

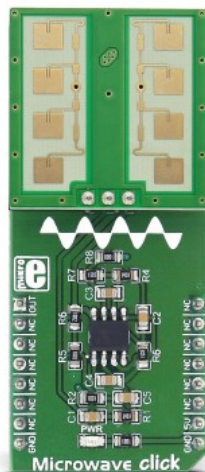
Microwave click

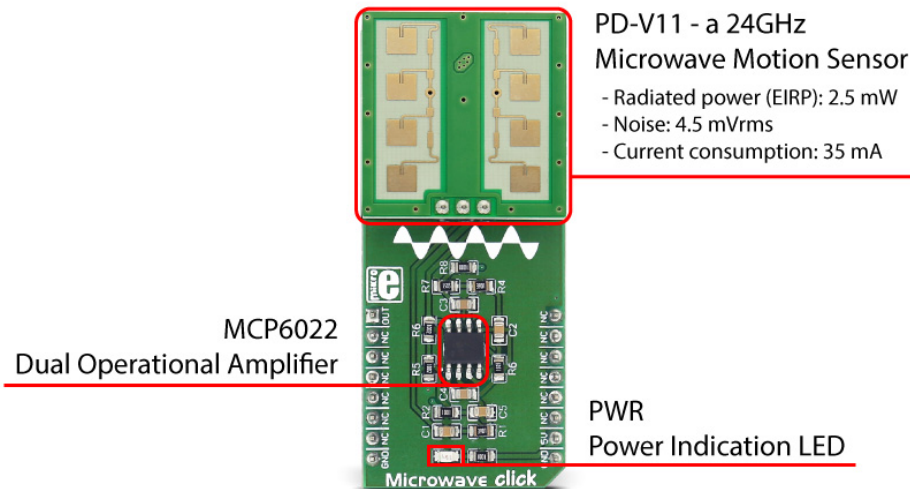
PID: MIKROE-2781

Microwave click detects movement, thanks to the [PD-V11](#) a 24GHz microwave motion sensor. The typical use for Microwave click is a proximity or motion detector in various applications and devices.

The Microwave click can detect movement or proximity by using the Doppler effect. The onboard microwave motions sensor transmits waves, and picks them back as they hit an object, with their frequency changed.

Microwave click does not need optical visibility to work, and the waves can penetrate many kinds of barriers and obstacles.





How the Microwave click works

Microwave click detects movement of objects utilizing Doppler effect. When the PD-V11 microwave sensor is powered on, it starts transmitting radio waves of fixed frequency. As the waves hit a moving object they are reflected back toward PD-V11 microwave motion sensor, with their frequency changed, depending on speed and direction of object's movement.

The Doppler effect - a change in frequency of a wave for the observer and object move closer or further apart from one another. A typical example of the Doppler effect is when a vehicle with siren passes and you hear the pitch drop of the siren.

The PD-V11 microwave motion sensor low power consumption, low noise, and a low wireless power output. See the [datasheet](#) to learn more.

The PD-V11 microwave motion sensor picks up reflected waves and converts them to a voltage signal. This signal has the magnitude of several hundred microvolts, so it's sent to the MCP6022 which amplifies the signal, in order to make it readable over the Analog pin on the mikroBUS™. This signal is amplified up to 3.3V.

Once amplified, the signal is routed to the Analog pin (OUT) on the mikroBUS™ line. The proximity of the object can be determined by measuring the amplitude of this signal, and speed/direction by determining its frequency.


The range at which Microwave click can detect movement depends on the way the algorithm is written (see the Software Support section).

Specifications

Type	Motion
Key Features	Frequency: 24GHz; Radiated power (EIRP): 2.5mW; noise: 4.5 mVrms; current consumption: 35 mA;
Interface	Analog
Input Voltage	5V
Click board size	L (57.15 x 25.4 mm)

Pinout diagram

This table shows how the pinout on **Microwave click** corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
Amplified sensed signal output	OUT	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	NC	
	NC	3	CS	TX	14	NC	
	NC	4	SCK	RX	13	NC	
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
	NC	7	3.3V	5V	10	+5V	Power supply
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
PWR	Power	-	Power LED, lights green when the power supply is established properly.