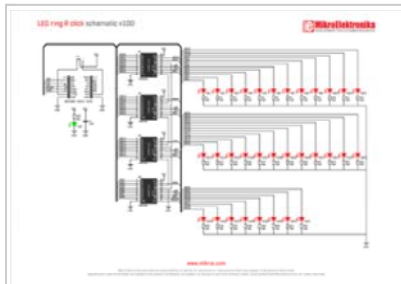


LED ring R click

From MikroElektronika Documentation

LED ring R click carries a ring of 32 red LEDs driven by four 8-bit 74HC595 serial-in, parallel-out shift registers. The ring is 25 mm in diameter. The click communicates with the target MCU through the mikroBUS™ SPI interface, with RST, CS, SCK, MISO and MOSI pins marked MR#, LAT, CLK, DSOUT, DSIN, respectively. Other LED colors will also be available. The board is designed to use either a 3.3V or 5V power supply only.

Features and usage notes



Schematic also available in PDF (http://cdn-docs.mikroe.com/images/9/94/LED_ring_R_click_sc)

LED ring click is one of several click boards that employ 74HC595 shift registers to drive LEDs. Rotary click use the same, as well as Bargraph click, 7-Seg click and 7x10 click.

Using 8-bit shift registers to drive an array of LEDs is simply good practice, because it leaves more available pins on the target MCU, allowing you to either use a cheaper, lower pin count main MCU, or use the leftover pins for other purposes.

The end result is a smaller, more cost effective design.

Programming

The following code snippet demonstrates different ways to communicate with the click and initializes a clockwork pattern with a single LED at a time.

```

1 sbit LRR_LAT at GPIO_ODR.B13;
2 sbit LRR_RST at GPIO_ODR.B2;
3 #include <stdint.h>
4 #include "led_ring_hw.h"
5
6 void main()
7 {
8
9     uint8_t test_bfr[4];
10    uint8_t i = 0;
11    uint16_t var_time = 500;
12    uint32_t led = 0x00000001;
13
14    // set latch and reset pins as output
15
16    GPIO_Digital_Output(&GPIO_BASE, _GPIO_PINMASK_13);
17    GPIO_Digital_Output(&GPIO_BASE, _GPIO_PINMASK_2);
18
19    // initialize SPI
20
21    SPI3_Init_Advanced( _SPI_FPCLK_DIV16, _SPI_MASTER | _SPI_8_BIT |
22                      _SPI_CLK_IDLE_LOW | _SPI_FIRST_CLK_EDGE_TRANSITION |
23                      _SPI_MSB_FIRST | _SPI_SS_DISABLE | _SPI_SSM_ENABLE |
24                      _SPI_SSI_1, &GPIO_MODULE_SPI3_PC10_11_I2);
25
26    led_ring_hal_init();
27    led_ring_start();
28
29    test_bfr[0] = 0xAA;
30    test_bfr[1] = 0xAA;
31    test_bfr[2] = 0xAA;
32    test_bfr[3] = 0xAA;
33
34    led_ring_hal_write(&test_bfr, 4); // demonstration of HAL write function
35    led_ring_latch();
36
37    Delay_ms(1000);
38
39    led_ring_send_32 ( 0xFAFAFAFA ); // demonstration of writing 4 bytes
40
41    Delay_ms(2000);
42    led_ring_send_8 ( test_bfr[0] ); // writing one byte at a time
43    led_ring_send_8 ( test_bfr[0] );
44    led_ring_send_8 ( test_bfr[0] );
45    led_ring_send_8 ( test_bfr[0] );
46
47    while (1)
48    {
49        led_ring_send_32 ( led ); // dot circling faster and faster
50        vDelay_ms(var_time);
51        led = led << 1;
52        if (led == 0)
53        {
54            led = 1;
55            i++;

```

LED ring R click



LED Ring R click

IC/Module	Led ring, 74HC595 serial in parallel out shift registers x4
Interface	SPI
Power supply	3.3V, 5V
Website	www.mikroe.com/click/led-ring-r (http://www.mikroe.com/click/led-ring-r)

```

%56     if (i == 0)
%57         var_time = 500;
%58     else if (i == 1)
%59         var_time = 250;
%60     else if (i == 2)
%61         var_time = 100;
%62     else if (i == 3)
%63         var_time = 50;
%64     else if ( i == 4 )
%65     {
%66         var_time = 500;
%67         i = 0;
%68     }
%69 }
%70 }
%71 }
```

Code examples that demonstrate the usage of LED Ring click with MikroElektronika hardware, written for mikroC for ARM, PIC, and FT90x are available on Libstock (<http://libstock.mikroe.com/projects/view/1815/led-ring-click>).

Resources

- LED ring click Libstock example (<http://libstock.mikroe.com/projects/view/1815/led-ring-click>)
- LED ring click product page (<http://www.mikroe.com/click/led-ring-r/>)
- Learn.mikroe.com article about handling shift registers (<http://learn.mikroe.com/leds-bit-shifting-shift-register-tutorial/>)

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