OUTFORM

# NFC Module User manual

**Model:20E0205-A01-E003**

**Brand:OUTFORM**

## KEY FEATURES

- USB Full-NFC solution (R/W, P2P, HCE) to connect to the mainstream OS environments (Android, Windows, Linux, MacOS)
- Integrated RF level detector
- No Drivers required
- HW solution (PN7150+LPC11U24) with very small footprint

## Product description

NFC USB Dongle is an NFC Reader-Writer based on NXP's PN7150 high-performance full NFC controller, supporting all NFC Forum modes. The USB NFC Dongle is powered through USB connector. Its operating frequency is 13.56MHz.

This NFC controller supports all NFC Forum communication modes like peer to peer, reader/writer and Host Card Emulation. It allows interacting with all NFC devices on the market according to NFC Forum: from simple NFC tags to NFC-enabled smartphone.

## HOW IT WORKS

NFC USB Dongle can be set to behave either as an NFC reader, or a tag, or to establish a two-way connection with another NFC device.

NFC USB Dongle features an LPC11U24 MCU which works in

conjunction with the PN7150. The USB interface is provided by NXP's LPC11U24 MCU, and the NFC functionality is ensured thanks to PN7150.

NFC is designed to be intuitive for users. Communication between two devices is established in the simplest way possible — by bringing them close to each other. NFC frontends can operate in three distinct modes:

**1．Card emulation mode — where USB NFC Dongle behaves like a smart card or a tag.**

In this mode, NFC USB Dongle emulates an NFC tag. It doesn't initiate the communication, it only responds to an NFC reader. A typical application of the card emulation mode is how people use NFC in their smartphones to replace several cards, badges and tags at once (using the same phone for tollgate check-ins, contactless payments and so on). Card emulation mode, however, is not useful just for smartphones, but for any type of portable device.

**2. Read/Write — where NFC USB Dongle behaves as an NFC Reader/Writer**

Here, NFC USB Dongle communicates with a passive tag, smart card, or an NFC device operating in card emulation mode. It can both read or write to a tag (although reading is a more common use-case because tags will often be write protected). In this mode, it is USB NFC Dongle that generates the RF field, while a tag or card only modulates it.

**3．Peer-to-peer — for more complex interactions**

Peer-to-peer mode establishes a two-way communication channel

between a pair of NFC-enabled devices. When a user brings two devices close to each other, the two NFC chips establish a P2P connection and exchange data.

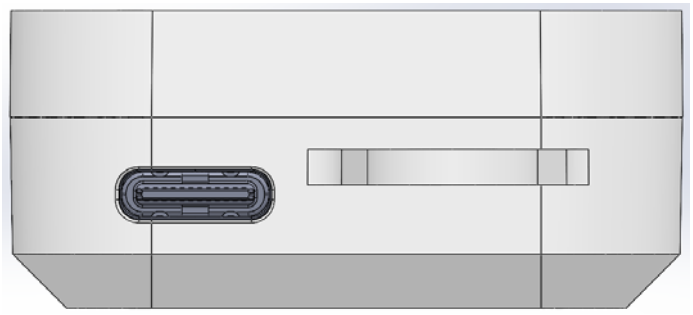
## PN7150 FEATURES

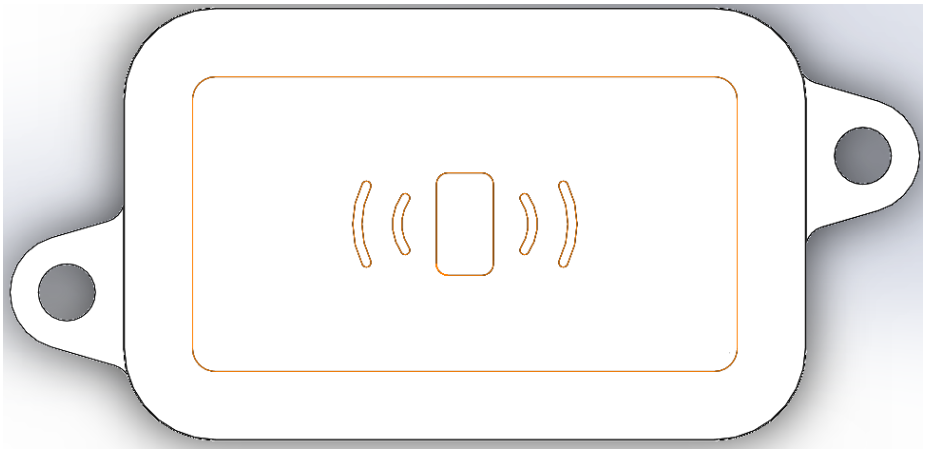
Optimized for fast design-in, NXP's PN7150 high-performance NFC controller is fully compliant with the NFC Forum.

PN7150 embeds a new generation RF contactless front-end supporting various transmission modes according to NFCIP-1 and NFCIP-2, ISO/IEC14443, ISO/IEC 15693, MIFARE and FeliCa specifications. Its crystal oscillator operates at a frequency of 27.12MHz.

## LPC11U24 FEATURES

The LPC11U24 is an ARM Cortex-M0 based, 32-bit microcontroller, with a USB 2.0 full-speed device controller. Its crystal oscillator operates at a frequency of 12MHz.





## Disclaimers

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC/IC RSS-102 radiation exposure limits set forth for an uncontrolled environment.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radioexempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The power source should meet limited power source or PS2 requirements according to IEC 60950-1 or IEC 62368-1.