Dual Interface EEPROM

28-02-2013

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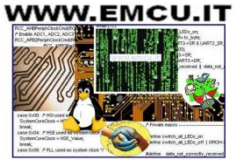
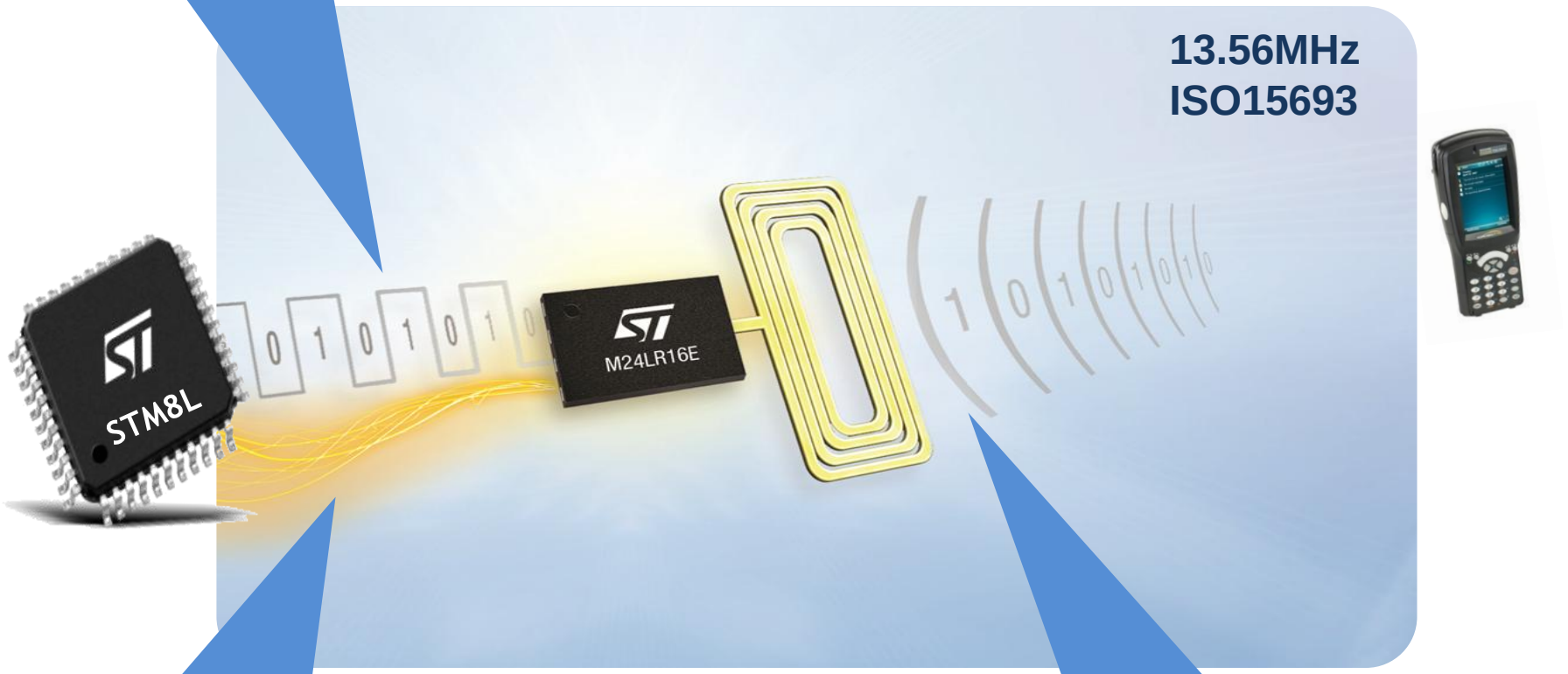


Innovative Wireless Solution

Low-power I2C interface for Microcontroller



Unique Energy Harvesting Function

RFID and NFC compatible RF interface

Dual Interface EEPROM - M24LR product line

- **Comprehensive portfolio**
  - Memory density: 4-Kbit, 16-Kbit and 64-Kbit
  - Large package choice

- **RF interface:**
  - Long range RFID
  - NFC (ISO15693)

M24LR04E (4-Kbit)

M24LR16E (16-Kbit)

M24LR64E (64-Kbit)

Serial Interface: low-power I2C

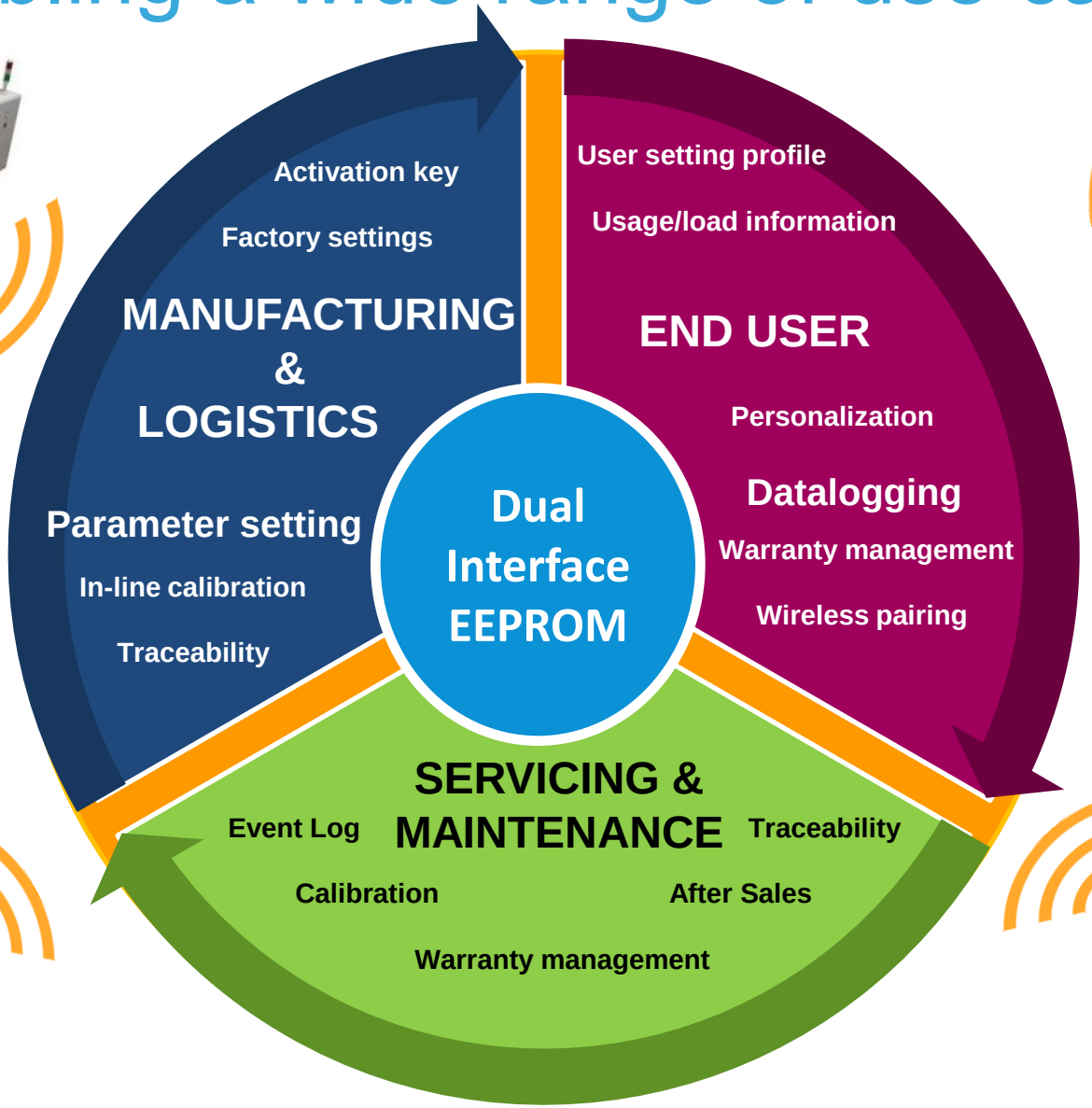
Energy Harvesting from RF

Enabling a wide range of use cases…

Product Parameter Management

Improve data log experience

Energy Harvesting



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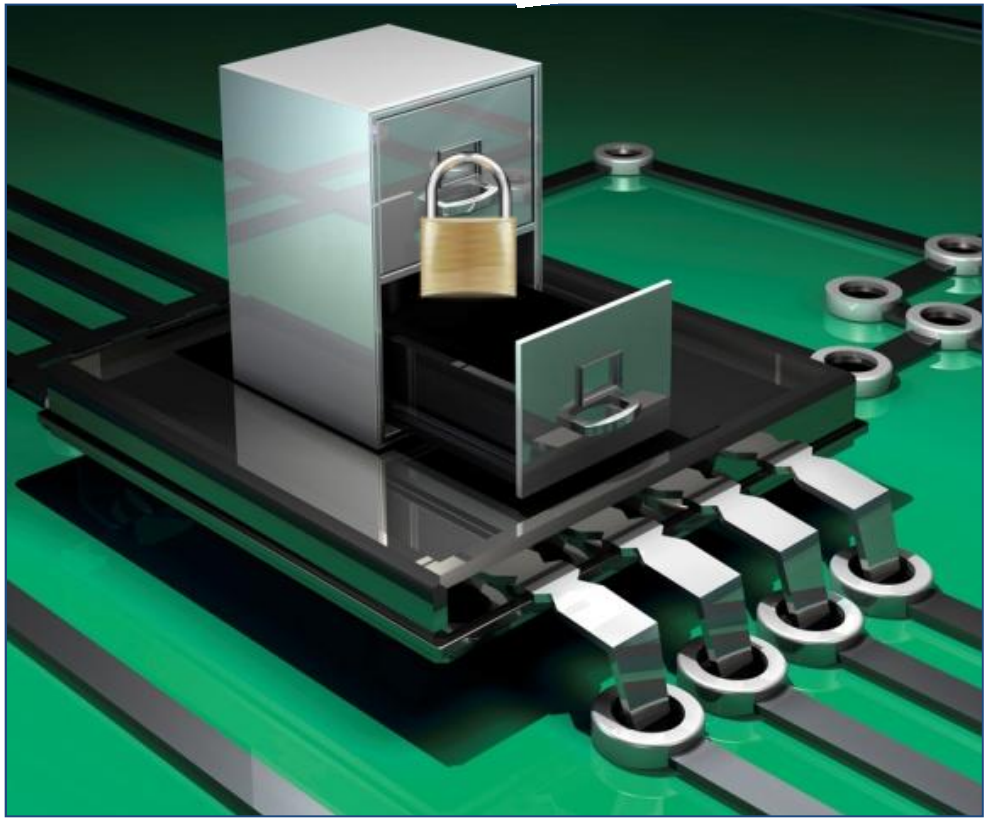
New perspectives for parameters management

- **Traceability information**
- **In line calibration**
- **Application data**
- **User settings**
- **Event log**
- **Identification data**



- 4kb to 64Kb
- Ultra low power
- 1 million cyclea
- 40 years retention
- 1.8V to 5.5V

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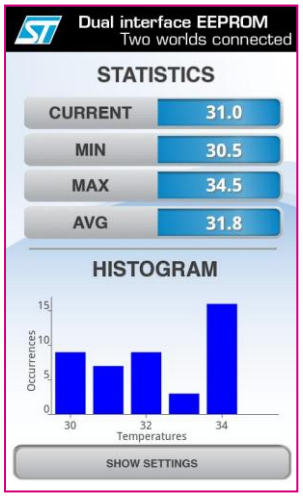
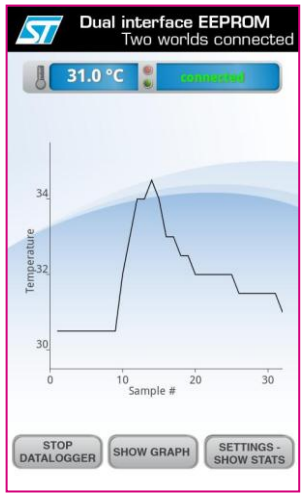
Improve data log experience





RF operations working even when device powered off !

NFC phone

Industrial reader or application

STEVAL-IPR002V1 reference design

No need of connectors to read data
Demo records temperature, humidity…

- **Dual EE Apps available at 'Android market':**

  https://play.google.com/store/apps/developer?id=STMicroelectronics

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Energy Harvesting
Enabling battery-less applications

RFID reader
or
NFC phone

Dual interface
EEPROM

Vout

Innovative energy harvesting function
enabling battery-less designs !

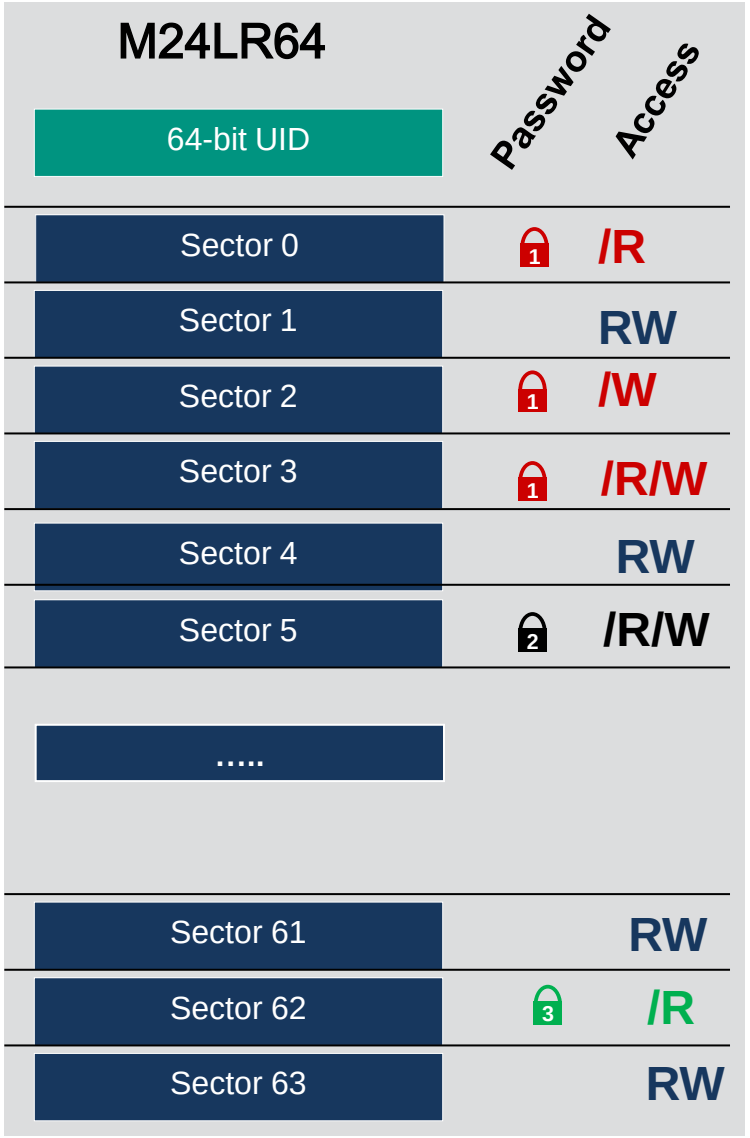
A few mA at ~2V delivered to your MCU and other components

Unique and flexible data protection scheme

- 64-Kbit user memory
  - 64 independant sectors of 1-Kbit each
- RF access rights
  - Set of 3 x 32-bit passwords
  - Each sector can be protected by either one of the 3 passwords
  - Each sector can be protected in Write, Read or Write and Read access
- 32-bit password
  - 32-bit = more than 4 billion combinations

Example of usage

See application AN3002

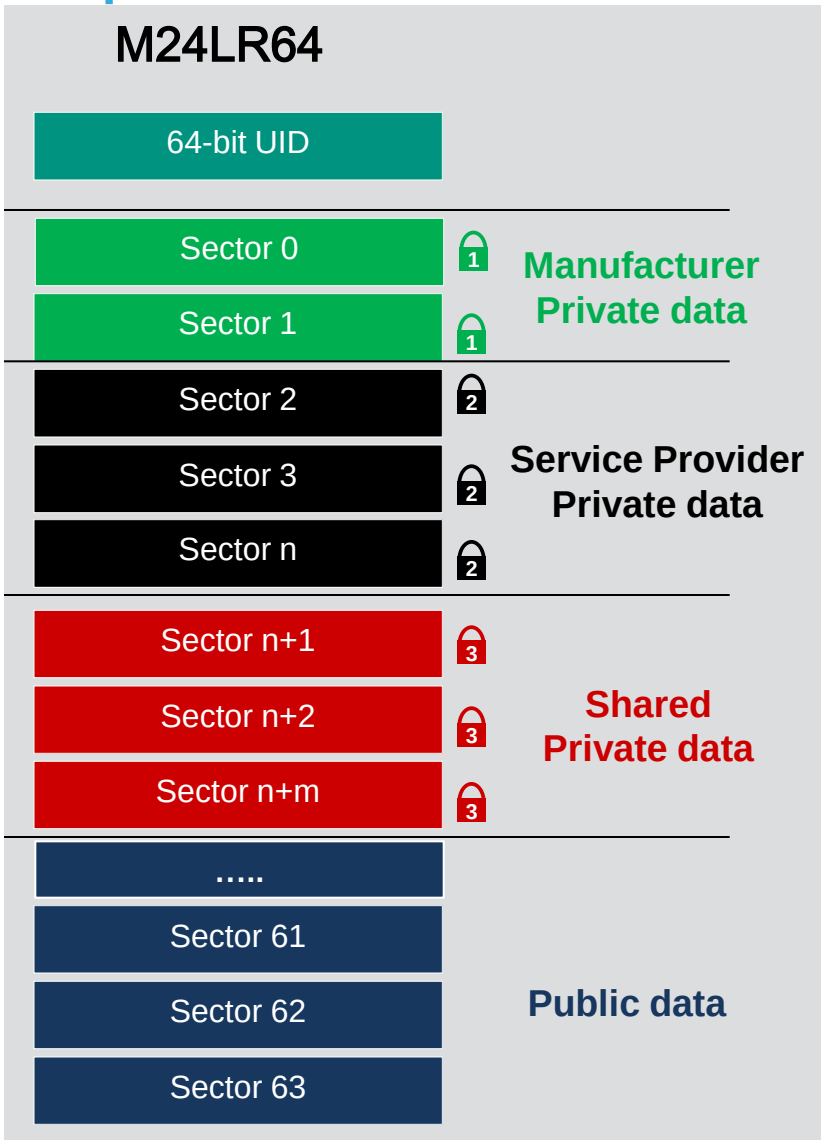


The benefits of 3 passwords

- Ideal for multi-user

  - One key for user1 (e.g. Product Manufacturer)
  - One key for user2 (e.g. Service Provider)
  - One shared key for users 1 and 2
  - The rest is « public » data

Example of usage



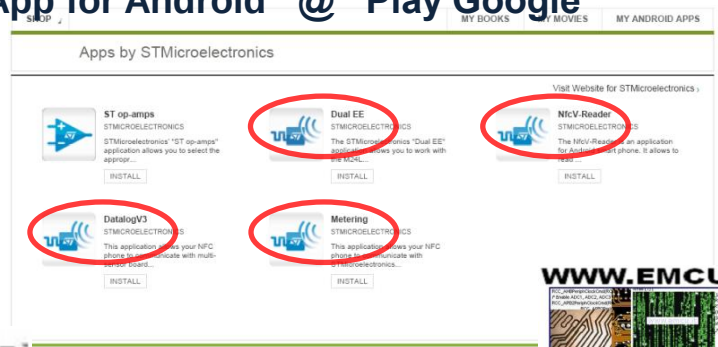
Nfc-Vreader Android App

M24LR64, M24LR16E
64-Kbit and 16-Kbit
Dual I/F EEPROM

LRi1K, LRi2K, LRiS2K
1 and 2-Kbit

LRiS64K
64-Kbit w/ password protection

- **Reader-writer application**
  - **NDEF Function and Basic Format**
- **Works with ISO15693 products**
- **NFCV reader App for Android @ 'Play Google'**



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M24LR-Discovery

For example I can display the text message stored in the Dual Interface EEPROM

Hello! ….Discovery

SWIM connector

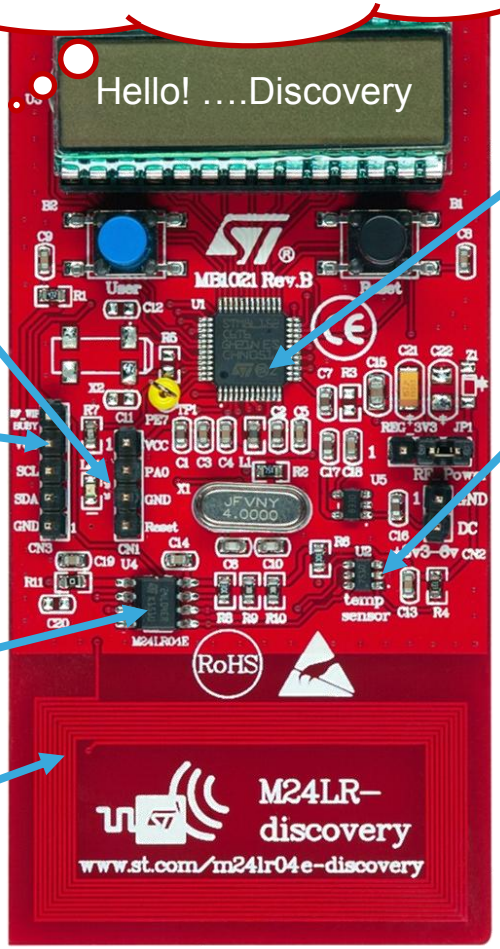
I²C connector

M24LR04E

RF antenna 20 mm x 40 mm (0.79 in x 1.57 in)

STM8L

Temperature sensor



M24LR-board (*)

1 0 1

I allow to power and exchange data with the M24LR04E but I am not the only one.

1 0 1

RF transceiver demo board (*)

(*)not right scale board

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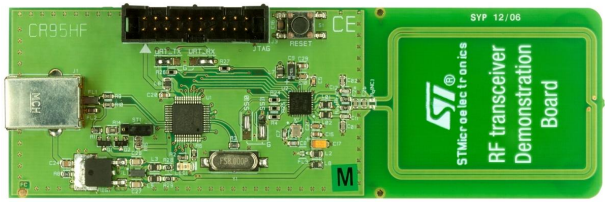
CR95HF Transceiver multi protocol

* Also supporting ISO14443 A&B. ISO 18092. NFC Forum Tags type: 1-2-3 & 4.

- The customer could also evaluate our ST's 13.56MHz transceiver IC named CR95HF to create his own embedded RF reader-writer.
- ST is also providing source code based on our popular 32bit ARM based Cortex-M3 STM32 family to easily integrate the commands to drive the CR95HFNFC.
- Full support with CR95HF:
  - Software libraries
  - Reference design
  - Application notes



Commercial ISO15693 RFID reader-writers, available through partners

Dual Interface EEPROM conclusion

Innovation based on 2 industry-standard protocols.

Cost reduction and flexibility at all product life steps.

Innovative energy harvesting function.

It is your time to innovate. For more details, please :

Ask your sales Interface for a dedicated meeting.
Get to full presentation here
Go to http://www.st.com /dualeeprom

THANK YOU !

for more info contact:

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