

## Fan 3 click

PID: MIKROE-2841

A fan is a simple device that creates a flow within some fluid - such as the air, causing the heat accumulated in one section of the fluid to be moved away from the heat source, effectively cooling the affected area. The faster the fan rotates, the faster the fluid moves. This movement causes an audible noise which is one of the most obvious reasons why the fan speed control is needed, especially when the fan is used to cool down electronic components, such as the personal computer.

**Fan 3 click** is the perfect choice for speed control and it can operate in seven discrete speed steps. Unlike the PWM regulation which can sometimes cause the infamous coil whining effect on some types of fans, this click board outputs the selected voltage via the MIC29152 voltage regulator from [Microchip](#), driven through the [MIC74](#) - a serial to parallel I/O expander and a fan controller from the same company, keeping it constant at the output. Fan 3 click works with 12V to 25V on its input connector and can be used whenever a noiseless solution with a variable fan speed is needed, for example - cooling of electronic components with the minimal possible noise produced.

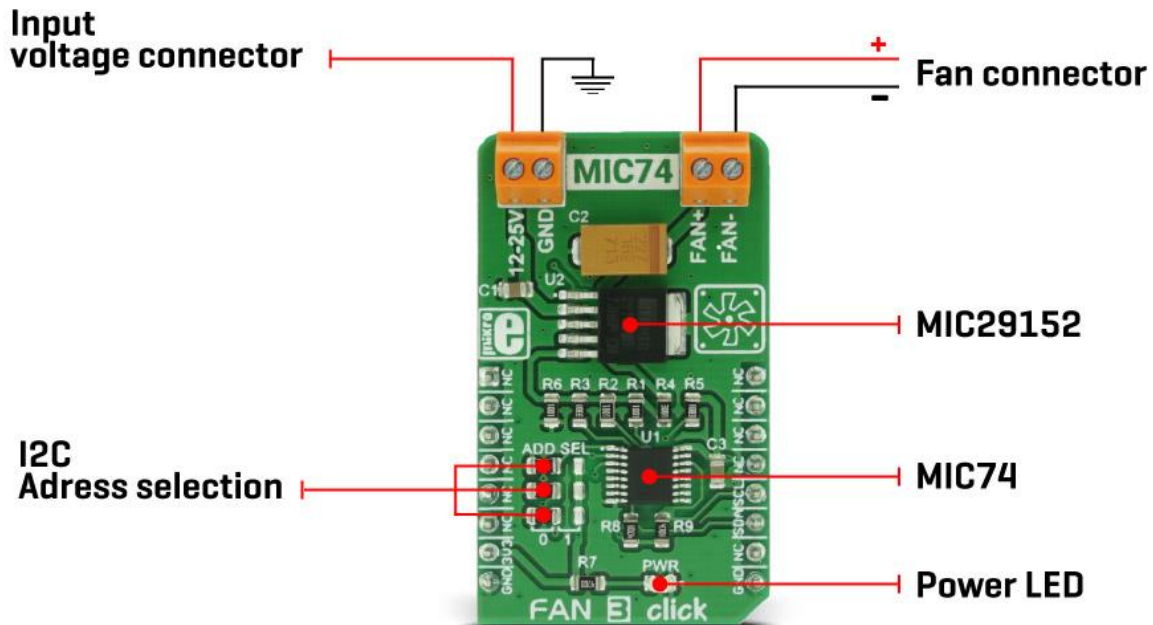
## How does it work?

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Fan 3 click uses two ICs to control the speed of the fan. The first IC is the MIC74 from Microchip, which is a serial to parallel I/O expander and fan controller. The four most significant bit outputs can be used to implement



equivalent resistance seen by the MIC29152 regulator's feedback path is raised or lowered, changing the output voltage that way. The fourth bit is set to work as the SHDN which is used to enable the voltage regulator, via its EN pin when the fan mode is selected by the I2C. Setting this bit will activate the voltage regulator and the fan will start turning with the speed defined by the MIC74 registers.



Fan 3 click can be used on several different I2C addresses, selectable by the ADD SEL jumpers. Those jumpers are used to directly set A0 to A2 address select pins of the MIC74. By default, all address pins are grounded, which sets the slave I2C address to 0x20h.

The click is equipped with two connectors. One connector is used to connect an external voltage source, which is fed to the input of the regulator. The other connector is used to connect the load - usually, an electromotor which works with the nominal voltage of 12V and has the fan blades attached to its rotor.

MikroElektronika offers libraries with functions which allow simplified control over this click board. The example can also be used as a starting point or a reference for your own application code.

# Specifications


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<b>Type</b>	DC
<b>Applications</b>	The click can be used whenever a noiseless solution with the variable fan speed is needed, for example - cooling of electronic components with the minimal possible noise produced
<b>On-board modules</b>	MIC74 - 2-Wire Serial I/O Expander and Fan Controller and MIC29152 a high current, high accuracy, low dropout voltage regulator from Microchip
<b>Key Features</b>	Fan speed control circuit with 7 discrete voltage levels, which can deliver relatively high current on the output terminals. Over-current protection, I2C communication interface, several selectable I2C addresses
<b>Interface</b>	I2C
<b>Input Voltage</b>	3.3V
<b>Click board size</b>	M (42.9 x 25.4 mm)

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## Pinout diagram

This table shows how the pinout on **Fan 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	NC	
	NC	2	RST	INT	15	NC	
	NC	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	SCL	I2C clock
	NC	6	MOSI	SDA	11	SDA	I2C data
Power supply	+3.3V	7	3.3V	5V	10	NC	
Ground	GND	8	GND	GND	9	GND	Ground

## Fan 3 click maximum ratings

Description	Min	Type	Max	Unit
Input connector voltage	12	12	25	V

## Onboard settings and indicators

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<b>Label</b>	<b>Name</b>	<b>Default</b>	<b>Description</b>
LD1	PWR LED	-	Power indication LED
JP1	ADD. SEL.	LEFT	Slave address least significant bit selection 0/1, left position 0, right position 1
JP2	ADD. SEL.	LEFT	Slave address second to least significant bit selection 0/1, left position 0, right position 1
JP3	ADD. SEL.	LEFT	Slave address third to least significant bit selection 0/1, left position 0, right position 1