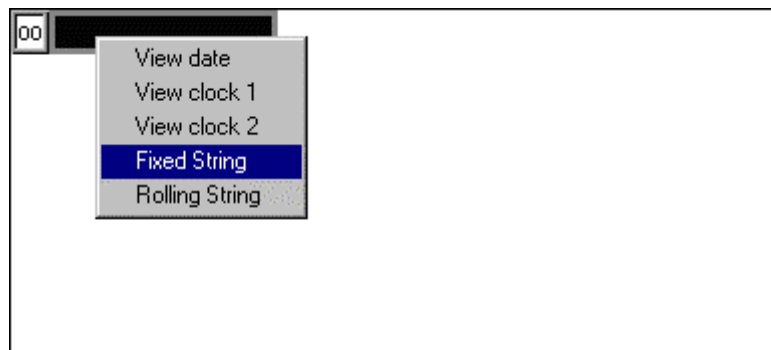


Figure 4 - Inserting a fixed string

- Select *Fixed String*. This will call up the fixed string dialog box in the command area.

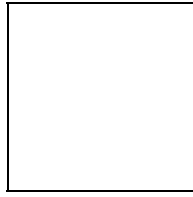


Figure 5 - Fixed string insertion dialog box

- Enter a string of your choice, for example *microTab*, and press the **‘Preview’** button. You will then be able to see a preview of how the string will appear on the displayboard. It is important to point out that this command does NOT send any command to the displayboard.
- Now press the button **‘Send’** to be able to display the string also on the uTab displayboard and the string will appear on the displayboard.



Figure 6 - Example of insertion of a fixed string on a uTab displayboard

---

## uGraph graphic displayboard

**First of all start the MicroBoards program.** The program will appear as in Figure 1.

The typical sequence for managing a single graphic displayboard is as follows:

### Creating or selecting a document

The first step is to open a new document with the command:

*File->New* or with the rapid selection key *Ctrl+N*.

or to use the empty one automatically created as default by the MicroBoards program the first time it is run. Alternatively, if a document with the same configuration has already been created and saved previously, call up the document with the command:

*File->Open* or with the rapid selection keys *Ctrl+O*.

In this case it is possible to skip the following section as the displayboards configuration has already been set. So go on to Inserting a fixed string.

## Setting displayboards configuration

When a new document is created, the MicroBoards program automatically proposes the dialog box for inserting displayboards configuration. Afterwards this dialog box can be called up at any moment with the command:

*DisplayboardsCommands* -> *Setting Displayboards* -> *Displayboards Configuration* or the corresponding button in the menu bar.

In this case, with only one graphic displayboard it will only be necessary to select the microGraph displayboard in the column *Displayboard type* and to enter 1 in the column *Num. displayboards* (this value is proposed automatically by the program when the displayboard type is selected).

To activate the fields *Displayboard type* and *Num. displayboards* double click with the left button of the mouse on any point in the fields, then press enter to confirm the modifications or press ESC to annul.

The configuration dialog box will appear as in this figure:

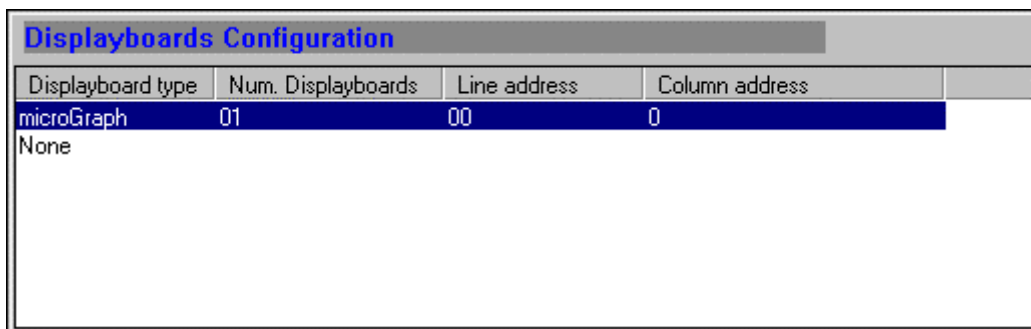


Figure 7 - Single microGraph displayboard configuration

Now press the '**Preview**' button to update the window.

Now the program is ready for a command to be inserted.

## Inserting a fixed string

This example will explain how to insert a fixed string in the graphic displayboard:

- Go with the mouse into the black area of the graphic displayboard.
- As soon as you enter the displayboard area, the mouse pointer changes appearance and becomes a cross. The centre of the cross represents the pixel where the object will be inserted. The status bar displays in real time the coordinates of the mouse pointer in displayboard pixels.
- In this case, as the displayboard is alphanumeric the coordinates will be expressed in lines and columns.

Go with the mouse pointer to the top left of the displayboard area so that the status bar shows the coordinates x: 3,y: 4. At this point press the right button of the mouse. A menu will appear where the mouse pointer is positioned.

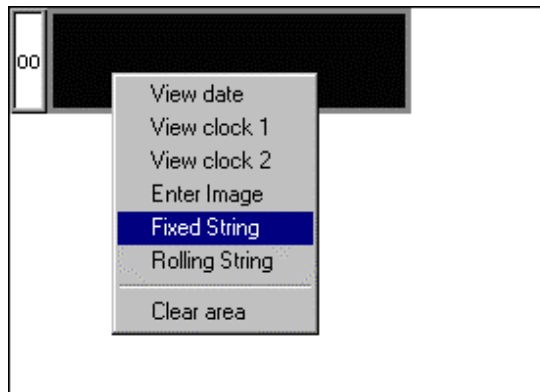


Figure 8 - Inserting a fixed string

- Select *Fixed String*. This will bring up the fixed string dialog box in the command area.

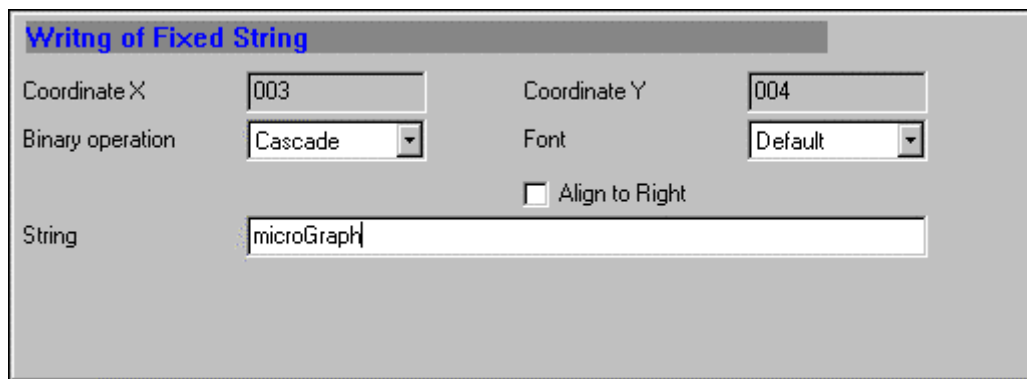


Figure 9 - Fixed string insertion dialog box

- Enter a string of your choice, for example *microGraph*, and press the **'Preview'** button. You will then be able to see a preview of how the string will appear on the displayboard. It is important to point out that this command does NOT send any command to the displayboard.
- Now press the button **'Send'** to be able to view the string also on the microGraph displayboard and the string will appear on the displayboard.

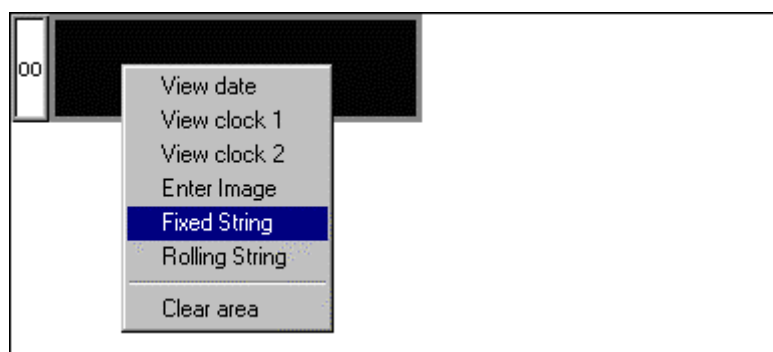


Figure 10 - Example of insertion of a fixed string on a uGraph displayboard



# The MicroBoards File

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## Extension type

The MicroBoards files have the default extension *mbf*. So if the MicroBoards program has been correctly installed, the Windows operating system recognizes this extension as a MicroBoards file and consequently the two icons (large and small) are associated to it:



large icon



small icon

Moreover, by double clicking with the mouse on a MicroBoards file, the MicroBoards program is automatically run and the file selected is opened.

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## The default file

When a new MicroBoards file is created, this appears as completely empty. So the first operation the user must perform is to create a displayboards configuration corresponding to the type and number of displayboards to be used.

With the displayboards configuration thus created, it will be possible to send, modify and/or cancel all the objects you want to.

---

## Saving a file

The MicroBoards file is divided into two parts:

- the displayboards configuration;
- the objects inserted.

The first time a file is saved, the program asks if you want to save only the displayboards configuration or the configuration and the objects inserted, as shown in Figure 11.

*Figure 11 - Saving a MicroBoards file*

When this file is saved on later occasions, the program will keep the initial choice. If you want to change the save mode and pass from saving only the configuration to saving the whole status or viceversa, it will therefore be necessary to save the file with a new name and to modify the save mode.

The difference between the two save modes is as follows:

- If only the **displayboards configuration** is saved, the next time the file is opened the program will propose only the displayboards configuration, while all the objects inserted in it will be lost.
- If the **whole status** is saved, the next time the file is opened the program will propose both the displayboards configuration and all the objects in the file when it was saved. The objects will be inserted in preview mode, so to physically update the displayboards an Update Displayboard command must be made:

*DisplayboardsCommands i->Update Displayboards* or with the rapid selection key F5.

# Displayboards viewing area

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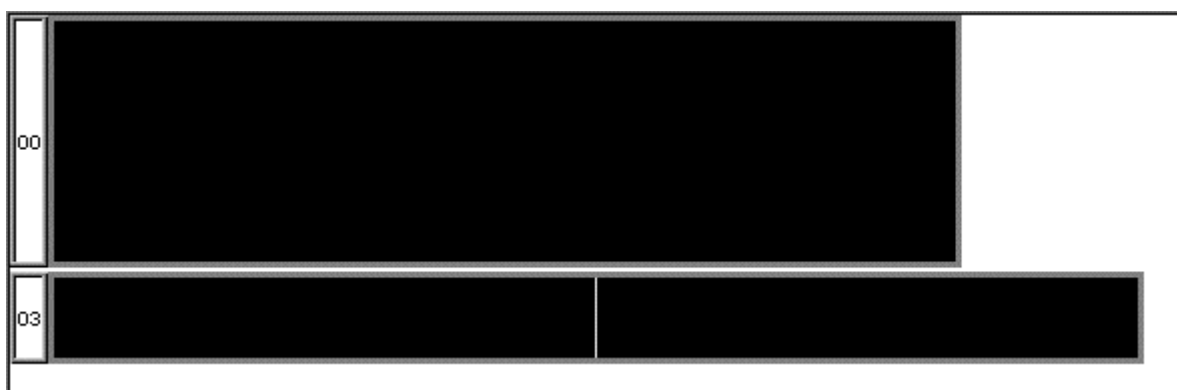
## Introduction

For each MicroBoards document the program proposes a displayboards viewing area. This area, updated in real time, shows the status of the displayboards so the user can check the current appearance of the displayboards and, with the preview, check how the objects inserted will appear before physically sending them to the displayboards.

Another use of the *viewing area* is for the insertion of all the visual objects for displayboards such as fixed or rolling strings, times, images, etc.

Finally the viewing area can also be used to select, modify and/or cancel an object already inserted.

The viewing area appears as in Figure 12 in which the configuration of a graphic displayboard and two alphanumeric displayboards has been set:



*Figure 12 – The displayboards viewing area*

---

## Displayboards coordinates

When the mouse pointer is situated in the displayboards viewing area, it takes the form of a cross. The centre of the cross represents the reference point for the insertion of objects. The coordinates of the centre of the mouse pointer are also displayed and updated in real time in the status bar.

The coordinates displayed are different according to whether movement takes place on a graphic displayboard or an alphanumeric displayboard:

- In the first case the coordinates displayed represent the coordinate of the graphic displayboard pixel: x: 36,y: 8.  
Remember that the coordinate x: 0,y: 0 is the pixel at the top left of all the graphic displayboards. Every graphic displayboard is of 90x24 pixels. So the coordinate of the pixel at the top left of the second displayboard to the right will be: x: 90,y: 0, the coordinate of the second displayboard below will be x: 0,y: 24 and so on. Note that the coordinates displayed in the status bar represent the coordinates in displayboard pixels and are therefore independent of the zoom currently being used. For example, if the zoom is 3:1, it will be necessary to move the mouse pointer three pixels on the screen for the displayboard pixel coordinate shown in the status bar to move by one.
- In the second case the coordinates displayed represent the coordinate of the alphanumeric character (of a fixed size of 6x8 pixels): R: 3, C: 4.  
Remember that the coordinate R: 0,C: 0 is the character at the top left of all the alphanumeric displayboards. Every alphanumeric displayboard has a line of 9 alphanumeric characters while every graphic displayboard has three lines of 15 alphanumeric characters in *small font* case. So the coordinate of the first character of the second displayboard of a line will be R: 0,C: 10 and so on.  
If a combination of alphanumeric and graphic displayboards is used, great attention must be paid to the line column configuration that the program automatically assigns to the displayboards. For example in the case of Figure 12 since, as stated above, a graphic displayboard occupies three lines of alphanumeric displayboards the configuration “03” is automatically assigned to the alphanumeric displayboard so the coordinate of the first character on the left will be R: 3,C: 0 and so on.  
As with the graphic displayboards, also for the alphanumeric displayboards the coordinates displayed by the status bar represent the coordinates of the character of the displayboard irrespective of the zoom used. For example, if the zoom is 3:1 it will be necessary to move the mouse pointer horizontally by three x 6 displayboard pixels = 18 screen pixels for the column coordinate to increase by one.

---

## Zoom

In the view area it is possible to set a zoom of from 1 to 5, which gives a more or less enlarged view of the displayboard.

When the zoom is set to 1:1, this means that 1 pixel on the screen corresponds to 1 displayboard pixel. This view type is usually not very practical because the displayboard shown is too small.

Passing to zoom 2:1 means that 2 screen pixels represent one displayboard pixel, with a zoom of 3:1, 3 screen pixels represent 1 displayboard pixel and so on.

When a document is saved, also the zoom being used at that moment is saved. Consequently, when the document is subsequently reopened, the displayboards will be shown using the same zoom.

For a new document, on the other hand, the zoom used is set in the general configuration dialog box. See Basic configurations for further details.

---

## Viewing modes

The main aim of the viewing area is to show the objects which have been inserted by the user. In particular an object in the displayboards viewing area can have three different statuses:

- preview view

- view as on displayboard
- view only on displayboard

## Preview view

When an object is displayed in preview, with the default color green, this means that the object has been inserted in the file, is displayed in the viewing area but has not yet been sent to the displayboard.

This mode is convenient for checking if the inserted object meets requirements without being displayed on the displayboards.

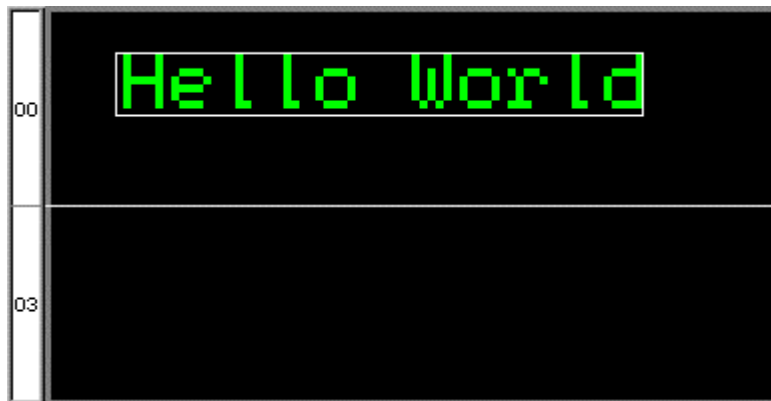


Figure 13 - Example of preview view of fixed string

## View as on displayboard

When an object is displayed as on the displayboard, with the default color yellow, this means that the object has been inserted in the file and has been sent both to the displayboard viewing area and to the displayboards. In this way the user has the chance to check the appearance of the displayboards directly on the screen without having to see the displayboards.



Figure 14 - Example of fixed string view as on displayboard

## View only on displayboard

This view mode occurs when an object previously viewed as on displayboard is modified, for example moved, but the modified object is sent in preview. So in this mode the displayboards still show the original object while in the

displayboards viewing area the object is displayed in modified form. To signal to the user that on the displayboard the object is still displayed in the original mode, it is displayed in the viewing area with a different color; the default color is grey. In Figure 15 an example of a string only on the displayboard (grey) and in preview (green) can be seen. Now if the user sends the object with the command 'Send', the program automatically eliminates the string only on displayboard and transforms the string in preview into a string as on displayboard, as shown in Figure 16.



Figure 15 - Example of fixed string viewed only on displayboard and in preview



Figure 16 – Example of fixed string as on displayboard after the command 'Send'

---

## Viewing active objects

By active objects is meant all the objects that are automatically updated by the displayboard according to a set time. Typical active objects are clocks, dates and rolling strings.

So it is not necessary to continually send new commands to update these objects but it is the displayboard itself which with its internal clock manages the updating of the objects.

To simulate these active objects as well as possible also the MicroBoards program contains inside it a mechanism which updates the active objects inserted by the user in the same way.

Particular attention must be paid to the commands for displaying the clocks and date. When started, the MicroBoards program has no way of knowing how the clocks and date inside the displayboards are set, so if the user sends a command

for the display of a clock or date, this is displayed in the *viewing area* as in Figure 17. The exact form of display depends on the format and font used:

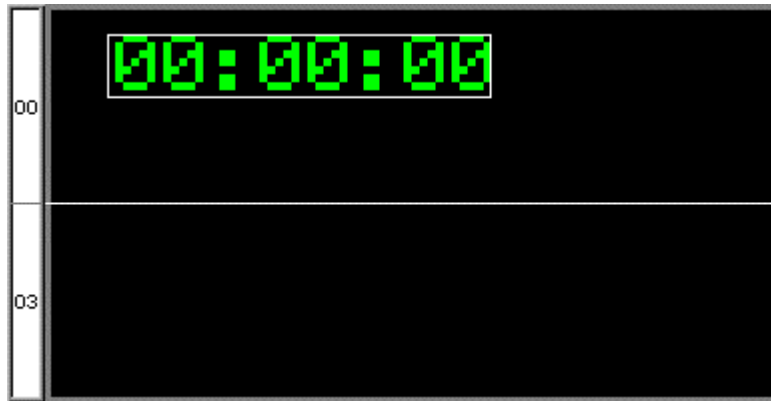


Figure 17 - View of clock I with the clock not set

In this way the user is informed that the clock displayed by the program does not correspond to the clock shown by the displayboards.

To synchronize the clocks of the program with the displayboards it is therefore necessary to send a command to set the clocks and/or date. After the set up command has been sent for the first time, the MicroBoards program will display the clocks and/or data as on the displayboards.



Figure 18 - View of clock I with the clock set

---

## Inserting objects from the viewing area

From the viewing area it is possible to insert and/or modify the following objects:

- for graphic displayboards:
  - insertion of clocks 1 e 2;
  - date insertion;
  - fixed string insertion;
  - rolling string insertion;
  - image insertion;
  - area reset.
- for alphanumeric displayboards:
  - insertion of clocks 1 e 2;

- date insertion;
- fixed string insertion;
- rolling string insertion.

To make an insertion go with the mouse pointer to the point on the displayboard where you want to insert the object. Press the right mouse button and, depending on the type of displayboard, the following menu will appear:

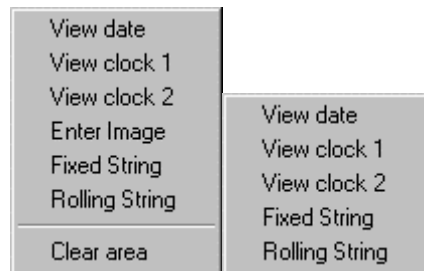


Figure 19 - Object insertion menu for uGraph and uTab

When you select the object you want to insert, a new object will automatically be inserted in the position chosen. In the Object insertion dialog box it will then be necessary to complete or modify the various fields as desired, according to the type of object. See Object insertion dialog box for further details about the various object insertion fields.

It is important to note that once the object has been inserted, in the viewing area the inset box of the object just inserted will be shown, as described in the section The inset box.

## Showing an object

As described in Displayboards viewing area, the objects inserted are shown in the viewing area. These objects can have various view modes according to their status.

In particular, all objects in *preview* or *as on displayboard* mode can be selected. Selecting an object shows its characteristics, giving the possibility to modify them or to cancel the object.

## Selecting an object

To select an object simply position the mouse pointer on the object and press the left mouse button.

When a number of objects are cascaded, to select the desired object, press the left mouse button repeatedly while at the same time pressing the *CTRL* key. Each press on the left mouse button takes you on to the next object until the desired object is selected.

## The inset box

For the object thus selected the program will show the dialog box for inserting and modifying the object, and in the viewing area, the inset box.

During insertion the inset box allows the user to know the real size of the object to be inserted and so to put it in the best position on the displayboard.



The inset box always has an origin which is the insertion point whose coordinates are always shown also in the in the corresponding object insertion dialog box.

In particular the origin is always situated at the top left for all objects on the alphanumeric displayboards while for objects on graphic displayboards the origin is at the top left for left-aligned objects and at the top right for right-aligned objects.

The origin of the inset box must always be a valid coordinate, that is, a point inside the displayboards while the opposite border and consequently a part of the inset box can be outside the displayboards. Obviously the part of the box outside the displayboards will not be displayed either in the viewing area or on the displayboards.

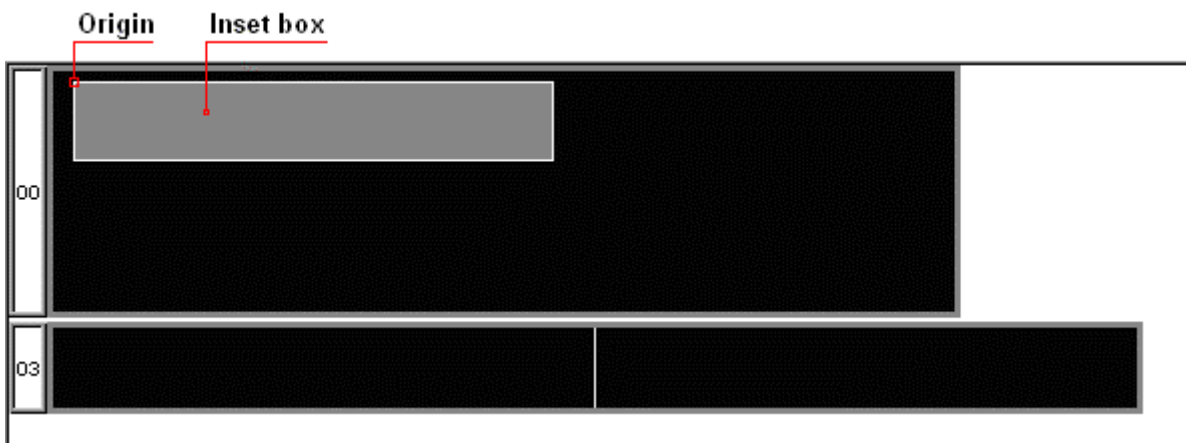


Figure 20 - "Simple" inset box

Depending on the type of object inserted, one or more sides of the inset box can appear with a double parallel line. This indicates that that side of the box can be *stretched*.

In particular this occurs for rolling strings where the inset box is not determined by the length of the string itself but that of the window in which the string is to be rolled. The side that can be *stretched* is the vertical side opposite the origin.

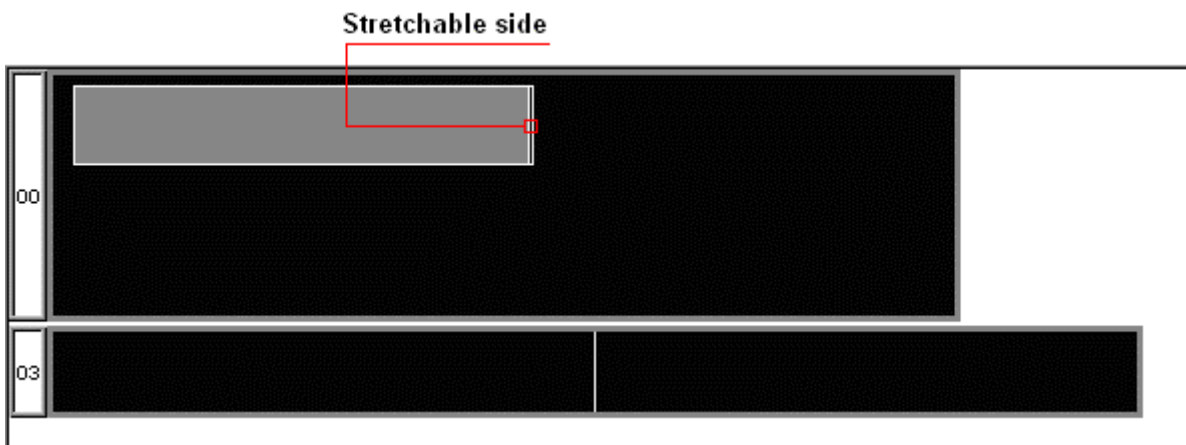


Figure 21 - Inset box with a "stretchable" side

Another object which can be *stretched* is the reset area. In this case it is possible to stretch the two sides opposite the origin of the box.

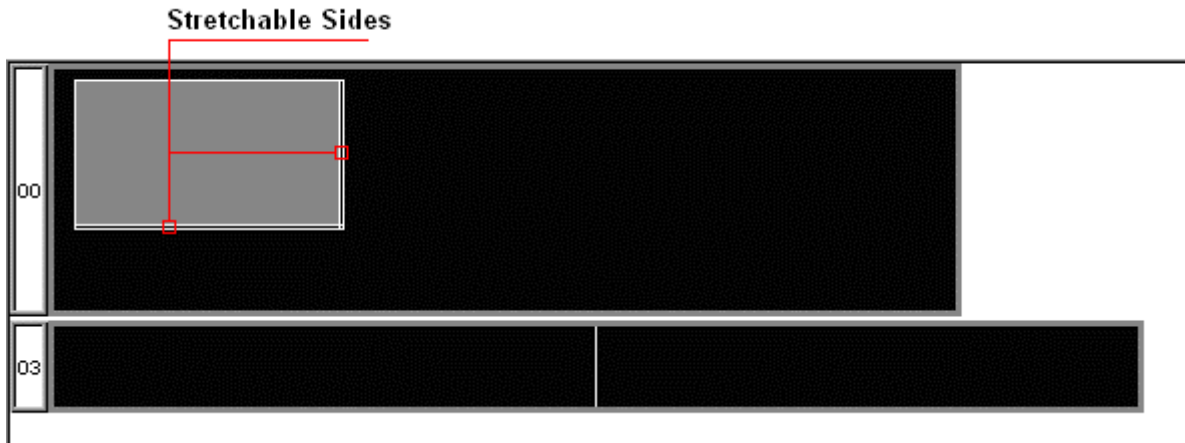


Figure 22 - Inset box with two “stretchable” sides

For how to modify the inset box see Stretching the inset box.

## Operations on the selected object from the viewing area

### ***Moving the object***

All objects inserted in the viewing area can be moved.


To do this it is first necessary to select the object as described in Selecting an object, then when the mouse pointer is positioned over the selected object, the pointer changes to the following form.



Holding the left mouse button down, drag the object into the desired position. The coordinate fields in the Edit dialog box will show the new position of origin while the inset box will show the new position of the object. Confirm with the buttons ‘**Preview**’ or ‘**Send**’ to activate the modification.

This operation can also be performed with the four arrow keys on the keyboard.

### ***Stretching the inset box***

This operation is only possible horizontally for rolling string objects and vertically and horizontally for reset area objects. The operation is performed by positioning the mouse pointer on the side of the inset box you want to stretch. This type of border can be recognized because it is a double line as shown in Figure 21 or Figure 22. When the mouse pointer is in the correct area, it changes to the following form. . Now, holding down the left mouse button, drag the side of the box to the desired position.

This operation can also be performed using the four arrow keys on the keyboard while at the same time holding down the *shift* key.

### ***Canceling an object***

To cancel an object from the viewing area and from the displayboard if the mode is as on displayboard, select the object as described in Selecting an object, then press the key ‘**Delete**’ and confirm the operation.

# Object insertion dialog

---

## Introduction

The objects which can be sent to the displayboards can be divided into three basic groups:

- **view objects:**
  - objects for microTab displayboards;
  - objects for microGraph displayboards;
- **objects for setting common to both displayboards;**
- **engineering objects:**
  - objects for microTab displayboards;
  - objects for microGraph displayboards;
  - common objects.

---

## View objects

View objects are those which display something on the displayboard. The objects can be active or static. Most of the view commands are the same for both displayboards but the insertion interface is different because the parameters to be inserted are different. For this reason the commands mentioned above are separately managed.

The following table summarises the various view objects :

Object Name	microTab	microGraph	Active Object
View clock 1	Yes	Yes	Yes
View clock 2	Yes	Yes	Yes
View date	Yes	Yes	Yes
View fixed string	Yes	Yes	No
View rolling string	Yes	Yes	Yes
Insert image	No	Yes	No
Clear area	No	Yes	No

*Table 1 - View objects*

Both the microGraph and microTab displayboards have two distinct internal clocks, clock 1 and clock 2. These two clocks can be set and used completely independently to allow the display of two completely distinct times.

## Object: view clock 1

### *microGraph*

The insertion dialog box for viewing clock 1 is as follows:

Figure 23 - "View Clock 1" dialog box for microGraph

The various fields are:

- Coordinate X: horizontal position of the object from left to right expressed in displayboard pixels. Pixel 0 is the first pixel on the left and so on. Remember that a graphic displayboard has 90 horizontal pixels so when two displayboards are placed side to side horizontally the first pixel of the displayboard on the right will have coordinate 90, and so on.
- Coordinate Y: vertical position of the object from top to bottom expressed in displayboard pixels. Pixel 0 is the first pixel at the top and so on. Remember that a graphic displayboard has 24 vertical pixels so when two displayboards are placed one on top of the other the first pixel of the lower displayboard will have coordinate 24, and so on.
- Binary operation: with binary operation it is possible to insert the object by filtering the pixels of the object about to be inserted. The various operations are the standard logical bit operations:

Operation	Displayboard pixel color	String pixel color	Final pixel color
Cascade	###	black	black
		yellow	yellow
NOT	###	black	yellow
		yellow	black
AND	yellow	yellow	yellow
	black	black	black
	yellow	black	black
	black	yellow	black
OR	yellow	yellow	yellow

	black	black	black
	yellow	black	yellow
	black	yellow	yellow
XOR	yellow	yellow	black
	black	black	black
	yellow	black	yellow
	black	yellow	yellow

- Fonts: the graphic displayboards contain five different sets of characters. The default character corresponds to small fixed font, which is the same as the font of the text displayboards. For further information about fonts, refer to the chapter Sets of characters.

Font	Size
Small Fixed	fixed font with a width of 6 pixels and a height of 8 pixels
Medium Proportional	proportional font with a height of 12 pixels
Huge Proportional	proportional font with a height of 24 pixels
Special	fixed font with a width of 15 pixels and a height of 24 pixels
Medium Fixed	fixed font with a width of 10 pixels and a height of 12 pixels

- Time format: the clock can be displayed in four different formats (for example 13 hours, 05 minutes, 20 seconds):  
HH:MM:SS (which in the example becomes 13:05:20)  
MM:SS (which in the example becomes 05:20)  
HH:MM (24h) (which in the example becomes 13:05)  
HH:MM (12h) (which in the example becomes 01:05).
- Align to right: if this option is enabled, the coordinate of origin of the object passes from top left to top right, so in this case the string will be displayed to the left of the insertion point selected.
- Delay [1/100sec]: this is the time difference between the time displayed and the time set inside the displayboard with the command set time.

If clock 1 of the displayboards has not yet been set with the command Object: set date and clocks, the box shows the message:

“Attention: clock 1 not defined” to inform the user that clock 1 on the displayboards must be set.

### **microTab**

The insertion dialog box for viewing clock 1 is as follows:

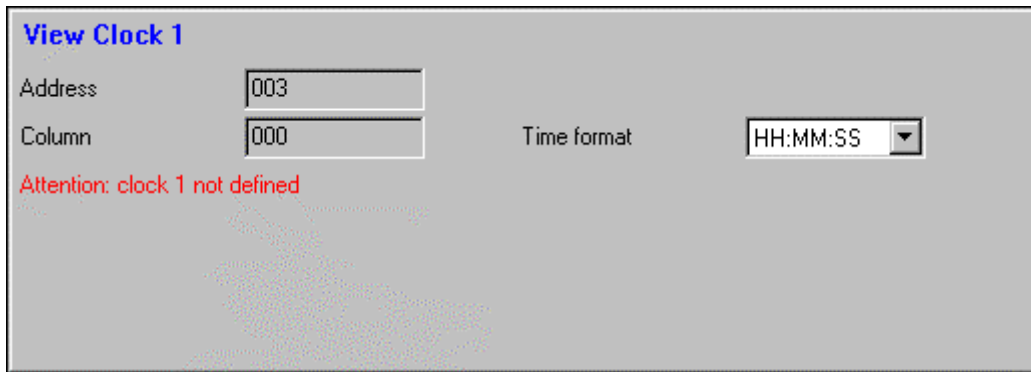


Figure 24 - "View Clock 1" dialog box for microTab

The various fields are:

- Address: configuration number of the displayboard as indicated in the area on the left of the displayboard.
- Column: position of the first character of the string. The first character on the left is identified with the position 0. Remember that an alphanumeric displayboard has 9 characters so if two displayboards are placed side by side horizontally (the first master and the ones after slaves), the first character on the displayboard to the right will be identified with the position 9 and so on.
- Time format: the clock can be displayed in four different formats (for example 13 hours, 05 minutes, 20 seconds):  
 HH:MM:SS (which in the example becomes 13:05:20)  
 MM:SS (which in the example becomes 05:20)  
 HH:MM (24h) (which in the example becomes 13:05)  
 HH:MM (12h) (which in the example becomes 01:05).  
 The first field *disable* makes it possible to send a command which interrupts updating of the clock but does NOT cancel it on the displayboard.

If clock 1 of the displayboards has not yet been set with the command Object: set date and clocks, the box shows the message:

“Attention: clock 1 not defined” to inform the user that clock 1 on the displayboards must be set.

## Object: view clock 2

### *microGraph*

The insertion dialog box for viewing clock 2 is as follows:

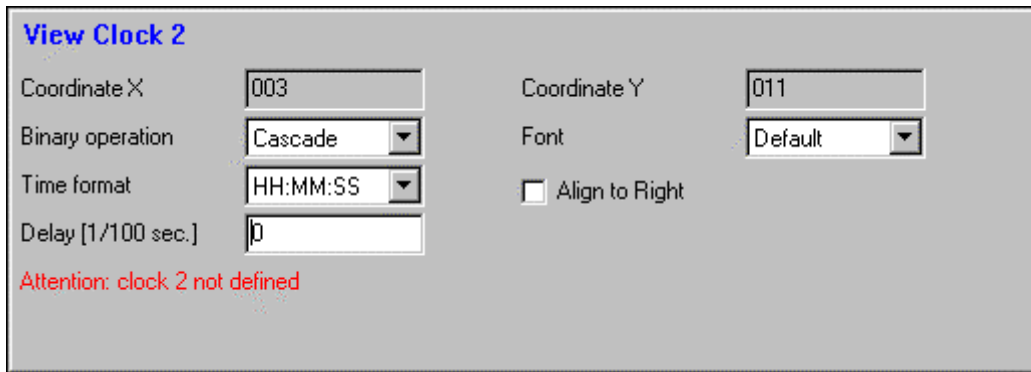


Figure 25 - "View Clock 2" dialog box for microGraph

The various fields are:

- Coordinate X: horizontal position of the object from left to right expressed in displayboard pixels. Pixel 0 is the first pixel on the left and so on. Remember that a graphic displayboard has 90 horizontal pixels so when two displayboards are placed side to side horizontally the first pixel of the displayboard on the right will have coordinate 90, and so on.
- Coordinate Y: vertical position of the object from top to bottom expressed in displayboard pixels. Pixel 0 is the first pixel at the top and so on. Remember that a graphic displayboard has 24 vertical pixels so when two displayboards are placed one on top of the other the first pixel of the lower displayboard will have coordinate 24, and so on.
- Binary operation: with binary operation it is possible to insert the object by filtering the pixels of the object about to be inserted. The various operations are the standard logical bit operations:

Operation	Displayboard pixel color	String pixel color	Final pixel color
Cascade	###	black	black
		yellow	yellow
NOT	###	black	yellow
		yellow	black
AND	yellow	yellow	yellow
	black	black	black
	yellow	black	black
	black	yellow	black
OR	yellow	yellow	yellow
	black	black	black
	yellow	black	yellow
	black	yellow	yellow
XOR	yellow	yellow	black
	black	black	black
	yellow	black	yellow
	black	yellow	yellow

- Fonts: the graphic displayboards contain five different sets of characters. The default character corresponds to small fixed font, which is the same as the font of the text displayboards. For further information about fonts, refer to the chapter Sets of characters.

Font	Size
Small Fixed	fixed font with a width of 6 pixels and a height of 8 pixels
Medium Proportional	proportional font with a height of 12 pixels
Huge Proportional	proportional font with a height of 24 pixels
Special	fixed font with a width of 15 pixels and a height of 24 pixels
Medium Fixed	fixed font with a width of 10 pixels and a height of 12 pixels

- Time format: clock 2 can be displayed in four different formats (for example 13 hours, 05 minutes, 20 seconds):  
 HH:MM:SS (which in the example becomes 13:05:20)  
 MM:SS (which in the example becomes 05:20)  
 HH:MM (24h) (which in the example becomes 13:05)  
 HH:MM (12h) (which in the example becomes 01:05).
- Align to right: if this option is enabled, the coordinate of origin of the object passes from top left to top right, so in this case the string will be displayed to the left of the insertion point selected.
- Delay [1/100sec]: this is the time difference between the time displayed and the time set inside the displayboard with the command set time.

If clock 2 of the displayboards has not yet been set with the command Object: set date and clocks, the box shows the message:

“Attention: clock 2 not defined” to inform the user that clock 2 on the displayboards must be set.

### **microTab**

The insertion dialog box for viewing clock 2 is as follows:

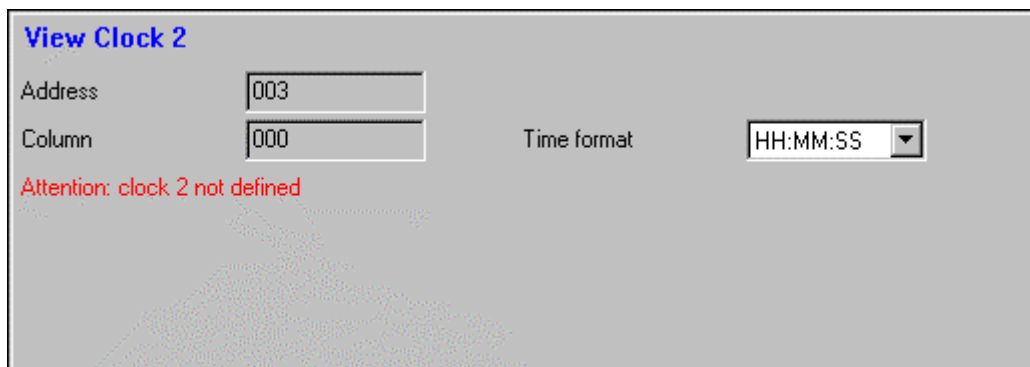


Figure 26 - "View Clock 2" dialog box for microTab

The various fields are:



- Address: configuration number of the displayboard as indicated in the area on the left of the displayboard.
- Column: position of the first character of the string. The first character on the left is identified with the position 0. Remember that an alphanumeric displayboard has 9 characters so if two displayboards are placed side by side horizontally (the first master and the ones after slaves), the first character on the displayboard to the right will be identified with the position 9 and so on.
- Time format: the clock can be displayed in four different formats (for example 13 hours, 05 minutes, 20 seconds):  
 HH:MM:SS (which in the example becomes 13:05:20)  
 MM:SS (which in the example becomes 05:20)  
 HH:MM (24h) (which in the example becomes 13:05)  
 HH:MM (12h) (which in the example becomes 01:05).  
 The first field *disable* makes it possible to send a command which interrupts updating of the clock but does NOT cancel it on the displayboard.

If clock 2 of the displayboards has not yet been set with the command Object: set date and clocks, the box shows the message:

“Attention: clock 2 not defined” to inform the user that clock 2 on the displayboards must be set.

## Object: view date

### *microGraph*

The insertion dialog box for viewing the date is as follows:

Figura 27- “View Date” dialog box for *microGraph*

The various fields are:

- Coordinate X: horizontal position of the object from left to right expressed in displayboard pixels. Pixel 0 is the first pixel on the left and so on. Remember that a graphic displayboard has 90 horizontal pixels so when two displayboards are placed side to side horizontally the first pixel of the displayboard on the right will have coordinate 90, and so on.
- Coordinate Y: vertical position of the object from top to bottom expressed in displayboard pixels. Pixel 0 is the first pixel at the top and so on. Remember that a graphic displayboard has 24 vertical pixels so when two displayboards are placed one on top of the other the first pixel of the lower displayboard will have coordinate 24, and so on.

- Binary operation: with binary operation it is possible to insert the object by filtering the pixels of the object about to be inserted. The various operations are the standard logical bit operations:

Operation	Displayboard pixel color	String pixel color	Final pixel color
Cascade	###	black	black
		yellow	yellow
NOT	###	black	yellow
		yellow	black
AND	yellow	yellow	yellow
	black	black	black
	yellow	black	black
	black	yellow	black
OR	yellow	yellow	yellow
	black	black	black
	yellow	black	yellow
	black	yellow	yellow
XOR	yellow	yellow	black
	black	black	black
	yellow	black	yellow
	black	yellow	yellow

- Fonts: the graphic displayboards contain five different sets of characters. The default character corresponds to small fixed font, which is the same as the font of the text displayboards. For further information about fonts, refer to the chapter Sets of characters.

Font	Size
Small Fixed	fixed font with a width of 6 pixels and a height of 8 pixels
Medium Proportional	proportional font with a height of 12 pixels
Huge Proportional	proportional font with a height of 24 pixels
Special	fixed font with a width of 15 pixels and a height of 24 pixels
Medium Fixed	fixed font with a width of 10 pixels and a height of 12 pixels

- Date format: the date can be displayed in two different formats (for example Thursday 20 February 2003):  
DD/MM/YY (which in the example becomes 20/02/03)  
DD MMM YY (which in the example becomes 20 Feb 03)

- **Align to right:** if this option is enabled, the coordinate of origin of the object passes from top left to top right, so in this case the string will be displayed to the left of the insertion point selected.

If the date of the displayboards has not yet been set with the command Object: set date and clocks, the box shows the message:

“Attention: date not defined” to inform the user that the date on the displayboards must be set.

### **microTab**

The insertion dialog box for viewing the date is as follows:

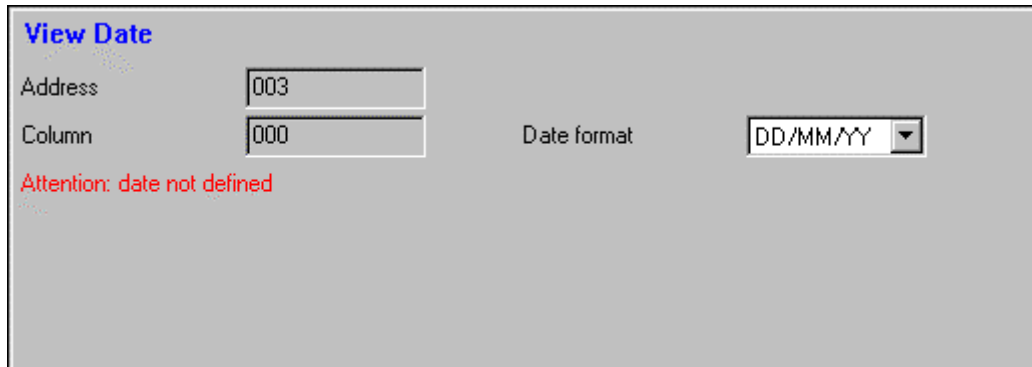


Figure 28 - "View Date" dialog box for microTab

The various fields are:

- **Address:** configuration number of the displayboard as indicated in the area on the left of the displayboard.
- **Column:** position of the first character of the string. The first character on the left is identified with the position 0. Remember that an alphanumeric displayboard has 9 characters so if two displayboards are placed side by side horizontally (the first master and the ones after slaves), the first character on the displayboard to the right will be identified with the position 9 and so on.
- **Date format:** the date can be displayed in two different formats (for example Thursday 20 February 2003):  
DD/MM/YY (which in the example becomes 20/02/03)  
DD MMM YY (which in the example becomes 20 Feb 03)

If the date of the displayboards has not yet been set with the command Object: set date and clocks, the box shows the message:

“Attention: date not defined” to inform the user that the date on the displayboards must be set.

## **Object: view fixed string**

### **microGraph**

The insertion dialog box for viewing a fixed string is as follows:

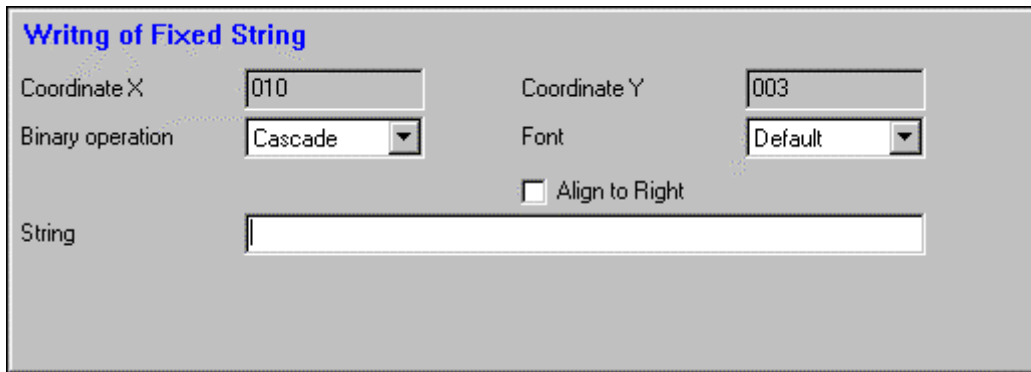


Figure 29 - "Writing a Fixed String" dialog box for microGraph

The various fields are:

- Coordinate X: horizontal position of the object from left to right expressed in displayboard pixels. Pixel 0 is the first pixel on the left and so on. Remember that a graphic displayboard has 90 horizontal pixels so when two displayboards are placed side to side horizontally the first pixel of the displayboard on the right will have coordinate 90, and so on.
- Coordinate Y: vertical position of the object from top to bottom expressed in displayboard pixels. Pixel 0 is the first pixel at the top and so on. Remember that a graphic displayboard has 24 vertical pixels so when two displayboards are placed one on top of the other the first pixel of the lower displayboard will have coordinate 24, and so on.
- Binary operation: with binary operation it is possible to insert the object by filtering the pixels of the object about to be inserted. The various operations are the standard logical bit operations:

Operation	Displayboard pixel color	String pixel color	Final pixel color
Cascade	###	black	black
		yellow	yellow
NOT	###	black	yellow
		yellow	black
AND	yellow	yellow	yellow
	black	black	black
	yellow	black	black
	black	yellow	black
OR	yellow	yellow	yellow
	black	black	black
	yellow	black	yellow
	black	yellow	yellow
XOR	yellow	yellow	black
	black	black	black
	yellow	black	yellow
	black	yellow	yellow

- Fonts: the graphic displayboards contain five different sets of characters. The default character corresponds to small fixed font, which is the same as the font of the text displayboards. For further information about fonts, refer to the chapter Sets of characters.

Font	Size
Small Fixed	fixed font with a width of 6 pixels and a height of 8 pixels
Medium Proportional	proportional font with a height of 12 pixels
Huge Proportional	proportional font with a height of 24 pixels
Special	fixed font with a width of 15 pixels and a height of 24 pixels
Medium Fixed	fixed font with a width of 10 pixels and a height of 12 pixels

- Align to right: if this option is enabled, the coordinate of origin of the object passes from top left to top right, so in this case the string will be displayed to the left of the insertion point selected.
- String: in this field it is possible to insert the string to be displayed. The string can contain all the characters that are active for the font selected. If it is necessary to insert a character which does not feature on the keyboard, it can be inserted with the combination ALT+code of the character to be inserted or alternatively the sequence of characters \xxx where xxx is the code of the character to be inserted preceded by zeros if the code is below 100 (for example, to insert the character ☺ press ALT+2 or \002)  
To insert the character \ use the sequence \\  
In a single fixed string a maximum of 80 characters can be inserted and it is not possible to start a new line. So to create a text on two lines, two different strings must be inserted.

### **microTab**

The insertion dialog box for viewing a fixed string is as follows:

Figure 30 - "Writing a Fixed String" dialog box for microTab

The various fields are:

- Address: configuration number of the displayboard as indicated in the area on the left of the displayboard.
- Column: position of the first character of the string. The first character on the left is identified with the position 0. Remember that an alphanumeric displayboard has 9 characters so if two displayboards are placed side by side horizontally (the first master and the ones after slaves), the first character on the displayboard to the right will be identified with the position 9 and so on.
- String: in this field it is possible to insert the string to be displayed. The string can contain all the characters that are active for the font selected. If it is necessary to insert a character which does not feature on the keyboard, it can be inserted with the combination ALT+code of the character to be inserted or alternatively the sequence of characters \xxx where xxx is the code of the character to be inserted preceded by zeros if the code is below 100 (for example, to insert the character ● press ALT+2 or \002).  
To insert the character \ use the sequence \\  
In a single fixed string a maximum of 53 characters can be inserted.

## Object: view rolling string

### *microGraph*

The insertion dialog box for viewing a rolling string is as follows:

The dialog box titled "Writing of Rolling String" contains the following fields:

- Coordinate X: 006
- Coordinate Y: 005
- Binary operation: Cascade
- Font: Default
- Width: 005
- Delay [1/100 sec.]: 010
- Increment [pixel]: 001
- Align to Right:
- String: (empty text area)

Figure 31 - "Writing a Rolling String" dialog box for *microGraph*

The various fields are:

- Coordinate X: horizontal position of the object from left to right expressed in displayboard pixels. Pixel 0 is the first pixel on the left and so on. Remember that a graphic displayboard has 90 horizontal pixels so when two displayboards are placed side to side horizontally the first pixel of the displayboard on the right will have coordinate 90, and so on.
- Coordinate Y: vertical position of the object from top to bottom expressed in displayboard pixels. Pixel 0 is the first pixel at the top and so on. Remember that a graphic displayboard has 24 vertical pixels so when two displayboards are placed one on top of the other the first pixel of the lower displayboard will have coordinate 24, and so on.

- Binary operation: with binary operation it is possible to insert the object by filtering the pixels of the object about to be inserted. The various operations are the standard logical bit operations:

Operation	Displayboard pixel color	String pixel color	Final pixel color
Cascade	###	black	black
		yellow	yellow
NOT	###	black	yellow
		yellow	black
AND	yellow	yellow	yellow
	black	black	black
	yellow	black	black
	black	yellow	black
OR	yellow	yellow	yellow
	black	black	black
	yellow	black	yellow
	black	yellow	yellow
XOR	yellow	yellow	black
	black	black	black
	yellow	black	yellow
	black	yellow	yellow

- Fonts: the graphic displayboards contain five different sets of characters. The default character corresponds to small fixed font, which is the same as the font of the text displayboards. For further information about fonts, refer to the chapter Sets of characters.

Font	Size
Small Fixed	fixed font with a width of 6 pixels and a height of 8 pixels
Medium Proportional	proportional font with a height of 12 pixels
Huge Proportional	proportional font with a height of 24 pixels
Special	fixed font with a width of 15 pixels and a height of 24 pixels
Medium Fixed	fixed font with a width of 10 pixels and a height of 12 pixels

- Width: this means the width in pixels of the box inside which the string must roll. Note that if the width of the string to be displayed is greater than the box in which the string must roll, one or two spaces must be inserted at the end of the string to prevent the first and last character of the string being displayed attached during the rolling of the string.

- **Align to right:** if this option is enabled, the coordinate of origin of the object passes from top left to top right, so in this case the string will be displayed to the left of the insertion point selected.
- **Delay [1/100sec]:** this is the period of time between one movement of the string and the next.
- **Increment:** this means the movement in pixels the string must make for each time span. By working on the two fields delay and increment it is possible to modify the speed at which the string rolls.
- **String:** in this field it is possible to insert the string to be displayed. The string can contain all the characters that are active for the font selected. If it is necessary to insert a character which does not feature on the keyboard, it can be inserted with the combination ALT+code of the character to be inserted or alternatively the sequence of characters \xxx where xxx is the code of the character to be inserted preceded by zeros if the code is below 100 (for example, to insert the character ● press ALT+2 or \002).  
To insert the character \ use the sequence \\.  
In a single rolling string a maximum of 255 characters can be inserted.

### **microTab**

The insertion dialog box for viewing a rolling string is as follows:

*Figure 32 - "Writing a Rolling String" dialog box for microTab*

The various fields are:

- **Address:** configuration number of the displayboard as indicated in the area on the left of the displayboard.
- **Column:** position of the first character of the string. The first character on the left is identified with the position 0. Remember that an alphanumeric displayboard has 9 characters so if two displayboards are placed side by side horizontally (the first master and the ones after slaves), the first character on the displayboard to the right will be identified with the position 9 and so on.
- **Num. columns:** width in number of characters of the area in which the string must roll.
- **Delay:** this is the period of time between one movement of the string and the next. Unlike the rolling strings of the graphic displayboards, the movement of the string is always of one character.



- **String:** in this field it is possible to insert the string to be displayed. The string can contain all the characters that are active for the font selected. If it is necessary to insert a character which does not feature on the keyboard, it can be inserted with the combination ALT+code of the character to be inserted or alternatively the sequence of characters \xxx where xxx is the code of the character to be inserted preceded by zeros if the code is below 100 (for example, to insert the character ☺ press ALT+2 or \002).  
To insert the character \ use the sequence \\.  
In a single rolling string a maximum of 255 characters can be inserted.

## Object: view image

### *microGraph*

The insertion dialog box for viewing an image is as follows:

Figure 33 - "Insert image" dialog box for microGraph

The various fields are:

- **Coordinate X:** horizontal position of the object from left to right expressed in displayboard pixels. Pixel 0 is the first pixel on the left and so on. Remember that a graphic displayboard has 90 horizontal pixels so when two displayboards are placed side to side horizontally the first pixel of the displayboard on the right will have coordinate 90, and so on.
- **Coordinate Y:** vertical position of the object from top to bottom expressed in displayboard pixels. Pixel 0 is the first pixel at the top and so on. Remember that a graphic displayboard has 24 vertical pixels so when two displayboards are placed one on top of the other the first pixel of the lower displayboard will have coordinate 24, and so on.
- **Binary operation:** with binary operation it is possible to insert the object by filtering the pixels of the object about to be inserted. The various operations are the standard logical bit operations:

Operation	Displayboard pixel color	String pixel color	Final pixel color
Cascade	###	black	black
		yellow	yellow

NOT	###	black	yellow
		yellow	black
AND	yellow	yellow	yellow
	black	black	black
	yellow	black	black
	black	yellow	black
OR	yellow	yellow	yellow
	black	black	black
	yellow	black	yellow
	black	yellow	yellow
XOR	yellow	yellow	black
	black	black	black
	yellow	black	yellow
	black	yellow	yellow

- Size X: horizontal size of the object expressed in displayboard pixels. This size is automatically calculated by the program as soon as a valid image file is selected.
- Size Y: vertical size of the object expressed in displayboard pixels. This size is automatically calculated by the program as soon as a valid image file is selected.
- File name: In this field it is possible to insert the name of the image file to be displayed on the displayboard. With the “Browse...” button it is possible to select the file using a file selection dialog box. The MicroBoards program only allows insertion of monochromatic bitmap files. If the user selects a file with an incorrect format, the program informs the user that the file format selected is not valid. To convert colour bitmap images into monochromatic bitmap use the BitmapConverter program supplied with the MicroBoards program. See BitmapConverter for further details about using the program.

## Object: clear area

### *microGraph*

The insertion dialog box for clearing an area is as follows:

**Reset Displayboard Area**

Coordinate X	002	Coordinate Y	003
Size X	10	Size Y	10

Figure 34 - "Displayboard reset area" dialog box for microGraph

The various fields are:

- **Coordinate X:** horizontal position of the object from left to right expressed in displayboard pixels. Pixel 0 is the first pixel on the left and so on. Remember that a graphic displayboard has 90 horizontal pixels so when two displayboards are placed side to side horizontally the first pixel of the displayboard on the right will have coordinate 90, and so on.
- **Coordinate Y:** vertical position of the object from top to bottom expressed in displayboard pixels. Pixel 0 is the first pixel at the top and so on. Remember that a graphic displayboard has 24 vertical pixels so when two displayboards are placed one on top of the other the first pixel of the lower displayboard will have coordinate 24, and so on.
- **Size X:** horizontal size of the object expressed in displayboard pixels. This size can only be modified using the view area. See *Stretching the inset box* for further details.
- **Size Y:** vertical size of the object expressed in displayboard pixels. See *Stretching the inset box* for further details.

It is important to note that clearing a displayboard area cancels only the pixels active in that area of the displayboard at that moment. This means that if there is an active object, such as a time or a text, in that zone, the next time these objects are updated a new text will appear in the zone just cleared by the clear area command. Moreover, although cancelled from the displayboard, also a non-active object will still remain in the list of objects in the database of the MicroBoards program. This means that if the left mouse button is pressed on a point in the viewing area where before there was a non-active object canceled by a clear area command, the MicroBoards program displays the inset box of this object and calls up an edit dialog box. Finally, if the 'Preview' or 'Send' buttons are pressed, the object will reappear in the viewing area and/or on the displayboards.

---

## Objects with common settings

Objects with common settings are those which make it possible to set the configuration parameters of the displayboards. These settings are identical for both the graphic and the alphanumeric displayboards.

The objects with common settings are the following:

- Displayboards configuration;
- Set date and clocks.

### Object: displayboards configuration

The dialog box for inserting displayboards configuration is as follows:

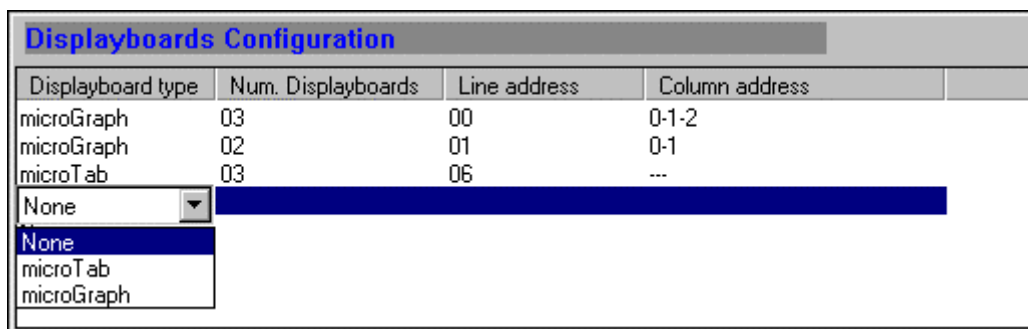


Figure 35 - "Displayboards Configuration" dialog box

This dialog box allows the insertion of the displayboards configuration with which the user will subsequently work. So configuring the displayboards is generally the first operation the user must perform before carrying out any other operation.

Description of the columns:

- Displayboard type: with a double click on the left mouse button in this field, the program automatically proposes a list of the types of displayboards which can be inserted: microTab or microGraph. After selection of the displayboard type, the program automatically updates the field Line address and proposes a displayboard on that line.
- Num. displayboards: also in this case with a double click on the left mouse button in this field the program proposes an area for insertion of the number of displayboards that you want to insert in that line.
- Line address: indicates the line address the MicroBoards program automatically assigns to the various lines. As every graphic displayboard allows the display of three lines with small fixed font, the MicroBoards program increases the line address by three for each graphic displayboard and by one for each alphanumeric displayboard to avoid possible conflicts of address between the various displayboards.
- Column address: in the case of graphic displayboards in this area the program indicates to the user the column address to be assigned to each graphic displayboard inserted. In the case of Figure 35, the following addresses must be assigned in the first line of three graphic displayboards:
  - 0: column zero;
  - 1: column one;
  - 2: column two.

The following addresses must be assigned in the second line of two graphic displayboards:

- 0: column zero;
- 1: column one.

In the case of alphanumeric displayboards the column address is not necessary.

## Object: set date and times

The dialog box for setting the date and time of the displayboards is as follows:

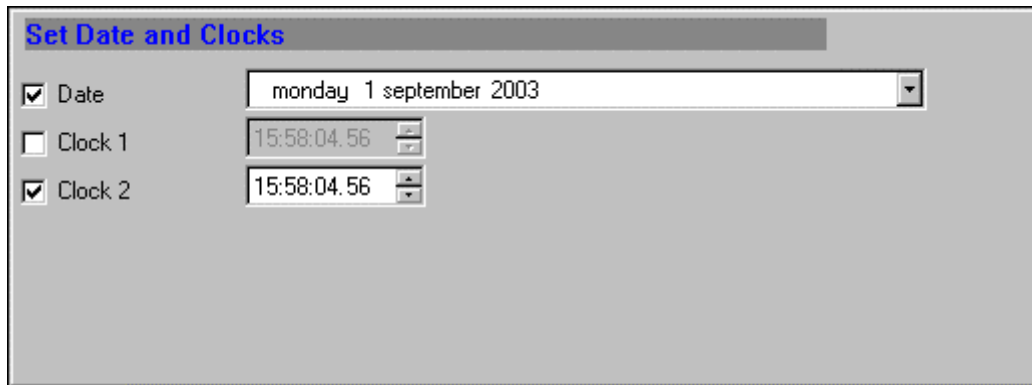


Figure 36 - "Set Date and Clocks" dialog box

When called up, this dialog box automatically proposes the current date and time. It is then possible to modify both the date and the clock fields as desired before sending the command to the displayboards.

The clock field is in the format: HOURS:MIN:SEC.HUNDREDTHS

With the selection field on the left of each line it is possible to set only the clock and/or date, thus leaving unaltered the objects not selected. In the example in Figure 36, only the date and clock 2 will be set.

Updating the date and clocks on the displayboards is very important as the MicroBoards program cannot synchronize itself with the displayboards it must manage until this operation has been performed. For this reason, until the user updates the date and clocks in the displayboards, if objects for the display of the date and/or clocks are inserted, the program warns the user with the message: "Attention: clock 1 or 2 or the date not defined" and the clocks and/or date displayed in the *viewing area* are composed of a series of zeros (depending on the selected format).

---

## Engineering objects

*Engineering* objects allow complete management of both the graphic and alphanumeric displayboards. For optimal use of these commands it is necessary to have a thorough knowledge of the functioning and potential of the Microgate displayboards. For this reason, in this manual it is better to present only the list of *engineering* commands available:

MicroGraph commands:

- Clear displayboard area;
- View date;
- View clock 1;
- View clock 2;
- Select text font;
- Insert image;
- Insert rolling string;
- Insert fixed string;
- Disactivate active object;

- Set digital outputs.

MicroTab commands:

- View date;
- View clock 1;
- View clock 2;
- Insert rolling string;
- Block rolling string;
- Insert fixed string;

Common commands:

- Set date;
- Set clock 1;
- Set clock 2;
- Set break;
- Reset Displayboards;
- Start of program;
- End of program;
- Set label;
- Set cycle;
- Run HW program;
- HW programs setup parameters;
- Self-timing printer strings.

Further information about the functioning and parameters of the various engineering commands can be found in the Reference Manuals supplied with the alphanumeric and graphic displayboards.

# Programming the displayboards

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## Introduction

In Microgate displayboards it is possible to insert a program created by the user that can be run automatically at any moment.

The commands available allow very complex and detailed programming. This version of the MicroBoards program only allows basic programming but even so is very useful for users of Microgate displayboards.

The program that can be created makes it possible to store a series of objects for display, both fixed and active, and to view them in displayboard view at any moment by selecting the required program and without using a PC on site.

---

## Programming

To create a program open a new document. With the Displayboards configuration dialog box create the displayboards configuration to be used. Now insert all the view objects you want to store in the program. These objects can be sent both to the displayboards, with the command '**send**', and in preview, with the command '**Preview**' so you can assess how, during this insertion phase, the program being created will turn out. When all the objects have been correctly inserted, make sure that the displayboards in which the program is to be stored are correctly connected and switched on and then store the configuration thus obtained with the command:

*DisplayboardsCommands ->Programming ->Download program*

At this point the program has been saved in the displayboards and it is possible to call it up at any moment.

---

## Running a program

When the program has been saved in the displayboards, it can be run at any moment. There are two ways of starting the program:

- using the control panel of the displayboards, selecting the program 1 (memory program) with the rotating selector and pressing the reset button or switching on the displayboard if it is still off. To terminate the program turn the rotating selector to program 0, which returns the displayboard to normal functioning mode.
- with the special command available in the MicroBoards program:

- *DisplayboardsCommands ->Programming ->Run program.*  
When you want to return to normal functioning mode, just send the program termination command:  
*DisplayboardsCommands ->Programming ->Stop program.*



# BitmapConverter

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## Introduction

The BitmapConverter program offers a very efficient way of converting any bitmap color file into a monochromatic bitmap file and of modifying its size to adapt it to the number of pixels on the graphic displayboards to be used.

The BitmapConverter program is supplied together with the MicroBoards program and it can be called up with the specific command from the MicroBoards program or from the connection

*Start->Microgate->MicroBoards->BitmapConverter*

created by the installation program.

---

## Using the BitmapConverter program

When started, the BitmapConverter program appears as in the following figure:

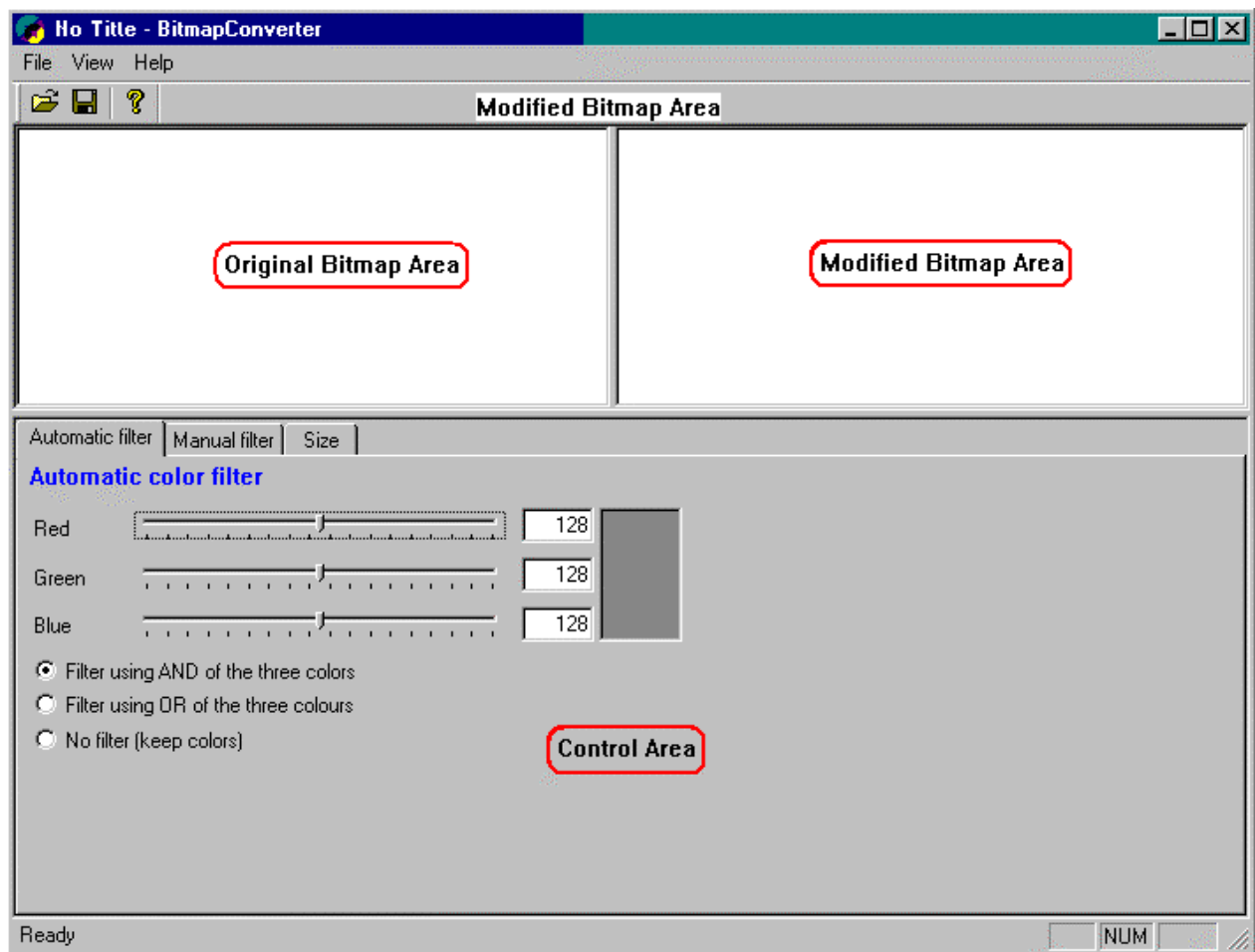


Figure 37 – Main window of BitmapConverter program

The viewing area is subdivided into three main zones:

- **Original bitmap area:** This area is for display of the original bitmap with the original size and colors;
- **Modified bitmap area:** This area is for display of the bitmap modified in color with the manual or automatic color filters and in size;
- **Control area:** This area is for display of the dialog boxes for insertion of the various parameters for filtering the bitmap to be modified.

When started, the first operation to perform is to select the bitmap file you want to convert with the command open, to be found in both the tool bar and the menu:

*File->Open.*

When it opens, the BitmapConverter program creates the new modified bitmap using the automatic filter settings as set at the moment the file is opened and retaining the size of the original bitmap.

At this point the user must intervene in the control area to optimize the monochromatic bitmap and if necessary, to modify its size. Once the desired result has been obtained, it is only necessary to save the new bitmap on disc to be able to call it up later from the MicroBoards program.

When saving the monochromatic bitmap, be careful to assign it a name different from that of the original bitmap file if you do not want to write over it and so lose it.

---

## The control areas

There are three control areas for manipulating the original bitmap. Two of them are for controlling the filter for colors while the third is for modifying its size.

Before describing the various control dialog boxes a brief explanation is necessary of how a color bitmap is saved. First of all, there are two types of bitmap, “classical” bitmaps and “*true color*” bitmaps. In the first case the bitmap is composed of a palette which can be of 16, 256, or 65536 colors. A color on the palette is assigned to each pixel of the bitmap. Consequently the bitmap file is much more compact as the various colors of the palette are defined only once inside the file.

In the “*true color*” bitmap on the other hand the color of each pixel of the bitmap is defined.

In the case of both the palette and “*true color*” bitmaps the color of a bitmap is created as a combination of the primary colors red, green and blue. A value from 0 to 255 is assigned to each color. The relationship between the three primary colours determines the shades of color while the absolute level determines the intensity of color.

This brief introduction to bitmaps allows a better understanding of how the two automatic and manual filters of the BitmapConverter program work..

### Automatic filter

The dialog box for control of the automatic filter is as follows:

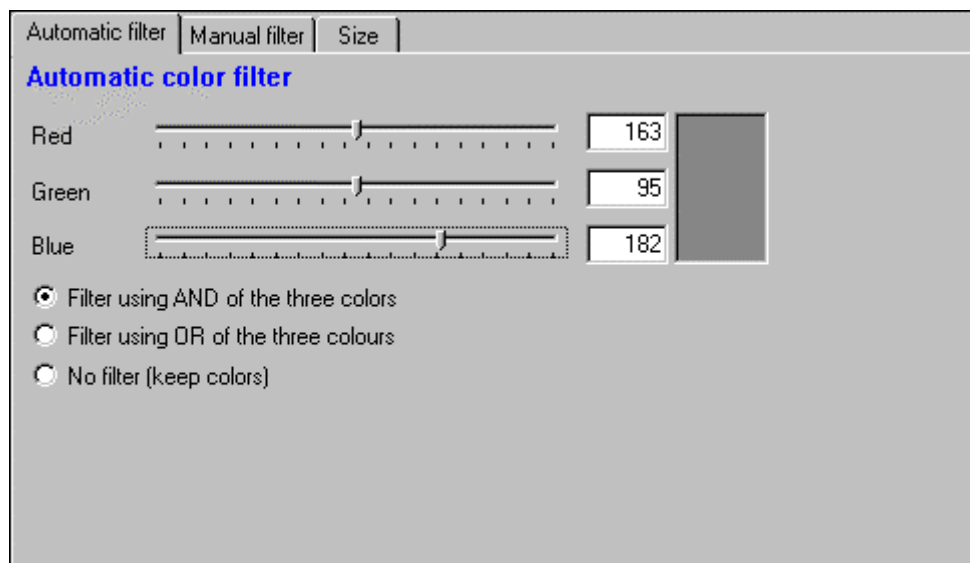


Figure 38 - Dialog box for Automatic Filter

The automatic filter uses the following principle: when a color is assigned by the user, in the final bitmap this filter considers as black (background color) all the pixels whose color is below the color threshold set by the user and as yellow (pixel color) all the pixels whose color is above the color threshold set.

To create the color threshold it is possible to use the three controls for the level of the three primary colors or to directly insert the value desired.

The box to the right of the value set for the three primary colors shows the color threshold obtained.

To give a further possibility for control, the filter on the threshold color can be made to use the logical AND of the three primary colors or the logical OR of the three primary colors: trying both the filters and seeing which of the two produces a better monochromatic bitmap is more useful than any mathematical explanation about what difference either filter makes!

Finally if no type of color filter is desired and you therefore want to keep all the colors of the original bitmap in the final bitmap, select the option “*No filter (keep colors)*”.

## Manual filter

The following is a dialog box for manual filter control:

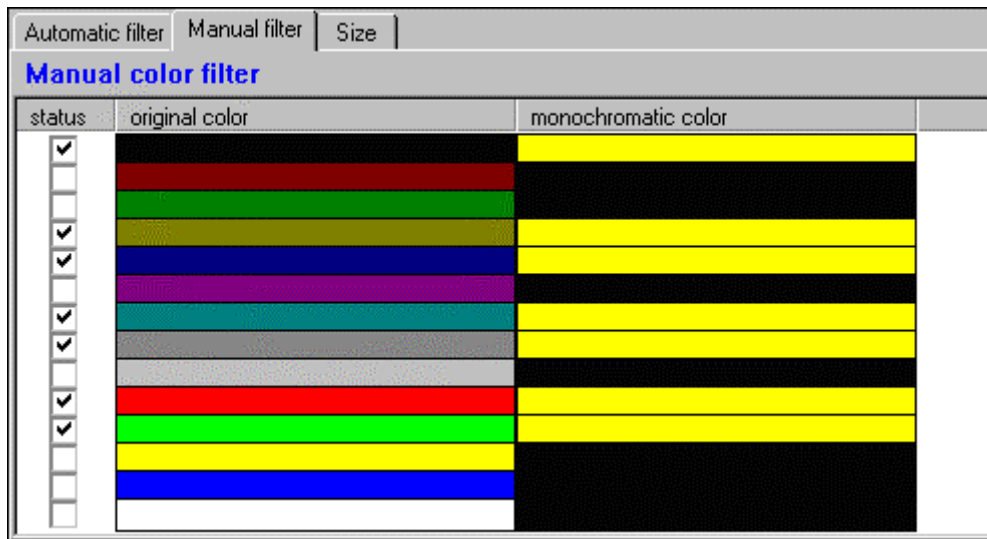


Figure 39 – Dialog box for Manual Filter

With the manual filter it is possible manually to assign the color black (background color) or yellow (pixel color) for each color in the original bitmap. In the list of colors the BitmapConverter program automatically presents only those colors present in the original bitmap, whether the bitmap is one of 16, 256, 65536 or a *true color* bitmap. In fact very often not all the colors of a palette are used.

This filter is very effective when the original bitmap has only a few colors or for more complex bitmaps for manually giving the final touches to some of the colors after a good result has already been achieved with the automatic filter.

## Size

The dialog box for size control is as follows:

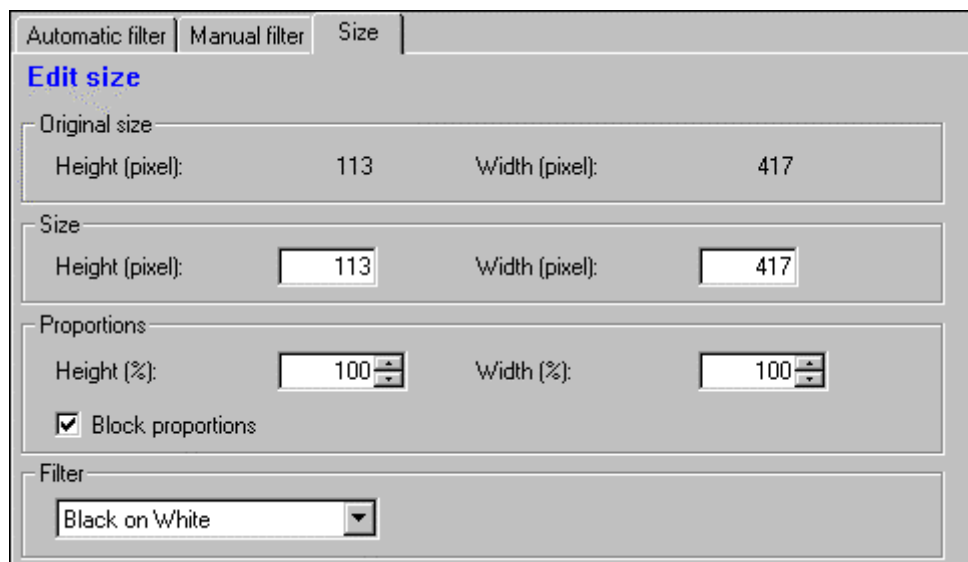


Figure 40 - Dialog box for setting size

The area *Original size* proposes the size of the original bitmap. When a new bitmap file is opened, the BitmapConverter program automatically assigns the size of the original bitmap to the final bitmap.

With this interface the size of the bitmap being processed can be increased or reduced.

The size can be changed either by directly inserting the final size desired in the fields *Height and/or Width* or by inserting the percentage by which the bitmap is to be resized. For example, 200% means the final bitmap will be twice as big as the original and 50% means it will be half as big.

The option *Block proportions* makes it possible to keep the height-width proportion of the final bitmap the same as that of the original or, if it is disabled, to assign height and width completely independently. To understand better, in the first case a circle will remain a circle, in the second case a circle may become an ellipse depending on the relationship between the height and width set for the final bitmap.

It is important to point out that a bitmap is not a vectorial object. This means that when size is increased or reduced, the pixels of the final bitmap are not exact. The result, in particular when considerable resizing occurs, is rather poor quality.

To offset this loss of quality as much as possible, above all when the final bitmap is smaller than the original bitmap, the filters:

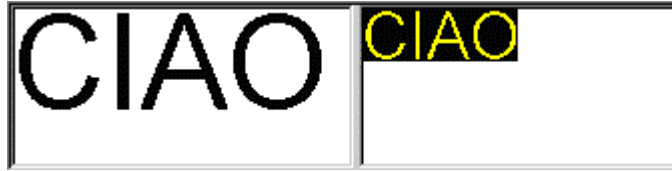
- Black on White;
- Color on Color;
- White on Black

control the algorithm for resizing and enhance the image pixels (yellow) in relation to the background pixels so as to give a more “solid” image.

Figure 41 and Figure 42 give an idea of the difference between the two filters Black on White and White on Black:



*Figure 41 - Filter: White on Black*



*Figure 42 - Filter: Black on White*

In the case of a 50 % reduction in size of the original bitmap.

# The character sets

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## Introduction

The character sets, more commonly known as “*fonts*” are the series of characters which can be used for for the alphanumeric and graphic displayboards.

A set of characters is normally composed of 256 characters even if not all the characters are always available. In the latter case the characters not available usually correspond to the character space.

Another important distinction to make is between a fixed and proportional font. The image below explains very well the differences between the two types of font:



Figure 43 - Fixed and proportional fonts

In the first case the font used is proportional whereas in the second case it is fixed. As can be seen, in the first font the letter “I” is narrower than than the letters “P” and “O”. In the second case all the letters are the same width in pixels.

The advantage of proportional font is that on average it is more compact than fixed font. The advantage is that the width of a string depends not only on the number of characters it contains but also on the characters themselves. In certain cases this can be a severe limitation, above all in cases when one wants to align a number of texts in columns, as for example with names.

In the specific case of the Microgate displayboards, the microGraph graphic displayboard has five fonts:

- Small fixed;
- Medium fixed;
- Medium proportional;
- Huge proportional;
- Special;

while the microTab alphanumeric displayboard has only the one font:

- Small fixed;

Of all the 256 characters of a font, those most commonly used are to be found on the keyboard, such as all the letters of the alphabet, both small and capital (using the “shift” key), the numbers and all the most frequently used accented letters. If however it is necessary to insert a character which is not on the keyboard, there are two ways of doing this:

- combination of the keys ALT+code of the character (with the numeric keypad situated on the right of PC keyboards);
- special character “\” + three-digit code of the character, for example “\002” for the character 2.

The first method is not always possible. The tables describing the various fonts will tell you when it is possible to use this method.

The second method can always be used for every character.

If it is necessary to insert the character “\” in the string, “\\” must be entered to show the single character “\” as the first character “\” is interpreted by the MicroBoards program as a special character.

## **Small Fixed Font**

The size of the character of this font is 6x8 pixels.

With this font a graphic displayboard allows the display of three strings of fifteen characters each.

This font is also used in alphanumeric displayboards, which can display only one line of nine characters.

## **Medium Fixed Font**

The size of the character of this font is 10x12 pixels. With this font a graphic displayboard allows the display of two strings of nine characters each.

## **Medium Proportional Font**

The height of this font is 12 pixels while, as explained above, the width of the characters of this font cannot be defined. With this font a graphic displayboard allows the display of two strings.

## **Huge Proportional Font**

The height of this font is 12 pixels while, as explained above, the width of the characters of this font cannot be defined. With this font a graphic displayboard allows the display of only one string.

## **Special Font**

The size of the character of this font is 15x24 pixels. With this font a graphic displayboard allows the display of only one string of seven characters. It should be noted that the set of characters available for this font is very limited and it has been created only for the display of numbers.



## Table of characters available

The following table summarises the characters available for each set of characters and their position. The column “From the numeric keypad” indicates if it is possible to call up the character with the combination of keys ALT+number. If not, to display that character the sequence of characters \+ character code must be used, as described in the Introduction of this chapter.

ASCII code	From number keypad	Small fixed character	Med prop character	Med fixed character	Huge prop character	Special character
0	no	empty	empty	empty	empty	empty
1	no	☺	Space	☺	Space	Space
2	no	☹	Space	☹	Space	Space
3	no	♥	Space	♥	Space	Space
4	no	♦	Space	♦	Space	Space
5	no	♣	Space	Space	Space	Space
6	no	♠	Space	Space	Space	Space
7	no	•	Space	•	Space	Space
8	no	Space	Space	Space	Space	Space
9	no	○	Space	Space	Space	Space
10	no	◼	Space	Space	Space	Space
11	no	♂	Space	Space	Space	Space
12	no	♀	Space	Space	Space	Space
13	no	♪	Space	Space	Space	Space
14	no	🎵	Space	Space	Space	Space
15	no	☀	Space	Space	Space	Space
16	no	▶	Space	Space	Space	Space
17	no	◀	Space	Space	Space	Space
18	no	↕	Space	Space	Space	Space
19	no	!!	Space	Space	Space	Space
20	yes	¶	Space	Space	Space	Space
21	yes	§	Space	Space	Space	Space
22	no	■	Space	Space	Space	Space
23	no	↕	Space	Space	Space	Space
24	no	↑	Space	Space	Space	Space
25	no	↓	Space	Space	Space	Space
26	no	→	Space	Space	Space	Space
27	no	←	Space	Space	Space	Space
28	no	└	Space	Space	Space	Space
29	no	↔	Space	Space	Space	Space
30	no	▲	Space	Space	Space	Space
31	no	▼	Space	Space	Space	Space
32	yes	Space	Space	Space	Space	Space
33	yes	!	!	!	!	Space
34	yes	“	“	“	“	Space

35	yes	#	#	#	#	Space
36	yes	\$	\$	\$	\$	Space
37	yes	%	%	%	%	Space
38	yes	&	&	&	&	Space
39	yes	,	,	,	,	Space
40	yes	(	(	(	(	Space
41	yes	)	)	)	)	Space
42	yes	*	*	*	*	Space
43	yes	+	+	+	+	+
44	yes	,	,	,	,	Space
45	yes	-	-	-	-	Space
46	yes	.	.	.	.	.
47	yes	/	/	/	/	Space
48	yes	0	0	0	0	0
49	yes	1	1	1	1	1
50	yes	2	2	2	2	2
51	yes	3	3	3	3	3
52	yes	4	4	4	4	4
53	yes	5	5	5	5	5
54	yes	6	6	6	6	6
55	yes	7	7	7	7	7
56	yes	8	8	8	8	8
57	yes	9	9	9	9	9
58	yes	:	:	:	:	:
59	yes	;	;	;	;	Space
60	yes	<	<	<	<	Space
61	yes	=	=	=	=	Space
62	yes	>	>	>	>	Space
63	yes	?	?	?	?	Space
64	yes	@	@	@	@	Space
65	yes	A	A	A	A	Space
66	yes	B	B	B	B	Space
67	yes	C	C	C	C	Space
68	yes	D	D	D	D	Space
69	yes	E	E	E	E	Space
70	yes	F	F	F	F	Space
71	yes	G	G	G	G	Space
72	yes	H	H	H	H	Space
73	yes	I	I	I	I	Space
74	yes	J	J	J	J	Space
75	yes	K	K	K	K	Space
76	yes	L	L	L	L	Space
77	yes	M	M	M	M	Space
78	yes	N	N	N	N	Space
79	yes	O	O	O	O	Space
80	yes	P	P	P	P	Space
81	yes	Q	Q	Q	Q	Space
82	yes	R	R	R	R	Space
83	yes	S	S	S	S	Space
84	yes	T	T	T	T	Space

85	yes	U	U	U	U	Space
86	yes	V	V	V	V	Space
87	yes	W	W	W	W	Space
88	yes	X	X	X	X	Space
89	yes	Y	Y	Y	Y	Space
90	yes	Z	Z	Z	Z	Space
91	yes	[	[	[	[	Space
92	yes	\	\	\	\	Space
93	yes	]	]	]	]	Space
94	yes	^	^	^	^	Space
95	yes	˘	˘	˘	˘	Space
96	yes	˘	˘	˘	˘	Space
97	yes	a	a	a	a	Space
98	yes	b	b	b	b	Space
99	yes	c	c	c	c	Space
100	yes	d	d	d	d	Space
101	yes	e	e	e	e	Space
102	yes	f	f	f	f	Space
103	yes	g	g	g	g	Space
104	yes	h	h	h	h	Space
105	yes	i	i	i	i	Space
106	yes	j	j	j	j	Space
107	yes	k	k	k	k	Space
108	yes	l	l	l	l	Space
109	yes	m	m	m	m	Space
110	yes	n	n	n	n	Space
111	yes	o	o	o	o	Space
112	yes	p	p	p	p	Space
113	yes	q	q	q	q	Space
114	yes	r	r	r	r	Space
115	yes	s	s	s	s	Space
116	yes	t	t	t	t	Space
117	yes	u	u	u	u	Space
118	yes	v	v	v	v	Space
119	yes	w	w	w	w	Space
120	yes	x	x	x	x	Space
121	yes	y	y	y	y	Space
122	yes	z	z	z	z	Space
123	yes	{	{	{	{	Space
124	yes					Space
125	yes	}	}	}	}	Space
126	yes	~	~	~	~	Space
127	no	△	Space	Space	Space	Space
128	yes	Ç	Ç	Space	Space	Space
129	yes	ü	ü	Space	ü	Space
130	yes	é	é	Space	é	Space
131	yes	â	â	Space	â	Space
132	yes	ä	ä	Space	ä	Space
133	yes	à	à	Space	à	Space
134	yes	å	å	Space	å	Space

135	yes	ç	ç	Space	Space	Space
136	yes	ê	ê	Space	ê	Space
137	yes	ë	ë	Space	ë	Space
138	yes	è	è	Space	è	Space
139	yes	ï	ï	Space	ï	Space
140	yes	î	î	Space	î	Space
141	yes	ì	ì	Space	ì	Space
142	yes	Ä	Ä	Space	Ä	Space
143	yes	Å	Å	Space	Å	Space
144	yes	É	É	Space	É	Space
145	yes	æ	æ	Space	æ	Space
146	yes	Æ	Æ	Space	Space	Space
147	yes	ô	ô	Space	ô	Space
148	yes	ö	ö	Space	ö	Space
149	yes	ò	ò	Space	ò	Space
150	yes	û	û	Space	û	Space
151	yes	ù	ù	Space	ù	Space
152	yes	ÿ	ÿ	Space	ÿ	Space
153	yes	Ö	Ö	Space	Ö	Space
154	yes	Ü	Ü	Space	Ü	Space
155	yes	ø	%o	Space	%o	Space
156	yes	£	£	Space	£	Space
157	yes	Ø	Ø	Space	Ø	Space
158	yes	x	x	Space	x	Space
159	yes	f	f	Space	Space	Space
160	yes	á	á	Space	á	Space
161	yes	í	í	Space	í	Space
162	yes	ó	ó	Space	ó	Space
163	yes	ú	ú	Space	ú	Space
164	yes	ñ	ñ	Space	ñ	Space
165	yes	Ñ	Ñ	Space	Space	Space
166	yes	ª	ª	Space	ª	Space
167	yes	º	º	Space	º	Space
168	yes	¿	¿	Space	Space	Space
169	yes	®	®	Space	®	Space
170	yes	¬	¬	Space	¬	Space
171	yes	½	½	Space	½	Space
172	yes	¼	¼	Space	¼	Space
173	yes	¡	¡	Space	Space	Space
174	yes	«	«	Space	«	Space
175	yes	»	»	Space	»	Space
176	no	Š	Š	Space	Š	Space
177	no	Š	Š	Space	Š	Space
178	no	Œ	Œ	Space	Œ	Space
179	no	Œ	Œ	Space	Œ	Space
180	no	Œ	Œ	Space	Œ	Space
181	yes	Á	Á	Space	Á	Space
182	yes	Â	Â	Space	Â	Space
183	yes	Ã	Ã	Space	Ã	Space
184	yes	©	©	Space	©	Space

185	no		‘	Space	‘	Space
186	no		’	Space	’	Space
187	no	]]	“	Space	“	Space
188	no	]]	”	Space	”	Space
189	yes	¢	¢	Space	Space	Space
190	yes	¥	¥	Space	¥	Space
191	no	┌	—	Space	—	Space
192	no	┌	~	Space	~	Space
193	no	┐	™	Space	™	Space
194	no	┐	§	Space	§	Space
195	no	┐	›	Space	›	Space
196	no	—	œ	Space	œ	Space
197	no	+	⌘	Space	⌘	Space
198	yes	ã	ã	Space	ã	Space
199	yes	Ã	Ã	Space	Ã	Space
200	no	ℒ	•	Space	•	Space
201	no	ℒ	—	Space	—	Space
202	no	ℒ	Space	Space	Space	Space
203	no	ℒ	Space	Space	Space	Space
204	no	ℒ	Space	Space	Space	Space
205	no	=	Space	Space	Space	Space
206	no	≠	Space	Space	Space	Space
207	yes	⌘	Space	Space	Space	Space
208	yes	ö	Space	Space	Space	Space
209	yes	Ð	Ð	Space	Ð	Space
210	yes	Ê	Ê	Space	Ê	Space
211	yes	Ë	Ë	Space	Ë	Space
212	yes	Ë	Ë	Space	Ë	Space
213	yes	ı	Space	Space	Space	Space
214	yes	ı	ı	Space	ı	Space
215	yes	ı	ı	Space	ı	Space
216	yes	ı	ı	Space	ı	Space
217	no	┘	ÿ	Space	ÿ	Space
218	no	┘	█	Space	█	Space
219	no	█	█	Space	█	Space
220	no	█	█	Space	█	Space
221	yes	█	█	Space	█	Space
222	yes	█	█	Space	█	Space
223	no	█	█	Space	█	Space
224	yes	Ó	Ó	Space	Ó	Space
225	yes	ß	ß	Space	ß	Space
226	yes	Ô	Ô	Space	Ô	Space
227	yes	Ò	Ò	Space	Ò	Space
228	yes	ö	Space	Space	Space	Space
229	yes	Ö	Ö	Space	Ö	Space
230	yes	μ	μ	Space	Space	Space
231	yes	þ	þ	Space	Space	Space
232	yes	þ	þ	Space	þ	Space
233	yes	Ú	Ú	Space	Ú	Space
234	yes	Û	Û	Space	Û	Space

235	yes	Ù	Ù	Space	Ù	Space
236	yes	ý	Space	Space	Space	Space
237	yes	Ý	Ý	Space	Ý	Space
238	yes	—	—	Space	—	Space
239	yes	‘	’	Space	’	Space
240	yes	-		Space		Space
241	yes	±	±	Space	±	Space
242	no	=	Space	Space	o	Space
243	yes	<sup>3</sup> / <sub>4</sub>	<sup>3</sup> / <sub>4</sub>	Space	<sup>3</sup> / <sub>4</sub>	Space
244	no	€	€	Space	€	Space
245	no	§	Space	Space	Space	Space
246	yes	÷	÷	Space	÷	Space
247	yes	◊	◊	Space	◊	Space
248	yes	◊	◊	Space	◊	Space
249	yes	¨	¨	Space	¨	Space
250	yes	·	·	Space	·	Space
251	yes	¹	¹	Space	¹	Space
252	yes	³	³	Space	³	Space
253	yes	²	²	Space	²	Space
254	no	■	:	Space	:	Space
255	yes	Space	Space	Space	Space	Space

# Configurations

---

## Introduction

All the configurations of the program can be called up from the Configuration Menu.

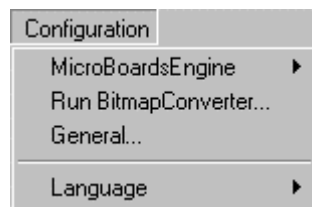


Figure 44 - Configuration Menu

In particular the program contains a dialog box for configuration of the serial port to which the displayboards are connected, a dialog box for setting the basic configurations and a submenu for setting the program language.

---

## Serial configuration dialog box

The serial configuration dialog box is as follows:

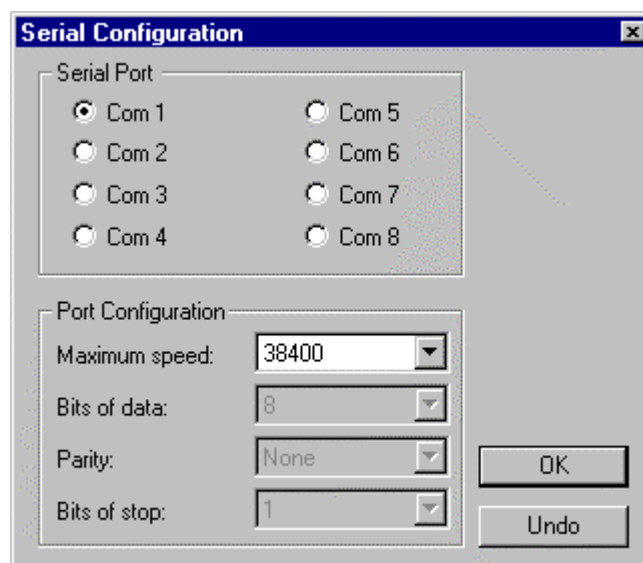


Figure 45 - Serial Configuration dialog box

With the serial configuration dialog box it is possible to set:

- the number of the serial port, from 1 to 8, to which the displayboards are connected;
- the speed of the serial port up to the maximum speed of 38400. The choice of speed generally depends on the quality of the connection being used between the personal computer and the displayboards. The poorer the connection, for example very long cables or cables of very bad quality, the lower the speed which must be selected.
- The other parameters of the serial port such as Bits of data, Parity and Bits of stop cannot be configured as the displayboards tolerate only a protocol with 8 bits of data, no parity and one bit of stop.

After editing, pressing the OK button confirms the new configuration while pressing the Undo button returns you to the previous configuration. If modifications are made, they will be saved in the program configuration and will be kept also on subsequent occasions when the MicroBoards program is started.

It is very important to point out that the serial speed set in this menu must be the same as the serial speed set with the *dip-switches* on the control panel of the displayboards. If these two speeds are not the same, the commands sent by the MicroBoards program will never reach the displayboards, giving the impression that the displayboards are not working.

---

## Basic configurations

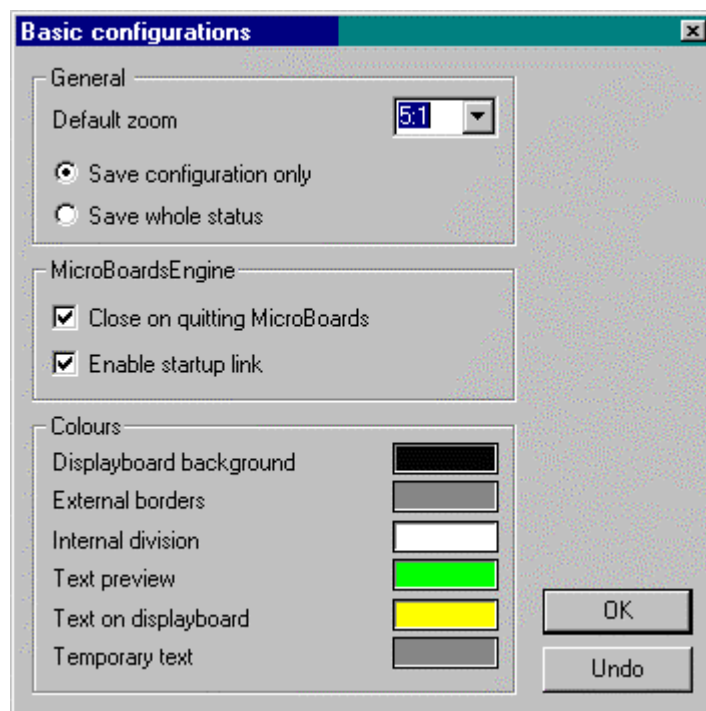


Figure 46 - Basic Configurations dialog box

The basic configurations are divided into:

- General;
- Serial;
- Colors.

After making modifications, press OK to save them as part of the program. Press Undo if you do not want to confirm the modifications made.



## General

General configurations include:

- **Default zoom:** this is the zoom which is automatically applied when a new document is created;
- **Save configuration only:** if this option is activated when a file is saved for the first time, the save dialog box automatically proposes saving of the configuration only;
- **Save whole status:** if this option is activated when a file is saved for the first time, the save dialog box automatically proposes saving of the whole status.

## Serial

Serial configuration allows you to enable or disable automatic opening of the serial port when the MicroBoards program is started.

## Colors

Color configurations include:

- Displayboard backgrounds;
- External borders;
- Internal divisions;
- Text preview;
- Text on displayboard;
- Temporary text.

Colors are modified by pressing the left mouse button on the panel with the color to be modified.

A dialog box is automatically opened which allows you to modify the color with various sophisticated controls. If you press OK, the new color is assigned to the corresponding area. Press the Undo button to quit the color selection dialog box, leaving the original color unchanged.

The new colors set in this way become operative only the next time the program is started. After editing, it is therefore necessary to close the MicroBoards program and then to start it up again to be able to use the new colors.

Figure 47 shows which sector of the viewing window the various colors refer to.

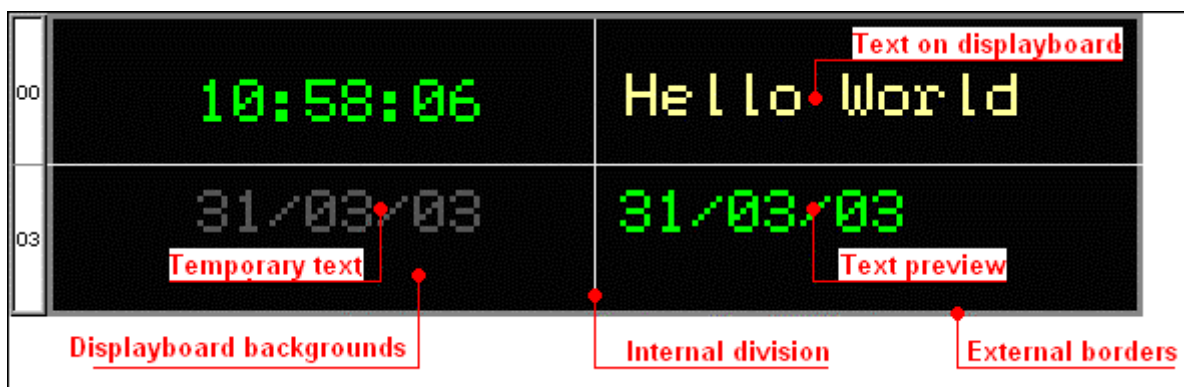


Figure 47 - Configuration of the various color areas

---

## Language configuration

The MicroBoards program is available in various languages.

When the submenu *Configuration->Language* is called up, a menu is displayed which shows all the languages available and a tick indicates the language being used:



The language of the program can be modified by selecting another language. This new configuration is automatically saved in the start up configurations of the program and so the new language selected automatically becomes the current language.

The language can be changed at any moment during running of the program. However we recommend that you set the language desired the first time the program is run.

# Menu Bar

---

## File Menu



Figure 48 – File Menu

- **New** (rapid selection key CTRL+N): creates a new file and automatically proposes the dialog box for inserting the displayboards configuration;
- **Open ...**(rapid selection key CTRL+O): displays the dialog box for selecting the document you want to open. The document must already exist;
- **Close**: closes the document active in the program desktop area and automatically asks if you want to save it if it has been modified;
- **Save** (rapid selection key CTRL+S): saves the document active in the program desktop area. The document will be saved in the whole status or only configuration mode set the first time the document was saved. If you want to modify the save mode, the document must be saved with another name with the command Save with name... ;
- **Save with name...**: this command displays the dialog box which allows you to modify the name and/or position of the document active in the program desktop area before saving it on disc as described in Saving a file. This operation then updates the name of the document with the new name inserted;
- **Recently used files list**: the program proposes the last four MicroBoards files opened by the user so they can be reopened more rapidly;

- **Quit** (rapid selection key ALT+F4): quits the MicroBoards program. If there are any documents open which have not been saved, the user is asked if he/she wants to save them, not save them or annul quitting the program.

---

## Edit Menu

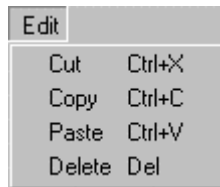


Figure 48 - Edit Menu

- **Cut** (rapid selection keys CTRL+X): copies the selected object into the clipboard and then deletes it;
- **Copy** (rapid selection keys CTRL+C): copies the selected object into the clipboard;
- **Paste** (rapid selection keys CTRL+V): inserts the object contained in the clipboard in the top left. After insertion the object can be moved to the desired position;
- **Delete** (rapid selection key DEL): deletes the object selected.

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## View Menu

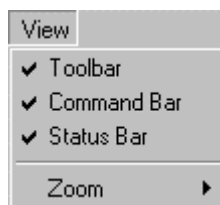


Figure 50 - View Menu

- **Toolbar**: displays/hides the toolbar;
- **Command Bar**: displays/hides the displayboard command bar;
- **Status Bar**: displays/hides the status bar;
- **Zoom**: calls up the zoom submenu.

### Zoom submenu

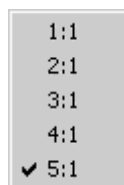


Figure 51 - Zoom Submenu

- **1:1**: when this zoom is set, one displayboard pixel is displayed with one screen pixel;
- **2:1**: when this zoom is set, one displayboard pixel is displayed with two screen pixels;
- **3:1**: when this zoom is set, one displayboard pixel is displayed with three screen pixels;
- **4:1**: when this zoom is set, one displayboard pixel is displayed with four screen pixels;
- **5:1**: when this zoom is set, one displayboard pixel is displayed with five screen pixels..

A tick indicates the zoom in current use.

---

## Window Menu



Figure 52 - Window Menu

- **Cascade**: this command reorganizes the display of currently open documents, stacking them in sequence with the standard Windows size;
- **Tile**: this command reorganizes the display of currently open documents horizontally, dividing the MicroBoards program desktop area into equal parts for each document;
- **Arrange icons**: this command lines up all the icons currently open in icon mode horizontally, starting from the bottom left corner;
- **Divide**: this command positions the cursor on the line dividing the two windows for viewing and inserting, to allow them to be resized;
- **Open documents list**: all the documents currently open are displayed and the active document is indicated. It is possible to change the active document by selecting another document.

---

## DisplayboardsCommands Menu



Figure 53 - DisplayboardsCommands Menu

- **Update Displayboards** (rapid selection key F5): this command first resets the displayboards and then sends in sequence to the displayboards all the commands associated with the objects currently inserted in the viewing area. In this way all the displayboards are updated with the configuration currently active;
- **Displayboards Settings**: calls up the Displayboards Settings submenu;
- **Reset Displayboards**: calls up the Reset Displayboards submenu;
- **Engineering**: calls up the Engineering submenu;
- **Programming**: calls up the Programming submenu.

## Displayboards Setting Submenu

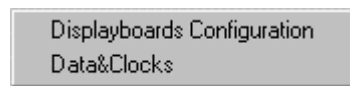


Figure 54 - Displayboards Setting Submenu

- **Displayboards configuration**: this command calls up the dialog box for insertion of the displayboards configuration;
- **Date & Clocks**: this command calls up the dialog box for insertion of the date and the displayboards clocks.

## Reset Displayboards Submenu



Figure 55 - Reset Displayboards Submenu

- **Strong Reset**: (rapid selection keys CTRL+R): this command sends a strong reset command to the displayboards;
- **Weak reset**: this command sends a weak reset command to the displayboards;
- **Reset Area**: this command calls up the dialog box for selection of an area on which to generate a reset area.

## Engineering Submenu

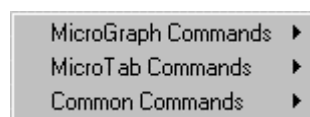


Figure 56 - Engineering Submenu

- **MicroGraph Commands**: calls up the MicroGraph Commands submenu;

- **MicroTab Commands:** calls up the MicroTab Commands submenu;
- **Common Commands:** calls up the Common Commands submenu.

## MicroGraph Commands Submenu

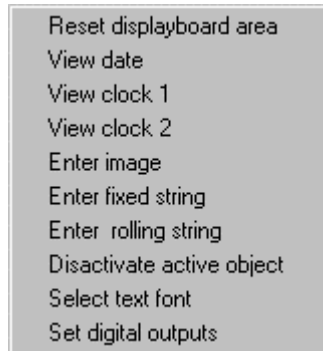


Figure 57 - MicroGraph Commands Submenu

- **Reset displayboard area:** calls up the dialog box for sending a reset command for a displayboard area;
- **View date:** calls up the dialog box for sending a command to display the date;
- **View clock 1:** calls up the dialog box for sending a command to display clock 1;
- **View clock 2:** calls up the dialog box for sending a command to display clock 2;
- **Enter image:** calls up the dialog box for sending a command to display an image;
- **Enter fixed string:** calls up the dialog box for sending a command to display a fixed string;
- **Enter rolling string:** calls up the dialog box for sending a command to display a rolling string;
- **Disactivate active object:** calls up the dialog box for sending a command to deactivate an active object;
- **Select text font:** calls up the dialog box for sending a command to set the text font for graphic displayboards;
- **Set digital outputs:** calls up the dialog box for sending a command to set the digital outputs.

## MicroTab Commands Submenu



Figure 58 - MicroTab Commands Submenu

- **View date:** calls up the dialog box for sending a command to display the date;
- **View clock 1:** calls up the dialog box for sending a command to display clock 1;
- **View clock 2:** calls up the dialog box for sending a command to display clock 2;
- **Enter fixed string:** calls up the dialog box for sending a command to display a fixed string;
- **Enter rolling string:** calls up the dialog box for sending a command to display a rolling string;
- **Lock rolling string:** calls up the dialog box to send a command to lock a rolling string.

## Common Commands Submenu



Figure 59 - Common Commands Submenu

- **Set date:** calls up the dialog box for sending a command to set the date;
- **Set clock 1:** calls up the dialog box for sending a command to set clock 1;
- **Set clock 2:** calls up the dialog box for sending a command to set clock 2;



- **Set break:** calls up the dialog box for sending a command to set the break;
- **Reset Displayboards:** calls up the dialog box for sending a command to reset the displayboards;
- **Program start:** calls up the dialog box for sending a command to initialize a program;
- **Program end:** calls up the dialog box for sending a command to end a program;
- **Set label:** calls up the dialog box for sending a command to set a label;
- **Set cycle:** calls up the dialog box for sending a command to set a cycle;
- **Run HW program:** calls up the dialog box for sending a command to select a hardware program;
- **HW programs parameters setup:** calls up the dialog box for sending a command to set the parameters of the various hardware programs;
- **Self-timing printer strings:** calls up the dialog box for sending a command to set the strings for the self-timing printer.

## Programming submenu

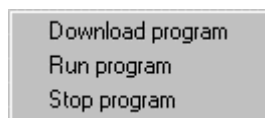


Figure 60 – Programming Submenu

- **Download program:** generates the sequence of commands for downloading a new internal program to the displayboards;
- **Run program:** generates a command to the displayboards to start the internal program;
- **Stop program:** generates a command to the displayboards to stop the internal program and return to normal mode.

---

## Configuration Menu

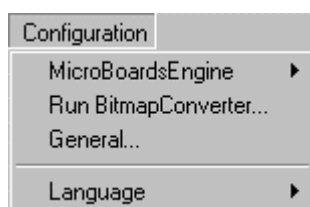


Figure 61 - Configuration Menu

- **Serial Configuration...:** calls up the dialog box for configuration of the serial port;

- **Open/Close serial port:** allows opening or closing of the serial port;
- **Run BitmapConverter...:** launches a BitmapConverter program session;
- **General...:** calls up the dialog box for configuration of all the program options;
- **Language:** calls up the language submenu.

## Language submenu

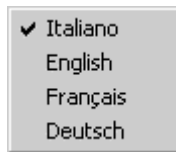


Figure 62 - Language Submenu

This submenu displays all the languages available for the MicroBoards program and indicates with a tick the one currently in use. The language of the program can be changed by selecting another language.

---

## Help Menu



Figure 63 - Help Menu

- **Online Help:** calls up online Help for the MicroBoards program;
- **Help Topics:** calls up the contents list by topic of the MicroBoards program online Help;
- **About MicroBoards:** displays the dialog box containing information about the program in use such as the version and the compilation date.


# Toolbar

## Introduction




The *toolbar* contains some of the commands featured in the *menu bar* which are most frequently used so they can be accessed more rapidly.


## New

 creates a new file and automatically proposes the dialog box for insertion of the displayboards configuration.

## Open

 displays the dialog box which allows you to select the document you want to open. The document must already exist.

## Save

 saves the active document in the desktop area of the program. The document will be saved in the whole status or only configuration mode set the first time the document was saved. If you want to modify the save mode, the document must be saved with another name with the command Save with name... ;


## Cut

 copies the object selected into the clipboard and then deletes it.

## Copy

 copies the selected object into the clipboard.

## Paste

 inserts the object contained in the clipboard into the top left. After insertion the object can be moved to the position desired.

## Cancel



Deletes the selected object.

## General configuration



displays the dialog box for configuration of the general settings of the MicroBoards program.

## About MicroBoards



displays the dialog box containing information about the program in use with the version and the compilation date.

# Command Bar

## Introduction



The *command bar* contains some of the most frequently used commands specific to the displayboards so they can be accessed more rapidly.

## Configure Displayboards



calls up the dialog box for inserting the displayboards configuration.

## Set date and clocks



calls up the dialog box for inserting the date and the displayboards clocks.

## Generate reset



generates a strong reset of the displayboards.

## Update displayboards



first resets the displayboards and then sends in sequence to the displayboards all the commands associated with the objects currently inserted in the viewing area. In this way all the displayboards are updated with the configuration currently active.

## Enable/Disable connection



Enables/Disables the serial connection between the displayboards and the MicroBoards program.

# Status Bar

## Introduction



Figure 64 - Status Bar on microGraph



Figure 65 - Status Bar on microTab

The status bar includes the standard Windows fields:

- Command selected;
- Upper-case active/disactive;
- Numeric keypad (Num Lock) active/disactive (second field from right);
- Scroll lock (Scroll Lock) active/disactive (first field from right).

As well as the standard fields there is a field dedicated to the MicroBoards program:

- Serial port status;
- Position of the mouse pointer in displayboard coordinates;

The serial port status field tells you immediately the serial port of the personal computer to which the MicroBoards commands are sent and if the serial port is open or closed. If the serial port is closed, the commands are not sent to the displayboards even if correctly connected.

When the mouse pointer is outside the displayboards area the field is empty, while as soon as the pointer moves into the displayboards area, the current position in displayboard coordinates is automatically updated.

The coordinates differ depending on whether the pointer is situated in a microGraph or microTab area.

In the case of a microGraph area, the coordinates are expressed in pixel coordinates, where 0,0 represents the coordinate at the top left, 89,23 the coordinates at the bottom right, of the first displayboard and so on.

In the case of a microTab area, the coordinates are expressed in character coordinates, where 0,0 represents the coordinate of the first character on the left of the first displayboard, 8,0 the coordinates of the last character of the first displayboard and so on.