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# OLED Switch click

## OLED Switch click



OLED Switch click	
<b>IC/Module</b>	NKI Switch ISC15ANP4 <sup>[1]</sup>
<b>Interface</b>	SPI
<b>Power supply</b>	3.3V
<b>Website</b>	<a href="http://www.mikroe.com/click/oled-switch">www.mikroe.com/click/oled-switch</a> <sup>[2]</sup>
<b>Schematic</b>	OLED Switch click schematic <sup>[3]</sup>

If you are building any type of human machine interface, OLED Switch click can help you keep the design simple, clear and interactive. It can be used in designing a control panel for an industrial machine... or a DIY arcade.

## Features and usage notes

### Hardware: a full color OLED built in a button

This board has a module that combines a button and a full color organic LED display, plus input/output screw terminals for connecting external electronics.

The mechanical button itself is nicely built, with a translucent black housing. When pressed, it gives satisfying tactile feedback.

The display, built in the button itself, can show 64 by 48 pixel images with up to 65k colors (16-bit depth).

With the screw terminals, you can toggle an external circuit on and off.

The display is big enough to display simple information, whether as icons or words. Small characters are legible and clear.

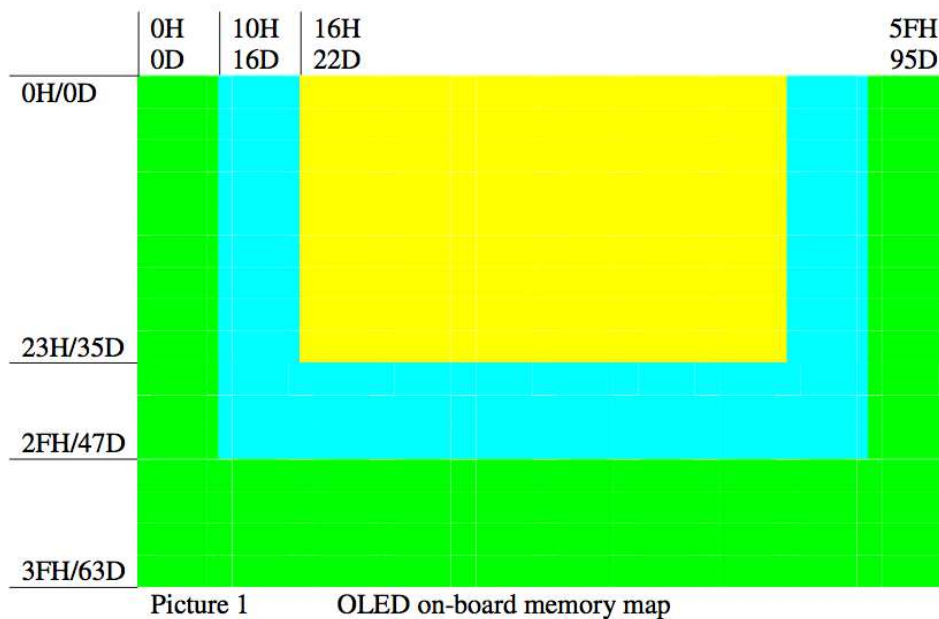
The most interesting feature is that the display can be programmed to change the picture when needed (for example, you can design a reprogrammable keypad that would allow users to switch from latin to cyrillic script or to chinese characters).

VisualTFT can be used to prepare the bmp images. There is a [learn.mikroe.com](http://learn.mikroe.com) article that explains how to take 16 or 24 bit bmp pictures and create C arrays.

The board communicates with the target MCU through the mikroBUS™ SPI interface. It uses a 3.3V power supply only.

### Software: frame buffering

The internal frame buffer on the OLED display holds 96x64 pixels with 2 bytes of 565 formatted color information for each. When displaying an image the size of the display, (64x48) the image will be displayed well, unless scrolled. To scroll an image without having random pixels from unused space in the internal frame buffer, load a 96x64 image onto the OLED Switch click with your desired image centered like the blue colored area in the picture below.



### Programming

This code snippet takes a 565 formatted 16-bit bitmap and displays it on the OLED display, and then scrolls the image across the display.

```
#define BIG_IMG_SIZE 12288

void main()
{
    //Local Declarations
    scroll_t scroll; //Used for scroll settings

    scroll.col_horiz_shift = 0x01; //Shift left to right
    scroll.row_offset      = 0;    //No offset of rows
    scroll.row_horiz_shift = 64;   //64: BIG IMAGE, 47:SMALL ( SMALL
doesn't work well, because of firmware on click side )
    scroll.row_vert_shift  = 0;    //No vertical shifting
    scroll.interval        = 1;    //1: 10 frames between each shift

    //Setup
    system_setup( BIG ); //Provide size of allocated space for images (
64x48 or 96x64 )
```

```


oled_switch_deactivate_scrolling();
                                //Scrolling must be absolutely
deactivated first
oled_switch_scrolling_setup( scroll );
                                //Next, setup scroll settings
oled_switch_draw_565_img( oled_switch_logo_big_bmp, BIG_IMG_SIZE );
//Draw the image to scroll
oled_switch_activate_scrolling();
                                //Activate scrolling on screen

while( 1 )//Forever
{
}
}

```

Code examples for OLED Switch click, written for MikroElektronika hardware and compilers are available on Libstock <sup>[4]</sup>.

## Pinout diagram

		 <b>mikroBUS<sup>tm</sup></b>						
		1	AN	—1	PWM	16	<b>D/C</b>	– Data/Command
	<b>RST</b>	2	RST		INT	15		
	<b>CS</b>	3	CS		RX	14		
	<b>SCK</b>	4	SCK		TX	13		
	<b>MISO</b>	5	MISO		SCL	12		
	<b>MOSI</b>	6	MOSI		SDA	11		
	<b>+3.3V</b>	7	+3.3V		+5V	10		
	<b>GND</b>	8	GND		GND	9	<b>GND</b>	

## Resources

- Libstock code example <sup>[4]</sup>
- Vendor's data sheet <sup>[5]</sup>
- OLED Switch 3D CAD model <sup>[6]</sup>
- mikroBUS™ standard specifications <sup>[7]</sup>

## References

- [1] <http://2t70un3m1d9z1kztamkdrd38.wpengine.netdna-cdn.com/wp-content/uploads/2016/03/ISC15ANP4.pdf>
- [2] <http://www.mikroe.com/click/oled-switch>
- [3] [http://cdn-docs.mikroe.com/images/7/72/Oled\\_Switch\\_click\\_schematic\\_v100.pdf](http://cdn-docs.mikroe.com/images/7/72/Oled_Switch_click_schematic_v100.pdf)
- [4] <http://libstock.mikroe.com/projects/view/1931/oled-switch-click>
- [5] <http://www.nkkswitches.com/pdf/ISC15ANP4.pdf>
- [6] [http://nkkswitches-embedded.partcommunity.com/3d-cad-models/?info=nkkswitches/smart\\_switch/oled\\_smartswitch/isc15anp4\\_asmtab.prj](http://nkkswitches-embedded.partcommunity.com/3d-cad-models/?info=nkkswitches/smart_switch/oled_smartswitch/isc15anp4_asmtab.prj)
- [7] <http://download.mikroe.com/documents/standards/mikrobus/mikrobus-standard-specification-v200.pdf>
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