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# ST25R100 product presentation





# ST25R100 – Key messages

## What it does

ST25R enables wireless communication features for enhancing product interactions and improving customer experience.

In combination with ST25T NFC tags and ST25DV dynamic tags, connectivity to even non-electronic devices can be enabled.

**Tiny** footprint and **cost efficiency** allow **easy implementation** into **high-volume** applications.

**0.5W** output power for excellent range/power consumption ratio and **improved** inductive **wake-up**.

**Ideally** suited for **Reader+Tag** solutions.

Healthcare, beauty, kitchen, consumer, IoT & more

[www.st.com/st25r](http://www.st.com/st25r)





# ST25R100 main markets

## Healthcare



Lab equipment – medical test kits – dispenser  
drug & asset management

## Beauty & Lifestyle



Toothbrush – hair & body care devices  
e-cigarette – aroma diffuser

## Kitchen & Home Appliances



Blender – vacuum cleaner – humidifier  
smart fridge – coffee machine

## Home Automation



smart devices – metering – smart lock  
sensing – smart furniture – access control

## Gaming & Education



Game consoles – figurines – board games  
RC vehicles – dolls

## Tools



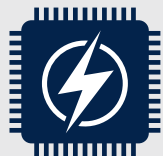
Power drill – disk grinder – pressure washer  
buzzsaw – buffer machine



# ST25R100 main application parameters

## Fitting into every application

4x4 mm TQFN package



Tiny package size and high output power enable design of **size-optimized** NFC solutions

## Good interaction range

Dynamic Power Output



Automatically adjusted output power to optimize power transfer and **stay within certification limits**

## Longer battery lifetime

Low Power Tag Detection



Improved inductive wake-up mode allows **low power consumption** and increased battery lifetime

## Complete NFC solution

Reader+Tag initiative



[www.st.com/reader-plus-tag](http://www.st.com/reader-plus-tag)

**Well-matched** and **industry proven** product combinations for enabling connectivity in consumer and industrial markets



# ST25R product lineup

	ST25R100	ST25R3918	ST25R3911B	ST25R3912	ST25R3916B
<b>Description</b>	Entry-level NFC reader	Multi purpose NFC reader	High-Performance NFC Forum Reader	Mid-Range NFC Forum Reader	High-performance NFC Universal Device & EMVCo Reader
<b>Reader/Writer mode</b>	ISO14443A/B ISO15693	ISO14443A/B ISO15693	ISO14443A/B ISO15693 FeliCa	ISO14443A/B ISO15693 FeliCa	ISO14443A/B ISO15693 FeliCa
<b>Card emulation mode</b>	No	Yes	-	-	Yes
<b>AP2P mode</b>	-	-	Initiator & Target	Initiator & Target	Initiator & Target
<b>PP2P mode</b>	-	Initiator & Target	Initiator	Initiator	Initiator & Target
<b>RF speed</b>	106kbps	848kbps	6.8Mbps (VHBR)	848kbps	848kbps
<b>Market</b>	Consumer Industrial	Consumer	Payment EMVCo 2.6, Industrial	Access control, Metering, Consumer	Payment EMVCo 3.0, Industrial, Consumer
<b>Advanced features</b>	DPO, IWU	DPO, NSR, DSA, AWS, IWU, EMD	AAT, DPO, CIWU	DPO, IWU	AAT, DPO, NSR, DSA, AWS, IWU, EMD
<b>HW interface</b>	SPI 6Mbps	I <sup>2</sup> C // SPI 10Mbps	SPI 6Mbps	SPI 6Mbps	I <sup>2</sup> C // SPI 10Mbps
<b>SW interface</b>	Unified Software Library for Frontends				
<b>Power supply</b>	2.7V - 5.5V	2.4V – 5.5V	2.4V – 5.5V	2.4V – 5.5V	2.4V – 5.5V
<b>Output power</b>	0.5W	0.5W	1.4W	1.0W	1.6W
<b>Temperature range</b>	-25°C to +85°C <sup>(A)</sup>	-40°C to +85°C <sup>(A)</sup>	-40°C to +125°C <sup>(J)</sup>	-40°C to +125°C <sup>(J)</sup>	-40°C to +105°C <sup>(A)</sup>
<b>Package</b>	24-pin TQFN	WF 32-pin QFN	32-pin QFN / Wafer	32-pin QFN / WF 32-pin QFN / WLCSP-30	WF 32-pin QFN / WLCSP-36



# ST25R100

## Entry-level NFC reader

### ST25R100




Reader Writer	ISO14443 ISO15693	RAM BUFFER	SPI
	106 kbps 26 & 53kb/s	256-Byte	2.7/5.5V  6Mb/s
0.5W	DPO: Dynamic Power Output IWU: Inductive Wake Up v2		



TQFN24

### Use cases

- Ideal for **Reader+Tag** applications 
- Consumer applications, Access control, Transportation
- Accessory recognition, Brand protection, Parameter setting

### Key Features

- **0.5W** dynamic output power
  - Up to 165mA/3.3V via internal LDO
- -25°C to 85°C ambient temperature
- **Improved inductive wake-up** function
- Small 4x4mm TQFN package

### Key Benefits

- Tiny package size for easy integration into applications
- Low power operation & great card detection range
- Optimized for cost conscious applications



# ST25R100 benefits

## Improved RF Performance



- Larger operating volume with smaller antennas
- Superior RX sensitivity with high output power delivers maximum margin for challenging antenna designs

## Improved low power card detection



- Improved performance of inductive wakeup allows detection of tags and cards over long range while power consumption stays low in card detection mode

## DPO: Dynamic Power Output

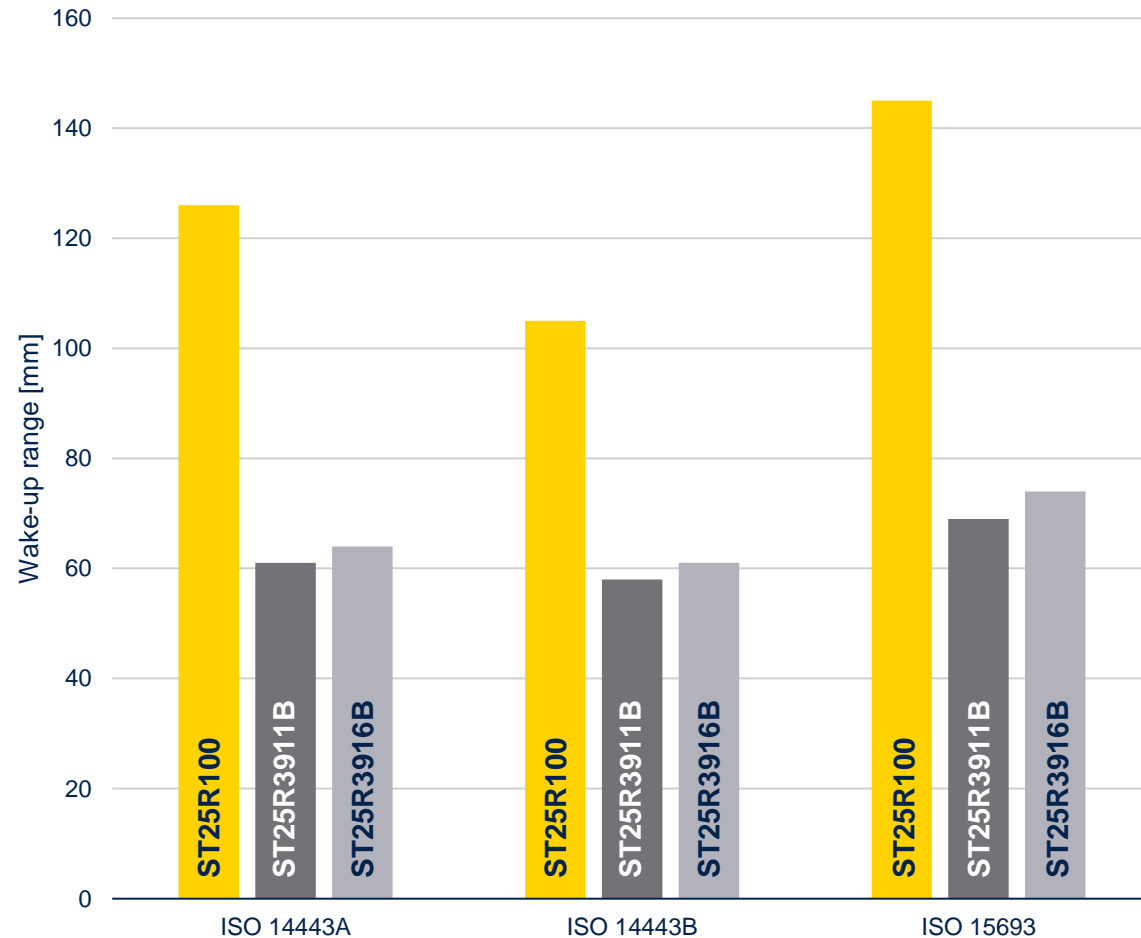


- The output power is adjusted automatically to reduce power and stay within certification limits
- Increase efficiency and achieve min/max limits



# Excellent inductive wake-up performance

- ST25R100 features improved **inductive wake-up v2**
- Fully configurable high-sensitive wakeup scheme
  - Inductive ping every 10 to 1700ms in 16 configurations
  - Automatic average over the last 4/8/16/32 cycles
  - Configurable pulse duration 10.6us up to 43.7us
- Detection of card movement
  - Configure wakeup to trigger at card approach, card removal or both
- No MCU required to run the wakeup

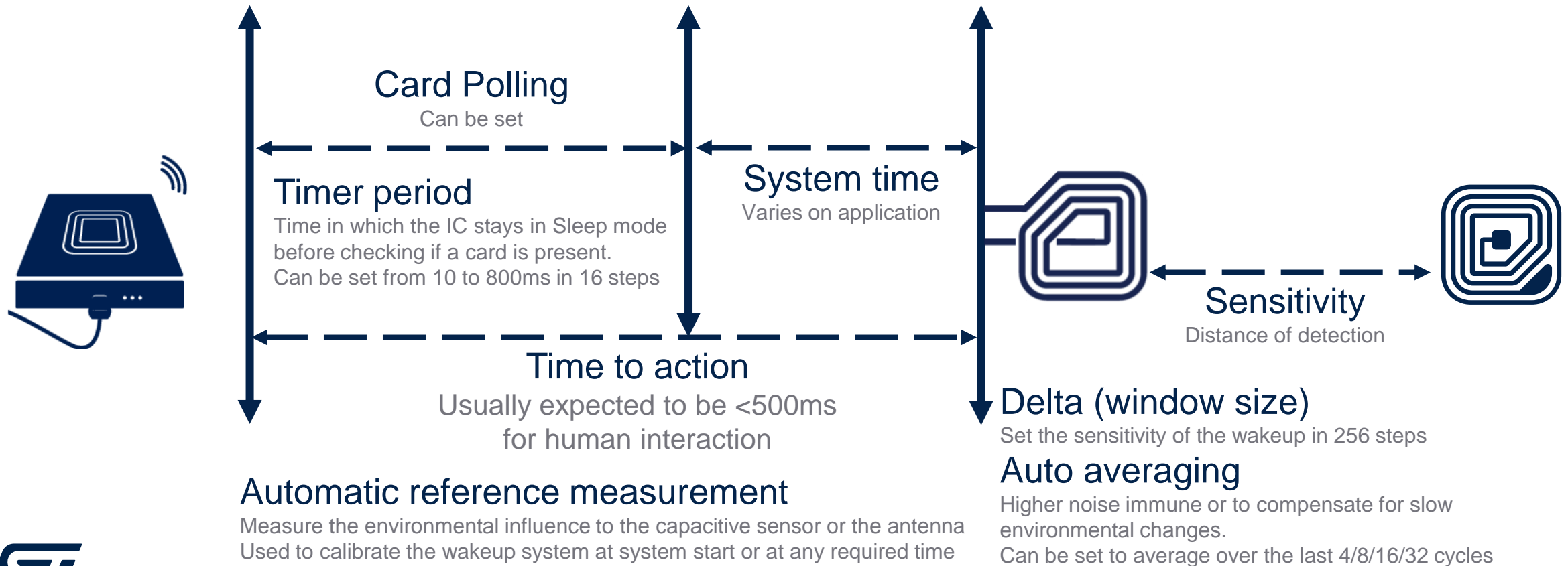






# Inductive low power card detection

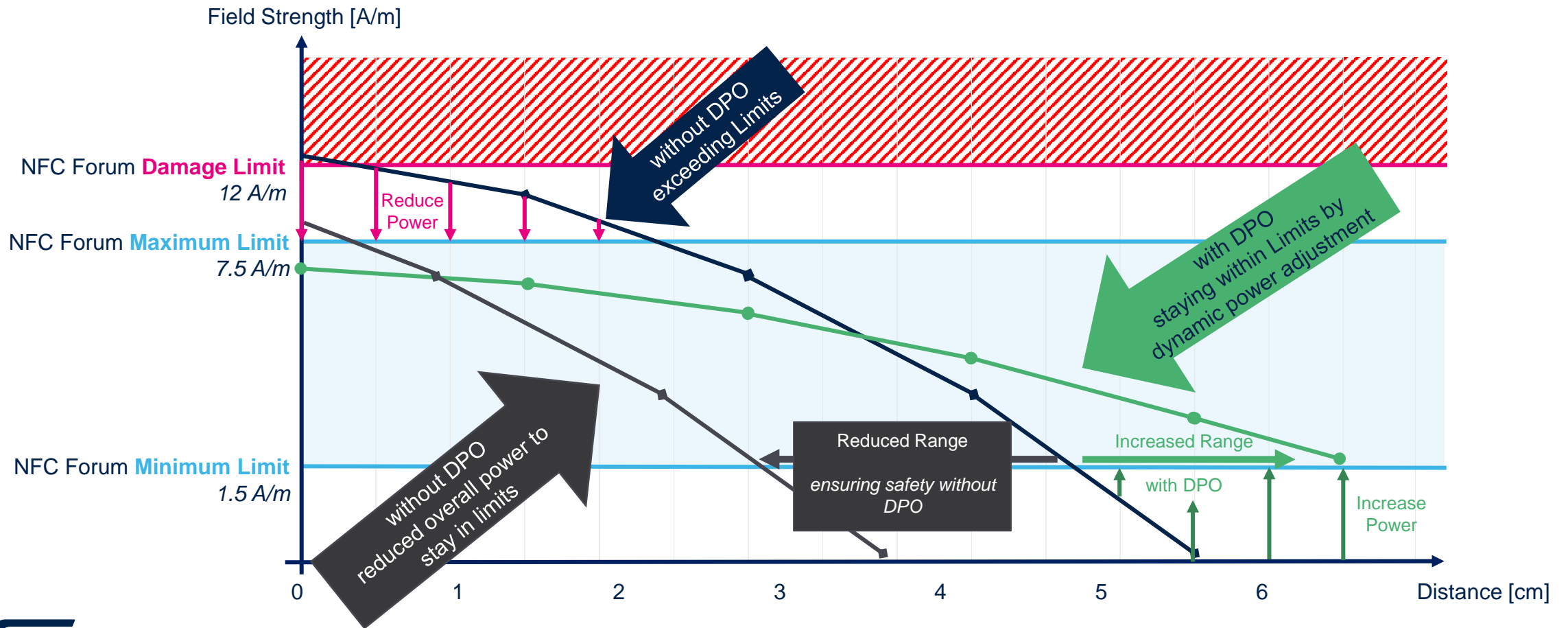
Consider reaction time/sensitivity of the system





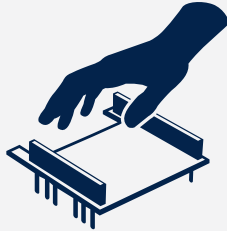
# ST25R100 DPO: Dynamic Power Output

DPO of reader will keep power levels within requirements & limits





# ST25R100 rich eco-system



- STEVAL kits based on STM32 MCU
- STM32 Nucleo boards ecosystem
- STM32Cube software ecosystem



- Antenna e-design tool
- Schematic, BOM, Gerber
- Applications notes



- PC software tool ST25
- MCU drivers firmware
- Evaluation boards



- Documentation
- e2e community
- Webinar
- MOOC

# Thank you

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