ST25 NFC / RFID solutions for home appliance applications

Brown goods, white goods, induction cooker, air conditioning…

MMY division
NFC, RFID HF & UHF technologies

Complementary solutions to Wireless Technologies

Communication from 1cm (NFC) to up to 10m (RFID UHF)
### NFC technology

<table>
<thead>
<tr>
<th>Near Field Communication</th>
<th>Interactive and zero power</th>
<th>NFC is developed by NFC Forum</th>
<th>Fast growing employment in Mobile phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Short range contactless communication</td>
<td>• NFC tags powered by phone or RFID reader</td>
<td>• Interoperability between devices with NFC Forum certified products</td>
<td>• More than 70% of new phones come with NFC</td>
</tr>
<tr>
<td>• Technology operating at 13.56MHz frequency</td>
<td>• Enabling convenient connection to the Cloud for IoT</td>
<td>• Standardized use cases (URL web link, Bluetooth handover…)</td>
<td>• NFC is used for Mobile Payment with Android and iOS (ApplePay)</td>
</tr>
<tr>
<td>• Based on RFID HF ISO14443 &amp; ISO15693 standards</td>
<td>• NFC-enabled mobile phone can engage with items by a simple tap</td>
<td></td>
<td>• Apple added in 2019 support of NFC reader / writer mode from iOS13 onward</td>
</tr>
</tbody>
</table>

- **Home Appliance applications**
NFC main use cases & benefits

Product configuration

- Smooth product personalization during production flow
- "In the box programming" thanks to long range capability (up to 1m)
- Parameter settings
- Tracking and identifying

Maintenance & Security

- Contactless access to maintenance & usage records
- Update parameters no matter if device is powered thanks to NFC phone
- Firmware upgrade via Fast Transfer Mode
- Brand recognition

End user experience

- Bluetooth / Wifi extended pairing
- Customer and warranty registration
- Device control with a mobile phone
- User identification & personalized settings
- Accessory authentication & parameter settings

Interactive and zero power technology (Tag powered by Reader)
Convenient product configuration and maintenance
Simple and flexible

Home Appliance applications
Dynamic NFC tag

Typical Dynamic NFC Tag Block Diagram & Usage in Home Appliance

- I2C fast interface
- Fast Transfer Mode
- Large memory storage

- ST25DV04K / 16K / 64K

- Product configuration
- Servicing & Security
- End user experience

Home Appliance applications
HF / NFC reader

Typical NFC Reader Block Diagram & Usage for Home Appliance

White goods
Brown goods

LCD Panel
Key Pad

ST25R
RAM

STM32 MCU

Battery
Monitoring Sensors

ST25R3911B / ST25R95

- High output power
- Low power consumption
- Automatic antenna tuning

Product configuration
Servicing & Security
End user experience

Home Appliance applications
Typical NFC Tag (+ Reader) Block Diagram & Usage in Home Appliance

- **Consumable**
  - **ST25T**
  - **EEPROM**

- **ST25TV02K / ST25TA02KB**
  - **TruST25 digital signature**
  - **Passwords**
  - **Easy & fast data transfer**

- **End user experience**
  - **Brand recognition**

**Home Appliance applications**
ST25 rich eco-system

- Discovery Kits based on STM32 MCU
- STM32 Nucleo boards ecosystem
- STM32Cube software ecosystem

- Antenna e-design tool
- Schematic, BOM, Gerber
- IBIS models

- PC software tool ST25 SDK
- Mobile Apps ST25 SDK (Android & iOS)

- Documentation
- Training
- Webinar
- MOOC

Home Appliance applications
ST25 hardware solutions

Speed-up Evaluation, Prototyping and Design

**NFC TAG KIT**
- ST25-TAG-BAG-U

**DYNAMIC NFC TAG KITS**
- ST25DV-DISCOVERY
- ANT-1-6-ST25DV
- X-NUCLEO-NFC04A1
- ANT7-T-ST25DV04K

**HF / NFC READER KITS**
- ST25R3911B-DISCO
- X-NUCLEO-NFC05A1

Home Appliance applications
Solutions for NFC / RFID tags & readers

ST25 SIMPLY MORE CONNECTED