ST25R210

High performance NFC reader for access control, industrial & consumer

Most sensitive NFC reader: extended wake-up range and advanced features in an ultra-compact package

ST25R210 is designed to operate in noisy environments without sacrificing design freedom. It provides strong analog performance combined with enhanced noise suppression and very high receiver sensitivity to provide reliable electro-magnetic compatibility (EMC).

Ideal for access control and consumer products, this high-performance NFC reader offers enhanced robustness and advanced features to accelerate CSA Aliro platform validation and NFC Forum certification.

ST25R210 comes in the most compact package available on the market.

KEY FEATURES AND BENEFITS

- Most sensitive reader for access control applications
- Enhanced wake-up range (LPCD)
- Improved dynamic power output (DPO)
- Advanced antenna tuning (AAT)
- Enhanced active wave shaping (AWS)
- France as country of origin (COO)
- ST 10-year longevity program

KEY APPLICATIONS

- Access control
- WPC Qi & NFC card protection
- Ki-kitchen appliances
- MFi applications (upon request)

Technical features

Universal protocol support

ST25R210 is a front-end device supporting all protocols required for consumer and industrial applications:

- NFC Forum NFC-A, NFC-B (ISO14443A/B up to 848 kb/s) reader functionality
- NFC-F (FeliCa™ up to 424 kb/s) reader functionality
- NFC-V (ISO15693, up to 212 kb/s) reader functionality
- NFC-A / NFC-F card emulation
- ISO18092 passive initiator and target

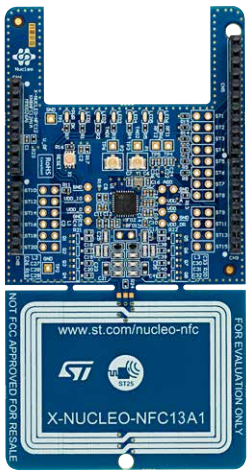
Advanced features

ST25R210 is a cost-effective NFC reader with advanced features that improve sensitivity and robustness and make certification and design-in easy and fast:

- **Improved wake-up range and low power card detection** based on an adjustable internal inductive wake-up circuit designed to maximize the detection range of a phone or card while keeping power consumption very low. ST25R210 is ideal for smart locks and meets the key requirements of mobile phone vendors.
- **Dynamic power output** ensures transmitted power levels remain safe and compliant with NFC Forum limits by automatically adjusting the output power in accordance with de-tuning conditions caused by different antenna sizes and distance.
- **Programmable active wave shaping** simplifies overshoot and undershoot control, ensuring compliance with NFC Forum monotonicity tests. Compatible with NFC Forum CR updates, starting from CR15 and its new increased operating volume.
- **Advanced antenna tuning** enables easy environmental and lifetime compensation by automatically adjusting the antenna's tuning resonance and matching impedance.
- **Most sensitive receiver** able to suppress external noise sources from LCD screens and industrial applications, ensuring robust and stable performance even when noise is present on the power supply lines. ST25R210 supports harsh conditions with reduced electromagnetic emissions, making it easier to achieve certification.

Getting started

Designed for use with STM32 Nucleo boards, the X-NUCLEO-NFC13A1 expansion board enables easy testing and evaluation of the ST25R210.



X-NUCLEO-NFC13A1

Product summary

Part number	Modes	Interface	Serial interface	Advanced features	Output power	Ambient temperature range	Package
ST25R210	Reader & Writer, Card emulation	ISO14443A/B, ISO15693, FeliCa	SPI up to 10 Mbps	LPCD[1], DPO[2], AWS[3], AAT[4], NSR[5], IWU[6]	1.6 W	-40 to +105°C	UQFPN28 (4 x 4 mm)

Note: 1) LPCD: Low Power Card Detection, 2) DPO: Dynamic Power Output, 3) AWS: Active Wave Shaping, 4) AAT: Advanced Antenna Tuning, 5) NSR: Noise Suppression Receiver, 6) IWU: Inductive Wake Up

Order code: FL2602ST25R210