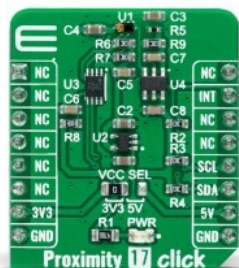


Proximity 17 Click



PID: MIKROE-5084

Proximity 17 Click is a compact add-on board that contains a close-range proximity sensing solution. This board features the TMD2635, a miniature proximity sensor module from ams AG. The TMD2635 features advanced proximity measurement in a tiny and thin optical land grid array module that incorporates a 940nm infrared vertical-cavity surface-emitting laser (IR VCSEL) factory calibrated for IR proximity response. It also offers advanced crosstalk noise cancellation through a wide range of offset adjustments through a digital fast-mode I2C interface to compensate for unwanted IR energy reflection at the sensor. This Click board™ is suitable for consumer and industrial applications.

Proximity 17 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?

Proximity 17 Click as its foundation uses the TMD2635, a miniature close-range proximity sensor module from ams AG. The TMD2635 implements a 940nm infrared VCSEL (Vertical Cavity Surface Emitting Laser) factory calibrated for IR proximity response, alongside a digital I2C serial interface. The proximity detection feature provides object detection (e.g., close proximity) by photodiode detection of reflected IR energy sourced by the integrated VCSEL emitter. The proximity engine also features a wide range offset adjustment to compensate for unwanted IR energy reflection at the sensor. The results are further improved by automatic ambient light subtraction.

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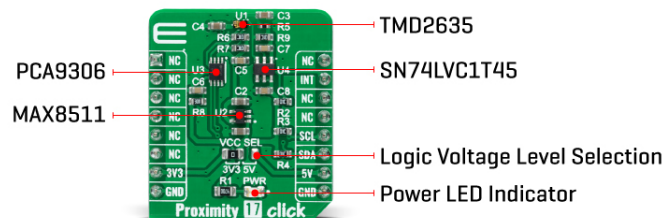
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ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.



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



The TMD2635 does not require a specific Power-Up sequence but requires a supply voltage of 1.8V to work correctly. Therefore, a small regulating LDO is used, the [MAX8511](#), providing a 1.8V out of both 5V and 3.3V mikroBUS™ power rails. Also, it can be shut down through software with a low standby current, allowing the power rails to remain powered at all times.

Proximity 17 Click communicates with MCU using the standard I2C 2-Wire interface with a maximum clock frequency of 400kHz, fully adjustable through software registers with a 14-bit proximity result stored in a PDATA register. Since the sensor for operation requires a power supply of 1.8V, this Click board™ also features the [PCA9306](#) and [SN74LVC1T45](#) voltage-level translators. The I2C interface bus lines are routed to the voltage-level translators allowing this Click board™ to work with both 3.3V and 5V MCUs properly. Also, it uses an interrupt pin, the INT pin of the mikroBUS™ socket, used for when an interrupt occurs to alert the system when proximity result crosses upper or lower threshold settings.

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 the communication lines properly. However, the Click board™ comes equipped with a library that contains easy-to-use functions and an example code that can be used, as a reference, for further development.

Specifications

Type	Proximity
Applications	Can be used for consumer and industrial applications
On-board modules	TMD2635 - miniature close-range proximity sensor module from ams AG
Key Features	Low power consumption, enables superior proximity detection, integrated factory calibrated 940nm IR VCSEL, crosstalk and ambient light cancellation, dual photodiode architecture, shutdown and interrupt feature, and more
Interface	I2C
ClickID	No

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Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on Proximity 17 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	INT	Interrupt
	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
LD1	PWR	-	Power LED Indicator
JP1	VCC SEL	Left	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

Proximity 17 Click electrical specifications

Description	Min	Typ	Max	Unit
Proximity 17 Click	3.3	-	5	V
Wavelength	-	940	-	nm
Operating Temperature Range	-30	+25	+85	°C

Software Support

We provide a library for the Proximity 17 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 Proximity 17 Click driver.

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Key functions

- `proximity17_get_int_pin` This function returns the INT pin logic state.
- `proximity17_read_proximity` This function reads the raw proximity data. The higher the value, the closer the detected object is.
- `proximity17_soft_reset` This function executes the defice software reset command.

Example Description

This example demonstrates the use of Proximity 17 Click board™ by reading and displaying the proximity data on the USB UART.

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.Proximity17

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

[Proximity 17 click example on Libstock](#)

[TMD2635 datasheet](#)

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[MAX8511 datasheet](#)

[SN74LVC1T45 datasheet](#)

[PCA9306 datasheet](#)

[Proximity 17 click schematic](#)

[Proximity 17 click 2D and 3D files](#)

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