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PN7150 product quick start guide

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Application note
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Document information

Information	Content
Keywords	PN7150, NFC, quick start
Abstract	This document describes the product support package to be used to start working with PN7150.



1 Revision history

Revision history

Rev	Date	Description
1.7	20210203	Removed Windows IoT support
1.6	20190708	Updated Linux demo part with link to instructions
1.5	20181113	Updated with MCUXpresso reference
1.4	20180725	Updated weblinks
1.3	20171120	Updated broken links
1.2	20170222	Updated demo images weblinks
1.1	20160819	Added UDOO Neo Android demo images reference
1.0	20160601	First released version

2 Introduction

This document describes how to start working with PN7150 to add NFC functionality to a device. It points where to find the dedicated information for hardware, antenna and software integration as well as information related to the PN7150 demo kit for reference implementation to be used as example.

3 General description of PN7150

PN7150 is a full NFC controller solution with integrated firmware and NCI interface designed for contactless communication at 13.56 MHz.

PN7150 is the ideal solution for rapidly integrating NFC technology in any application, especially those running O/S environment like Linux or Android reducing Bill of Material (BOM) size and cost.

You can get PN7150 technical details in the product data sheet: http://www.nxp.com/documents/data_sheet/PN7150.pdf.

4 PN7150 Integration steps

4.1 Hardware integration

Guidelines for hardware integration of the PN7150 are given in the “Hardware Design Guide” document: <https://nxp.com/downloads/en/board-support-packages/HW3561.zip>.

The “Low-Power Mode Configuration” document describes how to optimize power consumption by use of PN7150 low-power polling mode: http://www.nxp.com/documents/application_note/AN11757.pdf.

The PN7150 demo kit can be used as reference design (see [Section 5.1](#)).

4.2 Antenna integration

Recommendation for the antenna design choice and guidelines for antenna matching are given in the “Antenna Design and Matching Guide” document: http://www.nxp.com/documents/application_note/AN11755.pdf.

The PN7150 demo kit can be used as reference design (see [Section 5.1](#)).

4.3 Software integration

The “user manual” describes the PN7150 host interface commands: http://www.nxp.com/documents/user_manual/UM10936.pdf.

Furthermore, depending on the targeted platform the following software solutions are supported.

4.3.1 Linux

The “Linux Software Stack Integration Guidelines” document describes the Linux libnfc-nci software stack supporting PN7150 under a Linux system: http://www.nxp.com/documents/application_note/AN11697.pdf.

4.3.2 Android

The “NXP-NCI Android Porting Guidelines” document provides guidelines about how to integrate support of PN7150 under an Android system: http://www.nxp.com/documents/application_note/AN11690.pdf.

4.3.3 Other OS or Null OS

For other systems, source code examples and related documentation are given for both NXP’s LPC and NXP’s Kinetis MCUs:

- NXP-NCI MCUXpresso example project: <https://www.nxp.com/security/login?TARGET=https%3A%2F%2Fwww.nxp.com%2Fwebapp%2Fsecure%2Flogin.SAMLSecuredController.sp%3Faction%3DforwardToDestination>
- AN11990 NXP-NCI MCUXpresso example: http://www.nxp.com/documents/application_note/AN11990.pdf

5 PN7150 demo kit

The PN7150 NFC Controller SBC kit is available in 3 configurations referenced as:

- OM5578/PN7150ARD: PN7150 NFC Controller SBC Kit for Arduino
- OM5578/PN7150RPI: PN7150 NFC Controller SBC Kit for Raspberry Pi
- OM5578/PN7150BBB: PN7150 NFC Controller SBC Kit for BeagleBone Black

All information can be found on the dedicated OM5578 demo kit webpage: <https://www.nxp.com/products/rfid-nfc/nfc-hf/nfc-readers/development-kits-for-pn7150-plugin-play-nfc-controller:OM5578>.

5.1 Hardware

The “PN7150 NFC controller SBC kit user manual” provides a description of the demo kit from hardware perspectives: http://www.nxp.com/documents/user_manual/UM10935.pdf.

The related schematics, BOM and Gerber files can be found here: <https://nxp.com/downloads/en/board-support-packages/HW3560.zip>.

But the kits are based also on the NFC’s SBC Interface board concept referenced as OM29110 described in the related user manual:

http://www.nxp.com/documents/user_manual/UM10956.pdf.

The related schematics, BOM and Gerber files can be found here: <https://nxp.com/downloads/en/board-support-packages/HW3561.zip>.

5.2 Software

5.2.1 OM5578/PN7150ARD

The “PN7150 Arduino SBC kit quick start guide” document describes how to get started with the demo kit on UdoNeo platform running Linux and Android but also on LPCXpresso and Kinetis (relates to NulIOS and RTOS software integration described at [Section 4.3.3](http://www.nxp.com/documents/application_note/AN11841.pdf)): http://www.nxp.com/documents/application_note/AN11841.pdf

Then the related software image can be downloaded from here:

- UDOO Neo Linux demo image: https://www.nxp.com/lgfiles/updates/NFC/OM5578-PN7150S_UdooNeo_Linux_demo_v1.1.zip
- UDOO Neo Android Lollipop demo image: https://www.nxp.com/lgfiles/updates/NFC/OM5578-PN7150S_UdooNeo_AndroidLollipop_demo_v1.0.zip
- UDOO Neo Android Marshmallow demo image: https://www.nxp.com/lgfiles/updates/NFC/OM5578-PN7150S_UdooNeo_AndroidMarshmallow_v1.1.zip

5.2.2 OM5578/PN7150RPI

The “PN7150 Raspberry Pi SBC kit quick start guide” document describes how to get started with the demo kit on Raspberry Pi running Linux: http://www.nxp.com/documents/application_note/AN11758.pdf

Guidelines to set up the Linux demonstration are provided here <https://community.nxp.com/t5/NXP-Designs-Knowledge-Base/Easy-set-up-of-NFC-on-Raspberry-Pi/ta-p/1099034>.

5.2.3 OM5578/PN7150BBB

The “PN7150 BeagleBone Black SBC kit quick start guide” document describes how to get started with the demo kit on BeagleBone Black running Linux or Android: http://www.nxp.com/documents/application_note/AN11842.pdf

Then the related software images can be downloaded from here:

- BeagleBone Black Linux demo image: https://www.nxp.com/lgfiles/updates/NFC/OM5578-PN7150S_BBB_Linux_demo_v1.2.zip
- BeagleBone Black Android KitKat demo image: https://www.nxp.com/lgfiles/updates/NFC/OM5578-PN7150S_BBB_AndroidKitKat_demo_v1.0.zip

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Contents

1	Revision history	2
2	Introduction	3
3	General description of PN7150	3
4	PN7150 Integration steps	3
4.1	Hardware integration	3
4.2	Antenna integration	3
4.3	Software integration	3
4.3.1	Linux	3
4.3.2	Android	4
4.3.3	Other OS or Null OS	4
5	PN7150 demo kit	4
5.1	Hardware	4
5.2	Software	4
5.2.1	OM5578/PN7150ARD	4
5.2.2	OM5578/PN7150RPI	5
5.2.3	OM5578/PN7150BBB	5
6	Legal information	6

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