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DC Motor 21 Click





PID: MIKROE-4877

DC Motor 21 Click is a compact add-on board that contains a brushed DC motor driver. This board features the A3910, a DC motor driver designed for low voltage power applications from Allegro Microsystems. It is controlled via several GPIO pins and has a wide operating voltage range with an output current capacity of 500mA. In addition to the possibility to be used in the full-bridge configuration to drive a single bidirectional DC motor, it can also be used as a dual half-bridge to drive dual DC motors. Using an integrated MOS switch improves braking action for the motor, compared to implementation with a simple clamp diode. Besides, it also features built-in protection such as crossover current protection and thermal shutdown. This Click board™ is suitable for driving DC brushed motors and targeted at the consumer and industrial market with end applications to low voltage equipment.

DC Motor 21 Click is supported by a mikroSDK compliant library, which includes functions that simplify software development. This Click board™ comes as a fully tested product, ready to be used on a system equipped with the mikroBUS™ socket.

How does it work?

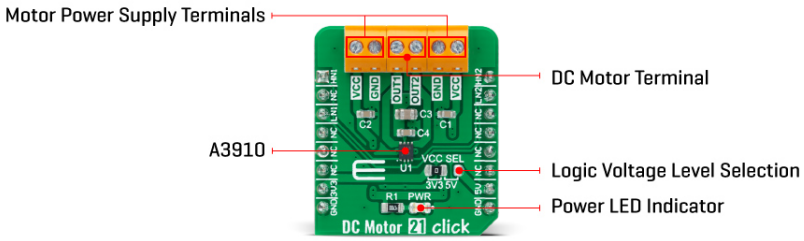
DC Motor 21 Click as its foundation uses the A3910, a dual half-bridge motor driver designed for low voltage power applications from Allegro Microsystems. This Click board™ is controlled via several GPIO pins of the mikroBUS™ socket and has a wide operating voltage range with an output current capacity of 500mA maximum. The integrated MOSFETs, which configures a half-bridge circuit inside the A3910, provide the possibility to drive dual DC motors but also allow to be used in the full-bridge configuration to drive a single bidirectional DC motor. Thanks to its plane features and benefits, this Click board™ is targeted at the consumer market with end applications to low voltage equipment.

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Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.

ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.

ISO 9001: 2015 certification of quality management system (QMS).

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Using an integrated MOS switch improves braking action for the motor, compared to implementation with a simple clamp diode. Besides, it also features built-in protection such as crossover current and thermal shutdown protection, alongside “Sleep” Standby mode with zero drain-current.

As mentioned in the product description, DC Motor 21 Click communicates with MCU using several GPIO pins. To turn ON the internal MOSFETs of the A3910, they need to be switched by the logic level, which is input to the control input pins: HN1, LN1, HN2, and LN2 pins routed to the AN, CS, PWM, and INT pins of the mikroBUS™ socket. Thereby, the Drive/Break/Coast/Sleep motor functions can be selected according to the state of its input control signals.

This Click board™ can operate with both 3.3V and 5V logic voltage levels selected via the VCC SEL jumper. This way, it is allowed for both 3.3V and 5V capable MCUs to use communication lines properly. However, the Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used, as a reference, for further development.

Specifications

Type	Brushed
Applications	Can be used for driving DC brushed motors and targeted at the consumer and industrial market with end applications to low voltage equipment
On-board modules	A3910 - dual half-bridge motor driver designed for low voltage power applications from Allegro Microsystems
Key Features	Low power consumption, full- and half-bridge configuration, low rds, Standby mode with zero drain-current, crossover and thermal shutdown protection, and more
Interface	GPIO
ClickID	No
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)

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Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on DC Motor 21 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
Motor 1 Control Input	**HN1**	1	AN	PWM	16	**HN2**	Motor 2 Control Input
	NC	2	RST	INT	15	**LN2**	Motor 2 Control Input
Motor 1 Control Input	**LN1**	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	NC	
	NC	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

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1	VCC SEL	Left	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

DC Motor 21 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Maximum Output Current	-	-	500	mA
Operating Temperature Range	-40	+25	+85	°C

Software Support

We provide a library for the DC Motor 21 Click as well as a demo application (example), developed using MikroElektronika compilers. The demo can run on all the main MikroElektronika development boards.

Package can be downloaded/installed directly from NECTO Studio Package Manager(recommended way), downloaded from our LibStock™ or found on Mikroe github account.

Library Description

This library contains API for DC Motor 21 Click driver.

Key functions

- dcmotor21_set_out_1 This function sets the state of output 1.

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- dcmotor21_set_out_2 This function sets the state of output 2.

Example Description

This example demonstrates the use of DC Motor 21 Click board™.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager(recommended way), downloaded from our LibStock™ or found on Mikroe github account.

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.DCMotor21

Additional notes and informations

Depending on the development board you are using, you may need USB UART click, USB UART 2 Click or RS232 Click to connect to your PC, for development systems with no UART to USB interface available on the board. UART terminal is available in all MikroElektronika compilers.

mikroSDK

This Click board™ is supported with mikroSDK - MikroElektronika Software Development Kit. To ensure proper operation of mikroSDK compliant Click board™ demo applications, mikroSDK should be downloaded from the LibStock and installed for the compiler you are using.

For more information about mikroSDK, visit the official page.

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click boards™

Downloads

DC Motor 21 click 2D and 3D files

A3910 datasheet

DC Motor 21 click schematic

DC Motor 21 click example on Libstock

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