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## UT-L 7-SEG R click

**PID:** MIKROE-2743

**Weight:** 25 g

Add a double 7 segment display to your next project.

**UT-L 7-SEG R click** carries two SMD ultra thin LED 7-SEG **displays** and the **MAX6969** constant-current LED driver from Maxim Integrated. The click is designed to run on either 3.3V or 5V power supply. It communicates with the target microcontroller over SPI interface.

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1

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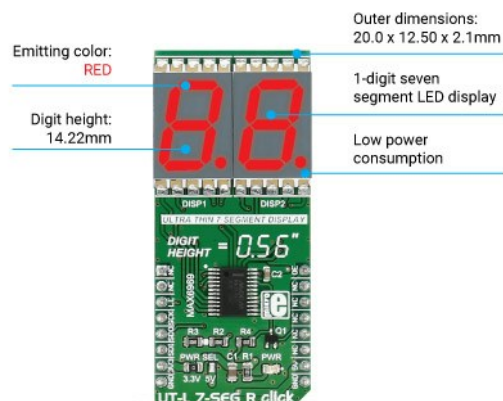
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**UT-L 7-SEG R click** carries two SMD ultra thin (3.1mm) LED 7-SEG **displays** and the **MAX6969** constant-current LED driver from Maxim Integrated. The click is designed to run on either 3.3V or 5V power supply. It communicates with the target microcontroller over SPI interface.

## Display features



## How the click works

The 7 segment displays are interfaced to the MCU over the **MAX6969** 16-port, constant-current LED driver IC.

It uses the common 4-wire serial bus for communication with MCU itself (LE,

SCK, SDO, SDI on mikroBUS™ pin socket).

There is an additional OE (output enable) pin which is used to control the output driver state (enabled/disabled). Since it is the PWM output pin on the mikroBUS™ by default, the LED segments light intensity could be controlled by software too.

## MAX6969 driver features

The MAX6969 uses the industry-standard, shift-register-plus-latch-type serial interface.

The driver accepts data shifted into a 16-bit shift register using data input DIN and clock input CLK. Input data appears at the DOUT output 16 clock cycles later to allow **cascading of multiple MAX6969s**. So, the IC allows you to connect multiple click boards™ - for applications that require more than two seven segment displays, such as digital clocks, temperature sensors, etc.

## Specifications

| Type             | LED Segment                                                            |
|------------------|------------------------------------------------------------------------|
| Applications     | Displaying digits and letters on two 7 segment displays                |
| Displays         | DSM Series Ultra Thin Surface Mount Single Digit 7-Segment LED Display |
| On-board modules | MAX6969 6-Port, 5.5V Constant-Current LED Driver                       |
| Key Features     | Excellent character appearance, low power consumption                  |
| Interface        | GPIO,SPI                                                               |
| Input Voltage    | 3.3V or 5V                                                             |
| Click board size | L (57.15 x 25.4 mm)                                                    |

## Pinout diagram

This table shows how the pinout on **UT-L 7-SEG R click** corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

| Notes | Pin |  mikroBUS |     |     |    | Pin       | Notes                          |
|-------|-----|-----------------------------------------------------------------------------------------------|-----|-----|----|-----------|--------------------------------|
|       | NC  | 1                                                                                             | AN  | PWM | 16 | <b>OE</b> | PWM control of light intensity |
|       | NC  | 2                                                                                             | RST | INT | 15 | NC        |                                |

|                    |              |   |      |     |    |            |              |
|--------------------|--------------|---|------|-----|----|------------|--------------|
| Load-Enable input  | <b>LE</b>    | 3 | CS   | TX  | 14 | NC         |              |
| Clock input        | <b>SCK</b>   | 4 | SCK  | RX  | 13 | NC         |              |
| Serial Data Output | <b>SDO</b>   | 5 | MISO | SCL | 12 | NC         |              |
| Serial Data Input  | <b>SDI</b>   | 6 | MOSI | SDA | 11 | NC         |              |
| Power supply       | <b>+3.3V</b> | 7 | 3.3V | 5V  | 10 | <b>+5V</b> | Power supply |
| Ground             | <b>GND</b>   | 8 | GND  | GND | 9  | <b>GND</b> | Ground       |

## Jumpers and settings

| Designator | Name     | Default Position | Default Option | Description                                                              |
|------------|----------|------------------|----------------|--------------------------------------------------------------------------|
| JP1        | PRW.SEL. | Down             | 3V3            | Power Supply Voltage Selection 3V3/5V, down position 3V3, up position 5V |

## Programming

Code examples for UT-L 7-SEG R click, written for MikroElektronika hardware and compilers are available on Libstock.

Code snippet

The following code snippet counts down from 99 to 0 on the displays of the UT-L 7-SEG R click.

```
01 sbit MAX6969_LE_PIN at RC2_bit;
02 sbit MAX6969_LE_PIN_Direction at TRISC2_bit;
03
04 uint16_t pwmPeriod;
05 static const uint8_t minus_char = 0x40;
06
07 void systemInit()
08 {
09     AD1PCFG = 0xFFFF;
10     MAX6969_LE_PIN_Direction = 0;
11     SPI3_Init();
12     pwmPeriod = PWM_Init(5000, 1, 1, 2);
13     PWM_Start(1);
14     PWM_Set_Duty(pwmPeriod/10, 1);
15
16 }
17
18 void MAX6969_Chip_Select()
19 {
20     MAX6969_LE_PIN = 1;
21     asm nop
22     asm nop
23     asm nop
24     MAX6969_LE_PIN = 0;
25 }
26
27 static void U7SEG_Write(uint8_t number)
28 {
29     char numbers[10] = {0x3F, 0x06, 0x5B, 0x4F, 0x66, 0x6D, 0x7D, 0x07, 0x7F, 0x6F};
30     uint8_t tens = number / 10;
31     uint8_t ones = number % 10;
32     if (number > 99) return;
33
34     SPI_Wr_Ptr(numbers[ones]);
```

```

35     SPI_Wr_Ptr(numbers[tens]);
36 }
37
38 void main()
39 {
40     uint8_t counter;
41
42     systemInit();
43     counter = 100;
44
45     while(counter--)
46     {
47         U7SEG_Write(counter);
48         MAX6969_Chip_Select();
49         Delay_ms(500);
50     }
51
52     SPI_Wr_Ptr(minus_char);
53     SPI_Wr_Ptr(minus_char);
54     MAX6969_Chip_Select();
55 }

```

## Downloads



[mikroBUS™ Standard specification](#)



[DSM7UA56101 display features](#)



[MAX6969 datasheet](#)



[UT-L 7-SEG R click schematic](#)



[LibStock: UT-L 7-SEG R click library](#)



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