

JOYSTICK 2 CLICK

PID: MIKROE-3711

Weight: 19 g

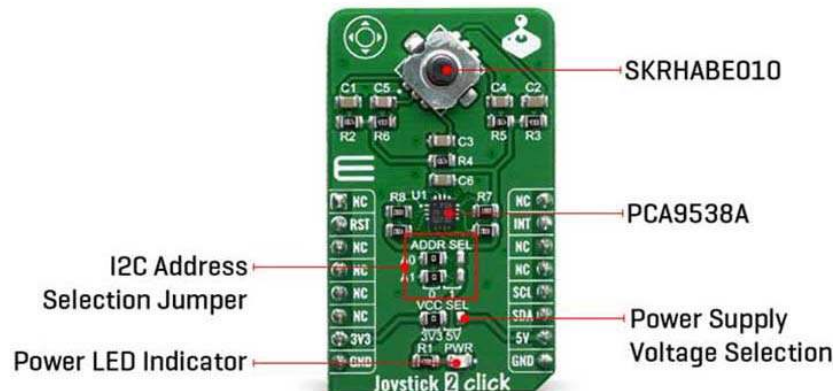
Joystick 2 Click is a smart navigation key concept based on SKRHABE010 by Alps, a 4-direction joystick switch with Center-push Function. Alps switches, also known as microswitches, are well renowned for their reliability and endurance. Joystick switches of this kind are widely used in many different applications. Joystick 2 click can be used in numerous different applications, as a human-machine interface device (HMI), such as cell phones, tablets, terminals, video games, toys, and many more.

Joystick 2 click board™ 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.

Joystick 2 click includes the SKRHABE010 by Alps, which is the omni directional joystick switch with center-push function. The mentioned joystick switch have 5 output pins – each for a single switch direction. With its body height of 1.85mm, it is very easy to implement it in various designs and thanks to the simple principles of operation, users have the ability to adapt it in a desired way. Its long-life (of 1 million life cycles) guarantees the rigidity and durability of the product.

HOW DOES IT WORK?

Joystick 2 click contains a SKRHABE01, a 4-direction joystick switch with Center-push Function by Alps. It is positioned on the board so it is easily accessible for interacting and the lever could be pressed, activating the microswitch that way. The microswitch is actuated by applying very little physical force, using a tipping-point mechanism which results in fast and reliable snap-in action. It has both NO (Normal open) contacts routed to the mikroBUS™ over the port expander. The switch lines are equipped with the RC filters, which serve as debouncing elements for the switch and also to pull-up the lines when they are left afloat. This way, the contact bouncing is reduced even further, resulting in an accurate detection of the switching event.



As already mentioned above, this click board™ contains the port expander, relatively large number of needed GPIO pins for the joystick switch. Used IC is PCA9538A, Low-voltage 8-bit I2C-bus I/O port with interrupt and reset, from NXP Semiconductors. It uses the I2C communication for interfacing with the main MCU, which simplifies the number of needed pins, and therefore the design itself. The Active LOW reset input (RESET) and Open-drain active LOW interrupt output (INT) pins helps simplifying the design even further.


The click board™ also features an onboard jumper selector, which is used to select the voltage level that is connected to the microswitch input pin, making it usable for both 3V3 and 5V capable microcontroller pins.

SPECIFICATIONS

Type	Pushbutton/Switches
Applications	Cell phones, tablets, terminals, video games, toys, and many more.
On-board modules	SKRHABE010 4-direction joystick switch with Center-push Function by Alps and Port Expander IC from NXP, PCA9538A
Key Features	High-quality microswitch, high mechanical and electrical durability, debouncing features
Interface	GPIO,I2C
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V

PINOUT DIAGRAM

This table shows how the pinout on Joystick 2 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	
Reset IN	RST	2	RST	INT	15	INT	Interrupt Out
	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	5V	Power supply
Ground	GND	8	GND	GND	9	GND	Ground

ONBOARD SETTINGS AND INDICATORS

Label	Name	Default	Description
JP1	VCC SEL	Left	Power supply voltage selection. Left position 3V3, right position 5V
LD1	Power LED	-	Power LED indicates that the click is powered on
JS1	SWITCH	-	Onboard switch

JOYSTICK 2 CLICK ELECTRICAL SPECIFICATIONS

Description	Min	Typ	Max	Unit
Contact resistance	-	-	100	mΩ
Mechanical durability (30 operations/min)	-	-	1 million	cycles

SOFTWARE SUPPORT

We provide a library for the Joystick 2 click on our LibStock page, as well as a demo application (example), developed using MikroElektronika compilers. The demo can run on all the main MikroElektronika development boards.

Library Description

The library initializes and defines the I2C bus driver and drivers that offer a choice for writing data in register and reads data from register. The library includes function for Joystick position. The user also has the function for configuration joystick, reset module and function for read interrupt state.

Key functions:

- `uint8_t joystick2_getJoystickPosition()` - Functions for get Joystick position
- `void joystick2_configuration(uint8_t cfgData)` - Functions for configuration joystick
- `void joystick2_reset()` - Functions for reset module

Examples description

The application is composed of three sections :

- System Initialization - Initializes the I2C module and all the necessary GPIO pins
- Application Initialization - Initializes the driver init, resets the module, and enables all joystick positions
- Application Task - It reads the position of the joystick, if it detects that the joystick has moved from the zero position, it prints a message about the current position

```
void applicationTask()
{
    uint8_t joystickPos;
    char demoText[ 50 ];

    joystickPos = joystick2_getJoystickPosition();

    switch(joystickPos)
    {
        case _JOYSTICK2_BUTTON_ACTIVE:
        {
            mikrobus_logWrite("--- Button is pressed!!! ---", _LOG_LINE );
        }
    }
}
```

```

        Delay_ms( 300 );
        break;
    }
    case _JOYSTICK2_POSITION_RIGHT:
    {
        mikrobus_logWrite("--- Joystick position [RIGHT] ---", _LOG_LINE );
        Delay_ms( 300 );
        break;
    }
    case _JOYSTICK2_POSITION_LEFT:
    {
        mikrobus_logWrite("--- Joystick position [LEFT] ---", _LOG_LINE );
        Delay_ms( 300 );
        break;
    }
    case _JOYSTICK2_POSITION_UP:
    {
        mikrobus_logWrite("--- Joystick position [UP] ---", _LOG_LINE );
        Delay_ms( 300 );
        break;
    }
    case _JOYSTICK2_POSITION_DOWN:
    {
        mikrobus_logWrite("--- Joystick position [DOWN] ---", _LOG_LINE );
        Delay_ms( 300 );
        break;
    }
}
}
}

```

The full application code, and ready to use projects can be found on our [LibStock](#) page. Other mikroE Libraries used in the example:

- I2C Library
- UART Library

