



Full NFC Forum-compliant controller family with integrated FW and NCI interface

Plug-and-Play NFC Solutions PN71xx

Optimized for fast design-in, NXP's PN71xx NFC solutions fully comply with the NFC Forum and include Linux®, Android™, and WinIoT drivers. These NFC controllers support the most popular platforms, including Raspberry Pi®, BeagleBone® Black and any boards featuring an Arduino® stackable header, including Kinetis®, LPCXpresso and i.MX boards.

KEY FEATURES

- ▶ Full hardware and software compatibility
 - Support for Linux, Android, Windows IoT, RTOS, NullOS
 - Interface to Raspberry Pi, BeagleBone Black, and all boards with Arduino-compatible header
- ▶ All NFC operating modes
 - Read/Write Mode: ISO/IEC 14443 A&B up to 848 kbit/s, FeliCa at 212 & 424 kbit/s, MIFARE 1K, 4K, NFC Forum type 1, 2, 3, 4, 5 tags, ISO/IEC 15693
 - All peer-to-peer modes
 - Card Emulation Mode (from host): NFC Forum T4T (ISO/IEC 14443 A&B) at 106 kbit/s, NFC Forum T3T (FeliCa, PN7150 only)
- ▶ Flexible host interface
 - Supply voltage: 1.8 to 3.3 V
 - I²C interface: 3.4 Mbit/s
 - NCI 1.0-compliant protocol
 - IRQ signal for improved synchronization

- ▶ Complete, power-efficient NFC control
 - RF driver: 3.0 to 4.75 V, 180mA max (PN7150); 2.7 to 3.3 V, 180mA max (PN7120)
 - NFC Forum device requirement: v1.3
 - Fully configurable polling loop with low-power mode
 - Load modulation scheme: active (PN7150), passive (PN7120)
- ▶ Standard packages: HVQFN40 (PN7150), VFBGA49 (PN7120)

KEY BENEFITS

- ▶ Seamless integration of NFC into any application, especially those with OS systems
- ▶ Plug-and-play NFC operation with many platforms, including most LPC, QorIQ®, Kinetis and i.MX boards
- ▶ All typical NFC use cases, including pairing, personalization, extended user interface, maintenance, etc.
- ▶ Fast deployment of advanced, fully interoperable NFC functionality, with a lower overall cost



APPLICATION EXAMPLES

- ▶ Gateways, routers
- ▶ Set-top boxes
- ▶ Audio
- ▶ Home appliances
- ▶ Healthcare/Medical
- ▶ Accessories

NXP PN71xx controllers are plug-and-play solutions. Each device integrates a complete NFC frontend and an advanced 32-bit microcontroller with dedicated code and data memories.

The embedded firmware simplifies development by handling critical timings on the host, and by reducing certain host interactions and abstracting RF protocols. There's no need to spend time with the RF protocols to finalize a design. The firmware is easy to integrate with the main OS and reduces the host code footprint because it performs so many functions. NXP-supplied design guidelines for the antenna help simplify design-in even more.

The PN71xx family is optimized for power consumption, supporting automatic transitions to low-power mode, and letting the host remain in sleep mode until RF communication is needed.

Smart homes and IoT

Embedded firmware and interoperability bring significant benefits to a wide range of smart-home and IoT applications, including home automation, home appliances, wearables, entertainment and gaming.

More specifically, the PN71xx family can be used for Bluetooth®, Wi-Fi®, or ZigBee® pairing, and simplifies commissioning of home-automation applications. The family can also be

	PN7120	PN7150
Embedded firmware	Yes	Yes
NFC reader tag	Type 1, 2, 3, 4, 5	Type 1, 2, 3, 4, 5
RF driver supply voltage	2.7 or 3.3 V	3.0 to 4.75 V
Read/Write mode	MIFARE®, FeliCa, ISO/IEC 15693	MIFARE, FeliCa, ISO/IEC 15693
Peer-to-Peer mode	ISO/IEC 18092 target and initiator (active and passive)	ISO/IEC 18092 target and initiator (active and passive)
Card emulation mode	NFC Forum T4T (ISO/IEC 14443 A and B)	NFC Forum T3T & T4T (FeliCa & ISO/IEC 14443 A and B)
NFC Forum compliance	Yes	Yes
Package	VFPGA49	HVQFN40
Load modulation scheme	Passive	Active

used for device personalization and parental control, and to simplify smartphone tasks, such as configuring settings, transferring data, or registering products. These controllers automate maintenance tasks with cloud assistance for troubleshooting and firmware updates. They also enable logical access control for a more secure way to use electronic devices.

The integrated I²C interface is compatible with the NTAG® I²C *plus*, a popular solution for sensors, light fixtures, and other devices associated with smart-home networks. With the PN71xx designed into a home gateway or router, smart-home equipment can be installed with just a tap.

PN7120 VERSUS PN7150

While the PN7120 is housed in a VFPGA49 package, the PN7150 controller comes in an HVQFN40 package for use with standard PCBs. It offers higher output power, with an RF driver output voltage of 4.75 V, for longer reading distance and smaller antenna size. Active load modulation reduces the antenna size for card emulation and passive target modes.

EASY INTEGRATION

Linux, Android, and WinIoT software drivers ease integration and reduce time-to-market. For NulIOS RTOS integration, NXP supplies a set of code examples running on our industry-leading microcontrollers.

DEVELOPMENT TOOLS

To help jump-start design, NXP offers a range of development tools, including demo kits for the PN7120 (OM5577) and PN7150 (OM5578). Other options contain a dedicated controller board, adapter boards based on Raspberry Pi and BeagleBone Black, and boards featuring an Arduino-compatible header, including LPCXpresso, Kinetis, and i.MX products. Linux, Android and WinIoT software drivers, as well as RTOS and NulIOS examples, offer added support with integration.

