
Raystar RS0010 OLED Display Controller Initialization Library

V2.1.0.0

The purpose of this library is to properly initialize OLED displays with Raystar RS0010 OLED display controller. This version is able to reinitialize the display after a soft or hard reset. The library is fully compatible with MikroElektronika's LCD library and requires exactly the same global variables.

Library Dependencies

Lcd, Lcd_constants

External dependencies of Lcd Library

Exactly the same global variables need to be defined like in case of mikroC Pro for PIC's Lcd Library.

Library Routines

- RS0010_Init
- RS0010_PixelTest_5x8

RS0010_Init

Prototype	<pre>void RS0010_Init(unsigned char displayLines, unsigned char characterFont, unsigned char fontTable, unsigned char displayOnOff, unsigned char cursorOnOff, unsigned char cursorBlinkingOnOff, unsigned char incrementDecrement, unsigned char displayShift);</pre>
Returns	Nothing.
Description	<p>Initializes the OLED display module.</p> <p>Parameters :</p> <ul style="list-style-type: none">▪ <code>displayLines</code>: This is used to set the number of display lines.▪ <code>characterFont</code>: This is used to set the character font set 5×8 or 5×10 dots.▪ <code>fontTable</code>: This is used to select the font table.▪ <code>displayOnOff</code>: This is used to turn on/off the display during initialization. As part of the initialization sequence the value usually should be <code>_DISPLAY_ON</code>.▪ <code>cursorOnOff</code>: This is used to display the cursor. In case of 5×8 dot character font, the cursor is displayed via the 5 dots in the 8th line. In case of 5×10 dot character font, it is displayed via 5 dots in the 11th line.▪ <code>cursorBlinkingOnOff</code>: This is used to turn on/off blinking of the character specified by the cursor.

- `incrementDecrement`:
This is used to define cursor move direction during DDRAM write.

In case of `_INCREMENT`, the DDRAM Address is incremented by "1" when a character code is written into or read from the DDRAM. An increment of 1 will move the cursor or blinking one step to the right.

In case of `_DECREMENT`, the DDRAM is decremented by 1 when a character code is written into or read from the DDRAM. A decrement of 1 will move the cursor or blinking one step to the left.
- `displayShift`:
This is used to shift the entire display. When `_RIGHT_SHIFT` is passed, the entire display is shifted to the right (when I/D = `_INCREMENT`) or left (when I/D = `_DECREMENT`). When `_NO_SHIFT` is passed, the display is not shifted.

Note: Predefined constants can be passed to the function, please refer to table Available OLED initialization constants.

Requires

Exactly the same global variables need to be defined like in case of mikroC Pro for PIC's Lcd Library:

- `LCD_D7`: Data bit 7
- `LCD_D6`: Data bit 6
- `LCD_D5`: Data bit 5
- `LCD_D4`: Data bit 4
- `LCD_RS`: Register Select (data/instruction) signal pin
- `LCD_EN`: Enable signal pin

- `LCD_D7_Direction`: Direction of the Data 7 pin
- `LCD_D6_Direction`: Direction of the Data 6 pin
- `LCD_D5_Direction`: Direction of the Data 5 pin
- `LCD_D4_Direction`: Direction of the Data 4 pin
- `LCD_RS_Direction`: Direction of the Register Select pin
- `LCD_EN_Direction`: Direction of the Enable signal pin

Example

```
//OLED module connections
sbit LCD_RS at LATA4_bit;
sbit LCD_EN at LATA5_bit;
sbit LCD_D4 at LATA0_bit;
sbit LCD_D5 at LATA1_bit;
sbit LCD_D6 at LATA2_bit;
sbit LCD_D7 at LATA3_bit;
sbit LCD_RS_Direction at TRISA4_bit;
sbit LCD_EN_Direction at TRISA5_bit;
sbit LCD_D4_Direction at TRISA0_bit;
sbit LCD_D5_Direction at TRISA1_bit;
sbit LCD_D6_Direction at TRISA2_bit;
sbit LCD_D7_Direction at TRISA3_bit;

...

//Initialize Raystar REC002004BYPP5N0 OLED display
RS0010_Init(_DIPLAY_LINES_2,
            _CHARACTER_FONT_SET_5X8,
            _WESTERN_EUROPEAN_II,
            _DISPLAY_ON,
            _CURSOR_OFF,
            _CURSOR_BLINKING_OFF,
            _INCREMENT,
            _NO_SHIFT);
```

Available OLED initialization constants

OLED initialization constant	Purpose
<code>_DIPLAY_LINES_1</code>	Sets 1 line display mode.
<code>_DIPLAY_LINES_2</code>	Sets 2 line display mode.
<code>_CHARACTER_FONT_SET_5X8</code>	Sets character font set 5×8 dots.
<code>_CHARACTER_FONT_SET_5X10</code>	Sets character font set 5×10 dots.
<code>_ENGLISH_JAPANESE</code>	Selects English/Japanese font table.
<code>_WESTERN_EUROPEAN_I</code>	Selects Western European I. font table.
<code>_ENGLISH_RUSSIAN</code>	Selects English/Russian font table.
<code>_WESTERN_EUROPEAN_II</code>	Selects Western European II. font table. It is compatible with MIKROE-159 (Character LCD 4×20 with large digits).
<code>_DISPLAY_OFF</code>	Turns off display during initialization.
<code>_DISPLAY_ON</code>	Turns on display during initialization.
<code>_CURSOR_BLINKING_OFF</code>	Turns cursor on.
<code>_CURSOR_BLINKING_ON</code>	Turns cursor off.

OLED initialization constant	Purpose
<code>_DECREMENT</code>	Sets cursor move direction to left.
<code>_INCREMENT</code>	Sets cursor move direction to right.
<code>_NO_SHIFT</code>	Don't shift display.
<code>_RIGHT_SHIFT</code>	Shifts entire display right or left.

RS0010_PixelTest_5x8

Prototype	<code>void RS0010_PixelTest_5x8();</code>
Returns	Nothing.
Description	The purpose of this function is to test the pixels of the OLED display. It turns on all pixels for all characters. The function is based on custom character, therefore it is font table independent.
Requires	The OLED Display module needs to be initialized. See RS0010_Init table.
Example	<pre>//Execute pixel test with character pattern 5x8 dots //for 4 lines and 20 columns RS0010_PixelTest_5x8(4, 20);</pre>