

# ProxFusion 3 Click



PID: MIKROE-4469

**ProxFusion 3 Click** is a compact add-on board that represents a multifunctional touch sensing Click board™. This board features the IQS292A, an 8-channel ProxFusion® capacitive touch and proximity controller with additional Hall-effect from Azoteq. This IQS292A can detect touch by using eight onboard sensor pads allowing installation of the protective acrylic glass layer over them and provides an integrated capacitive-touch solution with high flexibility, unique combination sensing, and long-term stability. This Click board™ is suitable for high-end proximity and touch applications and offers reliable and accurate sensing for any application that uses capacitive touch sensing functions.

ProxFusion 3 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?

ProxFusion 3 Click is based on the IQS269A, an eight-channel ProxFusion® capacitive, proximity, and touch controller with additional Hall-effect and inductive sensing, best in class signal-to-noise ratio, and low power consumption from Azoteq. The ProxFusion® module detects the capacitance changed with a charge-transfer method. In effect, the IQS269A represents a low-power microcontroller that features ProxFusion® technology for high-end proximity and touch applications and provides a highly integrated capacitive-touch solution with flexibility, unique combination sensing, and long-term stability. During low power mode, the ProxFusion® module can periodically wake the CPU based on a ProxFusion® timer source. Other features include automatic tuning and differential offset compensation for sense electrodes.

Mikroe produces entire development toolchains for all major microcontroller architectures.

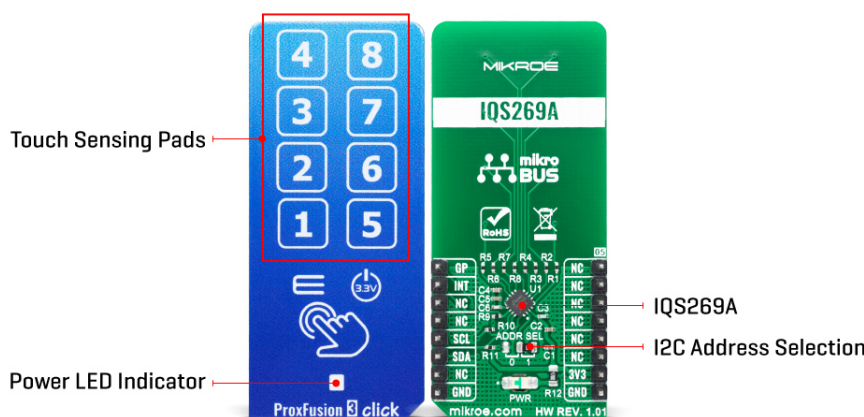
Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.



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).



The Click board™ has eight PCB pads used to sense touch or proximity events. These pads are the only elements on the top side of the board, allowing placement of the protective acrylic plexiglass layer. These pads can be programmed to generate a touch event for both when they are pressed and released. If a touch event is detected on one of the onboard pads, the state of the corresponding channel will be changed, indicating activated channel, more precisely, touch has been detected on that specific channel.

ProxFusion 3 Click communicates with MCU using a standard two-wire I2C interface that supports Fast Mode with a frequency of up to 400kHz. In addition to these pins, the IQS269A has a ready interrupt line, routed on the INT pin of the mikroBUS™ socket, that indicates a communication window, and one general-purpose pin labeled as GP and routed on the PWM pin of the mikroBUS™ socket. The GP pin represents a custom touch-out/sync-in function with which one can assign a touch flag state of any channel. Besides, also allows the choice of the least significant bit (LSB) of its I2C slave address by positioning the SMD jumper labeled as ADDR SEL to an appropriate position marked as 0 and 1.

This Click board™ is designed to be operated only with a 3.3V logic voltage level. A proper logic voltage level conversion should be performed before the Click board™ is used with MCUs with different logic levels. However, the Click board™ comes equipped with a library that contains functions and an example code that can be used, as a reference, for further development.

## Specifications

Type	Capacitive
Applications	Can be used for high-end proximity and touch applications and offers reliable and accurate sensing for any application that uses capacitive touch sensing functions.
On-board modules	IQS269A - eight-channel ProxFusion® capacitive, proximity, and touch controller with additional Hall-effect and inductive sensing, best in class signal-to-noise ratio, and low power consumption from Azoteq
Key Features	Low power consumption, highly flexible 8 sensor pads, internal Hall sensor, wide range of capacitance detection, best in class

Mikroe produces entire development toolchains for all major microcontroller architectures.

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).

	sensitivity and signal-to-noise ratio, and more.
Interface	I2C
ClickID	No
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V

## Pinout diagram

This table shows how the pinout on ProxFusion 3 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	 mikroBUS				Pin	Notes
	NC	1	AN	PWM	16	<b>GP</b>	Touch-Out/Sync-In
	NC	2	RST	INT	15	<b>INT</b>	Interrupt
	NC	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	<b>SCL</b>	I2C Clock
	NC	6	MOSI	SDA	11	<b>SDA</b>	I2C Data
Power Supply	<b>3.3V</b>	7	3.3V	5V	10	NC	
Ground	<b>GND</b>	8	GND	GND	9	<b>GND</b>	Ground

## Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1	ADDR SEL	Right	I2C Address Selection 0/1: Left position 0, Right position 1

## ProxFusion 3 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Capacitance Detection Range	-	-	200	pF
Operating Temperature Range	-40	+25	+85	°C

## Software Support

We provide a library for the ProxFusion 3 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

Mikroe produces entire development toolchains for all major microcontroller architectures.

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).

This library contains API for ProxFusion 3 Click driver.

Key functions:

- void proxfusion3\_cfg\_setup ( proxfusion3\_cfg\_t \*cfg ); - Config Object Initialization function.
- PROXFUSION3\_RETVAL proxfusion3\_init ( proxfusion3\_t \*ctx, proxfusion3\_cfg\_t \*cfg ); - Initialization function.
- void proxfusion3\_default\_cfg ( proxfusion3\_t \*ctx ); - Click Default Configuration function.

## Examples description

Display information about the last detected touch.

The demo application is composed of two sections :

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.ProxFusion3

## 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. The terminal available in all MikroElektronika [compilers](#), or any other terminal application of your choice, can be used to read the message.

## 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](#)

## Downloads

[ProxFusion 3 click 2D and 3D files](#)

Mikroe produces entire development toolchains for all major microcontroller architectures.

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).

[ProxFusion 3 click schematic](#)

[IOS269A datasheet](#)

[ProxFusion 3 click example on Libstock](#)

Mikroe produces entire development toolchains for all major microcontroller architectures.

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).