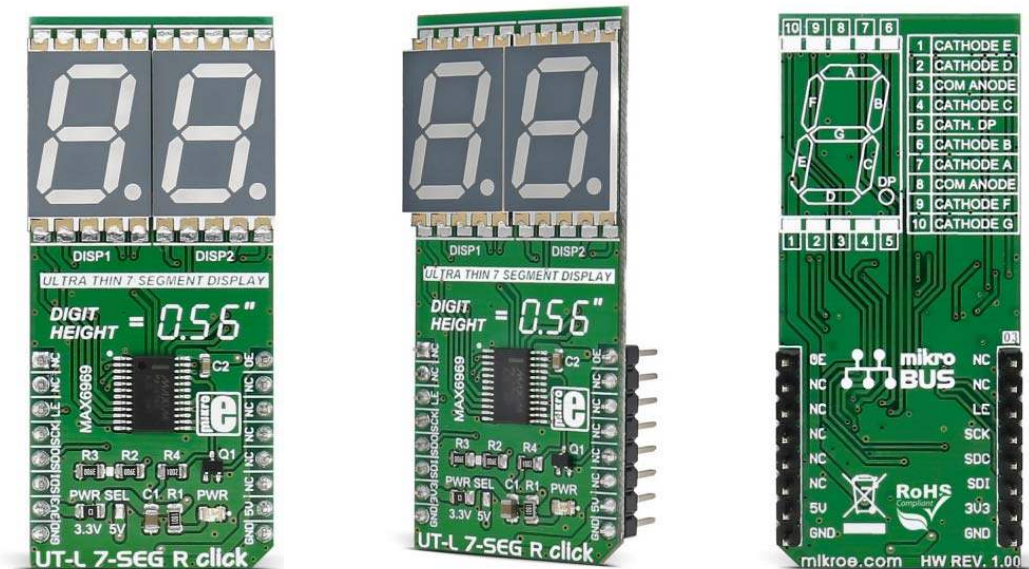


# UT-L 7-SEG R click

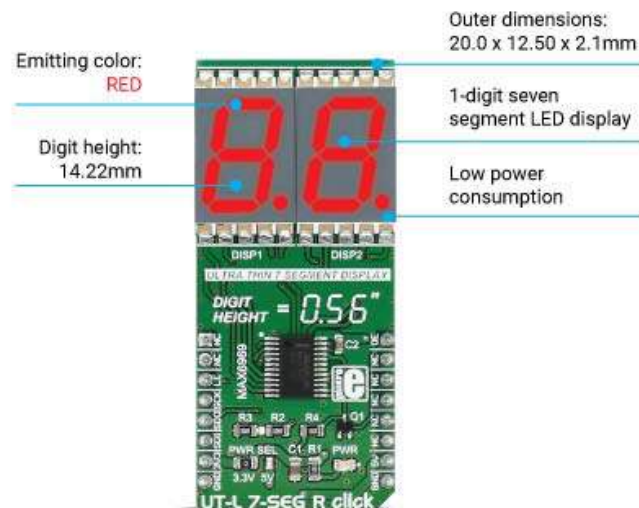
PID: MIKROE-2743



Add a double 7 segment display to your next project.

**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					Pin	Notes
	NC	1	AN	PWM	16	OE	PWM control of light intensity
	NC	2	RST	INT	15	NC	
Load-Enable input	LE	3	CS	TX	14	NC	
Clock input	SCK	4	SCK	RX	13	NC	
Serial Data Output	SDO	5	MISO	SCL	12	NC	
Serial Data Input	SDI	6	MOSI	SDA	11	NC	
Power supply	+3.3V	7	3.3V	5V	10	+5V	Power supply
Ground	GND	8	GND	GND	9	GND	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 }

```