SECONS

MicroVGA-TEXT User manual

WWW: http://www.MicroVGA.com/

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General information

Dimension of the displayed text array is 80x25 with 16 background and foreground colors.

Printable characters

Each received printable character is displayed on the screen with current background and foreground color and the cursor is moved one position rightward. If the end of line is reached, the cursor is moved to next line. If the right-bottom character is printed, the cursor does not move, but next printed character scrolls the whole display one line up, resulting in a new blank line with current background color at the bottom and a character is printed on first row of the new line plus cusror is moved to second row.

Flow Control

RTS of one DTE is connected to the CTS of the MicroVGA and the CTS of the DTE is connected to the RTS of the MicroVGA.

The RTS signal indicates that the device is ready to receive the data. The RTS pin is asserted (driven low) whenever the receiver is ready to receive data and the RTS pin is driven high whenever the device is not ready to receive (i.e., when the receiver buffer is full).

The CTS acts as an input pin which can control the transmission. This pin is controlled by another device (typically a host device). Transmission will begin only when the CTS is sampled low.

Control characters

Code	Hex	Key	Name	Description
BEL	0x07	^G	Bell	Ignored
BS	0x08	^H	Backspace	Backspaces one column
HT	0x09	^I	Tab	Goes to the next tab stop
LF	0x0A	^J	Line feed	Move cursor to next line
CR	0x0D	^M	Carriage return	Gives a carriage return
NUL	0x00	–	–	Ignored
ESC	0x1B	^[	Escape	Starts an escape sequence (ANSI Control Code)

ANSI Control Codes

The MicroVGA implements a subset of the VT102 and ECMA-48/ISO 6429/ANSI X3.64 terminal controls, plus certain private-mode sequences for changing character-set/font, etc.

All of these escape sequences start with the characters ESC (ASCII decimal 27/hex 0x1B/octal 033) and [(left bracket). This sequence is called CSI for Control Sequence Introducer (or Control Sequence Initiator). There is a single-character CSI (155/0x9B/0233) defined in ISO 6429 as well, however it is not supported by MicroVGA. The ESC+[two-character sequence has to always be used.

ANSI sequence is of following format:

ESC [<params> <code>

where:

ESC	is ASCII character 0x1B, 27 DEC or 030 in octal ('\030')
[	is left square bracket, ASCII character 0x5B
<params>	is either ommited (blank) or one decimal number or two decimal numbers delimited by ';'
<code>	is single ascii character specifying meaning of ANSI control sequence

Examples:

```
<ESC>[34m
<ESC>[5;5f
<ESC>[2J
<ESC>[K
```

Set Attribute Mode

<ESC>[{attr}m

Sets multiple display attribute settings. The following lists standard attributes:

Attribute	Description
0	Reset all attributes
1	Set high intensity foreground (Bright)
2	Set low intensity foreground (Dim)
4	High intensity background (VT100 Underscore)
5	Set blink mode
6	Disable blink or high intensity background
7	Reverse
8	Hidden
	Foreground Colours
30	Black
31	Red
32	Green
33	Yellow
34	Blue
35	Magenta
36	Cyan
37	White
	Background Colours
40	Black
41	Red
42	Green
43	Yellow
44	Blue
45	Magenta
46	Cyan
47	White

Intensity	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Normal	Black	Red	Green	Yellow	Blue	Magenta	Cyan	White
Bright	Black	Red	Green	Yellow	Blue	Magenta	Cyan	White

Erase End of Line

<ESC>[K

- Erases a section from the current cursor position to the end of the current line.

Erase Screen

<ESC>[2J

- Erases the screen with the background colour and moves the cursor to top-left character.

Move Cursor (Cursor Home)

```
<ESC>[{ROW};{COLUMN}H
<ESC>[{ROW};{COLUMN}f
```

- Sets the cursor position where subsequent text will begin.

Cursor Up

```
<ESC>[{COUNT}A
```

- Moves the cursor up by *COUNT* rows; the default count is 1.

Cursor Down

```
<ESC>[{COUNT}B
```

- Moves the cursor down by *COUNT* rows; the default count is 1.

Cursor Forward

```
<ESC>[{COUNT}C
```

- Moves the cursor *forward* by *COUNT* columns; the default count is 1.

Cursor Backward

```
<ESC>[{COUNT}D
```

- Moves the cursor *backward* by *COUNT* columns; the default count is 1.

Enable blinking cursor

```
<ESC>[25h
```

- Displays blinking cursor

Disable blinking cursor

```
<ESC>[25l
```

- Hides blinking cursor

Select codepage/font

<ESC>[{fontindex}l

- Set screen font (codepage). These are the available fonts (codepages):

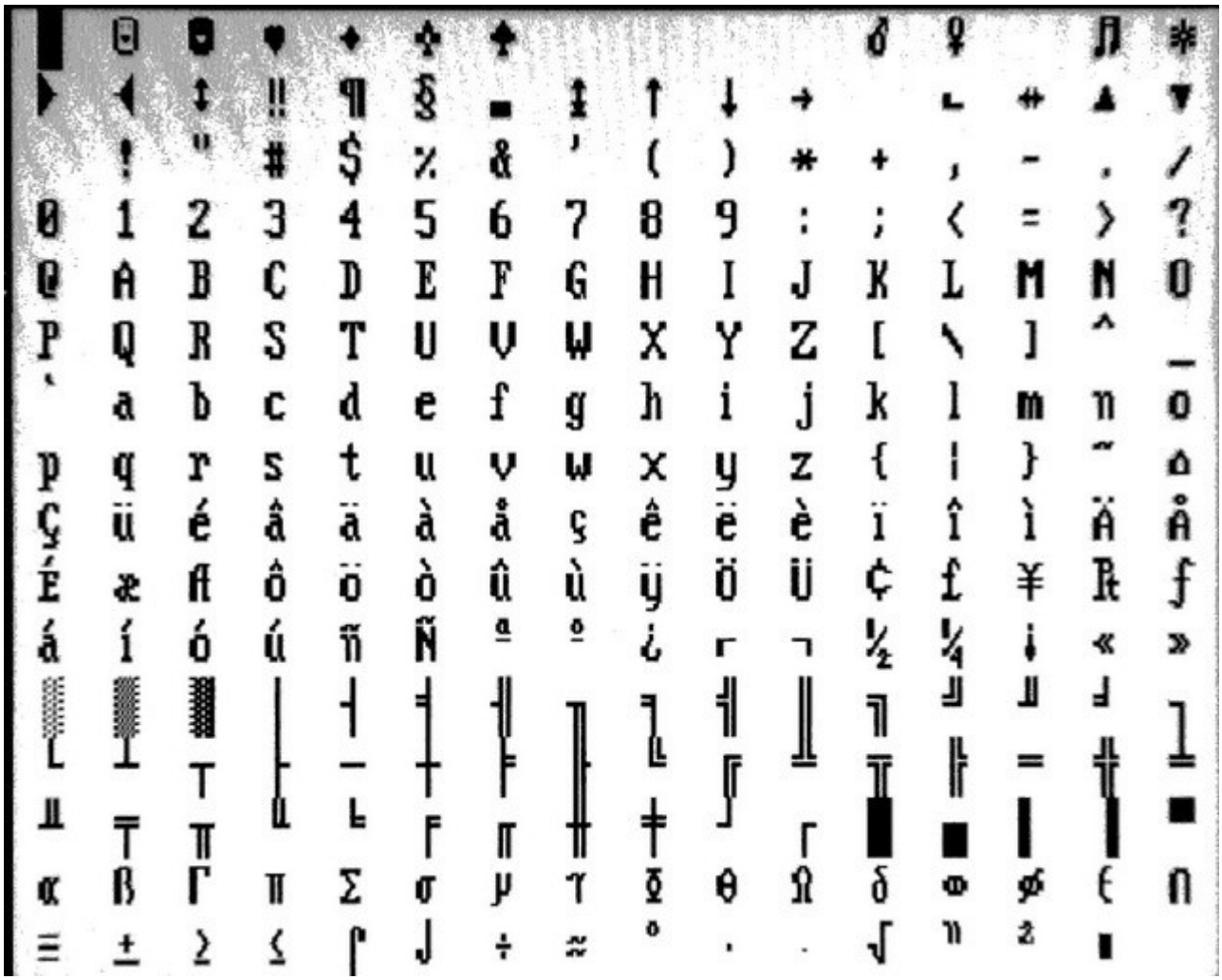
Index	Codepage
100	US-ASCII, CP-437
101	ISO-8859-1 (*Latin-1 Western European*)
102	ISO-8859-2 (*Latin-2 Central European*)
103	ISO-8859-3 (*Latin-3 South European*)
104	ISO-8859-4 (*Latin-4 North European*)
105	ISO-8859-5 (*Latin/Cyrillic*)

- This sequence code is shared with blinking cursor control

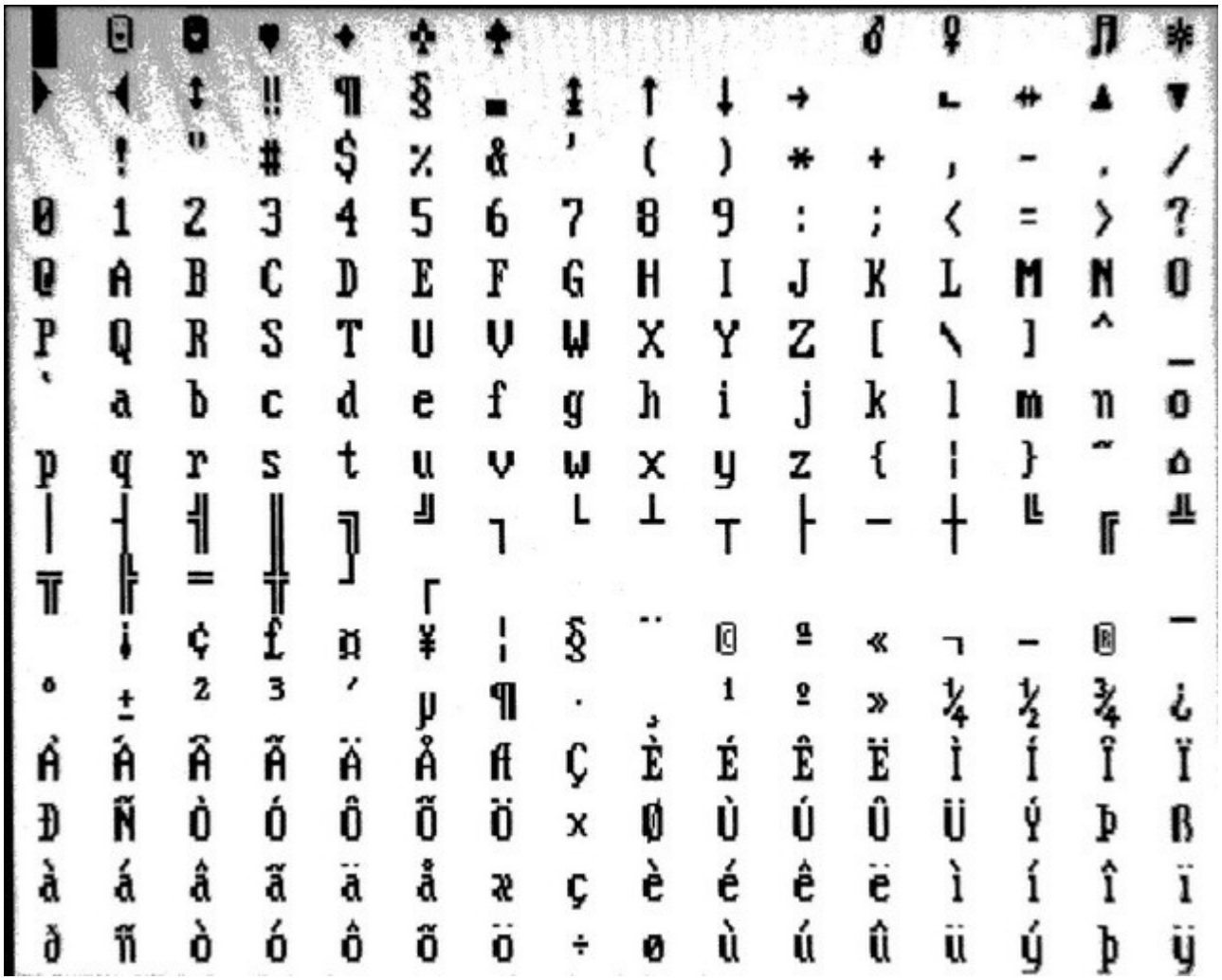
Character sets

Please note that images (photographs) shown belown are taken from a real device.

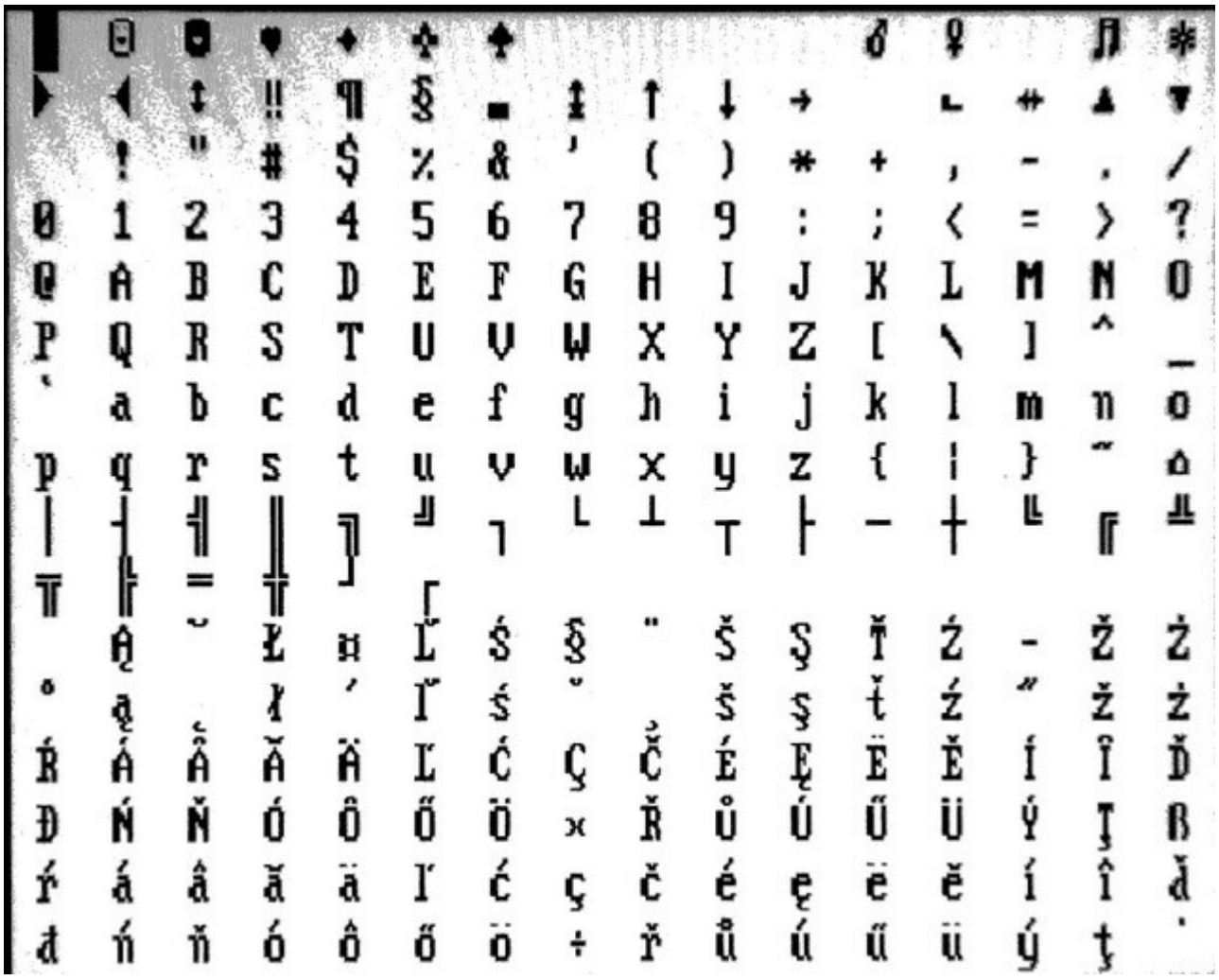
CP-437, US-ASCII



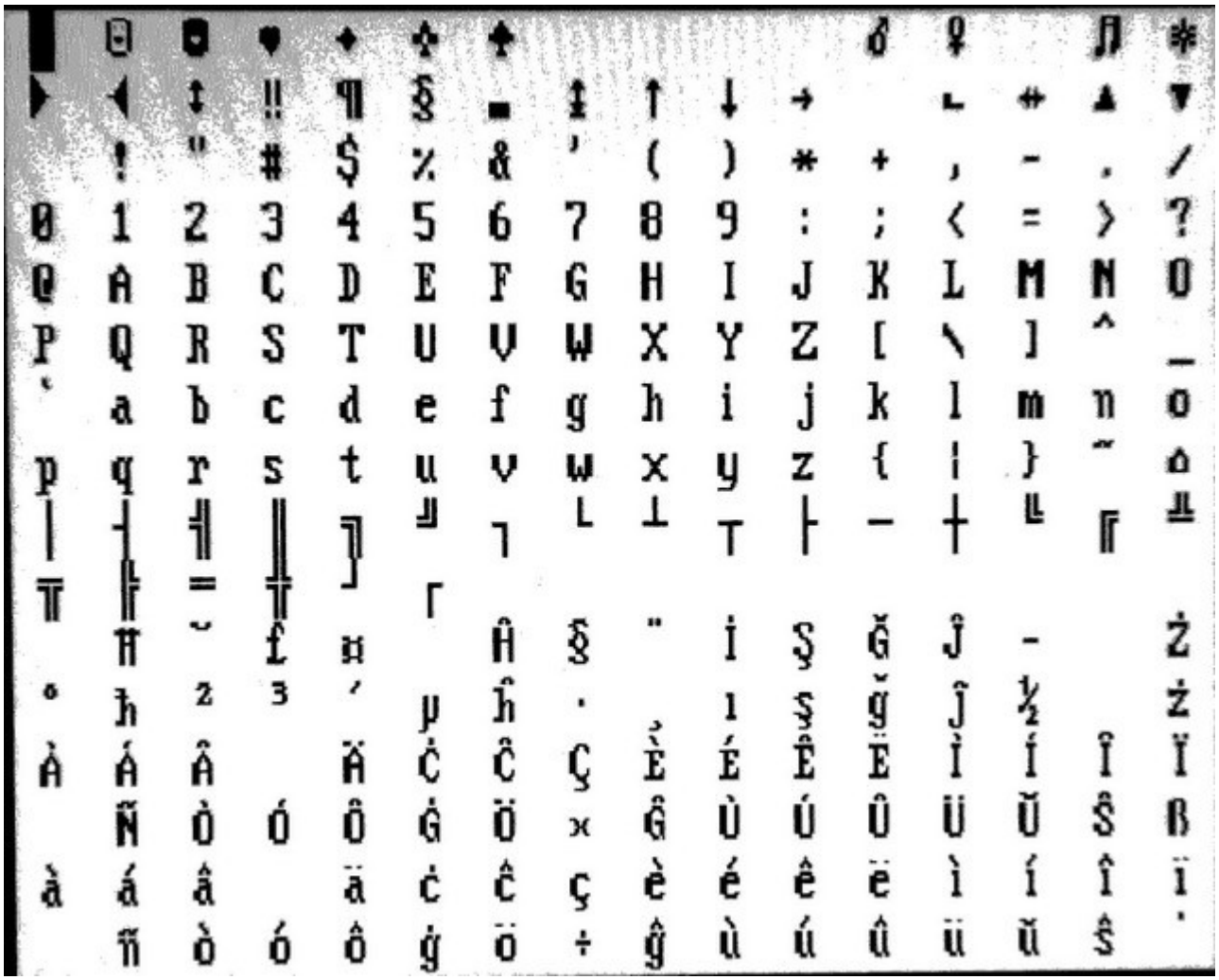
ISO-8859-1



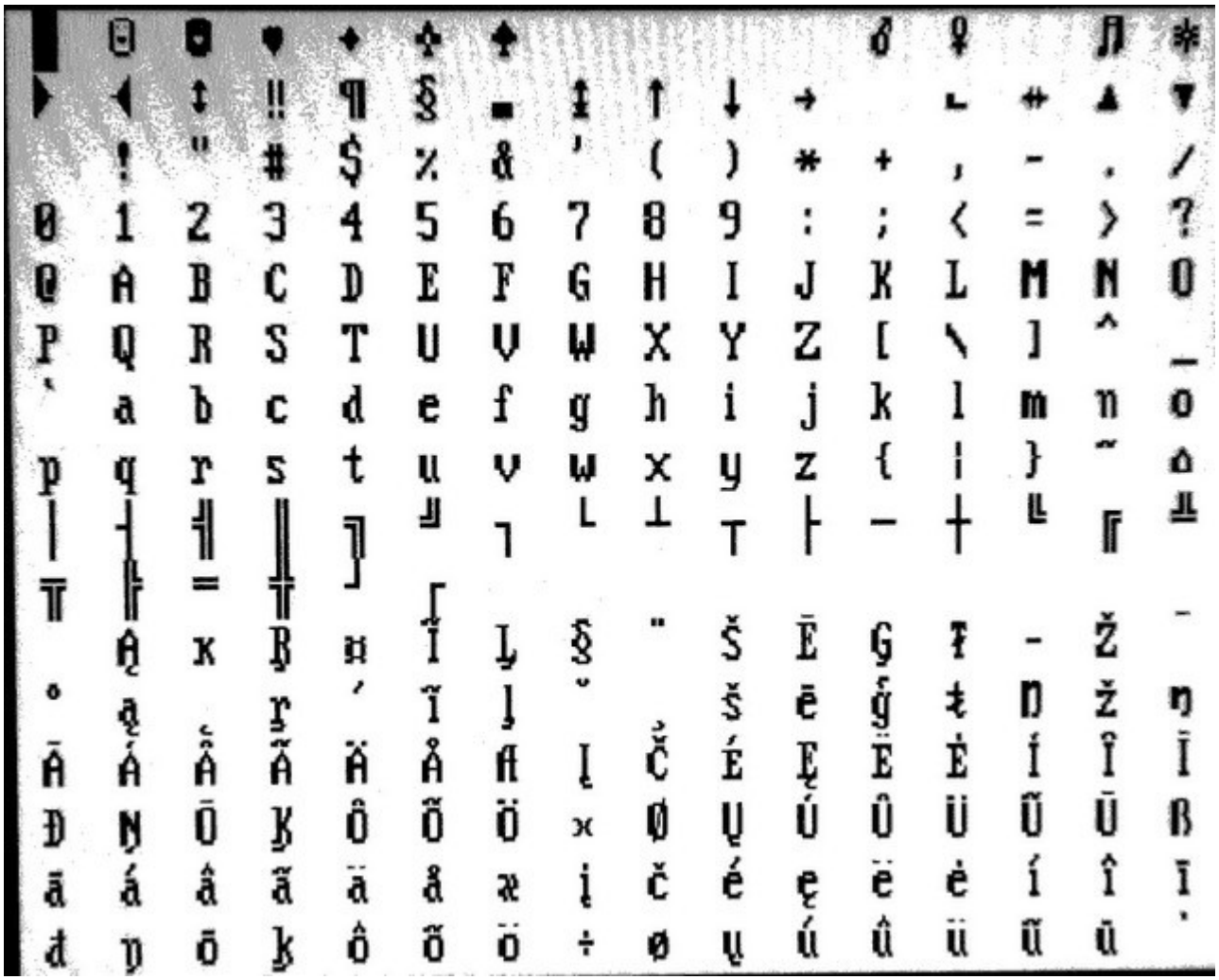
ISO-8859-2



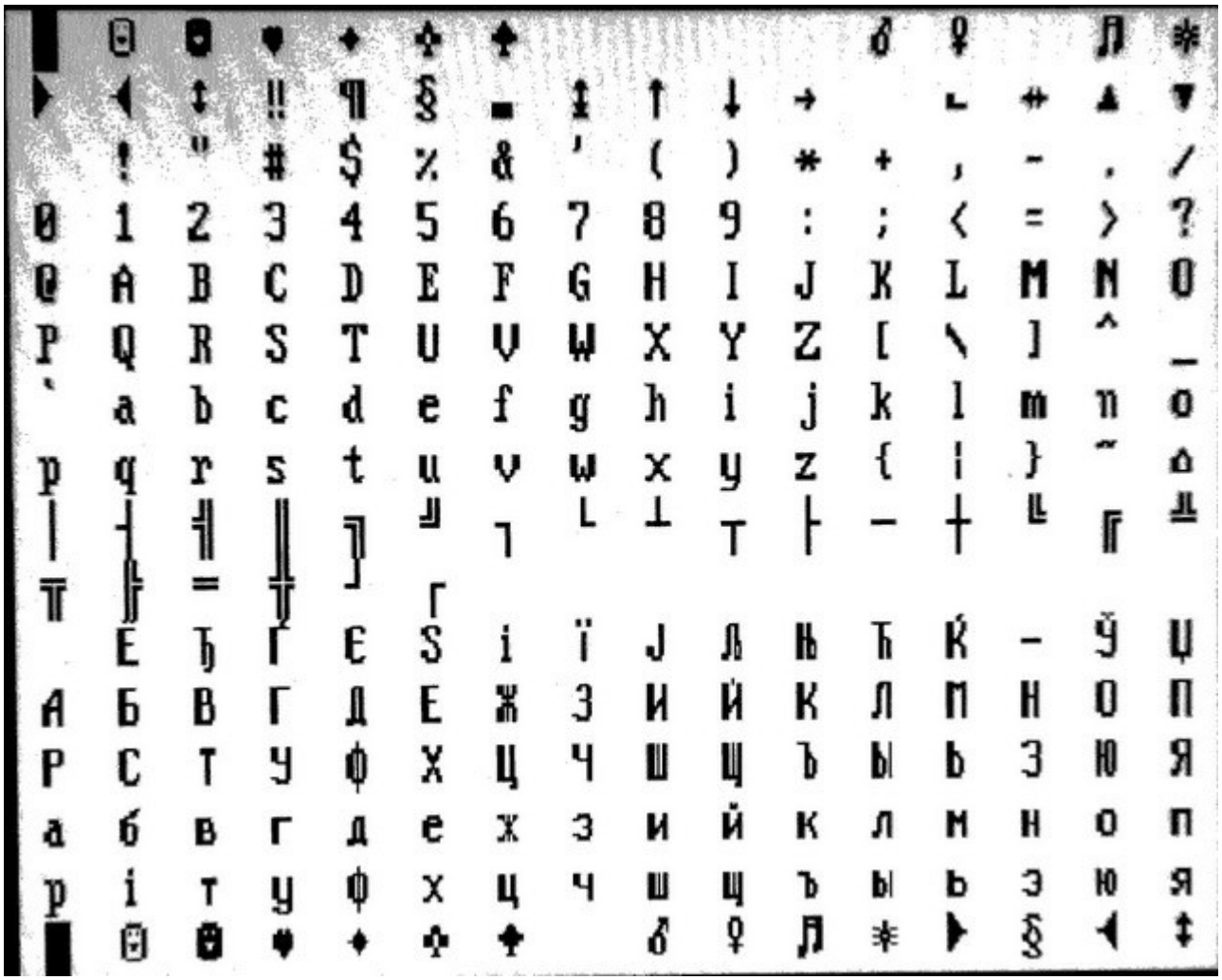
ISO-8859-3



ISO-8859-4

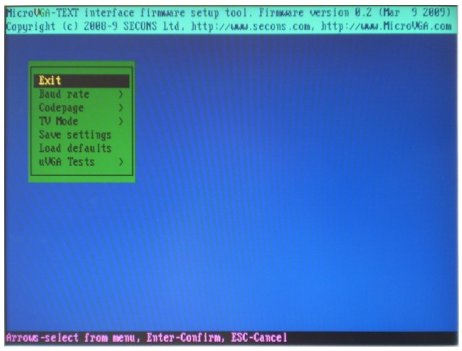


ISO-8859-5



Setup tool

The MicroVGA setup tool can be invoked by short-circuiting pads labeled “SETUP” near SO-28 chip on the MicroVGA-TEXT module.

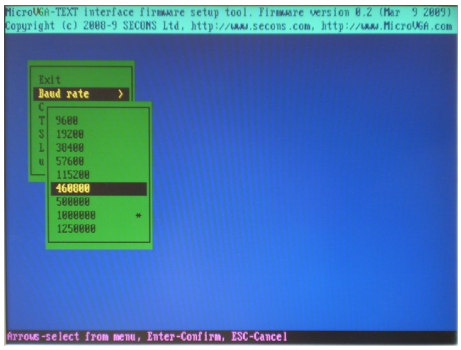


Please note that the setup firmware does not provide any visual information regarding current settings. All selections marked with “*” denote default values, not current setting.

Setup: Exit

Exit setup tool and resume normal operation. Uses current settings, but no changes are saved in EEPROM.

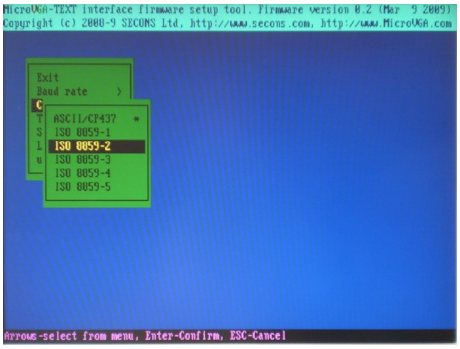
Setup: Baud rate



This menu allows UART communication baud rate selection.

Note: value marked * denotes default value, not currently selected baud rate.

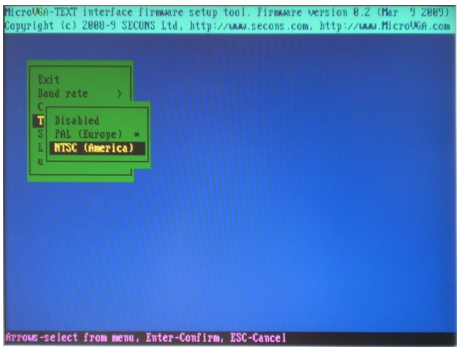
Setup: Codepage



Selection of code page. Allowed values are CP-437 (us-ascii) and ISO8859-1 to ISO-8859-5.

Note: value marked * denotes default value, not currently selected code page.

Setup: TV Mode



Selection of TV S-Video output mode (Disabled, PAL, NTSC).

Note: value marked * denotes default value, not currently selected mode.

Setup: Save settings

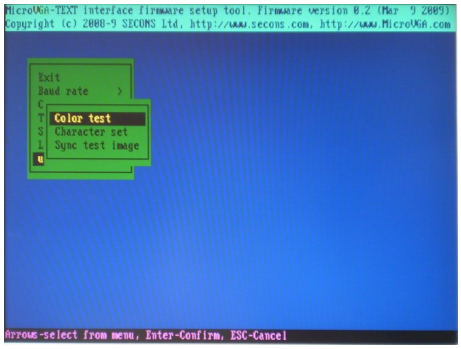
Saves settings in non-volatile memory (EEPROM). Please note that video signal may disappear for a moment while saving settings.

Setup: Load defaults

Loads default values, discarding all user settings. Baud rate is set to 1Mbit, codepage to CP437 and TV Mode to PAL.

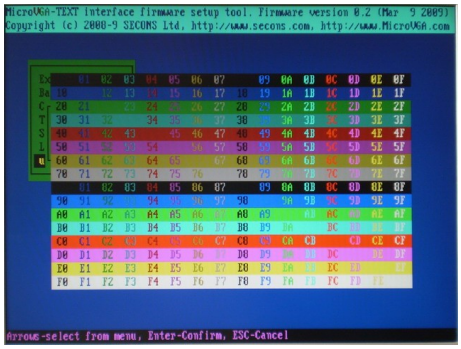
Setup: uVGA Tests

Allows MicroVGA testing. Three basic tests are provided:



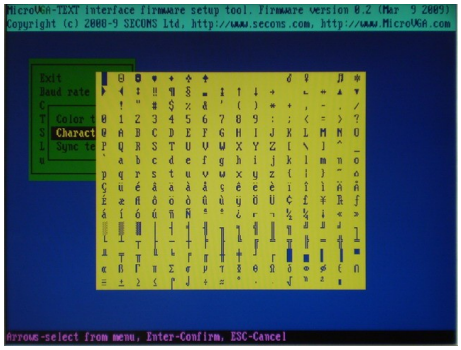
Setup: uVGA Tests > Color test

Displays all possible colors



Setup: uVGA Tests > Character set

Displays currently selected code page (all characters 0x00 – 0xFF).



Setup: uVGA Tests > Sync test image

Displays synchronization test image for TFT adjusting. Image should be clear, without any fuzzy areas or distortions.