Contactless Technology

Just tap for an easier life

FeliCa
More "Contactless" Convenience

We began developing contactless IC chips in the latter half of the 1980s, since then we have continued to invest in the technology to provide even greater convenience, security and value-add to public infrastructure, including e-tickets for transportation and e-money for payment. As a leading company, Sony endeavors to develop new markets through NFC-based products. Sony will continue to create even more "contactless" convenience.

The World’s First*1 contactless IC card chip to acquire EAL6+*2

*1: The world’s first certification for a product that contains an embedded software and functions as a contactless IC card
*2: EAL6+ Certification of Common Criteria (ISO/IEC 15408), the International Standard for IT Security

Tap for instant transactions
Transactions with compatible readers are fast (about 0.1 sec.) thanks to the FeliCa IC chip. Contactless communication means there’s no need to remove the card from a wallet or purse.

One card, many possibilities
Data for a range of applications can be managed in files and folders on a FeliCa card. Potential services include e-tickets, e-money, loyalty point services and many other applications.

Wide range of NFC mobile solutions optimized for global market
Mobile FeliCa was introduced by Sony in 2004. In 2010, Sony launched NFC smartphones supporting FeliCa for Japanese market and in 2013, Sony launched Mobile FeliCa for the international market. As NFC smartphones are becoming increasingly commonplace throughout the world, Sony will continue to support new mobile solutions.

ISO/IEC 18092 and FeliCa
The communication system for FeliCa contactless technology conforms to ISO/IEC 18092 (NFCIP-1), the standard jointly proposed by Sony and NXP Semiconductors. NFC technical specifications were decided by the NFC forum based on international standards set by ISO/IEC and support ISO/IEC 14443 and ISO/IEC 18092. FeliCa is one standard within the NFC framework.

High security
Transmission between FeliCa cards, readers and controllers is encrypted. What’s more, a new encryption key is generated for each transaction, protecting users from security risks. The Sony product line-up now also includes products supporting Advanced Encryption Standard (AES).

ISO/IEC 18092 and FeliCa

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Command & Response

Wireless Communication Protocol

FeliCa Interface

ISO/IEC 18092 (NFCIP-1)

ISO/IEC 14443 Type A

ISO/IEC 14443 Type B

NFC Forum Specifications

Device Communication Protocol

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IC card tickets throughout Asia Pacific

Recognized for their high level of security, FeliCa IC card tickets have been introduced by public transportation operators throughout the Asia Pacific region.

- **Hong Kong: Octopus Card & Mobile**
  Introduced in Hong Kong in 1997, the Octopus Card was one of the world’s first IC card transit tickets. From 2013, Octopus has been offering a mobile service.

- **India: Chennai Metro Travel Card**
  FeliCa has been adopted as an IC transit ticket by Chennai Metro, which was constructed in India to ease traffic congestion in the city of Chennai.

- **Indonesia: KCJ Transit Ticket**
  PT KAI COMMUTER JABODETABEK (KCJ), a leading rail operator in Indonesia, has adopted FeliCa technology for its IC ticket operation. KCJ has launched contactless prepaid card tickets as well as FeliCa embedded wristbands. KCJ also plans to launch NFC mobile phone service.

- **Vietnam: ETC Card**
  FeliCa has been adopted as an ETC smart card for the automated expressway toll collection system that connects the cities of Ho Chi Minh and Dau Giay.

- **Sri Lanka: Combination Bank Card & IC Transport Ticket**
  In Sri Lanka, bank cards that can also be used for public transportation have been issued.

- **Bangladesh: SPASS Card**
  Bangladesh has introduced a FeliCa transit card in the fare collection system for the state-run bus company.

IC card transit tickets / interoperable services throughout Japan

FeliCa IC cards are used as tickets for public transportation throughout Japan. Since spring 2013, 10 different types of IC transit cards have become interoperable throughout Japan. More transport systems can now accept more operators’ cards than ever before. IC card tickets can also be used as e-Money at a growing number of stores.

Indonesia: Indosat Ooredoo D-Tap

Indosat ooredoo, one of the largest MNOs in Indonesia, plans to launch its mobile payment service in Indonesia. The service will be available in some public transport, merchants, and other locations.

**e-payment**

FeliCa is used in various prepaid/postpaid e-Money services. These services can also be incorporated in mobile phones (Osaifu-Keitai).

**The flexibility of FeliCa**

In addition to card format, FeliCa technology can be used in a variety of form factors, such as mobile phone and coin-type tokens. FeliCa can also be incorporated into wristwatches or key fobs.
Sony has partnered with Blackboard to provide campus solutions using FeliCa-based ID cards and NFC readers. Starting with Santa Clara University, Blackboard has now expanded to introduce FeliCa/NFC infrastructure into more than 365 universities, of which more than 60 also use FeliCa card.

ID cards for students, faculty, and employees

FCF, a shared usage format of FeliCa for ID cards, has been introduced at 298 universities and other educational institutions and 96 companies and local governments in Japan. A total of 155 companies have joined the FCF Promotion Forum launched in 2004, and each company is providing diverse services. They began offering a new format in 2013, making FeliCa usable on even more systems.

**ANA: SKiP Service**

SKiP Service by All Nippon Airways enables passengers to check in and board simply by tapping a mobile wallet phone or ANA card compatible with Rakuten Edy or Suica over a reader. Earned mileage points can be converted to e-Money.

**JAL Touch & Go Service**

With Touch and Go service by Japan Airlines, which also uses FeliCa, passengers can pass through boarding gates simply by tapping their mobile wallet phone or JAL IC card to the reader. Earned mileage points can be converted to e-Money.

**Golf course membership card**

FeliCa cards can be used as membership cards for a golf course in Kuala Lumpur, Malaysia. The multi-application function can be used for loyalty programs, access control, and payment at the golf facilities.

**Fitness club membership cards**

At some Tipness fitness clubs in Japan, members wear FeliCa-equipped wristbands called TIP GEAR to check in, open lockers, and pay for purchases with Rakuten Edy e-money. The wristband can be worn during fitness activities, thanks to heat-resistant and waterproof functionality.

**FeliCa Lite-S fan club cards**

Fan club cards using FeliCa Lite-S are being issued. They are used for smooth access control with a simple tap at event venues, stamp rallies, and as proof of purchase, among other things.
Omron WellnessLINK-compatible devices
Easily transfer measurement data simply by holding an Android NFC smartphone near the WellnessLINK-compatible device. Data can be measured and sent instantly for even easier health monitoring on a PC or smartphone.

Terumo HR Joint-compatible devices
Daily vital data measured with a HR Joint-compatible device can be transferred to a PC and shown in a graph simply by placing the device over a reader.

A&D Healthcare Devices Wellness Connected Series
A&D’s healthcare products embedded with NFC Dynamic Tag (e.g., blood pressure monitors, body composition monitors, scales, and pedometers) can share health data with NFC devices such as NFC smartphones.

Blood donor card in Vietnam
The FeliCa AES card has been adopted for a blood donor management system developed by Parkway Systems and VKX Co., Ltd (a member of VNPT). This blood donor card can be used to manage blood donation and hospital examination histories, with e-money and other functions expected to be added in the future.

In home electronics
Using NFC technology to authorize devices with a single tap, Sony has developed One-touch functions capable of data transmission. An increasing range of products comes equipped with this capability.

One-touch Listening
Simply tap your smartphone on a compatible speaker to transmit and play music wirelessly.

One-touch Sharing
Simply tap your smartphone to a compatible digital camera to wirelessly send photos and videos.

One-touch Remote
Simply tap your smartphone to a compatible digital camera to enable remote shooting using the screen of your smartphone.

One-touch Connection
Simply tap your Walkman to a compatible headphone to transmit and play music wirelessly.

Smart B-Train
Simply tap your SSE-BTRI to a smartphone to download the application automatically via One-touch.
Major Products

FeliCa Standard Contactless IC Product :
RC-SA01
This is a highly versatile IC product with secure standard FeliCa capability, supporting AES encryption standard. This product is suitable for high end secure applications, such as transportation and e-payment.

FeliCa Lite-S Contactless IC Product :
RC-S966
With a simplified security functionality and optimized file system, FeliCa Lite-s can be used in stickers, posters, and other such items. They conform to NFC Forum Type 3 Tag Specification.

FeliCa SAM for Reader :
RC-S500
The FeliCa Secure Access Module (SAM) enables various terminals to support FeliCa security functionality for a wide range of applications. This product supports both AES and DES encryption systems.

SDK for NFC/FeliCa (Software Development Kit)
A range of SDK products for NFC/FeliCa operating on a Windows® or Linux PC to support efficient development of FeliCa applications.

USB NFC Reader Product :
RC-S380
RC-S380 is an NFC capable reader which can be connected to a PC via USB port.

Embedded NFC Reader Products :
Embedded Readers
A range of NFC modules for PC, tablet and other consumer electronic devices. They can communicate with any device conforming to the NFC Forum Specifications.

NFC Dynamic Tag :
FeliCa Link
FeliCa Link inherits the functionality of FeliCa Plug and FeliCa Lite. In addition, it supports reader/writer functionality as well as NFC-DEP function.

FeliCa Plug
This product can be integrated into various types of electronic devices. It is especially suitable for health equipment, electronic toys and other small, low-power-consumption devices as its power consumption on standby is less than 0.1uA.

Visit our website for detailed information on NFC/FeliCa technology, products and applications.
sony.net/felica/

Sony Imaging Products & Solutions Inc.
Sony City Osaki

FeliCa Business Division
2-10-1 Osaki Shinagawa-ku, Tokyo, 141-8610 Japan
FeliCa website: sony.net/felica/