

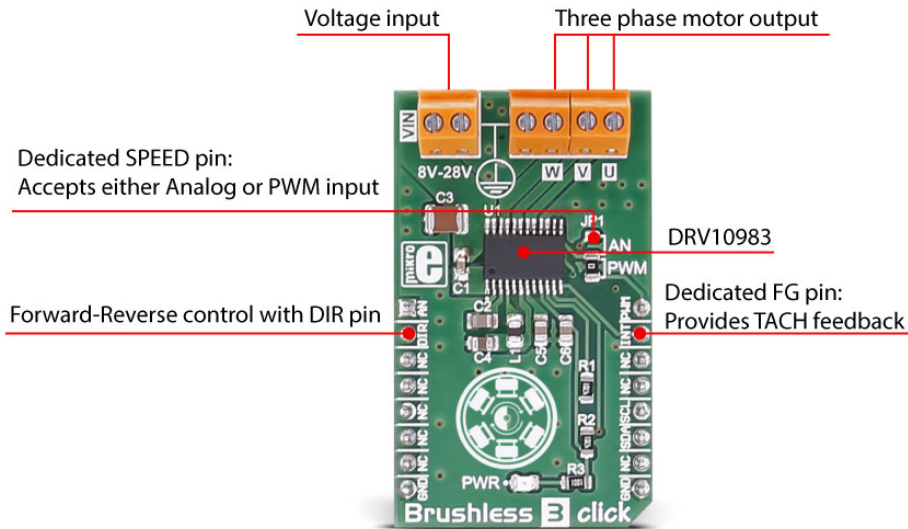
Brushless 3 click

PID: MIKROE-2766



Brushless 3 click carries the DRV10983, a three-phase sensorless motor driver with integrated power MOSFETs. When an external power supply is applied, you can drive a brushless DC motor through the PWM pin, AN pin or I2C interface. It communicates with the target microcontroller over I2C interface, with the additional functionality provided by the following pins on the mikroBUS™ line: PWM, AN, INT, RST.

A 3 wire BLDC motor can be connected over the screw terminals.



DRV10983 driver features

The DRV10983 is a three-phase sensorless motor driver with integrated power MOSFETs, which can provide continuous drive current up to 2A.

The DRV10983 uses a proprietary sensorless control scheme to provide continuous sinusoidal drive, which significantly reduces the pure tone acoustics that typically occurs as a result of commutation.


The interface to the device is designed to be simple and flexible. The motor can be controlled directly through PWM, analog, or I2C inputs. Motor speed feedback is available through either the FG pin or I2C.

Specifications

Type	DC
Applications	The automotive industry, drones (because of the good power-to weight ratio of brushless motors), computers, medical equipment, HVAC systems, small home appliances, robotics, battery powered systems, small cooling fans in computers, toys, etc.
On-board modules	DRV10983, a three-phase sensorless motor driver with integrated power MOSFETs.
Key Features	Input voltage range from 8V to 28V
Interface	GPIO,I2C
Click board size	M (42.9 x 25.4 mm)

Pinout diagram

This table shows how the pinout on **Brushless 3 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	PWM	PWM output
Direction	DIR	2	RST	INT	15	INT	FG signal output
	NC	3	CS	TX	14	NC	
	NC	4	SCK	RX	13	NC	
	NC	5	MISO	SCL	12	SCL	I2C clock
	NC	6	MOSI	SDA	11	SDA	I2C data
	NC	7	3.3V	5V	10	NC	
Ground	GND	8	GND	GND	9	GND	Ground

Jumpers and settings

Designator	Name	Default Position	Default Option	Description
JP1	SPEED	Left	PWM	Speed mode selection between analog and PWM.

Programming

Code examples for Brushless 3 click, written for MikroElektronika hardware and compilers are available on Libstock.

Code snippet

The following code snippet sets the motor parameters and measures the motor velocity.

```
01 sbit BRUSHLESS_3_DIR_PIN at LATC.B0;  
02 sbit BRUSHLESS_3_DIR_PIN_Direction at TRISC.B0;  
03 sbit BRUSHLESS_3_PWM_PIN at LATC.B1;
```

```

04 sbit BRUSHLESS_3_PWM_PIN_Direction at TRISC.B1;
05 uint8_t motorParameters [12] = { 0x39, 0x1E, 0x3A, 0x08, 0x50, 0xDA, 0x8B,
06 0x10, 0x27, 0x37, 0x04, 0x0C} ;
07 uint16_t Velocity;
08 char text[10];
09 void systemInit()
10 {
11     ANCON0 = 0x00;
12     ANCON1 = 0x00;
13     ANCON2 = 0x00;
14     BRUSHLESS_3_DIR_PIN_Direction = 0;
15     BRUSHLESS_3_PWM_PIN_Direction = 0;
16     I2C1_Init (100000);
17     Delay_ms(100);
18     BRUSHLESS_3_I2CdriverInit( I2C1_Start, I2C1_Stop, I2C1_Repeated_Start,
19 I2C1_Wr, I2C1_Rd);
20     UART1_Init(9600);
21     Delay_ms(100);
22     UART1_Write_Text("Init");
23 }
24 void Brushless_3_Init()
25 {
26     BRUSHLESS_3_DIR_PIN = 0;
27     BRUSHLESS_3_PWM_PIN = 1;
28     writeParameters(motorParameters);
29 }
30 void Brushless_3_Task()
31 {
32     getSpeed(&Velocity);
33     IntToStr(Velocity,text);
34     UART1_Write_Text( "Motor freq :" );
35     UART1_Write_Text(text);
36     UART1_Write_Text( "Hzrn" );
37     delay_ms(1000);
38 }
39 void main()
40 {
41     systemInit();
42     Brushless_3_Init();
43     while( 1 )
44     {
45         Brushless_3_Task();
46     }
47 }

```