

NFC Tag 2 Click



PID: MIKROE-2462

NFC Tag 2 Click is a compact add-on board that contains a compact NFC tag IC. This board features the [NT3H2111](#), an energy-harvesting NFC Forum Type 2 tag from [NXP Semiconductor](#). It combines a passive NFC interface with the I2C interface, password protection, and energy harvesting. The NFC IC has built-in 888 bytes of EEPROM user memory and 64 bytes of SRAM for transferring data between the NFC and the I2C interfaces with a memory mirror or pass-through mode. This Click board™ makes the perfect solution for the development of home automation, consumer applications, fitness equipment, meters, electronic shelf labels, and more.

NFC Tag 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?

NFC Tag 2 Click is based on the NT3H2111, an energy-harvesting NFC Forum Type 2 tag from NXP. It is ISO/IEC 14443 Part 2 and 3 compliant and features the unique 7-byte UID. The NFC IC transfers data in pass-through mode with a 64-byte SRAM buffer or using FAST_WRITE and FAST_READ NFC commands for higher data throughput. The security and memory-access management features NFC silence to turn off the NFC interface, signature based on Elliptic Curve Cryptography (ECC), full, read-only, or no memory access from the I2C interface, and full, read-only, or no memory access from the NFC interface based on a 32-bit password. The power management part of the NFC IC features the configurable field-detection output signal for data-transfer synchronization device wake-up and energy harvesting from the NFC field.

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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 energy harvesting allows for powering external devices such as the host MCU. It could typically provide a 5mA at 2V.

The NGC Tag 2 Click can achieve up to 106kbps of contactless transmission data over the onboard printed NFC antenna. The antenna operates at 13.56MHz. It benefits from full interoperability with every NFC-enabled device. The NFC State Machine consists of the Idle, Ready 1 and 2, Active, Authenticated, and Halt states. Those states depend on the mode of operation.

NFC Tag 2 Click uses a standard 2-Wire I2C interface to communicate with the host MCU, supporting fast mode and SCL frequency of up to 400KHz. The NFC tag uses an FD pin for field detection to indicate to the host MCU that the data is ready to be read from the SRAM. The NFC Tag 2 Click has an FD LED to represent the energy-harvested power visually.

This Click board™ can be operated only with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. However, the Click board™ comes equipped with a library containing functions and an example code that can be used as a reference for further development.

Specifications

Type	RFID/NFC
Applications	Can be used for the development of home automation, consumer applications, fitness equipment, meters, electronic shelf labels, and more
On-board modules	NT3H2111 - energy-harvesting NFC Forum Type 2 tag from NXP
Key Features	Energy harvesting, the NFC Tag can provide typically 5mA at 2V for powering up the host MCU, built-in printed antenna, unique 7-byte UID, contactless data transmission, built-in EEPROM and SRAM, field programmable read-only locking function, 32-bit password protection, pass-through and mirror mode, fully interoperable with every NFC-enabled device, and more
Interface	I2C
Feature	No ClickID
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 NFC Tag 2 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

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 ISOQAR REGISTERED	 UKAS MANAGEMENT SYSTEMS	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.	 TUV SUD ISO 9001 ISO 9001: 2015 certification of quality management system (QMS).

Notes	Pin					Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	FD	Field Detection
	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	NC	
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
LD2	PD	-	Field Detection Indicator

NFC Tag 2 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
External RF Signal Frequency	-	13.56	-	MHz
EEPROM Size	-	888	-	bytes
SRAM Size	-	64	-	bytes

Resources

[mikroBUS™](#)

[Click board™ Catalog](#)

[Click Boards™](#)

Downloads

[NFC Tag 2 click schematic v101](#)

[NFC Tag 2 click example on Libstock](#)

[NT3H2111 datasheet](#)

[NFC Tag 2 click 2D and 3D files v101](#)

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