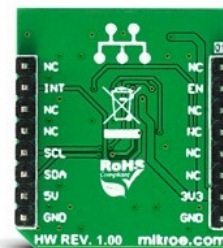
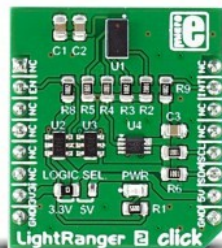


LightRanger 2 Click



PID: MIKROE-2509

Lightranger 2 Click is a compact add-on board with a ranging sensor for distance-sensing applications. This board features the VL53L0X, the world's smallest Time-of-Flight (ToF) ranging and gesture detection sensor from STMicroelectronics. This laser-ranging module provides accurate distance measurement, with absolute measurement distances up to 2m, whatever the target reflectances are. The sensor is a Class 1 laser device compliant and is eye-safe. This Click board™ makes the perfect solution for the development of applications for presence (object) detection, distance measurement, industrial ranging, inventory control, white goods, and many other applications.

Lightranger 2 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?

Lightranger 2 Click is based on the VL53L0X, the world's smallest Time-of-Flight (ToF) ranging and gesture detection sensor from STMicroelectronics. The VL53L0X integrates a leading-edge SPAD array (Single Photon Avalanche Diodes) and embeds ST's second generation FlightSense™ patented technology. FlightSense™ technology measures the time it takes for a photon to reach the nearest object. The photon travel time is multiplied by the speed of light, and a distance is calculated from there. The photon travel time is not affected by reflectance, and this kind of technology is immune to ambient illumination and optical path variations. The VL53L0X's 940nm VCSEL emitter (Vertical Cavity Surface-Emitting Laser) is invisible to the human eye, and coupled with internal physical infrared filters, it enables longer ranging distance, higher immunity to ambient light and better robustness to cover-glass optical cross-

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ISO 27001: 2013 certification of informational security management system.
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talk.

The VL53L0X has three ranging modes. The Single ranging mode is performed only once after the function is called. The Continuous ranging mode is performed continuously, and as soon as the measurement is finished, another one is started without delay. The Time ranging mode is the same as the Continuous mode, with a user-defined delay between measurements.

Lightranger 2 Click uses a standard 2-Wire I2C serial interface to communicate with the host MCU, supporting speeds up to 400kbit/s. The data can be obtained by polling the sensor over the I2C interface or by an interrupt feature when the sensor sends the interrupt over the INT pin to the host when a new measurement is available. There is an EN pin to turn the sensor on or off.

As this Click board™ can work on both the 3.3V and the 5V logic level devices, it features a few logic level translators. For I2C interface logic level translation, the Lightranger 2 Click uses the PCA9306, a dual bidirectional I2C bus and SMBus voltage-level translator from Texas Instruments. For additional enable and interrupt pins, this Click board™ uses a couple of SN74LVC1T45s, single-bit dual-supply bus transceivers with configurable voltage translation, and 3-state outputs from Texas Instruments.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the LOGIC SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. However, the Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used, as a reference, for further development.

Specifications

Type	Optical, Proximity
Applications	Can be used for the development of applications for presence (object) detection, distance measurement, industrial ranging, inventory control, white goods, and many other applications
On-board modules	VL53L0X - Time-of-Flight (ToF) ranging and gesture detection sensor from STMicroelectronics
Key Features	Detection range is independent of the target reflectance, operates in high infrared ambient light levels, advanced embedded optical cross-talk compensation to simplify cover glass section, eye-safe, 1D gesture recognition, and more
Interface	I2C
Feature	No ClickID
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V or 5V

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Pinout diagram

This table shows how the pinout on LightRanger 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	
Enable	EN	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	LOGIC SEL	Left	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

LightRanger 2 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Distance Measurement Range	-	-	2	m
Wavelength	-	940	-	nm

Resources

[mikroBUS™](#)

[Click board™ Catalog](#)

[Click Boards™](#)

Downloads

[VL53L0X sensor datasheet](#)

[LightRanger 2 click schematic](#)

[LightRanger 2 click example on Libstock](#)

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