STid
Electronic Identification

SECARD

USER MANUAL

Designed in France
Made in France

www.stid-security.com

Acknowledgment

Welcome to the world of high security!

You have purchased SECard software; it will allow you to program configuration and user cards.

We thank you for the confidence you place in us and hope that this solution developed by STid will satisfy you.

We remain at your disposal for any questions about using this software on range of products.

We look forward to seeing you for more information on our website www.stid-security.com.

STid Team

Introduction

This manual is composed of two parts:

Part 1: Detailed description of all the functionalities

Part 2: Technical

Summary

SECARD

USER MANUAL

Part 1: Detailed description of all the functionalities

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I. Informations

I. 1 - PC requirements

- A PC with operating system: Windows 7, 8 or 10 or Windows server 2012r2.
- USB available communication port.
- 50 MB min of free disk space.

I. 2 - USB Key Content

- FTDI USB Driver for Windows 7, 8.x and 10.
- SECard Version 3.x.x.
- MorphoCBM Driver.

I. 3 - Hardware required

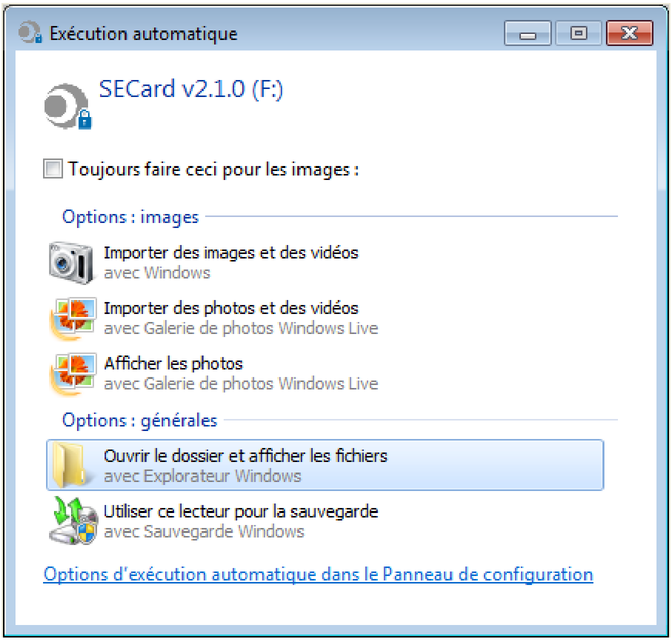
USB 13.56 MHz & Bluetooth® STid encoder Ref. ARCS-W35-E-BT1-5AA-1.
Z10 firmware version required (Identification on the back of the encoder).

To create SCB/OCB: MIFARE® DESFire® EV2 4ko not locked in EV2 mode

MIFARE® DESFire® EV1/ EV2 8ko not locked in EV2 mode

I. 4 - Windows Installation

- Insert the SECard USB Key on an USB port of your PC.
- Wait for the automatic opening of the browser window.



Exécution automatique

SECard v2.1.0 (F:)

□ Toujours faire ceci pour les images :

Options : images

Importer des images et des vidéos
avec Windows

Importer des photos et des vidéos
avec Galerie de photos Windows Live

Afficher les photos
avec Galerie de photos Windows Live

Options : générales

Ouvrir le dossier et afficher les fichiers
avec Explorateur Windows

Utiliser ce lecteur pour la sauvegarde
avec Sauvegarde Windows

Options d'exécution automatique dans le Panneau de configuration

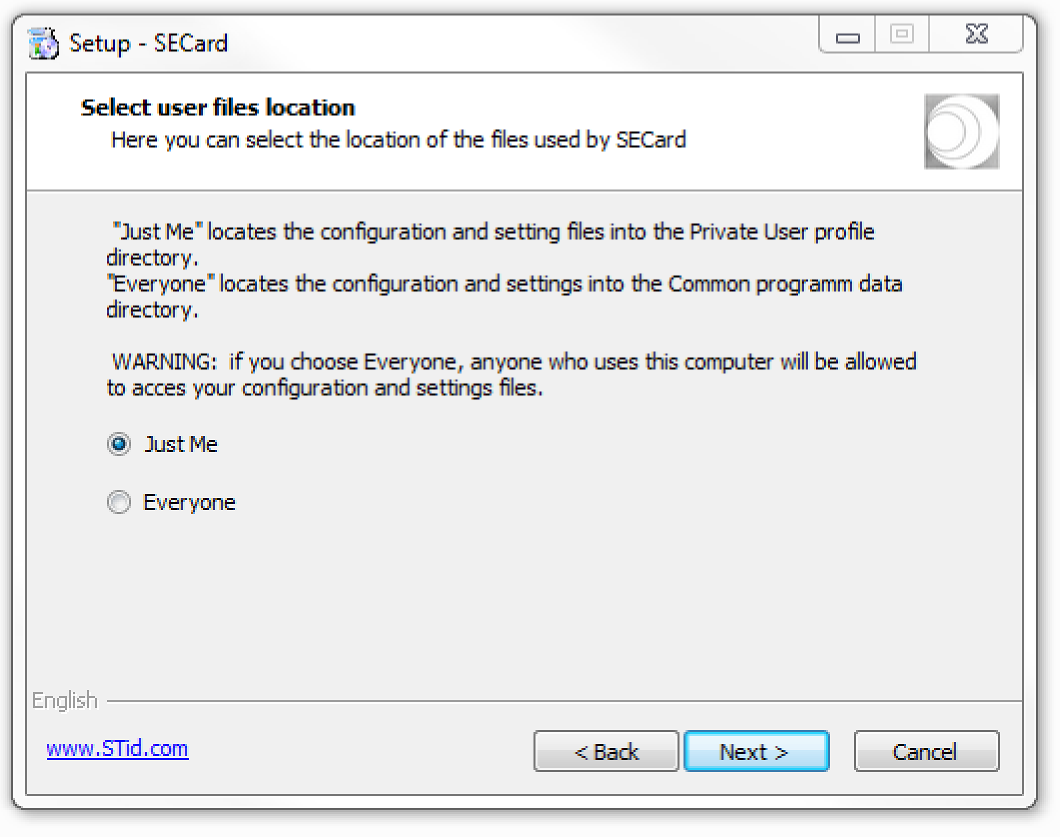
- Launch SECard V3.x.x_setup.exe.
- Follow the instructions on the screen.

<u>Note:</u>

<u>If FTDI driver has already been installed on the PC during a previous installation of SECard uncheck FTDI driver in installation wizard</u>

- Location of user files.

With SECard V3.x.x the settings files will be installed in the directory containing the executable (as previous SECard version) **and** in the following directories depending on user choice.



Setup - SECard

Select user files location

Here you can select the location of the files used by SECard

"Just Me" locates the configuration and setting files into the Private User profile directory.
"Everyone" locates the configuration and settings into the Common programm data directory.

WARNING: if you choose Everyone, anyone who uses this computer will be allowed to acces your configuration and settings files.

● Just Me

○ Everyone

✓ « Just me » : user files are saved in:

../Users/userXX/STid/SECard v3.x.x.x/

In this case files are only accessible to the userXX or to the Administrator.

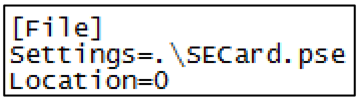
✓ « Everyone » : user files are saved in :

../ProgramData/STid/SECard v.x.x.x/

In this case files are accessible to everybody.

Note: To change the location of user files, open the .gcf file located in the same directory as SECard.exe and change the value of the [File]

Location=X ;X=0 for « Just me », X=1 for « Everyone »



```
[File]
Settings=.\SECard.pse
Location=0
```

I. 5 - Compatibility

➢ Firmware / SECard version

This SECard version (3.3.x) provides compatibilities tables between SECard versions and firmware versions of readers.

The objective is to configure with a unique tool SECard WAL* and Architect® readers.

SECard version	SCB version	Firmware version
V2.0.x	V7	Z01
V2.1.x	V8	≥ Z02
V2.2.x	V9	≥ Z04
V3.0.x	V10	≥ Z05
V3.1.x	V11	≥ Z07
V3.1.x	V12	≥ Z08
V3.3.x	V13	≥ Z11
V3.4.x	V14	≥ Z14
V3.5.x	V15	≥ Z16

SECard version	OCB version	Firmware version
V3.3.x	OCBv3	≥ Z05
V3.4.x	OCBv4	≥ Z08
V3.5.x	OCBv5	≥ Z09

* To configure standard readers and WAL with firmware SZ188F21, use a SECard version < v3.3.x and refer to SECard User Manuel v6.4.

(1): When an SCB (Standard, WAL, ARC, ARCs) without Bluetooth® configuration and with DESFire configuration* is presented to an ARCS Bluetooth®, a Bluetooth® configuration, named “DESFireAuto”, is activated for the Bluetooth®. All parameters (size, number of key, site code…) are the same as DESFire parameters.

Important note for Architect® readers

With SECard it is possible to configure all the features of the Architect® (RFID, keypad, touch screen, biometric, Bluetooth®, Matrix module) on a same SCB. The reader will recover in SCB only the parameters that are necessary. To disable a feature, disconnect the subassembly and represent the SCB to the reader.

* DESFire configuration: private ID with one file, data type: Raw and without biometry.

➢ Configuration file / SECard version

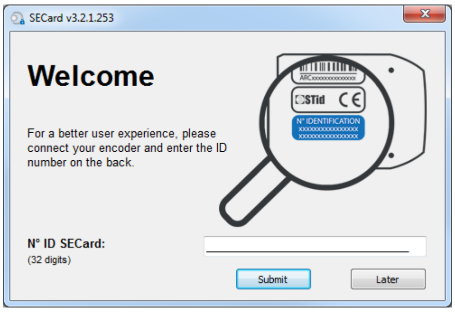
	SECard V1.x	SECard V2.x	SECard V3.x
.ese	✓	File converter	File converter
.pse generated with version < 3	x	✓	✓*
.pse generated with version ≥ 3	x	x	✓

Warning*

When a .pse file created with SECard V2.x is loaded and saved in SECard V3.x with a password, it will not be possible to load it again in SECard V2.x.

I. 6 - Starting SECard software

At first use, the software opens a window to enter the serial number of 32 characters located at the back of the encoder. After recording the number, the software doesn't reiterate this request.



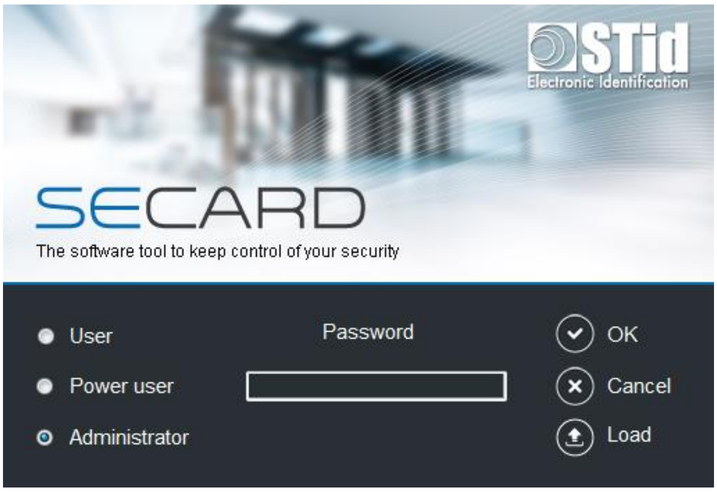
SECard v3.2.1.253

Welcome

For a better user experience, please connect your encoder and enter the ID number on the back.

N° ID SECard:
(32 digits)

It is possible to install the software on an unlimited number of workstations, but it is only possible to use it with the dedicated encoder (corresponding to the serial number). This number allows SECard to authenticate with the encoder provided in the kit. If you want to order an additional encoder contact the sales department.

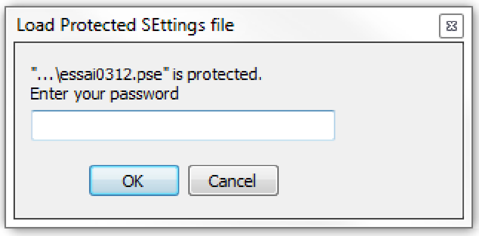


STid
Electronic Identification
SECARD
The software tool to keep control of your security
○ User
○ Power user
● Administrator
Password
OK
Cancel
Load

When starting the software, a window appears to enter the login information or to load a specific configuration file.
There are three Access level, managing different permissions within the software. These passwords are saved in the configuration file.

Access level	Default password	Associated rights
Administrator	STidA	Software configuration and use without restriction
Power User	STidP	Configurable by the Administrator
User	STidU	Create user cards

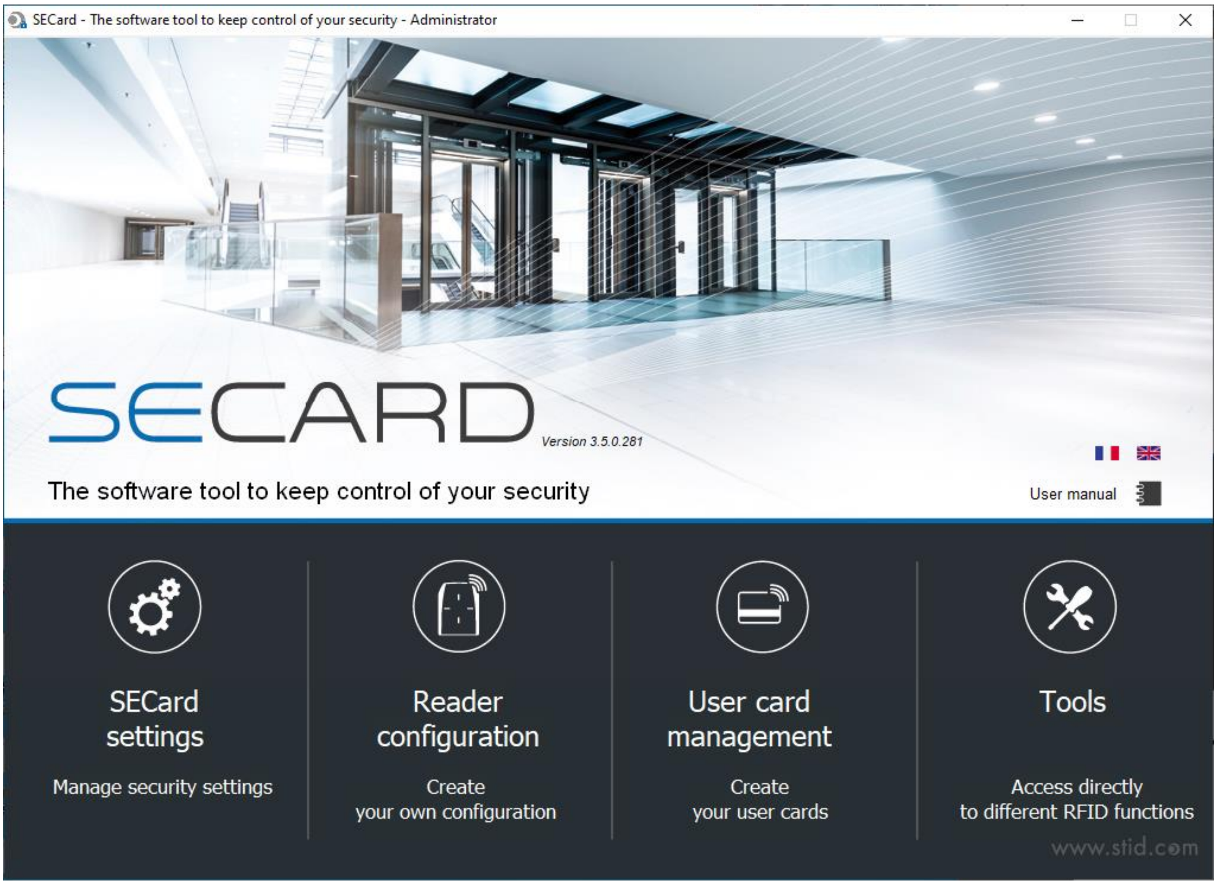
Note: if the following window appears and the password required is not known, press cancel and then use the "Load" button to load another file. The default file is in installation directory.



Load Protected SEttings file

"...\essai0312.pse" is protected.
Enter your password

I. 7 - Overview



SECard - The software tool to keep control of your security - Administrator

SECARD Version 3.5.0.281

The software tool to keep control of your security

- The software is divided into four distinct parts:

SECard and encoder settings

Create configuration card

Create user cards

Tools

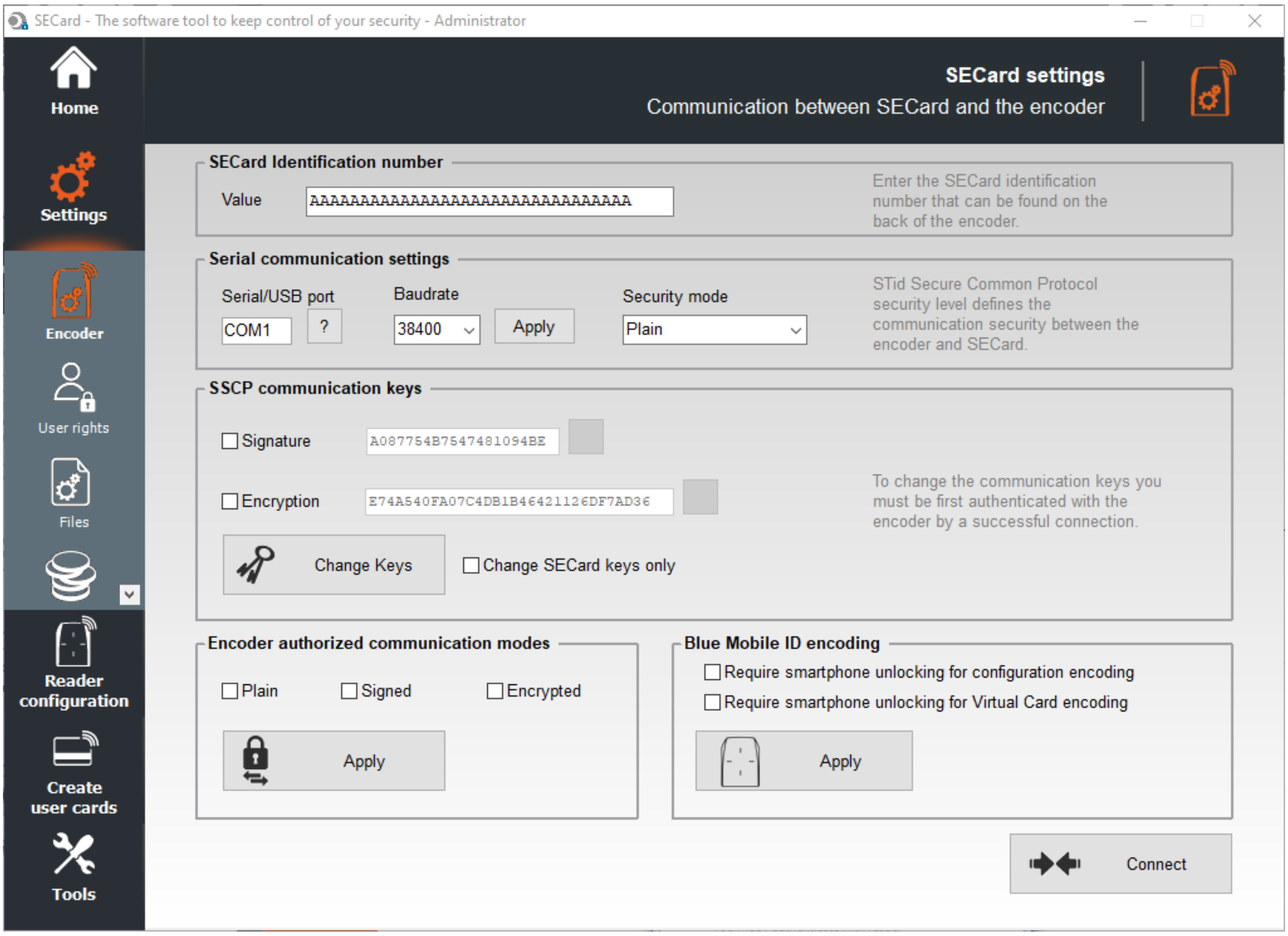
- On the Home page you have the choice of language and the link for user manual.
  User manual is available anytime with the F1 key.

- The encryption/signature user keys can be filled:
  - with a random value by a right click into the field and by choosing “Fill with random value” or by pressing on the keys CTRL+R. The random values have cryptographic level and are generated by ISAAC generator.
  - with FF by pressing on the keys CTRL+F or with right click.
  - with 00 by pressing on the keys CTRL+O or with right click.

- It is possible to Copy / Paste:
  - by a right click into the field and by choosing “Copy / Paste”.
  - by pressing on the keys CTRL+C / CTRL+V.

II. SECard Settings

II. 1 - Encoder



SECard - The software tool to keep control of your security - Administrator

SECard settings
Communication between SECard and the encoder

SECard Identification number

Value: AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

Enter the SECard identification number that can be found on the back of the encoder.

Serial communication settings

Serial/USB port: COM1 [?]
Baudrate: 38400 [Apply]
Security mode: Plain

STid Secure Common Protocol security level defines the communication security between the encoder and SECard.

SSCP communication keys

□ Signature: A087754B7547481094BE
□ Encryption: E74A540FA07C4DB1B46421126DF7AD36

To change the communication keys you must be first authenticated with the encoder by a successful connection.

[Change Keys] □ Change SECard keys only

Encoder authorized communication modes

□ Plain □ Signed □ Encrypted

[Apply]

Blue Mobile ID encoding

□ Require smartphone unlocking for configuration encoding
□ Require smartphone unlocking for Virtual Card encoding

[Apply]

[Connect]

SECard Identification number

Register the new encoder or check value.

Serial communication settings

Set the communication between encoder and SECard.

❖ The default baudrate of the encoder is 38400 bauds.
Caution, this baudrate must be exactly the same as that defined in the software.

To change the serial communication speed, it is possible to change the value of baudrate. To do this, ensure that communication encoder / SECard is correct, select a baudrate from the drop down "Baud rate” (115200 baud is the maximum baudrate) and click on "apply”.

Note:

- If you don’t know the correct communication port connected to the reader, it is possible to find it by clicking on the button ?.
  It is necessary to install the USB driver, and it is necessary to connect the reader.

- By pressing the left CTRL key and by using the ? button SECard will search for a connected reader on all serial com. ports and all speed rates. It can take some time.

- The communication between SECard software and encoder is done by serial link or USB, it is based on the communication protocol SSCP (STid Secure Common Protocol).
  Encoders integrate public signature algorithms (HMAC-SHA1) and encryption (AES), which can be used to secure data in serial communication between the encoder and SECard.

  Communication can be done in four different ways:

✓ Plain	:	Plain communication encoder / SECard
✓ Sign	:	Signed communication encoder / SECard
✓ Encipher	:	Enciphered communication encoder / SECard
✓ Sign and Encipher	:	Signed and Enciphered communication encoder / SECard

Note:
Communication encoder / SECard is more secured when it is used signed and enciphered (Security mode to “Sign and Encipher”). Plain communication (Security Mode to "Plain") is not secured.

SSCP communication keys

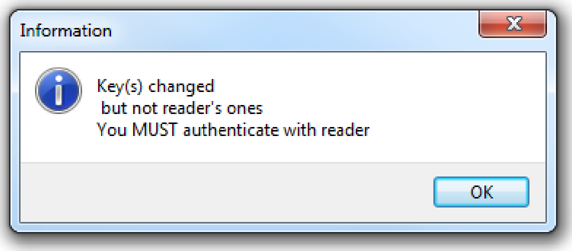
When the communication is Signed and / or Enciphered, the software SECard and encoder use the user default keys:

Signature key:	*A087754B7547481094BE*
Encipherment key:	*E74A540FA07C4DB1B46421126DF7AD36*

To change the value of these keys, simply check the box "Signature and / or Encipherment" and write the value. Then click-on the button “Change keys”.

Note:

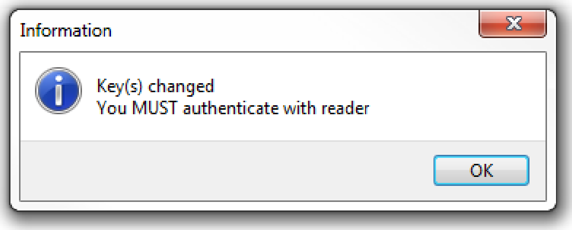
- ✓ The button ⌂ allows you to restore default value.
- ✓ Software **and** encoder key must be the same so that the two parts can communicate.
- ✓ If the box "Change SECard key only" is checked, only the keys of the software will be changed.



Information

Key(s) changed
but not reader's ones
You MUST authenticate with reader

- ✓ When changing user keys and software encoder, a window will appear requesting authentication.



Information

Key(s) changed
You MUST authenticate with reader

Warning

It is important to know the current user keys.

If lost, it would not be possible to communicate securely with the reader.

Only "Plain" mode would remain usable if it is still authorized.

Encoder authorized communication modes

Authorized / unauthorized communication mode between encoder and SECard.

To authorize a mode, simply click on the button "Set Modes" while checking desired modes. Those that are not checked will be unauthorized.

In order to authorize them again, simply restart the command in the right mode of communication while taking care to validate the desired mode.

Warning

If the plain mode is unauthorized **and** the user keys are lost, it will not be possible to communicate with the encoder.

It will be necessary to return the equipment for a factory reset.

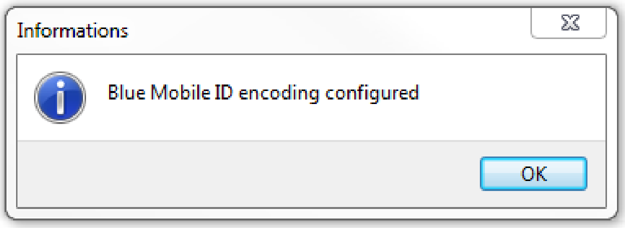
Blue Mobile ID encoding

Configure the Bluetooth® encoder (ARCS-W35-G-BT1-5AA) to authorize or not the encoding of smartphone in standby.

- Require smartphone unlocking for configuration encoding
  If checked, requires that the phone is unlocked to encode configuration.

- Require Smartphone unlocking for Virtual Card encoding
  If checked, requires that the phone is unlocked to encode virtual card.

Confirm your selection by clicking on this button:

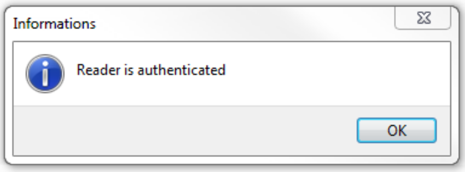


Blue Mobile ID encoding configured

Connect

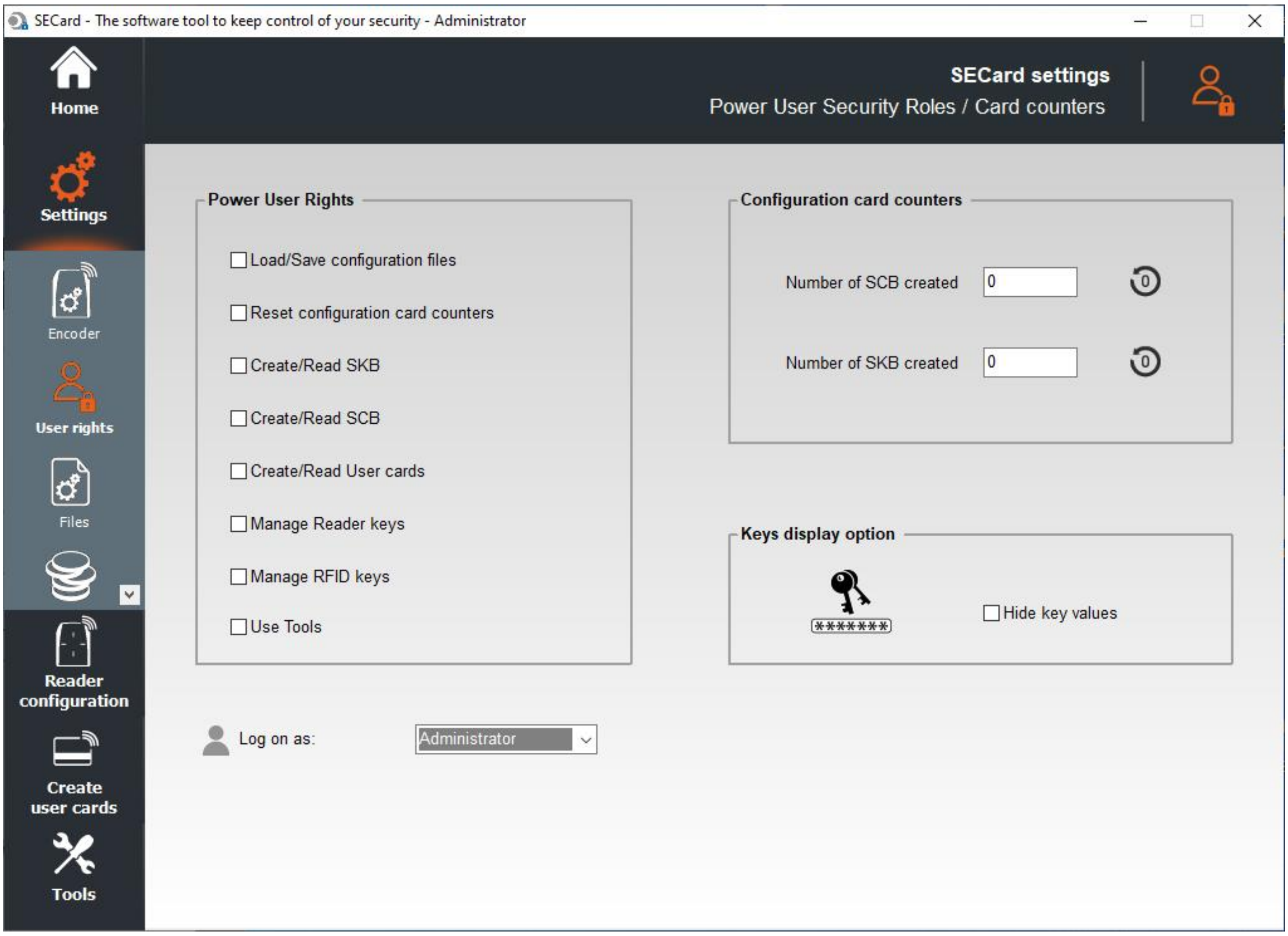
When powered on the encoder will light the white Led and emit a beep.

To verify the communication parameters with the encoder, use the button “Connect”. If the communication configuration is ok, the encoder will respond with light and sound signals and an acknowledgment window will appear.



Reader is authenticated

II. 2 - User rights


SECard - The software tool to keep control of your security - Administrator

SECard settings
Power User Security Roles / Card counters

Power User Rights

□ Load/Save configuration files
□ Reset configuration card counters
□ Create/Read SKB
□ Create/Read SCB
□ Create/Read User cards
□ Manage Reader keys
□ Manage RFID keys
□ Use Tools

Configuration card counters

Number of SCB created: 0
Number of SKB created: 0

Keys display option

□ Hide key values

Log on as: Administrator

Power User Rights

"Power User" mode is the transition between "*Administrator*" and "User" modes.
The administrator allocates the rights to the power user.

Configuration card counters

Counters display the number of SCB configuration card programmed and the number of SKB card programmed.

These values can be reset through the reset button only by Administrator or Power User if authorized.
Note: these values are saved into the .pse file.

Keys display option

It is possible to hide the values of the keys in their fields.

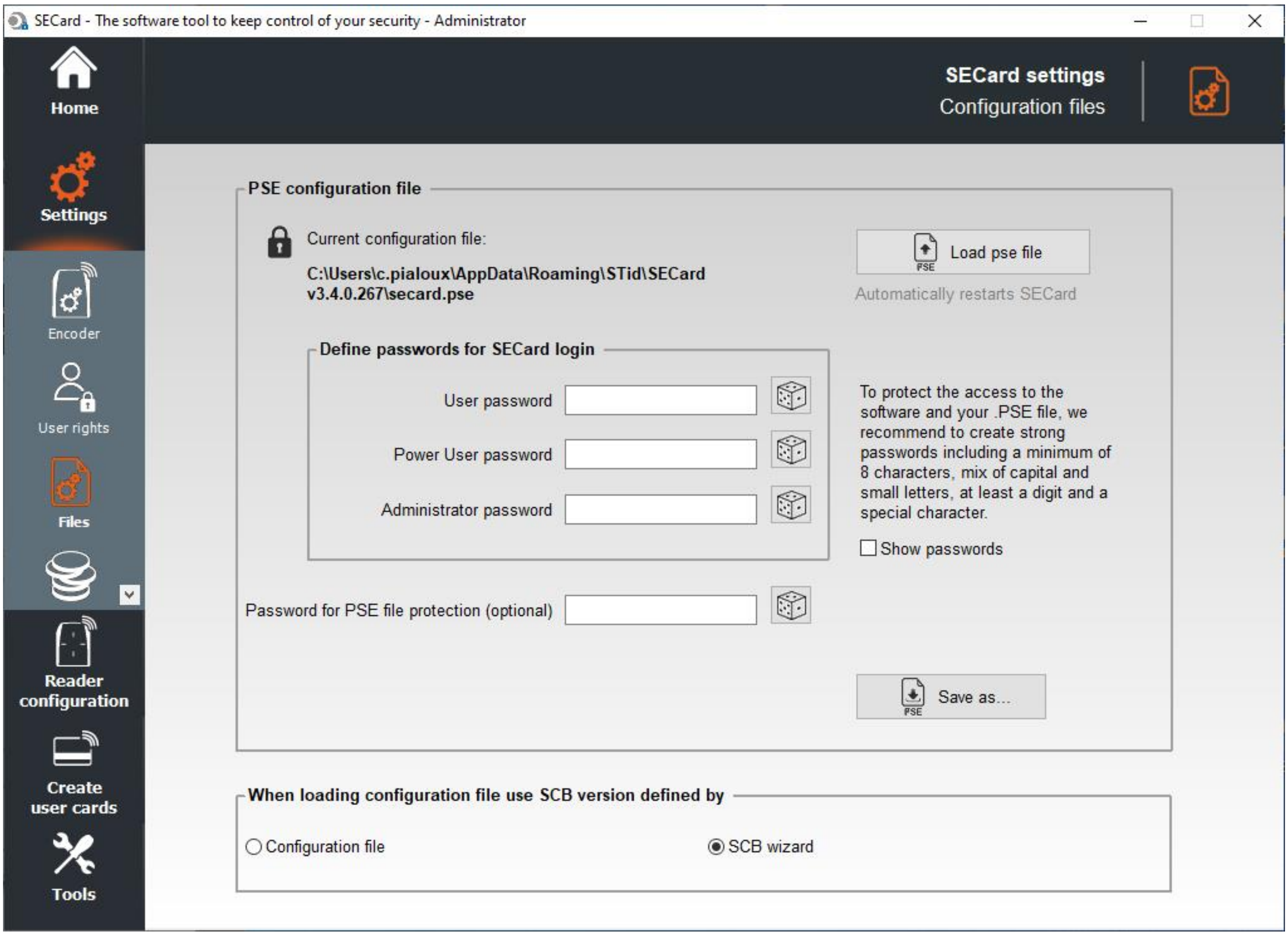
It can be activated by Administrator and remains activated when logged as Power *User* or *User*.

Log on as:

Change the access level.
It is necessary to know the password of the selected level.
Authorized changes:

- Administrator to Power User and to User.
- Power User to User and to Administrator.

II. 3 - Files



SECard - The software tool to keep control of your security - Administrator

SECard settings
Configuration files

PSE configuration file

Current configuration file:
C:\Users\c.pialoux\AppData\Roaming\STid\SECard v3.4.0.267\secard.pse

Load pse file
Automatically restarts SECard

Define passwords for SECard login

User password
Power User password
Administrator password

To protect the access to the software and your .PSE file, we recommend to create strong passwords including a minimum of 8 characters, mix of capital and small letters, at least a digit and a special character.

□ Show passwords

Password for PSE file protection (optional)

Save as...

When loading configuration file use SCB version defined by

○ Configuration file ● SCB wizard

When loading configuration file use SCB version defined by

SCB version is contained in the configuration .pse file.
It is possible to:

- Keep the version of SCB by checking Configuration file.
  SECard automatically retrieves the firmware version in the .pse file that was loaded and selected compatible SECard version.

- Choose the SCB version compatible with reader firmware.
  This choice will be made in the SCB Wizard.

PSE configuration file

Passwords for SECard login are contained in the configuration file.
This page allows you to save the configuration file containing all the current configuration settings (keys, formats, reader...). You can select a location and password to protect the file.

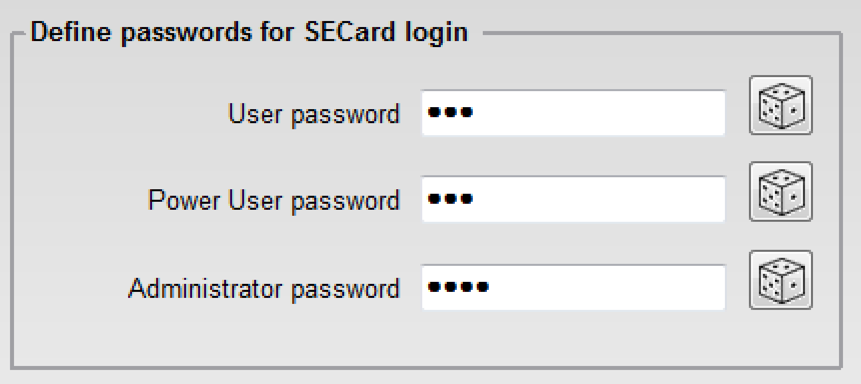
When loading a configuration file (.pse), SECard automatically restarts.

Refer to *T16 - Recommendation to save the configuration files PSE.*

Home
Settings
Encoder
User rights
Files
Reader configuration
Create user cards
Tools

Save as…

- **Passwords for SECard login**



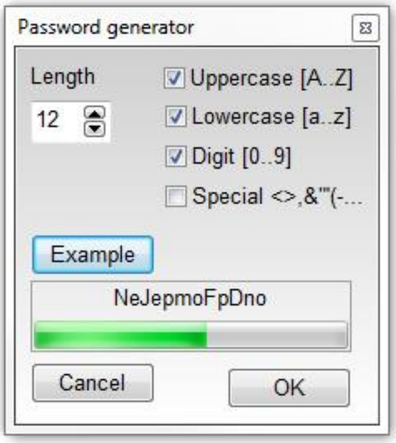
Define passwords for SECard login

User password ●●●

Power User password ●●●

Administrator password ●●●●

Random Password Generator Generates Logins:



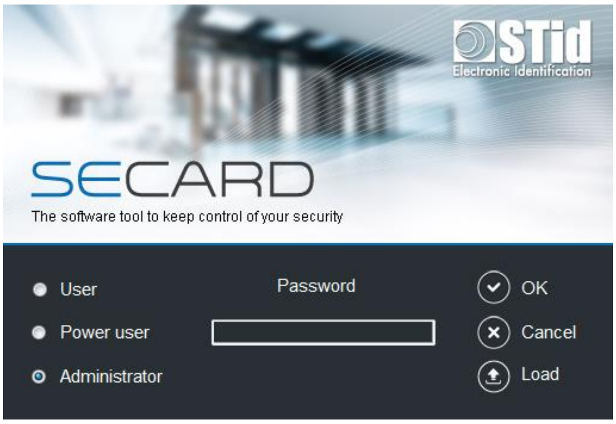
Password generator

Length 12

☑ Uppercase [A..Z]
☑ Lowercase [a..z]
☑ Digit [0..9]
□ Special <>,&"'(-...

NeJepmoFpDno

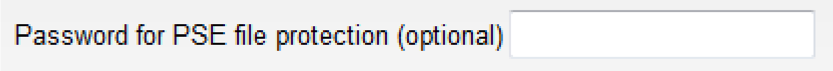
These passwords are needed to open SECard with the corresponding configuration.



STid Electronic Identification
SECARD
The software tool to keep control of your security
OK
Cancel
Load

○ User
○ Power user
◉ Administrator

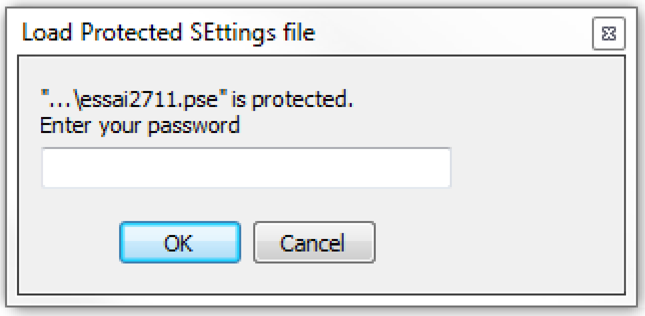
Password

- 

Password for PSE file protection (optional)

This password is used to protect .pse file. It is optional.

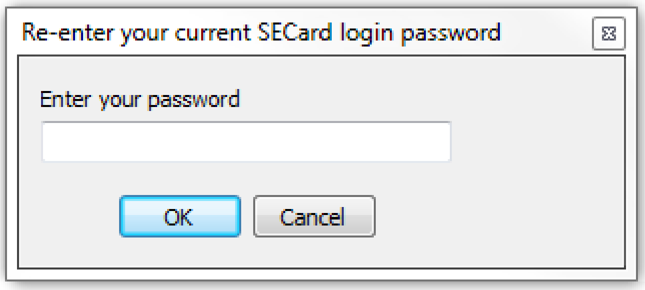
Note: when a .pse protected file is loaded, the window below appears:



Load Protected SEttings file

"...\essai2711.pse" is protected.
Enter your password

- When you click on Save As…a window asks to re-enter the current **Administrator SECard** login password.



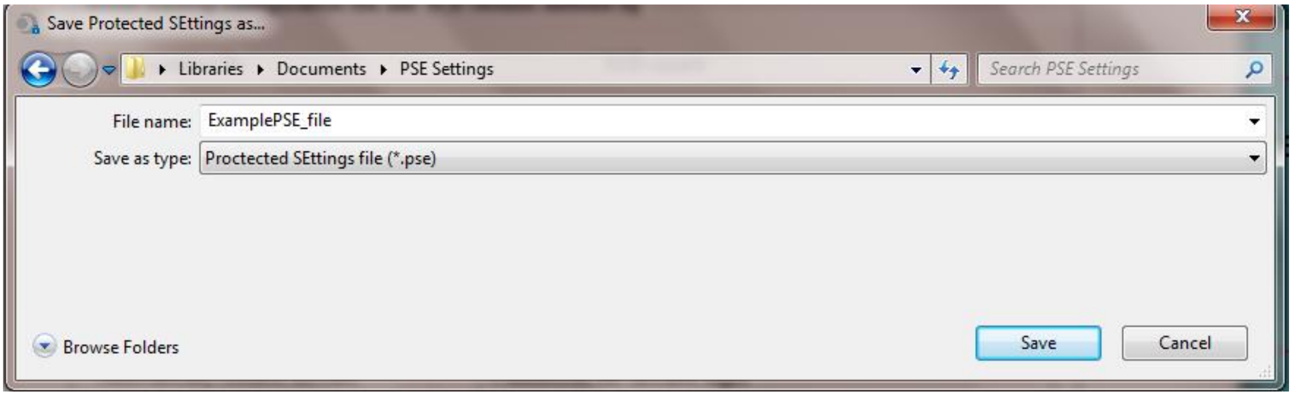
Re-enter your current SECard login password

Enter your password

Note: with pse default file, enter STidA.

Note: a Power User with “Load/Save configuration files” rights cannot change the Login Password.

A second window will open allowing you to select the file save location:



Save Protected SEttings as...

Libraries ▸ Documents ▸ PSE Settings

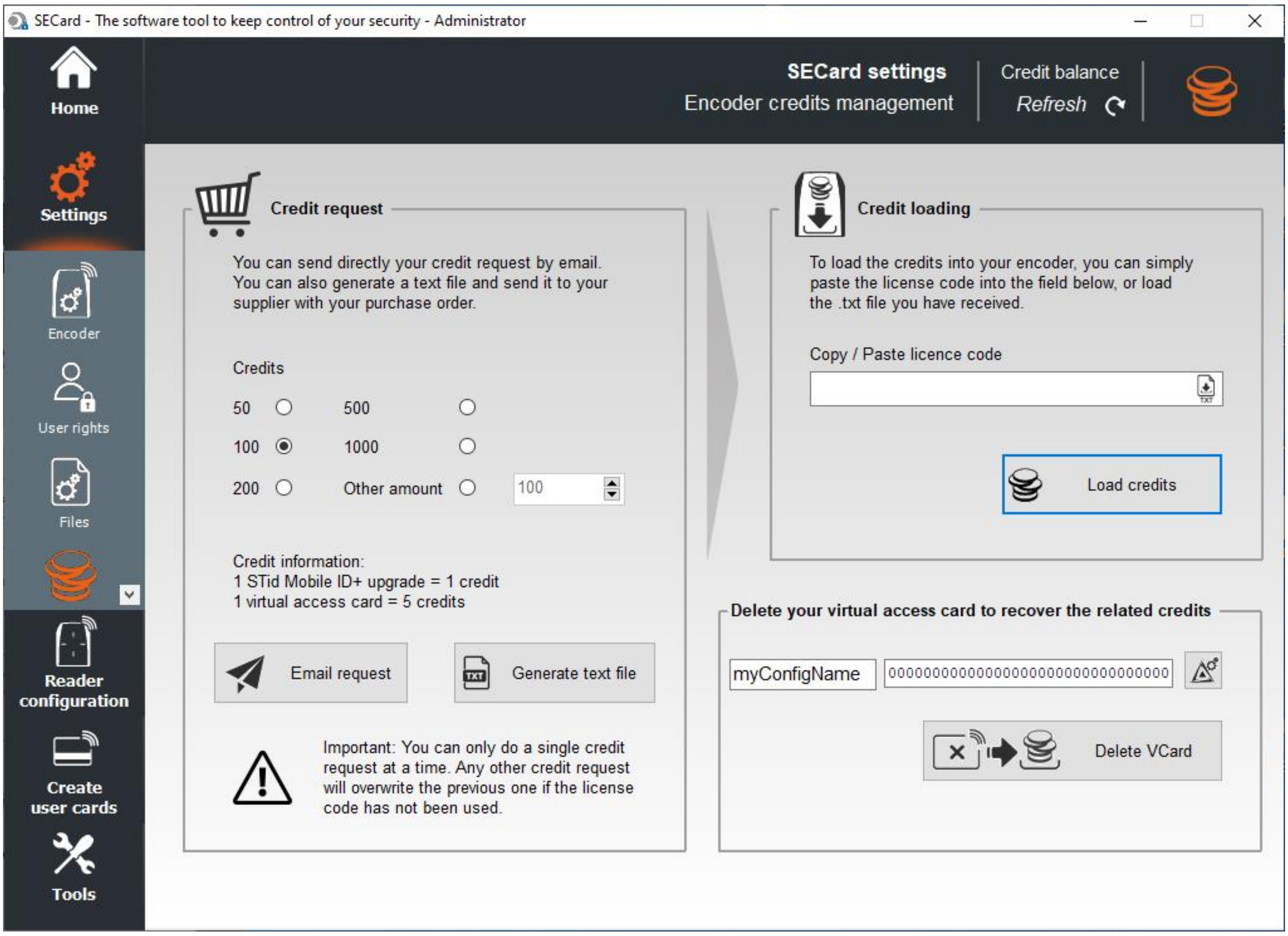
File name: ExamplePSE_file

Save as type: Proctected SEttings file (*.pse)

Once name and location entered, click Save.

- PSE : To load a configuration file (.pse) into SECard without closed the software.

II. 4 - Credits


SECard - The software tool to keep control of your security - Administrator

SECard settings
Encoder credits management

Credit balance
Refresh

Credit request

You can send directly your credit request by email. You can also generate a text file and send it to your supplier with your purchase order.

Credits

50 ○	500 ○		
100 ●	1000 ○		
200 ○	Other amount ○	100	

Credit information:
1 STid Mobile ID+ upgrade = 1 credit
1 virtual access card = 5 credits

Email request | Generate text file

Important: You can only do a single credit request at a time. Any other credit request will overwrite the previous one if the license code has not been used.

Credit loading

To load the credits into your encoder, you can simply paste the license code into the field below, or load the .txt file you have received.

Copy / Paste licence code

Load credits

Delete your virtual access card to recover the related credits

myConfigName | 00000000000000000000000000000000

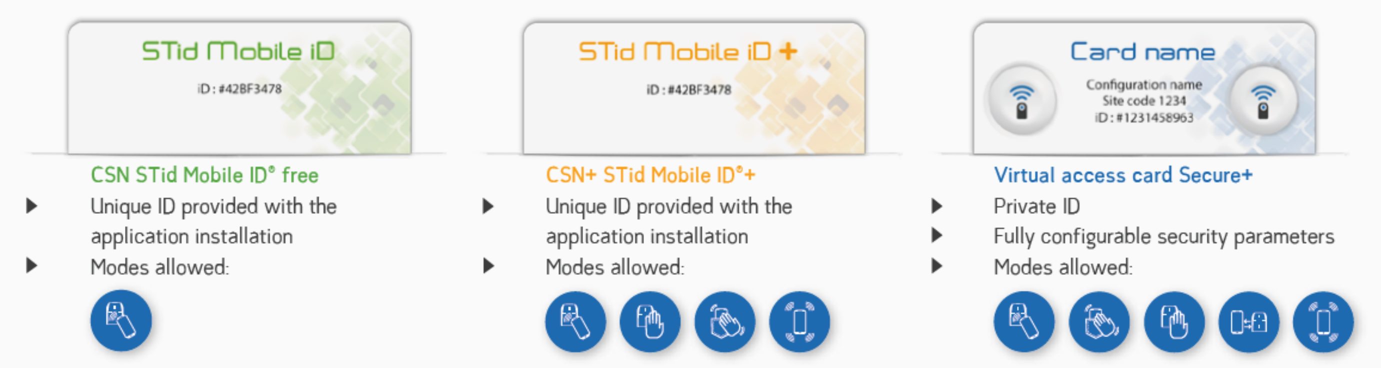
Delete VCard

To encode virtual user cards in the phone, you have to buy credits that will be loaded into the encoder.

Credits

Links to download the application for your mobile device:

STid Mobile ID® can store 3 types of cards:



CSN STid Mobile ID® free
- Unique ID provided with the application installation
- Modes allowed:

CSN+ STid Mobile ID®+
- Unique ID provided with the application installation
- Modes allowed:

Virtual access card Secure+
- Private ID
- Fully configurable security parameters
- Modes allowed:

Credit Request

This part of the software lets you make a credit request to your supplier.

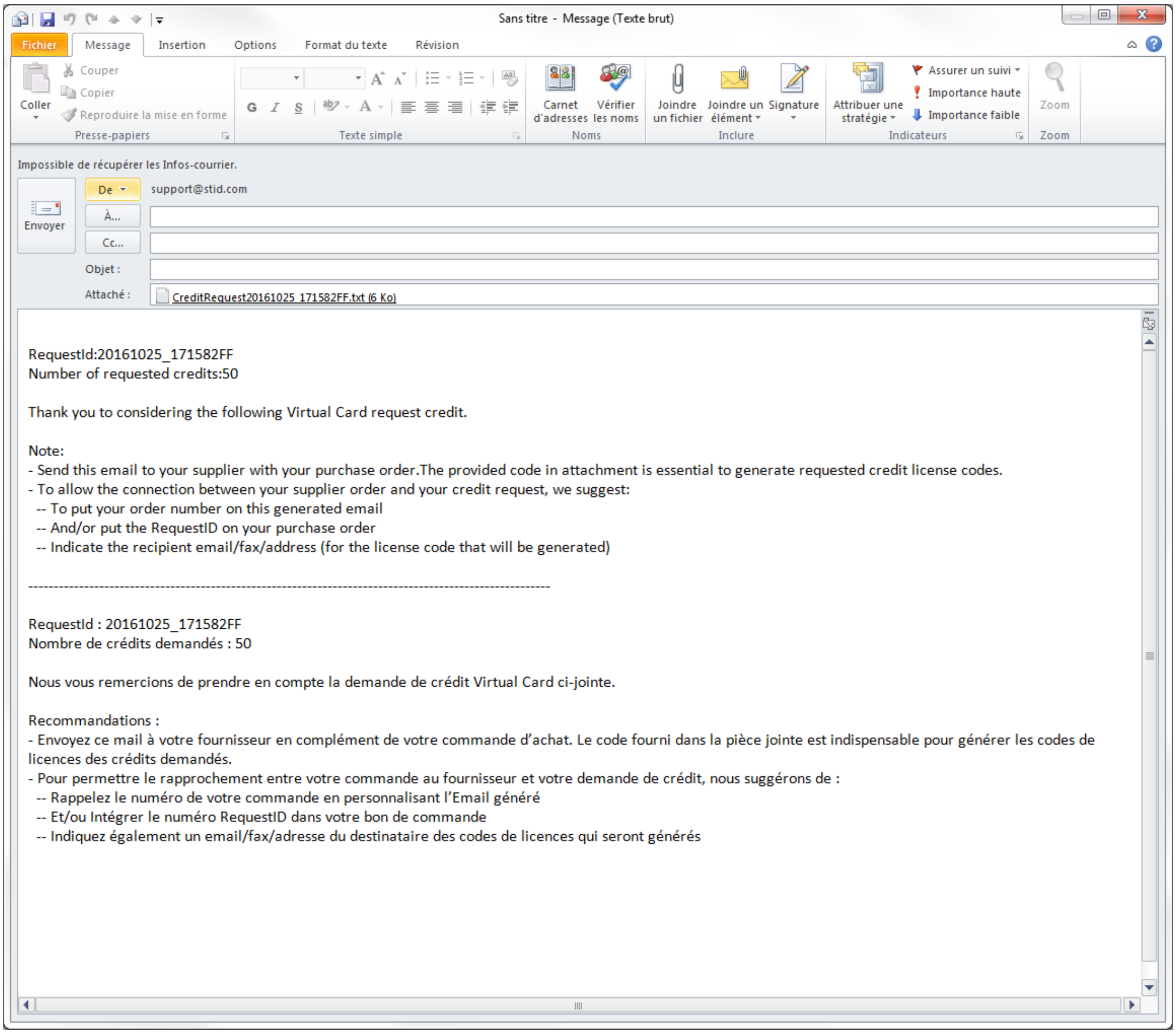
Two methods are proposed:

- "Email request" if the station has an internet connection and an e-mail messaging software available.
- "Generate text file": request file that can be sent by e-mail or any other mean.

Email Request

Select the credit required and click on .

A window will open with your e-mail messaging software:



Impossible de récupérer les Infos-courrier.

De: support@stid.com

Attaché : CreditRequest20161025_171582FF.txt (6 Ko)

RequestId:20161025_171582FF
Number of requested credits:50

Thank you to considering the following Virtual Card request credit.

Note:
- Send this email to your supplier with your purchase order.The provided code in attachment is essential to generate requested credit license codes.
- To allow the connection between your supplier order and your credit request, we suggest:
-- To put your order number on this generated email
-- And/or put the RequestID on your purchase order
-- Indicate the recipient email/fax/address (for the license code that will be generated)

RequestId : 20161025_171582FF
Nombre de crédits demandés : 50

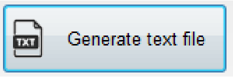
Nous vous remercions de prendre en compte la demande de crédit Virtual Card ci-jointe.

Recommandations :
- Envoyez ce mail à votre fournisseur en complément de votre commande d'achat. Le code fourni dans la pièce jointe est indispensable pour générer les codes de licences des crédits demandés.
- Pour permettre le rapprochement entre votre commande au fournisseur et votre demande de crédit, nous suggérons de :
-- Rappelez le numéro de votre commande en personnalisant l'Email généré
-- Et/ou Intégrer le numéro RequestID dans votre bon de commande
-- Indiquez également un email/fax/adresse du destinataire des codes de licences qui seront générés

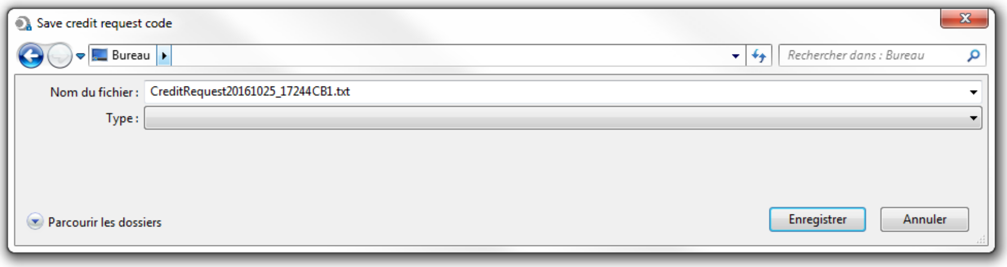
Follow the instructions in the e-mail.

Warning: you can only make a single credit request at a time. Any other credit request will replace the previous if the license code generated by the first request has not been used.

Generate text file

Select the credit required and click on .

A window will open allowing you to select the location where to save the file:



Save credit request code

Bureau

Rechercher dans : Bureau

Nom du fichier : CreditRequest20161025_17244CB1.txt

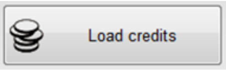
Type :

Send an email to your supplier with your purchase order and attach the document. The code provided in the attachment is essential to generate the credit license codes.

To allow the connection between your supplier order and your credit request, we suggest:

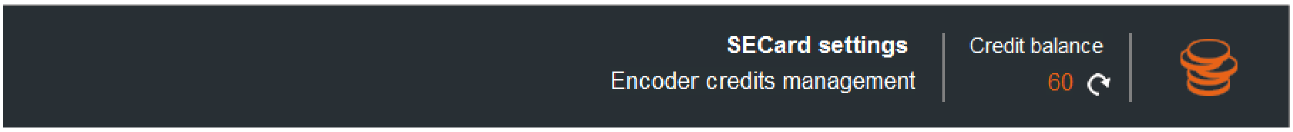
- To put your order number in your email
- And/or put the RequestID on your purchase order
- Indicate the recipient email/fax/address (for the licence code that will be generated)

Credits Load

1- Connect the encoder that generated the request.
2- Enter the license code provided.
3- Click on .

Credit balance

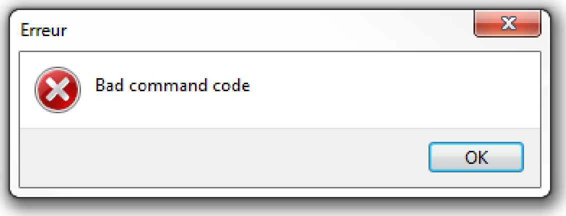
To check the credit balance available in the encoder, connect the Bluetooth® encoder and click on Check.
The credit balance is displayed as follows:



SECard settings
Encoder credits management

Credit balance
60

If the encoder connected is not a Bluetooth® model and you try to generate a Request Credit the following error appear:

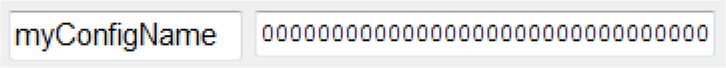


Erreur

Bad command code

Delete your virtual access card to recover the related credits

In Administrator profile:



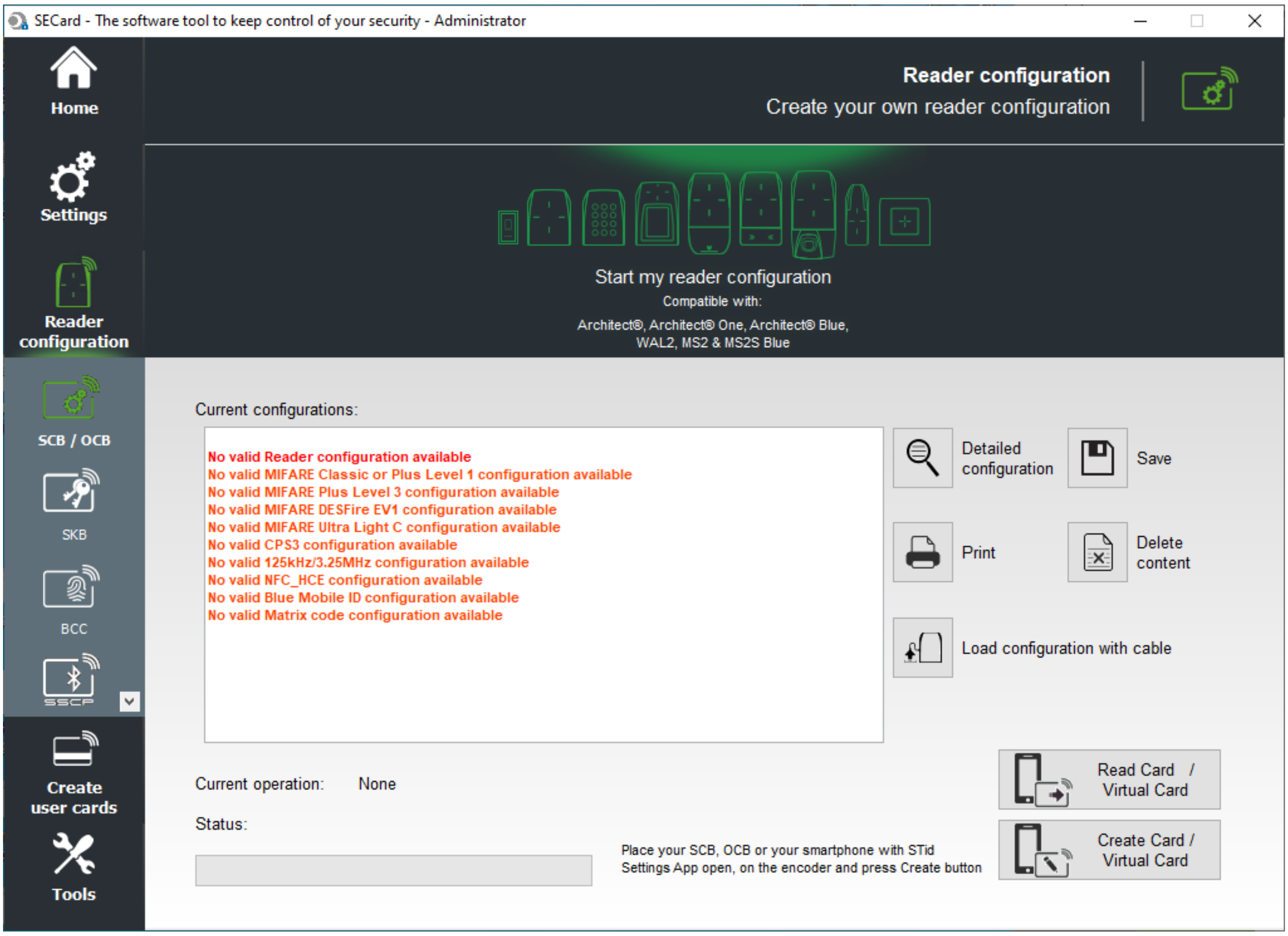
myConfigName 00000000000000000000000000000000

Enter the configuration name and the write key used to create the virtual card and click Delete VCard. Credits are automatically reloaded into the encoder.

Load the current configuration settings into the field.

In Power User and User:
It's only possible to delete the VCard corresponding to the current settings.

III. Reader Configuration – SCB / OCB



SECard - The software tool to keep control of your security - Administrator

Reader configuration
Create your own reader configuration

Start my reader configuration
Compatible with:
Architect®, Architect® One, Architect® Blue,
WAL2, MS2 & MS2S Blue

Current configurations:

No valid Reader configuration available
No valid MIFARE Classic or Plus Level 1 configuration available
No valid MIFARE Plus Level 3 configuration available
No valid MIFARE DESFire EV1 configuration available
No valid MIFARE Ultra Light C configuration available
No valid CPS3 configuration available
No valid 125kHz/3.25MHz configuration available
No valid NFC_HCE configuration available
No valid Blue Mobile ID configuration available
No valid Matrix code configuration available

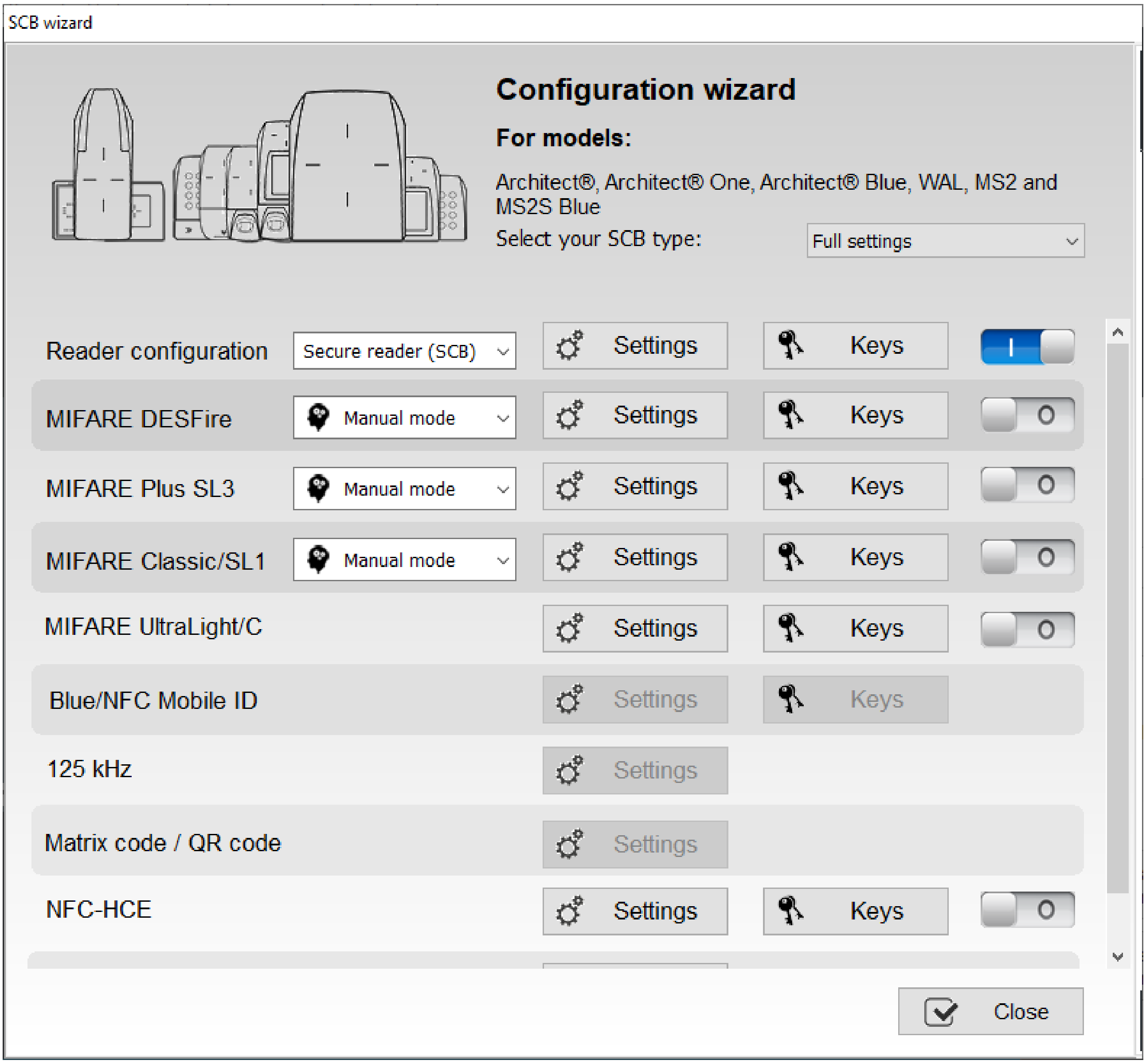
Current operation: None

Status:

Place your SCB, OCB or your smartphone with STid Settings App open, on the encoder and press Create button

 Start my reader configuration Compatible with: Architect®, Architect® One, Architect® Blue, WAL2, MS2 & MS2S Blue	Open the configuration wizard for readers
🖨	Print the configuration list displayed.
💾	Save in .rtf file the configuration list displayed.
☒	Clear the configuration list displayed.
🔍	Display details information of current configuration.
⇥	Load the configuration to the reader by serial link.
Read Card / Virtual Card	Read a SCB configuration card. Use SCB Company Key defined in the configuration wizard.
Create Card / Virtual Card	Create a SCB configuration card or virtual SCB with parameters defined in the configuration wizard.

This version of SECard allows you to create the configuration for WAL range, Architect® range (ARC, ARC One, ARCS and ARCS Blue) and OEM module MS2, MS2S.



SCB wizard

Configuration wizard

For models:

Architect®, Architect® One, Architect® Blue, WAL, MS2 and MS2S Blue

Select your SCB type: Full settings

Reader configuration	Secure reader (SCB)	Settings	Keys	I
MIFARE DESFire	Manual mode	Settings	Keys	O
MIFARE Plus SL3	Manual mode	Settings	Keys	O
MIFARE Classic/SL1	Manual mode	Settings	Keys	O
MIFARE UltraLight/C		Settings	Keys	O
Blue/NFC Mobile ID		Settings	Keys	
125 kHz		Settings		
Matrix code / QR code		Settings		
NFC-HCE		Settings	Keys	O

When the configurations settings are validated, the button turn on “1” .

These buttons are useful to enable or disable configurations.

Load configuration with cable

From v3.1.0 version, the SCB configuration can be load into the reader via serial link.

When all the settings are filled in the SCB configuration wizard:

1- In “Serial communication settings” select the port number.

2- Connect the reader ARC-R3x to configure via converter cable to the PC.

3- Click on “Load configuration with cable” while the LED blinks orange for serial readers or at any time for TTL readers

Creating physicals SCB cards

Refer to T15 – Recommendations for the Configuration Cards management

From version V3.5.x of SECard, SCB configuration card must be created with the types of cards below:

Chip to be used
MIFARE® DESFire® EV2 not locked 4ko
MIFARE® DESFire® EV1/ EV2 not locked 8ko

It’s possible to reuse an SCB card when we know his master key.

Warning

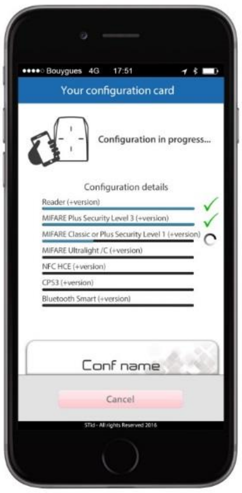
Changing a reader reference is not possible through a *SCB* card.

Example: ARC-R31-E-**103**-xx reader cannot be configured as an ARC-R31-E-**PH5**-xx reader.

It is necessary to return the product at the factory to change a reference.

Creating virtual SCB card (only for Bluetooth® reader and STid Mobile ID® app)

From the V3.0.x SECard version, the configuration cards can be loaded into a smartphone. **STid Settings application is required**.
A smartphone can contain multiple virtual configuration cards.



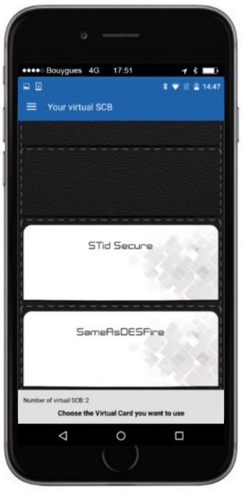
Bouygues 4G 17:51

Your configuration card

Configuration in progress...

Configuration details

Reader (+version) ✓
MIFARE Plus Security Level 3 (+version) ✓
MIFARE Classic or Plus Security Level 1 (+version)
MIFARE Ultralight /C (+version)
NFC HCE (+version)
CPS3 (+version)
Bluetooth Smart (+version)



Bouygues 4G 17:51
14:47

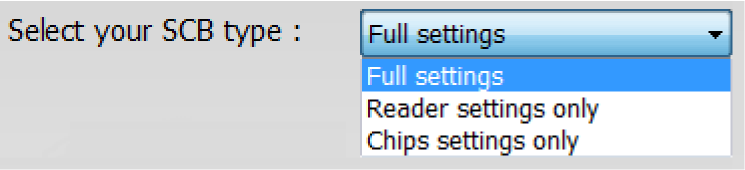
Your virtual SCB

Number of virtual SCB: 2

Choose the Virtual Card you want to use

III. 1 - SCB Wizard: Reader configuration settings

SCB level

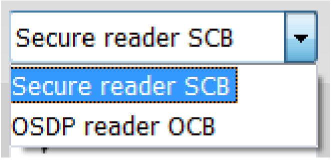


Select your SCB type : Full settings

Choose the settings, to be encoded in the SCB:

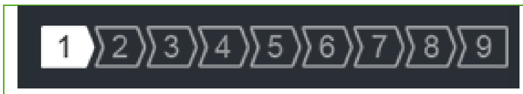
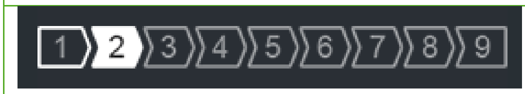
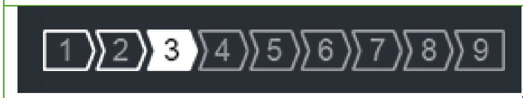
- Full settings: reader **and** chip settings will be encoded in SCB card.
- Reader settings only: only the reader settings and reader keys will be encoded (not available for reader Bluetooth® configuration).
- Chips settings only: only the chip settings and chip keys will be encoded, reader's settings have been configured via the UHF or via another SCB card.

Reader configuration: In the list select Secure reader SCB

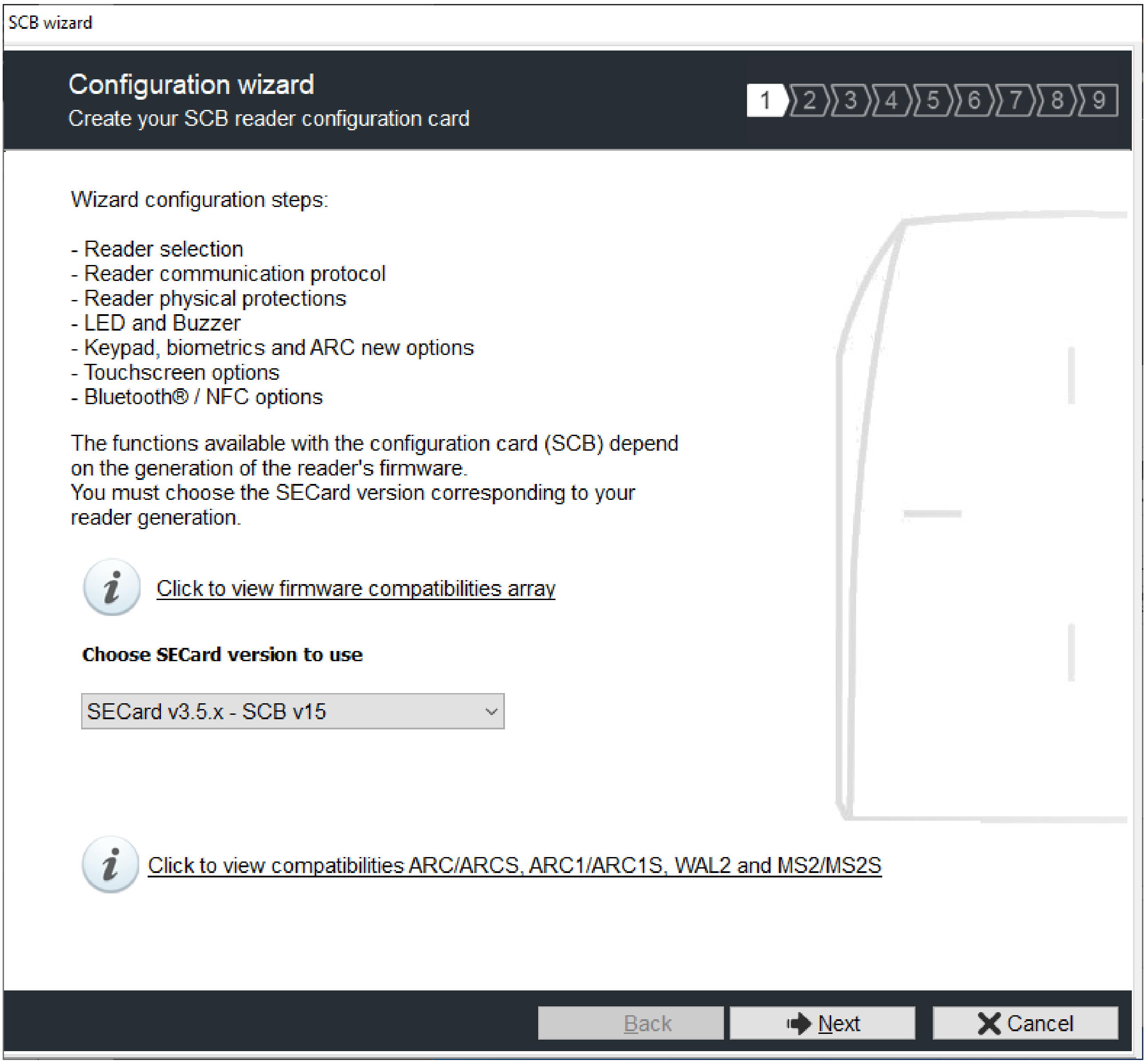


Secure reader SCB

Reader "settings": The reader configuration is done in eight steps. To move from one stage to another, you must click on "Next".

 Click here	Configuration wizard / Choose SECard version to use
 Click here	Reader reference selection
 Clich here	Reader communication protocol
Click here	Reader physical protections
Click here	LED and Buzzer
Click here	Keypad, biometric and ARC new options
Click here	Touchscreen options
Click here	Blue/NFC Mobile ID options
Click here	Matrix code options

SCB - Step 1



Configuration wizard
Create your SCB reader configuration card

Wizard configuration steps:

- Reader selection
- Reader communication protocol
- Reader physical protections
- LED and Buzzer
- Keypad, biometrics and ARC new options
- Touchscreen options
- Bluetooth® / NFC options

The functions available with the configuration card (SCB) depend on the generation of the reader's firmware.
You must choose the SECard version corresponding to your reader generation.

Click to view firmware compatibilities array

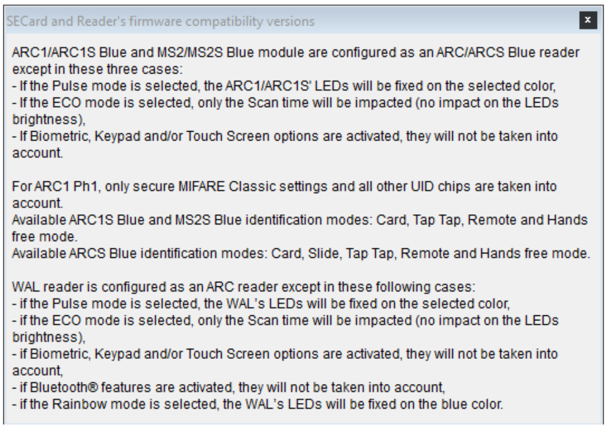
Choose SECard version to use

SECard v3.5.x - SCB v15

Click to view compatibilities ARC/ARCS, ARC1/ARC1S, WAL2 and MS2/MS2S

The available functionalities and the compatibility of SCB depend on reader firmware generation.

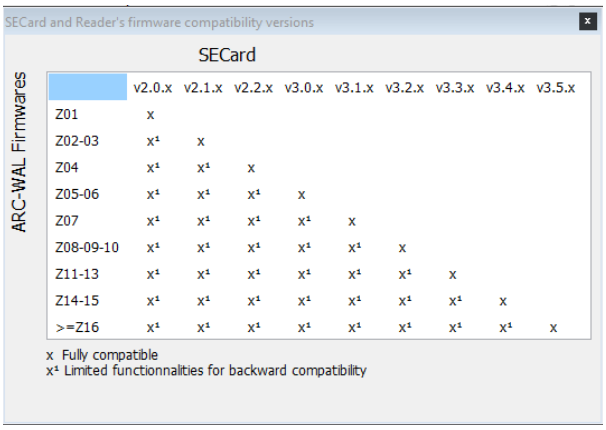
To provide compatibility between SECard and firmware versions, SECard proposes the choice about SECard version to use if the option is validated in “Files” cf. *II. 3* - Files.



ARC1/ARC1S Blue and MS2/MS2S Blue module are configured as an ARC/ARCS Blue reader except in these three cases:
- If the Pulse mode is selected, the ARC1/ARC1S' LEDs will be fixed on the selected color,
- If the ECO mode is selected, only the Scan time will be impacted (no impact on the LEDs brightness),
- If Biometric, Keypad and/or Touch Screen options are activated, they will not be taken into account.

For ARC1 Ph1, only secure MIFARE Classic settings and all other UID chips are taken into account.
Available ARC1S Blue and MS2S Blue identification modes: Card, Tap Tap, Remote and Hands free mode.
Available ARCS Blue identification modes: Card, Slide, Tap Tap, Remote and Hands free mode.

WAL reader is configured as an ARC reader except in these following cases:
- if the Pulse mode is selected, the WAL's LEDs will be fixed on the selected color,
- if the ECO mode is selected, only the Scan time will be impacted (no impact on the LEDs brightness),
- if Biometric, Keypad and/or Touch Screen options are activated, they will not be taken into account,
- if Bluetooth® features are activated, they will not be taken into account,
- if the Rainbow mode is selected, the WAL's LEDs will be fixed on the blue color.



SECard

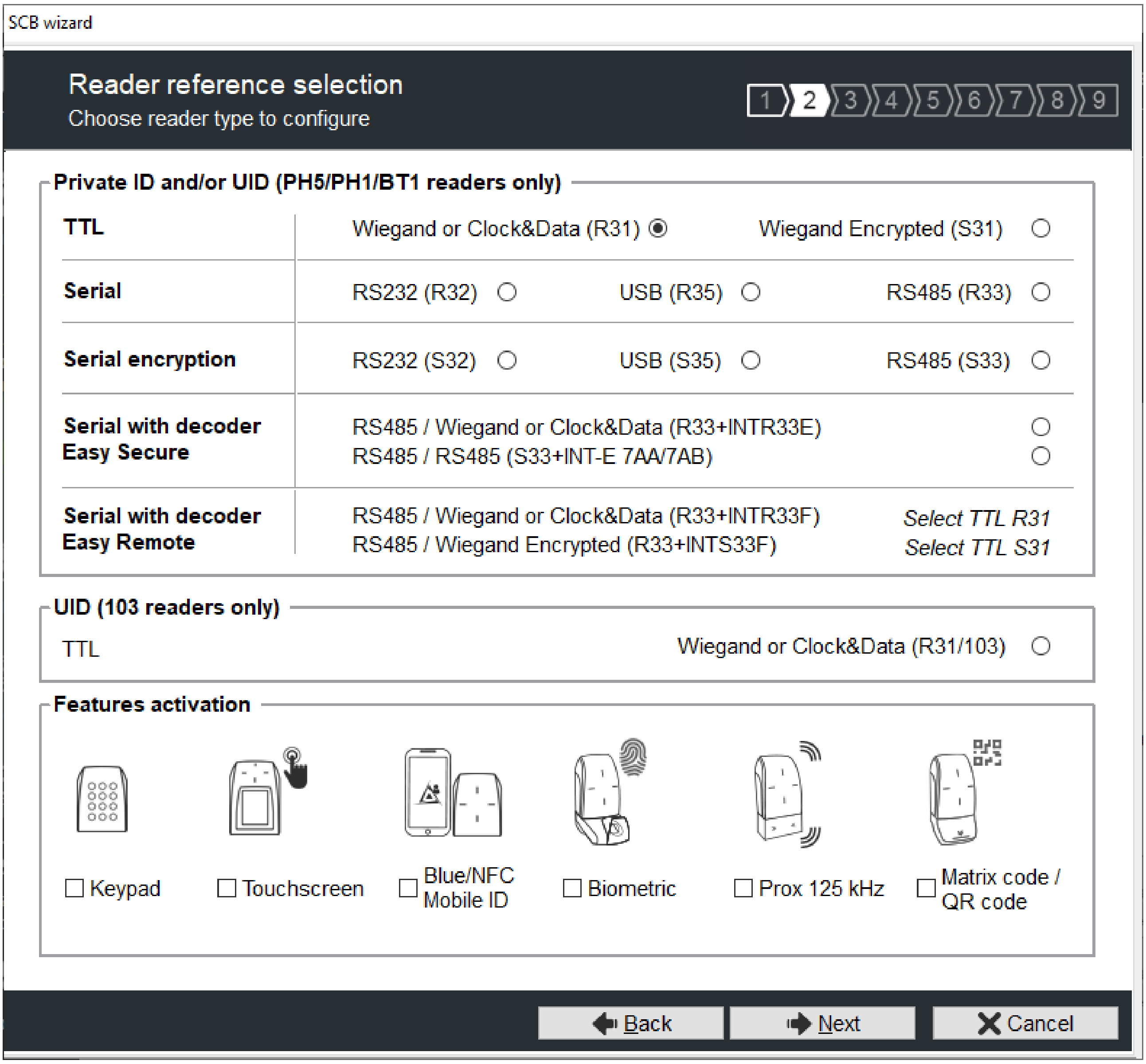
ARC-WAL Firmwares

	v2.0.x	v2.1.x	v2.2.x	v3.0.x	v3.1.x	v3.2.x	v3.3.x	v3.4.x	v3.5.x
Z01	x								
Z02-03	x^1	x							
Z04	x^1	x^1	x						
Z05-06	x^1	x^1	x^1	x					
Z07	x^1	x^1	x^1	x^1	x				
Z08-09-10	x^1	x^1	x^1	x^1	x^1	x			
Z11-13	x^1	x^1	x^1	x^1	x^1	x^1	x		
Z14-15	x^1	x^1	x^1	x^1	x^1	x^1	x^1	x	
>=Z16	x^1	x^1	x^1	x^1	x^1	x^1	x^1	x^1	x

x Fully compatible
x^1 Limited functionnalities for backward compatibility

To determine the version of firmware, refer to paragraph.*T2.1 - Powering up*

SCB - Step 2



Reader reference selection

Choose reader type to configure

Private ID and/or UID (PH5/PH1/BT1 readers only)

TTL	Wiegand or Clock&Data (R31) ●		Wiegand Encrypted (S31) ○
Serial	RS232 (R32) ○	USB (R35) ○	RS485 (R33) ○
Serial encryption	RS232 (S32) ○	USB (S35) ○	RS485 (S33) ○
Serial with decoder Easy Secure	RS485 / Wiegand or Clock&Data (R33+INTR33E) RS485 / RS485 (S33+INT-E 7AA/7AB)		○ ○
Serial with decoder Easy Remote	RS485 / Wiegand or Clock&Data (R33+INTR33F) RS485 / Wiegand Encrypted (R33+INTS33F)		*Select TTL R31* *Select TTL S31*

UID (103 readers only)

TTL — Wiegand or Clock&Data (R31/103) ○

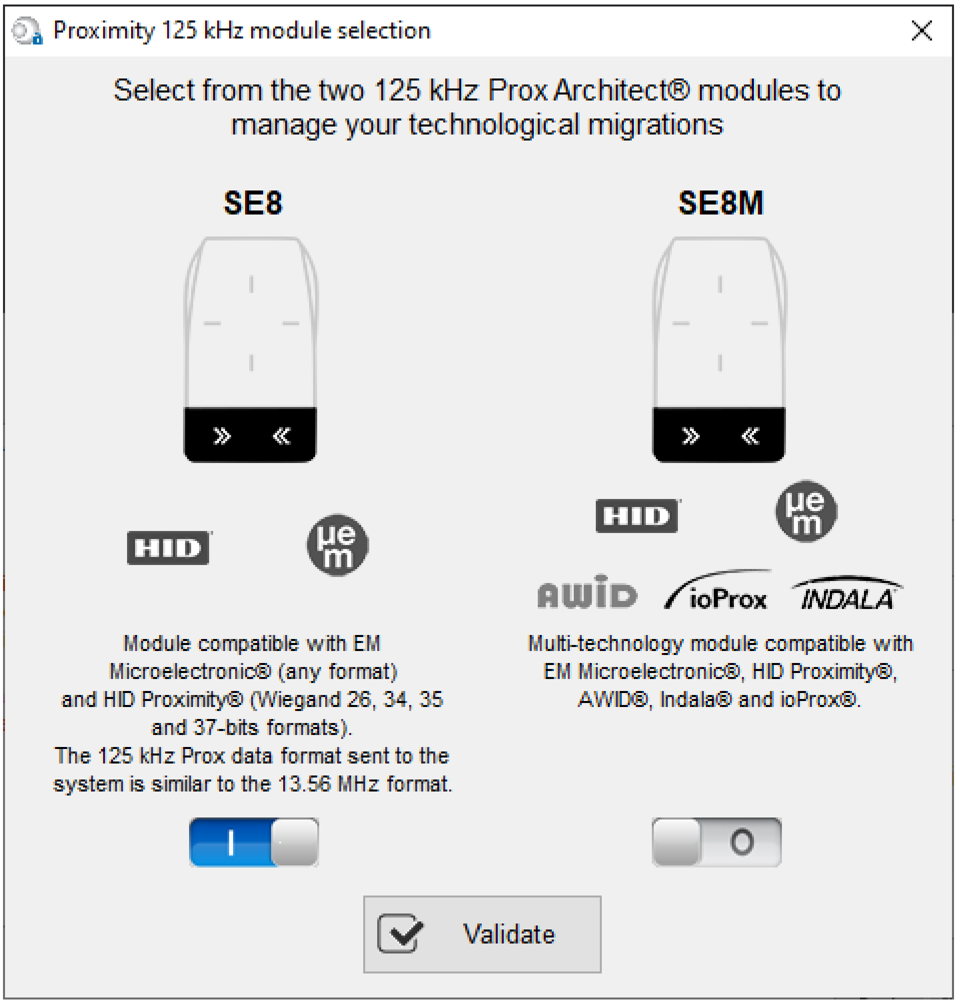
Features activation

□ Keypad □ Touchscreen □ Blue/NFC Mobile ID □ Biometric □ Prox 125 kHz □ Matrix code / QR code

This step allows you:

- To choose the type of reader to configure.
- To activate keypad configuration.
- To activate touchscreen configuration.
- To activate Blue/NFC Mobile ID configuration.
- To activate the biometric configuration.

❖ To select 125 kHz module (SE8 or SE8M) and activate configuration.



Proximity 125 kHz module selection

Select from the two 125 kHz Prox Architect® modules to manage your technological migrations

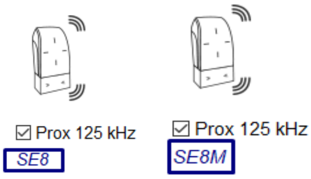
SE8

Module compatible with EM Microelectronic® (any format) and HID Proximity® (Wiegand 26, 34, 35 and 37-bits formats).
The 125 kHz Prox data format sent to the system is similar to the 13.56 MHz format.

SE8M

Multi-technology module compatible with EM Microelectronic®, HID Proximity®, AWID®, Indala® and ioProx®.

The current model appears on the screen



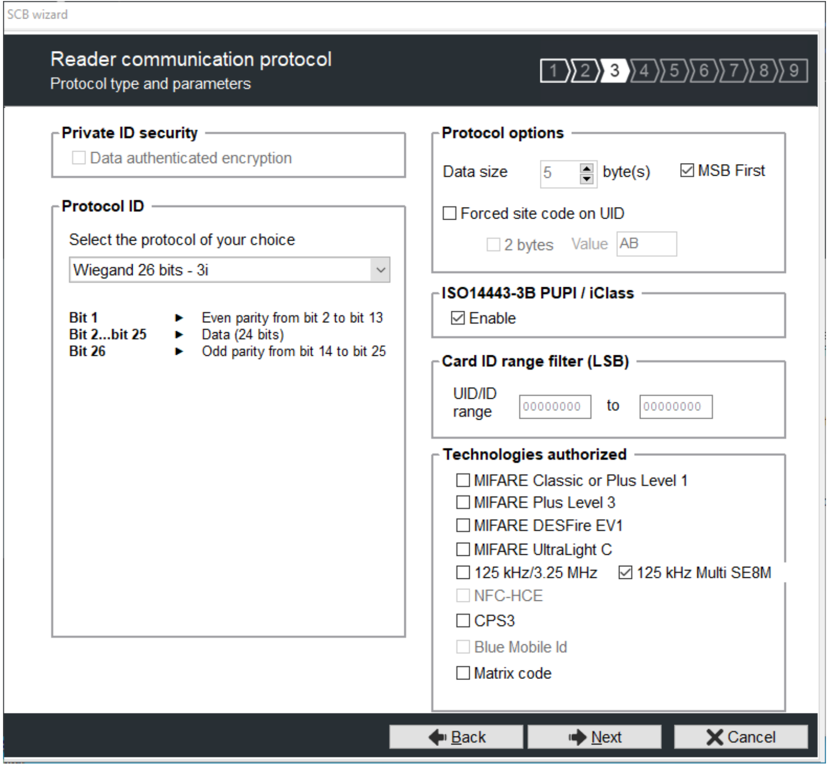
The SE8M module is only available for TTL R31/S31 and R31/103 readers in Wiegand output protocol (Wiegand 26 bits-3i default).

This choice impacts on 125kHz settings.

❖ To activate Matrix configuration.

SCB - Step 3

This window appears when the reader type selected at step 2 is R31/103:


SCB wizard

Reader communication protocol
Protocol type and parameters

Private ID security
□ Data authenticated encryption

Protocol ID
Select the protocol of your choice
Wiegand 26 bits - 3i

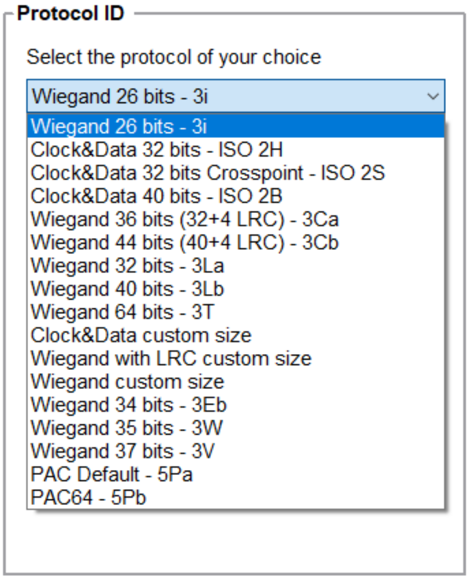
Bit 1	►	Even parity from bit 2 to bit 13
Bit 2...bit 25	►	Data (24 bits)
Bit 26	►	Odd parity from bit 14 to bit 25

Protocol options
Data size 5 byte(s) ☑ MSB First
□ Forced site code on UID
□ 2 bytes Value AB

ISO14443-3B PUPI / iClass
☑ Enable

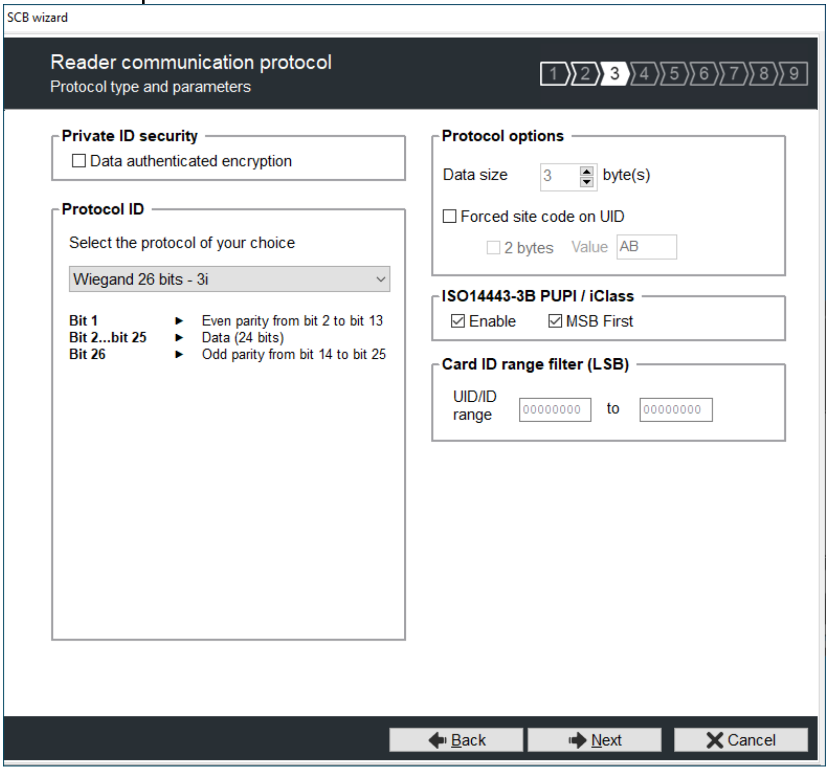
Card ID range filter (LSB)
UID/ID range 00000000 to 00000000

Technologies authorized
□ MIFARE Classic or Plus Level 1
□ MIFARE Plus Level 3
□ MIFARE DESFire EV1
□ MIFARE UltraLight C
□ 125 kHz/3.25 MHz ☑ 125 kHz Multi SE8M
□ NFC-HCE
□ CPS3
□ Blue Mobile Id
□ Matrix code


Protocol ID
Select the protocol of your choice
Wiegand 26 bits - 3i

- Wiegand 26 bits - 3i
- Clock&Data 32 bits - ISO 2H
- Clock&Data 32 bits Crosspoint - ISO 2S
- Clock&Data 40 bits - ISO 2B
- Wiegand 36 bits (32+4 LRC) - 3Ca
- Wiegand 44 bits (40+4 LRC) - 3Cb
- Wiegand 32 bits - 3La
- Wiegand 40 bits - 3Lb
- Wiegand 64 bits - 3T
- Clock&Data custom size
- Wiegand with LRC custom size
- Wiegand custom size
- Wiegand 34 bits - 3Eb
- Wiegand 35 bits - 3W
- Wiegand 37 bits - 3V
- PAC Default - 5Pa
- PAC64 - 5Pb

This window appears when the reader type selected at step 2 is TTL output:


SCB wizard

Reader communication protocol
Protocol type and parameters

Private ID security
□ Data authenticated encryption

Protocol ID
Select the protocol of your choice
Wiegand 26 bits - 3i

Bit 1	►	Even parity from bit 2 to bit 13
Bit 2...bit 25	►	Data (24 bits)
Bit 26	►	Odd parity from bit 14 to bit 25

Protocol options
Data size 3 byte(s)
□ Forced site code on UID
□ 2 bytes Value AB

ISO14443-3B PUPI / iClass
☑ Enable ☑ MSB First

Card ID range filter (LSB)
UID/ID range 00000000 to 00000000

Protocol

It contains the different TTL communication protocols supported by the reader.

For more information about the protocols refer to *T4 - About TTL communication protocols*.

Note: When encoding, the ID format is formed according to the format of the current protocol (example: Decimal 13 characters for the protocol 2B - 10 hexadecimal characters for 3CB protocol).

Protocol options

- *"Data size":* adjust the size for custom protocol.

  Maximum size in Wiegand: 48 bytes
  Maximum size in Data/Clock: 10 bytes

- "Forced site *code on UID":* force a site code whatever the communication protocol.
  The value of the code will be transmitted most significant on one or two bytes.
  UID can be truncated according to the protocol used.
  This option is only available in UID mode (not available on Wiegand 64 bits - 3T Protocol).

ISO 14443-3B PUPI / iCLASS™*

It is possible to manage differently the PUPI ISO14443-3B and the ISO 14443-2B by calculating an authentication code using a cryptographic hash function (SHA1) and a secret key. Other norms (ISO14443-A) and frequencies (125 kHz & 3.25 MHz) are not concerned by this option.

If the protocol size is less than 20 bytes, the 20 bytes obtained signature will be LSB truncated.
If the protocol size is more than 20 bytes, a zero padding will be made.

*Our readers only read the UID/Chip Serial Number. They do not read secure HID Global's iCLASS™ cryptographic protections.

Card ID range filter (LSB)

It is possible to return an UID / ID only if it is within a specified 4 bytes bounded range.

If the size of the UID / ID is more than 4 bytes, the range will be made on the 4 bytes LSB (taking into account the MSB First option first). The limits are included, lower limit ≤ UID / ID ≤ upper limit.

If the UID / ID is in the range, the reader will return the code for the current protocol and perform an action card LED + Buzzer (SCB). Otherwise, the reader light up (not configurable and not disabled) red LED + Buzzer for 400ms.

The UID / ID is compared to the hexadecimal value after taking into account the MSB First parameter and before entry into protocol shape.
For example, for a protocol 2S, the code to compare will be the code on 4 bytes before coding to 2S format.

Technologies authorized

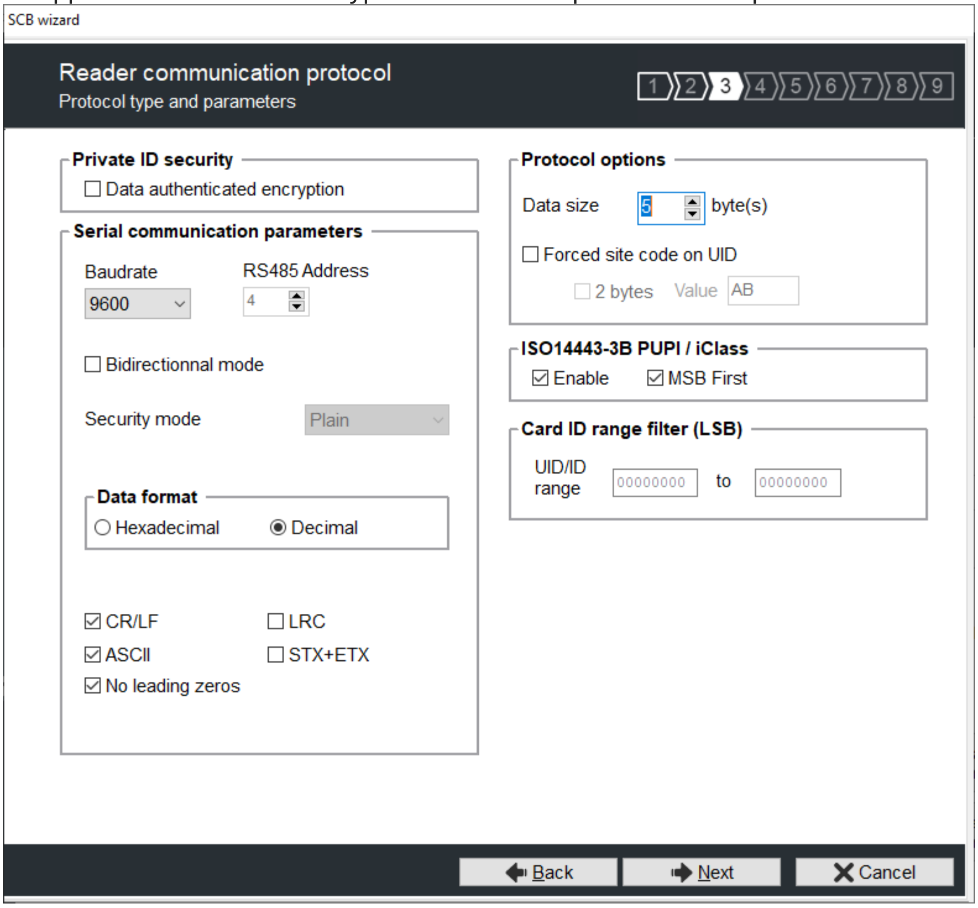
When the selected reader type is "UID only", you can select the type of chip technologies that can be read by the reader.

Private ID security

Private ID can be encrypted AND signed before being written in the card.
The reader will decrypt and authenticate the private ID before sending it on its output media.
Only an ID correctly decrypted and authenticated will produce an output data, otherwise the reader will remain mute.
The Authenticated Encryption uses the MtE mode (Maced then Encrypt).

Note: The size of private identifier is limited to 12 bytes.

This window appears when the reader type selected at step 2 is serial output:



SCB wizard

Reader communication protocol
Protocol type and parameters

Private ID security
□ Data authenticated encryption

Serial communication parameters
Baudrate: 9600
RS485 Address: 4
□ Bidirectionnal mode
Security mode: Plain

Data format
○ Hexadecimal ● Decimal

☑ CR/LF □ LRC
☑ ASCII □ STX+ETX
☑ No leading zeros

Protocol options
Data size: 5 byte(s)
□ Forced site code on UID
□ 2 bytes Value AB

ISO14443-3B PUPI / iClass
☑ Enable ☑ MSB First

Card ID range filter (LSB)
UID/ID range: 00000000 to 00000000

Serial communication protocol

It contains the different serial communication parameters.

For more information about the protocol, refer to *T5 - Serial communication protocol.*

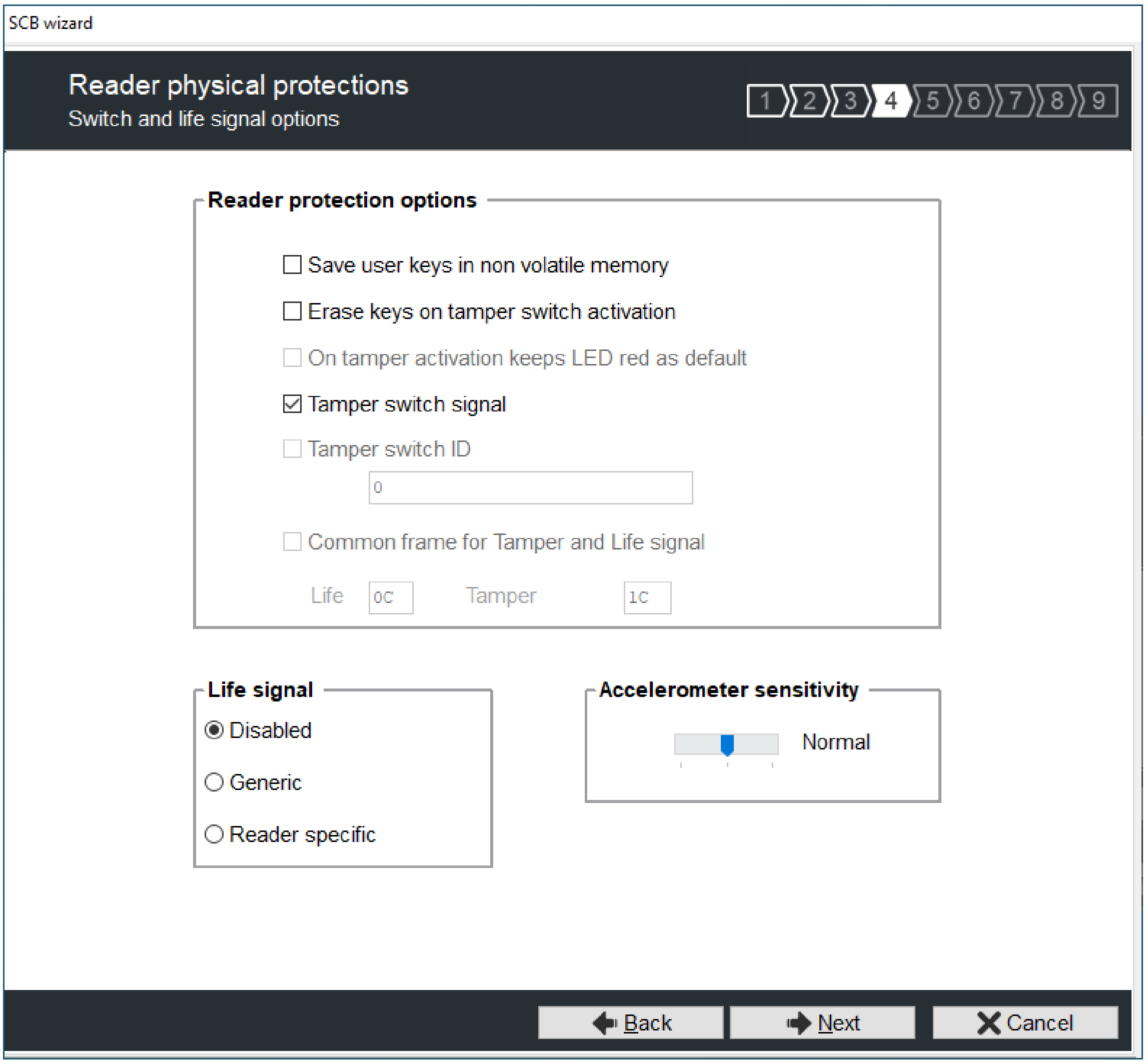
Protocole Options

- *“Data size”:* adjust the size for custom protocol.

  Maximum size in Hexadecimal: 48 bytes
  Maximum size in decimal: 10 bytes

Note:
It is possible to increase the size of the field beyond the maximum size for this, hold the button CTRL and click in the "Data Size", and then the value appears underlined. This manipulation does not work for encoding but only for reading an identifier. Only available on series readers.

SCB - Step 4



SCB wizard

Reader physical protections

Switch and life signal options

Reader protection options

☐ Save user keys in non volatile memory

☐ Erase keys on tamper switch activation

☐ On tamper activation keeps LED red as default

☑ Tamper switch signal

☐ Tamper switch ID

0

☐ Common frame for Tamper and Life signal

Life 0C Tamper 1C

Life signal

● Disabled

○ Generic

○ Reader specific

Accelerometer sensitivity

Normal

Reader protection option

- ❖ Save user keys in non-volatile memory: enables the keys to be saved, in encrypted form, in EEPROM non- volatile memory, in case of power failure.
- ❖ Erase keys on tamper switch activation: enables all the reader keys to be erased, if the status or accelerometer is changed.
- ❖ On tamper activation keeps red as default: requires activation of tearing.
  If the status of accelerometer is changed, LED is on the red indicating that the keys have been erased.
- ❖ Tamper switch signal: enables the tamper switch signal to be activated. Refer to *T11 - Tamper switch.*
- ❖ Tamper switch ID: enables the tamper switch ID to be activated. Refer to *T12 - Tamper switch ID*.
- ❖ Common frame for Tamper switch and Life signal: allows you to enable sending in a frame of a tamper signal and life, available only for R31, S31 and R33+INTR33E readers. Refer to *T13 - Mutual Life / Tamper switch Signal*.

Note: There is no tearing management on USB readers.

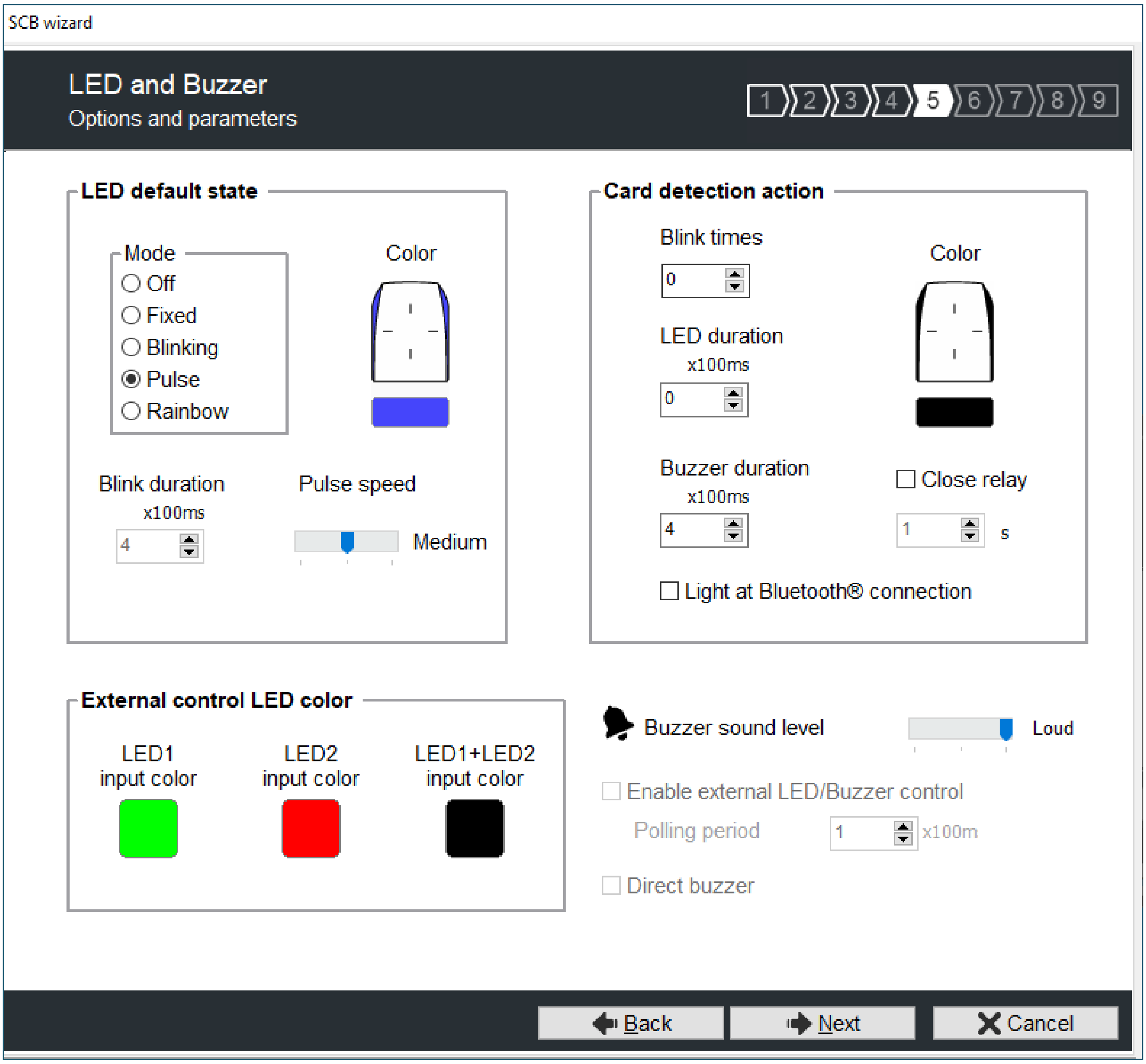
Life signal

Enable / disable the life signal and choose the type of signal "Generic" or "specific". Refer to *T10 - Life signal function*.

Accelerometer sensitivity

The ARC reader range includes an accelerometer to detect the reader tearing.
Depending on the support / installation location of the reader, it may be necessary to adjust the sensitivity of the sensor so that only an effective tear is detected.

SCB - Step 5


SCB wizard

LED and Buzzer
Options and parameters

1 2 3 4 5 6 7 8 9

LED default state

Mode
○ Off
○ Fixed
○ Blinking
● Pulse
○ Rainbow

Color

Blink duration x100ms: 4

Pulse speed: Medium

Card detection action

Blink times: 0

Color

LED duration x100ms: 0

Buzzer duration x100ms: 4

□ Close relay: 1 s

□ Light at Bluetooth® connection

External control LED color

LED1 input color	LED2 input color	LED1+LED2 input color
🟩	🟥	■

Buzzer sound level: Loud

□ Enable external LED/Buzzer control

Polling period: 1 x100m

□ Direct buzzer

LED default state

Define the default LED state (color and blink mode).

Availables modes for ARC readers:

- OFF
- Fixed
- Classic blinking
- Pulse
- Rainbow

Availables modes for WAL readers:

- Fixed
- Classic blinking

The image on the right allows you to view the selected effect: blinking and color.

Card detection action

- Define the LED and buzzer state (color and blink) when a card is detected.
  This information is independent of the acceptance of the identifier.

- Light at Bluetooth® connection
  Flash LED when smartphone start connection on the reader. The color can be selected by clicking on the right square.
  This action, independent of the detection of the virtual badge, informs the user that the communication between the smartphone and the reader is in progress.

- Close relay:
  On ARC/ARCS close the relay during time selected if the card has been well read (UID or PrivateID). If this function is enabled, the relay is no longer used for tamper or ring functionalities.

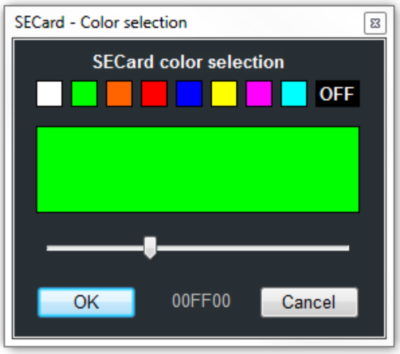
Note: Blinks times or LED duration defines, for the ARC Screen, the display time of the "image and text badge detection" state.

Buzzer sound level

Define the sound level for the buzzer **only available for ARCS, ARC1 and ARC1S**.

External control LED color

Define the color of LED1 input, LED2 input and both LED if they are controlled simultaneously.
To modify and select a color, click on the symbol ARC or color buttons, the following window opens:



To select a predefined color, click on one of the colored squares color.

For ARC readers only, it is possible to choose a different color. Move the cursor to the desired color, the value displayed corresponds to the RGB hexadecimal code of the selected color. It is possible to copy the value by double clicking.

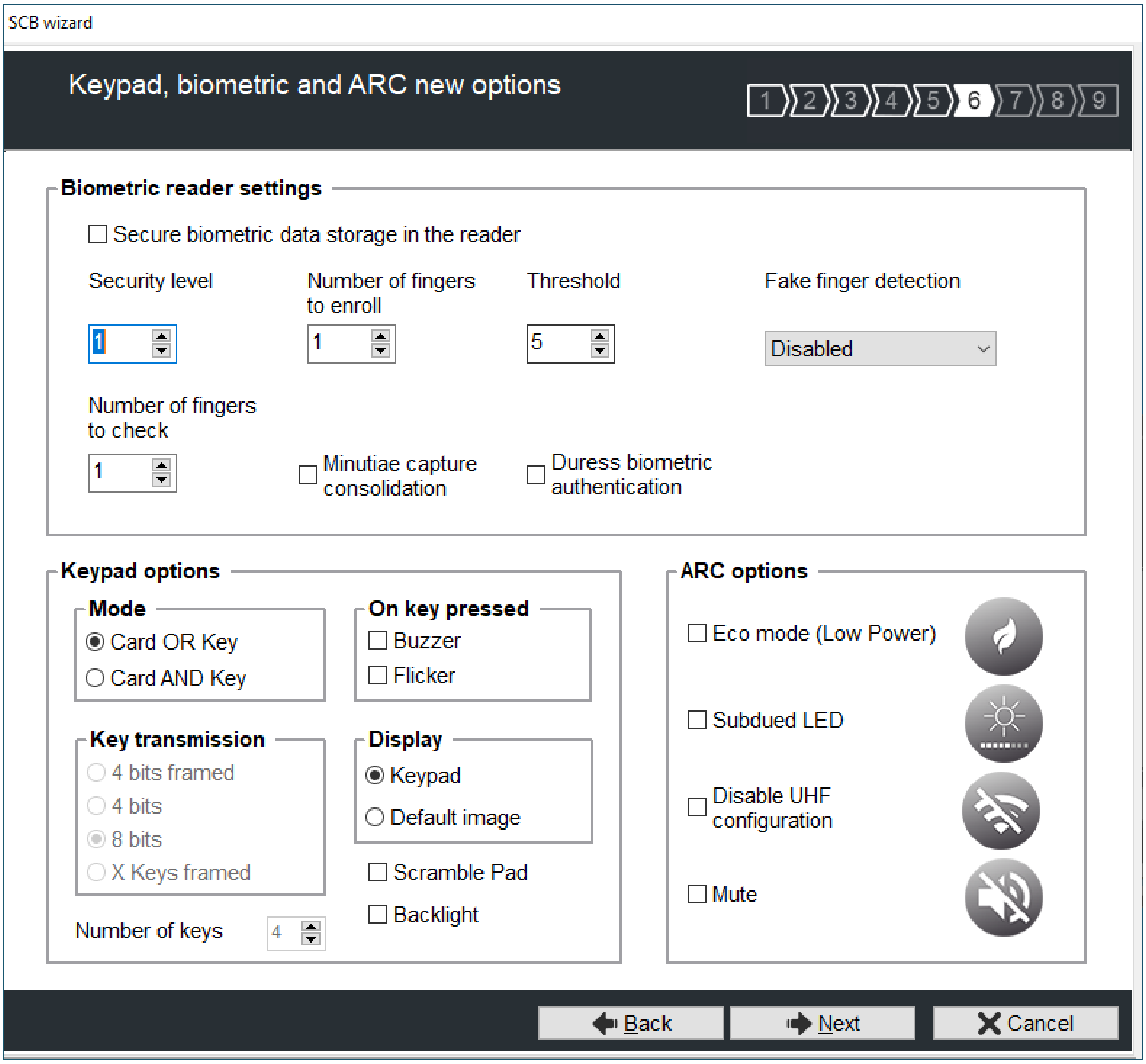
Enable external LED / Buzzer control

Control LED and buzzer externally. The polling period is adjustable in increments of 100ms.
Only available for serial readers (R/S-32 and R/S-33) in bidirectional mode.

Direct buzzer

Activate the buzzer as soon as a card is detected without waiting for an external command.
Only available for serial readers (R/S-32 and R/S-33) in bidirectional mode.

SCB - Step 6



SCB wizard

Keypad, biometric and ARC new options

Biometric reader settings

☐ Secure biometric data storage in the reader

Security level: 1

Number of fingers to enroll: 1

Threshold: 5

Fake finger detection: Disabled

Number of fingers to check: 1

☐ Minutiae capture consolidation

☐ Duress biometric authentication

Keypad options

Mode
● Card OR Key
○ Card AND Key

On key pressed
☐ Buzzer
☐ Flicker

Key transmission
○ 4 bits framed
○ 4 bits
● 8 bits
○ X Keys framed

Number of keys: 4

Display
● Keypad
○ Default image

☐ Scramble Pad
☐ Backlight

ARC options

☐ Eco mode (Low Power)
☐ Subdued LED
☐ Disable UHF configuration
☐ Mute

Reader biometric settings

- Security level: represents the reliability rate between the encoded and read fingerprints.
  - Security level = 1: low false finger security level (Morpho Sagem recommendation).
  - Security level = 2: medium false finger security level.
  - Security level = 3: high false finger security level.

- Threshold: represents the quality level of the fingerprints to encode in the chip (0 up to 10). Lower threshold = less false rejection. Morpho Sagem recommendation: 5.

- Number of fingers to enroll: represents the number of fingerprints to encode.

- Number of fingers to check: represents the number of finger to check.

- Minutiae capture consolidation: allows to capture the same finger three times. The biometric sensor will choose the best one during the encoding.

- Duress biometric authentication: The UID or private ID returned by the reader will be modified to include the finger number with which the user authenticated.
  This feature takes precedence over the site code if used.

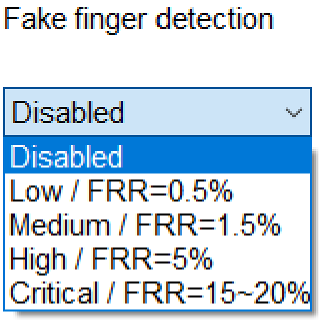
  Example: ID 0x1122334455 / 73 588 229 205 (decimal)

  Detection of finger number 2: ID sent by the reader is 0x**02**22334455 / 9 163 719 765.

  Note: not available in Wiegand 3T protocol, le 1st byte being used for the chip type.

Note: A new user card encoding with different number of fingers requires to format the chip.

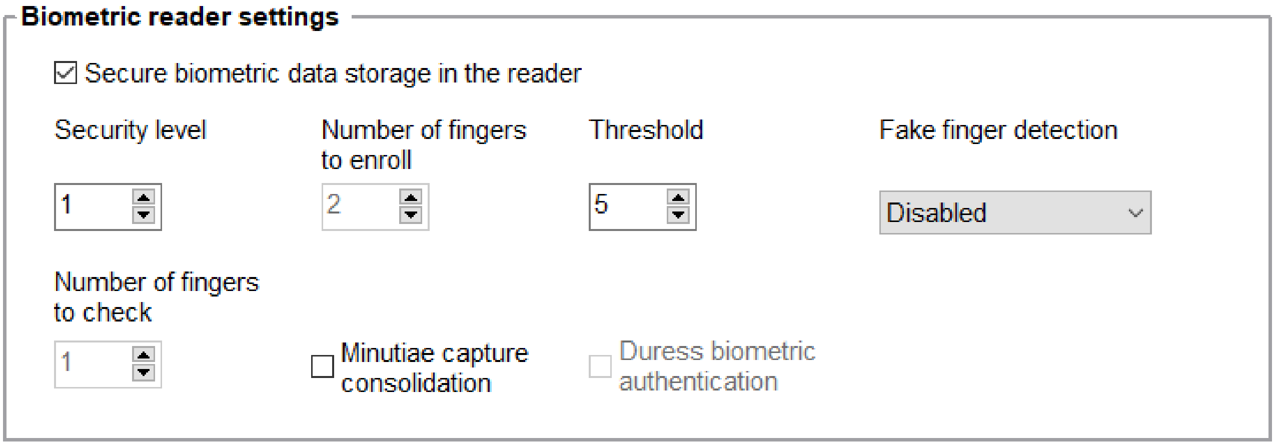
- Fake finger detection: Enable / Disabled the Fake finger detection with specific detection level.



Fake finger detection

Disabled

- Secure biometric data storage in the reader:



Biometric reader settings

☑ Secure biometric data storage in the reader

Security level: 1

Number of fingers to enroll: 2

Threshold: 5

Fake finger detection: Disabled

Number of fingers to check: 1

☐ Minutiae capture consolidation

☐ Duress biometric authentication

When this operating mode is select, the number of fingers to enroll is set on 2 fingers and the number of fingers to check is set on 1..

To create the Biometric Configuration Card, refer to BCC section. .

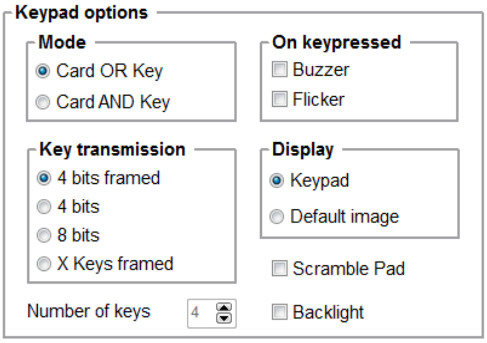
In this mode, you can’t encode templates in user card.
Warning: It is the responsibility of the end-user to ensure that the installation is in keeping with the local rules for the management and the storage of biometric data.

More information about this mode, refer to *T9 - Biometric data into the reader*.

Keypad options

Choose between the modes “Card OR Key” and “Card AND Key”:

❖ Card OR Key + format choice:



Keypad options

Mode
- ● Card OR Key
- ○ Card AND Key

On keypressed
- □ Buzzer
- □ Flicker

Key transmission
- ● 4 bits framed
- ○ 4 bits
- ○ 8 bits
- ○ X Keys framed

Display
- ● Keypad
- ○ Default image

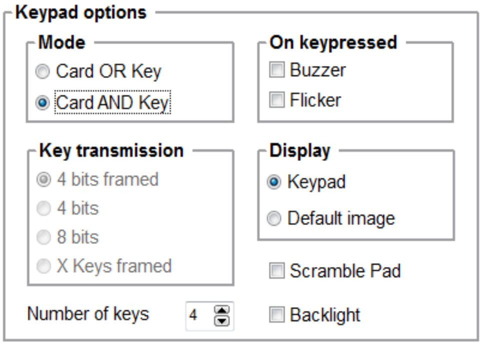
□ Scramble Pad

Number of keys 4

□ Backlight

Once the reader detects a card, its ID number is sent according the selected protocol followed by an acknowledgement sound.
Each time a key is pressed, its number is sent to the host according the selected protocol and encoding mode followed by an acknowledgement sound.

❖ Card AND Key + keys number:



Keypad options

Mode
- ○ Card OR Key
- ● Card AND Key

On keypressed
- □ Buzzer
- □ Flicker

Key transmission
- ● 4 bits framed
- ○ 4 bits
- ○ 8 bits
- ○ X Keys framed

Display
- ● Keypad
- ○ Default image

□ Scramble Pad

Number of keys 4

□ Backlight

When the key sequence is finished, the reader expects an identifier for a period of 6 seconds (a beep sound to indicate pending identifier).

For more information on the functioning and format, refer to paragraph *T6 - About keypad readers*.

Warning

The Wiegand 26 bits format is not available in Card AND Key mode.

❖ On Key Pressed
Allow to activate / deactivate LED and Buzzer when user press one touch of the keyboard.

❖ Display: Choose de default display for touchscreen if keyboard is active.

- Keypad:
  Display the keyboard.

- Default image:
  Display the default text and image (see step 7).

  To display the keyboard, touch a first time the screen.

  The display reverts to the default image after a timeout of 10s.

❖ Scramble Pad (Only available for screen touch ARC): Activate the scramble on keypad.
The scramble is performed:

- Card AND Key:
  - After each sequence: enter the number of configured keys and reading a valid card.
  - After a time out of 6s after the seizure of configured keys without presentation of a valid card.
  - Following the annulment by the * or # key.

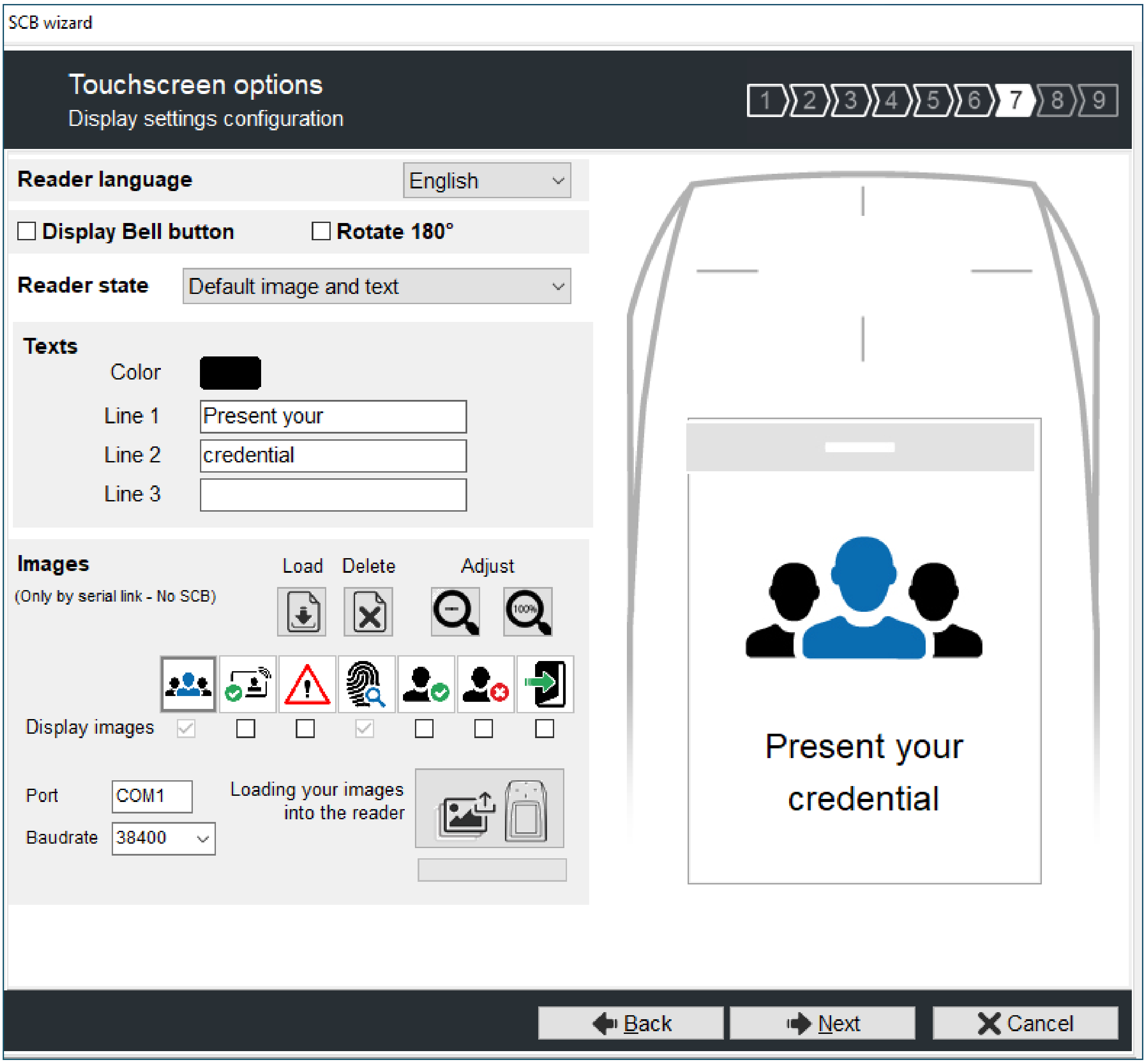
- Card OR Key:
  - After reading a valid card.
  - Every 30s. Pressing a key or reading a card resets the timer.

❖ Backlight: Allow to activate / deactivate keypad backlight.

ARC options

ECO MODE	Eco mode (Low Power) In this mode, light is less intense, and the scan cycles reduced, the consumption of the reader is reduced of about 25%.
☼	Subdued (LED) Reduce drastically the led intensity
	Disable UHF configuration Deactivate the UHF chip. For more details about UHF configuration, refer to *VIII. 10* - UHF config
🔇	Disable all sounds emitted by the reader

SCB - Step 7



SCB wizard

Touchscreen options
Display settings configuration

Reader language: English

☐ **Display Bell button** ☐ **Rotate 180°**

Reader state: Default image and text

Texts
Color ■
Line 1: Present your
Line 2: credential
Line 3:

Images
(Only by serial link - No SCB)

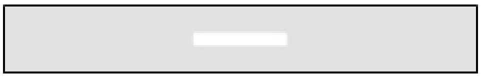
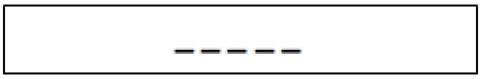
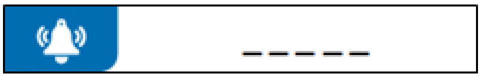
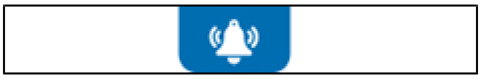
Display images ☑ ☐ ☐ ☑ ☐ ☐ ☐

Port: COM1
Baudrate: 38400

Loading your images into the reader

Display Bell button

Display or not the bell button on screen.
When you press the bell, it will be activated during 1s.

	Headband appearance
Keypad inactive and ring inactive	
Keypad active in Card AND Key mode and ring inactive	
Keypad active in Card AND Key mode and ring active	
Keypad inactive and ring active	

Warning

When the ring is active and if the reader has a screen then the tearing will not be effective on static relay (used for the ring).

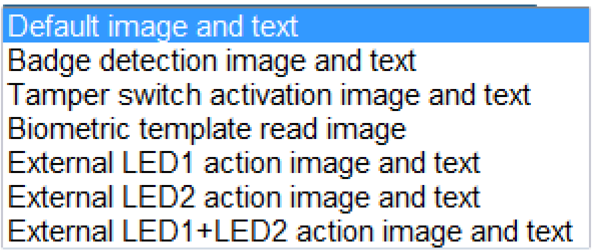
Rotate 180°: Used to rotate the image at 180°.

Reader Language

Choose the language used to display the text on the screen: English (default) or French.

Reader State

Select the state to change, either from the drop-down menu, or by clicking on the corresponding icon.

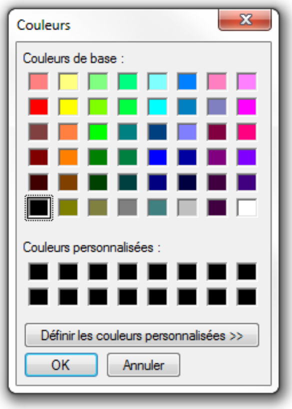


Default image and text
Badge detection image and text
Tamper switch activation image and text
Biometric template read image
External LED1 action image and text
External LED2 action image and text
External LED1+LED2 action image and text

For each state, it's possible to change the image, the text and the text color.
Note: for the biometric, the text is not modifiable because it takes into account the number of fingers defined in the configuration wizard.

Texts

To change the text color, click on the color button.


Couleurs
Couleurs de base :
Couleurs personnalisées :
Définir les couleurs personnalisées >>
OK
Annuler

(the language of this windows depends on your Windows language)

The color applies to the three lines of text.

Image

Load an image file in SECard and adjust with the three button:

Load an image file for the selected state.

Delete the image file to the selected state.

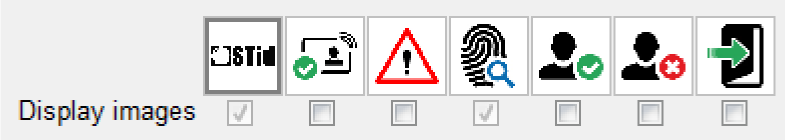
Reduces the image on the screen.

Note: The classic image formats are supported (bmp, png, jpeg, ...). By against the screen reader does not support transparency, the background color is white.

Loading image into the reader

After loading the images into SECard for the seven states, they must be loaded into the reader.

The check boxes allow you to select the states will be activated by the SCB and validate the image on the screen. “Default” and “biometric” states are automatically activate.

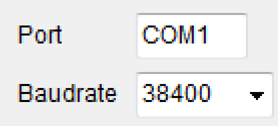


Display images ☑ ☐ ☐ ☑ ☐ ☐ ☐

Warning

Loading images into the reader is possible only through the reader serial communication, not with the SCB.

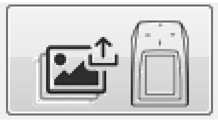
1 - Connect the screen touch reader to your computer with the reader serial link and set the communication:



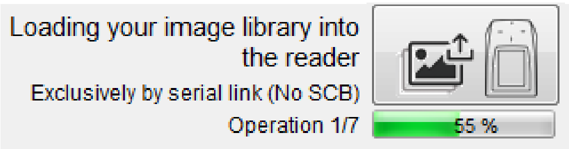
Port COM1

Baudrate 38400

2 - Power on the reader and click on while the **LED blinks orange for serial readers** or at any time for TTL readers.



3 - The loading progress is indicated by the progress bar:
The operation is repeated seven times, once for each image.

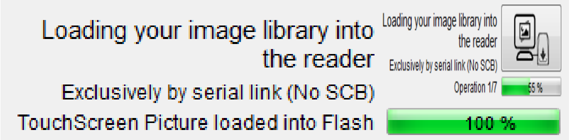


Loading your image library into the reader

Exclusively by serial link (No SCB)

Operation 1/7 55 %

At the end you must have the message below:



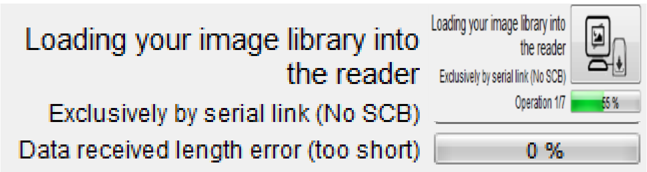
Loading your image library into the reader

Exclusively by serial link (No SCB)

TouchScreen Picture loaded into Flash 100 %

Note:

- Each image has an index, a new load erases the image loaded before.
- If you get the message below, your communication settings are not correct, return to the step 1.

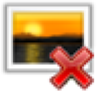


Loading your image library into the reader

Exclusively by serial link (No SCB)

Data received length error (too short) 0 %

- If the image has been loaded into SECard was moved, the preview will not be available and the next image will be displayed in the IHM SECard.



- The display time of the state “Badge detection image and text” is defined in step 5 “LED and Buzzer” with “Blinks times” if the blink is activated or “LED duration”.

Default Image and text

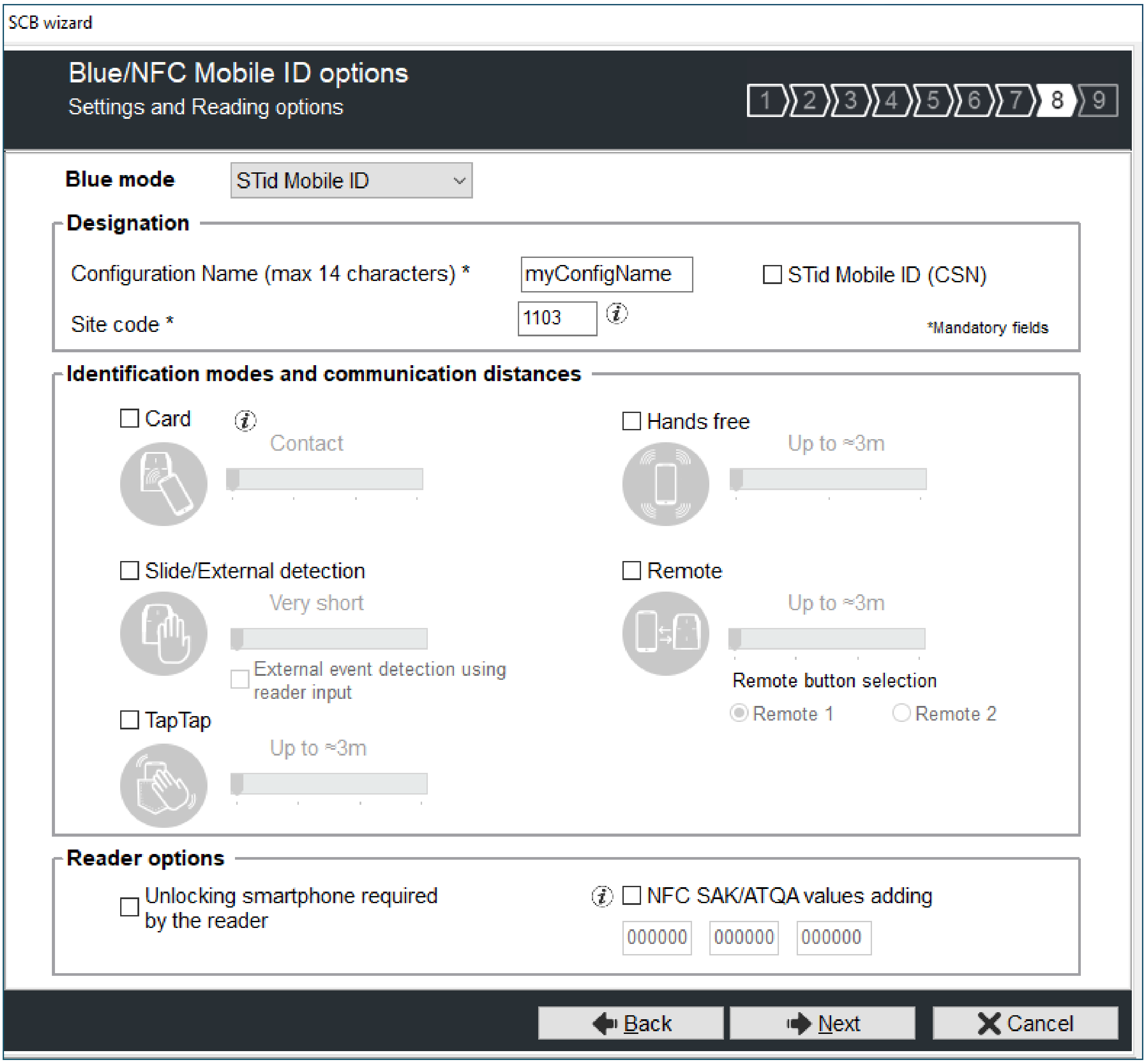
	Visuel
Default Image and text	 Present your credential
Badge detection image and text*	 Detected card
Tamper switch activation image and text	 Alert Attempted tampering
Biometric template read image (none editable text)	 Place your finger on the sensor
External LED1 action image and text	 Authorized access
External LED2 action image and text	 Access denied
External LED1 + LED2 action image and text	 Free access

Important note

A configuration card created with a version of SECard <V2.1 (SCB < V8) for a standard reader will automatically activate the screen if it is presented to a reader ARC screen with only the image “default image and text” and images related to the states LED1 and LED2.

A configuration card created with a version of SECard <V2.1 (SCB < V8) for a standard keypad reader will automatically activate the screen in keypad mode if it is presented to a reader ARC screen with only the image “default image and text” and images related to the states LED1 and LED2. The default image is the keypad.

SCB - Step 8



SCB wizard

Blue/NFC Mobile ID options

Settings and Reading options

Blue mode: STid Mobile ID

Designation

Configuration Name (max 14 characters) *: myConfigName

□ STid Mobile ID (CSN)

Site code *: 1103

*Mandatory fields

Identification modes and communication distances

□ Card — Contact

□ Hands free — Up to ≈3m

□ Slide/External detection — Very short

□ External event detection using reader input

□ Remote — Up to ≈3m

Remote button selection: ● Remote 1 ○ Remote 2

□ TapTap — Up to ≈3m

Reader options

□ Unlocking smartphone required by the reader

□ NFC SAK/ATQA values adding: 000000 000000 000000

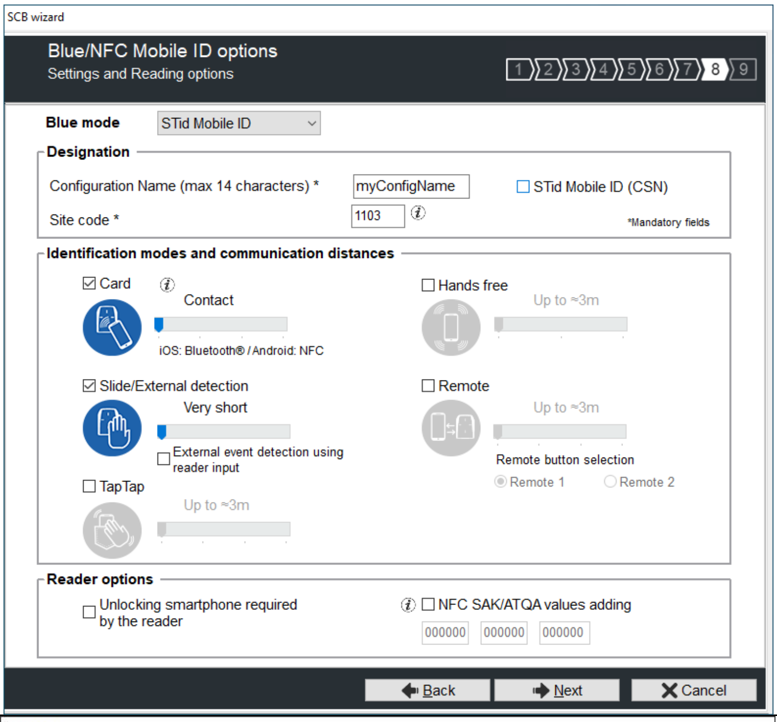
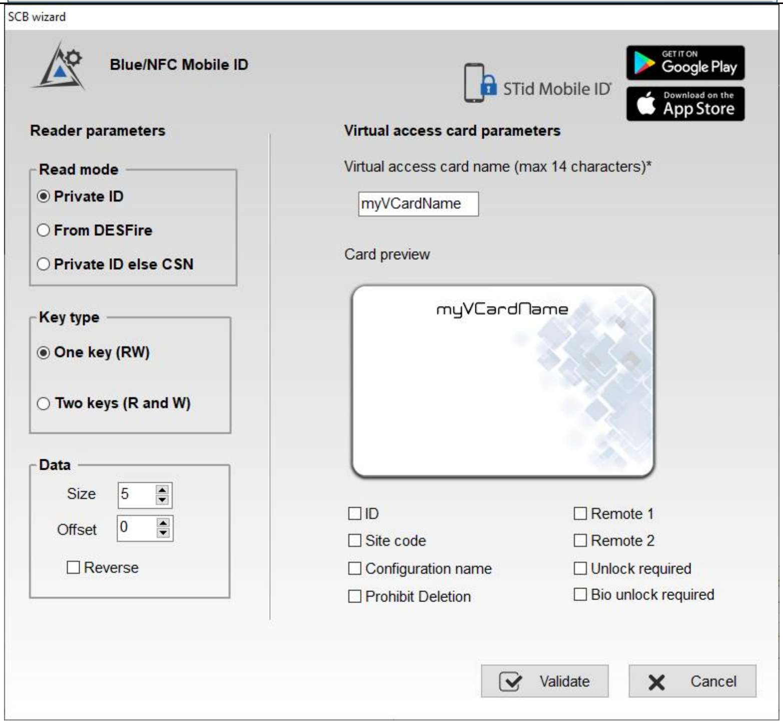
Four configurations are available for Bluetooth® authentication:

Configuration Name / Characteristics	ConfMobileID	ConfMobileID	SameAsDESFire	Custom
VirtualAccesCardName	STid Mobile ID	STid Mobile ID+	STid Secure ID	Custom
Identification modes	Only Card	All available except Remote	Only Card up to 0.5m	All available
Requires smartphone unlocking to authenticate	Select by customer	Select by customer	No	Custom
Site code	51BC	51BC	CRC16 CCITT AID DESFire	Custom

Blue/NFC mode

Configure the reader to read STid Mobile ID® or Orange^{TM} PAckID or Open Mobile Protocol.

This choice impacts the screen wizard Step 8 and Blue/NFC Mobile ID Settings:

	STid Mobile ID®
Wizard Step 8	
Wizard Blue/NFC Mobile ID settings	

SCB wizard

Blue/NFC Mobile ID options
Settings and Reading options

Blue mode: STid Mobile ID

Designation

Configuration Name (max 14 characters) *: myConfigName

□ STid Mobile ID (CSN)

Site code *: 1103

*Mandatory fields

Identification modes and communication distances

☑ Card — Contact — iOS: Bluetooth® / Android: NFC

□ Hands free — Up to ≈3m

☑ Slide/External detection — Very short

□ External event detection using reader input

□ Remote — Up to ≈3m

Remote button selection: ● Remote 1 ○ Remote 2

□ TapTap — Up to ≈3m

Reader options

□ Unlocking smartphone required by the reader

□ NFC SAK/ATQA values adding: 000000 000000 000000

SCB wizard

Blue/NFC Mobile ID

Reader parameters

Read mode
● Private ID
○ From DESFire
○ Private ID else CSN

Key type
● One key (RW)
○ Two keys (R and W)

Data
Size: 5
Offset: 0
□ Reverse

Virtual access card parameters

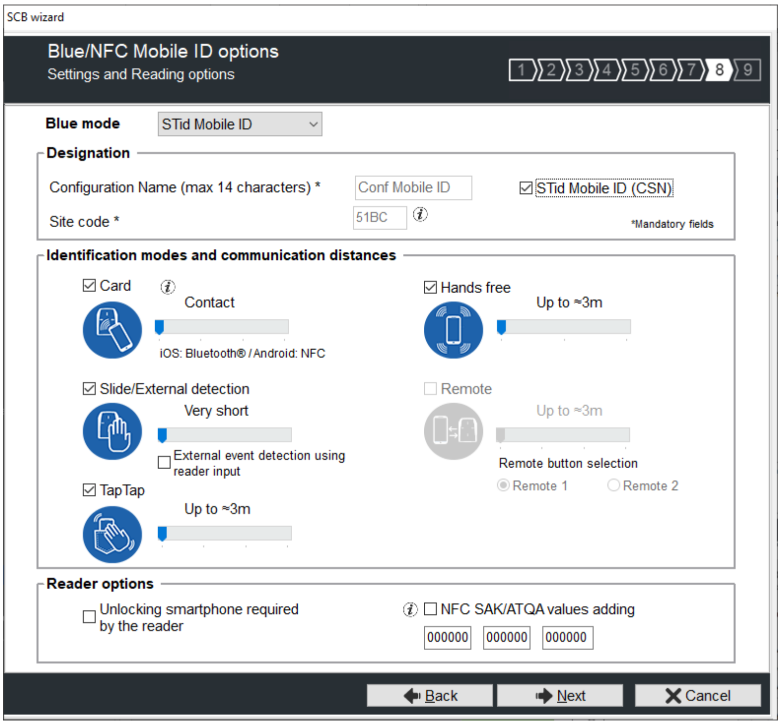
Virtual access card name (max 14 characters)*: myVCardName

Card preview

□ ID
□ Site code
□ Configuration name
□ Prohibit Deletion
□ Remote 1
□ Remote 2
□ Unlock required
□ Bio unlock required

STid Mobile ID® (CSN)

Wizard Step 8



SCB wizard

Blue/NFC Mobile ID options
Settings and Reading options

Blue mode STid Mobile ID

Designation

Configuration Name (max 14 characters) * Conf Mobile ID ☑ STid Mobile ID (CSN)

Site code * 51BC

*Mandatory fields

Identification modes and communication distances

☑ Card — Contact — iOS: Bluetooth® / Android: NFC

☑ Hands free — Up to ≈3m

☑ Slide/External detection — Very short — ☐ External event detection using reader input

☐ Remote — Up to ≈3m — Remote button selection: ● Remote 1 ○ Remote 2

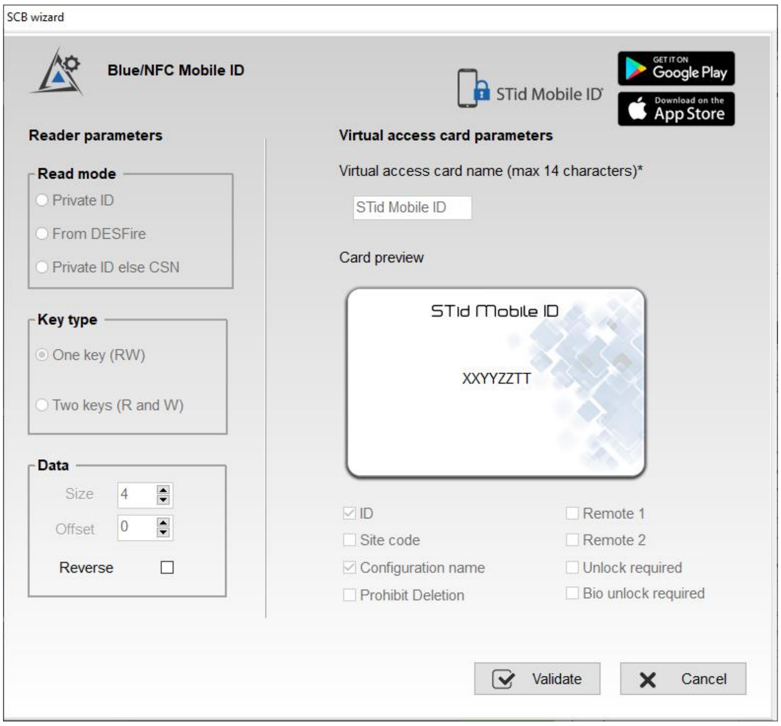
☑ TapTap — Up to ≈3m

Reader options

☐ Unlocking smartphone required by the reader

☐ NFC SAK/ATQA values adding: 000000 000000 000000

Wizard Blue/NFC Mobile ID settings



SCB wizard

Blue/NFC Mobile ID

Reader parameters

Read mode
○ Private ID
○ From DESFire
○ Private ID else CSN

Key type
● One key (RW)
○ Two keys (R and W)

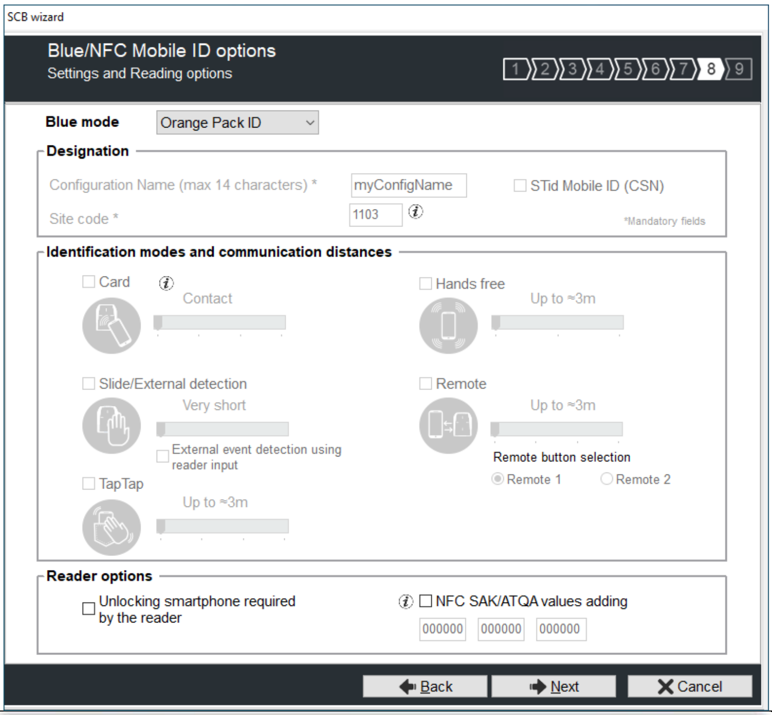
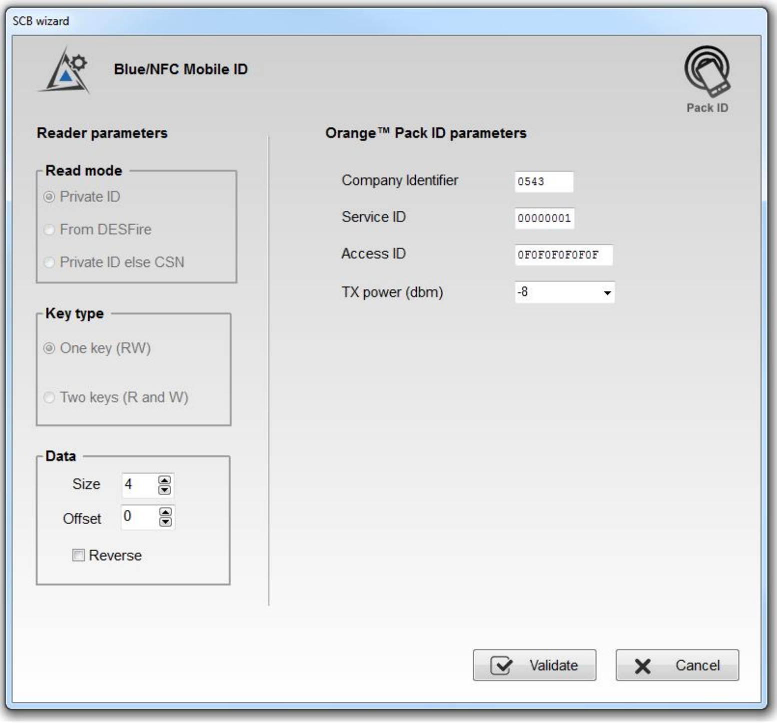
Data
Size 4
Offset 0
Reverse ☐

Virtual access card parameters

Virtual access card name (max 14 characters)* STid Mobile ID

Card preview

☑ ID ☐ Remote 1
☐ Site code ☐ Remote 2
☑ Configuration name ☐ Unlock required
☐ Prohibit Deletion ☐ Bio unlock required

	Orange^{TM} PAckID
Wizard Step 8	
Wizard Blue/NFC Mobile ID settings	

SCB wizard

Blue/NFC Mobile ID options

Settings and Reading options

1 2 3 4 5 6 7 8 9

Blue mode: Orange Pack ID

Designation

Configuration Name (max 14 characters) *: myConfigName

□ STid Mobile ID (CSN)

Site code *: 1103

*Mandatory fields

Identification modes and communication distances

□ Card — Contact

□ Hands free — Up to ≈3m

□ Slide/External detection — Very short

□ External event detection using reader input

□ Remote — Up to ≈3m

Remote button selection: ● Remote 1 ○ Remote 2

□ TapTap — Up to ≈3m

Reader options

□ Unlocking smartphone required by the reader

□ NFC SAK/ATQA values adding: 000000 000000 000000

SCB wizard

Blue/NFC Mobile ID

Pack ID

Reader parameters

Read mode: ● Private ID ○ From DESFire ○ Private ID else CSN

Key type: ● One key (RW) ○ Two keys (R and W)

Data: Size 4, Offset 0, □ Reverse

Orange™ Pack ID parameters

Company Identifier: 0543

Service ID: 00000001

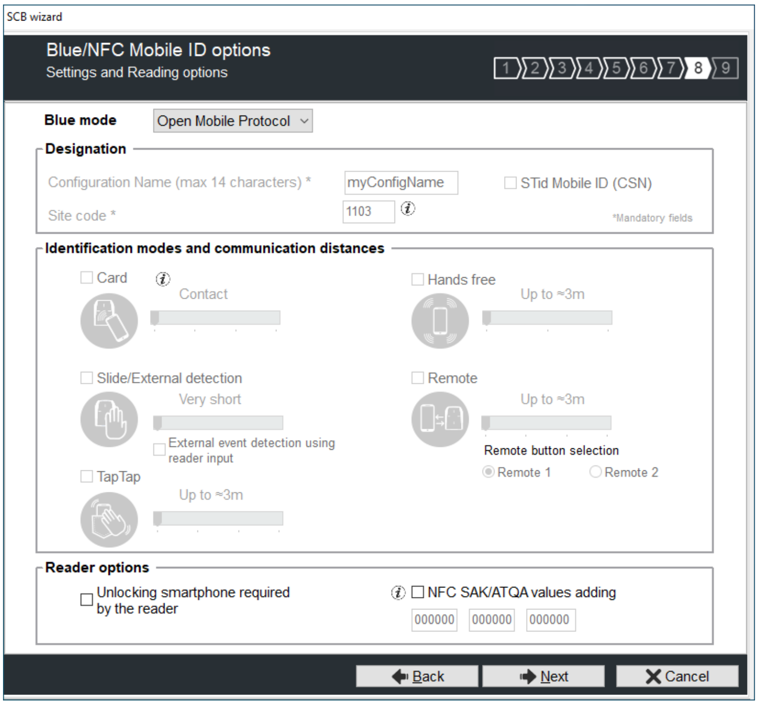
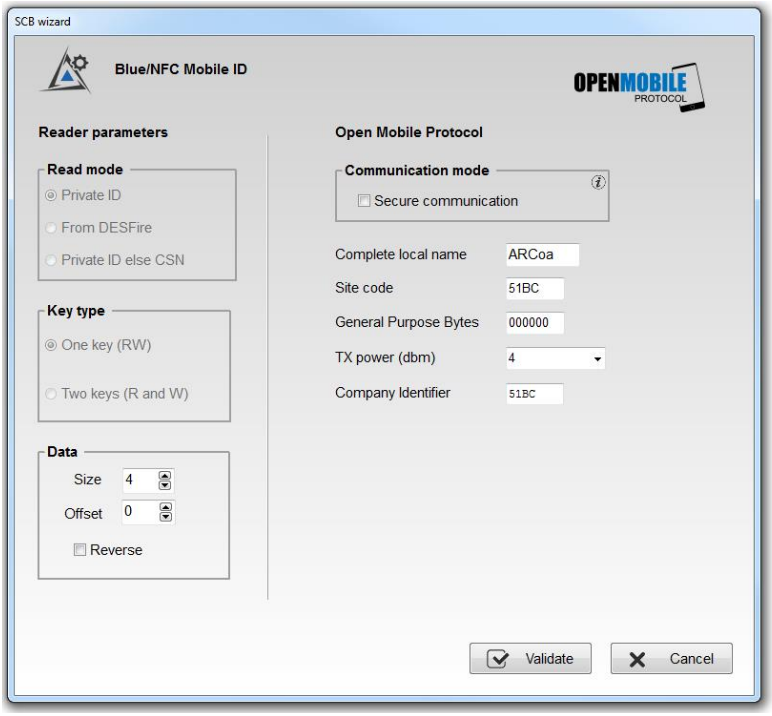
Access ID: 0F0F0F0F0F0F

TX power (dbm): -8

Blue Mode Orange Pack ID

The detection mode for this application is fixed to Contact.

Warning: To configure the reader for this application, you must create a physical SCB and not a virtual SCB.

	Open Mobile Protocol
Wizard Step 8	
Wizard Blue/NFC Mobile ID settings	

SCB wizard

Blue/NFC Mobile ID options
Settings and Reading options

Blue mode: Open Mobile Protocol

Designation

Configuration Name (max 14 characters) *: myConfigName

☐ STid Mobile ID (CSN)

Site code *: 1103

*Mandatory fields

Identification modes and communication distances

☐ Card – Contact

☐ Hands free – Up to ~3m

☐ Slide/External detection – Very short

☐ External event detection using reader input

☐ Remote – Up to ~3m

Remote button selection: ● Remote 1 ○ Remote 2

☐ TapTap – Up to ~3m

Reader options

☐ Unlocking smartphone required by the reader

☐ NFC SAK/ATQA values adding: 000000 000000 000000

SCB wizard

Blue/NFC Mobile ID

Reader parameters

Read mode: ● Private ID ○ From DESFire ○ Private ID else CSN

Key type: ● One key (RW) ○ Two keys (R and W)

Data: Size 4, Offset 0, ☐ Reverse

Open Mobile Protocol

Communication mode: ☐ Secure communication

Complete local name: ARCoa

Site code: 51BC

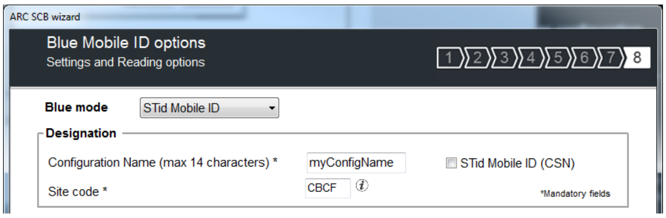
General Purpose Bytes: 000000

TX power (dbm): 4

Company Identifier: 51BC

Blue/NFC Mobile ID and NFC-HCE compatibility

If “STid Mobile ID“ or “Open Mobile Protocol“ is activated, then it is not possible to activate “NFC-HCE“, the parameters and keys are greyed. The NFC Mobile ID is automatically activated.



ARC SCB wizard

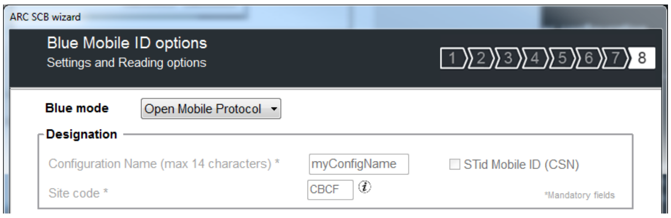
Blue Mobile ID options
Settings and Reading options

1 2 3 4 5 6 7 8

Blue mode: STid Mobile ID

Designation
Configuration Name (max 14 characters) *: myConfigName
□ STid Mobile ID (CSN)
Site code *: CBCF
*Mandatory fields

or



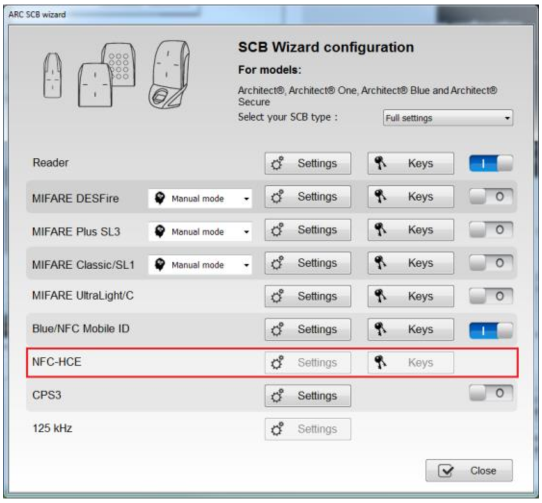
ARC SCB wizard

Blue Mobile ID options
Settings and Reading options

1 2 3 4 5 6 7 8

Blue mode: Open Mobile Protocol

Designation
Configuration Name (max 14 characters) *: myConfigName
□ STid Mobile ID (CSN)
Site code *: CBCF
*Mandatory fields



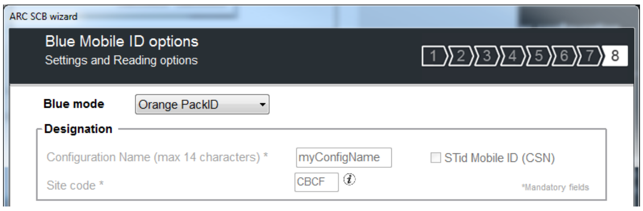
ARC SCB wizard

SCB Wizard configuration
For models:
Architect®, Architect® One, Architect® Blue and Architect® Secure
Select your SCB type : Full settings

Reader		Settings	Keys	I
MIFARE DESFire	Manual mode	Settings	Keys	O
MIFARE Plus SL3	Manual mode	Settings	Keys	O
MIFARE Classic/SL1	Manual mode	Settings	Keys	O
MIFARE UltraLight/C		Settings	Keys	O
Blue/NFC Mobile ID		Settings	Keys	I
NFC-HCE		Settings	Keys	
CPS3		Settings		O
125 kHz		Settings		

Close

If “Orange Pack ID“ is activated it is possible to activate “NFC-HCE“, the parameters and keys are not greyed.



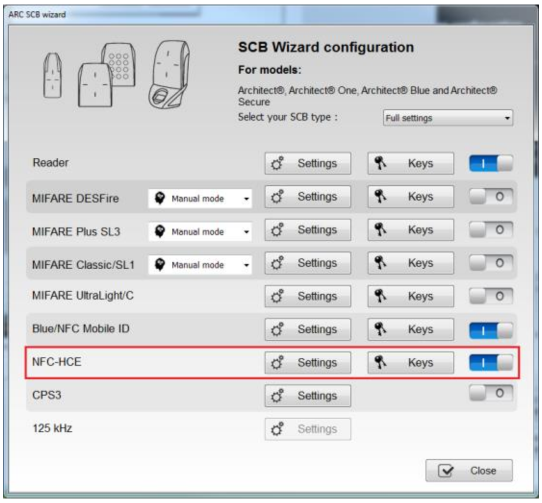
ARC SCB wizard

Blue Mobile ID options
Settings and Reading options

1 2 3 4 5 6 7 8

Blue mode: Orange PackID

Designation
Configuration Name (max 14 characters) *: myConfigName
□ STid Mobile ID (CSN)
Site code *: CBCF
*Mandatory fields



ARC SCB wizard

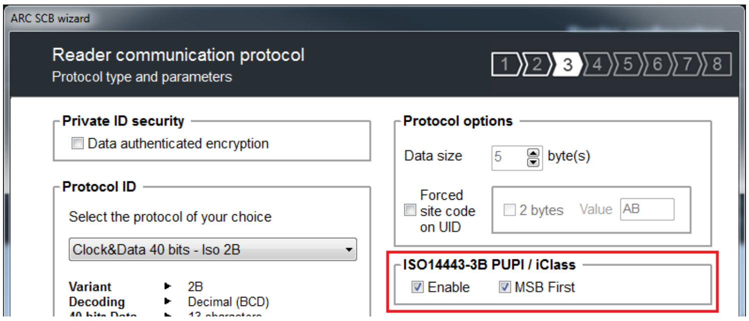
SCB Wizard configuration
For models:
Architect®, Architect® One, Architect® Blue and Architect® Secure
Select your SCB type : Full settings

Reader		Settings	Keys	I
MIFARE DESFire	Manual mode	Settings	Keys	O
MIFARE Plus SL3	Manual mode	Settings	Keys	O
MIFARE Classic/SL1	Manual mode	Settings	Keys	O
MIFARE UltraLight/C		Settings	Keys	O
Blue/NFC Mobile ID		Settings	Keys	I
NFC-HCE		Settings	Keys	I
CPS3		Settings		O
125 kHz		Settings		

Close

NFC Mobile ID and « ISO14443-3B PUPI / iClass » compatibility

“NFC Mobile ID” and “ISO14443-3B PUPI“ can be activated at the same time as “NFC Mobile ID“ is compliant with ISO14443-A.



ARC SCB wizard

Reader communication protocol
Protocol type and parameters

1 2 3 4 5 6 7 8

Private ID security
□ Data authenticated encryption

Protocol ID
Select the protocol of your choice
Clock&Data 40 bits - Iso 2B
Variant ▸ 2B
Decoding ▸ Decimal (BCD)
40 bits Data ▸ 13 characters

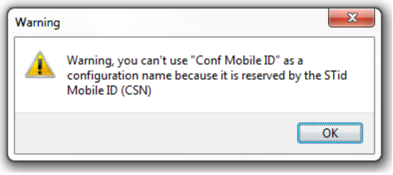
Protocol options
Data size: 5 byte(s)
□ Forced site code on UID: □ 2 bytes Value AB

ISO14443-3B PUPI / iClass
☑ Enable ☑ MSB First

Blue Mode STid Mobile ID

Designation

- Configuration Name: enter the name of the configuration Mobile ID Secure Plus: 14 characters max.
  Note: configuration name “Conf Mobile ID” is reserved to STid Mobile ID.



Warning

Warning, you can't use "Conf Mobile ID" as a configuration name because it is reserved by the STid Mobile ID (CSN)

- Site Code: 2-bytes data used for the site code of the configuration.
  Note: site code 51BC is reserved for STid Mobile ID®.

- STid Mobile ID (CSN): configure the Blue reader to read only a CSN on the smartphone.

Identification modes and communication distances

For each identification mode the communication distance is adjustable.

❖ **Card:**

By placing the smartphone in front of the reader.

- Contact: smartphone must be in contact with the reader.
- Up to 0.2m: smartphone must be in an area of 0.2m around the reader
- Up to 0.3m: smartphone must be in an area of 0.3m around the reader.
- Up to 0.5m: smartphone must be in an area of 0.5m around the reader.

❖ **Slide/External detection:**

Slide: By placing your hand close to the reader without taking out your smartphone.

External detection: Works by changing the potential applied to the LED2 input (see details below).

The distance between the smartphone and the reader can be:

- Very short
- Short
- Medium
- Long
- Very long

Not available for ARC1S neither ARCS keypad in Card or Key mode.

❖ **Tap Tap:**

By tapping your smartphone twice in your pocket for near or remote opening.
The communication distance can be:

- Up to 3m
- Up to 5m
- Up to 10m
- Up to 15m.

❖ **Hands free:**

By simply passing in front of the reader.
Communication distance around the reader:

- Up to 3m
- Up to 5m
- Up to 10m

❖ **Remote:**

By controlling your access points remotely.
Communication distance around the reader:

- Up to 3m
- Up to 10m
- Up to 15m
- Up to 20m

- **Remote button selection**

If the identification mode "Remote" has been activated, it allows to associate the current configuration to the Remote button 1 or Remote button 2.

Notes:

The notion of distance in Bluetooth® corresponds to an area around the reader, not just in the front.
Reading distances depend on the environment, on the position smartphone // reader ...

It is recommended to do on-site testing to evaluate the settings.

Warning

When Architect® Blue readers are installed close to each other, detection distances must be defined to accommodate the distance between the readers to avoid cross readings.

- **External event detection using reader input:**

Hand (slide mode) information is given by capacitive sensor or input LED2 level on ARCS reader.

If enabled: information is given by LED2 level.

- LED2 no connected or connected to high level = Hand not present
- LED2 connected to the GND = Hand present.

For example: connect a detection system to the LED2. When people are detected, the smartphone reading is activated.

- **Unlocking smartphone required by the reader: security option**

- If checked: the smartphone must be unlocked (with PIN code or other unlocking option depending on the smartphone) to authenticate with the reader.
- If unchecked: unlocking the smartphone is not required to authenticate with the reader.

❖ NFC SAK/ATQA values adding

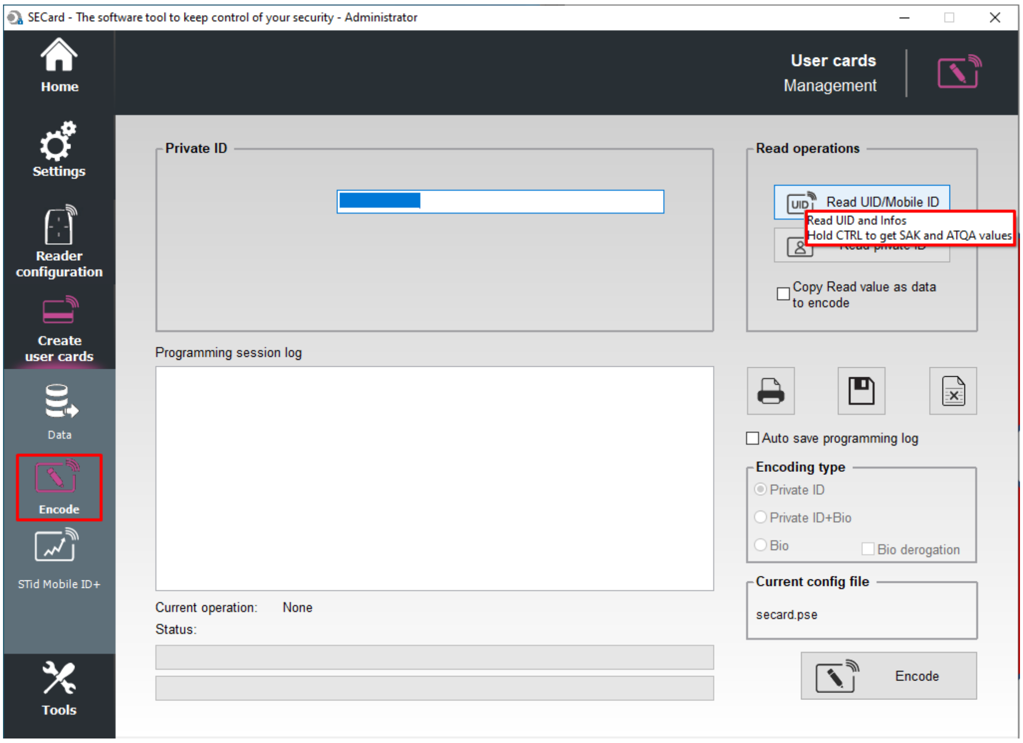
In RFID a chip is identified by two parameters ATQA and SAK. These parameters must be known to the readers for read the identifiers.

Smartphones in NFC mode meet this same rule. Some ATKA + SAK are already implemented in STid readers.

To ensure the compatibility of the readers with the reading of new smartphones in NFC mode, these fields make it possible to set up three values of ATQA and SAK**.**

How to know these values for your smartphone:

- ❖ Enabled the NFC on the smartphone
- ❖ Go to Create user cards



SECard - The software tool to keep control of your security - Administrator

Read UID and Infos
Hold CTRL to get SAK and ATQA values

□ Copy Read value as data to encode

□ Auto save programming log

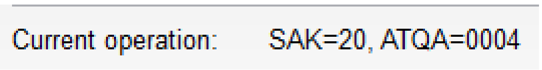
Encoding type: ● Private ID ○ Private ID+Bio ○ Bio □ Bio derogation

Current config file: secard.pse

Current operation: None

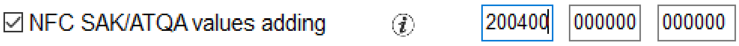
Status:

- ❖ Present the smartphone to SECard encoder and hold CTRL + click on Read UID button
- ❖ Result



Current operation: SAK=20, ATQA=0004

- ❖ Enter this value in the field:

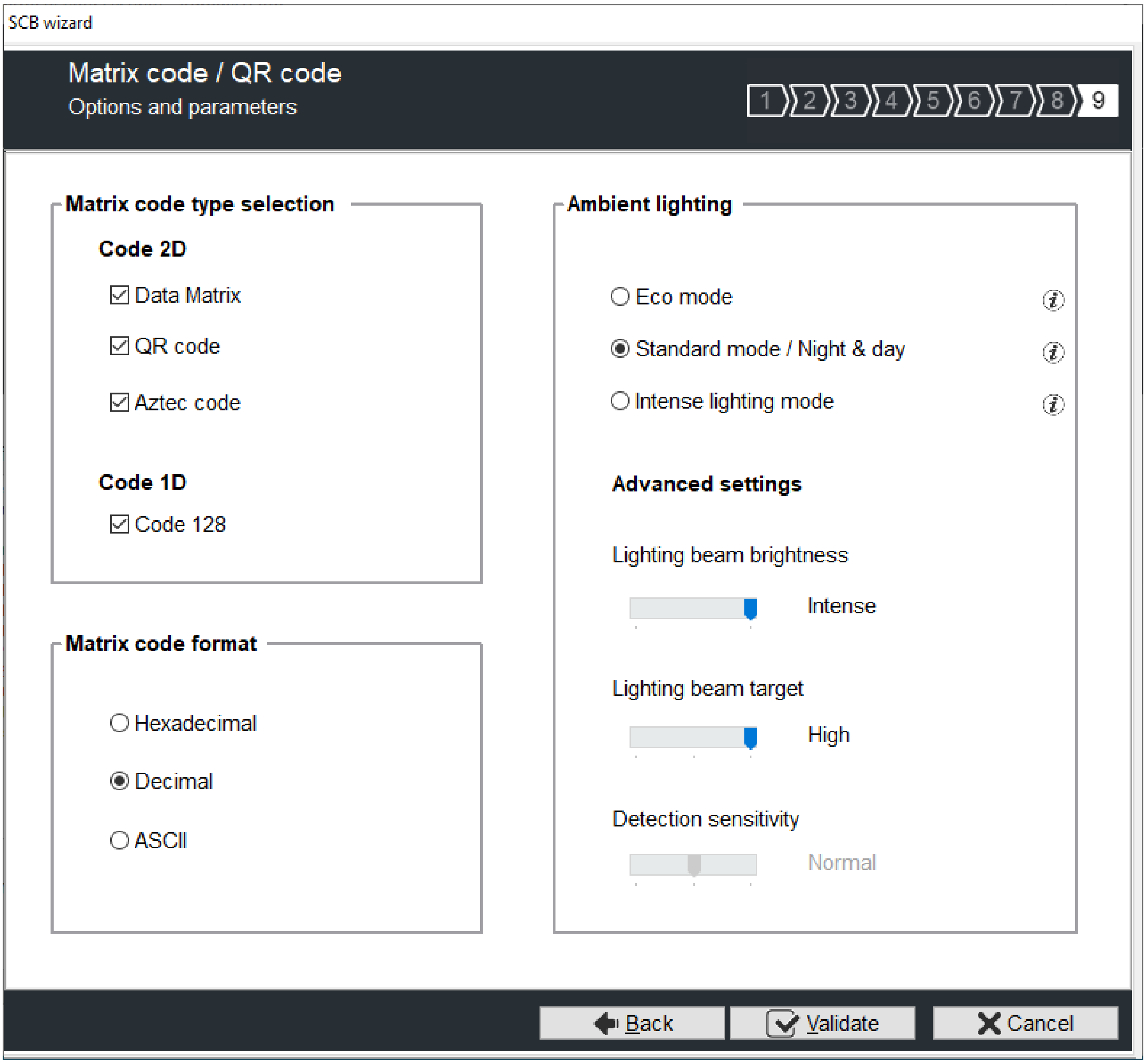


☑ NFC SAK/ATQA values adding 200400 000000 000000

Notes:

- The NFC-HCE option for “NFC Mobile ID” is not a SECard option. It has to be activated in STid Mobile ID app (activated by default).
This feature is only available for Android phones.
- “NFC Mobile ID” is not compatible with STid Settings app.

SCB - Step 9



SCB wizard

Matrix code / QR code

Options and parameters

1 2 3 4 5 6 7 8 9

Matrix code type selection

Code 2D

☑ Data Matrix

☑ QR code

☑ Aztec code

Code 1D

☑ Code 128

Matrix code format

○ Hexadecimal

● Decimal

○ ASCII

Ambient lighting

○ Eco mode

● Standard mode / Night & day

○ Intense lighting mode

Advanced settings

Lighting beam brightness: Intense

Lighting beam target: High

Detection sensitivity: Normal

Back | Validate | Cancel

❖ **MATRIX code type selection**
Select the code type to be read:

Data Matrix	QR Code	Aztec code	Code 128
Data Matrix			Barcode507072

❖ MATRIX code format

Select the format of the matrix code to be read.

The maximum size of the code depends on the format chosen:

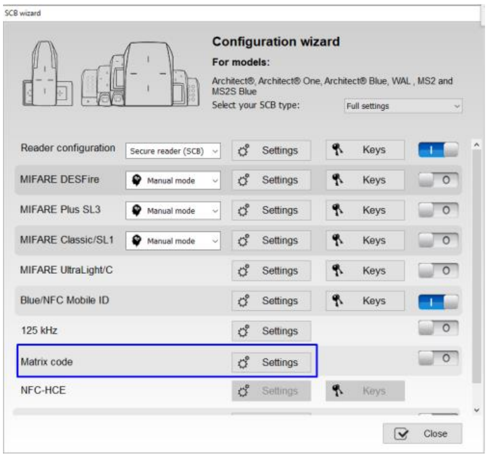
Format	Size in characters	Size in bytes	
Hexadecimal	96	48	
Decimal	25	10	De 0 à 1208925819614629174706175 0x0 à 0xFFFFFFFFFFFFFFFFFFFF
ASCII	192	48	

Note: only the characters list below are authorized in ASCII:

Value	ASCII character	Value	ASCII character	Value	ASCII character
30	0	38	8	61	a
31	1	39	9	62	b
32	2	41	A	63	c
33	3	42	B	64	d
34	4	43	C	65	e
35	5	44	D	66	f
36	6	45	E		
37	7	46	F		

Note: if the code to read is not in the code type set in the wizard, the code is not read. For example, if decimal type is set and the code to read contain letter the code will not read.

To read a specific part of the data code go to the settings Matrix code:



SCB wizard

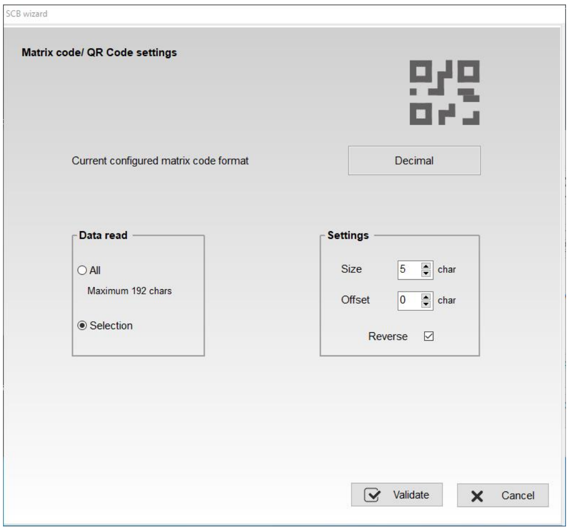
Configuration wizard

For models:

Architect®, Architect® One, Architect® Blue, WAL , MS2 and MS2S Blue

Select your SCB type: Full settings

Reader configuration	Secure reader (SCB)	Settings	Keys	I
MIFARE DESFire	Manual mode	Settings	Keys	O
MIFARE Plus SL3	Manual mode	Settings	Keys	O
MIFARE Classic/SL1	Manual mode	Settings	Keys	O
MIFARE UltraLight/C		Settings	Keys	O
Blue/NFC Mobile ID		Settings	Keys	I
125 kHz		Settings		O
Matrix code		Settings		O
NFC-HCE		Settings	Keys	



SCB wizard

Matrix code/ QR Code settings

Current configured matrix code format: Decimal

Data read
○ All
Maximum 192 chars
● Selection

Settings
Size: 5 char
Offset: 0 char
Reverse ☑

❖ Ambient lighting

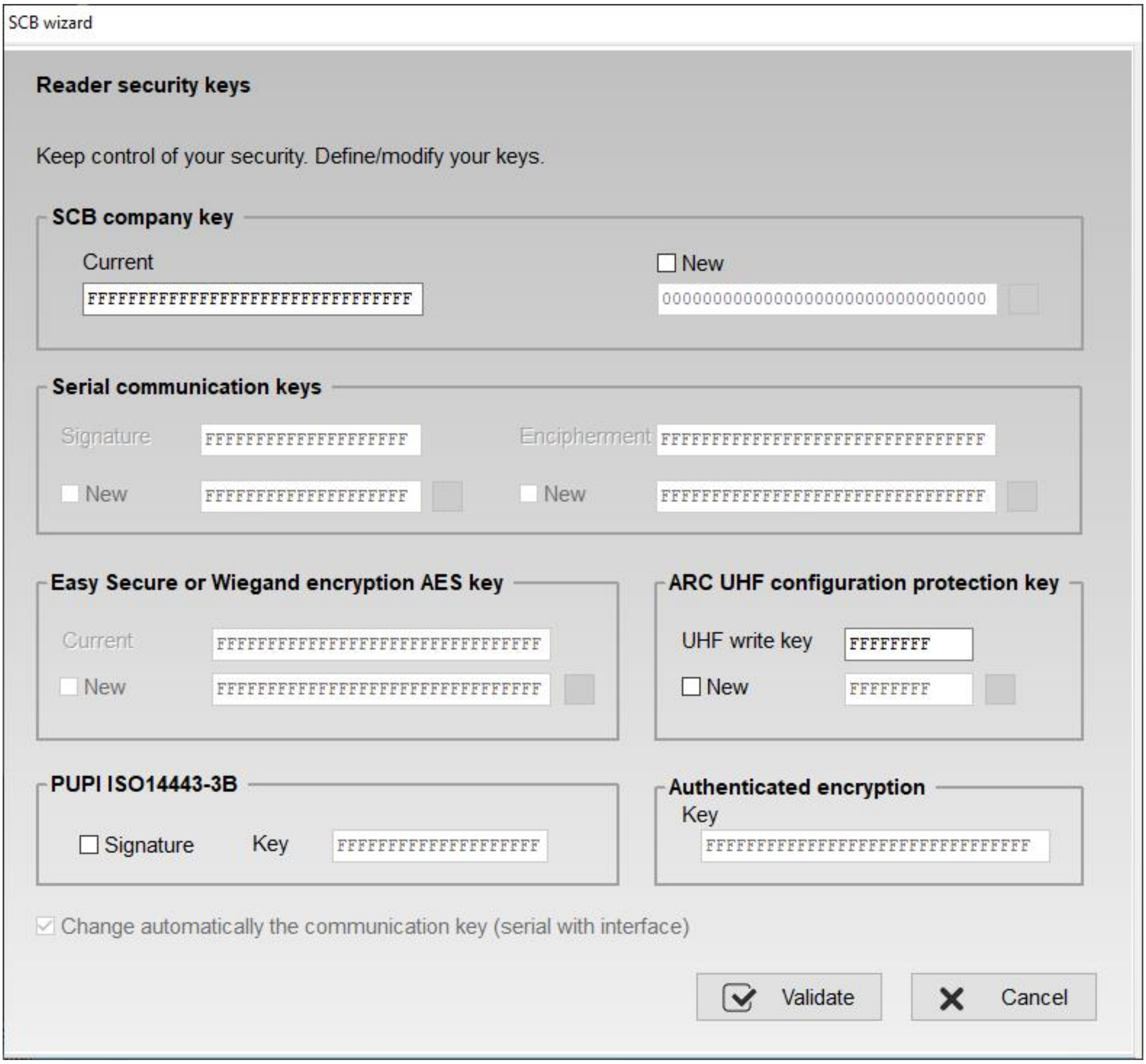
- Eco mode
- Standard mode / Night day
- Intense lighting mode

❖ Advanced settings

Lighting beam brightness	Control the power of the spot which illuminates the code	Normal		Intense
Lighting beam target	Control the power of the laser which targets the code	Low	Normal	High
Detection sensitivity	Control the sensitivity of the trigger to start scanning the code	Low	Normal	Max

Click the button ☑ Validate **to complete the reader configuration settings.**

III. 2 - SCB Wizard: reader security keys



SCB wizard

Reader security keys

Keep control of your security. Define/modify your keys.

SCB company key

Current: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

□ New: 00000000000000000000000000000000

Serial communication keys

Signature: FFFFFFFFFFFFFFFFFFFF

□ New: FFFFFFFFFFFFFFFFFFFF

Encipherment: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

□ New: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

Easy Secure or Wiegand encryption AES key

Current: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

□ New: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

ARC UHF configuration protection key

UHF write key: FFFFFFFF

□ New: FFFFFFFF

PUPI ISO14443-3B

□ Signature Key: FFFFFFFFFFFFFFFFFFFF

Authenticated encryption

Key: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

☑ Change automatically the communication key (serial with interface)

SCB company key

Refer to T15 – Recommendations for the Configuration Cards management

Configurable readers with « *SCB* » card are initially supplied with default configuration (factory key 0XFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF).
These can be configured by a "SCB" with 0xFF…FF in current key to a new company key.
It can be entered manually or automatically by pressing CTRL + R or by right click "Fill with a random value."

After the initial configuration and in order to reconfigure the reader, it will be necessary to present to the reader "SCB" with a company key similar to that recorded by the reader.

Warning

This key is important and should definitely be known by the administrator. It protects the data from the "SCB" and allows changes to the configuration of readers.

If you lose this key, the reader cannot be reconfigured for another "SCB" and will must be reset at the factory.

Serial communication keys

Modify the signature and encipherment keys for serial secured reader (S32 / S35 / S33).
For more information about the protocol, refer to
T5.2 - Bidirectional communication mode

Easy Secure or Wiegand encryption AES key

Modify the enciphered AES key used to secure the connection between the reader R33 and INTR33E and the output reader S31.
Note:
The default value (factory settings) is «*FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF*».
It is mandatory to change the value of this key so that the output is encrypted.

PUPI ISO 14443-3B

Enter the key used for the signature calculation, called "secret key" (10 bytes).

ARC UHF configuration protection key

Change the write UHF configuration key, if enabled. It recommends to change it, to protect the configuration in the chip in against further write operations.

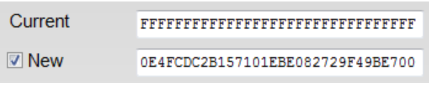
Authenticated encryption:

Enter the authenticated encryption key.

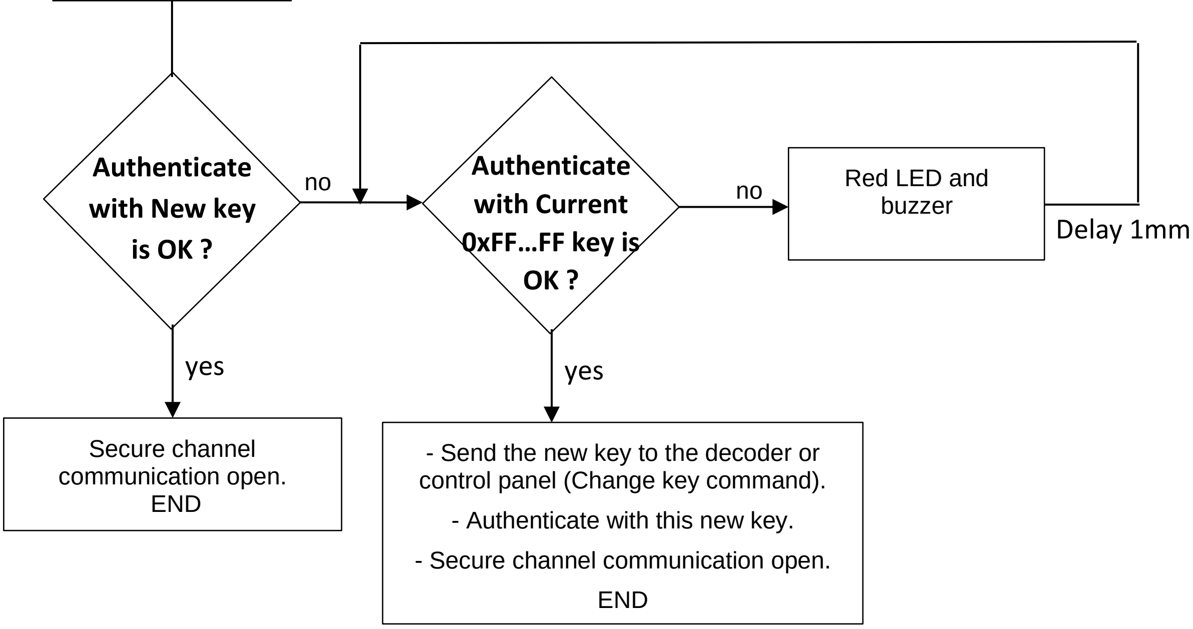
Change automatically the communication key: by default, select this option.

❖ **Activate**:
In SECard <v3.3.x this option is automatically activate. The authentication sequence at the power on of the reader are:

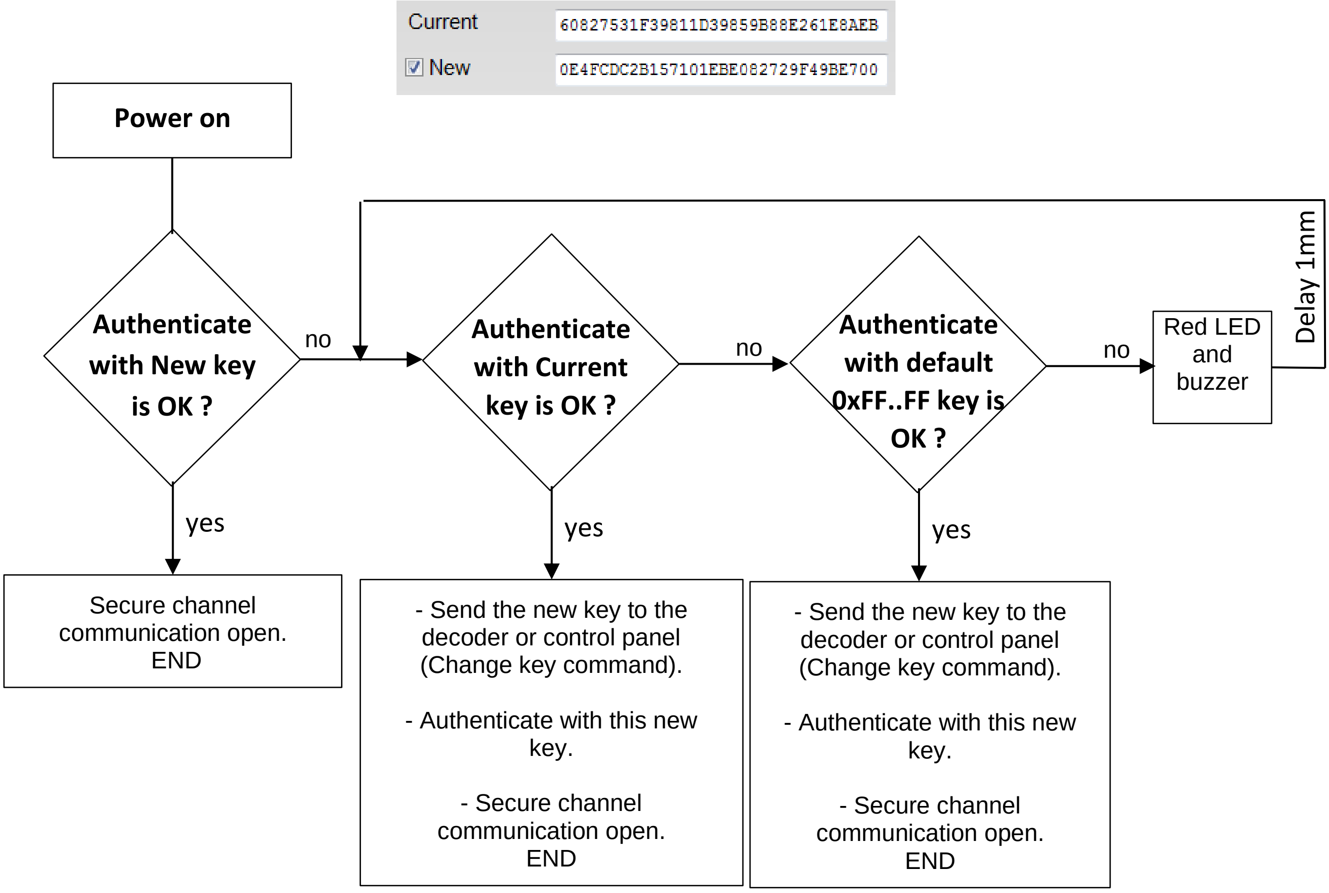
- 1st case: The current decoder or control panel key is the default key 0xFF…FF.



Current FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
☑ New 0E4FCDC2B157101EBE082729F49BE700


Power on
Authenticate with New key is OK ?
no
Authenticate with Current 0xFF…FF key is OK ?
no
Red LED and buzzer
Delay 1mm
yes
Secure channel communication open.
END
yes
- Send the new key to the decoder or control panel (Change key command).
- Authenticate with this new key.
- Secure channel communication open.
END

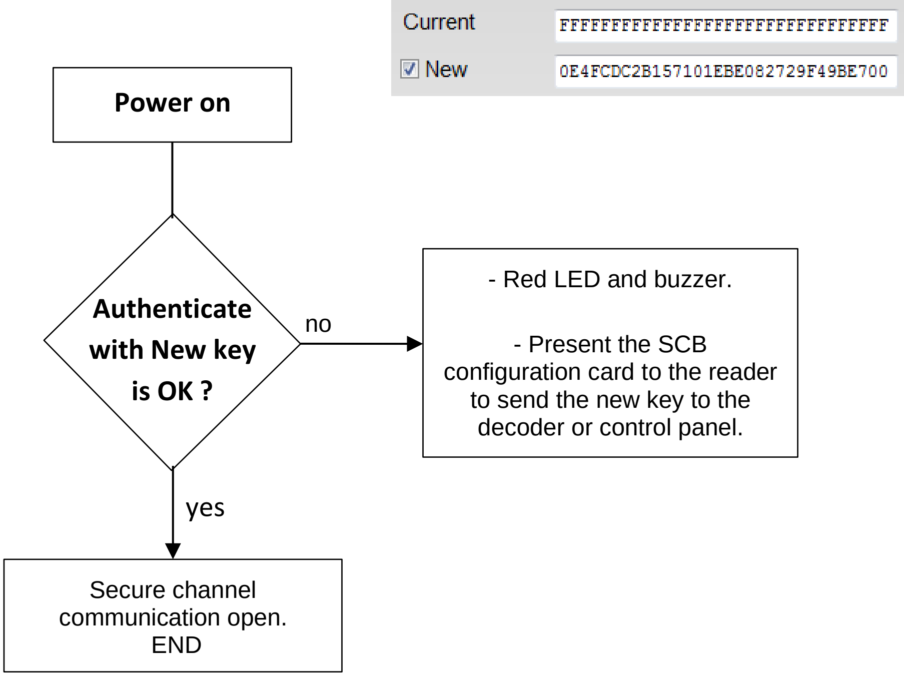
- 2nd case: The current decoder or control panel key is different to default key.



Current 60827531F39811D39859B88E261E8AEB
☑ New 0E4FCDC2B157101EBE082729F49BE700

Power on
Authenticate with New key is OK ?
no
yes
Secure channel communication open. END
Authenticate with Current key is OK ?
no
yes
- Send the new key to the decoder or control panel (Change key command).
- Authenticate with this new key.
- Secure channel communication open. END
Authenticate with default 0xFF..FF key is OK ?
no
yes
- Send the new key to the decoder or control panel (Change key command).
- Authenticate with this new key.
- Secure channel communication open. END
Red LED and buzzer
Delay 1mm

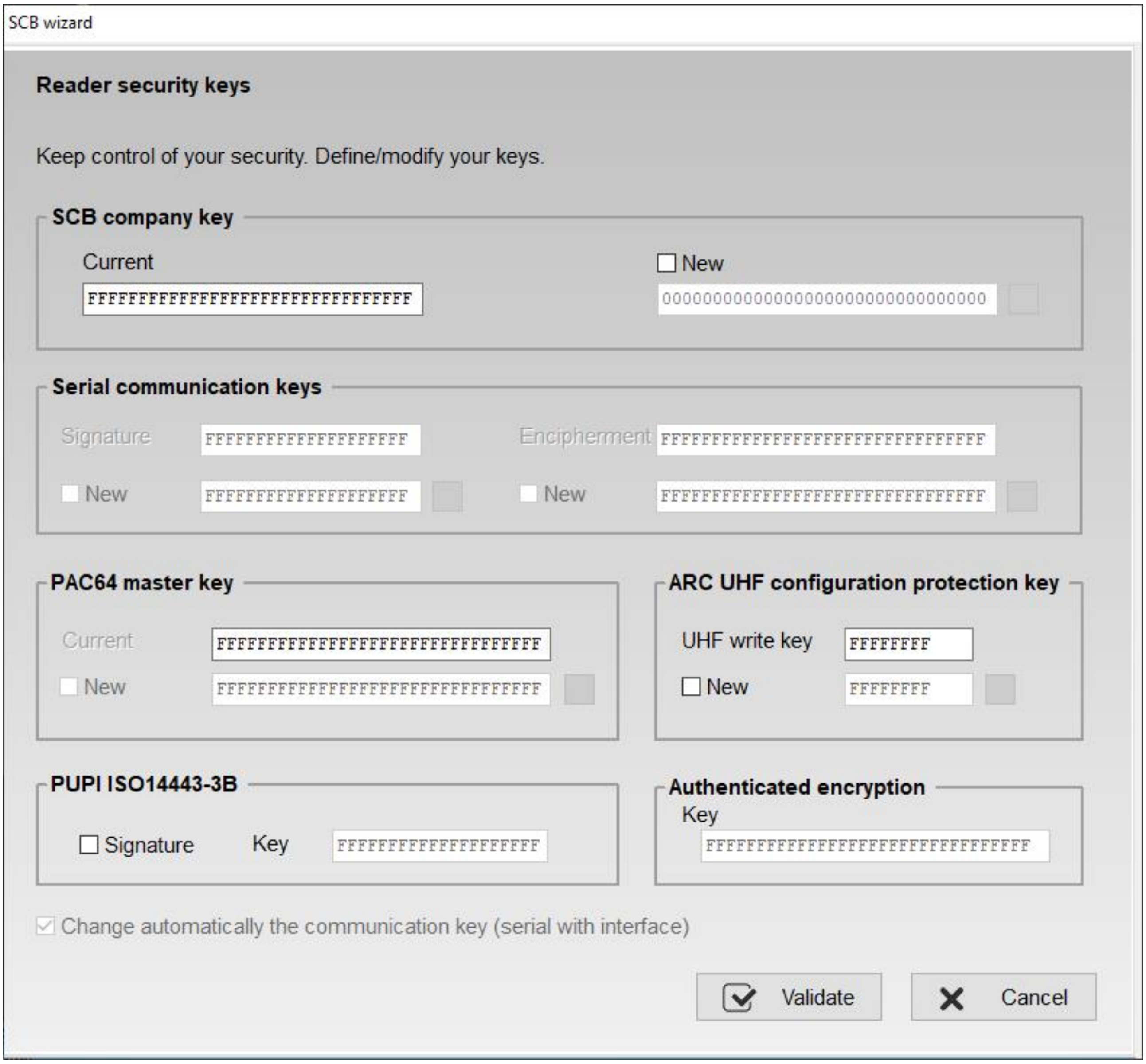
❖ **Not Activate**: the authenticate sequence is:



Current FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
☑ New 0E4FCDC2B157101EBE082729F49BE700

Power on
Authenticate with New key is OK ?
no
yes
- Red LED and buzzer.
- Present the SCB configuration card to the reader to send the new key to the decoder or control panel.
Secure channel communication open. END

If PAC 64 protocol selected at step 3



SCB wizard

Reader security keys

Keep control of your security. Define/modify your keys.

SCB company key

Current: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

□ New: 00000000000000000000000000000000

Serial communication keys

Signature: FFFFFFFFFFFFFFFFFFFF

□ New: FFFFFFFFFFFFFFFFFFFF

Encipherment: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

□ New: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

PAC64 master key

Current: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

□ New: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

ARC UHF configuration protection key

UHF write key: FFFFFFFF

□ New: FFFFFFFF

PUPI ISO14443-3B

□ Signature Key: FFFFFFFFFFFFFFFFFFFF

Authenticated encryption

Key: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

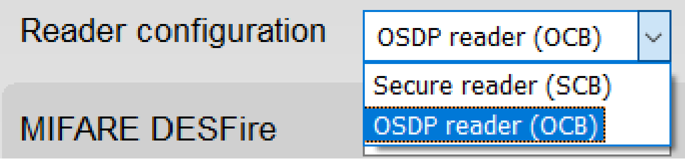
☑ Change automatically the communication key (serial with interface)

PAC64 master key: Enter the authenticated PAC64 encryption key.

Click the button ☑ Validate **to complete the key settings.**

III. 3 - OCB Wizard: Reader configuration settings

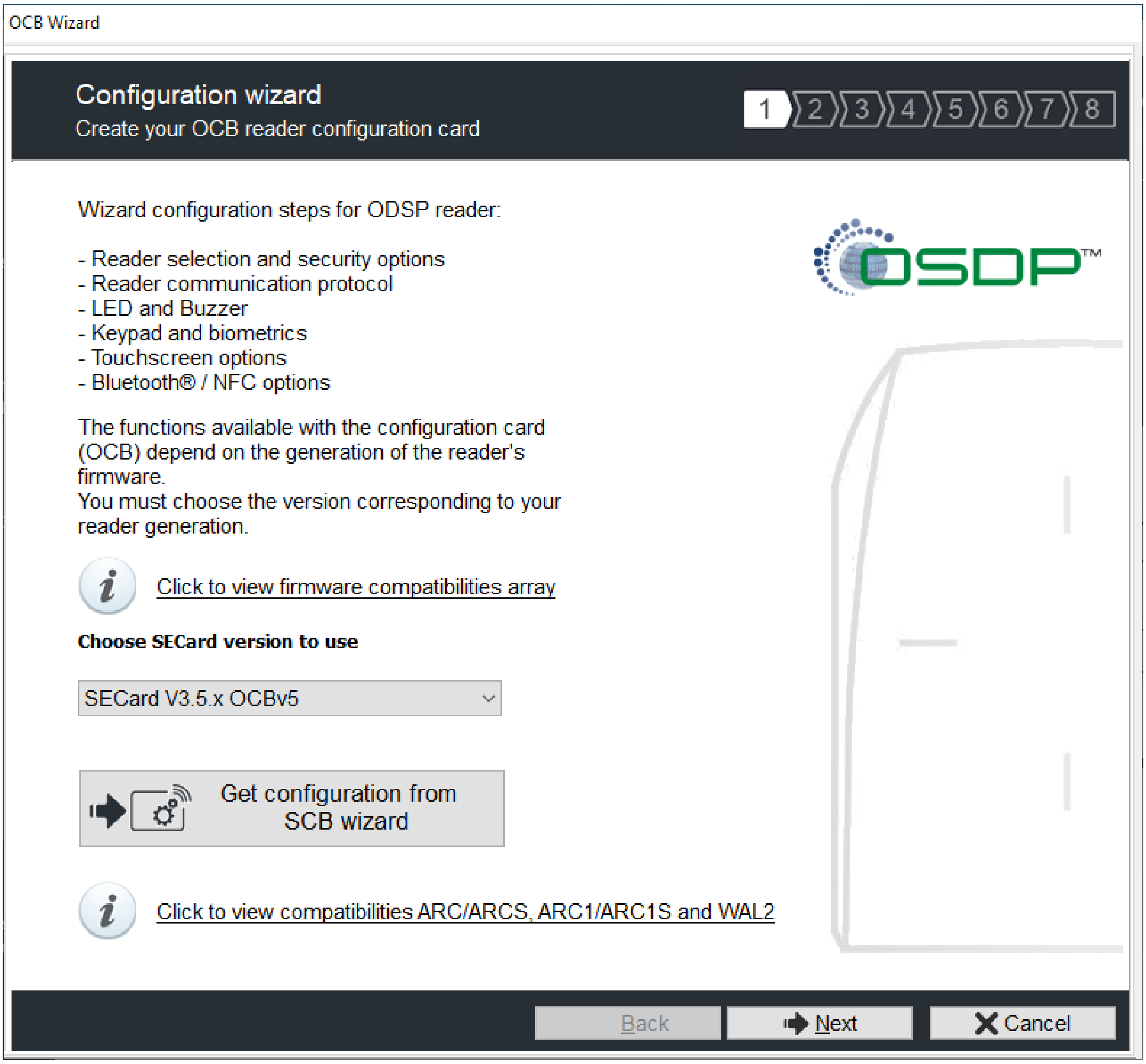
Reader configuration: In the list select OSDP reader OCB



Reader "settings": The reader configuration is done in five steps. To move from one stage to another, you must click on "Next".

Click here	Configuration wizard
Click here	Reader type and options
Clich here	Protocol and options
Click here	LED and Buzzer
Click here	Keypad and biometrics options
Click here	Touchscreen options
Click here	Blue/NFC Mobile ID options
Click here	Matrix code

OCB - Step 1



OCB Wizard

Configuration wizard
Create your OCB reader configuration card

Wizard configuration steps for ODSP reader:

- Reader selection and security options
- Reader communication protocol
- LED and Buzzer
- Keypad and biometrics
- Touchscreen options
- Bluetooth® / NFC options

The functions available with the configuration card (OCB) depend on the generation of the reader's firmware.
You must choose the version corresponding to your reader generation.

Click to view firmware compatibilities array

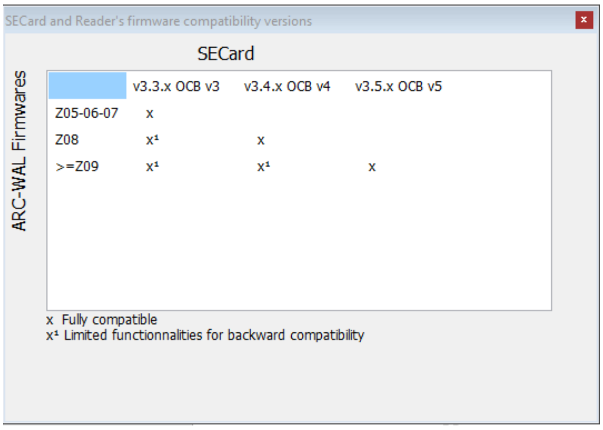
Choose SECard version to use

SECard V3.5.x OCBv5

Click to view compatibilities ARC/ARCS, ARC1/ARC1S and WAL2

The available functionalities and the compatibility of OCB depend on reader firmware generation.

To provide compatibility between SECard and firmware versions, SECard proposes the choice about SECard version to use if the option is validated in “Files” cf. *II. 3* - Files.



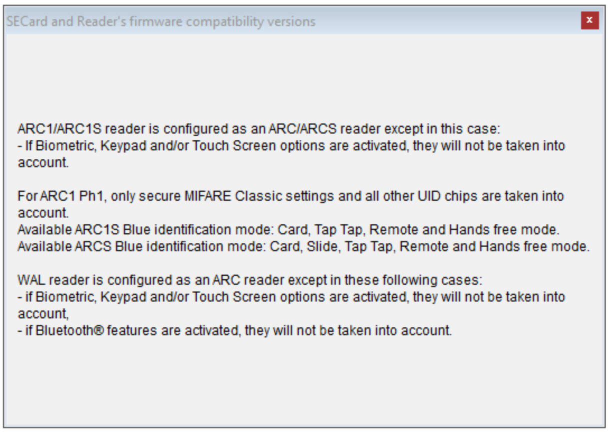
SECard and Reader's firmware compatibility versions

SECard

ARC-WAL Firmwares

	v3.3.x OCB v3	v3.4.x OCB v4	v3.5.x OCB v5
Z05-06-07	x		
Z08	x^1	x	
>=Z09	x^1	x^1	x

x Fully compatible
x^1 Limited functionnalities for backward compatibility

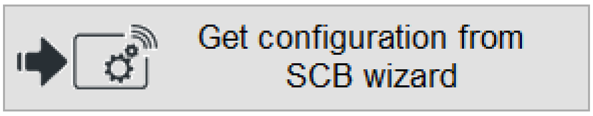


SECard and Reader's firmware compatibility versions

ARC1/ARC1S reader is configured as an ARC/ARCS reader except in this case:
- If Biometric, Keypad and/or Touch Screen options are activated, they will not be taken into account.

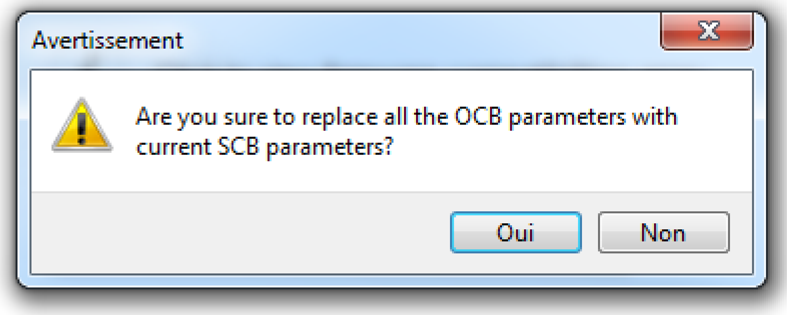
For ARC1 Ph1, only secure MIFARE Classic settings and all other UID chips are taken into account.
Available ARC1S Blue identification mode: Card, Tap Tap, Remote and Hands free mode.
Available ARCS Blue identification mode: Card, Slide, Tap Tap, Remote and Hands free mode.

WAL reader is configured as an ARC reader except in these following cases:
- if Biometric, Keypad and/or Touch Screen options are activated, they will not be taken into account,
- if Bluetooth® features are activated, they will not be taken into account.

- 

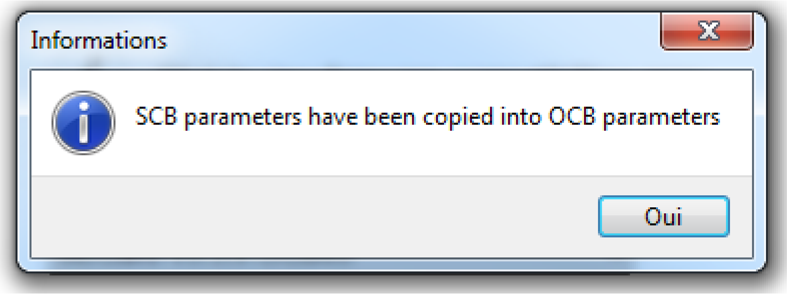
Get configuration from SCB wizard

When you click on Get configuration from SCB wizard all parameters defined in OCB wizard are set in wizard will be replace by the parameters presents on the SCB.



Avertissement

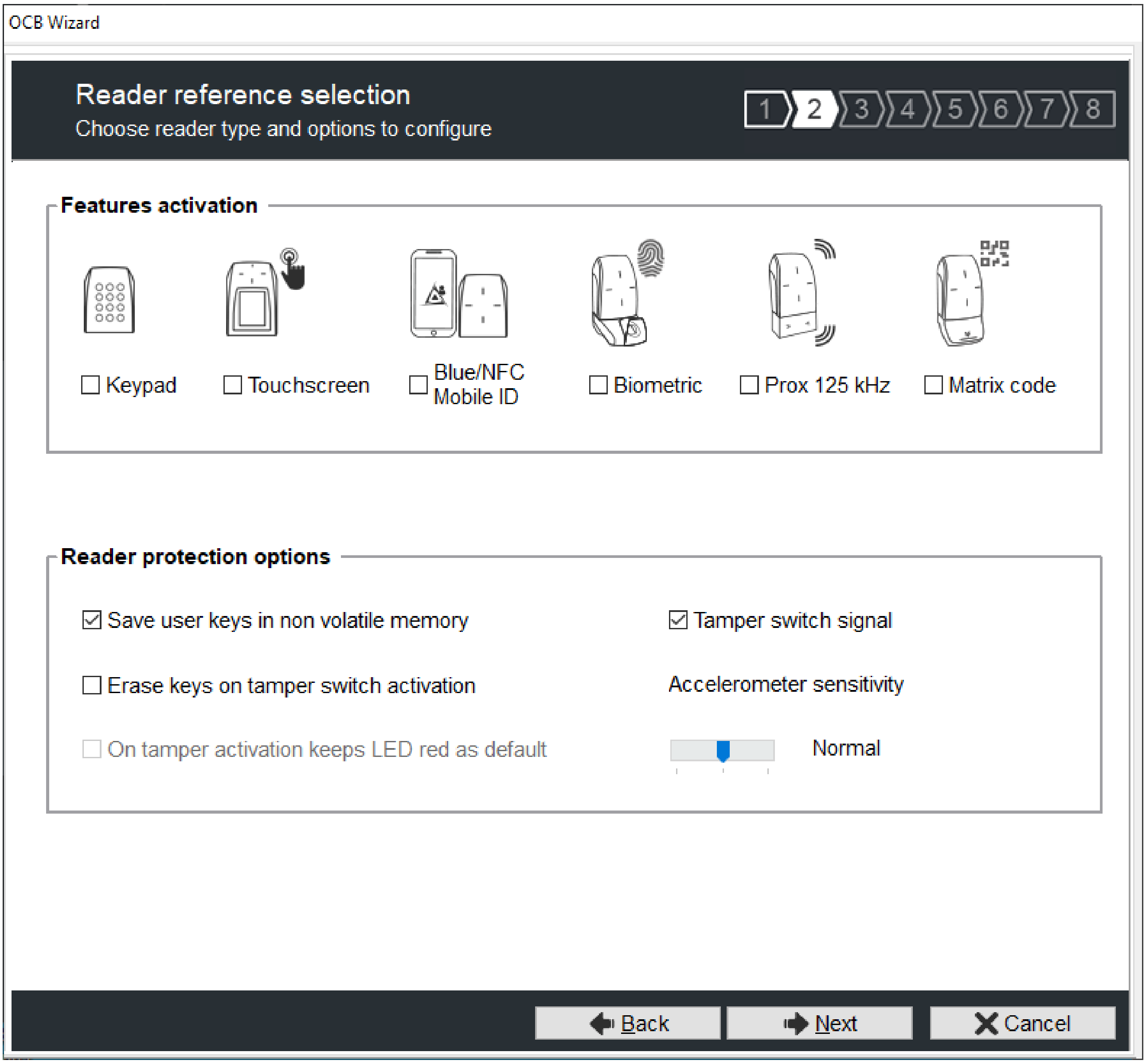
Are you sure to replace all the OCB parameters with current SCB parameters?



Informations

SCB parameters have been copied into OCB parameters

OCB - Step 2


OCB Wizard

Reader reference selection

Choose reader type and options to configure

Features activation

□ Keypad □ Touchscreen □ Blue/NFC Mobile ID □ Biometric □ Prox 125 kHz □ Matrix code

Reader protection options

☑ Save user keys in non volatile memory

☑ Tamper switch signal

□ Erase keys on tamper switch activation

Accelerometer sensitivity

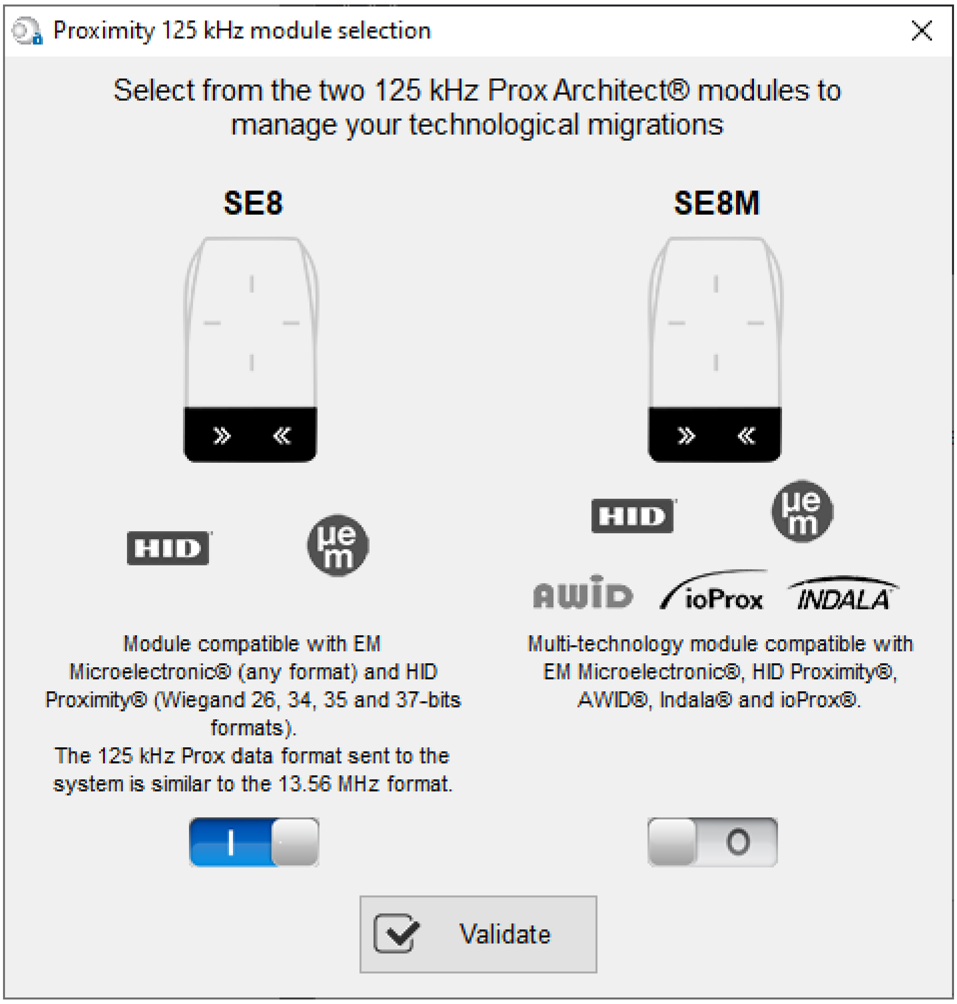
□ On tamper activation keeps LED red as default

Normal

Features activation:

- To activate keypad configuration.
- To activate touchscreen configuration.
- To activate Blue/NFC Mobile ID configuration.
- To activate the biometric configuration.

- ❖ To select 125 kHz module (SE8 or SE8M) and activate configuration.



Proximity 125 kHz module selection

Select from the two 125 kHz Prox Architect® modules to manage your technological migrations

SE8

Module compatible with EM Microelectronic® (any format) and HID Proximity® (Wiegand 26, 34, 35 and 37-bits formats).
The 125 kHz Prox data format sent to the system is similar to the 13.56 MHz format.

I

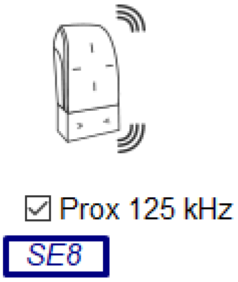
SE8M

Multi-technology module compatible with EM Microelectronic®, HID Proximity®, AWID®, Indala® and ioProx®.

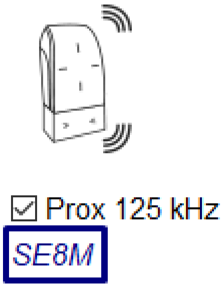
O

This choice impacts on 125kHz settings.

You can see the current model on the screen



☑ Prox 125 kHz
SE8



☑ Prox 125 kHz
SE8M

- ❖ To activate Matrix configuration.

Home
Settings
Reader configuration
SCB / OCB
SKB
BCC
SSCP
Create user cards
Tools

Reader protection option

- Save user keys in non-volatile memory: enables the keys to be saved, in encrypted form, in EEPROM non- volatile memory, in case of power failure.

- Erase keys on tamper switch activation: enables all the reader keys to be erased, if the status or accelerometer is changed.

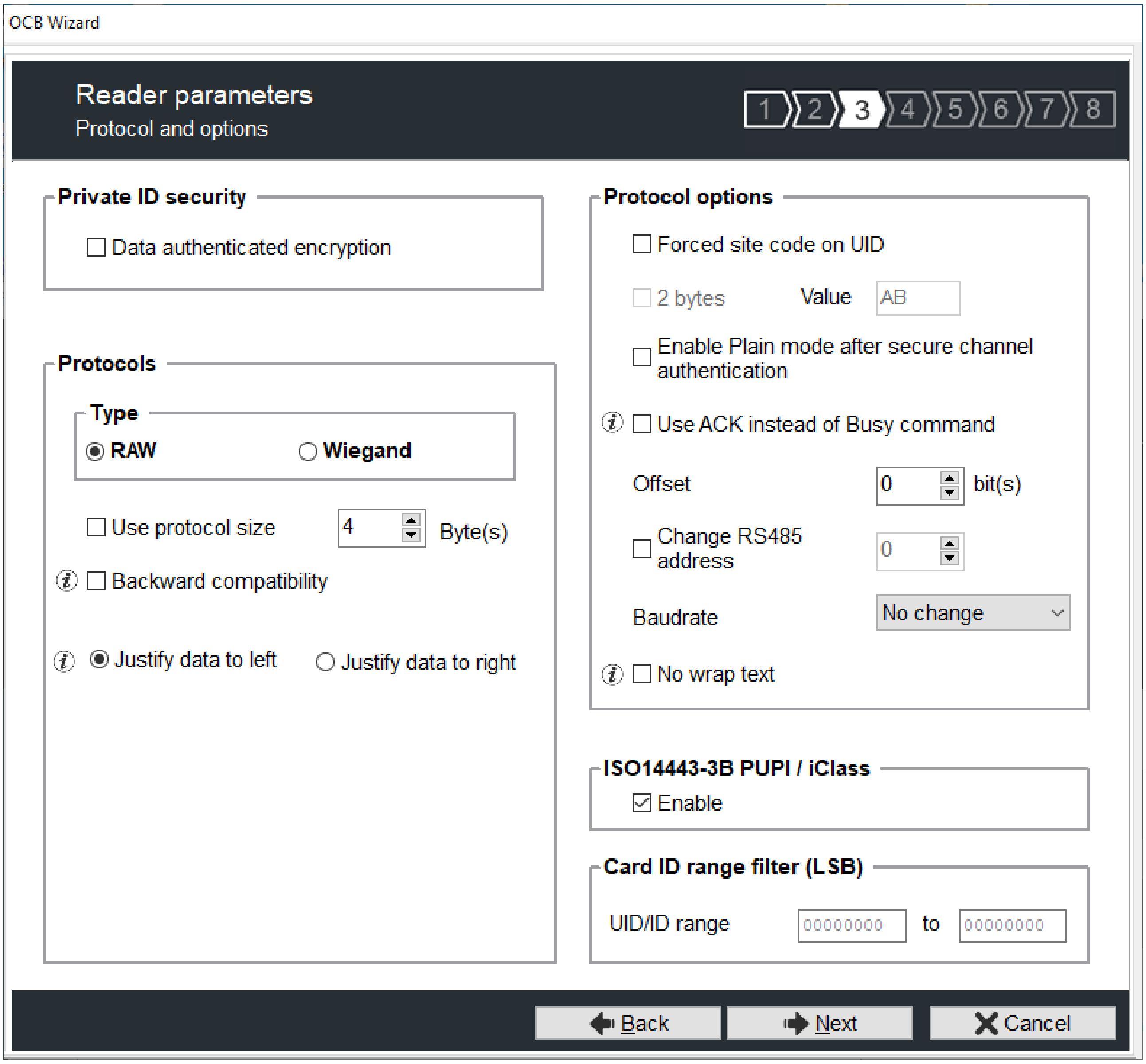
- On tamper activation keeps red as default: requires activation of tearing.
  If the status of accelerometer is changed, LED is on the red indicating that the keys have been erased.

- Tamper switch signal: enables the tamper switch signal to be activated.

- Accelerometer sensitivity

  The ARC reader range includes an accelerometer to detect the reader tearing. Depending on the support / installation location of the reader, it may be necessary to adjust the sensitivity of the sensor so that only an effective tear is detected.

OCB - Step 3



OCB Wizard

Reader parameters
Protocol and options

Private ID security

☐ Data authenticated encryption

Protocols

Type: ● RAW ○ Wiegand

☐ Use protocol size: 4 Byte(s)

☐ Backward compatibility

● Justify data to left ○ Justify data to right

Protocol options

☐ Forced site code on UID

☐ 2 bytes Value: AB

☐ Enable Plain mode after secure channel authentication

☐ Use ACK instead of Busy command

Offset: 0 bit(s)

☐ Change RS485 address: 0

Baudrate: No change

☐ No wrap text

ISO14443-3B PUPI / iClass

☑ Enable

Card ID range filter (LSB)

UID/ID range: 00000000 to 00000000

❖ Private ID security

Private ID can be encrypted AND signed before being written in the card.
The reader will decrypt and authenticate the private ID before sending it on its output media.
Only an ID correctly decrypted and authenticated will produce an output data, otherwise the reader will remain mute.
The Authenticated Encryption uses the MtE mode (Maced then Encrypt).

Note: The size of private identifier is limited to 12 bytes.

❖ Protocols

[REPLY]: osdp_RAW – 50h

SOM	ADDR	LEN	CTRL	REPLY	DATA					CRC / CKSUM
53h	Physical Reader Address [80h...FEh]	XXh XXh: CKSUM XXh XXh: CRC	XXh	50h: osdp_RAW	Reader number	Format code	Count		Data	XXh / XXh XXh
							LSB	MSB		

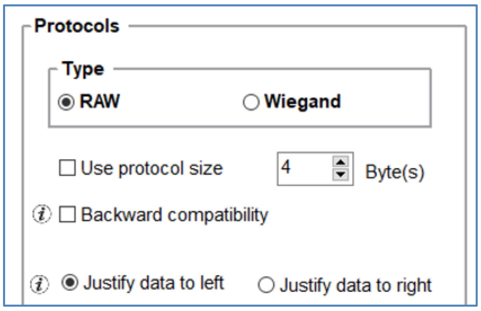
Reader number: 00h First reader
1 byte 01h Second reader….

Format code: 00h not specified, raw bit array
1 byte 01h P/data/P (Wiegand)

Count: 2-byte size (in bits) of the data at the end of the record
2 bytes

Data: MSB to LSB (left justified)
n bytes

Type RAW

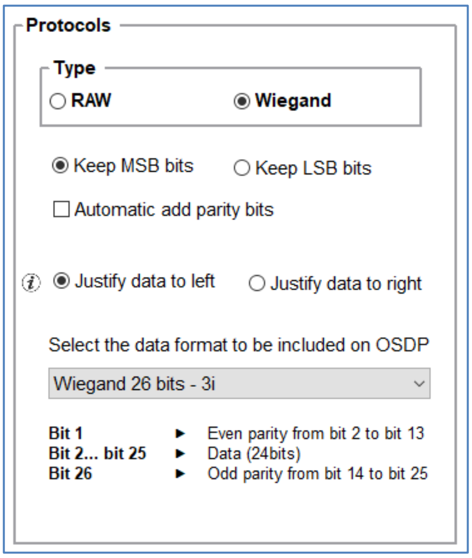


Protocols
Type
● RAW ○ Wiegand
□ Use protocol size 4 Byte(s)
□ Backward compatibility
● Justify data to left ○ Justify data to right

- Type Raw + Backward compatibility: Format code is fixed to 01h.
- Type Raw: Format code is fixed to 00h.

Use protocol size: Allow to fix the data size send by the reader to the OSDP_RAW command (UID and Private ID).

Type Wiegand



Protocols
Type
○ RAW ● Wiegand
● Keep MSB bits ○ Keep LSB bits
□ Automatic add parity bits
● Justify data to left ○ Justify data to right
Select the data format to be included on OSDP
Wiegand 26 bits - 3i

Bit 1	▸	Even parity from bit 2 to bit 13
Bit 2... bit 25	▸	Data (24bits)
Bit 26	▸	Odd parity from bit 14 to bit 25

- Format code is fixed to **01h**.
- 3 different Wiegand are available: Wiegand 26bits, 35 bits and 37 bits.

For 13.56MHz, BLE/NFC and Private ID 125kHz possibility to format the data send in osdp_RAW with Keep MSB or LSB bits data, add a zero padding on left or right (Left justified or Right justified) and add parity bits on the data read.

For UID 125kHz, the reader calculates and adds the parity bits obligatorily with the configuration Keep LSB / Add parity bit / Left justified. The options defined in SECard are not take into account.

Protocol options

- “Forced site *code on UID”:* force a site code whatever the communication protocol.
  The value of the code will be transmitted most significant on one or two bytes.
  UID can be truncated according to the protocol used.

- Enable Plain mode after secure channel authentication:

  - disable: after osdp_keyset command with a key different from default key SCBKD, it is mandatory to communicate over the secure channel.

  - enable: after odsp_keyset command with key different from default key SCBKD, it is possible to communicate in plain mode even after successful authentication.

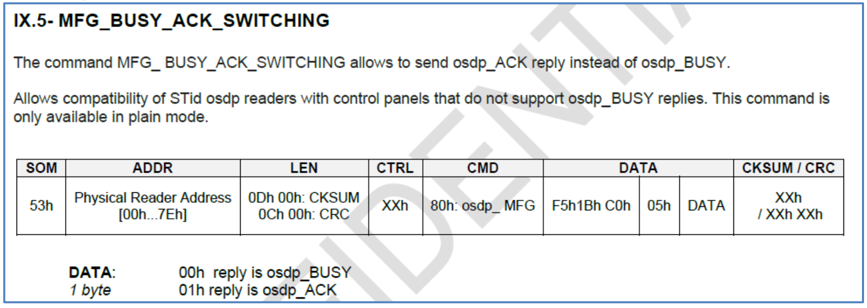
- Use ACK instead of Busy

  Tick this option if the system does not take into account “osdp_Busy” reply.

  - disable: reply is osdp_busy.

  - enable: reply is osdp_ACK.

  Corresponds to the Manufacturer command:



IX.5- MFG_BUSY_ACK_SWITCHING

The command MFG_ BUSY_ACK_SWITCHING allows to send osdp_ACK reply instead of osdp_BUSY.

Allows compatibility of STid osdp readers with control panels that do not support osdp_BUSY replies. This command is only available in plain mode.

SOM	ADDR	LEN	CTRL	CMD	DATA			CKSUM / CRC
53h	Physical Reader Address [00h...7Eh]	0Dh 00h: CKSUM 0Ch 00h: CRC	XXh	80h: osdp_ MFG	F5h1Bh C0h	05h	DATA	XXh / XXh XXh

DATA: 00h reply is osdp_BUSY
1 byte 01h reply is osdp_ACK

- Offset in bit

  Allow to fix the first bit of ID send by the reader to the OSDP_RAW command (UID and Private ID). Adjustable from 0 to 255 bits.

  example: if the offset is 6 and the data is 0x123456 (hexa), 0b0001 0010 0011 0100 0101 0110 (binary)
  The data with the offset will be 0b10 0011 0100 0101 0110 (binary), 0x023456 (hexa)

- Change RS485 address / Baudrate:

  Allow to fix the RS485 address and the Braudate with OCB configuration badge, without use the osdp_COMSET command.

- No wrap text: Link to OSDP_TEXT command (default disable)

  - Disable: if the OSDP_TEXT command is used to display more than 1 text line or 1 text line that not fitted on only 1 text line, then the reader will clear all the screen and will display the corresponding text.

  - Enable: the reader will cut the text beyond the first line; the reader will display only the first line and will not clear all the screen.

❖ ISO 14443-3B PUPI / iCLASS™*

It is possible to manage differently the PUPI ISO14443-3B and the ISO 14443-2B by calculating an authentication code using a cryptographic hash function (SHA1) and a secret key. Other norms (ISO14443-A) and frequencies (125 kHz & 3.25 MHz) are not concerned by this option.

If the protocol size is less than 20 bytes, the 20 bytes obtained signature will be LSB truncated.
If the protocol size is more than 20 bytes, a zero padding will be made.

*Our readers only read the UID/Chip Serial Number. They do not read secure HID Global's iCLASS™ cryptographic protections.

❖ Card ID range filter (LSB)

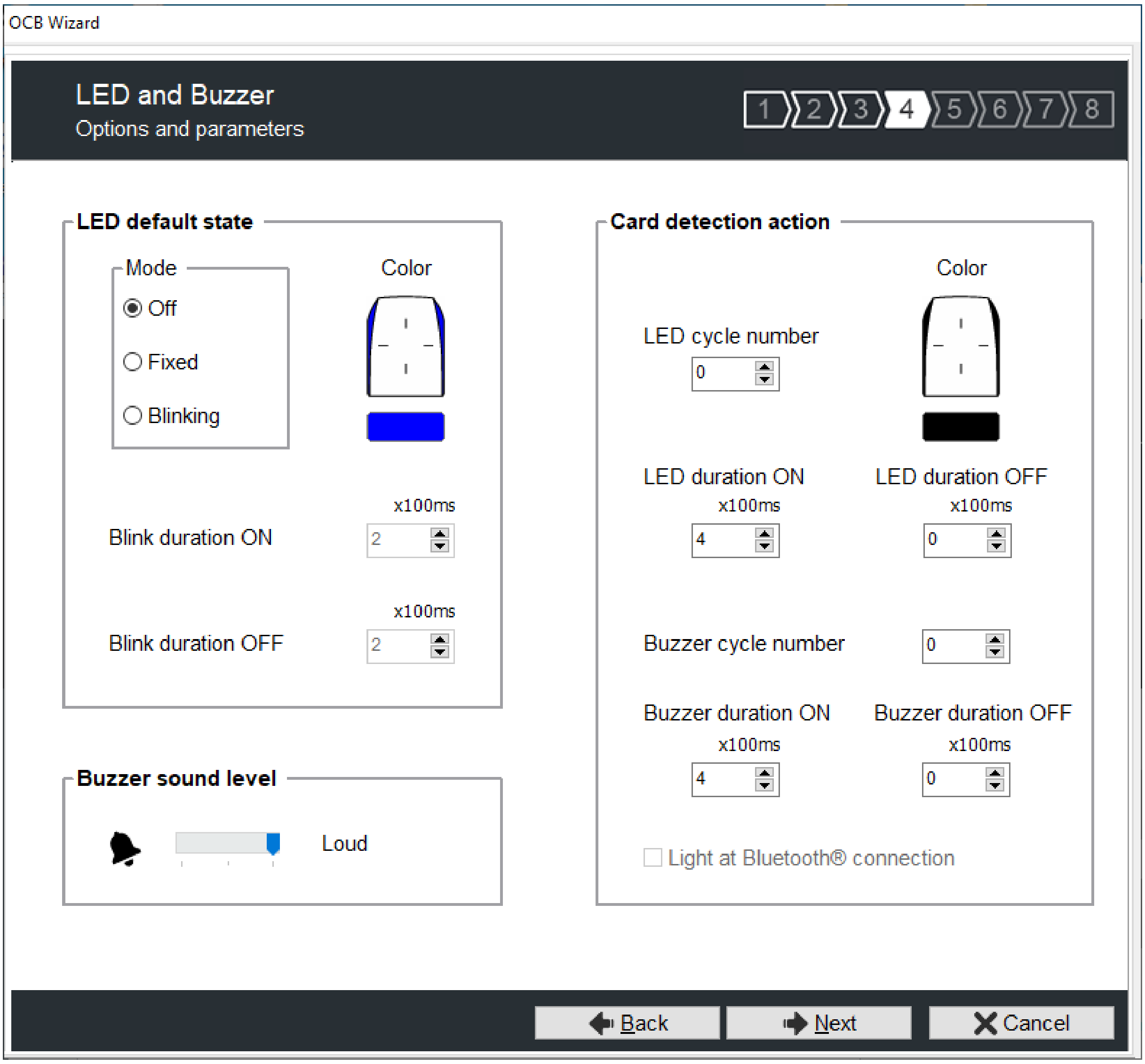
It is possible to return an UID / ID only if it is within a specified 4 bytes bounded range.

If the size of the UID / ID is more than 4 bytes, the range will be made on the 4 bytes LSB (taking into account the MSB First option first). The limits are included, lower limit ≤ UID / ID ≤ upper limit.

If the UID / ID is in the range, the reader will return the code for the current protocol and perform an action card LED + Buzzer (SCB). Otherwise, the reader light up (not configurable and not disabled) red LED + Buzzer for 400ms.

The UID / ID is compared to the hexadecimal value after taking into account the MSB First parameter and before entry into protocol shape.

OCB - Step 4



OCB Wizard

LED and Buzzer

Options and parameters

1 2 3 4 5 6 7 8

LED default state

Mode: ● Off ○ Fixed ○ Blinking

Color

Blink duration ON x100ms: 2

Blink duration OFF x100ms: 2

Buzzer sound level

Loud

Card detection action

Color

LED cycle number: 0

LED duration ON x100ms: 4

LED duration OFF x100ms: 0

Buzzer cycle number: 0

Buzzer duration ON x100ms: 4

Buzzer duration OFF x100ms: 0

□ Light at Bluetooth® connection

LED default state

Define the default LED state (color and blink duration).

- OFF
- Fixed
- Blinking with Duration ON and OFF

The image on the right allows you to view the selected effect: blinking and color.
You can always change this state with the command osdp_LED and permanent settings.

Card detection action

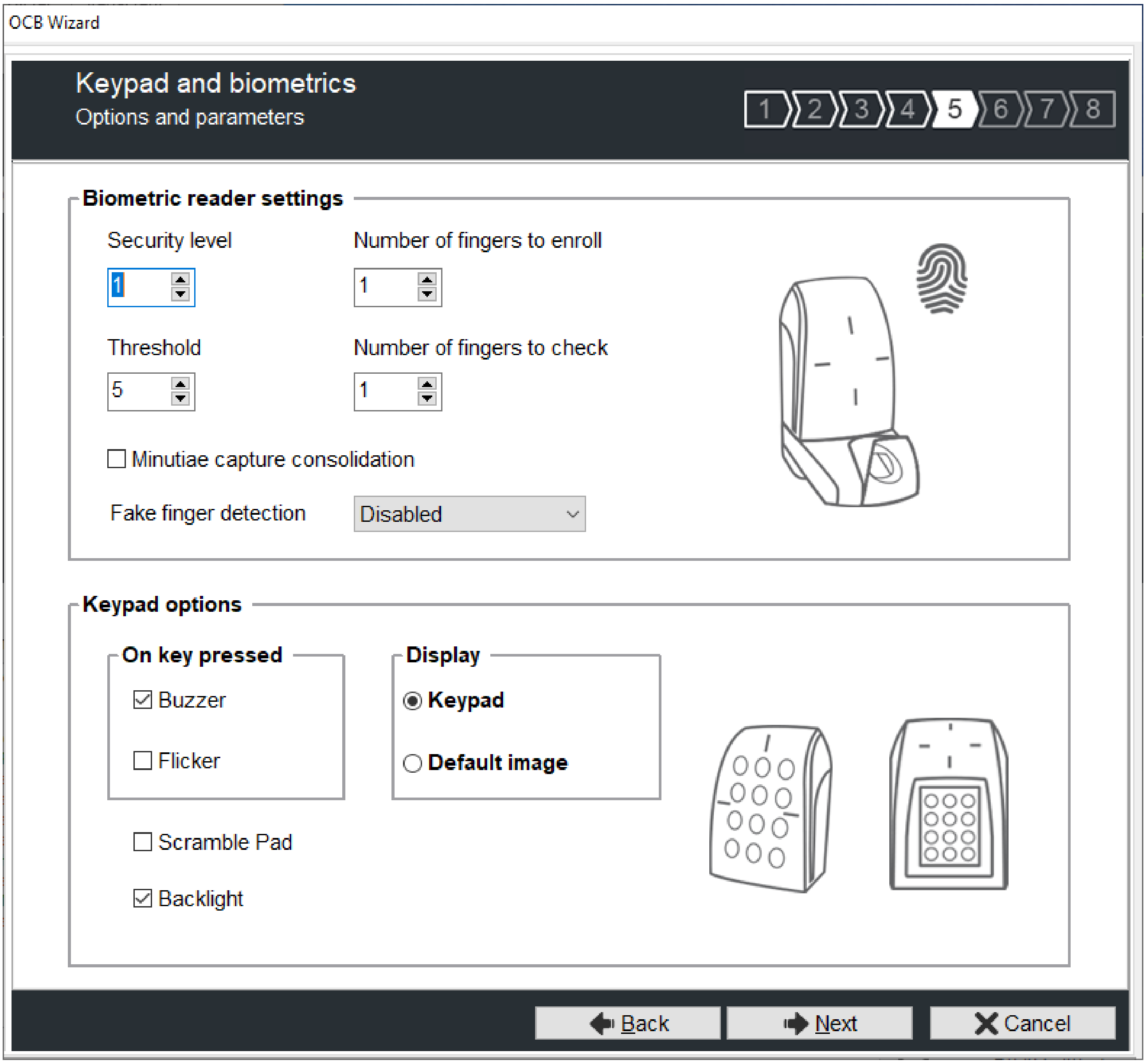
- Define the LED and buzzer action (color and blink) when a valid identifier is detected.
  This information is independent of the acceptance of the identifier.

- Light at Bluetooth® connection
  Flash LED when smartphone start connection on the reader. The color can be selected by clicking on the right square.
  This action, independent of the detection of the virtual badge, informs the user that the communication between the smartphone and the reader is in progress.

Buzzer sound level

Define the sound level for the buzzer **only available for ARCS, ARC1 and ARC1S**.

OCB - Step 5



OCB Wizard

Keypad and biometrics
Options and parameters

Biometric reader settings

Security level: 1

Number of fingers to enroll: 1

Threshold: 5

Number of fingers to check: 1

☐ Minutiae capture consolidation

Fake finger detection: Disabled

Keypad options

On key pressed

☑ Buzzer

☐ Flicker

Display

● **Keypad**

○ **Default image**

☐ Scramble Pad

☑ Backlight

Biometric reader settings

- Security level: represents the reliability rate between the encoded and read fingerprints.
  - ➢ Security level = 1: low false finger security level (Morpho Sagem recommendation).
  - ➢ Security level = 2: medium false finger security level.
  - ➢ Security level = 3: high false finger security level.

- Threshold: represents the quality level of the fingerprints to encode in the chip (0 up to 10). Lower threshold = less false rejection. Morpho Sagem recommendation: 5.

- Number of finger to enroll: represents the number of fingerprints to encode.

- Number of finger to check: represents the number of finger to check.

- Minutiae capture consolidation: allows to capture the same finger three times. The biometric sensor will choose the best one during the encoding.

- Fake finger detection: Enable / Disabled the Fake finger detection with specific detection level.

Keypad options

- On Key Pressed:
  Allow to activate / deactivate LED and/or Buzzer when user press one touch of the keyboard.

- Display: Choose de default display for touchscreen if keyboard is active.

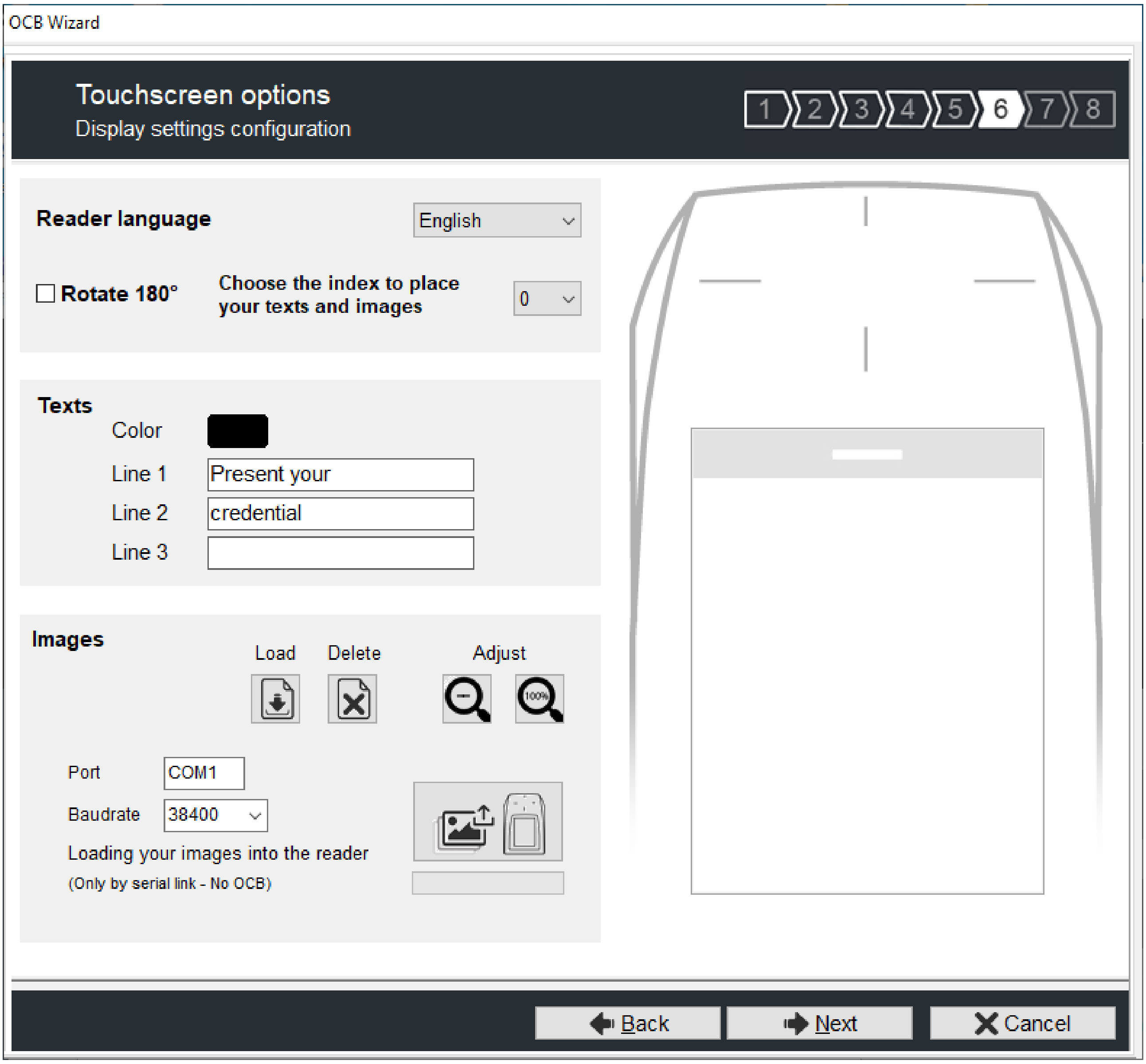
  - Keypad: Display the keyboard.

  - Default image: Display the default text and image (see step 7).
    To display the keyboard, touch a first time the screen.
    The display reverts to the default image after a timeout of 10s.

- Scramble Pad (only available for screen touch ARC): Activate the scramble on keypad.
  The scramble is performed:
  - After reading a valid card.
  - Every 30s. Pressing a key or reading a card resets the timer.

- Backlight: Allow to activate / deactivate keypad backlight.

OCB - Step 6



OCB Wizard

Touchscreen options
Display settings configuration

Reader language: English

□ Rotate 180°

Choose the index to place your texts and images: 0

Texts

Color: ■

Line 1: Present your

Line 2: credential

Line 3:

Images

Port: COM1

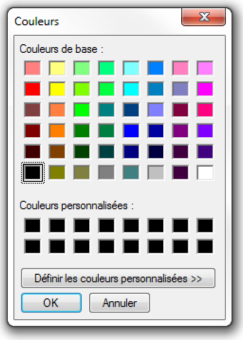
Baudrate: 38400

Loading your images into the reader
(Only by serial link - No OCB)

Reader Language: Choose the language used to display the text on the screen: English (default) or French.

Rotate 180°: Used to rotate the image at 180°.

Index: select the Index number [0 ; 9] to load the selected image and text**.**
Texts: To change the text color, click on the color button.

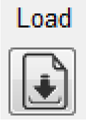


Couleurs
Couleurs de base :
Couleurs personnalisées :
Définir les couleurs personnalisées >>
OK
Annuler

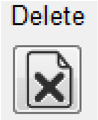
(the language of this windows depends on your Windows language)

The color applies to the three lines of text.

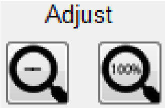
Load your images:


Load

Load an image file for the selected state.


Delete

Delete the image file to the selected state.


Adjust

Reduces the image on the screen.

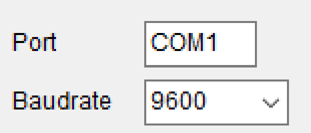
Note: The classic image formats are supported (bmp, png, jpeg, ...). By against the screen reader does not support transparency, the background color is white.

Loading your image into the reader

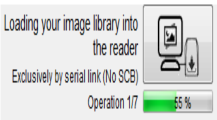
Warning

Loading images into the reader is possible only through the reader serial communication, not with the OCB.

1 - Connect the screen reader to your computer with the reader serial link and set the communication parameters:


Port COM1
Baudrate 9600

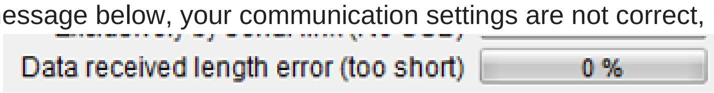
2 - Power on the reader and click on


Loading your image library into the reader
Exclusively by serial link (No SCB)
Operation 1/7 55 %

3 - The loading progress is indicated by the progress bar

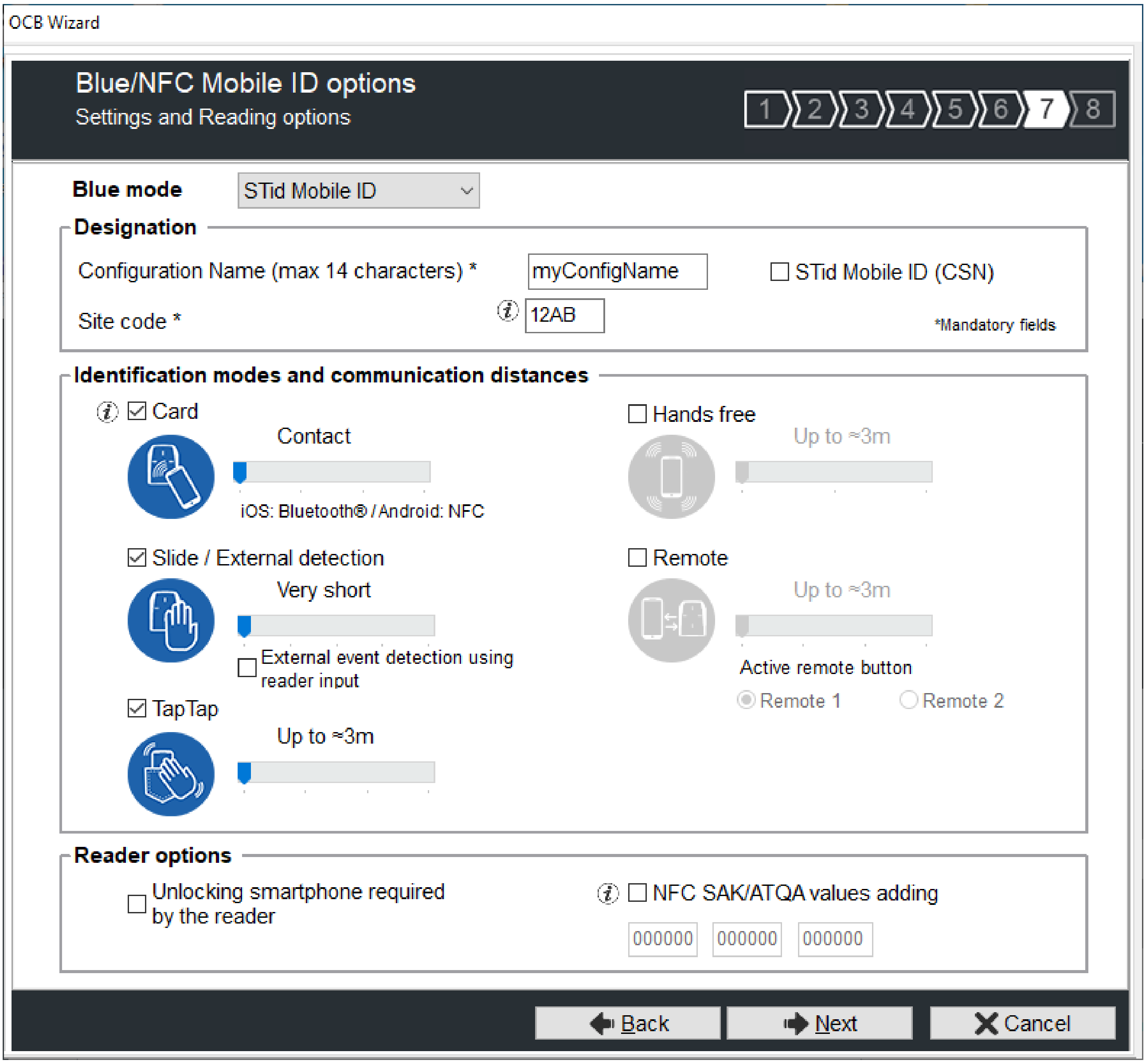
Note:

- Image/text has an index; a new load erases the image/text loaded before.
- If you get the message below, your communication settings are not correct, return to the step 1.


Data received length error (too short) 0 %

- If the image has been loaded into SECard was moved, the preview will not be available, and the next image will be displayed in the IHM SECard.

OCB - Step 7



OCB Wizard

Blue/NFC Mobile ID options

Settings and Reading options

Blue mode STid Mobile ID

Designation

Configuration Name (max 14 characters) * myConfigName

□ STid Mobile ID (CSN)

Site code * 12AB

*Mandatory fields

Identification modes and communication distances

☑ Card — Contact

iOS: Bluetooth® / Android: NFC

□ Hands free — Up to ≈3m

☑ Slide / External detection — Very short

□ External event detection using reader input

□ Remote — Up to ≈3m

Active remote button: ● Remote 1 ○ Remote 2

☑ TapTap — Up to ≈3m

Reader options

□ Unlocking smartphone required by the reader

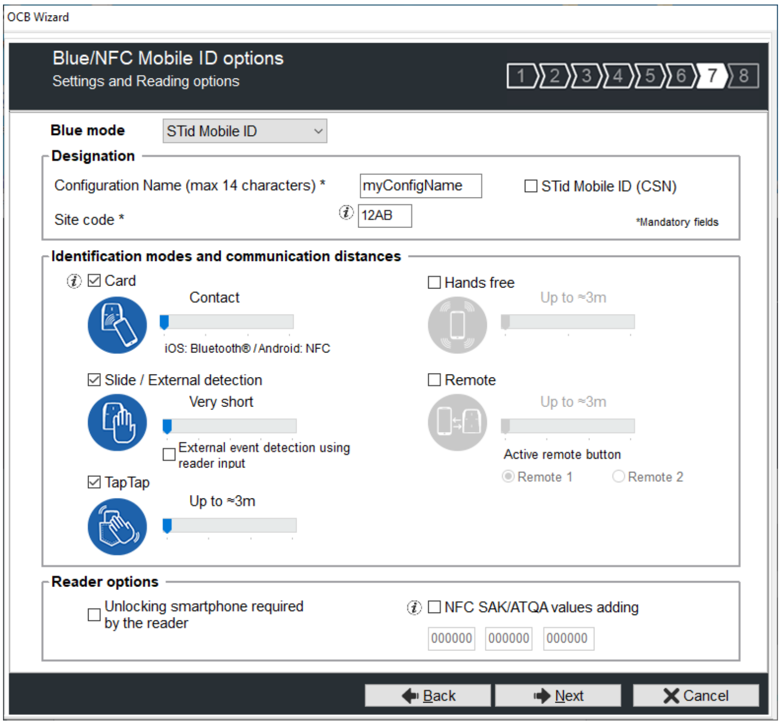
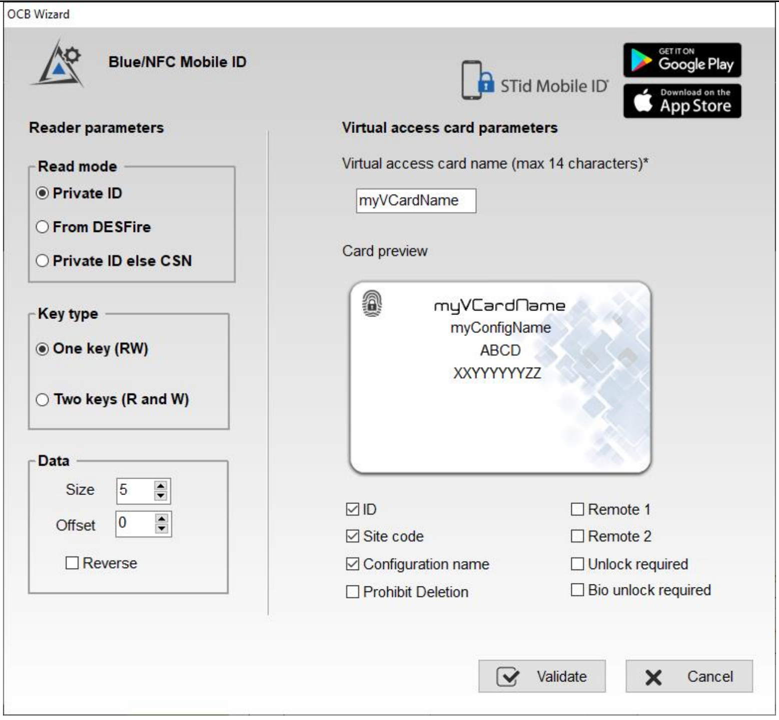
□ NFC SAK/ATQA values adding

000000 000000 000000

Blue/NFC mode

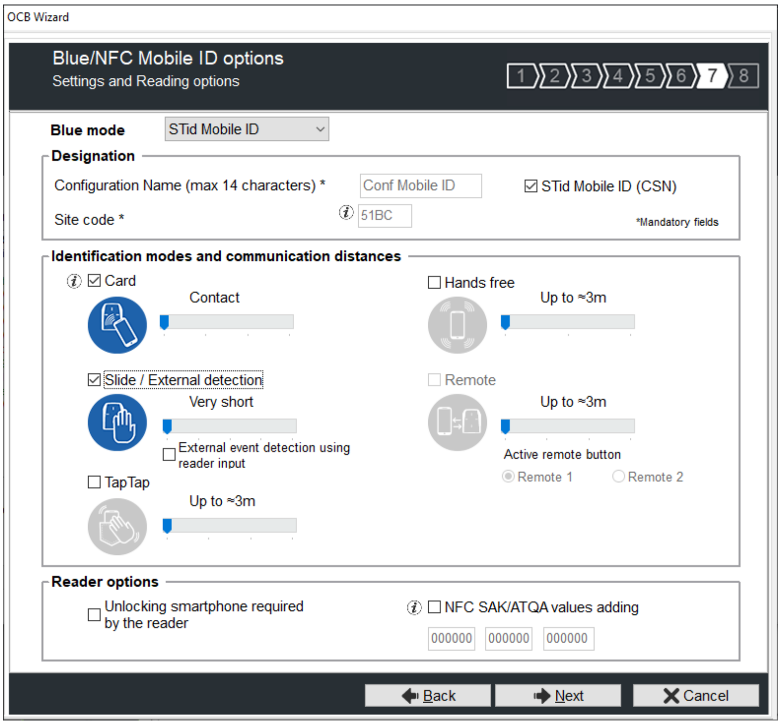
Configure the reader to read STid Mobile ID® or Orange^{TM} PAckID or Open Mobile Protocol.

This choice impacts the screen wizard Step 7 and Blue/NFC Mobile ID Settings.

	STid Mobile ID®
Wizard Step 7	 OCB Wizard Blue/NFC Mobile ID options Settings and Reading options 1 2 3 4 5 6 7 8 Blue mode: STid Mobile ID Designation Configuration Name (max 14 characters) *: myConfigName □ STid Mobile ID (CSN) Site code *: 12AB *Mandatory fields Identification modes and communication distances ☑ Card – Contact – iOS: Bluetooth® / Android: NFC □ Hands free – Up to ~3m ☑ Slide / External detection – Very short □ External event detection using reader input □ Remote – Up to ~3m Active remote button: ● Remote 1 ○ Remote 2 ☑ TapTap – Up to ~3m Reader options □ Unlocking smartphone required by the reader □ NFC SAK/ATQA values adding: 000000 000000 000000 Back – Next – Cancel
Wizard Blue/NFC Mobile ID settings	 OCB Wizard Blue/NFC Mobile ID STid Mobile ID – GET IT ON Google Play – Download on the App Store Reader parameters Read mode ● Private ID ○ From DESFire ○ Private ID else CSN Key type ● One key (RW) ○ Two keys (R and W) Data Size: 5 Offset: 0 □ Reverse Virtual access card parameters Virtual access card name (max 14 characters)*: myVCardName Card preview: myVCardName / myConfigName / ABCD / XXYYYYYYYZZ ☑ ID ☑ Site code ☑ Configuration name □ Prohibit Deletion □ Remote 1 □ Remote 2 □ Unlock required □ Bio unlock required Validate – Cancel

STid Mobile ID® (CSN)

Wizard Step 8



OCB Wizard

Blue/NFC Mobile ID options

Settings and Reading options

Blue mode: STid Mobile ID

Designation

Configuration Name (max 14 characters) *: Conf Mobile ID

☑ STid Mobile ID (CSN)

Site code *: 51BC

*Mandatory fields

Identification modes and communication distances

☑ Card – Contact

☐ Hands free – Up to ≈3m

☑ Slide / External detection – Very short

☐ External event detection using reader input

☐ Remote – Up to ≈3m

Active remote button ● Remote 1 ○ Remote 2

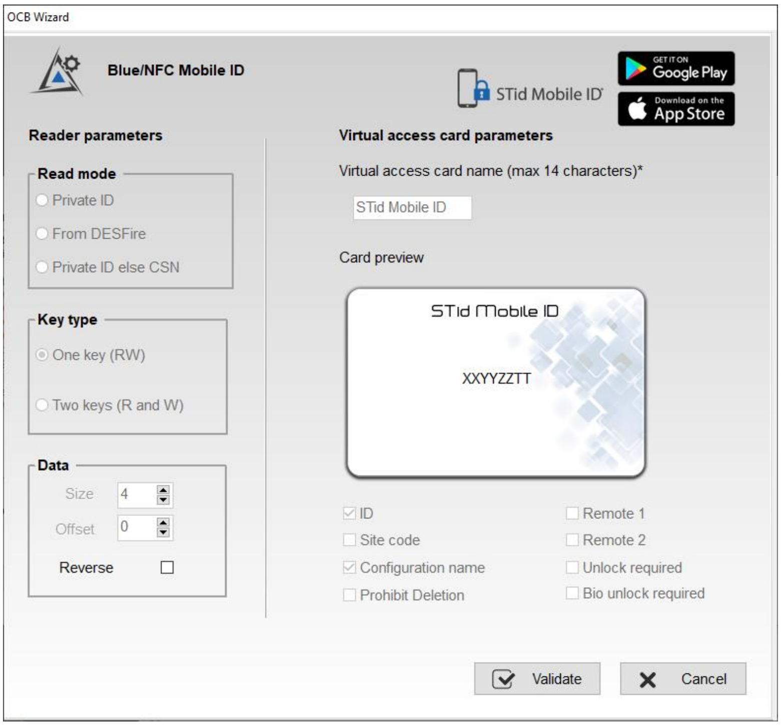
☐ TapTap – Up to ≈3m

Reader options

☐ Unlocking smartphone required by the reader

☐ NFC SAK/ATQA values adding: 000000 000000 000000

Wizard Blue/NFC Mobile ID settings



OCB Wizard

Blue/NFC Mobile ID

Reader parameters

Read mode

○ Private ID

○ From DESFire

○ Private ID else CSN

Key type

● One key (RW)

○ Two keys (R and W)

Data

Size: 4

Offset: 0

Reverse ☐

Virtual access card parameters

Virtual access card name (max 14 characters)*: STid Mobile ID

Card preview

STid Mobile ID

XXYYZZTT

☑ ID

☐ Site code

☑ Configuration name

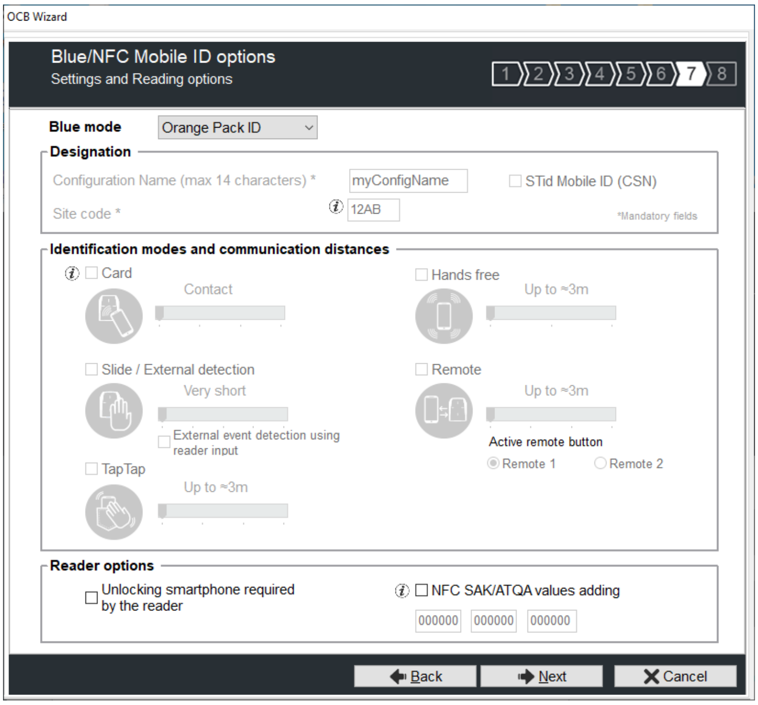
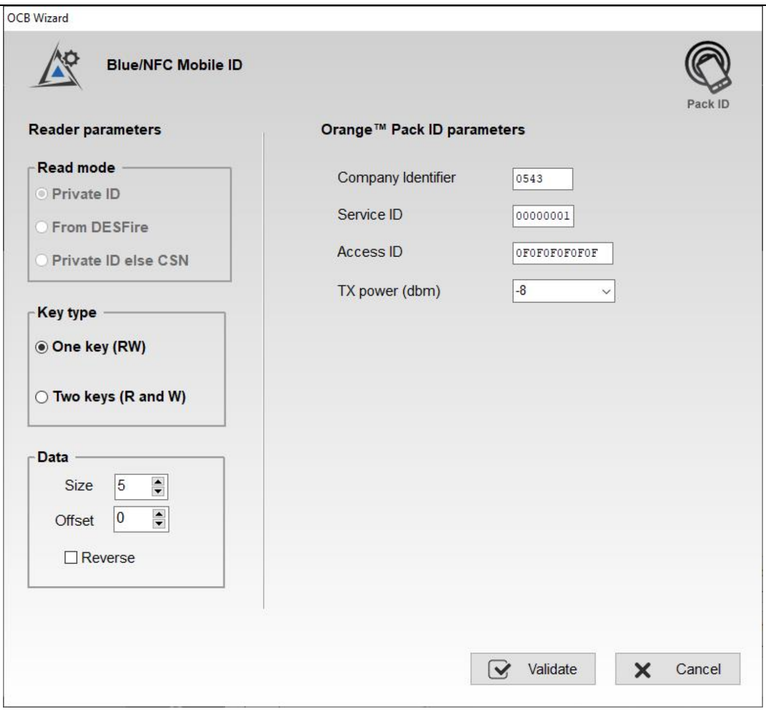
☐ Prohibit Deletion

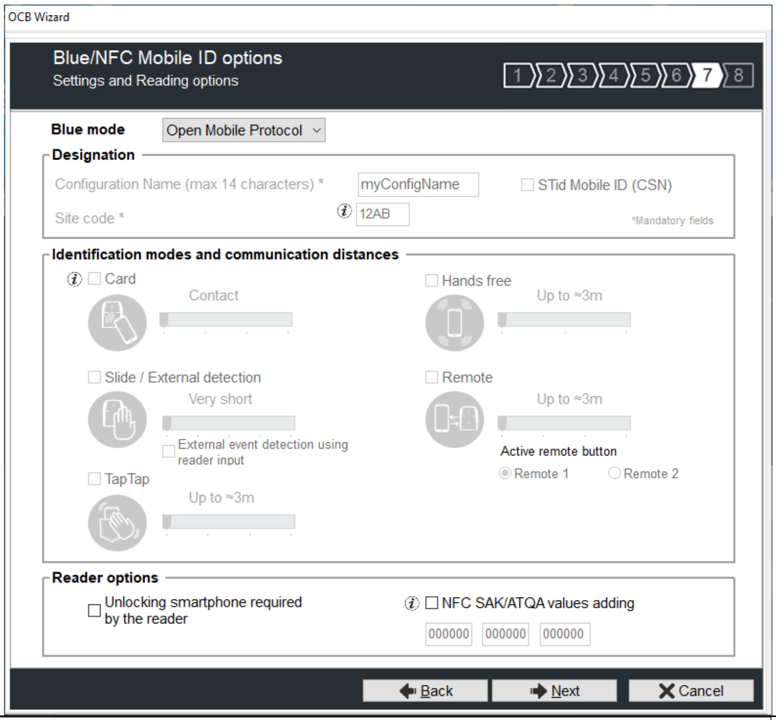
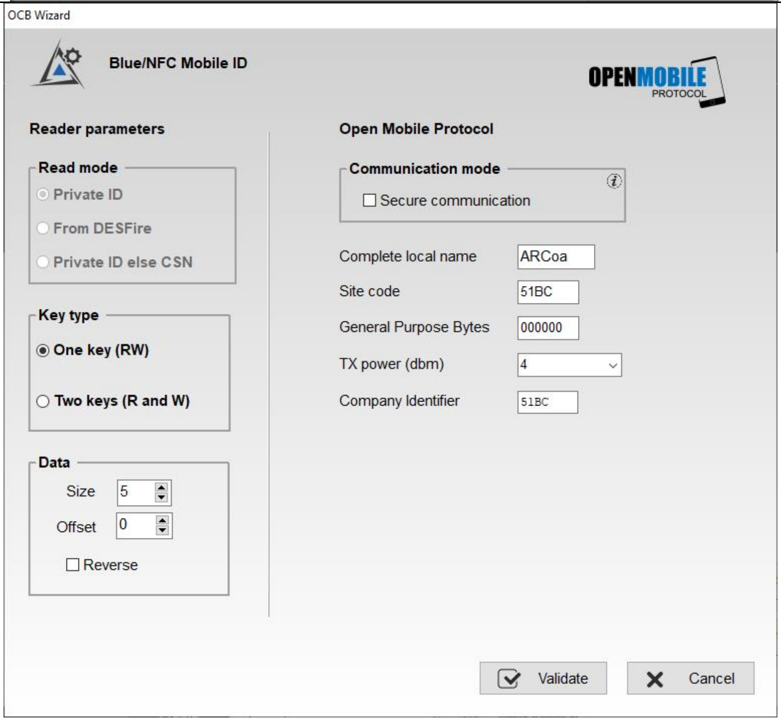
☐ Remote 1

☐ Remote 2

☐ Unlock required

☐ Bio unlock required

	Orange^{TM} PAckID
Wizard Step 7	 OCB Wizard Blue/NFC Mobile ID options Settings and Reading options 1 2 3 4 5 6 7 8 Blue mode: Orange Pack ID Designation Configuration Name (max 14 characters) *: myConfigName □ STid Mobile ID (CSN) Site code *: 12AB *Mandatory fields Identification modes and communication distances □ Card – Contact □ Hands free – Up to ≈3m □ Slide / External detection – Very short □ External event detection using reader input □ Remote – Up to ≈3m Active remote button: ● Remote 1 ○ Remote 2 □ TapTap – Up to ≈3m Reader options □ Unlocking smartphone required by the reader □ NFC SAK/ATQA values adding: 000000 000000 000000 Back Next Cancel The detection mode for this application is fixed to Contact.
Wizard Blue/NFC Mobile ID settings	 OCB Wizard Blue/NFC Mobile ID Pack ID Reader parameters Read mode: ○ Private ID ○ From DESFire ○ Private ID else CSN Key type: ● One key (RW) ○ Two keys (R and W) Data Size: 5 Offset: 0 □ Reverse Orange™ Pack ID parameters Company Identifier: 0543 Service ID: 00000001 Access ID: 0F0F0F0F0F0F TX power (dbm): -8 Validate Cancel

	Open Mobile Protocol
Wizard Step 5	
Wizard Blue/NFC Mobile ID settings	

OCB Wizard

Blue/NFC Mobile ID options
Settings and Reading options

1 2 3 4 5 6 7 8

Blue mode: Open Mobile Protocol

Designation
Configuration Name (max 14 characters) *: myConfigName
☐ STid Mobile ID (CSN)
Site code *: 12AB
*Mandatory fields

Identification modes and communication distances
☐ Card — Contact
☐ Hands free — Up to ≈3m
☐ Slide / External detection — Very short
☐ External event detection using reader input
☐ Remote — Up to ≈3m
Active remote button: ● Remote 1 ○ Remote 2
☐ TapTap — Up to ≈3m

Reader options
☐ Unlocking smartphone required by the reader
☐ NFC SAK/ATQA values adding: 000000 000000 000000

Back | Next | Cancel

OCB Wizard

Blue/NFC Mobile ID

Reader parameters

Read mode
○ Private ID
○ From DESFire
○ Private ID else CSN

Key type
● One key (RW)
○ Two keys (R and W)

Data
Size: 5
Offset: 0
☐ Reverse

Open Mobile Protocol

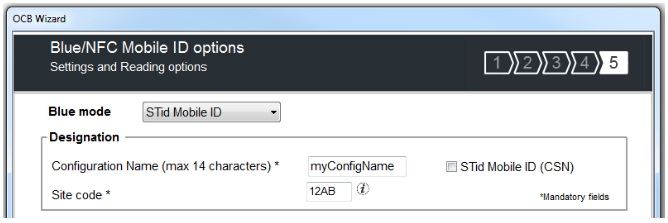
Communication mode
☐ Secure communication

Complete local name: ARCoa
Site code: 51BC
General Purpose Bytes: 000000
TX power (dbm): 4
Company Identifier: 51BC

Validate | Cancel

Blue/NFC Mobile ID and NFC-HCE compatibility

If “STid Mobile ID“ or “Open Mobile Protocol“ is activated, then it is not possible to activate “NFC-HCE“, the parameters and keys are greyed. The NFC Mobile ID is automatically activated.



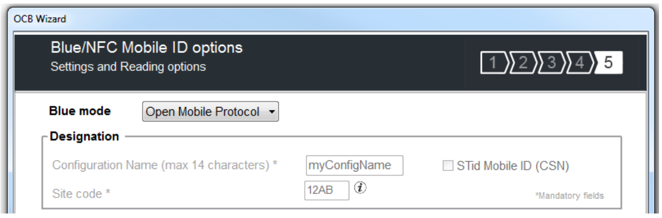
OCB Wizard

Blue/NFC Mobile ID options
Settings and Reading options
1 2 3 4 5

Blue mode: STid Mobile ID

Designation
Configuration Name (max 14 characters) *: myConfigName
□ STid Mobile ID (CSN)
Site code *: 12AB
*Mandatory fields

or

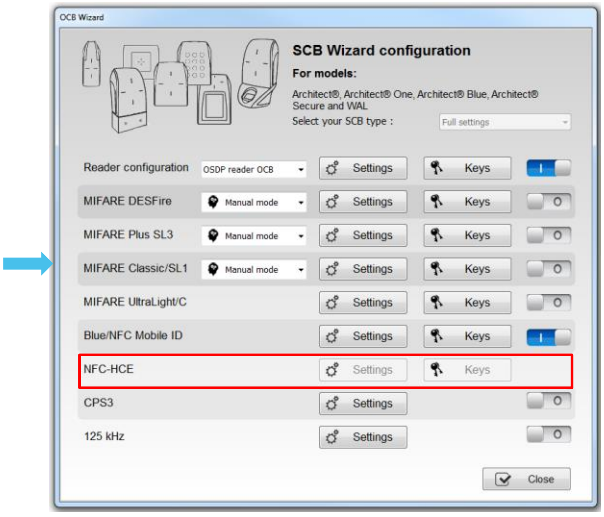


OCB Wizard

Blue/NFC Mobile ID options
Settings and Reading options
1 2 3 4 5

Blue mode: Open Mobile Protocol

Designation
Configuration Name (max 14 characters) *: myConfigName
□ STid Mobile ID (CSN)
Site code *: 12AB
*Mandatory fields



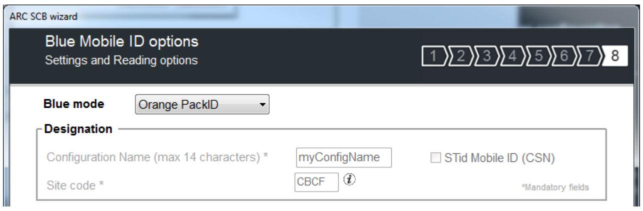
OCB Wizard

SCB Wizard configuration
For models:
Architect®, Architect® One, Architect® Blue, Architect® Secure and WAL
Select your SCB type : Full settings

Reader configuration	OSDP reader OCB	Settings	Keys	I
MIFARE DESFire	Manual mode	Settings	Keys	O
MIFARE Plus SL3	Manual mode	Settings	Keys	O
MIFARE Classic/SL1	Manual mode	Settings	Keys	O
MIFARE UltraLight/C		Settings	Keys	O
Blue/NFC Mobile ID		Settings	Keys	I
NFC-HCE		Settings	Keys	
CPS3		Settings		O
125 kHz		Settings		O

Close

If “Orange Pack ID “ is activated it is possible to activate “NFC-HCE“, the parameters and keys are not greyed.

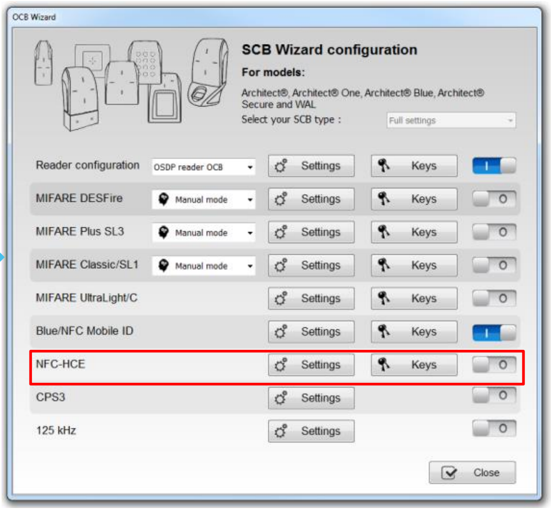


ARC SCB wizard

Blue Mobile ID options
Settings and Reading options
1 2 3 4 5 6 7 8

Blue mode: Orange PackID

Designation
Configuration Name (max 14 characters) *: myConfigName
□ STid Mobile ID (CSN)
Site code *: CBCF
*Mandatory fields



OCB Wizard

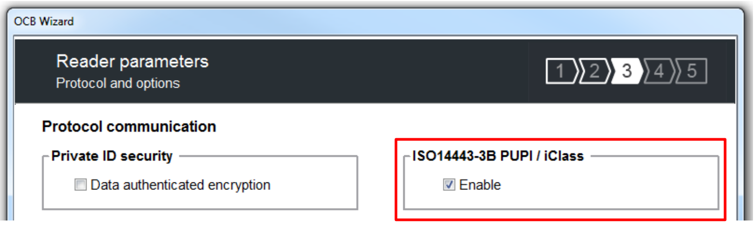
SCB Wizard configuration
For models:
Architect®, Architect® One, Architect® Blue, Architect® Secure and WAL
Select your SCB type : Full settings

Reader configuration	OSDP reader OCB	Settings	Keys	I
MIFARE DESFire	Manual mode	Settings	Keys	O
MIFARE Plus SL3	Manual mode	Settings	Keys	O
MIFARE Classic/SL1	Manual mode	Settings	Keys	O
MIFARE UltraLight/C		Settings	Keys	O
Blue/NFC Mobile ID		Settings	Keys	I
NFC-HCE		Settings	Keys	O
CPS3		Settings		O
125 kHz		Settings		O

Close

NFC Mobile ID and « ISO14443-3B PUPI / iClass » compatibility

“NFC Mobile ID” and “ISO14443-3B PUPI“ can be activated at the same time as “NFC Mobile ID“ is compliant with ISO14443-A.



OCB Wizard

Reader parameters
Protocol and options
1 2 3 4 5

Protocol communication

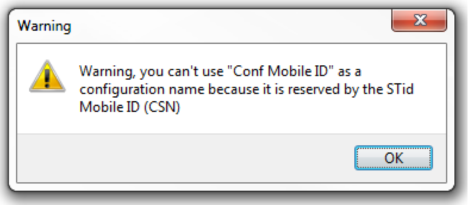
Private ID security
□ Data authenticated encryption

ISO14443-3B PUPI / iClass
☑ Enable

Blue Mode STid Mobile ID

Designation

- Configuration Name: enter the name of the configuration Mobile ID Secure Plus: 14 characters max.
  Note: configuration name “Conf Mobile ID” is reserved to STid Mobile ID.



Warning

Warning, you can't use "Conf Mobile ID" as a configuration name because it is reserved by the STid Mobile ID (CSN)

- Site Code: 2-bytes data used for the site code of the configuration.
  Note: site code 51BC is reserved for STid Mobile ID®.

- STid Mobile ID (CSN): configure the Blue reader to read only a CSN on the smartphone.

Identification modes and communication distances

For each identification mode the communication distance is adjustable.

- **Card:** By placing the smartphone in front of the reader.
  - Contact: smartphone must be in contact with the reader.
  - Up to 0.2m: smartphone must be in an area of 0.2m around the reader
  - Up to 0.3m: smartphone must be in an area of 0.3m around the reader.
  - Up to 0.5m: smartphone must be in an area of 0.5m around the reader

- **Slide:**

  Slide: By placing your hand close to the reader without taking out your smartphone.

  External detection: Works by changing the potential applied to the LED2 input (see details below):
  - Very short
  - Short
  - Medium
  - Long
  - Very long

  Not available for ARC1S neither ARCS keypad in Card or Key mode.

- **Tap Tap:** By tapping your smartphone twice in your pocket for near or remote opening. The communication distance can be:
  - Up to 3m
  - Up to 5m
  - Up to 10m
  - Up to 15m.

- **Hands free:** By simply passing in front of the reader. Communication distance around the reader:
  - Up to 3m
  - Up to 5m
  - Up to 10m

- **Remote:** By controlling your access points remotely. Communication distance around the reader:
  - Up to 3m
  - Up to 10m
  - Up to 15m
  - Up to 20m

- **Remote button selection**

  If the identification mode "Remote" has been activated, it allows to associate the current configuration to the Remote button 1 or Remote button 2.

Notes:

The notion of distance in Bluetooth® corresponds to an area around the reader, not just in the front.
Reading distances depend on the environment, on the position smartphone // reader ...

It is recommended to do on-site testing to evaluate the settings.

Warning

When Architect® Blue readers are installed close to each other, detection distances must be defined to accommodate the distance between the readers to avoid cross readings.

Notes:

- The NFC-HCE option for “NFC Mobile ID” is not a SECard option. It has to be activated in STid Mobile ID app (activated by default).
  This feature is only available for Android phones.

- “NFC Mobile ID” is not compatible with STid Settings app.

❖ **External event detection using reader input:**

Hand (slide mode) information is given by capacitive sensor or input LED2 level on ARCS reader.

If enabled: information is given by LED2 level.

- LED2 no connected or connected to high level = Hand not present
- LED2 connected to the GND = Hand present.

For example: connect a detection system to the LED2. When people are detected, the smartphone reading is activated.

❖ **Unlocking smartphone required by the reader: security option**

- If checked: the smartphone must be unlocked (with PIN code or other unlocking option depending on the smartphone) to authenticate with the reader.

- If unchecked: unlocking the smartphone is not required to authenticate with the reader.

❖ **NFC SAK/ATQA values adding**

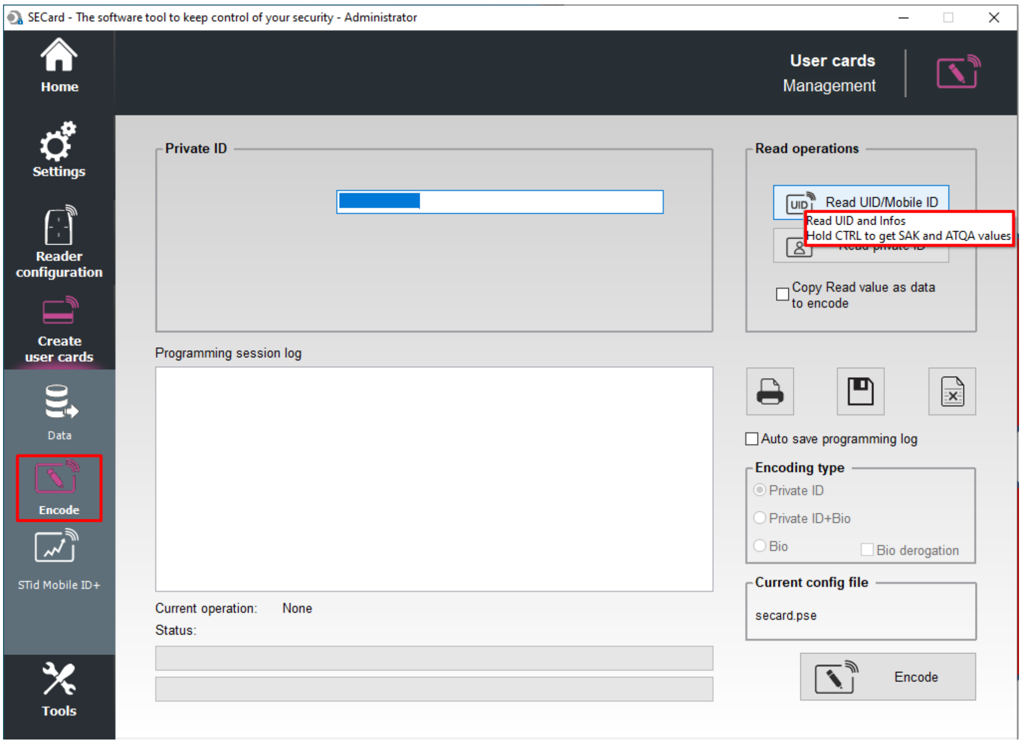
In RFID a chip is identified by two parameters ATQA and SAK. These parameters must be known to the readers for read the identifiers.

Smartphones in NFC mode meet this same rule. Some ATKA + SAK are already implemented in STid readers.

To ensure the compatibility of the readers with the reading of new smartphones in NFC mode, these fields make it possible to set up three values of ATQA and SAK**.**

How to know these values for your smartphone:

- ❖ Enabled the NFC on the smartphone
- ❖ Go to Create user cards



SECard - The software tool to keep control of your security - Administrator

Private ID

Read operations

Read UID and Infos
Hold CTRL to get SAK and ATQA values

□ Copy Read value as data to encode

Programming session log

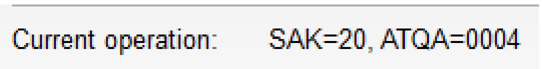
□ Auto save programming log

Encoding type
● Private ID
○ Private ID+Bio
○ Bio □ Bio derogation

Current config file
secard.pse

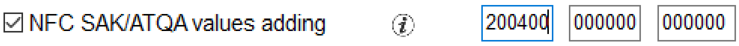
Current operation: None
Status:

- ❖ Present the smartphone to SECard encoder and hold CTRL + click on Read UID button
- ❖ Result



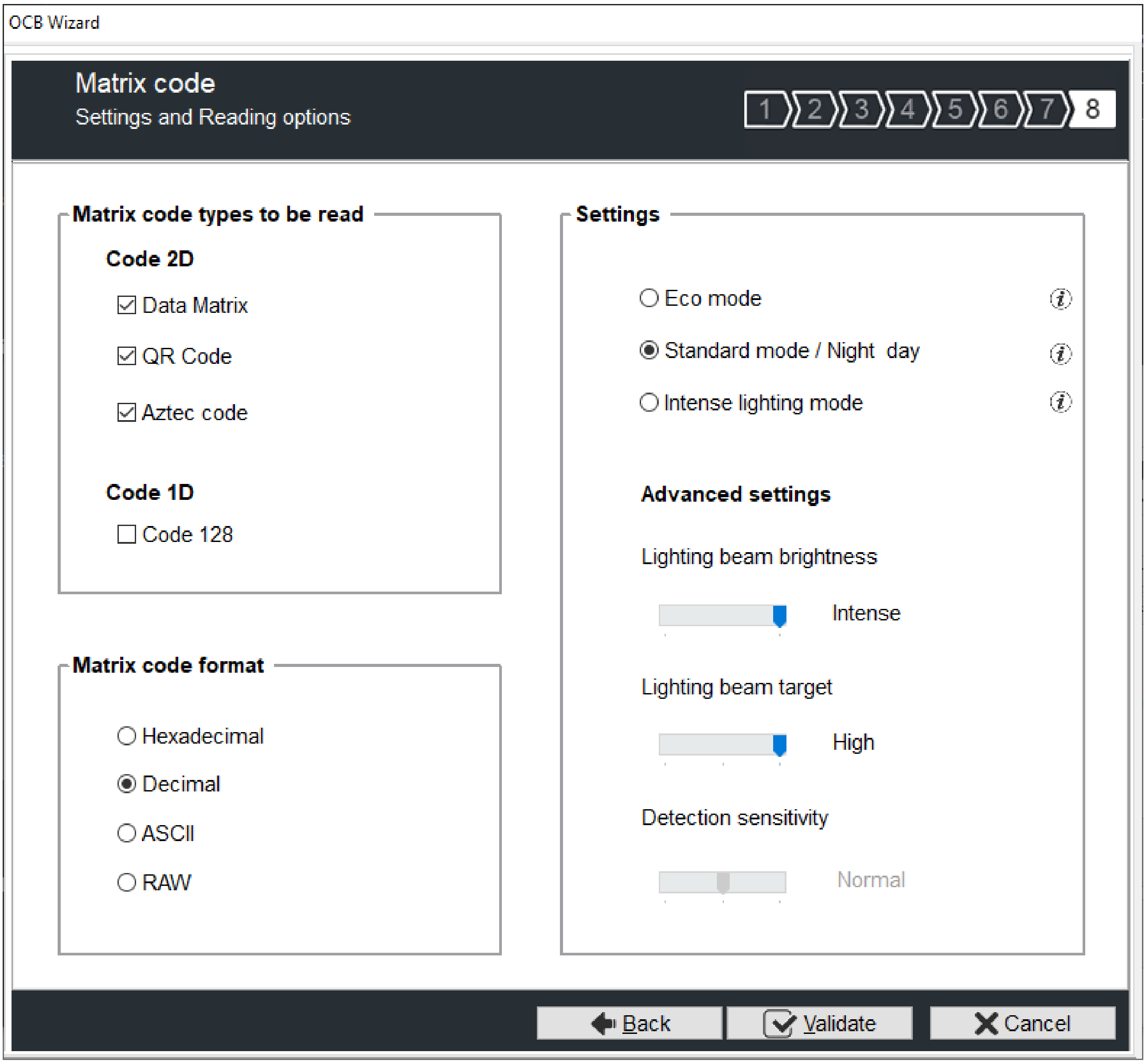
Current operation: SAK=20, ATQA=0004

- ❖ Enter this value in the field:



☑ NFC SAK/ATQA values adding ⓘ 200400 000000 000000

OCB - Step 8



OCB Wizard

Matrix code
Settings and Reading options

Matrix code types to be read

Code 2D

☑ Data Matrix

☑ QR Code

☑ Aztec code

Code 1D

□ Code 128

Matrix code format

○ Hexadecimal

● Decimal

○ ASCII

○ RAW

Settings

○ Eco mode

● Standard mode / Night day

○ Intense lighting mode

Advanced settings

Lighting beam brightness: Intense

Lighting beam target: High

Detection sensitivity: Normal

- **MATRIX code type selection**
  Select the code type to be read:

Code 2D Data Matrix	QR Code	Aztec code	Code 128
 Data Matrix	 QR Code	 Aztec code	 Barcode507072

❖ MATRIX code format

Select the format of the matrix code to be read.

The maximum size of the code depends on the format chosen:

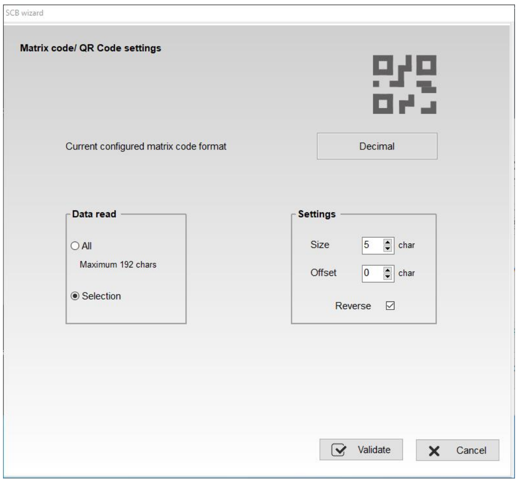
Format	Size in characters	Size in bytes	
Hexadecimal	96	48	
Decimal	25	10	De 0 à 1208925819614629174706175 0x0 à 0xFFFFFFFFFFFFFFFFFFFF
ASCII	192	48	
Raw	192		

Note: only the characters list below are authorized in ASCII:

Value	ASCII character	Valeur	ASCII character	Valeur	ASCII character
30	0	38	8	61	a
31	1	39	9	62	b
32	2	41	A	63	c
33	3	42	B	64	d
34	4	43	C	65	e
35	5	44	D	66	f
36	6	45	E		
37	7	46	F		

Note: if the code to read is not in the code type set in the wizard, the code is not read. For example, if decimal type is set and the code to read contain letter the code will not read.

To read a specific part of the data code go to the settings Matrix code:

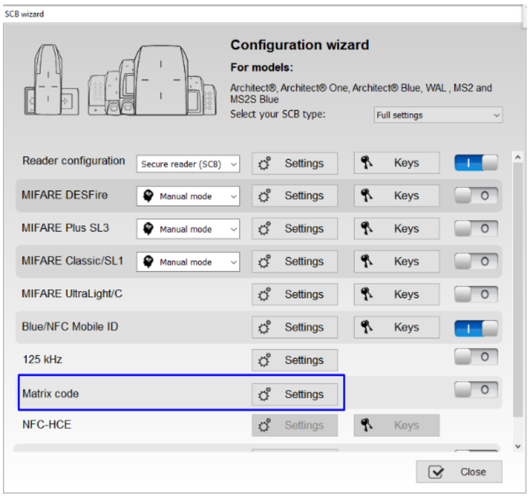


Matrix code/ QR Code settings

Current configured matrix code format: Decimal

Data read
○ All
Maximum 192 chars
● Selection

Settings
Size: 5 char
Offset: 0 char
Reverse ☑



Configuration wizard

For models:

Architect®, Architect® One, Architect® Blue, WAL , MS2 and MS2S Blue

Select your SCB type: Full settings

Reader configuration	Secure reader (SCB)	Settings	Keys	I
MIFARE DESFire	Manual mode	Settings	Keys	O
MIFARE Plus SL3	Manual mode	Settings	Keys	O
MIFARE Classic/SL1	Manual mode	Settings	Keys	O
MIFARE UltraLight/C		Settings	Keys	O
Blue/NFC Mobile ID		Settings	Keys	I
125 kHz		Settings		O
Matrix code		Settings		O
NFC-HCE		Settings	Keys	

❖ Ambient lighting

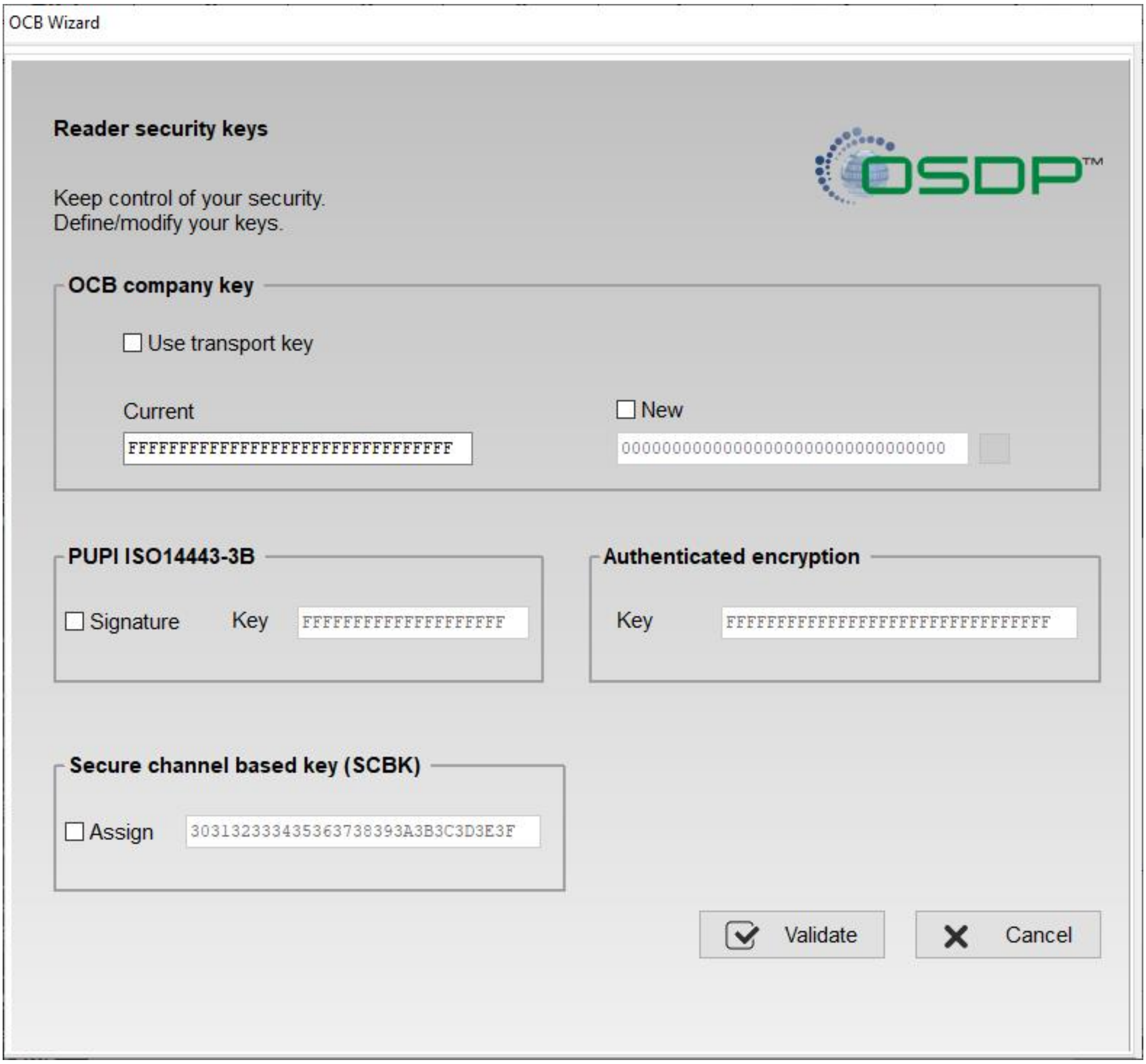
- Eco mode: for low and normal light environments
- Standard mode / Night day: for all lighting conditions
- Intense lighting mode: for indoor and outdoor environments with full sun exposure or direct lighting on the reader.

❖ Advanced settings

Lighting beam brightness	Control the power of the spot which illuminates the code	Normal		Intense
Lighting beam target	Control the power of the laser which targets the code	Low	Normal	High
Detection sensitivity	Control the sensitivity of the trigger to start scanning the code	Low	Normal	Max

Click the button **to complete the reader configuration settings.**

III. 4 - OCB Wizard: reader security keys



OCB Wizard

Reader security keys

Keep control of your security.
Define/modify your keys.

OCB company key

☐ Use transport key

Current: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

☐ New: 00000000000000000000000000000000

PUPI ISO14443-3B

☐ Signature Key: FFFFFFFFFFFFFFFFFFFF

Authenticated encryption

Key: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

Secure channel based key (SCBK)

☐ Assign: 303132333435363738393A3B3C3D3E3F

Attention: the osdp^{TM} readers, in factory configuration, are in the transport key (key value not known).

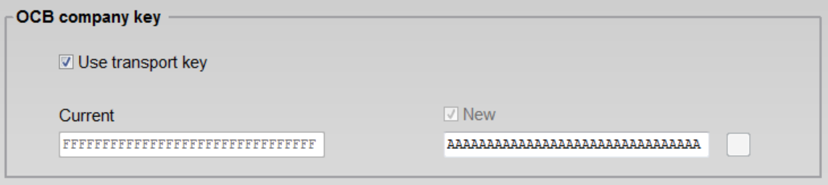
Warning

The OCB company key is important and should definitely be known by the administrator. It protects the data from the "OCB" and allows changes to the configuration of readers.

If you lose this key, the reader cannot be reconfigured for another "OCB" and will must be reset at the factory.

Configure a factory reader

Check "Use transport key" and "New" and enter a value in the field.



OCB company key

☑ Use transport key

Current: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

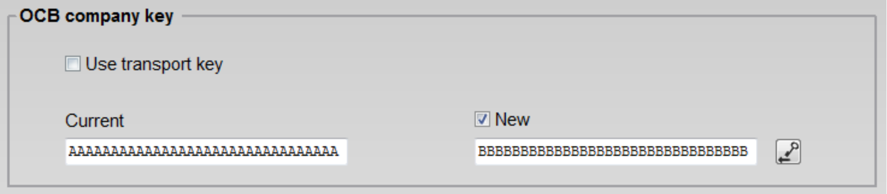
☑ New: AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

When this OCB configuration card is presented is to the reader, the security key of the reader takes the value of the new field (ex: 0xAA…AA).
This configuration card is usable on the factory readers and on the readers having already been configured by this card.

OCB « Transport key » to « key 0xAA…AA »	Reader with transport key	OK
	Reader already at the key 0xA…AAA	OK
	Reader with another key value	KO

Modify the key of a reader

Enter the reader’s key value in the current field and the value of the new key. When this configuration card is presented to the reader, the security key of the reader takes the value of the new field (ex 0xBB ... BB) only if the current key value is that known by the reader.



OCB company key

☐ Use transport key

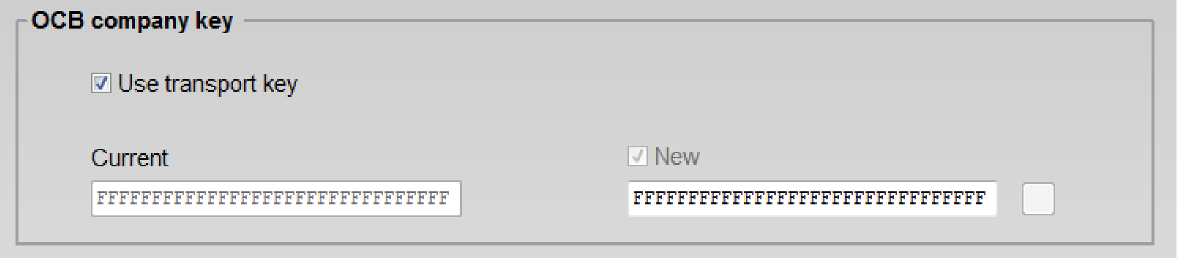
Current: AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

☑ New: BBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB

OCB « key 0xAA…AA » to « key 0xBB…BB »	Reader with transport key	KO
	Reader with key 0xAA…AA	OK
	Reader with key 0xBB…BB	OK
	Reader with another key value	KO

Recommended procedure in the test phase

Step1: create an OCB badge to pass the reader from transport key to the key 0xFF…FF:



OCB company key

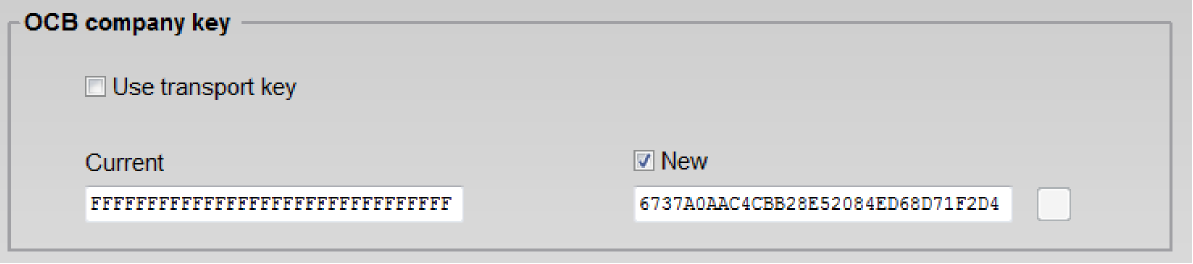
☑ Use transport key

Current: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

☑ New: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

- Label this badge to identify it.
- Present the OCB badge to the reader, wait for the BIPS to take into account.
- The reader is now at the key 0xFF ... FF.
- You can re-encode this badge in order to make changes to the reader settings and do configuration tests without losing the reader security key.
- When the configuration is validated proceed to step 2 to secure the reader with a different key from FF.

Step2: create an OCB badge to pass the reader from 0xFF…FF to a new key



OCB company key

□ Use transport key

Current: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

☑ New: 6737A0AAC4CBB28E52084ED68D71F2D4

- Label this badge to identify it.
- Present the OCB badge to the reader, wait for the BIPS to take into account.
- The reader is now at the new value key.

PUPI ISO 14443-3B

Enter the key used for the signature calculation, called “secret key” (10 bytes).

Authenticated encryption:

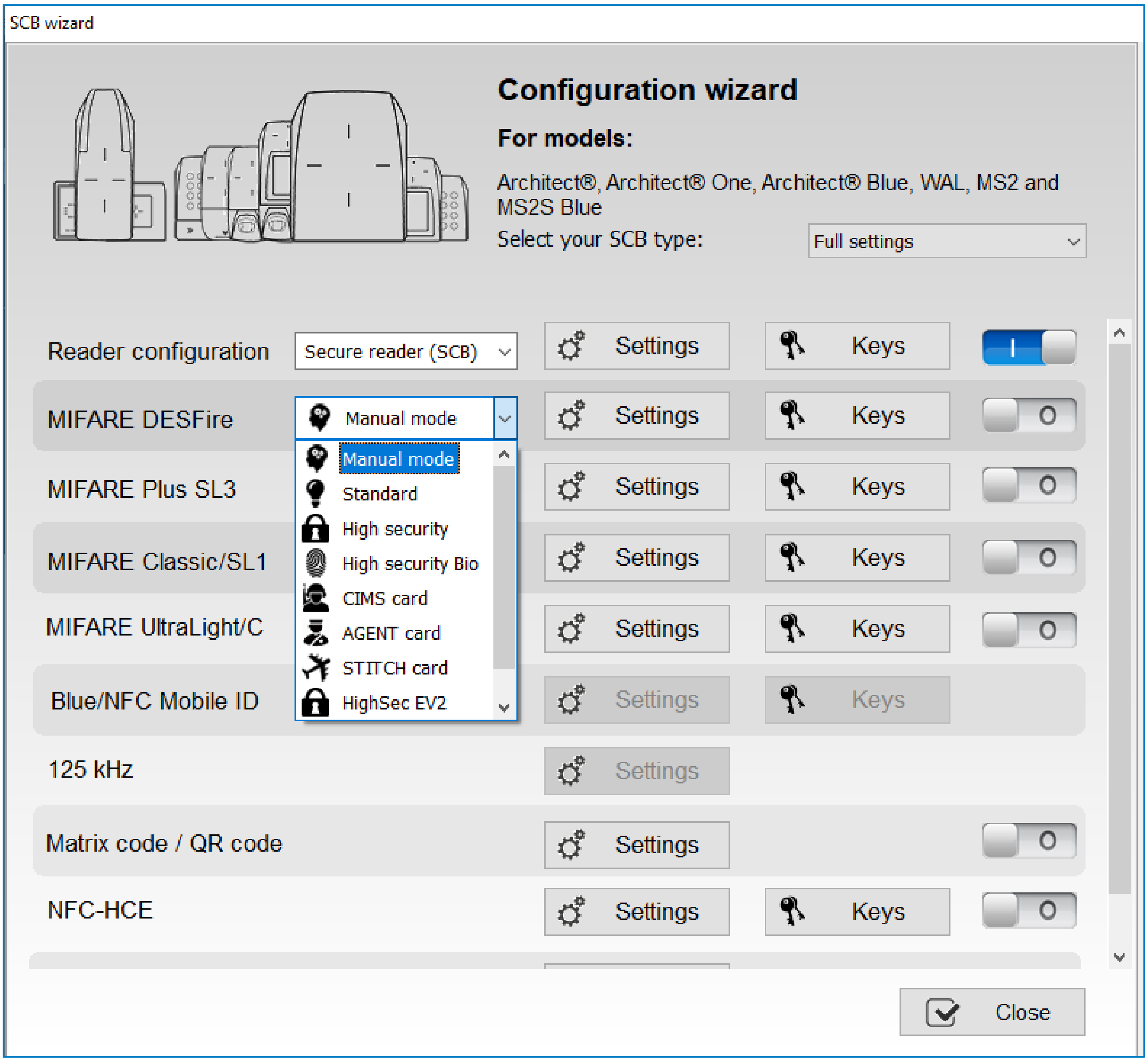
Enter the authenticated encryption key.

Secure channel based key (SCBK)

Assign with OCB configuration card the secure channel base key.

Click the button ☑ Validate **to complete the key settings.**

III. 5 - MIFARE® DESFire®: settings



SCB wizard

Configuration wizard

For models:

Architect®, Architect® One, Architect® Blue, WAL, MS2 and MS2S Blue

Select your SCB type: Full settings

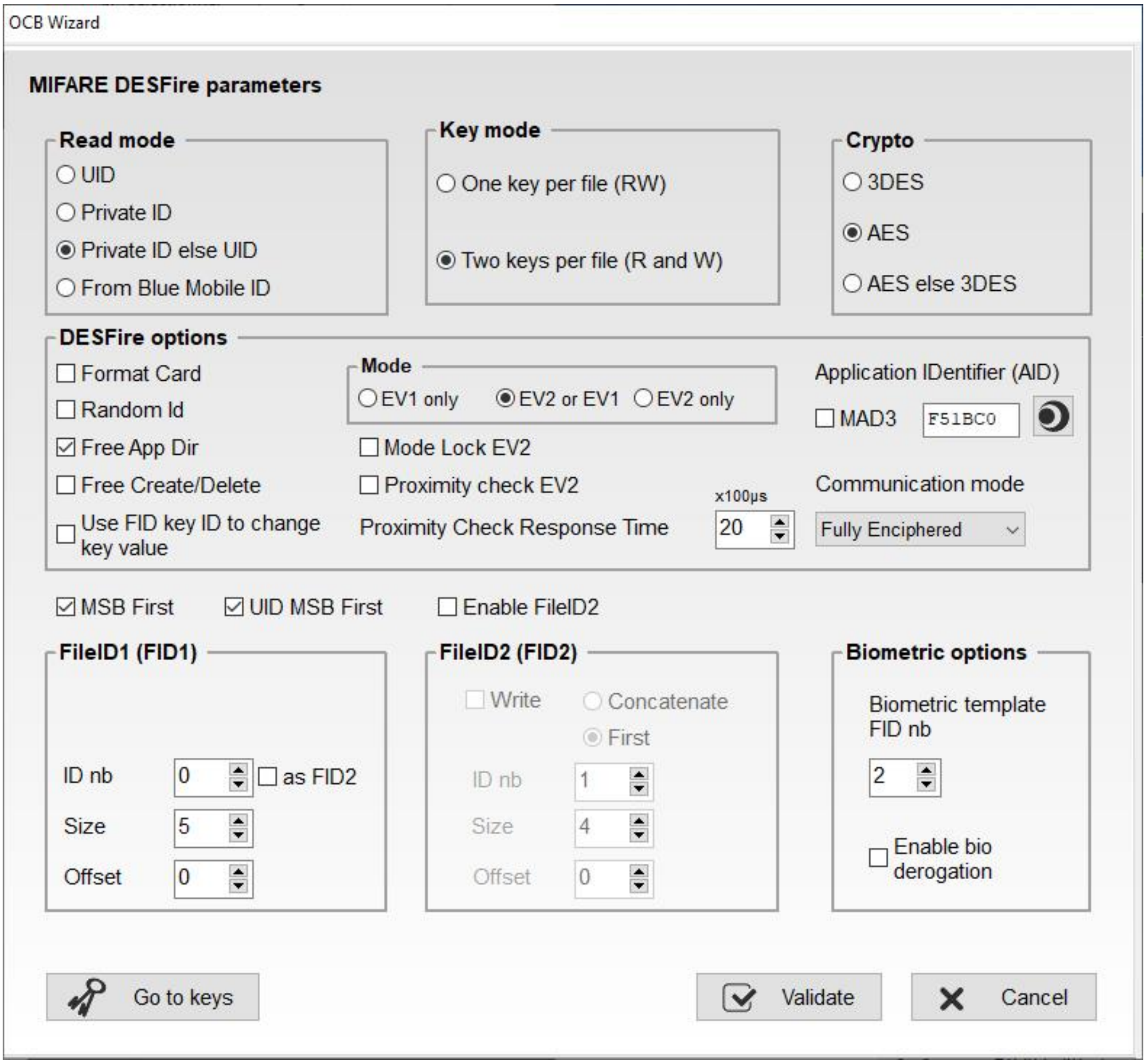
Reader configuration: Secure reader (SCB)

MIFARE DESFire: Manual mode

To help user with the settings of the DESFire® chip, a drop-down menu offers pre-configurations. Depending on the selected configuration, the parameters are automatically selected, and key values are generated randomly, it is always possible to view and / or make changes using the Settings and Keys buttons.

Manual Mode: all parameters and keys are to be entered manually.
Standard: corresponds to a standard secure level configuration.
High Security: corresponds to a high security configuration with Key Diversification.
High security Bio: corresponds to the high secure mode with biometric settings.
HighSecEV2: corresponds to a high security configuration with Key Diversification and Proximity Check.
HighSecEV2 Bio: corresponds to a highSecEV2 mode with biometric settings.

The three modes CIMS, AGENT and STITCH, corresponding to specific French cards.



OCB Wizard

MIFARE DESFire parameters

Read mode
○ UID
○ Private ID
● Private ID else UID
○ From Blue Mobile ID

Key mode
○ One key per file (RW)
● Two keys per file (R and W)

Crypto
○ 3DES
● AES
○ AES else 3DES

DESFire options
□ Format Card
□ Random Id
☑ Free App Dir
□ Free Create/Delete
□ Use FID key ID to change key value

Mode
○ EV1 only ● EV2 or EV1 ○ EV2 only
□ Mode Lock EV2
□ Proximity check EV2
Proximity Check Response Time x100µs 20

Application IDentifier (AID)
□ MAD3 F51BC0
Communication mode: Fully Enciphered

☑ MSB First ☑ UID MSB First □ Enable FileID2

FileID1 (FID1)
ID nb 0 □ as FID2
Size 5
Offset 0

FileID2 (FID2)
□ Write ○ Concatenate ● First
ID nb 1
Size 4
Offset 0

Biometric options
Biometric template FID nb 2
□ Enable bio derogation

Read mode

- ❖ UID: Reader configured in “read-only serial number”.
- ❖ Private ID: Reader configured in “read-only private code”.
- ❖ Private ID else UID: Reader configured in “read-only private code”. If it is not found or if the security settings are incorrect, then the reader will read and return the UID.
- ❖ From Blue Mobile ID*: Reader configured in “read-only Blue mobile ID code”.

Key mode

- ❖ One key per file (RW): Use one key per file used for reading and writing.
- ❖ Two key per file (R & W): Use two keys per file. A key used for reading, the second for reading and writing.

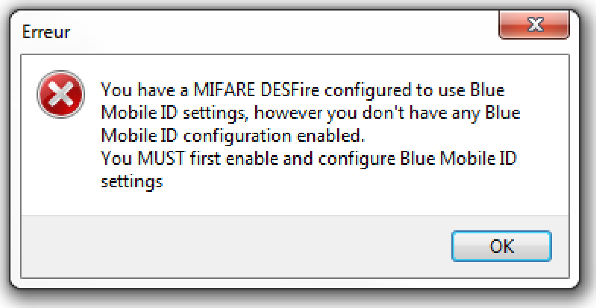
Crypto
Choose the authentication method to use.

- 3DES
- AES
- AES but 3DES: In this case the reader will accept two authentication methods. First authentication AES, second in 3DES. The key value must be the same.

It is also possible to modify the authentication method; you must change the value of the Card Master Key by checking New and writing the value and selecting the authentication method.

*From BlueMobileID

- If this mode is select, a Blue configuration must be enabled; if you select this option without Blue configuration you have the error:

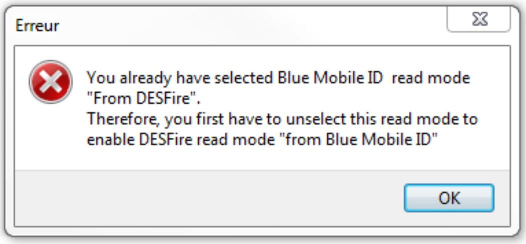


You have a MIFARE DESFire configured to use Blue Mobile ID settings, however you don't have any Blue Mobile ID configuration enabled.
You MUST first enable and configure Blue Mobile ID settings

- In this mode, the DESFire parameters are automatically determined and inherited from the Blue configuration.
  These settings cannot be changed:
  - ✓ Crypto method: AES
  - ✓ AID: 0xF"site code Blue configuration"0
  - ✓ MSB First
  - ✓ RandomID: no
  - ✓ Enable FID2: no
  - ✓ Data type: Raw
  - ✓ FID1: 0
  - ✓ Size and offset same as Blue configuration

  These settings can be changed:
  - ✓ Format Card
  - ✓ FreeAppDir
  - ✓ Biometric template FID nb

- If FromBlueMobileID is select and BlueMobileID is configured on FromDESFire:



You already have selected Blue Mobile ID read mode "From DESFire".
Therefore, you first have to unselect this read mode to enable DESFire read mode "from Blue Mobile ID"

DESFire® options

- **Format card**:

  If this option is enabled, DESFire® EV1 / EV2 chips will be formatted before encoding. For this it is necessary to enter the current value of the Card Master Key of the chip.

  Warning

  This option will completely erase the data (applications and files) of the chip but not the current key.

- **Random Id**:

  If this option is enabled, the DESFire® EV1 / EV2 chips will be configured in Random Id mode. It means the chip serial number sent for each "Scan" will be different and coded on 32 bits.

  Warning

  This option is irreversible. The Random ID cannot be disabled afterwards.

- **Free App dir**:

  If this option is enabled, reading the list of applications included in the chip will be possible without authentication.
  This option is enabled by default on the chip DESFire® EV1/EV2.

- **Use FID key ID to change key value**:

  By default in SECard a change of key value file requires a preliminary authentication with the Master Key Application.
  If this option is enabled, SECard will authenticate with the key to change.
  To use this option with a chip that has been encoded but not with SECard, requires that the application has been created with the access rights to the "Configuration Changeable OK" otherwise it will format the chip or delete the application.
  In the case of encoding maps agents this option must be enabled.

- **Free C/D**:
  On the DESFire it's possible to choose the settings of application.
  By default SECard create Application with Free Create/Delete. To create / delete file, authentication with Application Master key is not required.

  If this box is check application will be created without Free Create/Delete. To create / delete file, authentication with Application Master key is required.

- **Communication mode:**

  On the DESFire® EV1/EV2, it's possible to choose the communication mode with the file.
  There are three different modes: Plain, MACed or Fully Enciphered.

  - **Plain**: communication in plain.
  - **MACed**: communication in plain with signature DES/3DES or AES.
  - **Fully Enciphered**: communication fully enciphered in DES/3DES or AES.

  This setting is applied to the encoding and to the reading.

  Warning

  The default communication mode in SECard is Fully Enciphered up to SECard versions < 3.0.0

❖ **Application IDentifier**:

If "MAD3" is checked, then the value of the identifier of the application will be four characters long, but it real value will consist of six, SECard forcing the first character to the value "F" and the last to "0" .
Example: For *Application IDentifier* “51BC”, application really created will be “F51BC0”.

If this box is unchecked, the field of AID is no longer restrained and completely customizable by the user, and then it is possible to set it to 6 characters long

❖ **Mode for reading**

The DESFire® EV2 offers security features (Secure messaging EV2) that we will call here Mode Ev2: including the prohibition of dialogue in EV1 and 3DES.

EV1 only:
Reader configured to read Ev1 and EV2 in EV1 mode.
A not locked EV2 will be read as an EV1.
A locked EV2 will not be read.

EV2 or EV1:
Reader configured to read EV2 (locked or not) and EV1.
Reader will try to communicate in EV2 mode, if he fails it tries in EV1.

EV2 only:
Reader configured to read EV2 only.
An EV1 will not be read.

❖ **Mode for encoding**

EV1 only:
Encode only in EV1 mode.
A not locked EV2 will be encoded as an EV1.
A locked EV2 will not be encoded.

EV2 or EV1:
Encode an EV1 in EV1 AES mode and an EV2 (locked or not) in EV2 mode.

EV2 only:
Encode only in EV2 mode.
An EV1 will not be encoded.

❖ **Lock EV2 Mode (Secure messaging)**

Only available for EV2 chip. During the encoding, the chip will be configured to communicate only in Secure Messaging EV2. It will no longer be able to talk in EV1 or 3 DES.

Warning
This operation is definitive, no possible ‘CANCEL’.

❖ **EV2 Proximity check / Proximity check Response Time**

Enables protection against relay attacks.
Puts tighter timing constraints on the permitted round-trip delay during authentication, in order to make it harder to forward messages to far-away cards or readers via computer networks.

The maximum acceptable time for exchange of the Proximity Check is user-defined (multiple of 100 micro seconds).

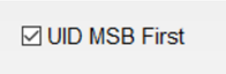
MSB First

If the box is checked, the reader reads the identifier Most Significant Byte First.
If the box is unchecked, the reader reads the identifier Least Significant Byte First.

For STid reader, the MSB First is default mode.

UID MSB First

If “Read mode” is “Private ID else UID”, define the reading for Private ID **and** for UID.
With this option, you can separately define the reading direction for the private ID and the UID.



☑ UID MSB First

If the box is checked, the reader reads the UID Most Significant Byte First.
If the box is unchecked, the reader reads the UID Least Significant Byte First.

Enable FileID2

Activate the settings of the second file.

SECard allows the user to encode two files with two possibilities**:**

- Reserve the space for the second file without encoding it.
- Write the second file at the same time than the first.

FileID1(FID1)

Set the first data file:

- Data type: Choose the data type **to read**:
  - Raw: if data in the card have been written in hexadecimal.
  - ASCII: if data in the card have been written in ASCII Decimal – max 17 digits (8 bytes).(for ex: 0x313131 written in the card will be read 111 or 0x6F depending protocol chosen).
    Only available for ARC & ARC1 readers
- ID nb: Choose the number (0 to 31) of the file to be created into application.
- Size: Choose the size of ID to be encoded.
- Offset: Define an offset in the encoding from the first byte.
- As FID2: Encode the second file in a future encoding.

  Must report data (key, size, file number ...) of the second file in the field box FileID1. After this manipulation, the FID2 will be ready to be encoded and read by the reader without reconfiguring by SCB card.

FileID2(FID2)

Set the second data file, if the box “Enable FileID2” is checked:

- ❖ Write: Encode the second file in the same time than the first. If the box is not checked, the second file is not encoded, but the settings are known by the reader.
- ❖ ID nb: Choose the number (0 to 31) of the file to be created into application.
- ❖ Size: Choose the size of ID to be encoded.
- ❖ Offset: Define an offset in the encoding from the first byte.
- ❖ Concatenate: This feature informs to tell the reader that it must read the files FID1 and FID2. The information brought up by the reader will be then concatenated (the first file and second file). In this case of configuration, it is necessary that the global encoded data size (FID1 & FID2) match the size of outgoing protocol defined in the configuration of the reader. (Example: for a Wiegand 3CB 5 bytes, the total size of both files should be 5 bytes or less). In the opposite case, the reader will truncate the FID2 data. In this mode, the file FID2 is also automatically written at first encoding if the box “Write” is checked.
- ❖ First: In this mode, the reader automatically reads the first file found using security parameters. If authentication with the file FID1 is not possible (bad key values for example), the reader will then attempt to read the second file.

Note:
File 1 and 2 are Standard data files (StandardDataFile) of 48 bytes each.
RF communication is according the choice of user.

Both numbers of the two files must be different from the number of biometric file otherwise numbers will be highlighted in red.

Warning

In the case of using two files and when the "Write" is activated (Concatenate or First), it is important that the sizes defined in the field “size” of the files 1 and 2 correspond to those to be encoded.

For this, the addition of insignificant 0 may be necessary
Example: for an ID 0x11 0x22, if the defined size is 3 bytes, i twill then fill 0x00 0x11 0x22.
.

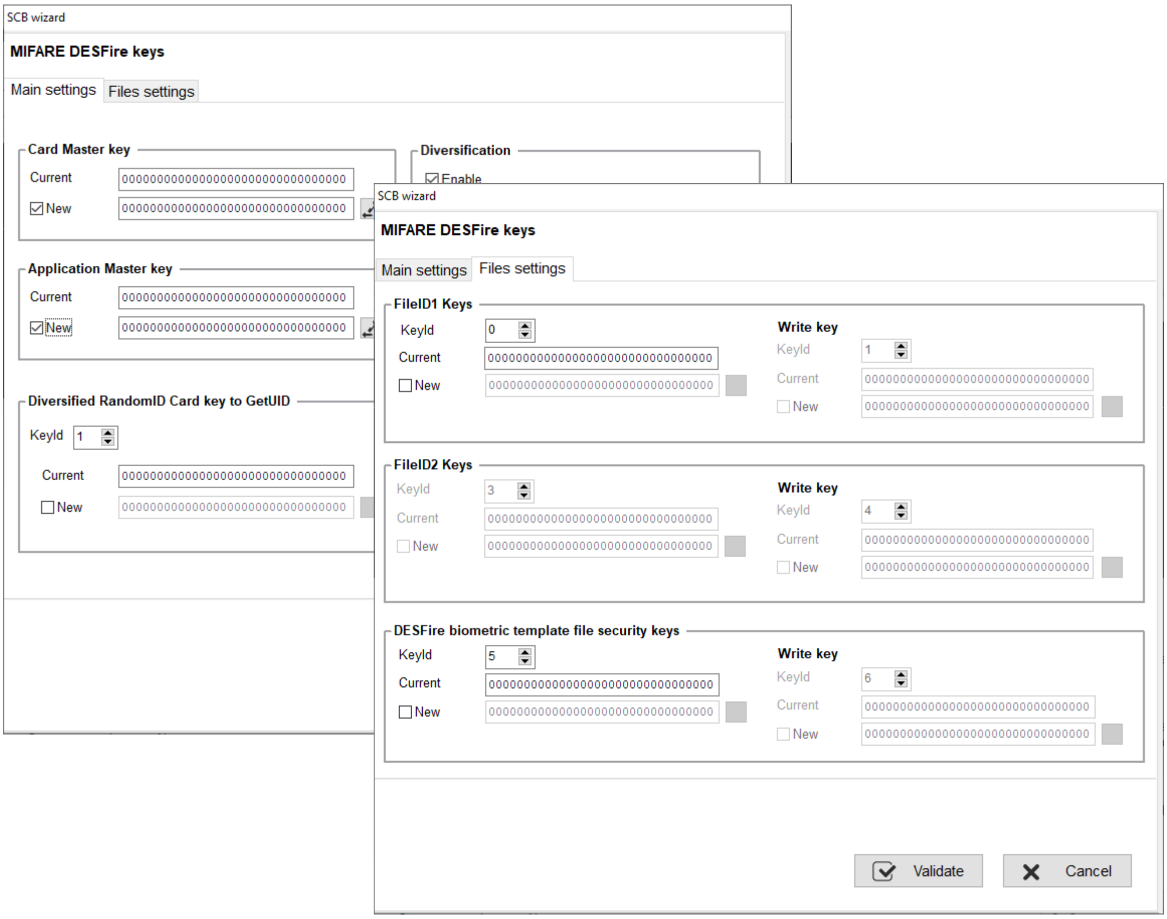
Biometric options

- ❖ Biometric template FID nb: Choose the number (0 to 31) of the file that will be encoded fingerprints.
- ❖ Enable bio derogation: refer to *T7.2 - Biometric derogation*.

Goto Keys: shortcut to the DESFire keys settings**.**

Click the button ☑ Validate **to complete the DESFire® settings.**

III. 6 - MIFARE® DESFire®: keys



SCB wizard

MIFARE DESFire keys

Main settings | Files settings

Card Master key

Current: 00000000000000000000000000000000

☑ New: 00000000000000000000000000000000

Diversification

☑ Enable

Application Master key

Current: 00000000000000000000000000000000

☑ New: 00000000000000000000000000000000

Diversified RandomID Card key to GetUID

KeyId: 1

Current: 00000000000000000000000000000000

□ New: 00000000000000000000000000000000

SCB wizard

MIFARE DESFire keys

Main settings | Files settings

FileID1 Keys

KeyId: 0

Current: 00000000000000000000000000000000

□ New: 00000000000000000000000000000000

Write key

KeyId: 1

Current: 00000000000000000000000000000000

□ New: 00000000000000000000000000000000

FileID2 Keys

KeyId: 3

Current: 00000000000000000000000000000000

□ New: 00000000000000000000000000000000

Write key

KeyId: 4

Current: 00000000000000000000000000000000

□ New: 00000000000000000000000000000000

DESFire biometric template file security keys

KeyId: 5

Current: 00000000000000000000000000000000

□ New: 00000000000000000000000000000000

Write key

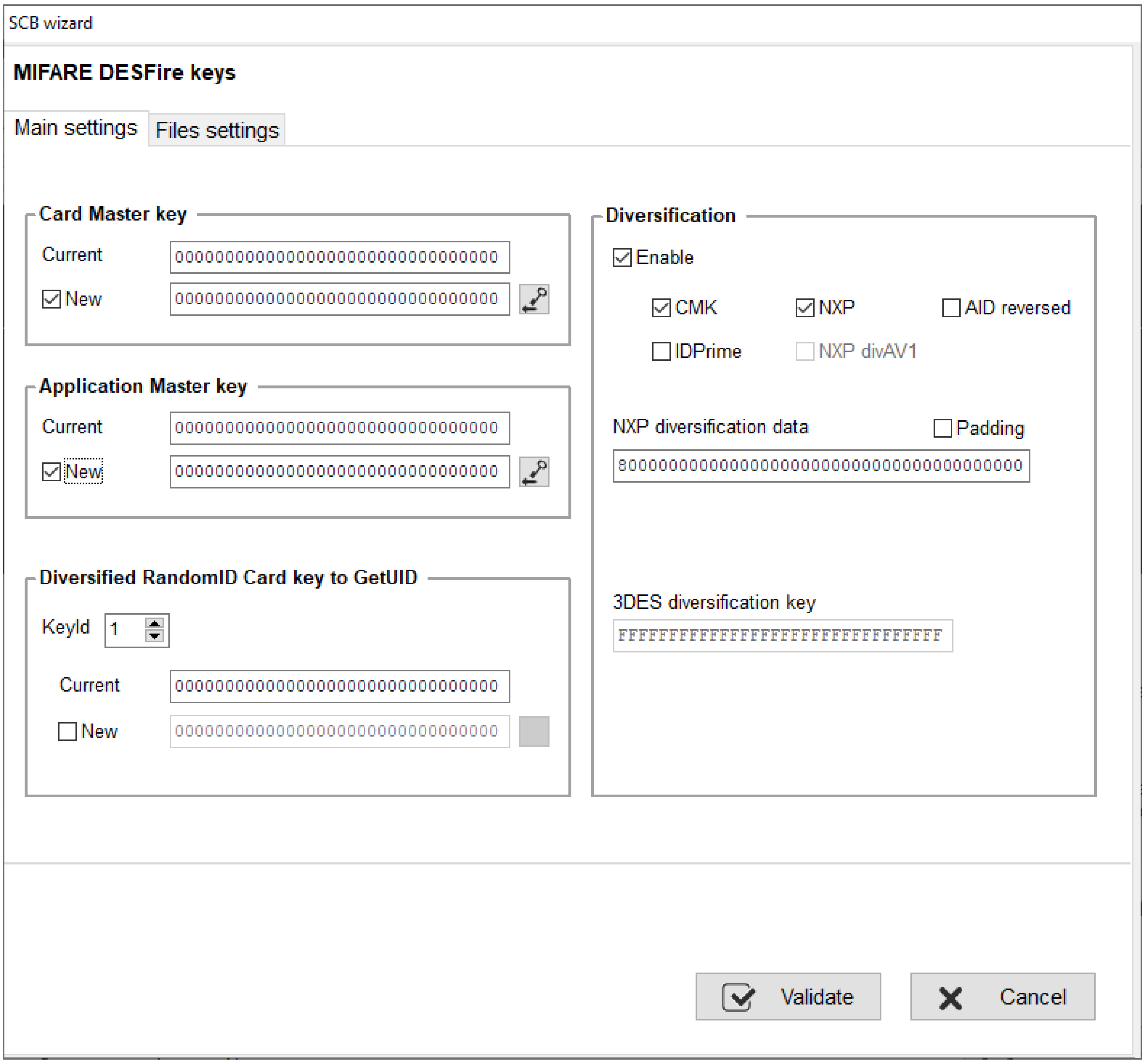
KeyId: 6

Current: 00000000000000000000000000000000

□ New: 00000000000000000000000000000000

Define all the MIFARE® DESFire® keys.

For more information about the memory organization refer to *T3.2 - MIFARE® DESFire® and MIFARE® DESFire® EV1/2 chips memory* mapping.



SCB wizard

MIFARE DESFire keys

Main settings | Files settings

Card Master key

Current: 00000000000000000000000000000000

☑ New: 00000000000000000000000000000000

Application Master key

Current: 00000000000000000000000000000000

☑ New: 00000000000000000000000000000000

Diversified RandomID Card key to GetUID

KeyId: 1

Current: 00000000000000000000000000000000

☐ New: 00000000000000000000000000000000

Diversification

☑ Enable

☑ CMK ☑ NXP ☐ AID reversed

☐ IDPrime ☐ NXP divAV1

NXP diversification data ☐ Padding

8000000000000000000000000000000000000000

3DES diversification key

FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

Card Master key

Card Master key is the value of the master key of the chip MIFARE® DESFire® and MIFARE® DESFire® EVx.

Default value is « 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 » (16 bytes to 00h).
It is recommended to change its value to optimize security.

Application Master key

Application Master key is the value of the key of the application that has been defined within the settings MIFARE® DESFire® and MIFARE® DESFire® EVx.

Default value is « 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 » (16 bytes to 00h).
It is recommended to change its value to optimize security.

Diversified RandomID Card Key to GetUID

In the case of RandomID card and diversification, it’s necessary to authenticate with the card to get the UID with GetUID command.

By default, the key used to make the authentication is the Card Master Key (CMK), if you don’t know this key defined another key to authenticate.
This key is created during encoding only if RandomID is select in settings and box “New” is checked.

Note: if you don’t enter a new value with box new check, the GetUID used CMK key.

Diversification

- ☑ Enable

This function allows you to use another key than the one known by the user. To do this, the encoder uses the algorithm defined in the box “*Crypto”* in the DESFire® settings, to generate another key.

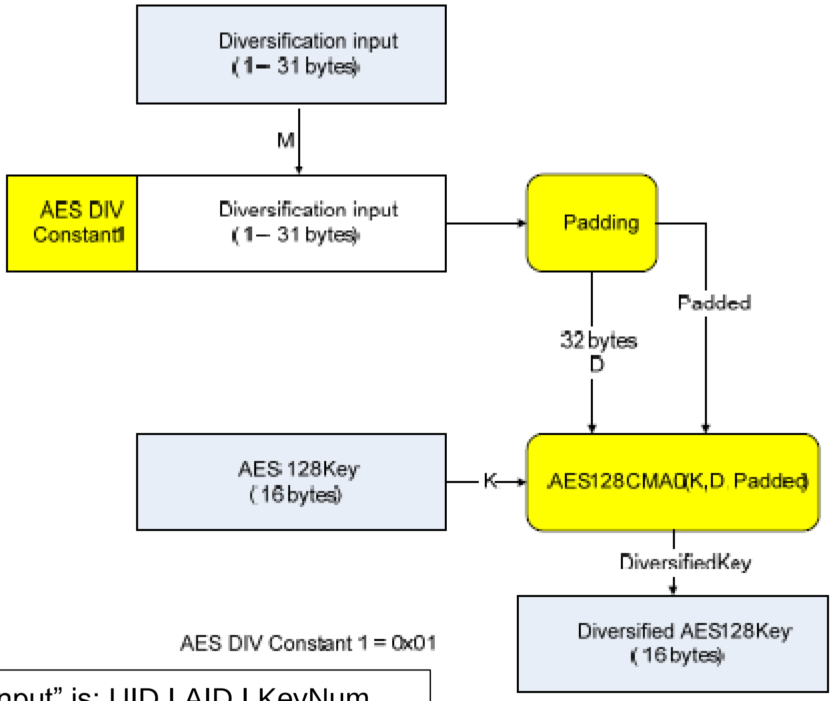
- If the current algorithm is the 3DES, the generated key is a function of 3DES encryption key set in the 16-byte "3DES key diversification" field. It is necessary that the first 8 bytes of this key are different to the last 8 bytes.

- If the current algorithm is AES, the key will be generated based on the user key and other parameters. In this case, the "key 3DES diversification" field is grayed.

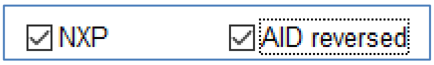
- ☑ CMK — diversify the Card Master Key.
To deactivate diversification applied to the Card Master Key, it is necessary to uncheck the "CMK" option and format the chip via the option "Format the card". Furthermore, you have to change the keys.

- ☐ NXP — Diversified key according to NXP-AN-165310.

☑ NXP — Diversified key according to NXP-AN10922 method.

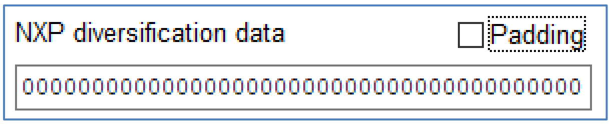


“Diversification input” is: UID I AID I KeyNum.

- 

  ☑ NXP ☑ AID reversed

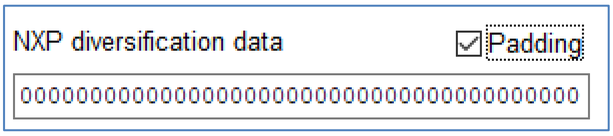
  Diversified key according to NXP-AN10922 method with reversed AID (LSB / MSB) before the computation of the diversified key.
  Ex. AID = 10 C5 FB or AID = FB C5 10.

- 

  NXP diversification data □ Padding

  0000000000000000000000000000000000000000

  Specifies the 20-byte input used in NXP AN-10922 diversification (use CMAC K1*).

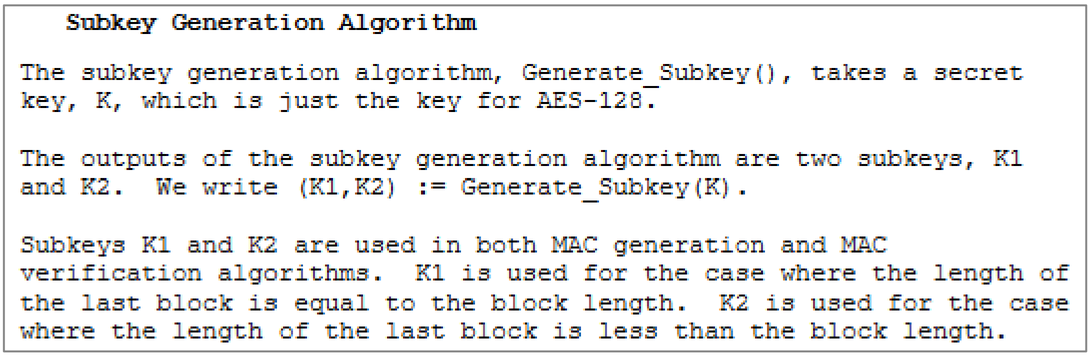
- 

  NXP diversification data ☑ Padding

  0000000000000000000000000000000000000000

  Specifies the 20-byte padding used in NXP AN-10922 diversification (use CMAC K2*).

  * RFC 4493:

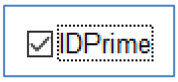


```
    Subkey Generation Algorithm

  The subkey generation algorithm, Generate_Subkey(), takes a secret
  key, K, which is just the key for AES-128.

  The outputs of the subkey generation algorithm are two subkeys, K1
  and K2.  We write (K1,K2) := Generate_Subkey(K).

  Subkeys K1 and K2 are used in both MAC generation and MAC
  verification algorithms.  K1 is used for the case where the length of
  the last block is equal to the block length.  K2 is used for the case
  where the length of the last block is less than the block length.
```

Note: in order to authenticate with the French Card CIMS you MUST use one of these methods.

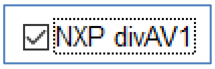
Note:

- For diversification to be effective it is necessary to also check the "New" key boxes to diversify and enter the value of the key.
- It is possible to use the diversification and Random Id options at the same time in a configuration. However, the *Card Master Key* won't be diversified.

- 

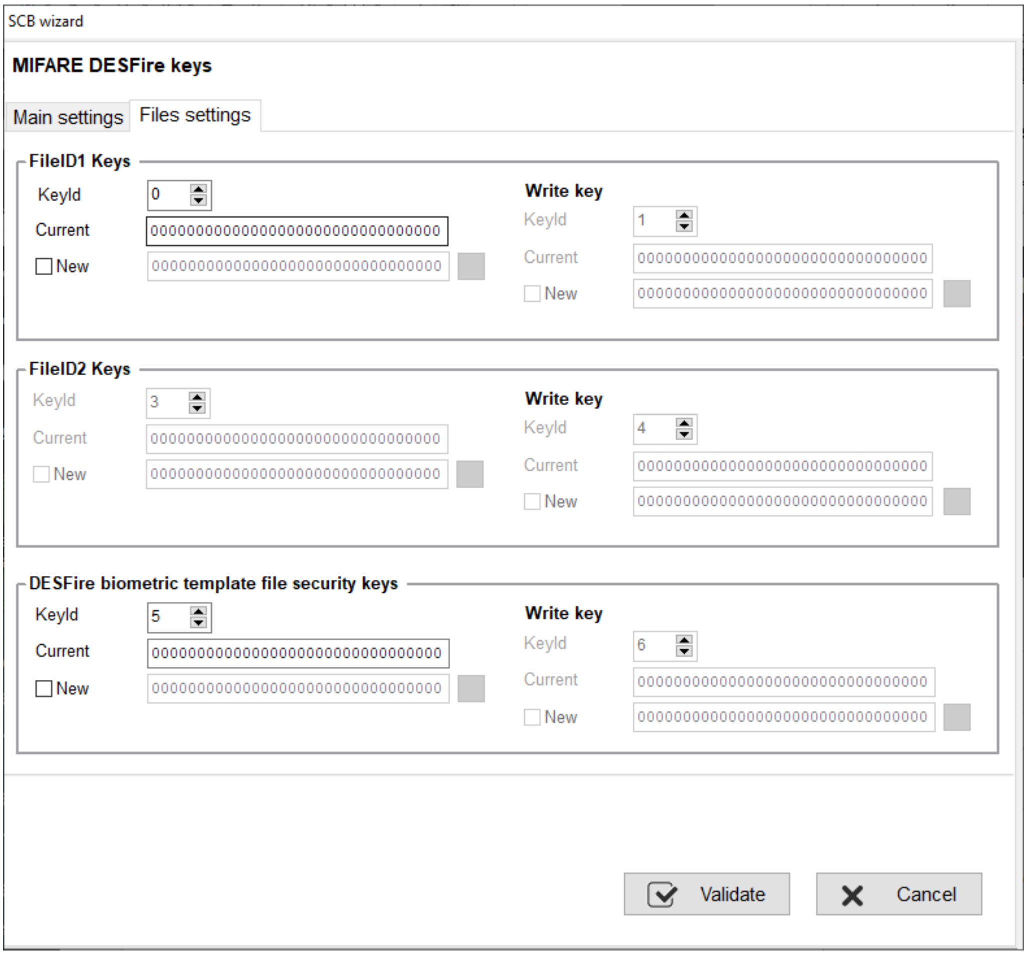
  ☑ IDPrime

  Check this box **to read** card encoded with specific Gemalto MD3811 diversification (1 I UID I Padding & Card UID Len=4) **only to read encoded card not for encoding**.

- 

  ☑ NXP divAV1

  Diversified key according to NXP-AN-0148 (3DES divAv1)



SCB wizard

MIFARE DESFire keys

Main settings | Files settings

FileID1 Keys

- KeyId: 0
- Current: 00000000000000000000000000000000
- □ New: 00000000000000000000000000000000

Write key

- KeyId: 1
- Current: 00000000000000000000000000000000
- □ New: 00000000000000000000000000000000

FileID2 Keys

- KeyId: 3
- Current: 00000000000000000000000000000000
- □ New: 00000000000000000000000000000000

Write key

- KeyId: 4
- Current: 00000000000000000000000000000000
- □ New: 00000000000000000000000000000000

DESFire biometric template file security keys

- KeyId: 5
- Current: 00000000000000000000000000000000
- □ New: 00000000000000000000000000000000

Write key

- KeyId: 6
- Current: 00000000000000000000000000000000
- □ New: 00000000000000000000000000000000

FileID1 Keys / FileID2 Keys

Set the number key and key value for data files.
Warning, the key number 0 is the Application Master Key.

If using “One key per file” the section “Write key” is grayed.

To change a key value, in the "Current" field fill the current key and then checked "New" and fill in the field with the value of the desired key.

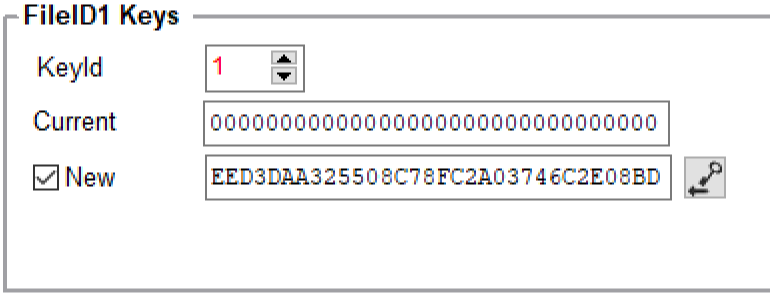
Default key are 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00.

Note:

From SECard 3.0.0, it is not required to write the value of New in Current to re-encode the card.

- **Particular case:** it is possible to use the same key for file 1 and file 2.

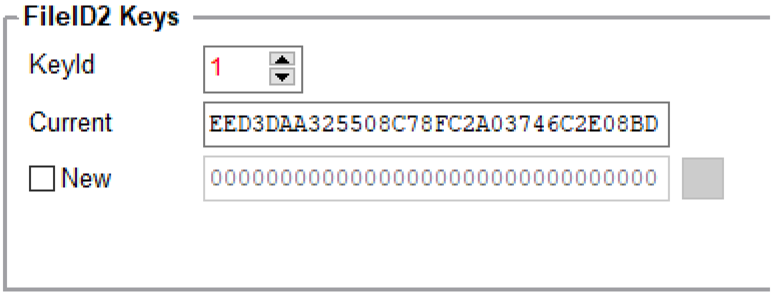
  In this case, the key fields must be filled in as below:


FileID1 Keys

Keyld: 1

Current: 00000000000000000000000000000000

☑ New: EED3DAA325508C78FC2A03746C2E08BD

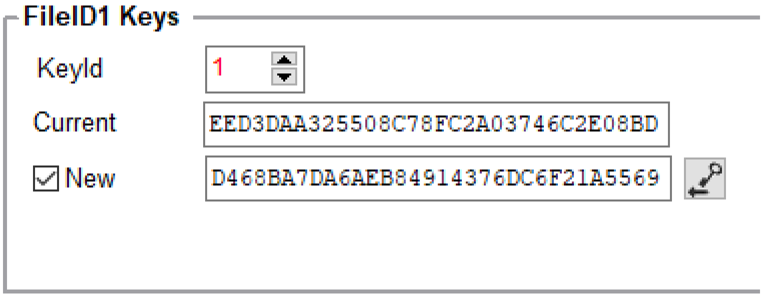

FileID2 Keys

Keyld: 1

Current: EED3DAA325508C78FC2A03746C2E08BD

☐ New: 00000000000000000000000000000000

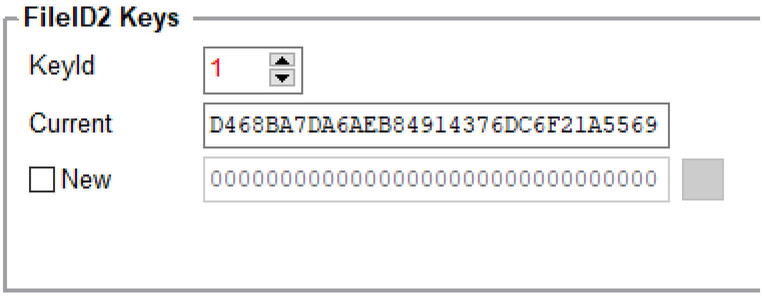
To change the value of the key, the key fields must be filled in as below:


FileID1 Keys

Keyld: 1

Current: EED3DAA325508C78FC2A03746C2E08BD

☑ New: D468BA7DA6AEB84914376DC6F21A5569

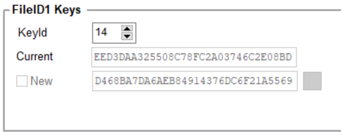

FileID2 Keys

Keyld: 1

Current: D468BA7DA6AEB84914376DC6F21A5569

☐ New: 00000000000000000000000000000000

- **Free Read**


FileID1 Keys

Keyld: 14

Current: EED3DAA325508C78FC2A03746C2E08BD

☐ New: D468BA7DA6AEB84914376DC6F21A5569

  To read a file encoded with Free Read use the key number 14. The key field is grayed out.

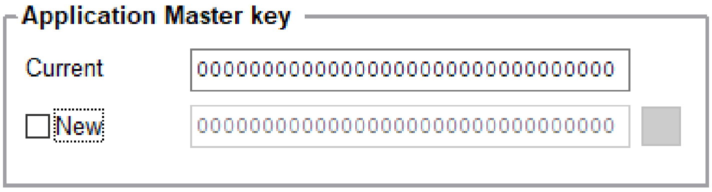
  When this key is used for reading key, the reading does not require authentication.

- **Using a single key to manage application and file security**

With SECard ≥ 3.0.0, you can use the Application Master Key (0) to manage the security of the application and file 1. File 2 must not be activated.

Case of One key per file (RW):

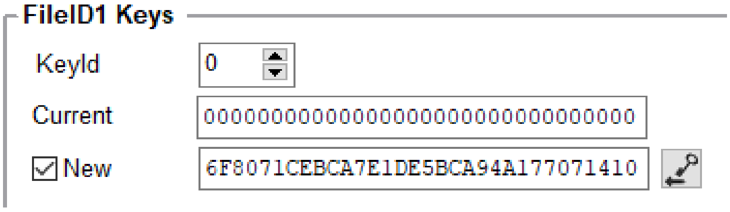
First encoding



Application Master key

Current 00000000000000000000000000000000

□ New 00000000000000000000000000000000



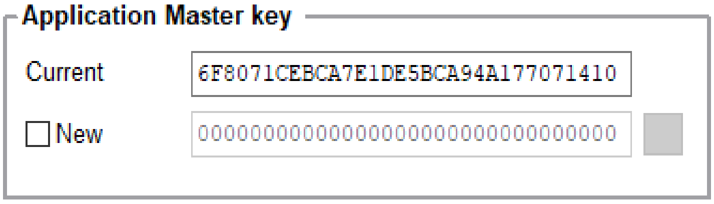
FileID1 Keys

KeyId 0

Current 00000000000000000000000000000000

☑ New 6F8071CEBCA7E1DE5BCA94A177071410

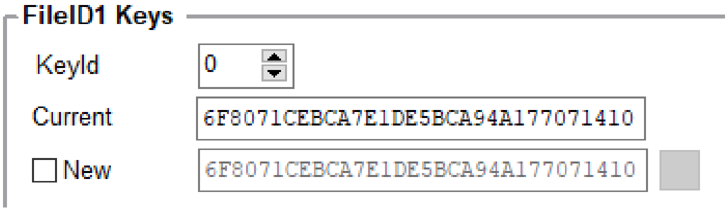
Second encoding with the same key value



Application Master key

Current 6F8071CEBCA7E1DE5BCA94A177071410

□ New 00000000000000000000000000000000



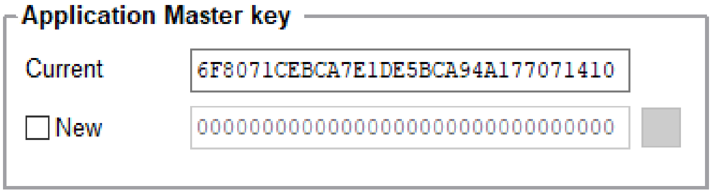
FileID1 Keys

KeyId 0

Current 6F8071CEBCA7E1DE5BCA94A177071410

□ New 6F8071CEBCA7E1DE5BCA94A177071410

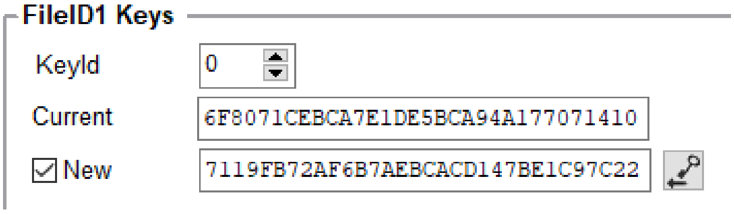
Second encoding with change key value



Application Master key

Current 6F8071CEBCA7E1DE5BCA94A177071410

□ New 00000000000000000000000000000000



FileID1 Keys

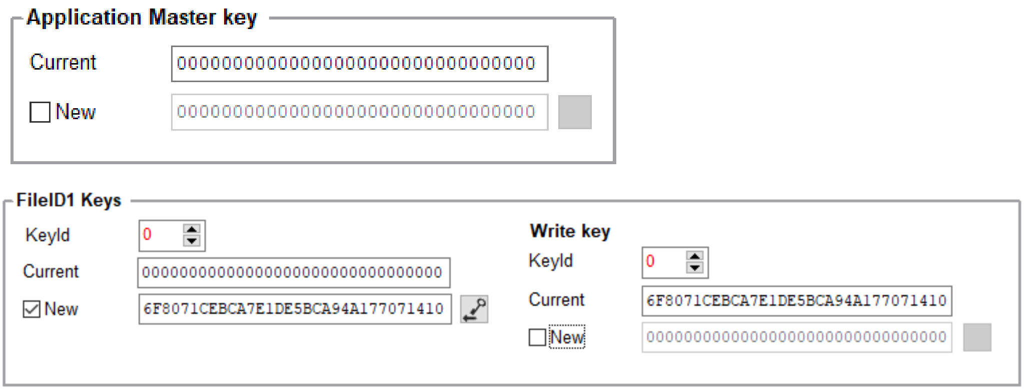
KeyId 0

Current 6F8071CEBCA7E1DE5BCA94A177071410

☑ New 7119FB72AF6B7AEBCACD147BE1C97C22

Case of two keys per file:

First encoding on virgin card

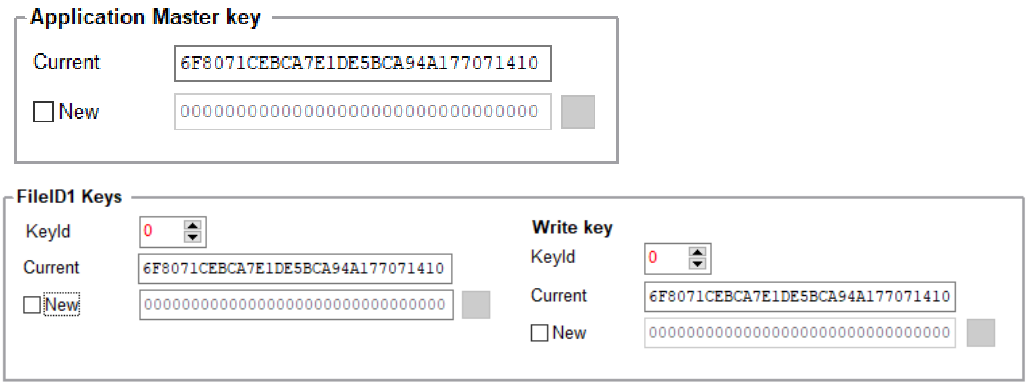


Application Master key
Current 00000000000000000000000000000000
□ New 00000000000000000000000000000000

FileID1 Keys
KeyId 0
Current 00000000000000000000000000000000
☑ New 6F8071CEBCA7E1DE5BCA94A177071410

Write key
KeyId 0
Current 6F8071CEBCA7E1DE5BCA94A177071410
□ New 00000000000000000000000000000000

Second encoding with the same key value

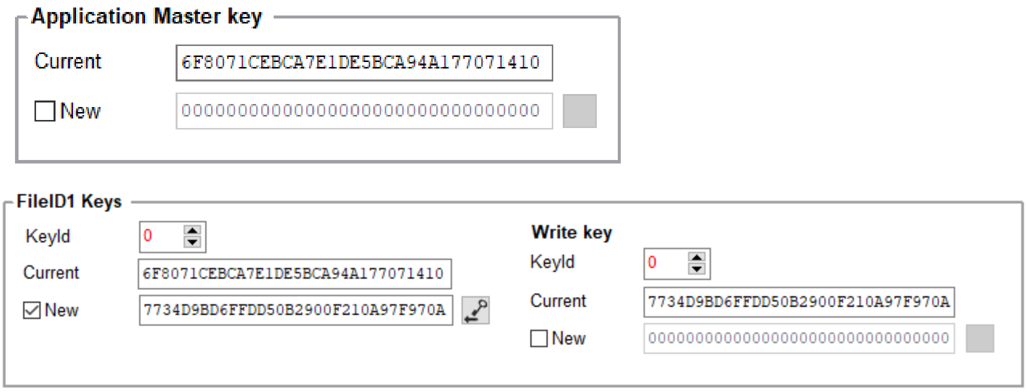


Application Master key
Current 6F8071CEBCA7E1DE5BCA94A177071410
□ New 00000000000000000000000000000000

FileID1 Keys
KeyId 0
Current 6F8071CEBCA7E1DE5BCA94A177071410
□ New 00000000000000000000000000000000

Write key
KeyId 0
Current 6F8071CEBCA7E1DE5BCA94A177071410
□ New 00000000000000000000000000000000

Second encoding with change key value



Application Master key
Current 6F8071CEBCA7E1DE5BCA94A177071410
□ New 00000000000000000000000000000000

FileID1 Keys
KeyId 0
Current 6F8071CEBCA7E1DE5BCA94A177071410
☑ New 7734D9BD6FFDD50B2900F210A97F970A

Write key
KeyId 0
Current 7734D9BD6FFDD50B2900F210A97F970A
□ New 00000000000000000000000000000000

DESFire® biometric template file security keys

Set the key number and key value for biometric file.

If using “One key per file” the section “Write key” is grayed.

To change a key value, in the "Current" field fill the current key and then checked "New" and fill in the field with the value of the desired key.

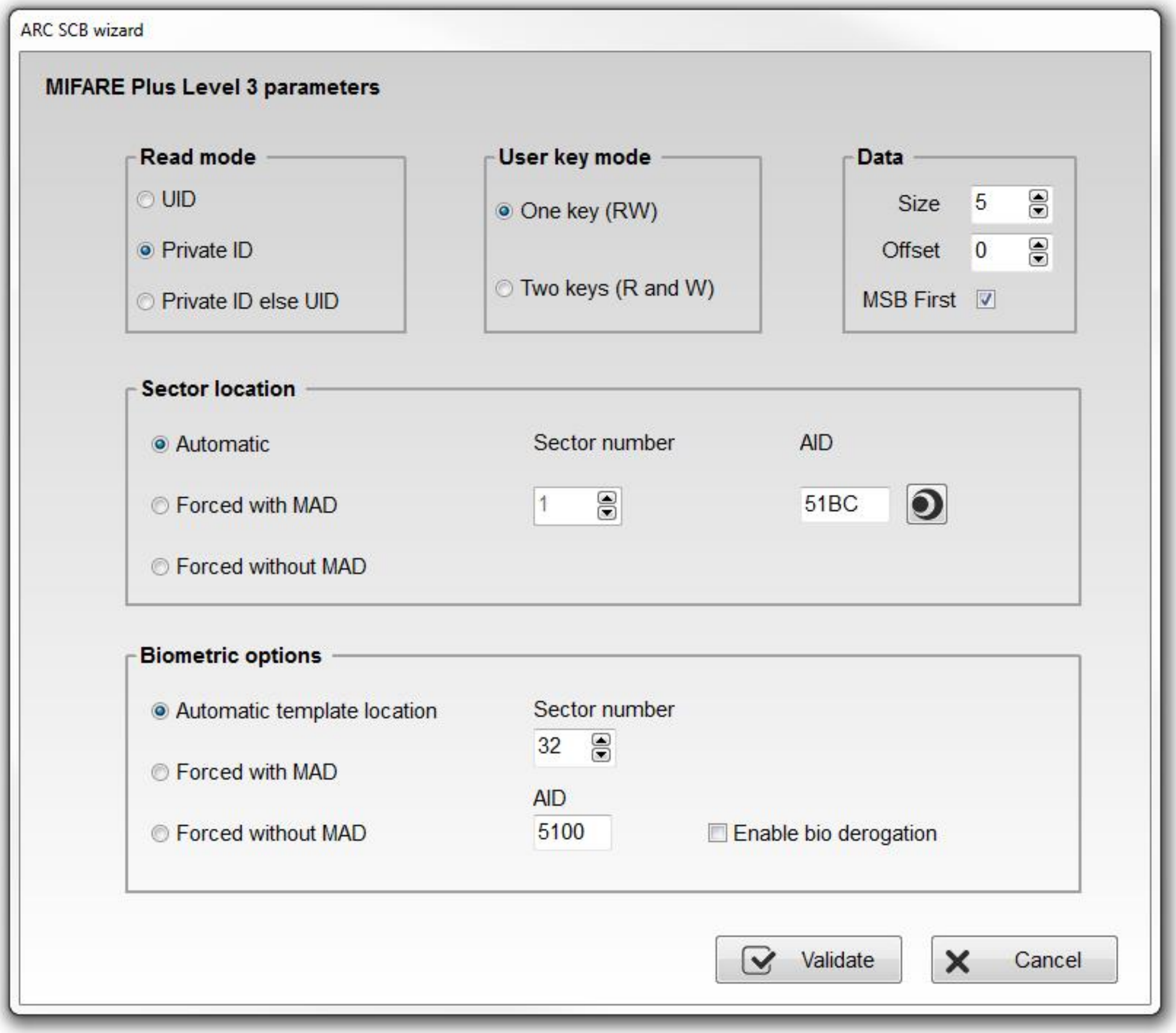
Default key are 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00.

Note:

If in DESFire® settings the Read mode is “From Blue Mobile ID”, file ID1 keys are automatically determined according to Blue configuration keys.

Click the button **to complete the DESFire® EVx keys.**

III. 7 - MIFARE Plus® SL3: settings



ARC SCB wizard

MIFARE Plus Level 3 parameters

Read mode

○ UID
● Private ID
○ Private ID else UID

User key mode

● One key (RW)
○ Two keys (R and W)

Data

Size: 5
Offset: 0
MSB First ☑

Sector location

● Automatic
○ Forced with MAD
○ Forced without MAD

Sector number: 1
AID: 51BC

Biometric options

● Automatic template location
○ Forced with MAD
○ Forced without MAD

Sector number: 32
AID: 5100
□ Enable bio derogation

Read mode

- UID: Reader configured in "read-only serial number".
- Private ID: Reader configured in "read-only private code".
- Private ID else UID: Reader configured in "read-only private code". If it is not found or if the security settings are incorrect, then the reader will read and return the UID.

User Key mode

- One key (RW): Use one key per sector used for reading and writing.
- Two keys (R et W): Use two keys per sector. A key used for reading, the second for reading and writing.

Data

- Size: Determines the length of the ID read in the sector. The value corresponds to the protocol selected in the configuration of the reader. However, it is possible to choose a different size by entering another value, in this case the reader will read the ID to the size specified in this field and will return to the format defined by the protocol.
- Offset: Define an offset in the encoding from the first byte.
- MSB First: If the box is checked the reader reads the identifier Most Significant Byte First. If the box is unchecked the reader reads the identifier Least Significant Byte First.

Sector location

Define the sector to encode datas and/ or read by the reader.

MAD (Mifare® Application Directory) is a "table of contents" which reference applications (information) written in the areas of users' card through an AID (Application Identifier. Cf. AN103787).

It is completely customizable and is divided into two parts: the cluster code and application code.

The MIFARE Plus® 2k chip has 32 sectors (0 à 31). It can be used with MAD1 (sector 0 to manage sectors 1 to 15) and MAD2 (sector 16 to manage 17 to 31).

The MIFARE Plus® 4k chip has 40 sectors (0 to 39).It can be used with MAD1 (sector 0 to manage sectors 1 to 15) and MAD2 (sector 16 to manage sectors 17 à 39). Only the first 31 sectors are managed by SECard.

The MAD is protected by a read key (Key A) and a write key (Key B). Defaults are:

- ✓ "A0 A1 A2 A3 A4 A5 A6 A7 A0 A1 A2 A3 A4 A5 A6 A7" for key A
- ✓ "FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF" for key B

These key values are those recommended by *NXP* application note which allows at all users to access the MAD.

With this method (MAD and AID) a reader can retrieve a user code in cards that have been encoded at different memory areas with personal data at different location (in memory card).

- ❖ Automatic + AID:
  In this mode, the user does not have to worry about the location of data. The "SCB" and the user card are created with the following parameters:
  - ❖ First free sector available in card is chosen by SECard by MAD scanning.
  - ❖ AID defined in "AID" field is transmitted to the reader by the "SCB".
  - ❖ The user MAD card is programmed with AID in the corresponding position in the first sector available using the default keys:
    - ▪ Read key (key A) "A0 A1 A2 A3 A4 A5 A6 A7 A0 A1 A2 A3 A4 A5 A6 A7" cannot modified
    - ▪ Write key (key B) "FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF" can be modified
  - ❖ The reader identifies the user card sector to read by searching the AID in the MAD.

- ❖ Forced with MAD + sector number + AID:
  In this mode, sector number will be forced by SECard and use to encode user ID, but AID select in "AID field will be written in MAD at right location (depending the sector number forced).
  Reader configured with these parameters will only use forced sector number and NOT MAD to find the sector to read.

- ❖ Forced without MAD + sector number:
  In this mode, no MAD management is performed. Only the parameter "sector number" is considered to find the location of data in the chip.
  The reader reads the information in this sector. For the sector 0, only blocks 1 and 2 will be read.

Note: AID 51BC displayed by default in the "AID" field is the value of the Application Identifier STid.

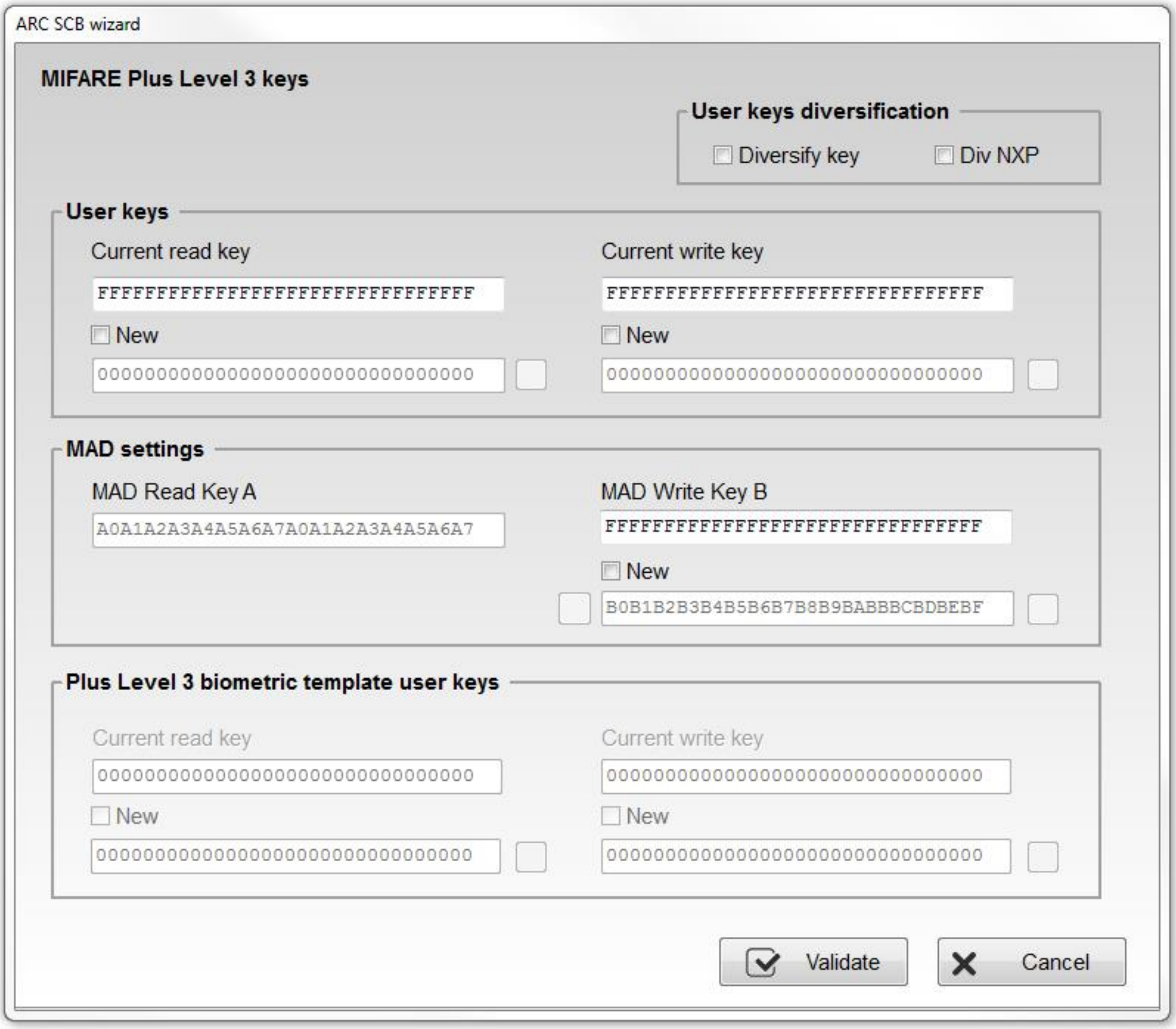
Biometric option

Fingerprints to encode will be registered in sectors 32 to 39 of chips MIFARE Plus® Level 3. Options “Auto”, “Forced with MAD” and “Forced without MAD” same principle as above.
In the case of the use of the MAD with AID, the AID value must be different from that used for the private ID.
Note: biometrics encoding is only possible on chips MIFARE Plus® Level 3 4KB of memory.

- Enable bio derogation: refer to *T7.2 - Biometric derogation*.

Click the button ☑ Validate to complete the MIFARE Plus® Level 3 settings.

III. 8 - MIFARE Plus® SL3: keys



ARC SCB wizard

MIFARE Plus Level 3 keys

User keys diversification
□ Diversify key □ Div NXP

User keys
Current read key: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
□ New: 00000000000000000000000000000000
Current write key: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
□ New: 00000000000000000000000000000000

MAD settings
MAD Read Key A: A0A1A2A3A4A5A6A7A0A1A2A3A4A5A6A7
MAD Write Key B: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
□ New: B0B1B2B3B4B5B6B7B8B9BABBBCBDBEBF

Plus Level 3 biometric template user keys
Current read key: 00000000000000000000000000000000
□ New: 00000000000000000000000000000000
Current write key: 00000000000000000000000000000000
□ New: 00000000000000000000000000000000

User keys diversification

- Activate / desactivate key diversification.
  This function allows you to use another than the one key than known by the user. To do this, the encoder uses the AES algorithm to generate another key. To that diversification is effective it is necessary to check the "New" key boxes to diversify and enter the value of the key.

- *"NXP"* diversify the key according to NXP-AN10922 method. If this option is not selected the keys will be diversified according to the NXP-AN165310 method.
  AES_CMAC(K,1|UID|blocNb).

User keys

Keys to protect the sector containing the private ID.
Enter the value of the current key and change it.

Note: From SECard 3.0.0, to re encode a Mifare Plus, it is not required to put the value from field New to field Current.

Home
Settings
Reader configuration
SCB / OCB
SKB
BCC
SSCP
Create user cards
Tools

MAD settings

This box is available only if the location of the sector was set to "Automatic" or "Forced with MAD" mode.

Key A, reading MAD is automatically forced to the value "A0 A1 A2 A3 A4 A5 A6 A7 A0 A1 A2 A3 A4 A5 A6 A7."

Key B, writing MAD is by default FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF, it is possible to change by completing the field New of MAD Write key B.

During a management MAD, key sectors "0" and "16" change. The access conditions are:

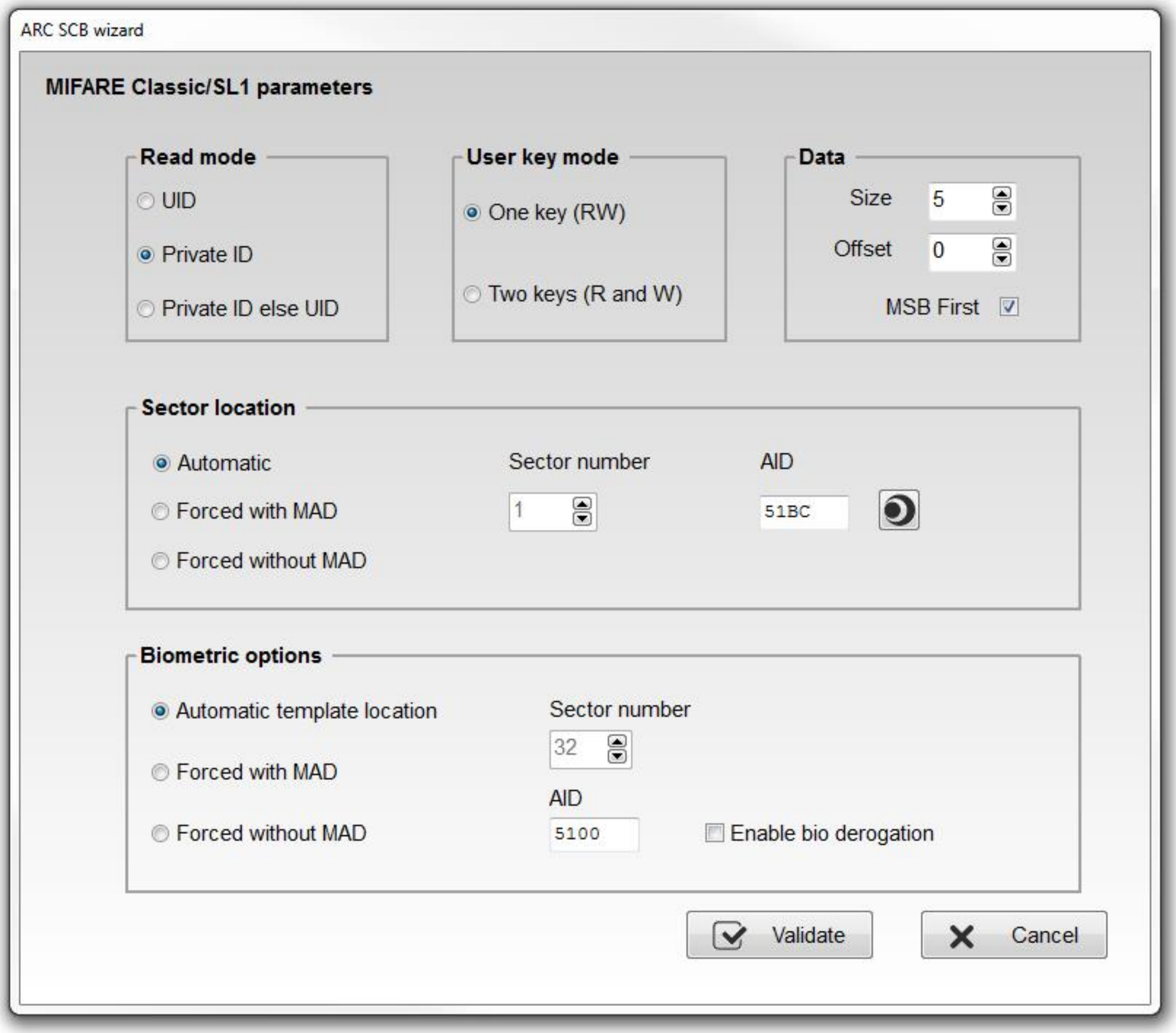
- One read key, key A: “A0 A1 A2 A3 A4 A5 A6 A7 A0 A1 A2 A3 A4 A5 A6 A7”.
- One write key, key B: “FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF”.

Plus Level 3 biometric template user keys

Key to protect the sector containing biometric information.
Enter the current value of the key and change it.

Click the button to complete the MIFARE Plus® Level 3 keys.

III. 9 - MIFARE® Classic/SL1: settings



ARC SCB wizard

MIFARE Classic/SL1 parameters

Read mode
- ○ UID
- ● Private ID
- ○ Private ID else UID

User key mode
- ● One key (RW)
- ○ Two keys (R and W)

Data
- Size: 5
- Offset: 0
- MSB First ☑

Sector location
- ● Automatic
- ○ Forced with MAD
- ○ Forced without MAD
- Sector number: 1
- AID: 51BC

Biometric options
- ● Automatic template location
- ○ Forced with MAD
- ○ Forced without MAD
- Sector number: 32
- AID: 5100
- □ Enable bio derogation

Read mode

- ❖ UID: Reader configured in “read-only serial number”.
- ❖ Private ID: Reader configured in “read-only private code”.
- ❖ Private ID else UID: Reader configured in “read-only private code”. If it is not found or if the security settings are incorrect, then the reader will read and return the UID.

User Key mode

- ❖ One key (RW): One key per sector used for read and write operations.
- ❖ Two keys (R et W): Two keys per sector. A key used for read operation, the second one for read/ write operations.

Data

- ❖ Size: Determines the length of the ID read in the sector. The value corresponds to the protocol selected in the configuration of the reader. However, it is possible to choose a different size by entering another value, in this case the reader will read the ID to the size specified in this field and will return to the format defined by the protocol.
- ❖ Offset: Define an offset from the first byte, before encoding.
- ❖ MSB First: If the box is checked the reader reads the identifier Most Significant Byte First. If the box is unchecked the reader reads the identifier Least Significant Byte First.

Sector location

Define the sector to encode data and/or to read data by the reader.

MAD (Mifare® Application Directory) is a "table of contents" which reference applications (information) written in the areas of users' card through an AID (Application Identifier. Cf. AN103787).

It is completely customizable and is divided into two parts: the cluster code and application code.

The MIFARE® Classic 1k has 16 sectors (0 to 15). It can be used with MAD1 Sectors (1 to15) are available for data, sector 0 is occupied by the MAD.

The MIFARE Plus® 2k chip has 32 sectors (0 to 31). It can be used with MAD1 (sector 0 manage sectors 1 to 15) and MAD2 (sector 16 to manage sectors 17 to 31).

The MIFARE® Classic / MIFARE Plus® 4k chip has 40 sectors (0 to 39). It can be used with MAD1 (sector 0 manage sectors 1 to 15) and MAD2 (sector 16 manage sectors 17 to 39). Only the first 31 sectors are managed by SECard.

The MAD is protected by a read key (Key A) and a write key (Key B). Default values are:

- ✓ "A0 A1 A2 A3 A4 A5" for key A
- ✓ "FF FF FF FF FF FF" for key B

These key values are those recommended by *NXP* application note which allows at all users to access the MAD.

With this method (MAD and AID) a reader can retrieve an user code in cards that have been encoded at different memory areas with personal data at different location (in memory card).

- ❖ Automatic + AID:
  In this mode, the user does not have to worry about the location of data. The "SCB" and the user card are created with the following parameters:
  - ❖ First free sector available in card is chosen by SECard by MAD scanning.
  - ❖ AID defined in "AID" field is transmitted to the reader by the "SCB".
  - ❖ The user MAD card is programmed with AID in the corresponding position in the first sector available using the default keys:
    - ▪ Read key (key A) "A0 A1 A2 A3 A4 A5" can be modified
    - ▪ Write key (key B) "FF FF FF FF FF FF" can be modified
  - ❖ The reader identifies the user card sector to read by searching the AID in the MAD.

- ❖ Forced with MAD + sector number + AID:
  In this mode, sector number will be forced by SECard and use to encode user ID, but AID select in "AID field will be written in MAD at right location (depending the sector number forced).
  Reader configured with these parameters will only use forced sector number and NOT MAD to find the sector to read.

- ❖ Forced without MAD + sector number:
  In this mode, no MAD management is performed. Only the parameter "sector number" is considered to find the location of data in the chip.
  The reader reads the information in this sector. For the sector 0, only blocks 1 and 2 will be read.

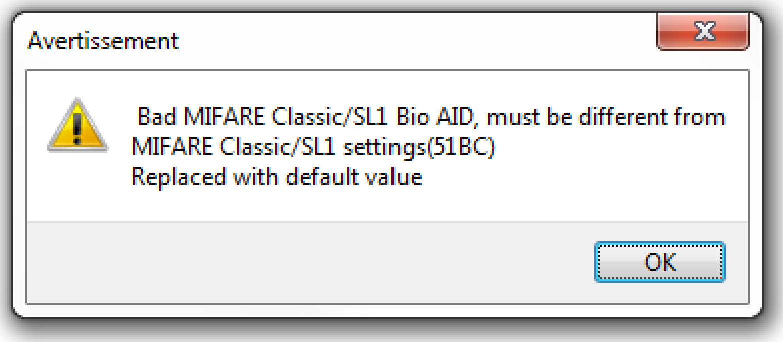
Note: AID 51BC displayed by default in the "AID" field is the value of the Application Identifier STid.

Biometric options

Only available for MIFARE® Classic 4ko.

Define the sector (>=32) to encode template and/or to read template by the reader.

If the MAD used, it must be different than MAD used for data.

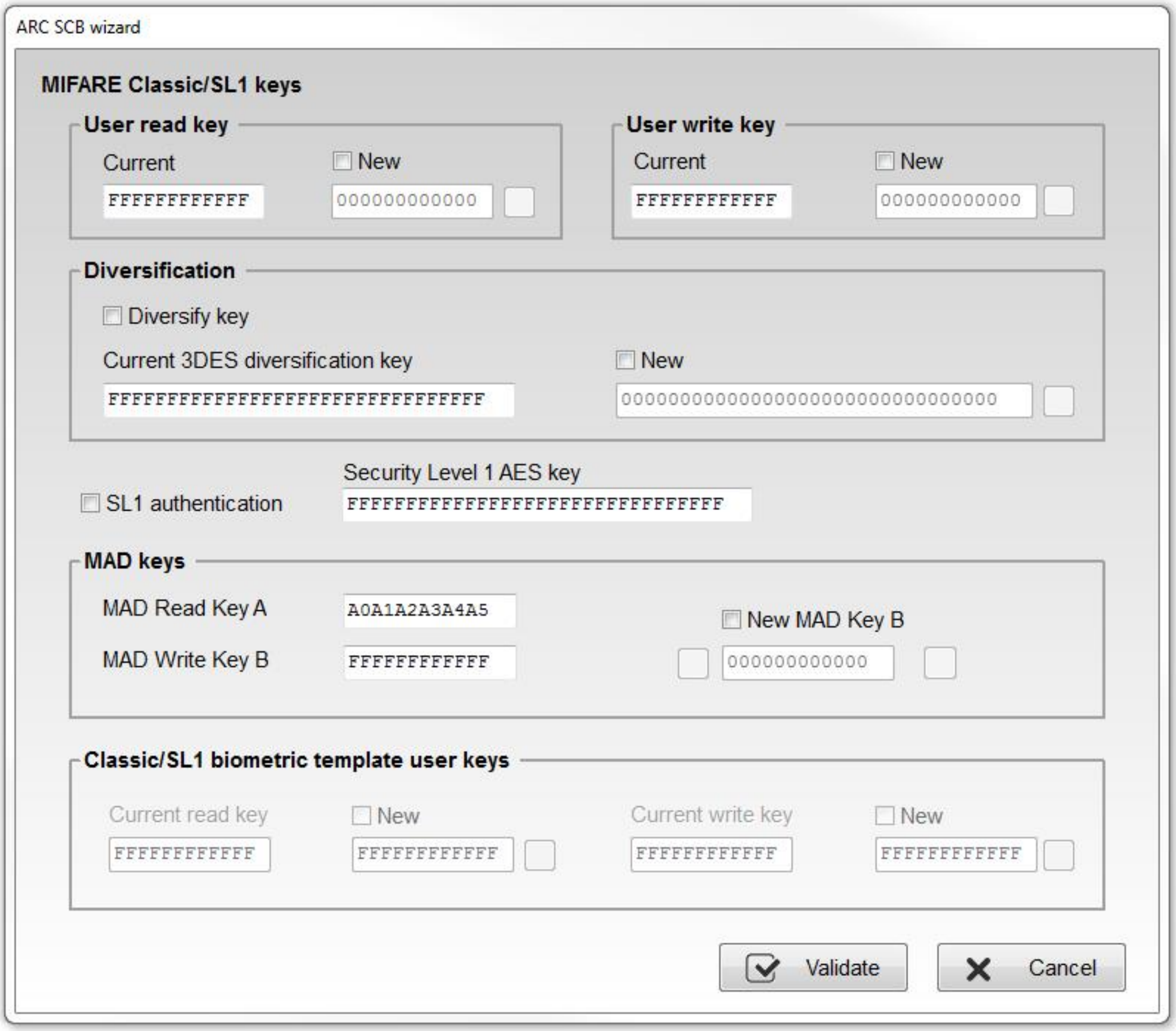


Bad MIFARE Classic/SL1 Bio AID, must be different from MIFARE Classic/SL1 settings(51BC)
Replaced with default value

- Enable bio derogation: refer to *T7.2 - Biometric derogation*.

Click the button ✓ Validate **to complete MIFARE® Classic/SL1 settings.**

III. 10 - MIFARE® Classic /SL1: keys



ARC SCB wizard

MIFARE Classic/SL1 keys

User read key
Current: FFFFFFFFFFFF
□ New: 000000000000

User write key
Current: FFFFFFFFFFFF
□ New: 000000000000

Diversification
□ Diversify key
Current 3DES diversification key: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
□ New: 00000000000000000000000000000000

□ SL1 authentication
Security Level 1 AES key: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

MAD keys
MAD Read Key A: A0A1A2A3A4A5
MAD Write Key B: FFFFFFFFFFFF
□ New MAD Key B: 000000000000

Classic/SL1 biometric template user keys
Current read key: FFFFFFFFFFFF
□ New: FFFFFFFFFFFF
Current write key: FFFFFFFFFFFF
□ New: FFFFFFFFFFFF

User read key / User write key

Keys to protect the sector containing the private ID.
Enter the value of the current key and change it.

Note: the default keys for a blank card are either "FF FF FF FF FF FF" or "A0 A1 A2 A3 A4 A5" according to the original supplier of the card.

Diversification

- Activate / deactivate the key diversification.
  This function allows you to use a different key than known by the user. For this, the encoder uses the diversification algorithm to generate a new key. It will be function of block number, the serial number, user key and a 3DES encryption key of 16 bytes. To be effective it is necessary to check the "New" key boxes to diversify and enter the new value of the key.

Note: it is possible to deactivate the key diversification. For this, you must recreate the "SCB" by unchecking the "Diversification" box and indicating in the first field the value of the key 3DES. It will be necessary later to encode the user card again without this option.

The diversification algorithm used is the one recommended by NXP (AES-CMAC – NXP AN165310).

It's AES_CMAC(K,1|UID|blocNb) with K the key to diversify.

SL1 authentication

Activate the AES authentication for MIFARE Plus® Level 1 chip. It is used to secure authentication chip / reader by an encryption algorithm.

Only available for "*Private ID"* and "Private *ID else UID". (*UID will be sent in this mode if the reader is unable to authenticate*).*

Warning

This key is important and should definitely be known to the administrator
A MIFARE Plus® Level 1 with another AES key value cannot authenticate with the reader.

If this option is used, the reader can no longer read private code of MIFARE® Classic

To disable this option, it is necessary to recreate / reconfigure the card "SCB" by unchecking "*SL1 authenticate"*.

For an encoding of Mifare® Classic 7 bytes CSN, it is necessary to desactivate the "*Autocard Type*" and to choose "*Classic/Plus L1*".

MAD keys

This box is available only if the location of the sector was set to "Automatic" or "Forced with MAD" mode.

Key A, reading MAD is by default "A0 A1 A2 A3 A4 A5", it is possible to use a different key by modifying the value in the field.

Key B, writing MAD is by default "FF FF FF FF FF FF", it is possible to change by completing the field New of MAD Write key B.

During a management MAD, key sectors "0" and "16" change. The access conditions are:

- One read key, key A: "A0 A1 A2 A3 A4 A5".
- One write key, key B: "FF FF FF FF FF FF".

Note: from NXP AN-10787 Rev07 7 July 2010 document, key A is fixed to A0A1A2A3A4A5A6A7.

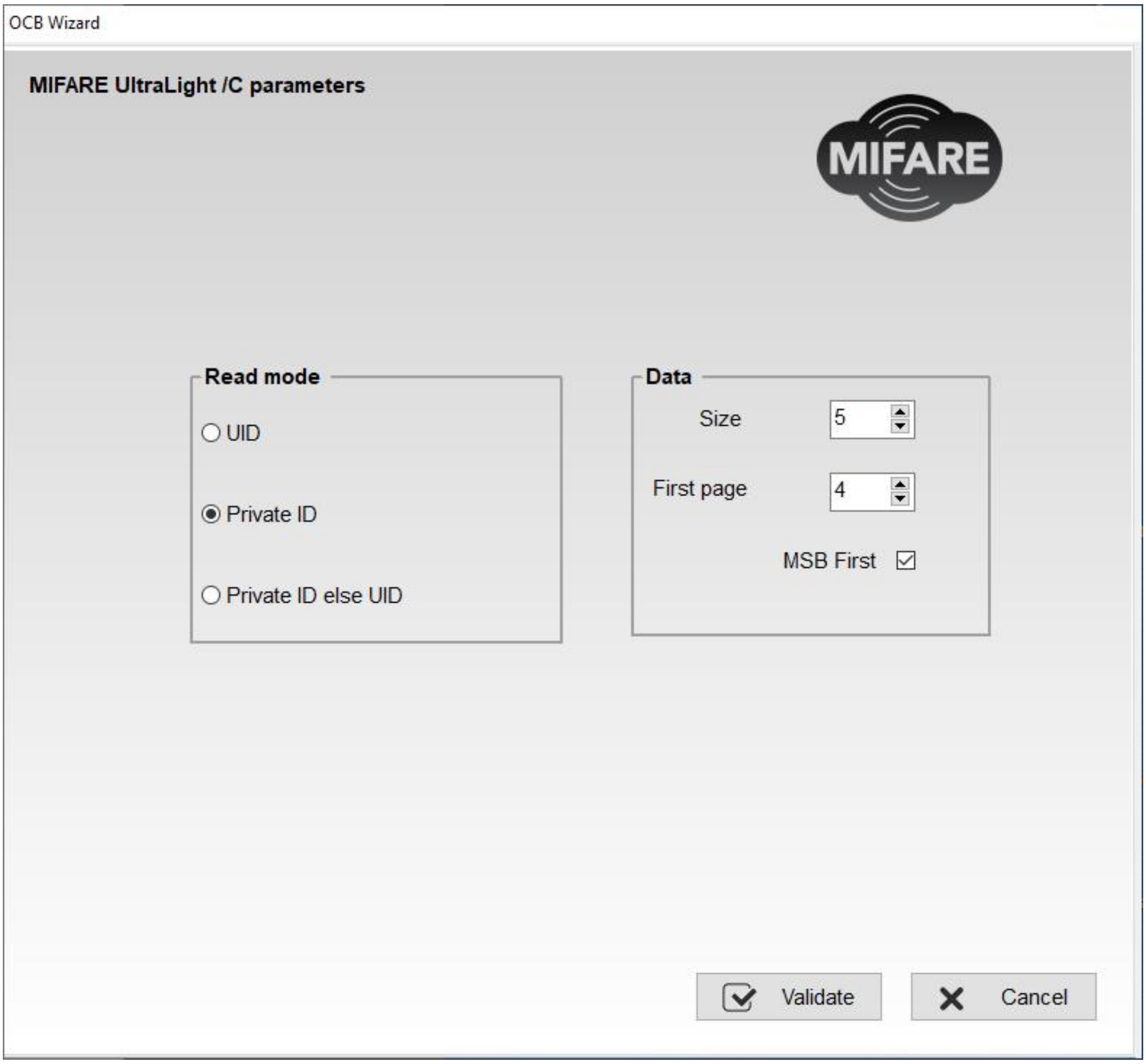
Classic/SL1 biometric template user keys

Keys to protect the sector containing the template.
Enter the value of the current key and change it.

Click the button

to complete MIFARE® Classic/SL1 keys.

III. 11 - MIFARE Ultralight® C: settings



OCB Wizard

MIFARE UltraLight /C parameters

Read mode

○ UID

● Private ID

○ Private ID else UID

Data

Size 5

First page 4

MSB First ☑

Read mode

- UID: Reader configured in “read-only serial number”.
- Private ID: Reader configured in “read-only private code”.
- Private ID else UID: Reader configured in “read-only private code”. If it is not found or if the security settings are incorrect, then the reader will read and return the UID.

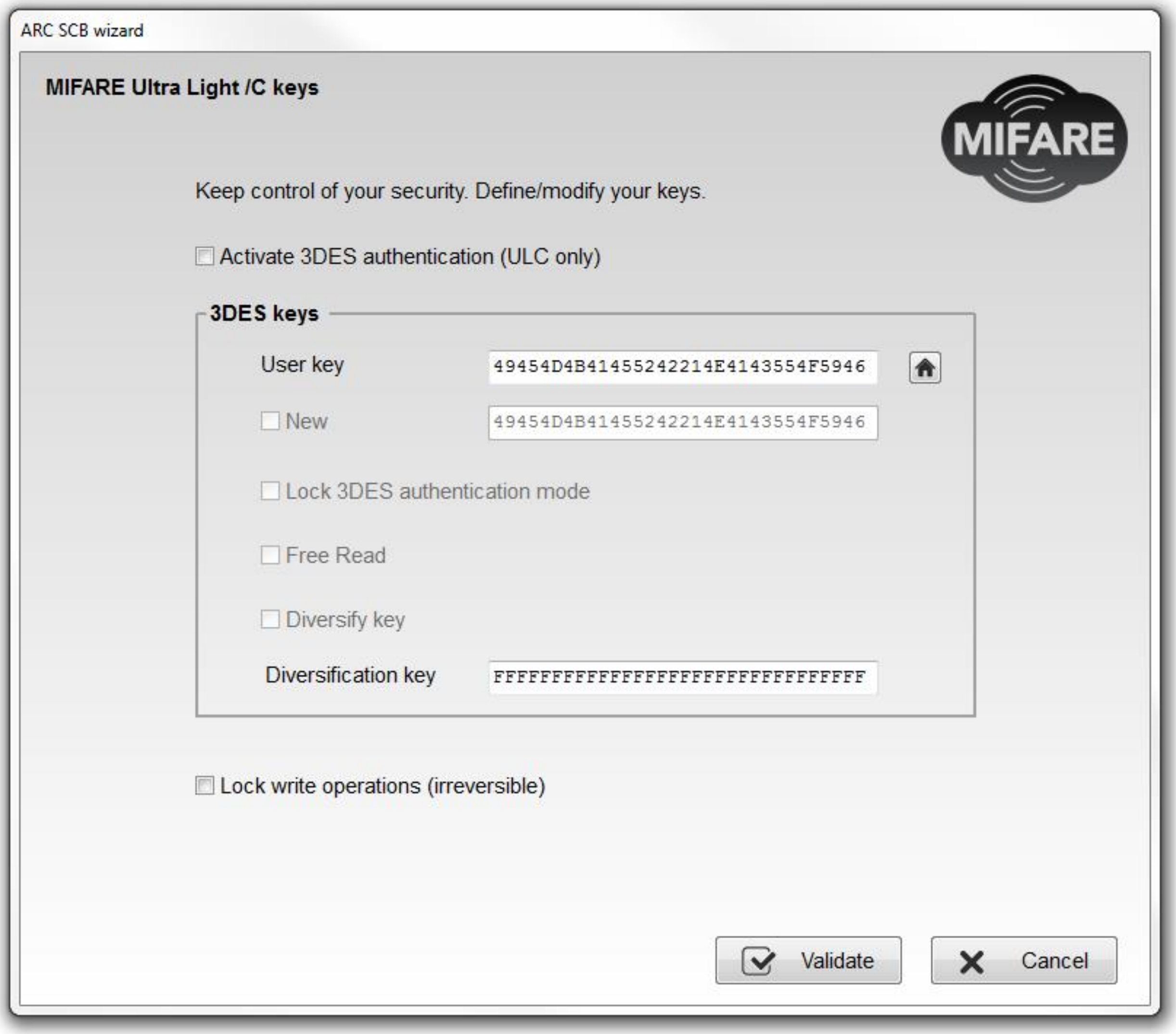
Data

- Size: Determine the length of the ID read. The value corresponds to the protocol selected in the configuration of the reader. However it is possible to choose a different size by entering another value, in this case the reader will read the ID to the size specified in this field and will return to the format defined by the protocol.
- First page: Define the first page where the private ID will be encode / read. In addition, 3DES authentication changes will be effective from this value to the last page.
- MSB First: If the box is checked the reader reads the identifier Most Significant Byte First. If the box is unchecked the reader reads the identifier Least Significant Byte First.

From SECard V3.0.0, the first accessible page becomes the page 3. **Warning: it’s an OTP page. Re-encoding is not possible in this case.**

Click the button Validate **to complete MIFARE Ultralight®/C settings.**

III. 12 - MIFARE Ultralight® C: keys



ARC SCB wizard

MIFARE Ultra Light /C keys

Keep control of your security. Define/modify your keys.

☐ Activate 3DES authentication (ULC only)

3DES keys

User key: 49454D4B41455242214E4143554F5946

☐ New: 49454D4B41455242214E4143554F5946

☐ Lock 3DES authentication mode

☐ Free Read

☐ Diversify key

Diversification key: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

☐ Lock write operations (irreversible)

Activate 3DES authentication (ULC only)

Activate/ deactivate 3DES authentication between MIFARE Ultralight® C chip and the reader.

User key

Fields reserved for common values of 3DES keys and change.
Default user key is: *49454D4B41455242214E4143554F5946.*

Lock 3DES authentication mode

If this option is selected, it will be necessary to use 3DES authentication with MIFARE Ultralight® C chip (**this action is irreversible**).

Free read

If this option is selected and if "Lock 3DES authentication mode" is not selected, it will NOT be necessary to use 3DES authentication with MIFARE Ultralight® C chip to read encoded data.

Diversify keys

Activate key diversification.

With the diversification function, it is possible to use a different key from that known by the user. For this, the encoder uses a diversification algorithm in order to generate a key based on the serial number, the user key and a 3DES encryption key.

Lock write operations (irreversible)

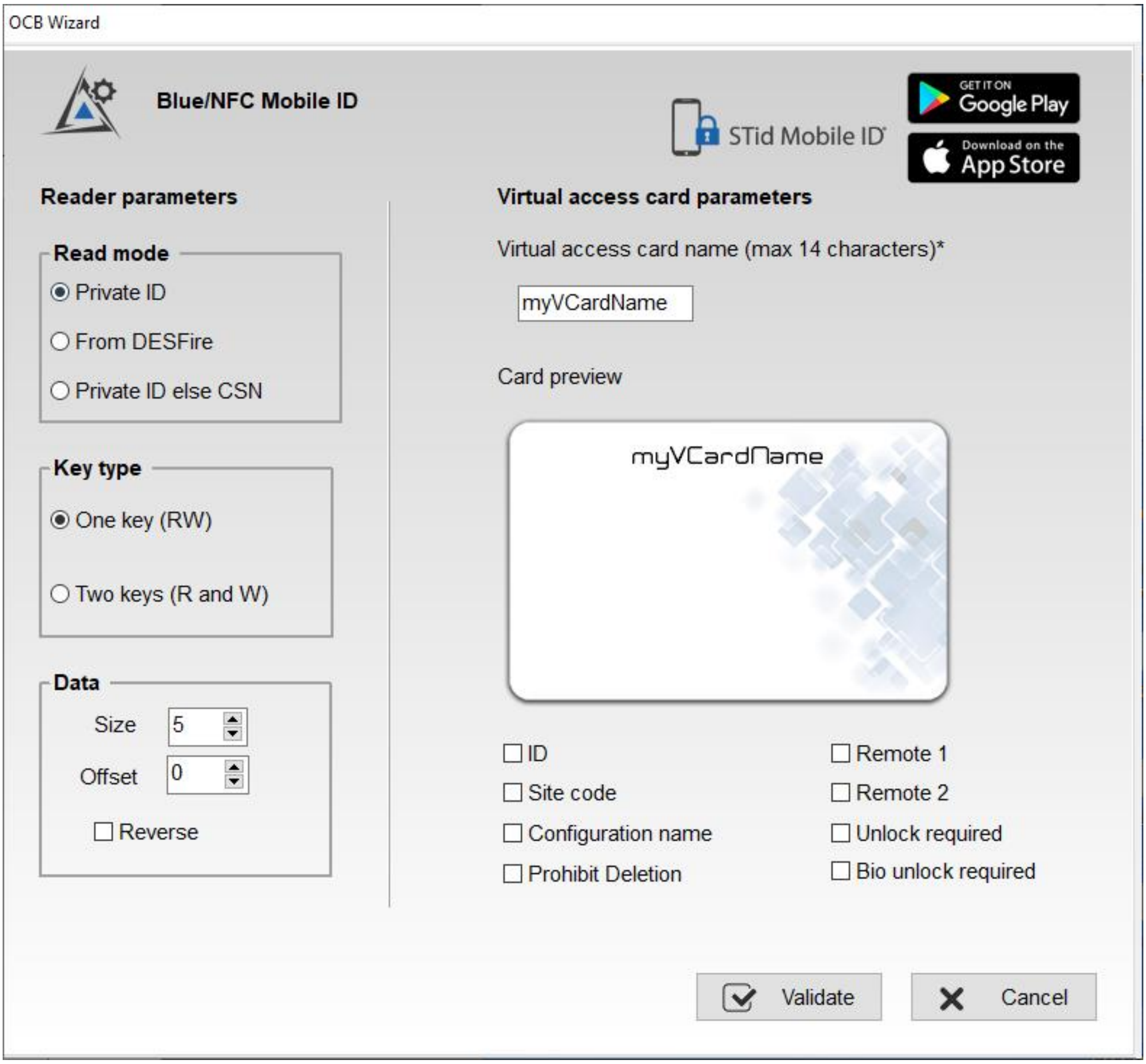
Prohibit all write operations on the chip. It will be read only mode (**this action is irreversible**).

Click the button **to complete MIFARE Ultralight®/C keys.**

III. 13 - Blue/NFC Mobile ID: settings

III.13.1 - STid Mobile ID

❖ **Read mode: Private ID**



Reader parameters

Read mode

● Private ID
○ From DESFire
○ Private ID else CSN

Key type

● One key (RW)
○ Two keys (R and W)

Data

Size: 5
Offset: 0
□ Reverse

Virtual access card parameters

Virtual access card name (max 14 characters)*: myVCardName

Card preview: myVCardName

□ ID
□ Site code
□ Configuration name
□ Prohibit Deletion
□ Remote 1
□ Remote 2
□ Unlock required
□ Bio unlock required

Reader configured in “read-only private ID”.

Key type

- ❖ One key (RW): Use one key for reading and writing.
- ❖ Two keys (R & W): Use two keys. A key used for reading, the second for reading and writing.

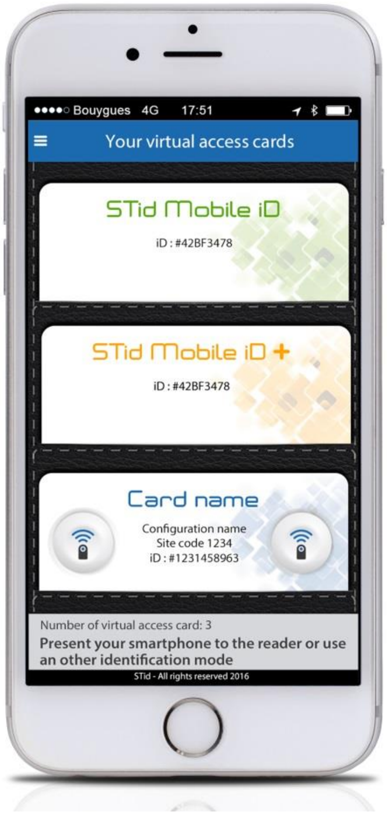
Data

- ❖ Size: Determines the length of the ID.
  In SCB, Size must be equal to the protocol size in SCB-Step3.
- ❖ Offset: Define an offset from the first byte before reading.
- ❖ Reverse: If the box is checked the reader reads the identifier Least Significant Byte First.
  If the box is unchecked the reader reads the identifier Most Significant Byte First.

Virtual access card parameters

Customize virtual access card by selecting the parameters to be displayed.
Virtual access card name: Enter the name of the virtual access card. 14 characters max.

Note: In case where the user has several virtual access cards on his smartphone, choose a significant name to the access card.



●●●●○ Bouygues 4G 17:51

Your virtual access cards

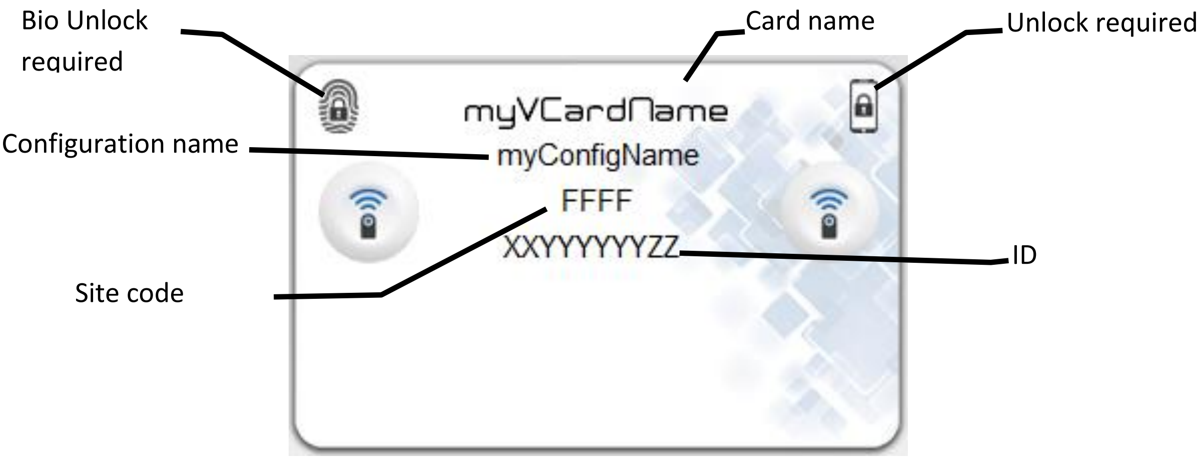
STid Mobile iD
iD : #42BF3478

STid Mobile iD +
iD : #42BF3478

Card name
Configuration name
Site code 1234
iD : #1231458963

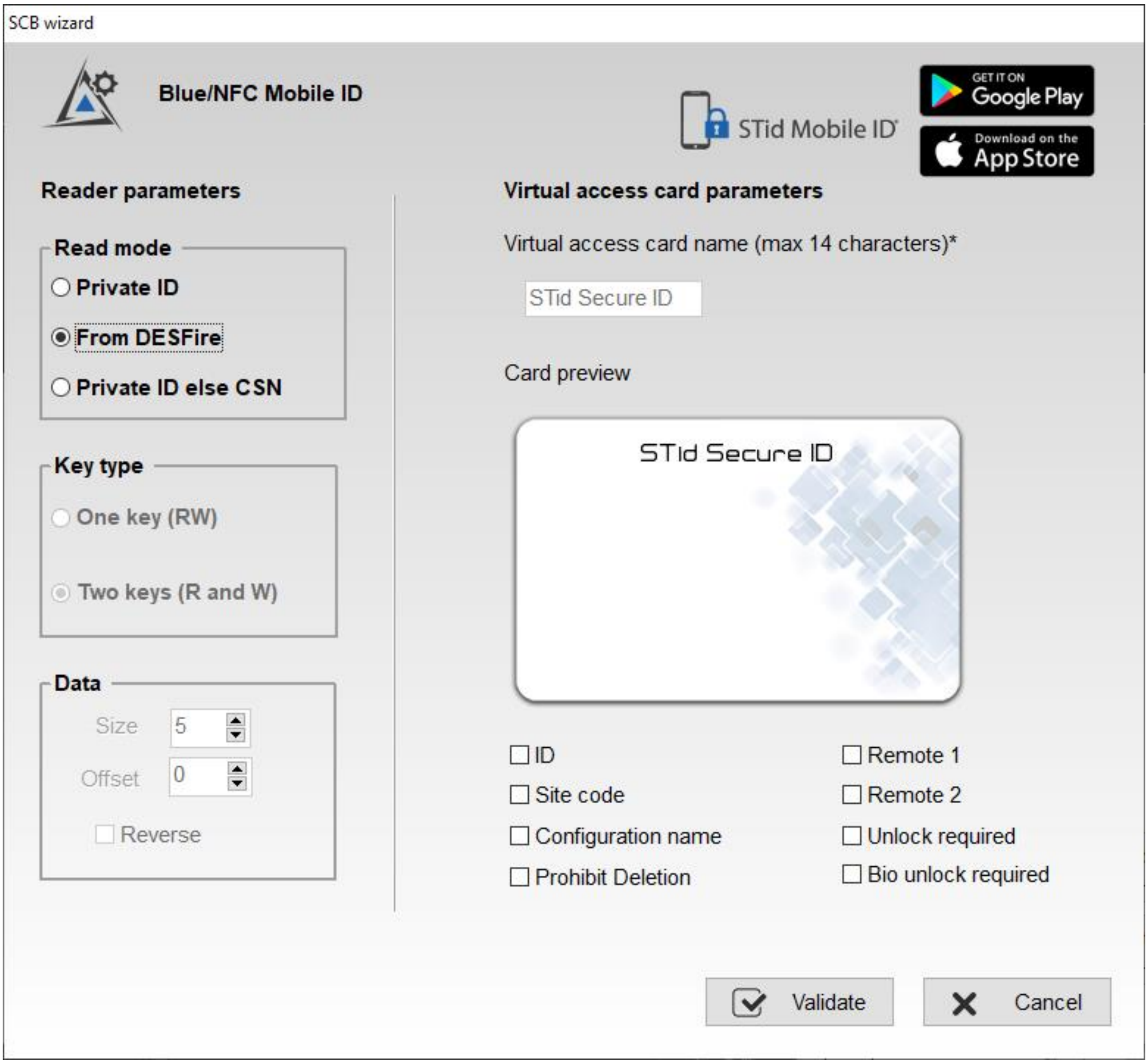
Number of virtual access card: 3
Present your smartphone to the reader or use an other identification mode
STid - All rights reserved 2016

Non-contractual picture



<u>Prohibit Deletion</u>: prohibit the deletion of the virtual access card by the user. Only the administrator, via SECard (Settings / Credits / Delete your virtual access card) can delete it.

- **Read mode: from DESFire**



SCB wizard

Blue/NFC Mobile ID

Reader parameters

Read mode
○ Private ID
● From DESFire
○ Private ID else CSN

Key type
○ One key (RW)
● Two keys (R and W)

Data
Size: 5
Offset: 0
□ Reverse

Virtual access card parameters

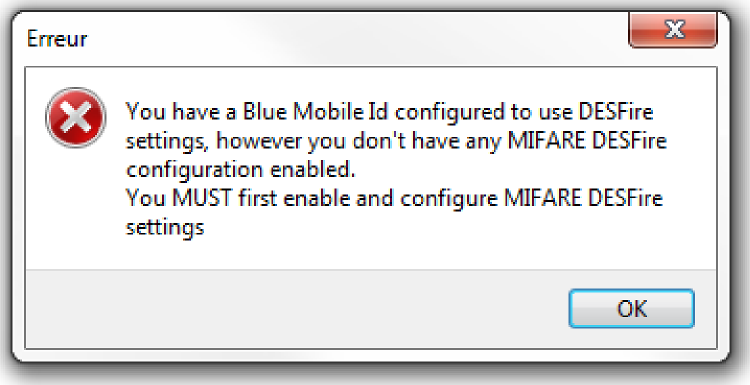
Virtual access card name (max 14 characters)*: STid Secure ID

Card preview

STid Secure ID

□ ID
□ Site code
□ Configuration name
□ Prohibit Deletion
□ Remote 1
□ Remote 2
□ Unlock required
□ Bio unlock required

- If this mode is selected, a DESFire® configuration must be enabled; if you select this option without DESFire® configuration enabled you have the error:



Erreur

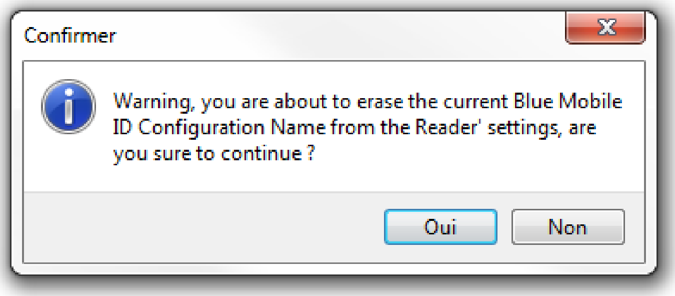
You have a Blue Mobile Id configured to use DESFire settings, however you don't have any MIFARE DESFire configuration enabled.
You MUST first enable and configure MIFARE DESFire settings

- ❖ In this mode, the Blue Mobile ID parameters are automatically determined and inherited from the DESFire® configuration.

These settings cannot be changed:

- ✓ Reverse no: MSB First
- ✓ Key type, Size and offset same as DESFire® configuration.

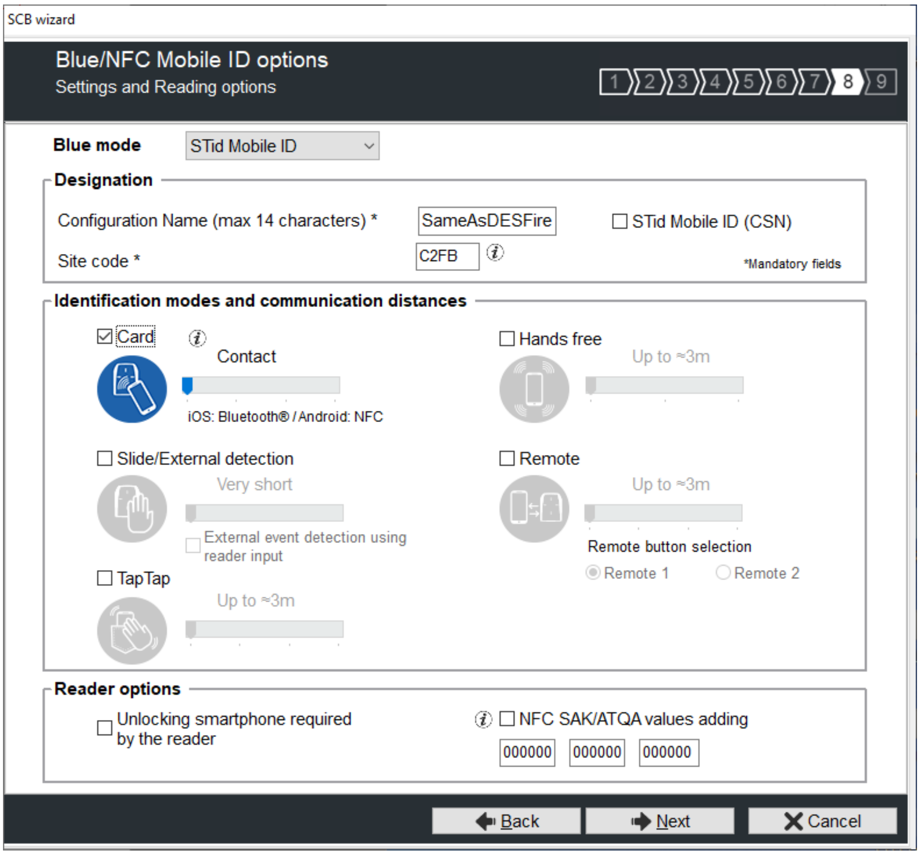
Warning



Confirmer

Warning, you are about to erase the current Blue Mobile ID Configuration Name from the Reader' settings, are you sure to continue ?

Note: Reader parameters are modified, and the configuration used is SameAsDESFire.



SCB wizard

Blue/NFC Mobile ID options

Settings and Reading options

Blue mode: STid Mobile ID

Designation

Configuration Name (max 14 characters) *: SameAsDESFire

□ STid Mobile ID (CSN)

Site code *: C2FB

*Mandatory fields

Identification modes and communication distances

☑ Card — Contact — iOS: Bluetooth® / Android: NFC

□ Hands free — Up to ≈3m

□ Slide/External detection — Very short

□ External event detection using reader input

□ Remote — Up to ≈3m

Remote button selection: ● Remote 1 ○ Remote 2

□ TapTap — Up to ≈3m

Reader options

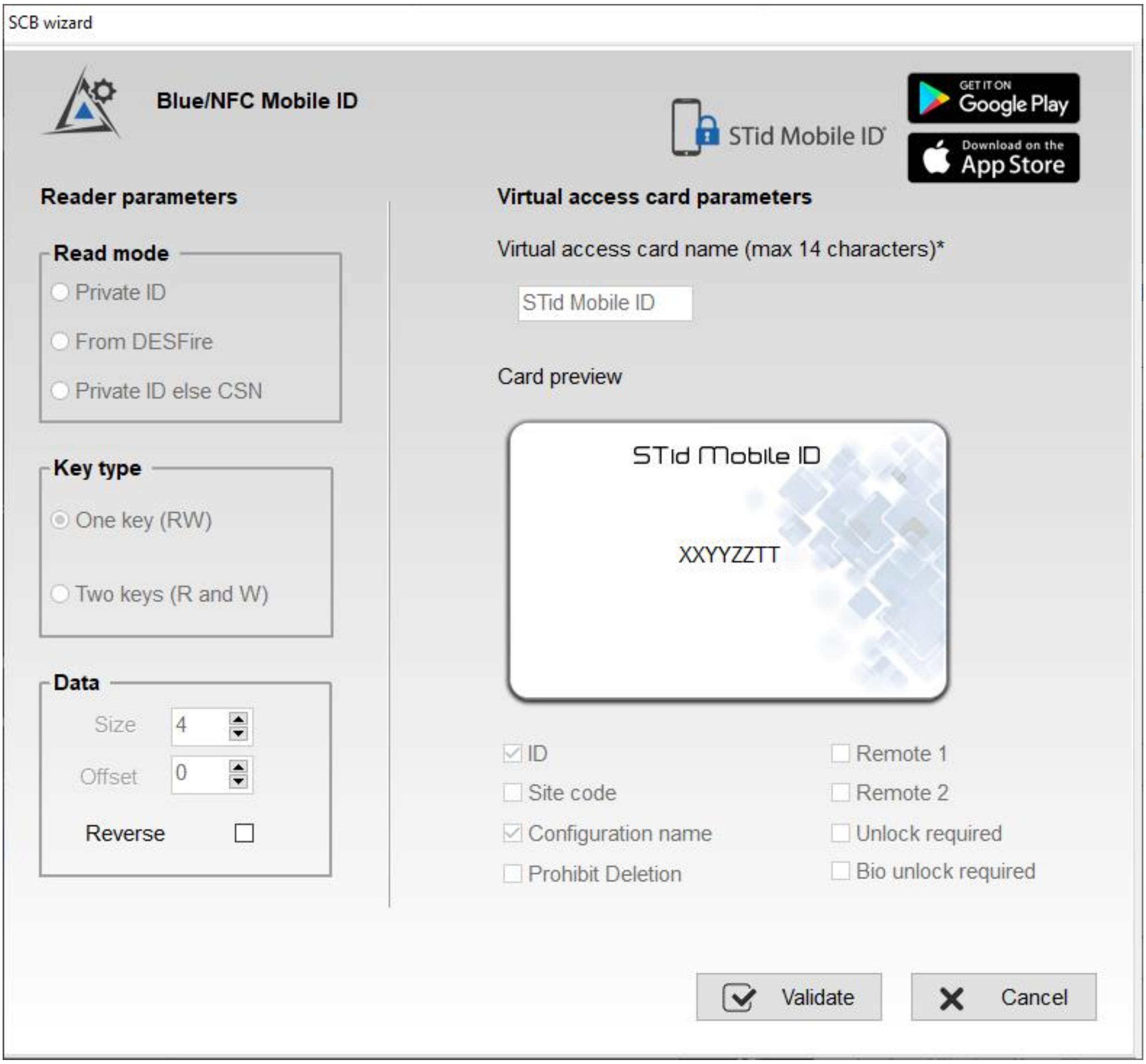
□ Unlocking smartphone required by the reader

□ NFC SAK/ATQA values adding: 000000 000000 000000

❖ Read mode: Private ID else CSN

Reader configured in “read-only private virtual card”. If it is not found or if the security settings are incorrect, then the reader will read and return the STid Mobile ID CSN.

III.13.2 - STid Mobile ID (CSN)



SCB wizard

Blue/NFC Mobile ID

Reader parameters

Read mode

○ Private ID
○ From DESFire
○ Private ID else CSN

Key type

● One key (RW)
○ Two keys (R and W)

Data

Size: 4
Offset: 0
Reverse □

Virtual access card parameters

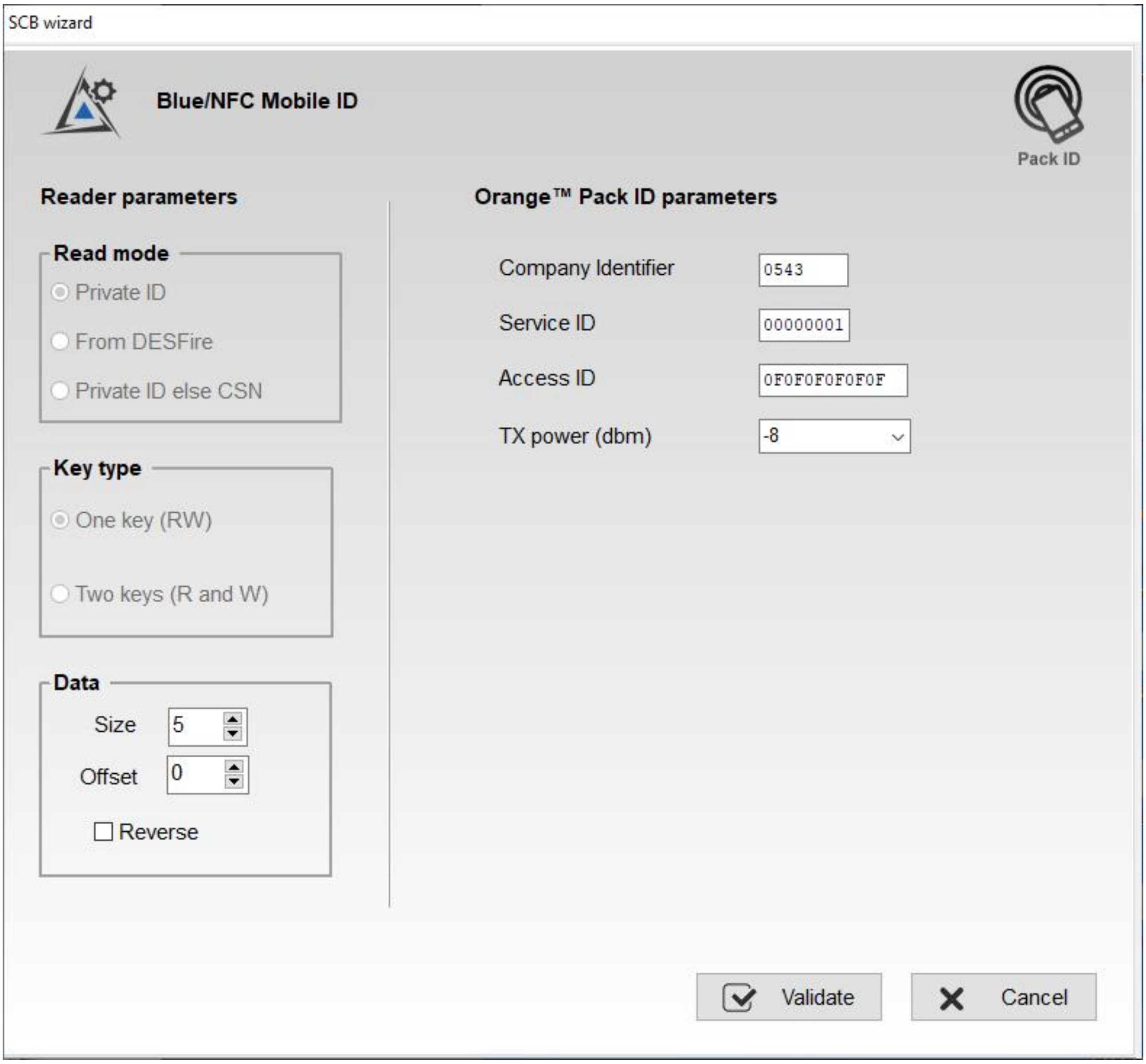
Virtual access card name (max 14 characters)*: STid Mobile ID

Card preview

☑ ID
□ Site code
☑ Configuration name
□ Prohibit Deletion
□ Remote 1
□ Remote 2
□ Unlock required
□ Bio unlock required

- Reverse: If the box is checked the reader reads the CSN Least Significant Byte First.
  If the box is unchecked the reader reads the CSN Most Significant Byte First.

III.13.3 - Orange Pack ID



SCB wizard

Blue/NFC Mobile ID

Pack ID

Reader parameters

Read mode
- ● Private ID
- ○ From DESFire
- ○ Private ID else CSN

Key type
- ● One key (RW)
- ○ Two keys (R and W)

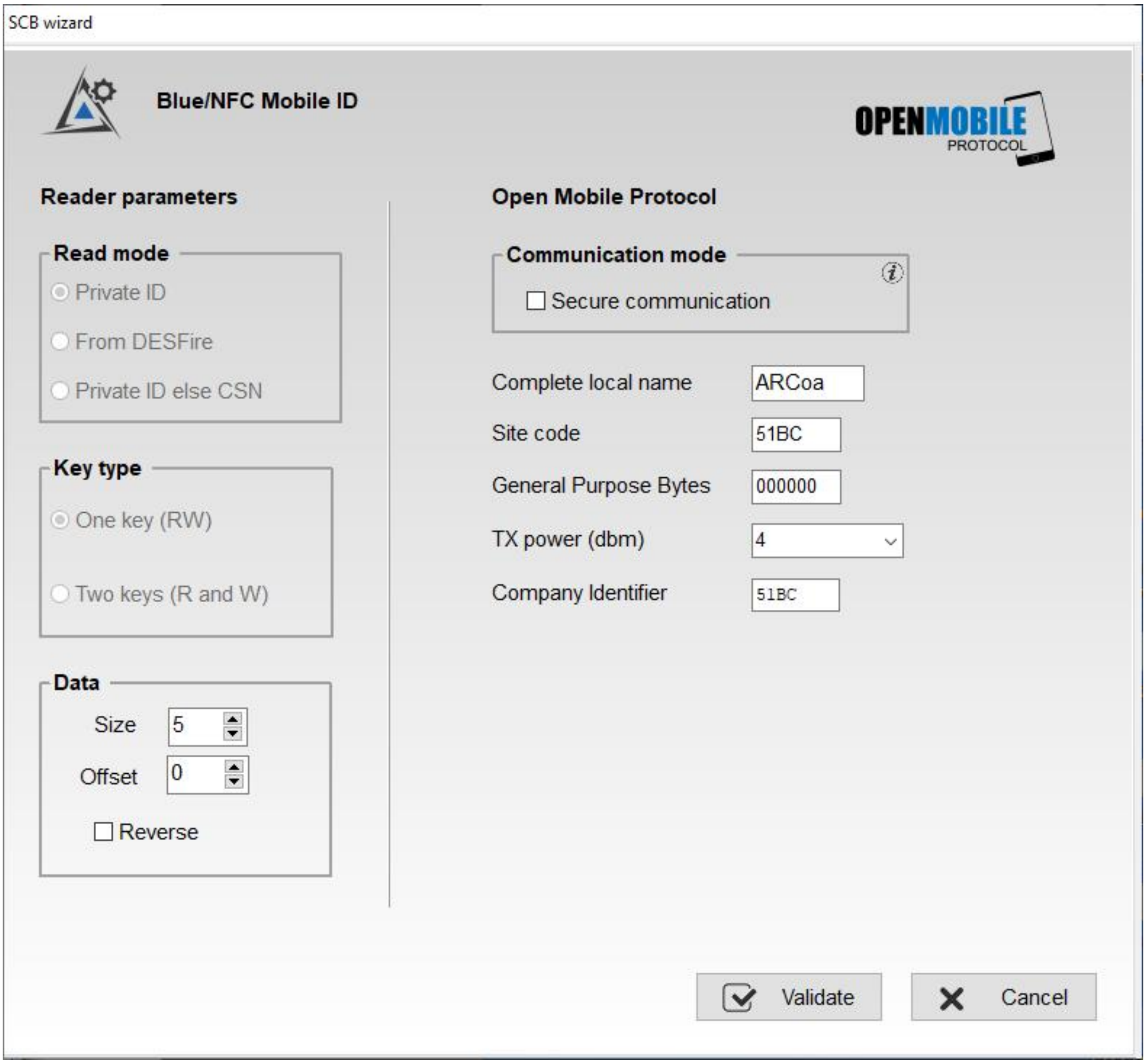
Data
- Size: 5
- Offset: 0
- □ Reverse

Orange™ Pack ID parameters

- Company Identifier: 0543
- Service ID: 00000001
- Access ID: 0F0F0F0F0F0F
- TX power (dbm): -8

- Company Identifier: manufacturer data on 2 bytes.
- Service ID: manufacturer data on 4 bytes to differentiate the customers of Pack ID.
- Access ID: manufacturer data on 6 bytes to identify the access zone controlled by the reader.
- Tx power: change the power level of the reader (default 4 dbm). Possible values: -16, -12, -8, -4, 0 and 4 dbm.

III.13.4 - Open Mobile Protocol



Blue/NFC Mobile ID

Reader parameters

Read mode

- ● Private ID
- ○ From DESFire
- ○ Private ID else CSN

Key type

- ● One key (RW)
- ○ Two keys (R and W)

Data

Size: 5

Offset: 0

□ Reverse

Open Mobile Protocol

Communication mode

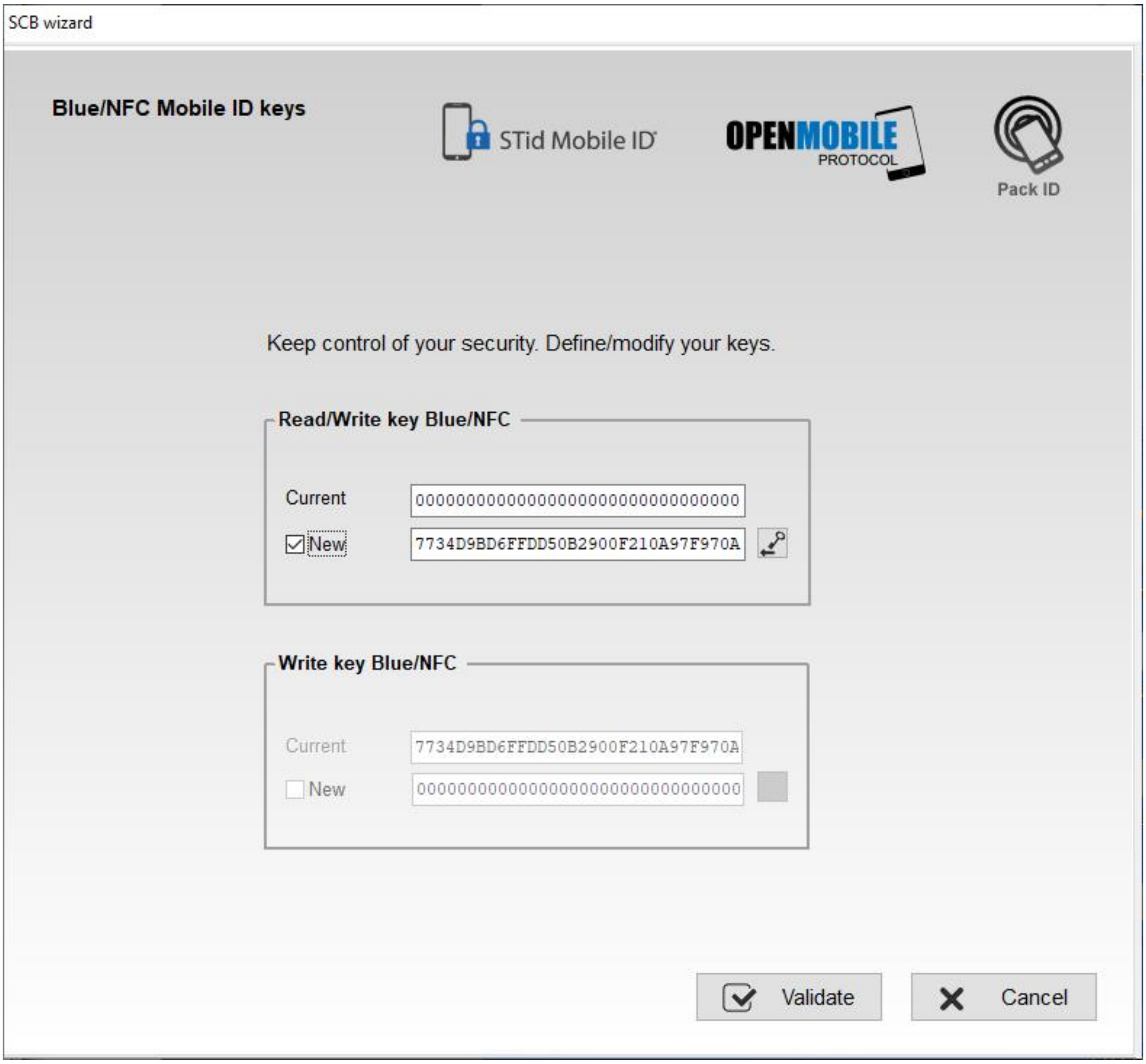
□ Secure communication

Complete local name	ARCoa
Site code	51BC
General Purpose Bytes	000000
TX power (dbm)	4
Company Identifier	51BC

For information about Open Mobile Protocol, contact your STid sales representative.

Click the button ☑ Validate **to complete Blue Mobile ID settings.**

III. 14 - Blue/NFC Mobile ID: Keys



SCB wizard

Blue/NFC Mobile ID keys

Keep control of your security. Define/modify your keys.

Read/Write key Blue/NFC

Current 00000000000000000000000000000000

☑ New 7734D9BD6FFDD50B2900F210A97F970A

Write key Blue/NFC

Current 7734D9BD6FFDD50B2900F210A97F970A

☐ New 00000000000000000000000000000000

Set the key value for Blue/NFC Mobile ID data.

If using “One key RW” the section “Write key” is grayed.

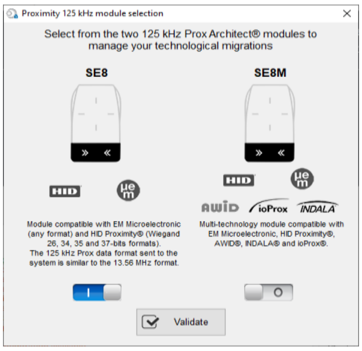
To change a key value: fill the current key in the "Current" field and then check "New" and fill the value of the desired key in the field.

Default keys are 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00.

III. 15 - 125 kHz: settings

The Settings screen depend on the SE8 module selected in Reader configuration Wizard step 2

III.15.1 – SE8



Proximity 125 kHz module selection

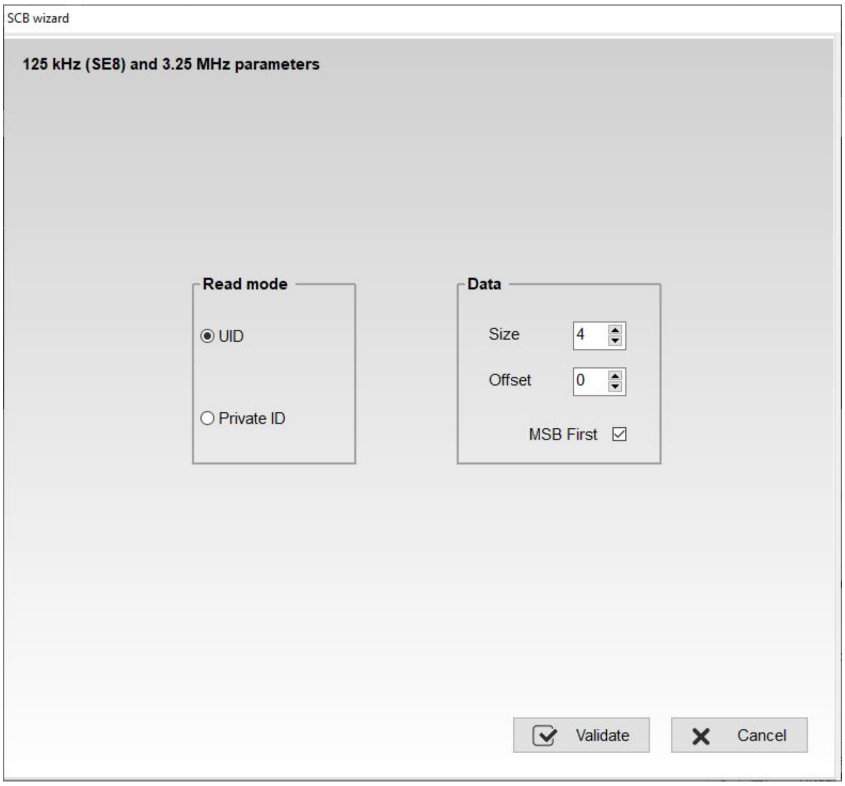
Select from the two 125 kHz Prox Architect® modules to manage your technological migrations

SE8

Module compatible with EM Microelectronic (any format) and HID Proximity® (Wiegand 26, 34, 35 and 37-bits formats).
The 125 kHz Prox data format sent to the system is similar to the 13.56 MHz format.

SE8M

Multi-technology module compatible with EM Microelectronic, HID Proximity®, AWID®, INDALA® and ioProx®.



SCB wizard

125 kHz (SE8) and 3.25 MHz parameters

Read mode
- ● UID
- ○ Private ID

Data
- Size: 4
- Offset: 0
- MSB First ☑

Configure reader settings related to EM4102 chip, EM4x50, HID 125, Nedap.

Read mode

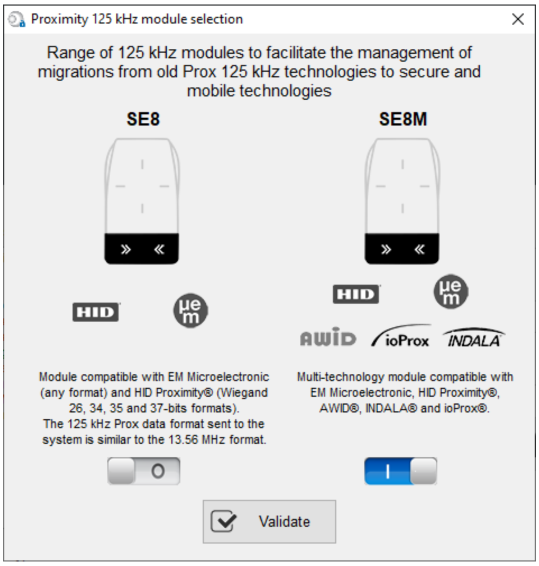
- UID: Reader configured in “read-only serial number”.
- Private ID: Reader configured in “read-only private Id” with determine size and offset. Allows to manage the particular functioning of the 2H.

Data

- Size: Determine the length of the ID read. The value corresponds to the protocol selected in the configuration of the reader. However, it is possible to choose a different size by entering another value, in this case the reader will read the ID to the size specified in this field and will return to the format defined by the protocol.
- Offset: Allow to shift the private number to be read from the byte "0".
- MSB First: If the box is checked the reader reads the identifier Most Significant Byte First. If the box is unchecked the reader reads the identifier Least Significant Byte First.

Click the button Validate **to complete 125 kHz settings.**

III.15.2 – SE8M



Proximity 125 kHz module selection

Range of 125 kHz modules to facilitate the management of migrations from old Prox 125 kHz technologies to secure and mobile technologies

SE8

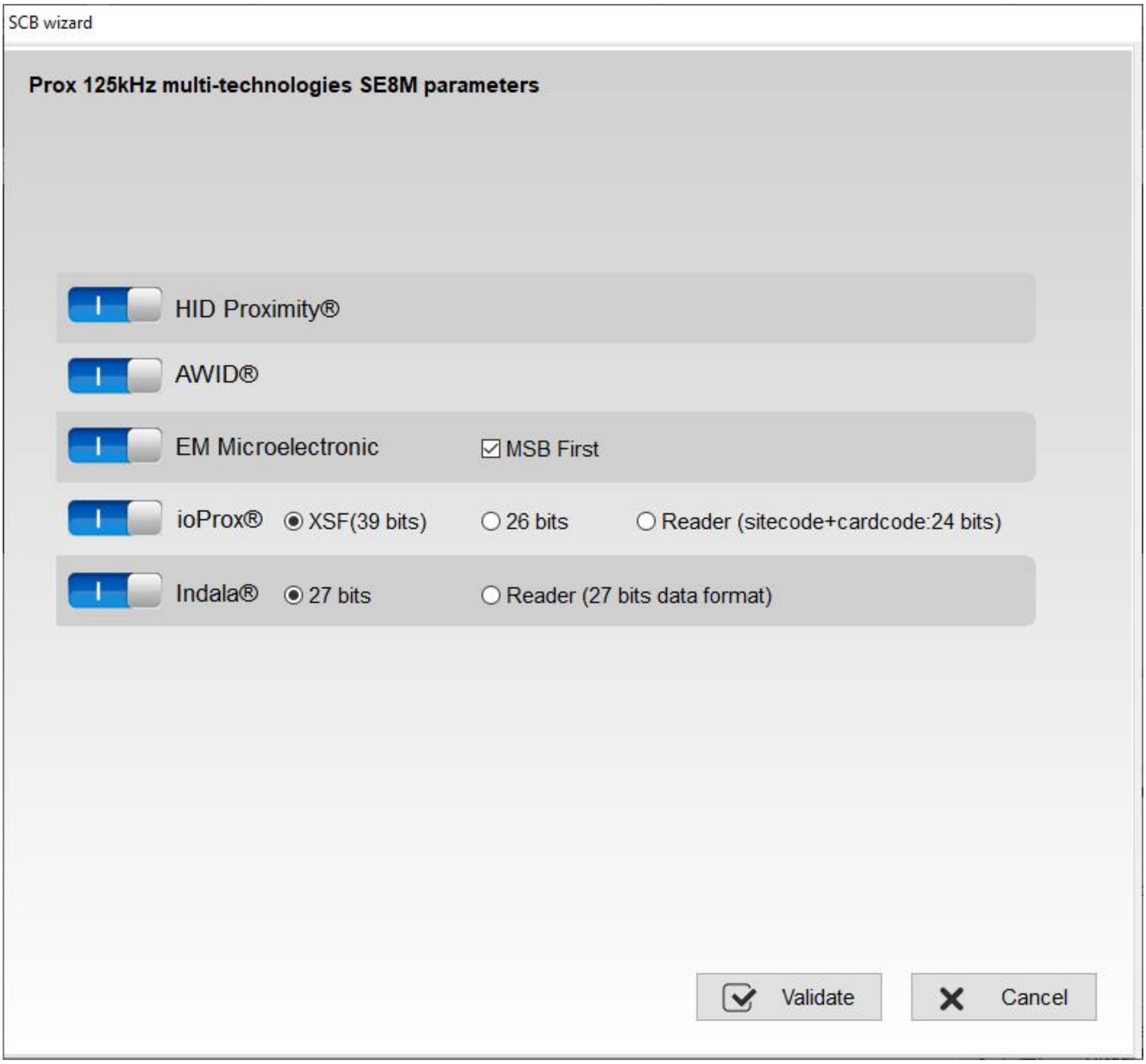
Module compatible with EM Microelectronic (any format) and HID Proximity® (Wiegand 26, 34, 35 and 37-bits formats). The 125 kHz Prox data format sent to the system is similar to the 13.56 MHz format.

O

SE8M

Multi-technology module compatible with EM Microelectronic, HID Proximity®, AWID®, INDALA® and ioProx®.

I



SCB wizard

Prox 125kHz multi-technologies SE8M parameters

I HID Proximity®

I AWID®

I EM Microelectronic ☑ MSB First

I ioProx® ● XSF(39 bits) ○ 26 bits ○ Reader (sitecode+cardcode:24 bits)

I Indala® ● 27 bits ○ Reader (27 bits data format)

❖ HID Proximity®

The output protocol depends on the encoded card format.

The output protocol selected on Configuration reader wizard step 3 is not consider.

❖ AWID®

The output protocol depends on the encoded card format.

The output protocol selected on Configuration reader wizard step 3 is not consider.

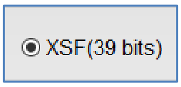
❖ EM Microelectronic

The output protocol is the output protocol reader selected on Configuration reader wizard step 3.

MSB First

If the box is checked, the reader reads the identifier Most Significant Byte First.
If the box is unchecked, the reader reads the identifier Least Significant Byte First.

❖ ioProx®

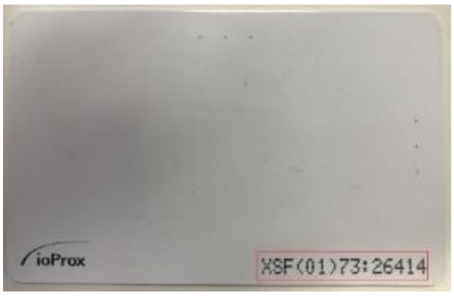


◉ XSF(39 bits)

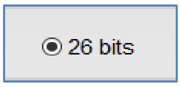
Message structure

Bit 1 ...Bit 5 (6 bits)	Bit 6 ... Bit 38 (data)			Bit 39 (1 bit)
	Bit 6...bit 13 (8 bits)	Bit 14...Bit 21 (8 bits)	Bit 22...Bit 38 (16 bits)	
Size of data card	*Family code*	*Site Code*	*Card code*	*Odd parity on the 38 bits*

Example:



39 size	0x01 family code	0x73 (site code)	26414 = 0x672E	Parity
10 0111	0000 0001	0111 0011	0110 0111 0010 1110	0



● 26 bits

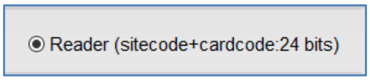
Message structure

Bit 1	Bit 2 ... Bit 25 (data)		Bit 26
	Bit 2…Bit 9	Bit 10…bit 25	
Even parity from bit 2 to bit 13	*Site code*	*Card code*	*Odd parity from bit 4 to bit 25*

✓

Example:

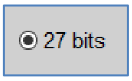
Parity	0x73 (site code)	26414 = 0x672E	Parity
1	0111 0011	0110 0111 0010 1110	0



● Reader (sitecode+cardcode:24 bits)

SiteCode + Card code are sent within a frame according the output protocol reader selected on Configuration reader wizard step 3.

❖ Indala



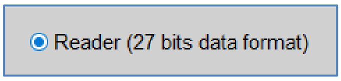
● 27 bits

Message structure

Bit 1 ...Bit 27 (27 bits)
Card data

Example:

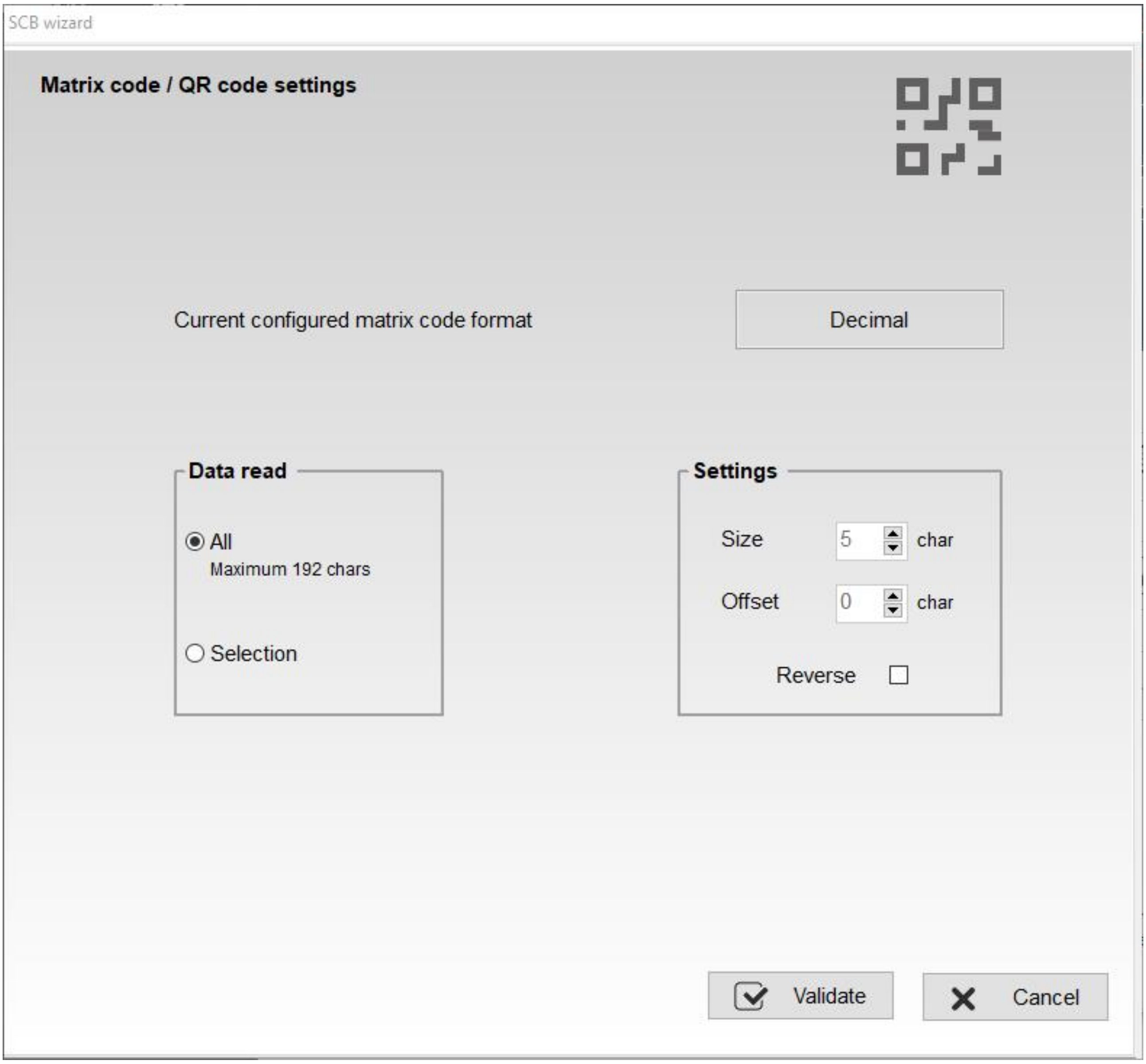
19030 = 0x0004A56
000 0000 0000 0100 1010 0101 0110



● Reader (27 bits data format)

27 bits card code are sent within a frame according the output protocol reader selected on Configuration reader wizard step 3.

III. 16 – MATRIX code: settings



SCB wizard

Matrix code / QR code settings

Current configured matrix code format: Decimal

Data read
- ● All — Maximum 192 chars
- ○ Selection

Settings
- Size: 5 char
- Offset: 0 char
- Reverse □

- ❖ **All**: Read the complet string
- ❖ **Selection**: Read a string with size and Offset defined.

Example: The string “stid2156487” with size 3 characters and offset 4 characters will be read:

- Data type decimal: 215 (ie 0xD7)
- Data type hexadecimal: 0x215 in hexadecimal
- Data type ASCII: data not read because 215 is not ASCII.

Example: The string «stid323634dsf» with size 6 characters and offset 4 characters will be read:

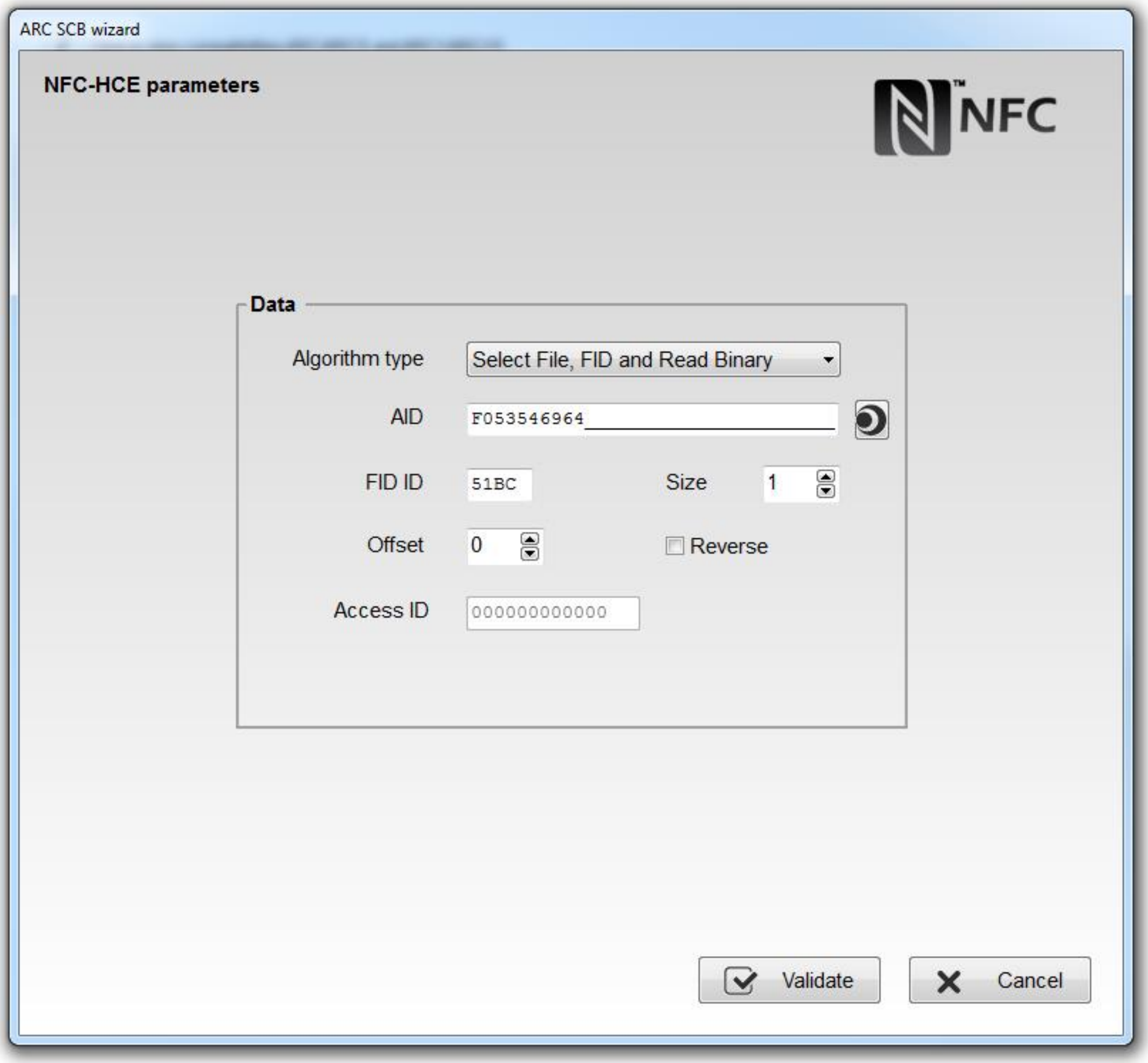
- Data type ASCII: 0x264.

Reverse: example: data read 0x123456789A, if **Reverse** is check: 0x9A78563412.

Note: if the code type to read is not the code type set in the wizard, the code is not read. For example, if decimal type is set and the code to read contain letter the code will not read.

III. 17 - NFC-HCE: settings

Please check the compatibility between Blue/NFC Mobile ID and NFC-HCE.



ARC SCB wizard

NFC-HCE parameters

Data

Algorithm type: Select File, FID and Read Binary

AID: F053546964

FID ID: 51BC

Size: 1

Offset: 0

□ Reverse

Access ID: 000000000000

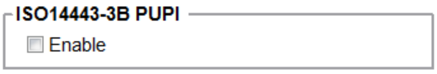
APK (mobile application) and Android Smartphone with HCE supported are required (OS version ≥4.4.x).

Smartphones tested compatible: Samsung S4, S5 & S6, LG G3, Nexus 6, Sony Xperia Z1 and Huawei P8 Lite.

You must develop your APK according to one of two available algorithms or use Orange Pack ID APK.

Warning

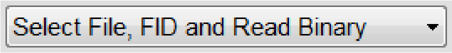
Disable reading PUPI in the Wizard.



ISO14443-3B PUPI

□ Enable

❖ **Algorithme type:**



Select File, FID and Read Binary

The exchanges between the RFID reader and smartphone are made according to ISO7816. The operating mode is “Select File AID + Select File FID ID + Read binary (size + offset)”.

Commands must be implemented in the APK are:

- SELECT FILE 0xAID (DESFIRE ISO FILE): An AID has at least 5 bytes and may consist of up to 16 bytes.

  command APDU: 00A4040005AID

  response APDU: 9000

- SELECT FILE 0xFID ID (DESFIRE ISO FILE ID): File ID to be read on 2 bytes.

  command APDU: 00A4000002FIDID

  response APDU: 9000

- READ BINARY xx bytes

  command APDU: 00B000000Size

  response APDU: xxxxxxxxxx9000 with xx = ID on size bytes

<u>SECard parameters</u>:

➢ **AID** An AID has at least 5 bytes and may consist of up to 16 bytes
Default = 0xF053546964

➢ **FID ID** File ID to be read on 2 bytes. Default = 0x51BC.

➢ **Size** Number of bytes of the ID (up to 48):
  ❖ TTL Wiegand and Serial Hexadecimal: 1 to 48 bytes
  ❖ TTL Iso and Serial Decimal: 1 to 10 bytes

➢ **Offset** First byte position of ID (0 to 48-Size). Default = 0.

➢ **Reverse**

□ Reverse ID sends not reversed (Default)

☑ Reverse ID sends reversed

- **Algorithme type:** Select File only ▾

Command must be implemented in the APK is:

- SELECT FILE 0xAID (DESFIRE ISO FILE):

command APDU: 00A40400**Size**$_{\text{AID}}$AID

Size$_{\text{AID}}$: *1 byte (0x05 up to 0x10)*

An AID has at least 5 bytes and may consist of up to 16 bytes

response APDU: ID9000

SECard parameters:

- **AID** An AID has at least 5 bytes and may consist of up to 16 bytes
  Default = 0xF053546964
- **Size** Number of bytes of the ID (up to 48):
  - TTL Wiegand and Serial Hexadecimal: 1 to 48 bytes
  - TTL Iso and Serial Decimal: 1 to 10 bytes
- **Reverse** ☐ Reverse ID sends not reversed (Default)
  ☑ Reverse ID sends reversed

Note: the settings “Size” is used to check the Size ID read with the Size ID set in SECard.

- **Algorithme type:** Orange PackID ▾

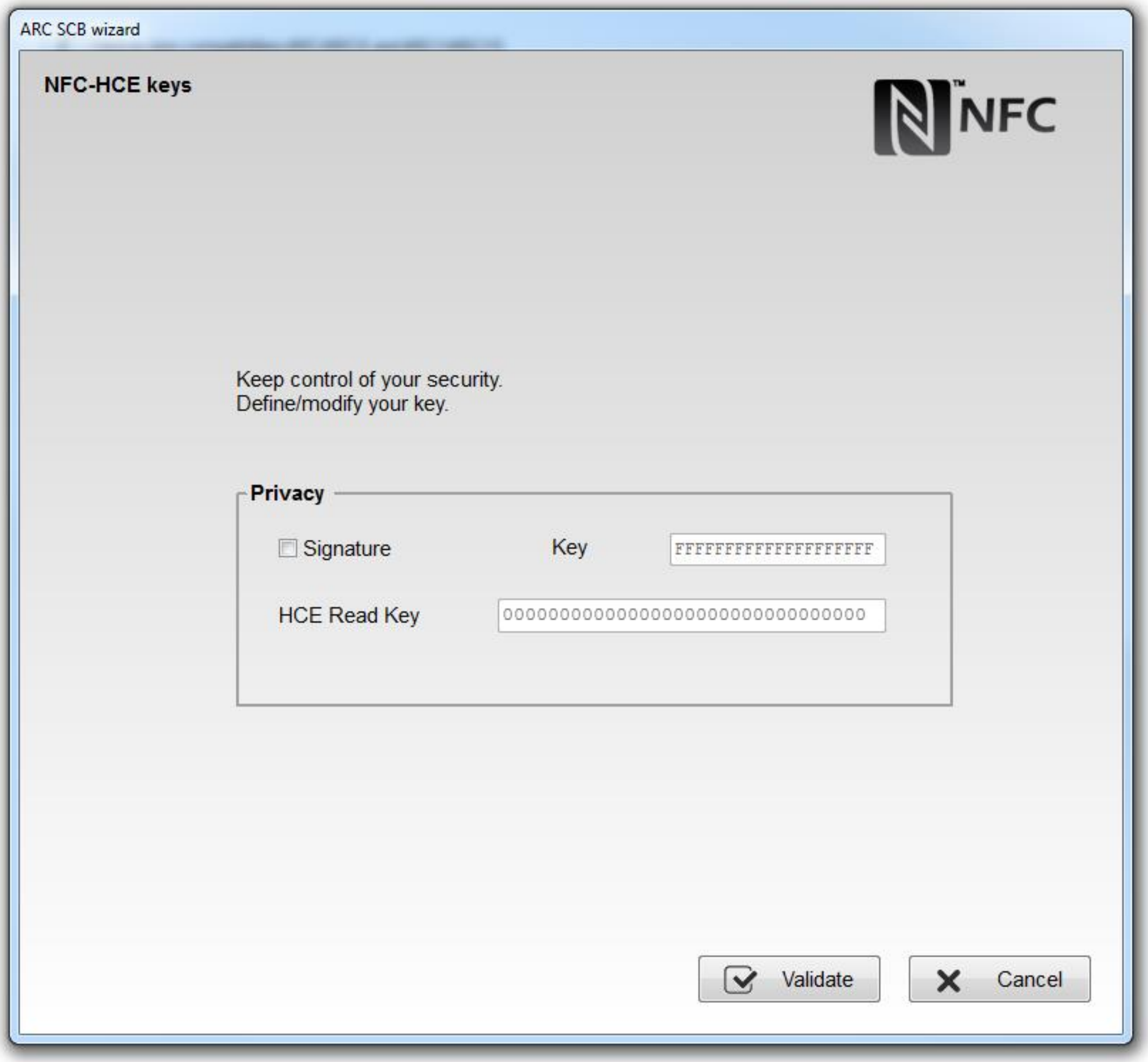
SECard parameters:

- **AID** An AID has at least 5 bytes and may consist of up to 16 bytes
  Default = 0xF053546964
- **Size** Number of bytes of the ID (up to 48):
  - TTL Wiegand and Serial Hexadecimal: 1 to 48 bytes
  - TTL Iso and Serial Decimal: 1 to 10 bytes
- **Reverse** ☐ Reverse ID sends not reversed (Default)
  ☑ Reverse ID sends reversed
- **Access ID** Value on 6 bytes to identify the access zone controlled by the reader.

Click the button ✓ Validate **to complete NFC-HCE: Settings**

III. 18 - NFC-HCE: Keys

Please check the compatibility between Blue/NFC Mobile ID and NFC-HCE.



ARC SCB wizard

NFC-HCE keys

Keep control of your security.
Define/modify your key.

Privacy

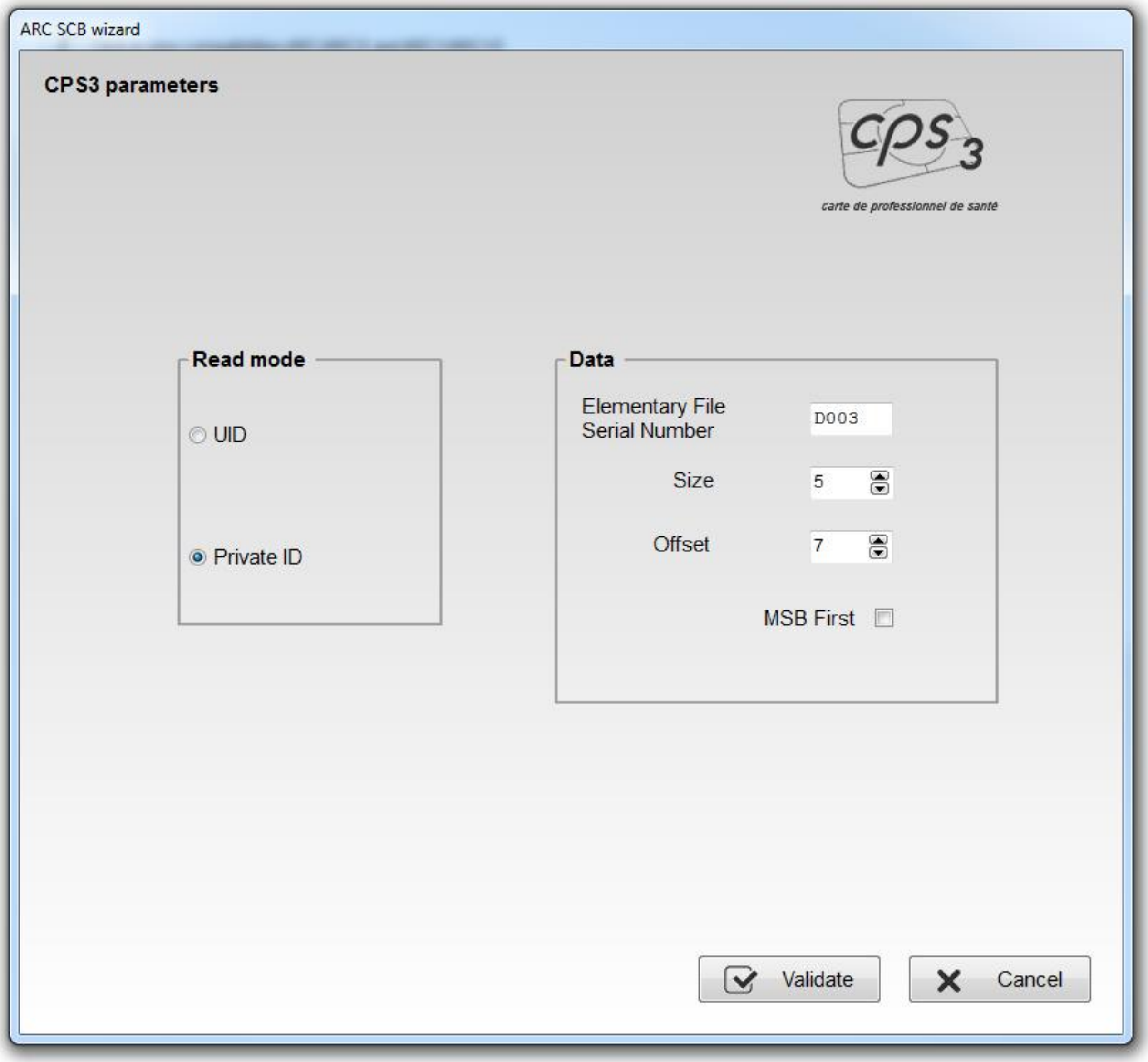
☐ Signature Key FFFFFFFFFFFFFFFFFFFF

HCE Read Key 00000000000000000000000000000000

- **Signature** ☐ Signature HCE ID it’s send in plain mode (default).
  ☑ Signature An HMAC-SHA1 key on 10 bytes is used for signing the HCE ID.
- **Key** 10 bytes key for signing.
- **HCE Read Key** Only available for Orange PackID.
  Secret key for Access ID zone defined in settings.

Click the button ✓ Validate **to complete NFC-HCE: Keys**

III. 19 - CPS3: settings



CPS3 parameters

Read mode
○ UID
● Private ID

Data

Elementary File Serial Number	D003
Size	5
Offset	7
MSB First	□

Read mode

- ❖ UID: Reader configured in”read-only serial number”.
- ❖ Private ID: Reader configured in “read-only private code”.

In the case of the CPS3, UID is the protocolary identifier, which is the serial number of the chip.

Private Id corresponds to the technical identifier (serial IAS number), it is a 19 digit number consists of the following:

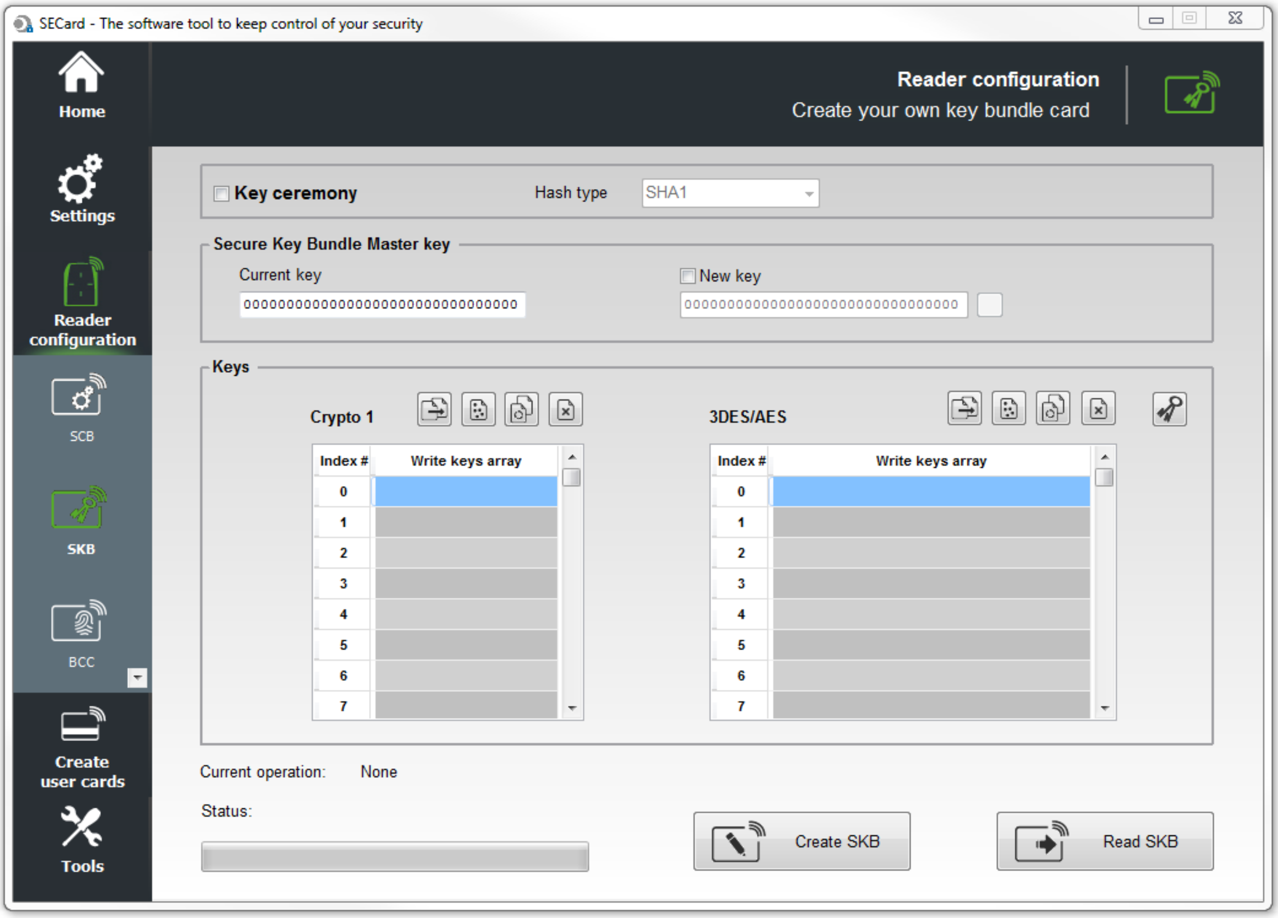
[Identifier ASIP (10)][Unique card number (8)][key(1)]

Its value is present in the Elementary File D003.

To recover the unique code of the card should read 5 bytes of the IAS with an offset of 7 bytes for not reading the id ASIP.
To read this ID, there is no authentication between the reader and the chip.

Click the button Validate **to complete CPS3 settings.**

III. Reader configuration - SKB



Reader configuration
Create your own key bundle card

□ **Key ceremony** Hash type: SHA1

Secure Key Bundle Master key

Current key: 00000000000000000000000000000000

□ New key: 00000000000000000000000000000000

Keys

Crypto 1

Index #	Write keys array
0	
1	
2	
3	
4	
5	
6	
7	

3DES/AES

Index #	Write keys array
0	
1	
2	
3	
4	
5	
6	
7	

Current operation: None

Status:

SECard software has a module to create cards named “*SKB* (Secured Key Bundle)”.
These cards contain 32 *Crypto1* keys and 32 *3DES/AES* keys. They are protected by a card master key « *SKB Master Key* ».

Refer to T15 – Recommendations for the Configuration Cards management

These cards are used by the following readers via command Load_SKB (see communication protocol 5AA-7AA):

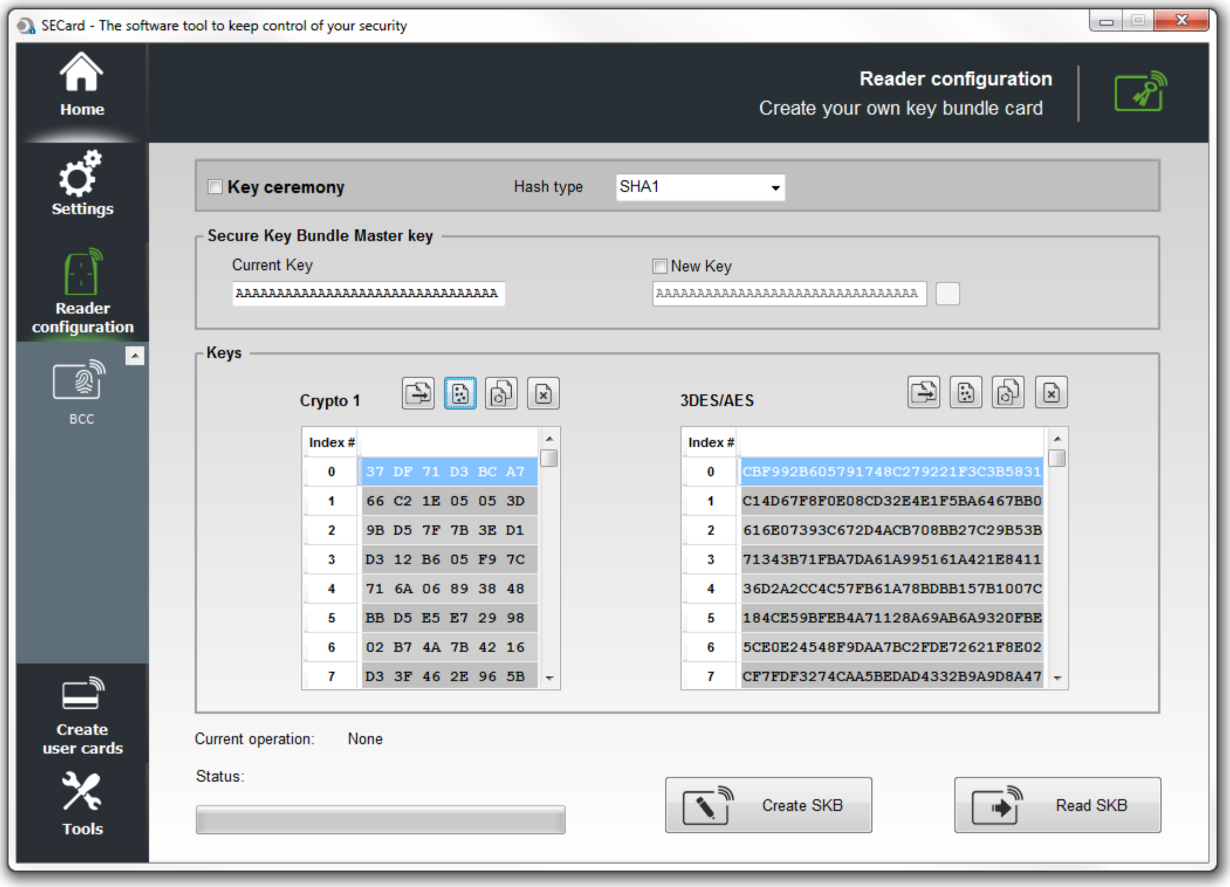
➢ ARC-W32-X-PH5-5AA-x	*Upgradable reader – RS232 – Read / Write*
➢ ARC-W33-X-PH5-7AA-x	*Upgradable reader – RS485 – Read / Write*
➢ WAL-W32-X-PH5-5AA-x	*Reader – RS232 – Read / Write*
➢ WAL-W33-X-PH5-5AA-x	*Reader – RS485 – Read / Write*
➢ ARCS-W33-X-PH5-7AA-x	*Secure Upgradable reader – RS485 – Read / Write*
➢ ARC1S-W33-X-PH5-7AA-x	*Secure reader – RS485 – Read / Write*
➢ STR-W35-E-PH5-5AA-1	*Desktop reader – USB – Read / Write*
➢ STR-W32-E-PH5-5AA-1	*Desktop reader – RS232 – Read / Write*
➢ LXS/ ATX/ MXS / LXC / LXE-W32-E-PH5-5AA-x	*Prox Reader – RS232 – Read / Write*
➢ LXS/ ATX/ MXS / LXC / LXE-W33-E-PH5-5AA-x	*Prox Reader – RS485 – Read / Write*
➢ MS-W31-E-PH5-5AA-x	OEM reader – *RS232/TTL – Read / Write*

The feature of « *SKB* » is to provide a portfolio (bundle) of indexed keys (index from 0 to 31 for *Crypto1* and *3DES/AES*). Once stored in reader’s EEPROM, it will be possible to access these keys by calling them in *SSCP* command with their index value. Then no need to communicate the key values through the serial link.
Note: timing to load SKB is 6 seconds.

Warning

It is necessary to create these cards with MIFARE Plus® Level 0, MIFARE® DESFire® EV1/EV2 or with a current SKB.

IV. 1 - Classic creation mode



SECard - The software tool to keep control of your security

Reader configuration
Create your own key bundle card

□ **Key ceremony** Hash type SHA1

Secure Key Bundle Master key

Current Key: AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

□ New Key: AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

Keys

Crypto 1

Index #	
0	37 DF 71 D3 BC A7
1	66 C2 1E 05 05 3D
2	9B D5 7F 7B 3E D1
3	D3 12 B6 05 F9 7C
4	71 6A 06 89 38 48
5	BB D5 E5 E7 29 98
6	02 B7 4A 7B 42 16
7	D3 3F 46 2E 96 5B

3DES/AES

Index #	
0	CBF992B605791748C279221F3C3B5831
1	C14D67F8F0E08CD32E4E1F5BA6467BB0
2	616E07393C672D4ACB708BB27C29B53B
3	71343B71FBA7DA61A995161A421E8411
4	36D2A2CC4C57FB61A78BDBB157B1007C
5	184CE59BFEB4A71128A69AB6A9320FBE
6	5CE0E24548F9DAA7BC2FDE72621F8E02
7	CF7FDF3274CAA5BEDAD4332B9A9D8A47

Current operation: None

Status:

Secure Key Bundle Master key

On a MIFARE® DESFire® EV1/EV2 blank card the default key is "00000000000000000000000000000000"

On a MIFARE Plus® Level 0 blank card the default key is FFFF…FFFF or A0A1A2….A15.

It is recommended to change this value for more security.

Keys

⇨	Copy the values of table read keys to the array of keys to write.
⁘	Fill “value to write” array with random keys values. These values are those written in the SKB card.
⟲	Switch from array of keys write to array of keys to read.
☒	Delete all values of the array of keys to write.
🔑	Indexed keys table for Encoding.

Crypto 1

Array reserved for key 32 key values Crypto 1.

3DES/AES

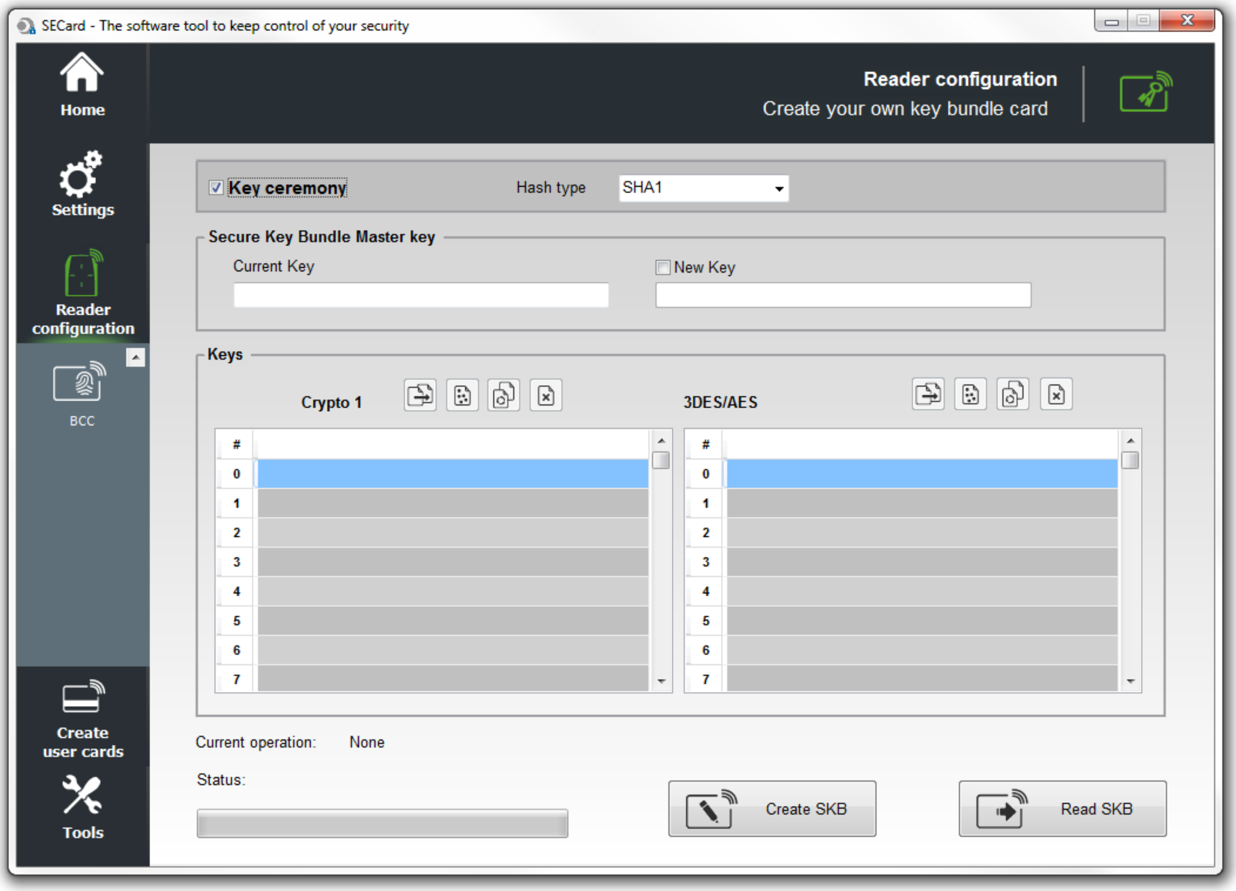
Array reserved for key 32 key values 3DES/AES.

IV. 2 - Key ceremony creation mode

With this Key ceremony, three holders are required to generate the SKB.

You can’t write in the keys field; all field are automatically filled by the Key ceremony. The resulting value of a key is the XOR on the three keys. The value that appears in the field is the HASH of the resulting key.

Made the Key Ceremony for all Key you needed, if a field it’s not used it’s forced to 00…00.



SECard - The software tool to keep control of your security

Reader configuration
Create your own key bundle card

☑ Key ceremony   Hash type: SHA1

Secure Key Bundle Master key
Current Key:
□ New Key:

Keys

#	Crypto 1
0	
1	
2	
3	
4	
5	
6	
7	

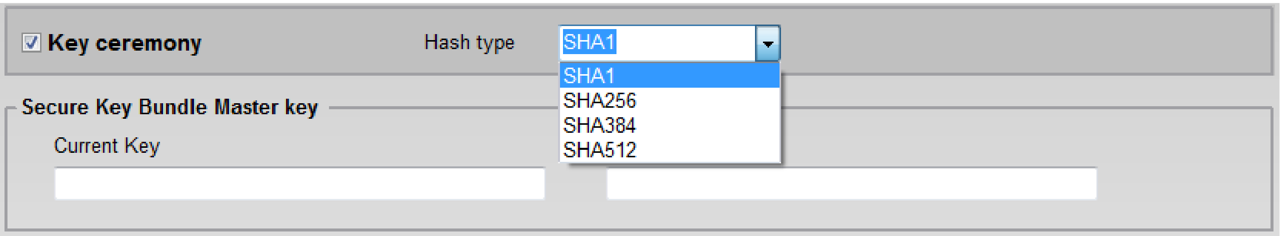
#	3DES/AES
0	
1	
2	
3	
4	
5	
6	
7	

Current operation: None
Status:

+

Example for SKB Master Key

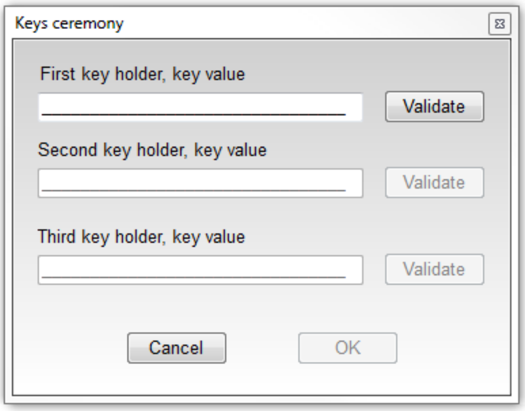
1- Select the Hash type wanted



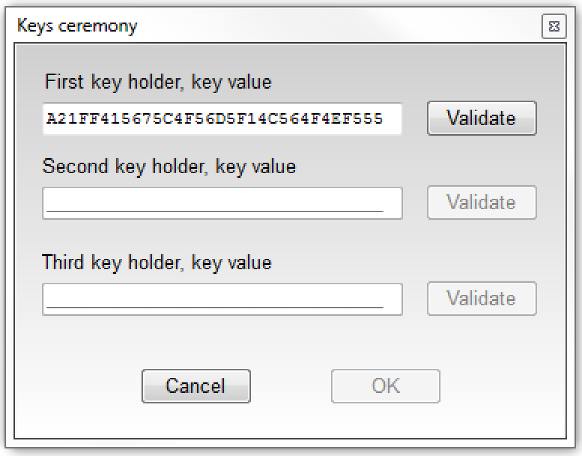
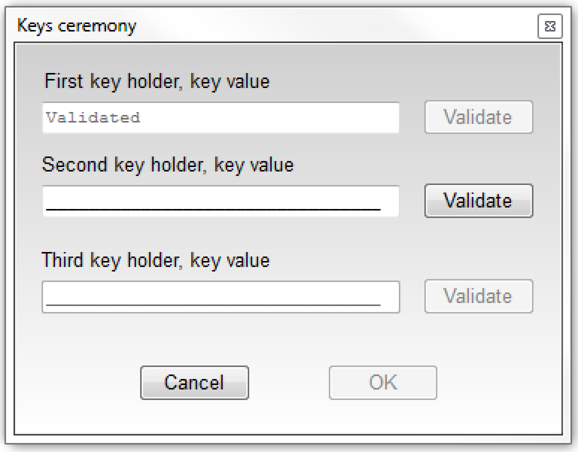
☑ Key ceremony   Hash type: SHA1

Secure Key Bundle Master key
Current Key

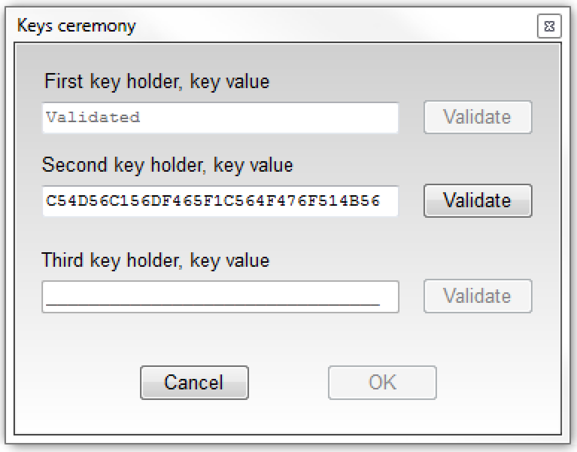
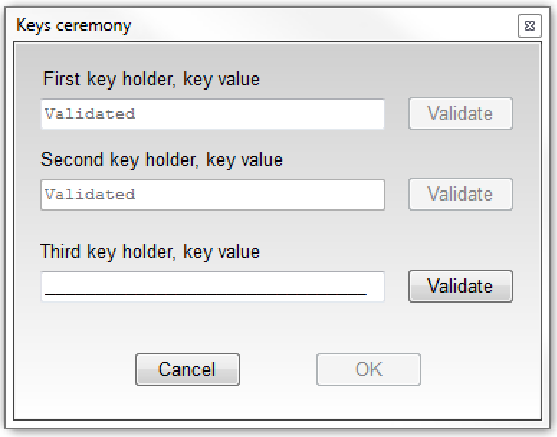
2- Double click in Current Key field to open the Keys ceremony windows


Keys ceremony
First key holder, key value
Validate
Second key holder, key value
Validate
Third key holder, key value
Validate
Cancel
OK

3- First key

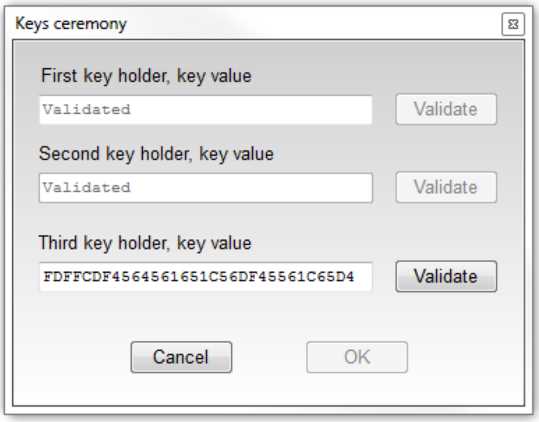
Enter the first key	Click on Validate
 Keys ceremony First key holder, key value A21FF415675C4F56D5F14C564F4EF555 Validate Second key holder, key value Validate Third key holder, key value Validate Cancel OK	 Keys ceremony First key holder, key value Validated Validate Second key holder, key value Validate Third key holder, key value Validate Cancel OK
	The value of the first key is then masked

4- Second key

Enter the second key	Click on Validate
 Keys ceremony First key holder, key value Validated Validate Second key holder, key value C54D56C156DF465F1C564F476F514B56 Validate Third key holder, key value Validate Cancel OK	 Keys ceremony First key holder, key value Validated Validate Second key holder, key value Validated Validate Third key holder, key value Validate Cancel OK
	The value of the second key is then masked.

5- Third key

Enter the third key



Keys ceremony

First key holder, key value

Validated — Validate

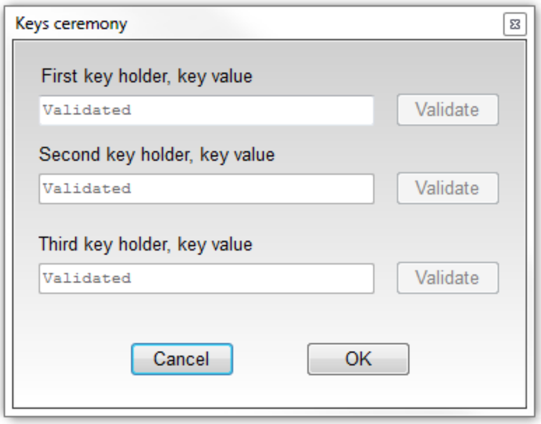
Second key holder, key value

Validated — Validate

Third key holder, key value

FDFFCDF4564561651C56DF45561C65D4 — Validate

Click on Validate



Keys ceremony

First key holder, key value

Validated — Validate

Second key holder, key value

Validated — Validate

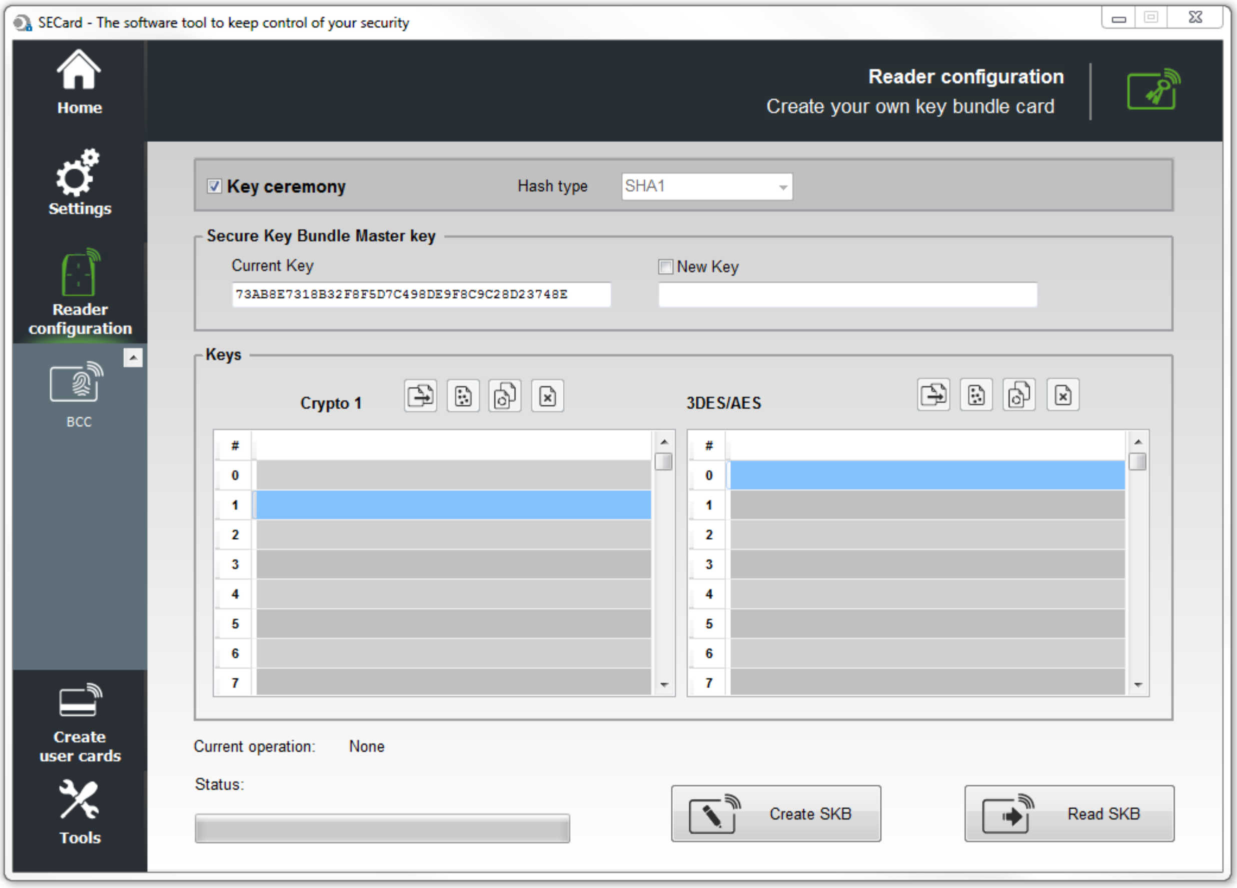
Third key holder, key value

Validated — Validate

The value of the third key is then masked

6- Click on OK to finish the key ceremony FOR Master key.

7- The key ceremony for Master Key is achieved and we can see the HASH of current SKB Master key



SECard - The software tool to keep control of your security

Reader configuration
Create your own key bundle card

☑ Key ceremony — Hash type: SHA1

Secure Key Bundle Master key

Current Key: 73AB8E7318B32F8F5D7C498DE9F8C9C28D23748E

□ New Key

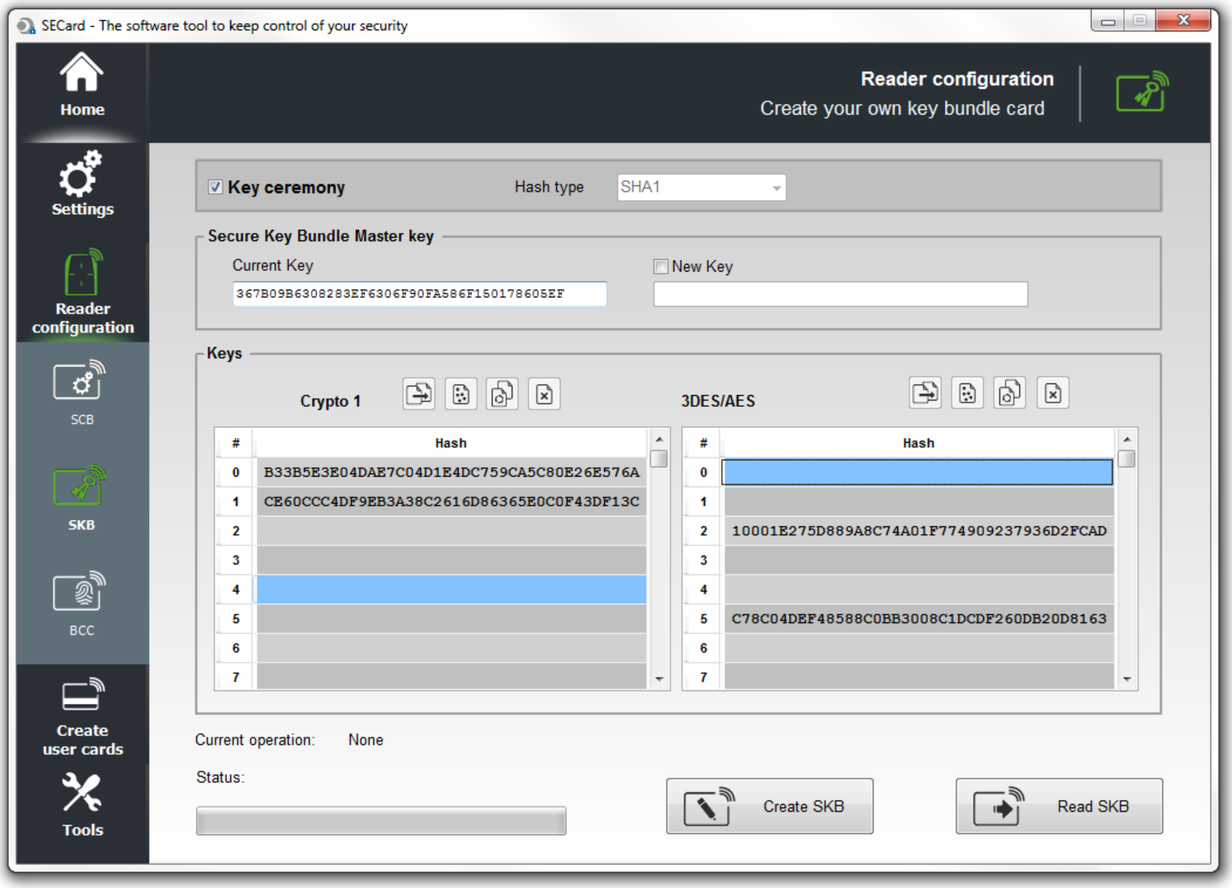
Keys

Current operation: None

Status:

Repeat this operating mode for each key needed.

For example:



☑ Key ceremony   Hash type: SHA1

Secure Key Bundle Master key

Current Key: 367B09B6308283EF6306F90FA586F150178605EF

□ New Key:

Keys

Crypto 1

#	Hash
0	B33B5E3E04DAE7C04D1E4DC759CA5C80E26E576A
1	CE60CCC4DF9EB3A38C2616D86365E0C0F43DF13C
2	
3	
4	
5	
6	
7	

3DES/AES

#	Hash
0	
1	
2	10001E275D889A8C74A01F774909237936D2FCAD
3	
4	
5	C78C04DEF48588C0BB3008C1DCDF260DB20D8163
6	
7	

Current operation: None

Status:

8- Create SKB

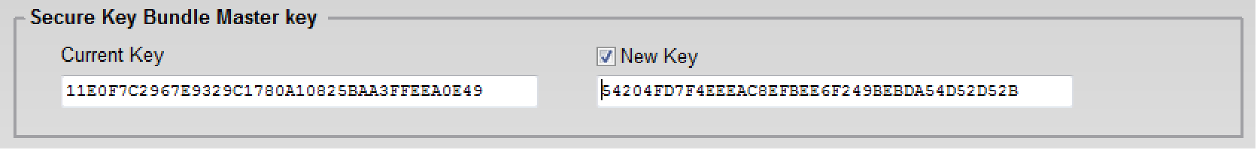
Once the key values needed are create, click on “Create SKB” to write the keys into the card.

Read SKB

Read again a SKB card: need to inform the master key of the card to read.

Change SKB Master Key

To change the current SKB Master key, double click in the New Key field, and go to step 2.



Secure Key Bundle Master key

Current Key: 11E0F7C2967E9329C1780A10825BAA3FFEEA0E49

☑ New Key: 54204FD7F4EEEAC8EFBEE6F249BEBDA54D52D52B

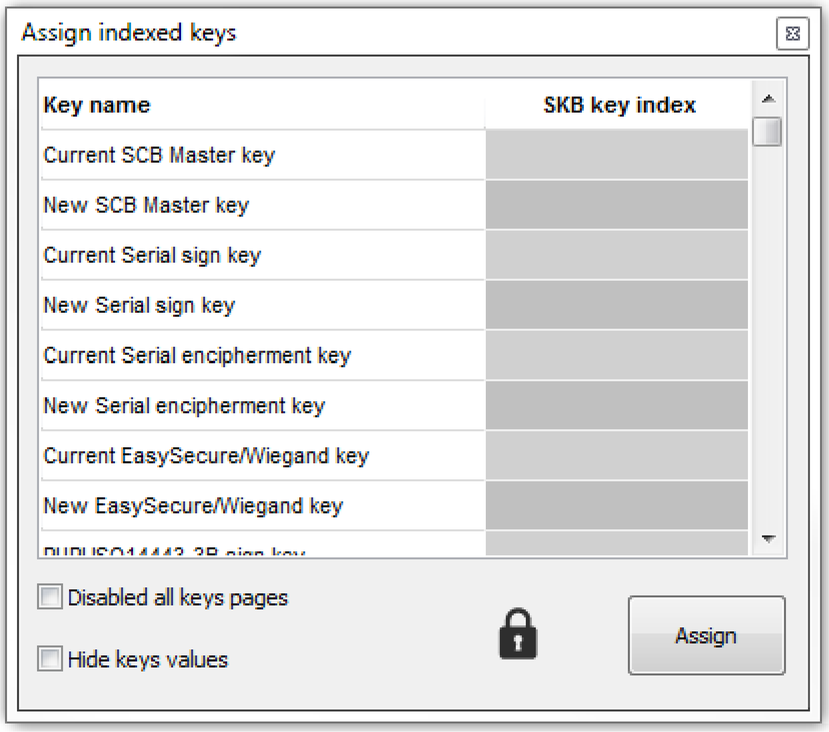
IV. 3 - Using indexed keys in the SECard configuration

From version 3.1, you can fill the key fields of the configuration wizard from a SKB badge.

The keys that can be assigned are:

- Reader keys
- DESFire keys
- Mifare Plus Level 3 keys
- UltraLight keys
- Mobile ID keys

To do this, click on button, a window containing a table appears in order to assign an index to the different desired keys.



Assign indexed keys

Key name	SKB key index
Current SCB Master key	
New SCB Master key	
Current Serial sign key	
New Serial sign key	
Current Serial encipherment key	
New Serial encipherment key	
Current EasySecure/Wiegand key	
New EasySecure/Wiegand key	
PUPI ISO14443-3B sign key	

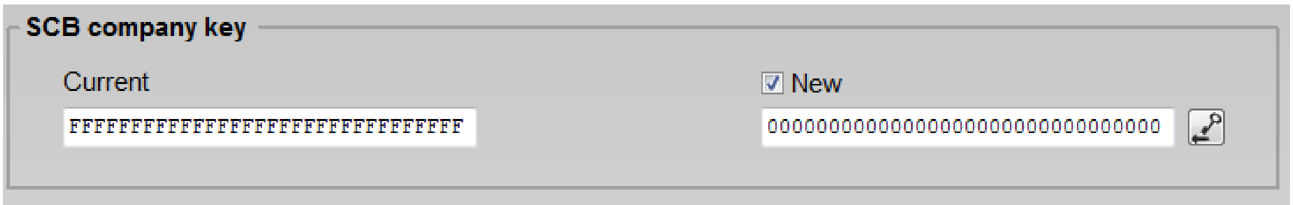
□ Disabled all keys pages

□ Hide keys values

All fields are not to be filled in, only those useful for the current configuration.

Note: to make a key change, in the SCB wizard, check the New box next the field.

For example, the current SCB key is the default value and must be changed to the value of the key at index 2, check the box New to make the change effective:



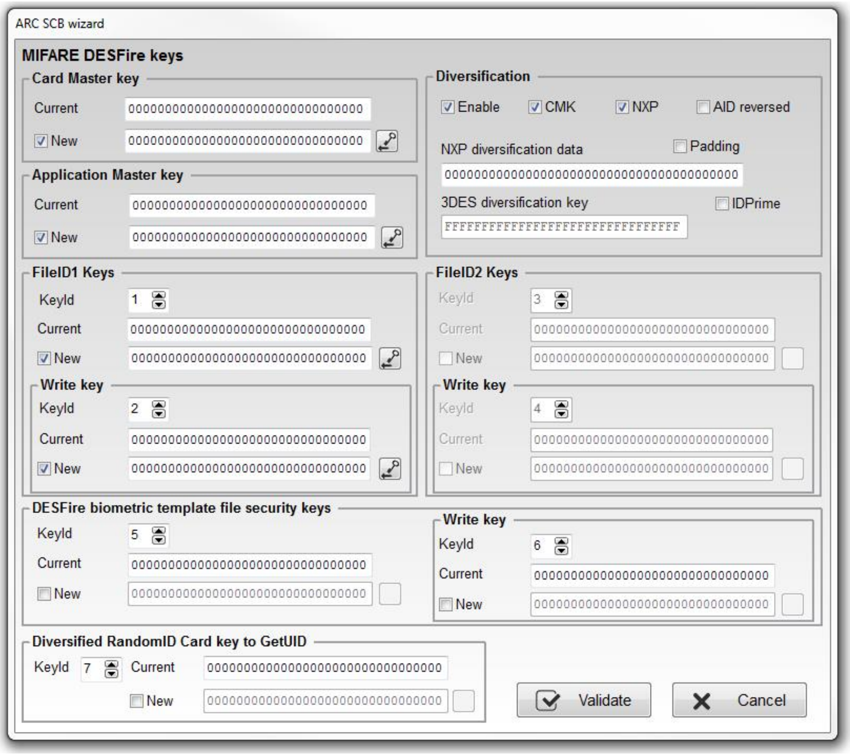
SCB company key

Current: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

☑ New: 00000000000000000000000000000000

Example: keys to change: Card Master key, Application Master Key, Read and Write File ID1 Key for a virgin DESFire®.

1- In the SCB wizard, after DESFire® settings is ok, open the DESFire® Keys window and check the "New" box of all the fields concerned:



ARC SCB wizard

MIFARE DESFire keys

Card Master key
- Current: 00000000000000000000000000000000
- ☑ New: 00000000000000000000000000000000

Application Master key
- Current: 00000000000000000000000000000000
- ☑ New: 00000000000000000000000000000000

Diversification
- ☑ Enable ☑ CMK ☑ NXP □ AID reversed
- NXP diversification data □ Padding: 0000000000000000000000000000000000000000
- 3DES diversification key □ IDPrime: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

FileID1 Keys
- KeyId: 1
- Current: 00000000000000000000000000000000
- ☑ New: 00000000000000000000000000000000
- Write key
  - KeyId: 2
  - Current: 00000000000000000000000000000000
  - ☑ New: 00000000000000000000000000000000

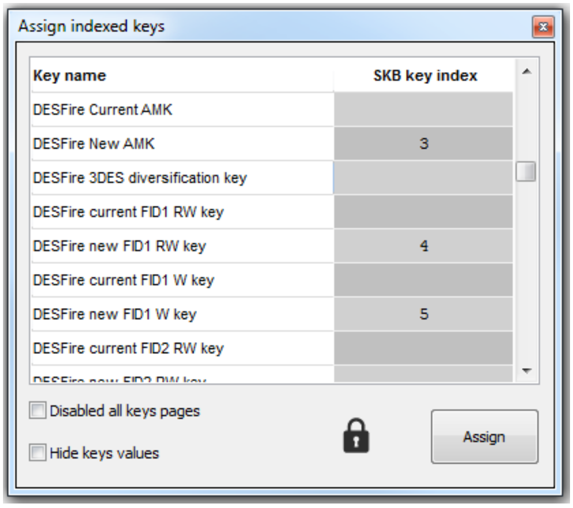
FileID2 Keys
- KeyId: 3
- Current: 00000000000000000000000000000000
- □ New: 00000000000000000000000000000000
- Write key
  - KeyId: 4
  - Current: 00000000000000000000000000000000
  - □ New: 00000000000000000000000000000000

DESFire biometric template file security keys
- KeyId: 5
- Current: 00000000000000000000000000000000
- □ New: 00000000000000000000000000000000
- Write key
  - KeyId: 6
  - Current: 00000000000000000000000000000000
  - □ New: 00000000000000000000000000000000

Diversified RandomID Card key to GetUID
- KeyId: 7
- Current: 00000000000000000000000000000000
- □ New: 00000000000000000000000000000000

Validate

2- In the SKB window, load the SKB then open the assignment table and assign the index numbers of the keys



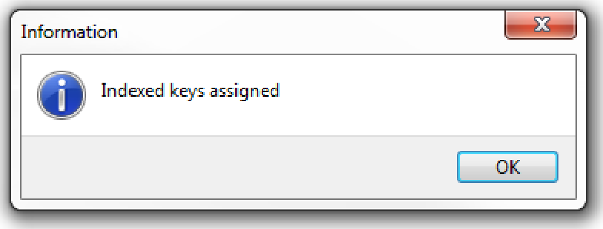
Assign indexed keys

Key name	SKB key index
DESFire Current AMK	
DESFire New AMK	3
DESFire 3DES diversification key	
DESFire current FID1 RW key	
DESFire new FID1 RW key	4
DESFire current FID1 W key	
DESFire new FID1 W key	5
DESFire current FID2 RW key	

□ Disabled all keys pages

□ Hide keys values

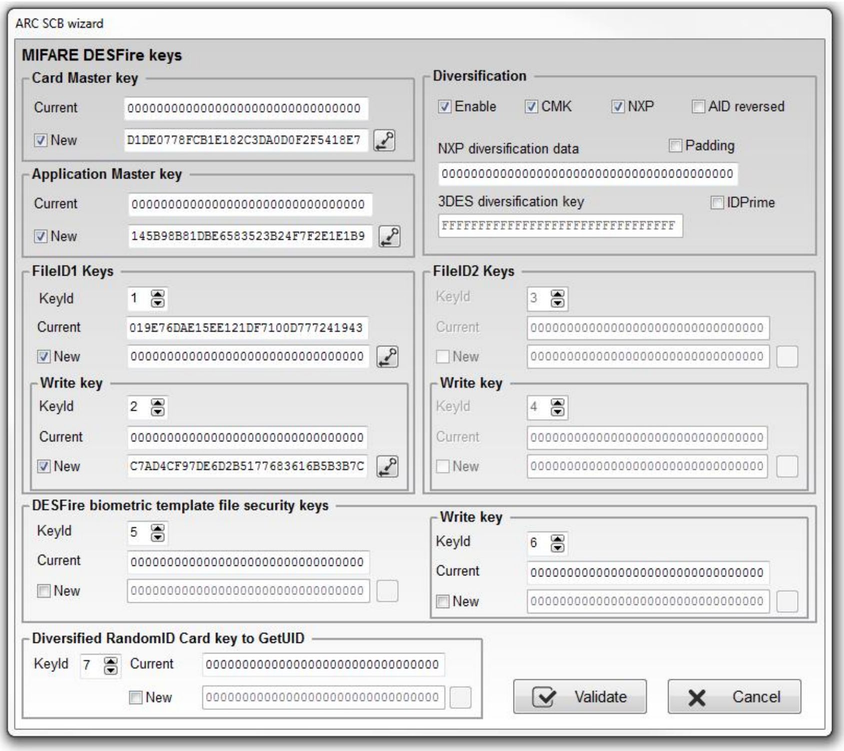
3- Click on Assign



Information

Indexed keys assigned

4- If “Disabled all keys pages” and “Hide keys values” were not checked during the assignment, the DESFire® key window will be:



ARC SCB wizard

MIFARE DESFire keys

Card Master key
Current 00000000000000000000000000000000
☑ New D1DE0778FCB1E182C3DA0D0F2F5418E7

Application Master key
Current 00000000000000000000000000000000
☑ New 145B98B81DBE6583523B24F7F2E1E1B9

Diversification
☑ Enable ☑ CMK ☑ NXP □ AID reversed
NXP diversification data □ Padding
0000000000000000000000000000000000000000
3DES diversification key □ IDPrime
FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

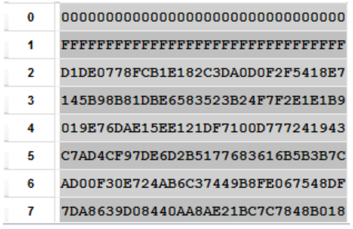
FileID1 Keys
KeyId 1
Current 019E76DAE15EE121DF7100D777241943
☑ New 00000000000000000000000000000000
Write key
KeyId 2
Current 00000000000000000000000000000000
☑ New C7AD4CF97DE6D2B5177683616B5B3B7C

FileID2 Keys
KeyId 3
Current 00000000000000000000000000000000
□ New 00000000000000000000000000000000
Write key
KeyId 4
Current 00000000000000000000000000000000
□ New 00000000000000000000000000000000

DESFire biometric template file security keys
KeyId 5
Current 00000000000000000000000000000000
□ New 00000000000000000000000000000000
Write key
KeyId 6
Current 00000000000000000000000000000000
□ New 00000000000000000000000000000000

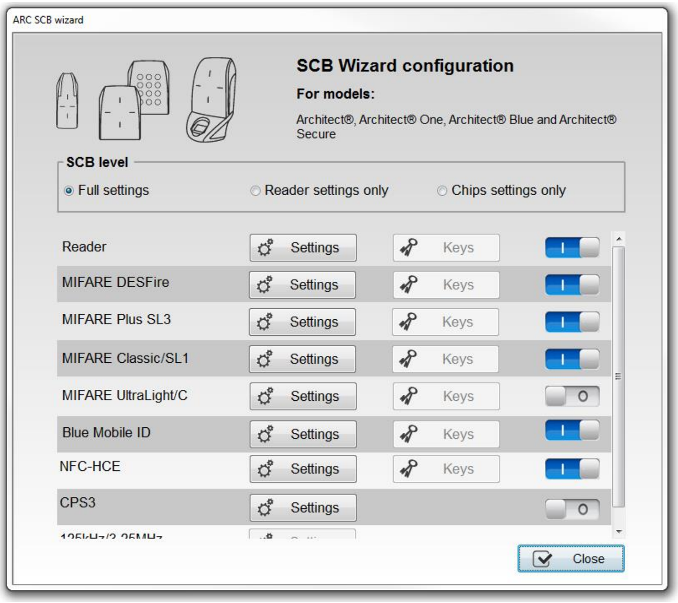
Diversified RandomID Card key to GetUID
KeyId 7 Current 00000000000000000000000000000000
□ New 00000000000000000000000000000000

The value of the keys appears in the fields according to the values of the indexed keys.



0	00000000000000000000000000000000
1	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
2	D1DE0778FCB1E182C3DA0D0F2F5418E7
3	145B98B81DBE6583523B24F7F2E1E1B9
4	019E76DAE15EE121DF7100D777241943
5	C7AD4CF97DE6D2B5177683616B5B3B7C
6	AD00F30E724AB6C37449B8FE067548DF
7	7DA8639D08440AA8AE21BC7C7848B018

5- If “Disabled all keys pages” was checked during the assignment, the buttons giving access to the keys will be grayed out



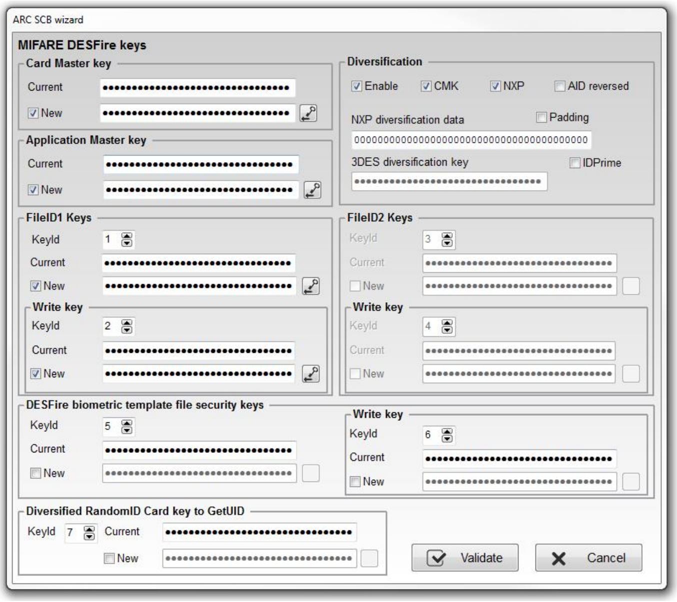
ARC SCB wizard

SCB Wizard configuration
For models:
Architect®, Architect® One, Architect® Blue and Architect® Secure

SCB level
● Full settings ○ Reader settings only ○ Chips settings only

Reader	Settings	Keys	I
MIFARE DESFire	Settings	Keys	I
MIFARE Plus SL3	Settings	Keys	I
MIFARE Classic/SL1	Settings	Keys	I
MIFARE UltraLight/C	Settings	Keys	O
Blue Mobile ID	Settings	Keys	I
NFC-HCE	Settings	Keys	I
CPS3	Settings		O

6- If “Hide keys value” was checked during the assignment, the DESFire® key window will be:



ARC SCB wizard

MIFARE DESFire keys

Card Master key
Current ••••••••••••••••••••••••••••••••
☑ New ••••••••••••••••••••••••••••••••

Application Master key
Current ••••••••••••••••••••••••••••••••
☑ New ••••••••••••••••••••••••••••••••

Diversification
☑ Enable ☑ CMK ☑ NXP □ AID reversed
NXP diversification data □ Padding
0000000000000000000000000000000000000000
3DES diversification key □ IDPrime
••••••••••••••••••••••••••••••••

FileID1 Keys
KeyId 1
Current ••••••••••••••••••••••••••••••••
☑ New ••••••••••••••••••••••••••••••••
Write key
KeyId 2
Current ••••••••••••••••••••••••••••••••
☑ New ••••••••••••••••••••••••••••••••

FileID2 Keys
KeyId 3
Current ••••••••••••••••••••••••••••••••
□ New ••••••••••••••••••••••••••••••••
Write key
KeyId 4
Current ••••••••••••••••••••••••••••••••
□ New ••••••••••••••••••••••••••••••••

DESFire biometric template file security keys
KeyId 5
Current ••••••••••••••••••••••••••••••••
□ New ••••••••••••••••••••••••••••••••
Write key
KeyId 6
Current ••••••••••••••••••••••••••••••••
□ New ••••••••••••••••••••••••••••••••

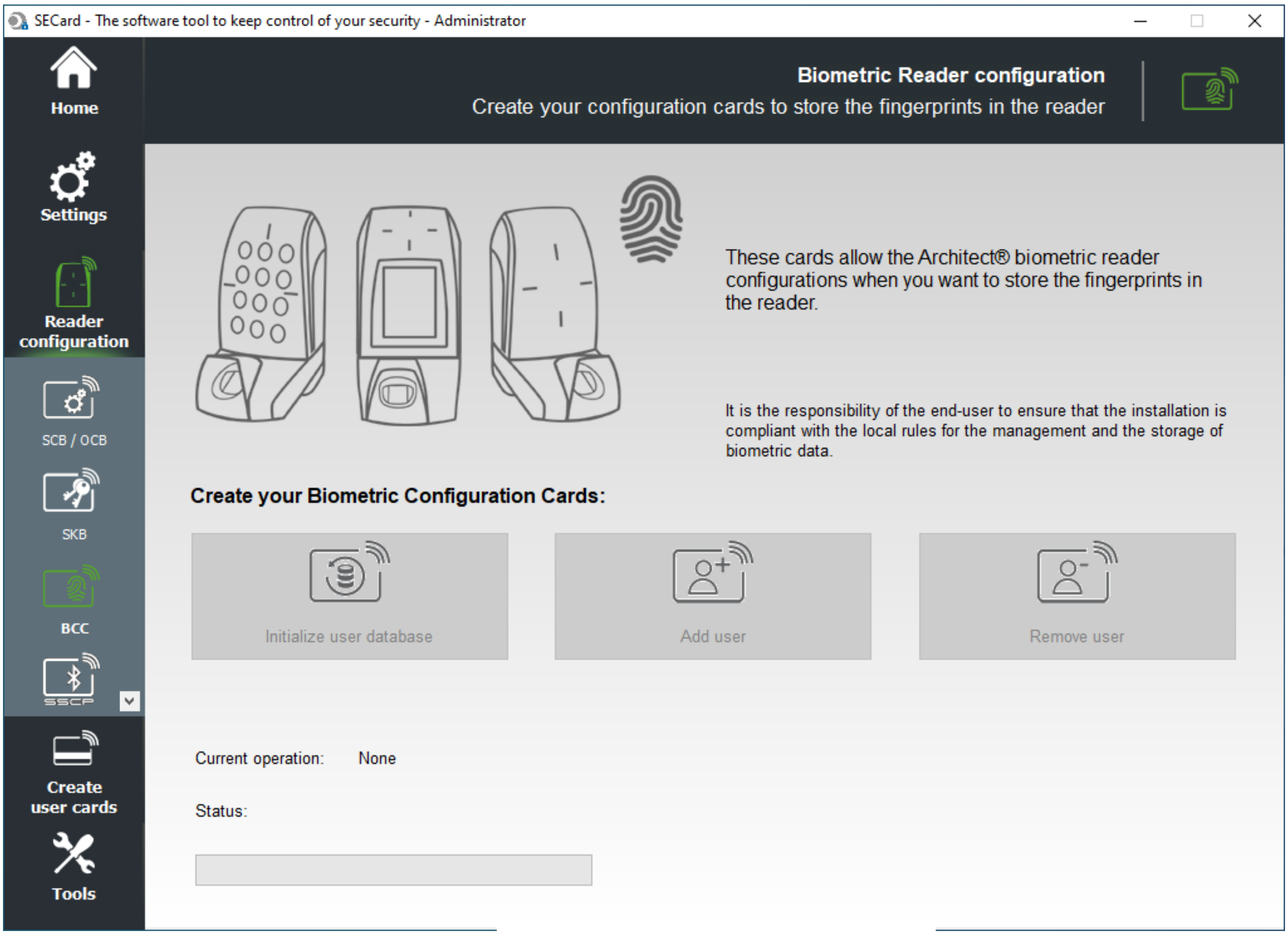
Diversified RandomID Card key to GetUID
KeyId 7 Current ••••••••••••••••••••••••••••••••
□ New ••••••••••••••••••••••••••••••••

Note: it is possible to modify an Index or options “Disabled all keys pages”, “Hide keys value” by making the change and clicking Assign again.

Warning

All key values set by this method in the configuration wizard will not be saved in the .PSE file.

IV. Reader configuration - BCC



Biometric Reader configuration

Create your configuration cards to store the fingerprints in the reader

These cards allow the Architect® biometric reader configurations when you want to store the fingerprints in the reader.

It is the responsibility of the end-user to ensure that the installation is compliant with the local rules for the management and the storage of biometric data.

Create your Biometric Configuration Cards:

Current operation: None

Status:

If in ARC SCB Wizard the mode is check, ☑ Biometric data into the reader, the Biometric Configuration Cards creation is available.

Three cards are required to manage the reader in this mode. For this card, use MIFARE® DESFire® **EV1** (2ko, 4ko or 8ko).

The Biometric configuration card master key is the SCB diversified key.

Initialize user database

This card is used to initialize the biometric user databate into the module.

Add user

This card is used to add user to database.

Remove user

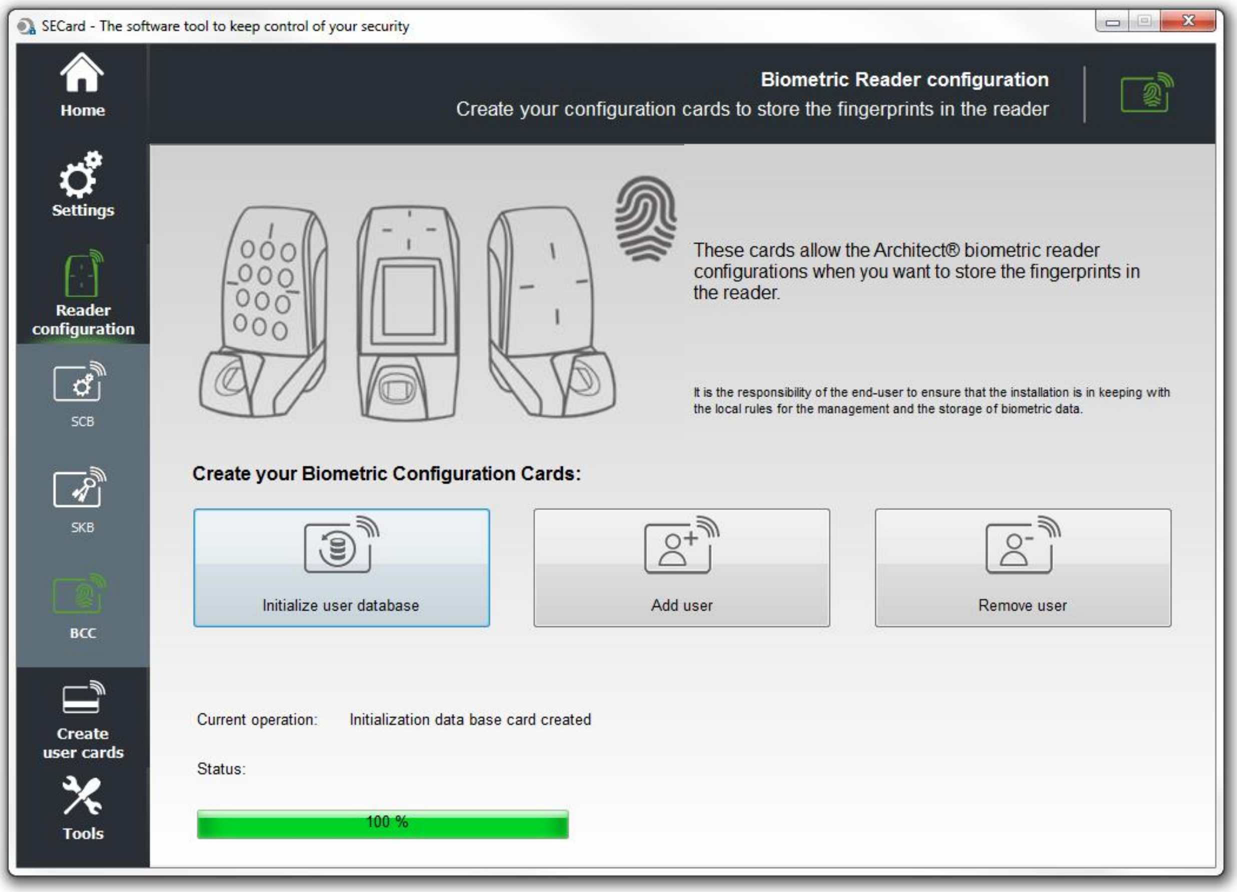
This card is used to delete user from database.

For more information about the procedure to configure the reader, add and Remove user refer to *T9 - Biometric data into the reader*.

Warning

Initialize user database erases the current database

Error messages



Biometric Reader configuration
Create your configuration cards to store the fingerprints in the reader

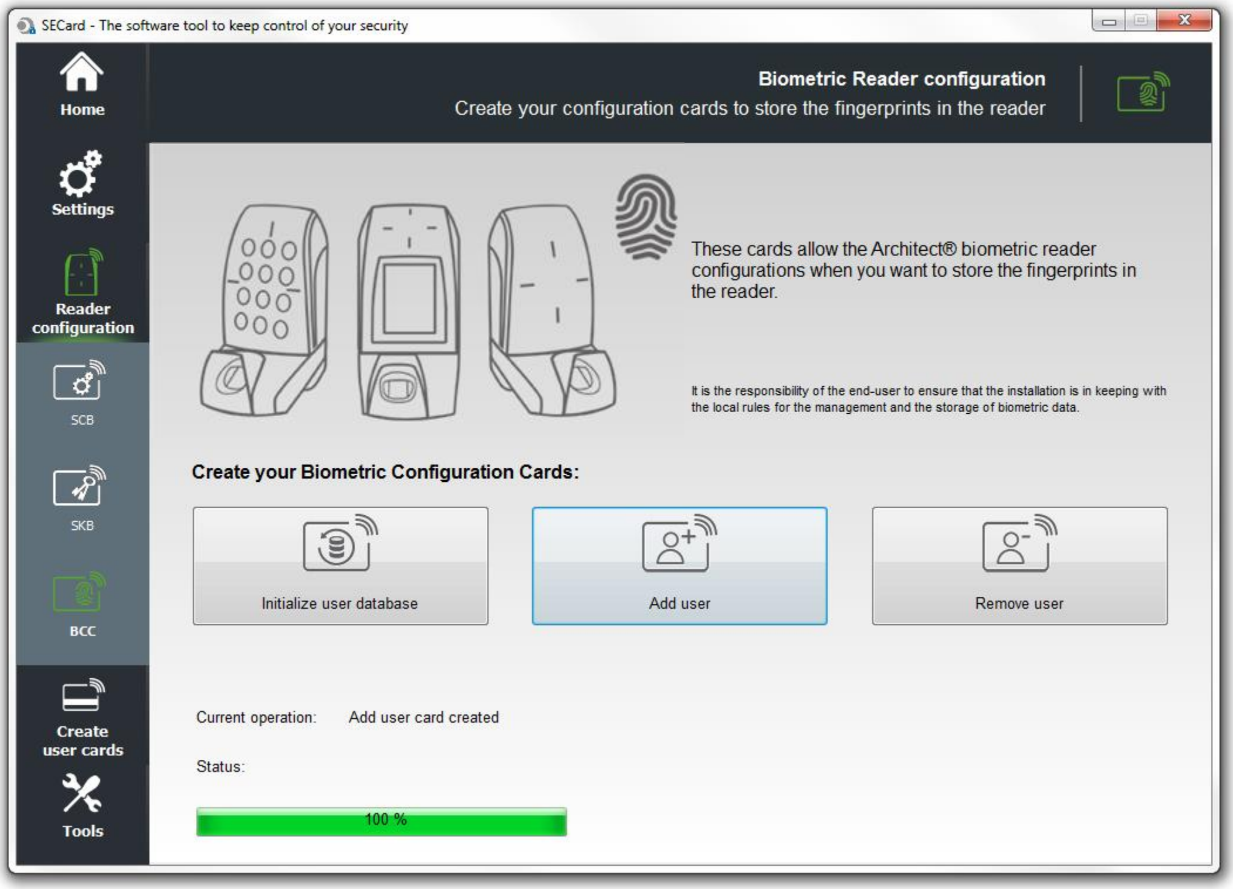
These cards allow the Architect® biometric reader configurations when you want to store the fingerprints in the reader.

It is the responsibility of the end-user to ensure that the installation is in keeping with the local rules for the management and the storage of biometric data.

Create your Biometric Configuration Cards:

Current operation: Initialization data base card created

Status:



Biometric Reader configuration
Create your configuration cards to store the fingerprints in the reader

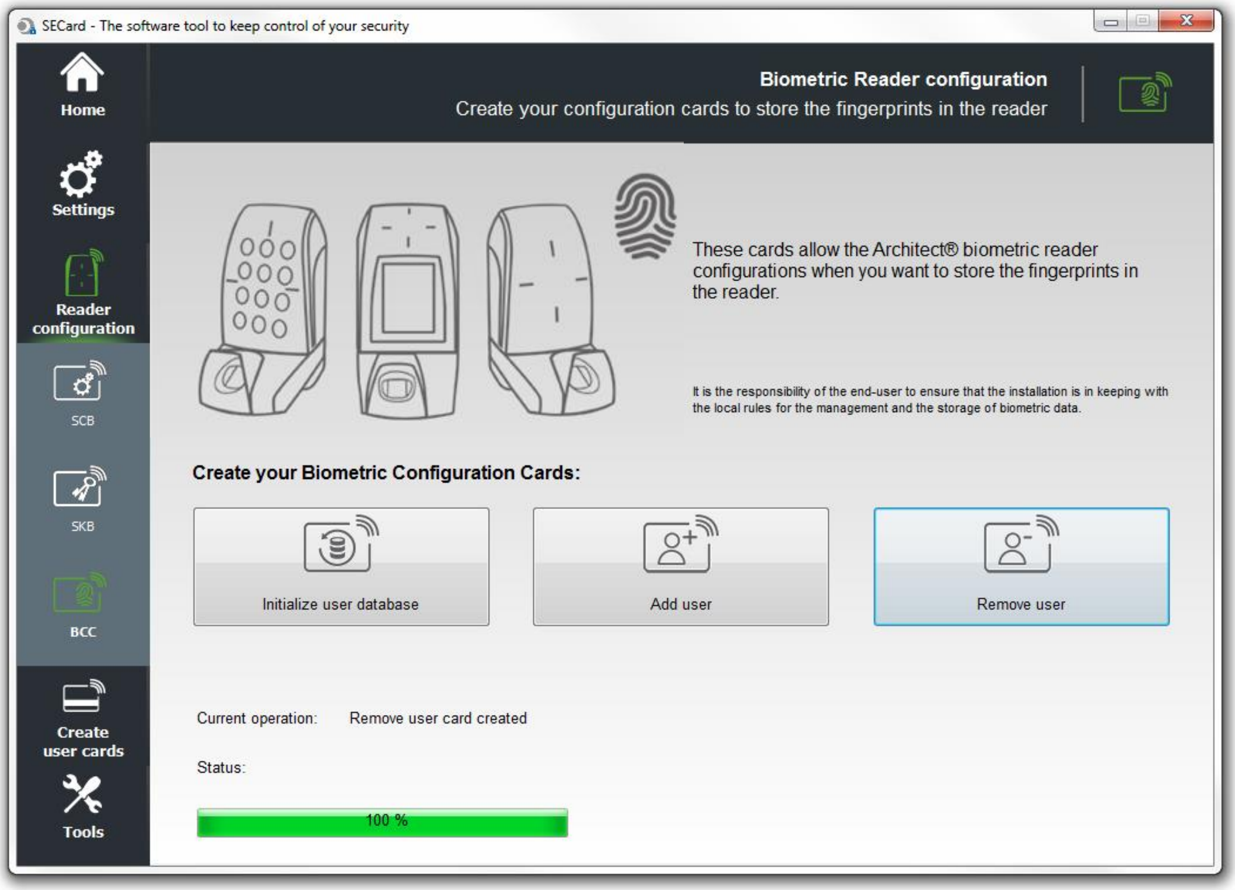
These cards allow the Architect® biometric reader configurations when you want to store the fingerprints in the reader.

It is the responsibility of the end-user to ensure that the installation is in keeping with the local rules for the management and the storage of biometric data.

Create your Biometric Configuration Cards:

Current operation: Add user card created

Status:


SECard - The software tool to keep control of your security
Home
Settings
Reader configuration
SCB
SKB
BCC
Create user cards
Tools
Biometric Reader configuration
Create your configuration cards to store the fingerprints in the reader
Initialize user database
Add user
Remove user

These cards allow the Architect® biometric reader configurations when you want to store the fingerprints in the reader.

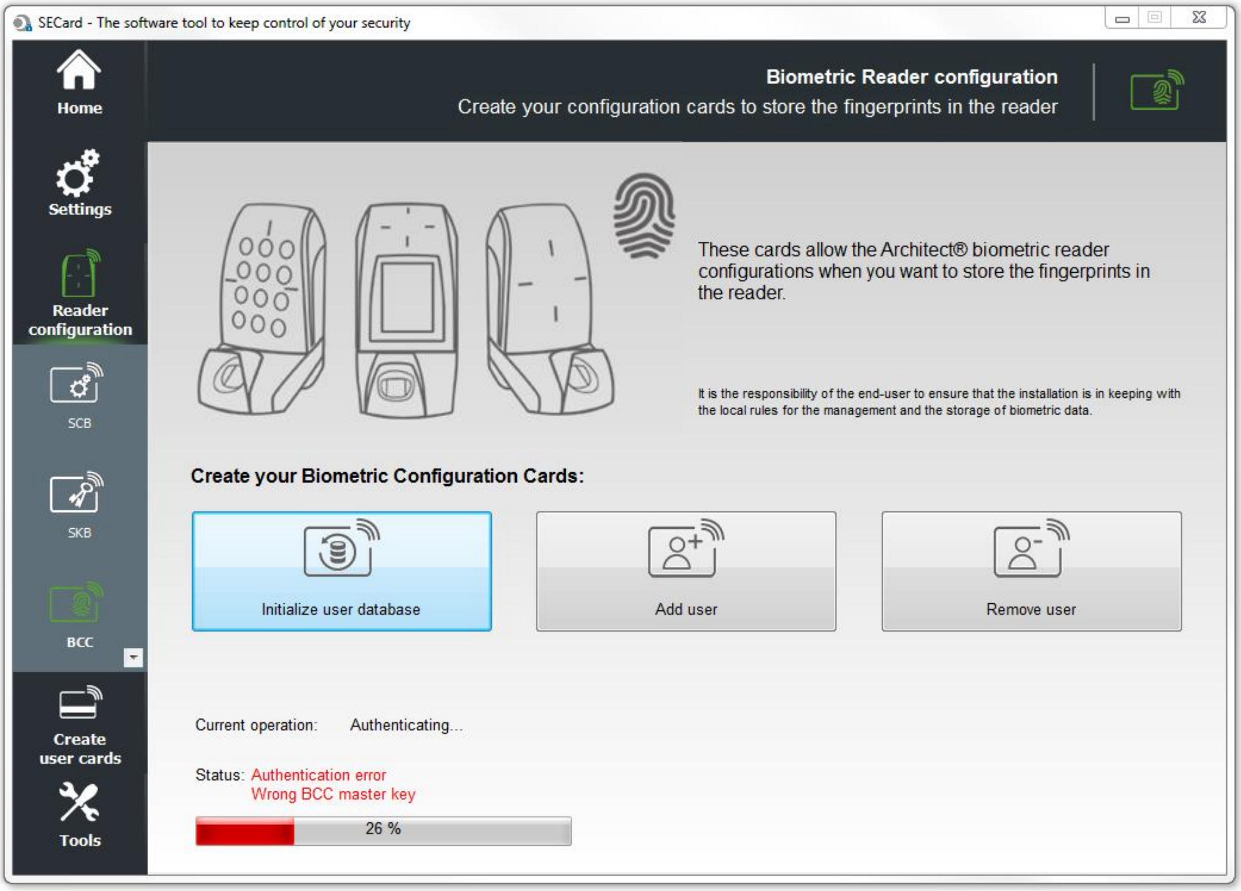
It is the responsibility of the end-user to ensure that the installation is in keeping with the local rules for the management and the storage of biometric data.

Create your Biometric Configuration Cards:

Current operation: Remove user card created

Status:

100 %


SECard - The software tool to keep control of your security
Home
Settings
Reader configuration
SCB
SKB
BCC
Create user cards
Tools
Biometric Reader configuration
Create your configuration cards to store the fingerprints in the reader
Initialize user database
Add user
Remove user

These cards allow the Architect® biometric reader configurations when you want to store the fingerprints in the reader.

It is the responsibility of the end-user to ensure that the installation is in keeping with the local rules for the management and the storage of biometric data.

Create your Biometric Configuration Cards:

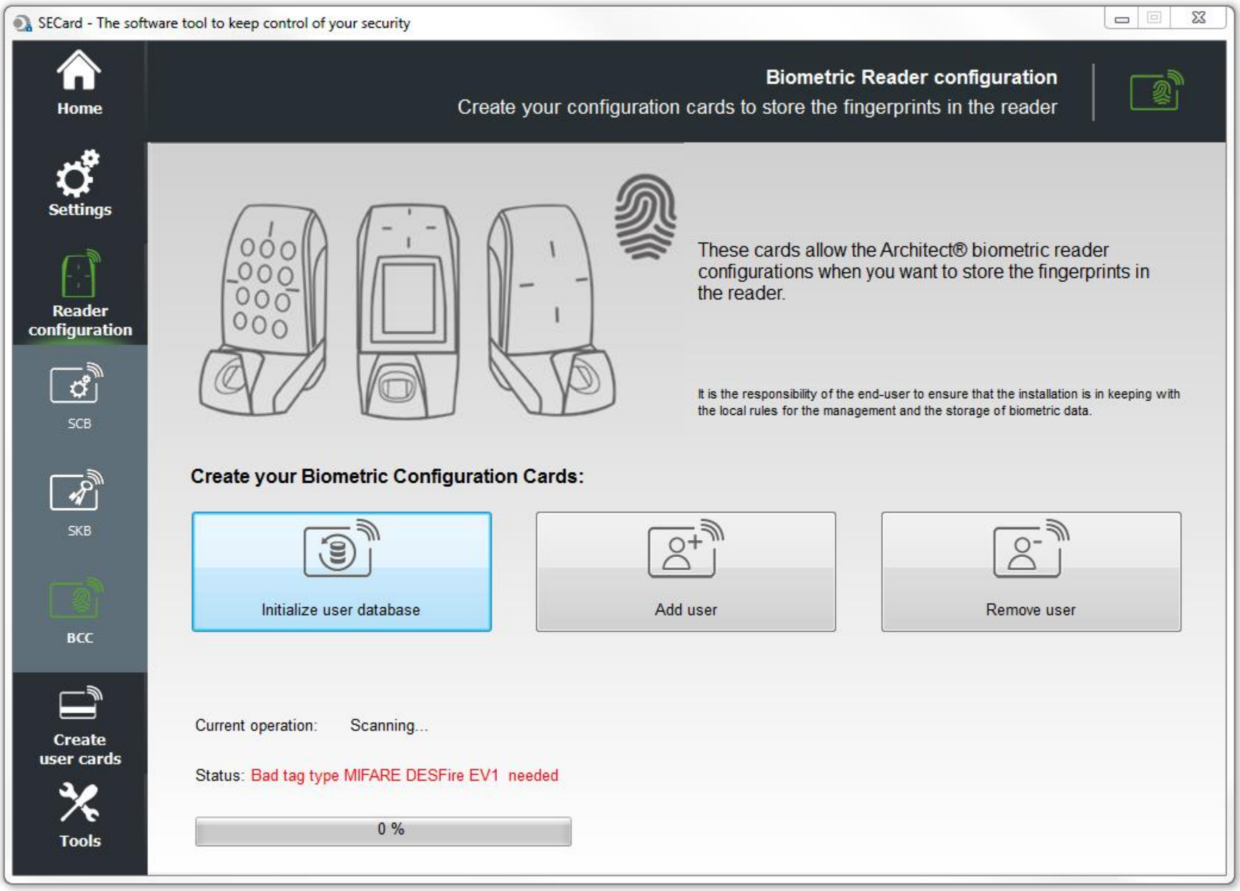
Current operation: Authenticating...

Status: Authentication error
Wrong BCC master key

26 %

The Master Key for Biometric Configuration Card is the same key than SCB master.

Check the Card Master Key or use a virgin card.



SECard - The software tool to keep control of your security

Biometric Reader configuration

Create your configuration cards to store the fingerprints in the reader

These cards allow the Architect® biometric reader configurations when you want to store the fingerprints in the reader.

It is the responsibility of the end-user to ensure that the installation is in keeping with the local rules for the management and the storage of biometric data.

Create your Biometric Configuration Cards:

Current operation: Scanning...

Status: Bad tag type MIFARE DESFire EV1 needed

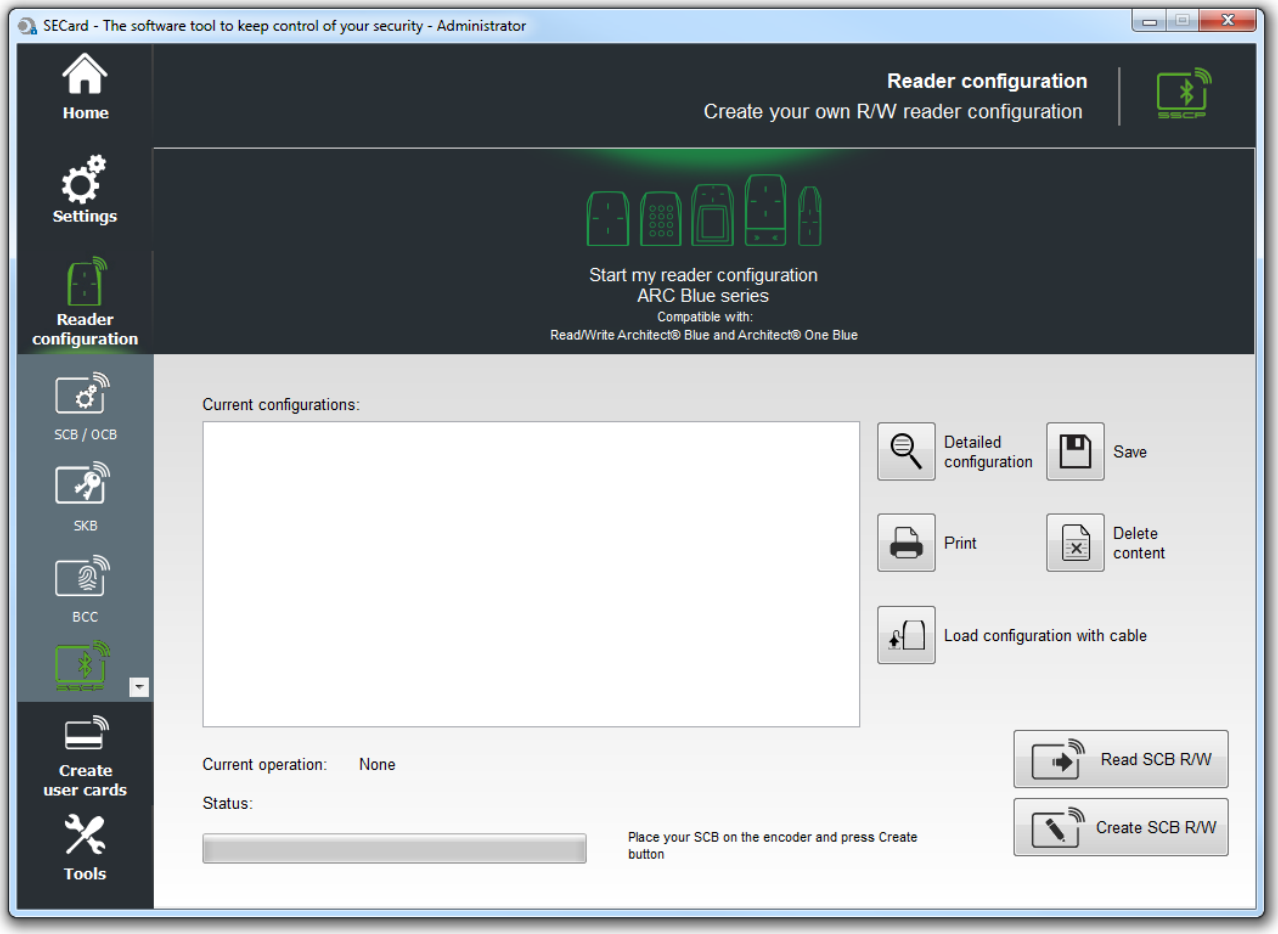
Biometric Configuration Card must be created on MIFARE® DESFire® EV1 (2ko, 4 ko or 8ko).

Home
Settings
Reader configuration
SKB
BCC
SCB R/W
Create user cards
Tools

V. Reader configuration – SCB R/W

The SCB R/W is a configuration badge for ARC R/W Bluetooth®, that allows to configure the Blue/NFC of the reader.

Refer to T15 – Recommendations for the Configuration Cards management



SECard - The software tool to keep control of your security - Administrator

Reader configuration
Create your own R/W reader configuration

Start my reader configuration
ARC Blue series
Compatible with:
Read/Write Architect® Blue and Architect® One Blue

Current configurations:

Current operation: None

Status:

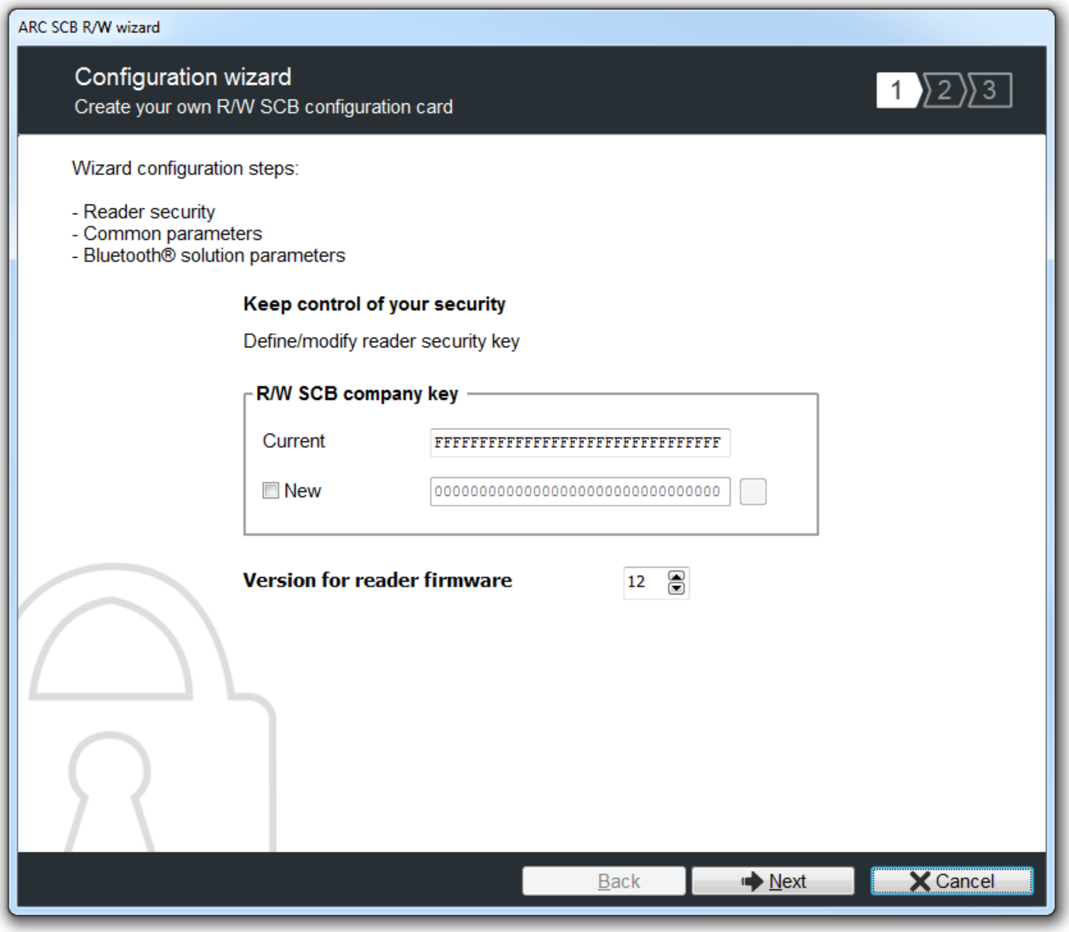
Place your SCB on the encoder and press Create button

Start my reader configuration ARC Blue series Compatible with: Read/Write Architect® Blue and Architect® One Blue	Open the configuration wizard for readers
🖨	Print the configuration list displayed.
💾	Save in .rtf file the configuration list displayed.
☒	Clear the configuration list displayed.
🔍	Display details information of current configuration.
⎆	Load the configuration to the reader by serial link.
Read SCB R/W	Read a SCB R/W configuration card. Use SCB Company Key defined in the configuration wizard.
Create SCB R/W	Create a SCB R/W configuration card with parameters defined in the configuration wizard.

VI.1 - Configuration Wizard

The reader configuration is done in 3 steps. To move from one stage to another, you must click on “Next”.

1 2 3 Click here	Reader security
1 2 3 Click here	Common parameters
1 2 3 Clich here	STid Mobile ID settings
1 2 3 Clich here	Orange Pack ID settings
1 2 3 Clich here	Open Mobile Protocol settings



ARC SCB R/W wizard

Configuration wizard

Create your own R/W SCB configuration card

Wizard configuration steps:

- Reader security
- Common parameters
- Bluetooth® solution parameters

Keep control of your security

Define/modify reader security key

R/W SCB company key

Current: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

□ New: 00000000000000000000000000000000

Version for reader firmware: 12

SCB R/W company key

Configurable readers with SCB R/W card are initially supplied with default configuration (factory key 0XFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF).
These can be configured by a " SCB R/W " with 0xFF…FF in current key to a new company key.

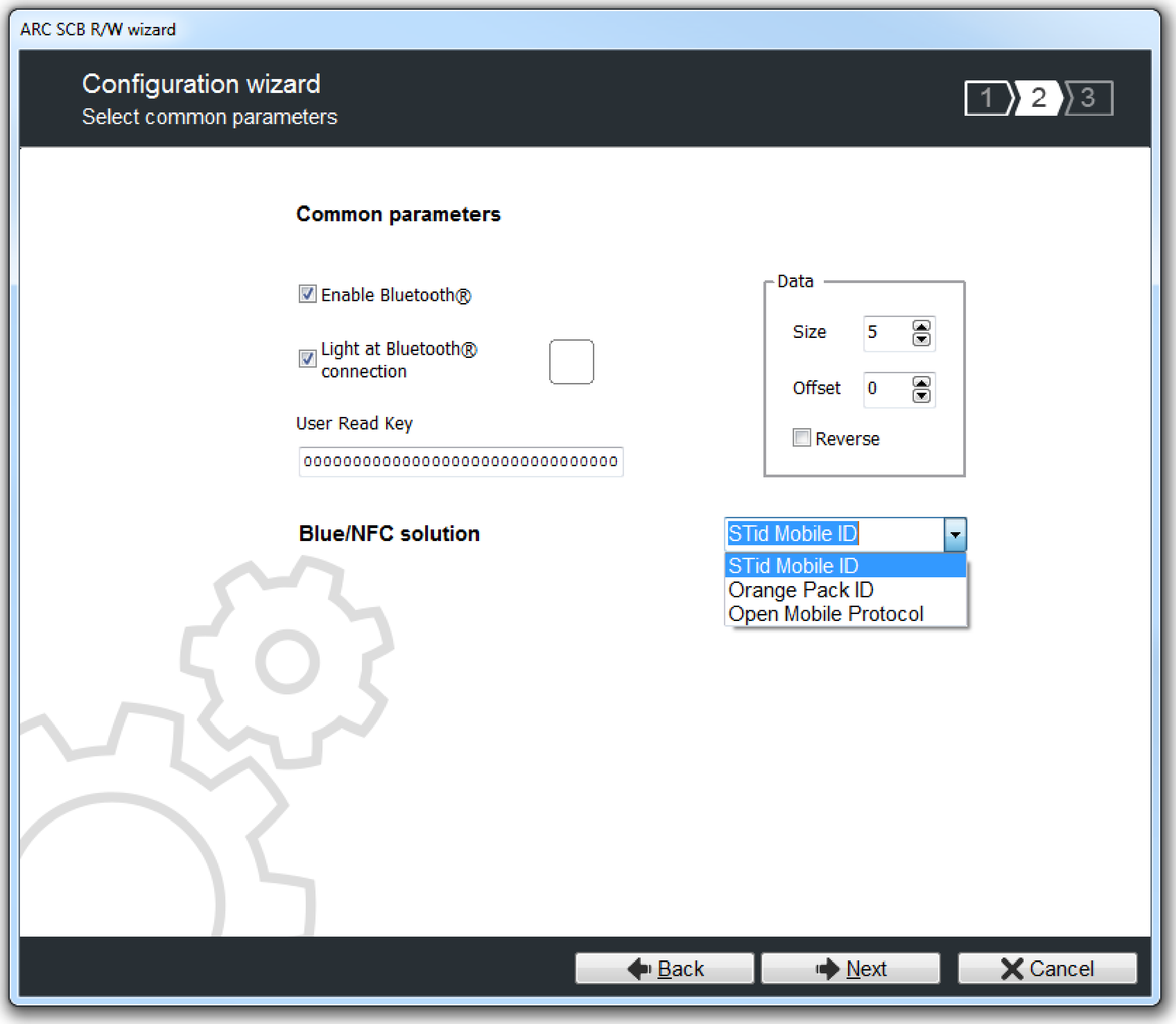
After the initial configuration and in order to reconfigure the reader, it will be necessary to present to the reader " SCB R/W " **with a company key similar to that recorded by the reader.**

Warning

This key is important and should definitely be known by the administrator. It protects the data from the " SCB R/W " and allows changes to the configuration of readers.
If you lose this key, the reader cannot be reconfigured for another " SCB R/W " and will must be reset at the factory.

Version for reader firmware

The available functionalities and the compatibility of SCB R/W depend on reader firmware generation.



ARC SCB R/W wizard

Configuration wizard
Select common parameters

Common parameters

☑ Enable Bluetooth®

☑ Light at Bluetooth® connection □

User Read Key
00000000000000000000000000000000

Data
Size 5
Offset 0
☐ Reverse

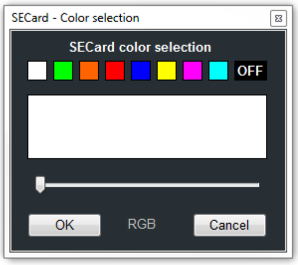
Blue/NFC solution STid Mobile ID
- STid Mobile ID
- Orange Pack ID
- Open Mobile Protocol

Enable Bluetooth®:

Activate / disactivate STid Mobile ID or Orange Pack ID or Open Mobile Protocol (Blue and NFC). If is disactivate, there is no Bluetooth® transmission.

Light at Bluetooth® connection:

Flash LED when smartphone start connection on the reader. The color can be selected by clicking on the right square.



SECard - Color selection

SECard color selection

This action, independent of the detection of the virtual badge, informs the user that the communication between the smartphone and the reader is in progress.

User Read Key:

Set the read key value for Blue/NFC Mobile ID data.

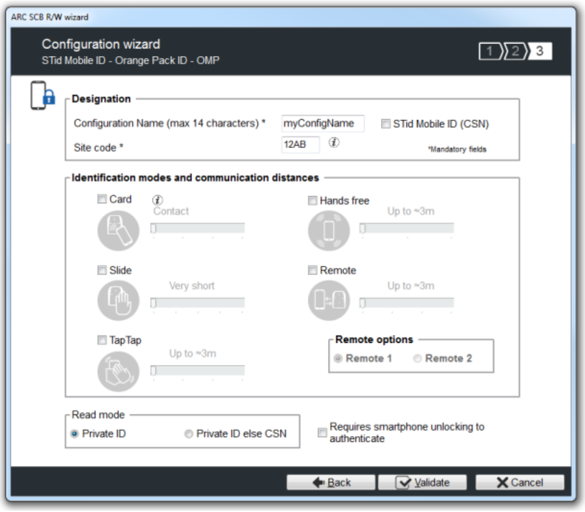
Data:

- Size: Determines the length of the ID.
- Offset: Define an offset from the first byte before reading.
- Reverse: If the box is checked the reader reads the identifier Least Significant Byte First.
  If the box is unchecked the reader reads the identifier Most Significant Byte First.

Blue/NFC solution:

Configure the reader to read STidMobile ID or OrangePAckID or Open Mobile Protocol.

This choice impacts the screen wizard Step 3:



ARC SCB R/W wizard

Configuration wizard
STid Mobile ID - Orange Pack ID - OMP

Designation

Configuration Name (max 14 characters) * myConfigName

□ STid Mobile ID (CSN)

Site code * 12AB

*Mandatory fields

Identification modes and communication distances

□ Card – Contact

□ Hands free – Up to ~3m

□ Slide – Very short

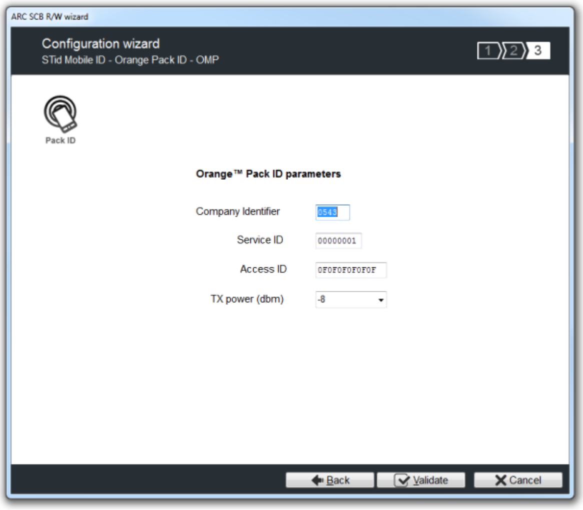
□ Remote – Up to ~3m

□ TapTap – Up to ~3m

Remote options: ● Remote 1 ○ Remote 2

Read mode: ● Private ID ○ Private ID else CSN

□ Requires smartphone unlocking to authenticate



ARC SCB R/W wizard

Configuration wizard
STid Mobile ID - Orange Pack ID - OMP

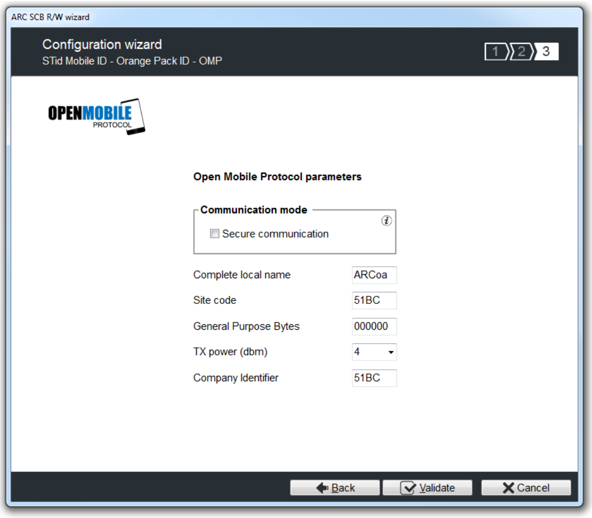
Orange™ Pack ID parameters

Company Identifier 0543

Service ID 00000001

Access ID 0F0F0F0F0F0F

TX power (dbm) -8



ARC SCB R/W wizard

Configuration wizard
STid Mobile ID - Orange Pack ID - OMP

Open Mobile Protocol parameters

Communication mode

□ Secure communication

Complete local name ARCoa

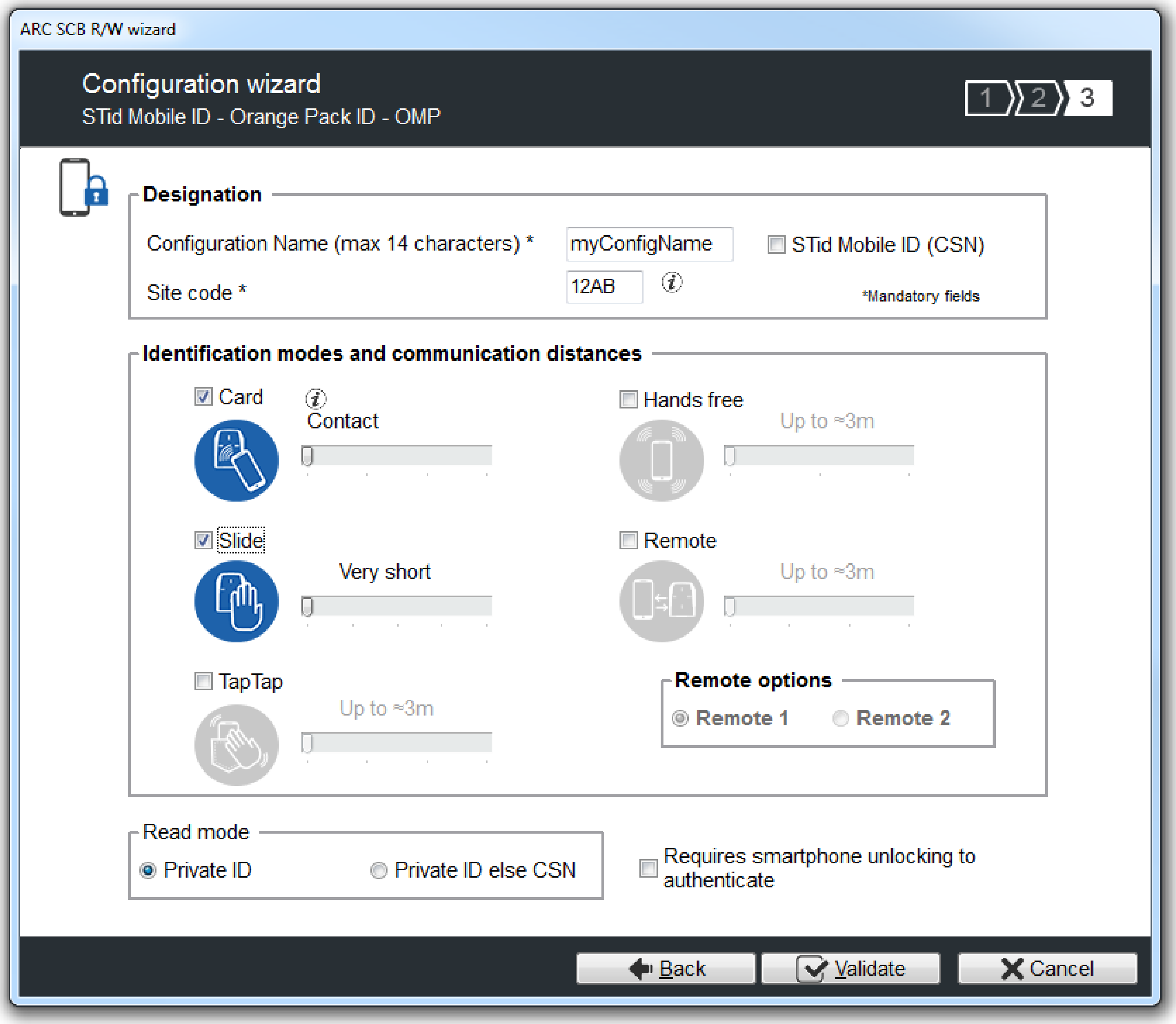
Site code 51BC

General Purpose Bytes 000000

TX power (dbm) 4

Company Identifier 51BC

Step3 - Blue Mode STid Mobile ID



ARC SCB R/W wizard

Configuration wizard
STid Mobile ID - Orange Pack ID - OMP

1 2 3

Designation

Configuration Name (max 14 characters) * myConfigName ☐ STid Mobile ID (CSN)

Site code * 12AB

*Mandatory fields

Identification modes and communication distances

☑ Card — Contact
☐ Hands free — Up to ≈3m
☑ Slide — Very short
☐ Remote — Up to ≈3m
☐ TapTap — Up to ≈3m

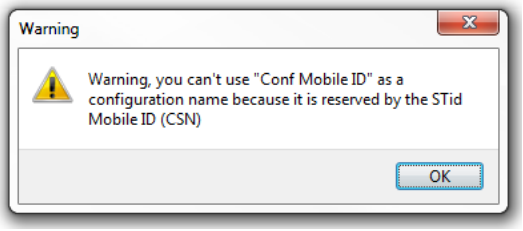
Remote options
● Remote 1 ○ Remote 2

Read mode
● Private ID ○ Private ID else CSN

☐ Requires smartphone unlocking to authenticate

Designation

- Configuration Name: enter the name of the configuration Mobile ID Secure Plus: 14 characters max.
  Note: configuration name “Conf Mobile ID” is reserved to STid Mobile ID.



Warning

Warning, you can't use "Conf Mobile ID" as a configuration name because it is reserved by the STid Mobile ID (CSN)

- Site Code: 2-bytes data used for the site code of the configuration.
  Note: site code 51BC is reserved for STid Mobile ID®.

- STid Mobile ID (CSN): configure the Blue reader to read only a CSN on the smartphone.

Identification modes and communication distances

For each identification mode the communication distance is adjustable.

❖ **Card:** By placing the smartphone in front of the reader.

- Contact: smartphone must be in contact with the reader.
- Up to 0.2m: smartphone must be in an area of 0.2m around the reader
- Up to 0.3m: smartphone must be in an area of 0.3m around the reader.
- Up to 0.5m: smartphone must be in an area of 0.5m around the reader

❖ **Slide:** By placing your hand close to the reader without taking out your smartphone. The distance between the smartphone and the reader can be:

- Very short
- Short
- Medium
- Long
- Very long

Not available for ARC1S neither ARCS keypad in Card or Key mode.

❖ **Tap Tap:** By tapping your smartphone twice in your pocket for near or remote opening. The communication distance can be:

- Up to 3m
- Up to 5m
- Up to 10m
- Up to 15m.

❖ **Hands free:** By simply passing in front of the reader. Communication distance around the reader:

- Up to 3m
- Up to 5m
- Up to 10m

❖ **Remote:** By controlling your access points remotely. Communication distance around the reader:

- Up to 3m
- Up to 10m
- Up to 15m
- Up to 20m

❖ **Remote options**

If the identification mode "Remote" has been activated, it allows to associate the current configuration to the Remote button 1 or Remote button 2.

Notes:

The notion of distance in Bluetooth® corresponds to an area around the reader, not just in the front.
Reading distances depend on the environment, on the position smartphone // reader ...

It is recommended to do on-site testing to evaluate the settings.

Warning

When Architect® Blue readers are installed close to each other, detection distances must be defined to accommodate the distance between the readers to avoid cross readings.

Read mode

- **Read mode: Private ID**
  Reader configured in read private virtual card.

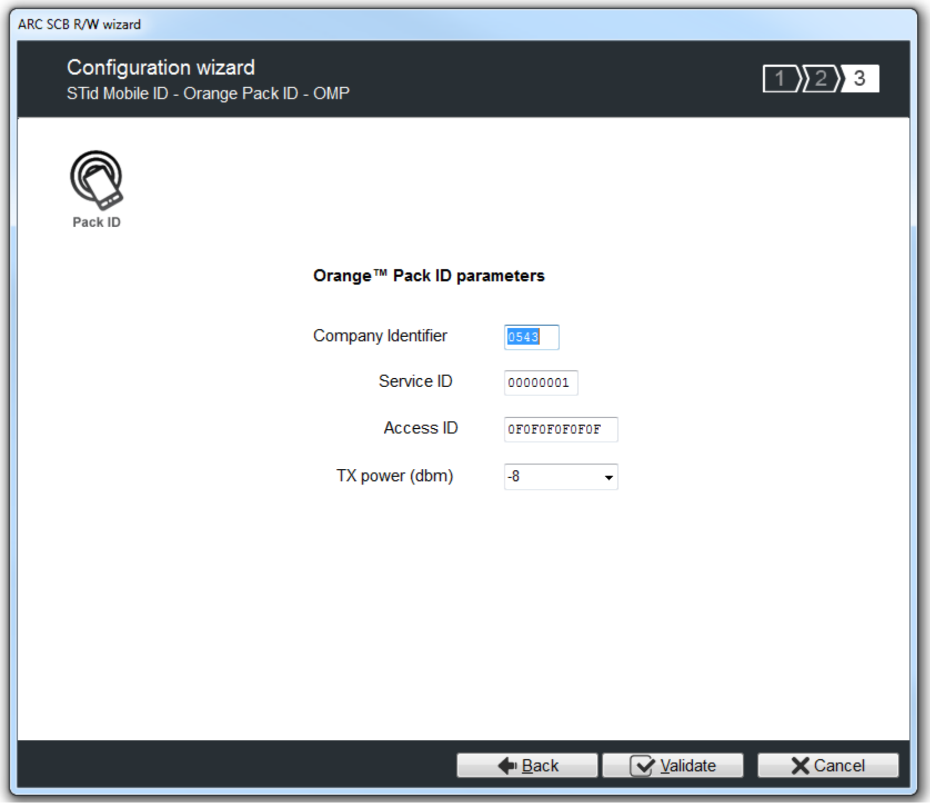
- **Read mode: Private ID else CSN**
  Reader configured in read private virtual card. If it is not found or if the security settings are incorrect, then the reader will read and return the STid Mobile ID CSN.

Requires smartphone unlocking to authenticate: security option

- If checked: the smartphone must be unlocked (with PIN code or other unlocking option depending on the smartphone) to authenticate with the reader.

- If unchecked: unlocking the smartphone is not required to authenticate with the reader.

Step3 - Blue Mode Orange Pack ID



ARC SCB R/W wizard

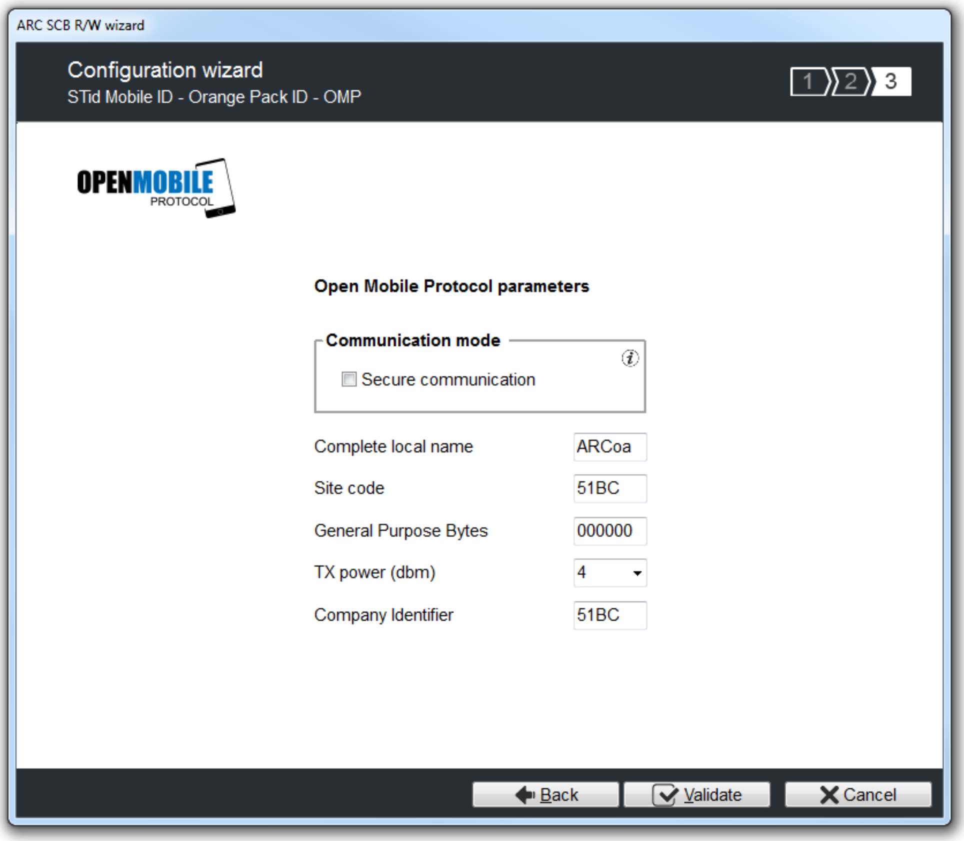
Configuration wizard
STid Mobile ID - Orange Pack ID - OMP

Orange™ Pack ID parameters

Company Identifier: 0543
Service ID: 00000001
Access ID: 0F0F0F0F0F0F
TX power (dbm): -8

- **Company Identifier**: manufacturer data on 2 bytes.
- **Service ID**: manufacturer data on 4 bytes to differentiate the customers of Pack ID.
- **Access ID**: manufacturer data on 6 bytes to identify the access zone controlled by the reader.
- **Tx power**: change the power level of the reader (default 4 dbm). Possible values: -16, -12, -8, -4, 0 and 4 dbm.

Step3 - Blue Mode Open Mobile Protocol



Configuration wizard

STid Mobile ID - Orange Pack ID - OMP

Open Mobile Protocol parameters

Communication mode

☐ Secure communication

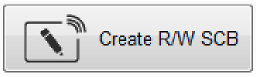
Complete local name	ARCoa
Site code	51BC
General Purpose Bytes	000000
TX power (dbm)	4
Company Identifier	51BC

For information about Open Mobile Protocol, contact your STid sales representative.

Click the button ☑ Validate to complete the reader configuration settings.

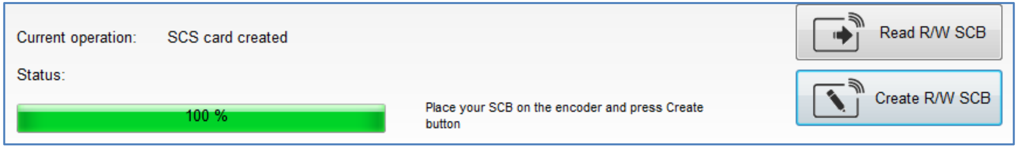
VI.2 - Creating R/W SCB

Two possibilities to load the configuration into the reader:

- 

R/W SCB configuration card must be created with MIFARE® DESFire® Ev1/ EV2 not locked 4ko and MIFARE® DESFire® Ev1/ EV2 not locked 8ko.

1- Put a DESFire badge on the SECard encoder and press Create R/W SCB button.

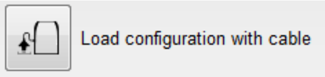


Current operation: SCS card created

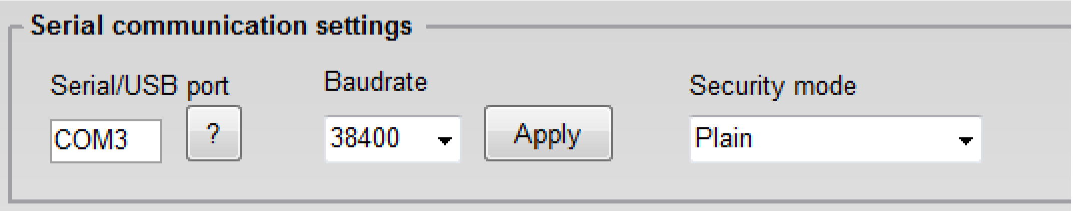
Status: 100 %

Place your SCB on the encoder and press Create button

2- To load the configuration into the reader use SSCP commands LoadConf_X (cf Spec_Protocole_5AA-7AA_MIFARE_GLOBAL_V1.17_EN.pdf)

- 

1- Connect the reader to configure to a port of the PC.
2- In “Serial communication settings” select the port number, the reader is a R/W reader so you can used CTRL+?



Serial communication settings

Serial/USB port: COM3

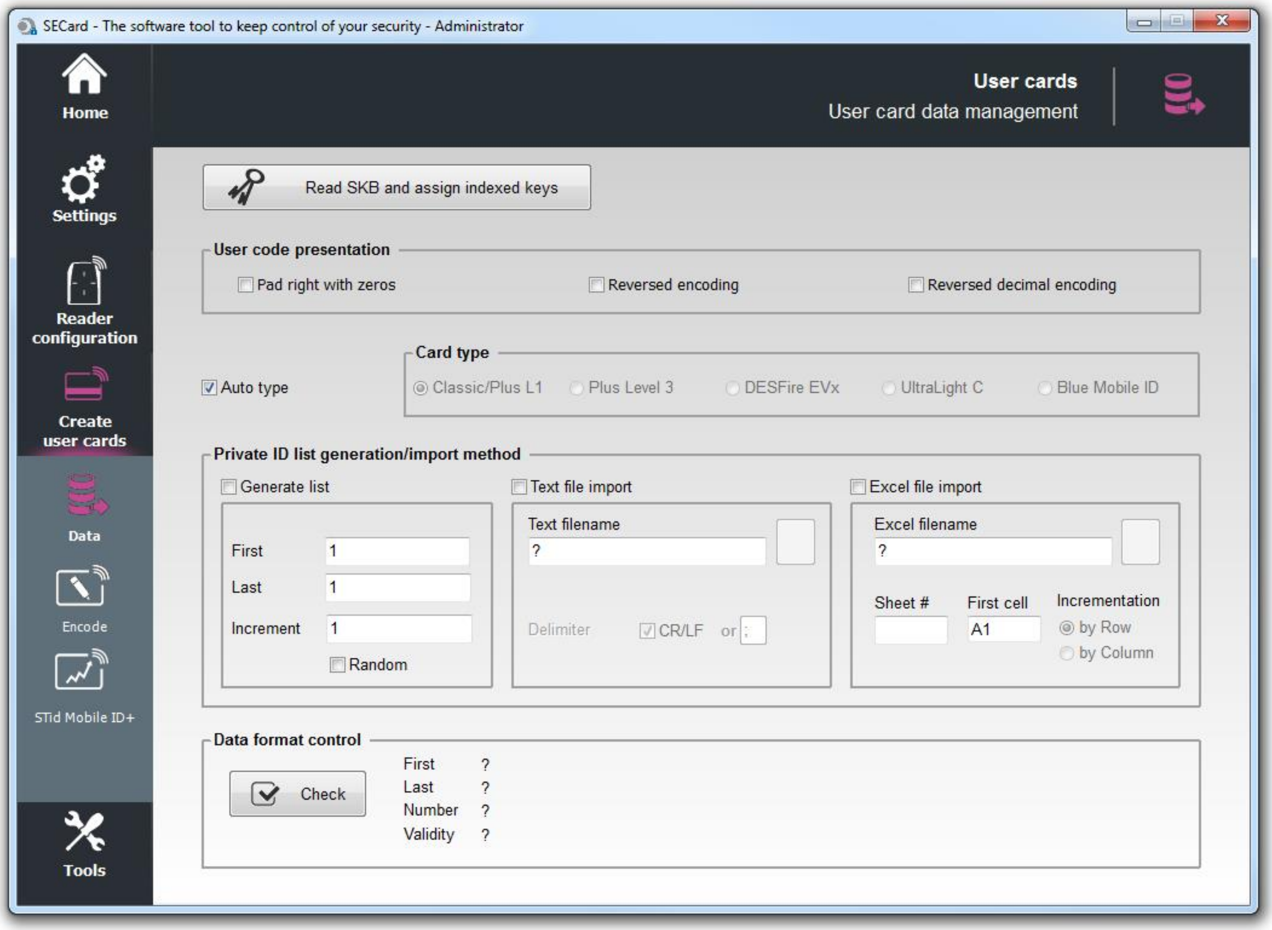
Baudrate: 38400

Security mode: Plain

3- Press Load configuration with cable button.

VI. Create User cards

VII. 1 - Data



SECard - The software tool to keep control of your security - Administrator

User cards
User card data management

Read SKB and assign indexed keys

User code presentation

□ Pad right with zeros □ Reversed encoding □ Reversed decimal encoding

☑ Auto type

Card type

● Classic/Plus L1 ○ Plus Level 3 ○ DESFire EVx ○ UltraLight C ○ Blue Mobile ID

Private ID list generation/import method

□ Generate list

First: 1
Last: 1
Increment: 1
□ Random

□ Text file import

Text filename: ?
Delimiter ☑ CR/LF or ;

□ Excel file import

Excel filename: ?
Sheet #
First cell: A1
Incrementation ● by Row ○ by Column

Data format control

Check

First ?
Last ?
Number ?
Validity ?

The encoding is done according to the settings defined in the “*SCB Wizard”*.
The keys can be those defined in the configuration or read in a SKB card.

User code presentation

- Pad right with zeros:
  If the size of the number to be encoded is less than the size specified in the configuration, software will complete the number to encode with zeros in the most significant bits by default.

  If the "Pad right with zero" is checked the number to encode will be completed by zeros in the least significant bits.

- Reversed encoding:
  Reverse the hexadecimal writing.
  Example: number to encode ABCDEF10, with reversed encoding is: 10EFCDAB.

- Reversed decimal encoding (not alone, option to add with “Reversed encoding”)
  Reverse the decimal writing. The decimal ID to encode is then convert in hexadecimal and then reversed.
  Otherwise the decimal value is inverted and then converted to hexadecimal.

Card Type

Auto type: If this box is checked, the encoder automatically detects the type of chip and encodes it according to its own parameters defined in “Wizard SCB”.

Warning

If chips are Mifare Plus® Level 0 AND Mifare Plus® Level 1 to be encoded as Mifare Plus Level® 1 AND Mifare Plus® Level 3, then you need to uncheck « *Auto type* » box and choose chip type to encode.
For an encoding of Mifare ® Classic 7 bytes CSN, it is necessary to deactivate the “*Auto Type*” and to choose “*Classic/Plus L1*”.

To encode the DESFire part on IDPrime card force to DESFire type.

Generate list

This mode is only available for standard sizes and custom sizes of private ID with length less or equal than 10 bytes in decimal and 48 in hexadecimal.

In each of the corresponding fields: enter the start, the end and increment of the list of numbers to encode.

Random

This option can be activate / deactivate only by Administrator. The increment field becomes the number of elements in the random value list.
Generate a random list of n values between the first and last value.
Note:

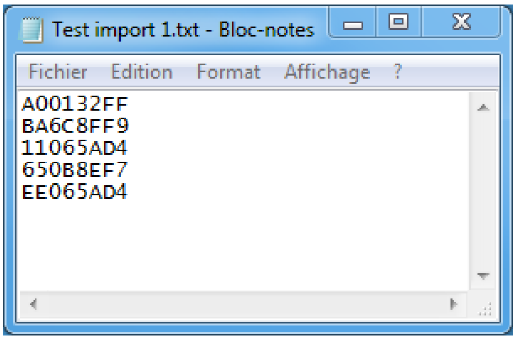
- ✓ The random list is not compatible with 26-bits Wiegand format.
- ✓ The maximum value is 0x7F FF FF FF (2147483647).

With this option the data encoded not appear in “Progressing session log” and it’s not possible for User to read it with “Read private ID”. Administrator can read the private ID by unchecking this option.
Warning: No duplicate check is performed.

Text file import

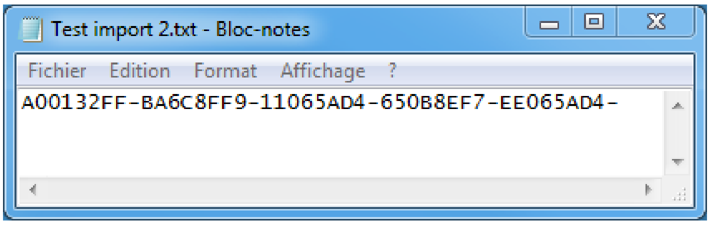
To import a list in text format, that will be used for encoding users card.

Delimiter CR/LF


Test import 1.txt - Bloc-notes
Fichier Edition Format Affichage ?

```
A00132FF
BA6C8FF9
11065AD4
650B8EF7
EE065AD4
```

Delimiter « - »


Test import 2.txt - Bloc-notes
Fichier Edition Format Affichage ?

```
A00132FF-BA6C8FF9-11065AD4-650B8EF7-EE065AD4-
```

Warning
The last number to be encoded must be followed by a delimiter.

Warning

The text import is not importing the values if:
- there are intermediate empty lines with the separator CR/LF
- there are multiple delimiters with another delimiter for example “ ;“ (ex:12313;12385485;;;5646;;12;041)

Excel file import

Import a list in Excel format, that will be used for encoding users card.

Indicate the page (sheet) in which the numbers are to be encoded and the first cell.

Increment per line: Use when the numbers are written in a column.
Increment per column: Use when numbers are written on one line.

Warning

Import from Excel is supporting only continuous list. If the user has inserted empty cells, then SECard will stop the encoding.

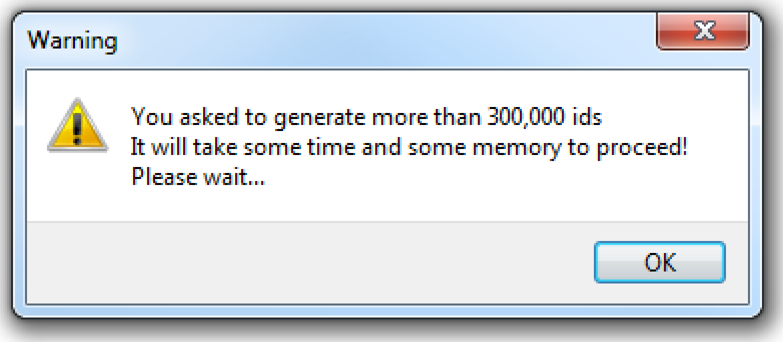
It is necessary to install Excel® before using this mode.

Data format control

Check the validity of number to encode. It is based only on the first and last values to be encoded.

Note:

- The software will check that the first and last values of text files and Excel. In any case, this function will check the maximum and / or minimum.
- If the number of identifiers is greater than 300,000, a message appears asking you to wait while checking and that it will require RAM resources of your computer.



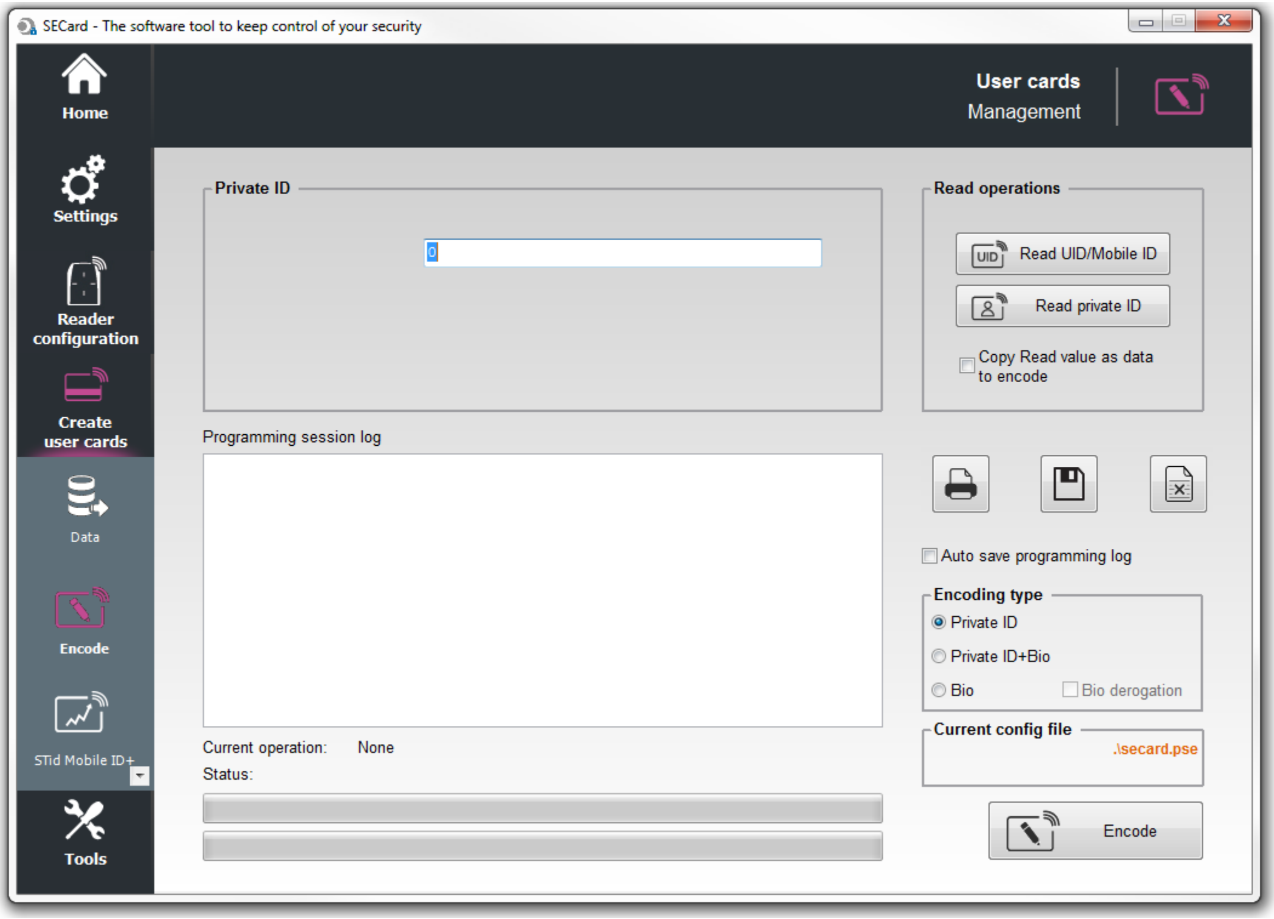
Warning

You asked to generate more than 300,000 ids
It will take some time and some memory to proceed!
Please wait...

Read SKB and assign indexed keys

In the case where the keys required for encoding are contained in a SKB badge, the SKB badge must be read to temporarily load the keys in SECard

VII. 2 - Encode



SECard - The software tool to keep control of your security

User cards Management

Private ID: 0

Read operations
- Read UID/Mobile ID
- Read private ID
- □ Copy Read value as data to encode

Programming session log

□ Auto save programming log

Encoding type
- ● Private ID
- ○ Private ID+Bio
- ○ Bio □ Bio derogation

Current config file: .\secard.pse

Current operation: None

Status:

Encode

Once the setup application finished and the numbers to be encoded determined, IDs can be encoded.

To encode an ID on a Smartphone it is necessary to install STid Mobile ID from the AppStore or PlayStore.

Android — Google play | iOS — Available on the App Store

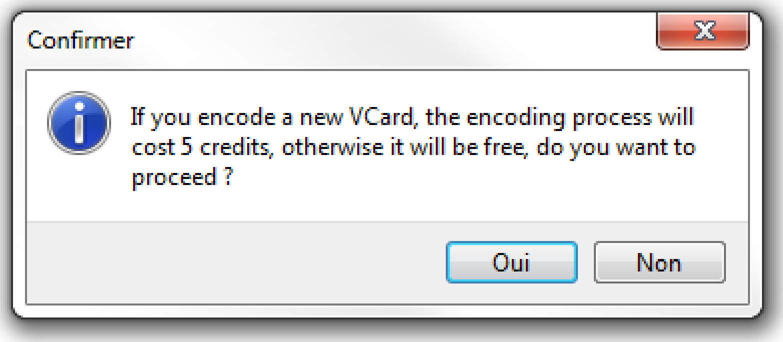
STid Mobile ID
STid SAS
PEGI 3

UNINSTALL UPDATE

STid Mobile ID® is a mobile access control solution.

WHAT'S NEW
Tap Tap Improvements

Encode VCard



Confirmer

If you encode a new VCard, the encoding process will cost 5 credits, otherwise it will be free, do you want to proceed ?

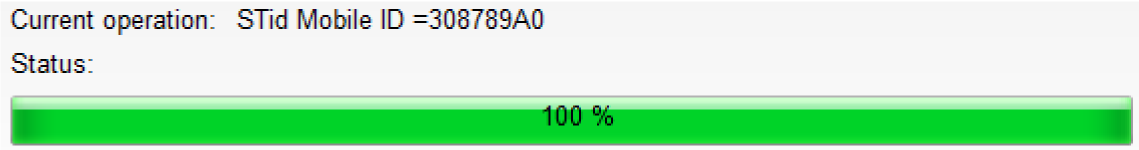
- If it’s a new VCard the encoding process will cost 5 credits.
- If the VCard is already encoded in the smartphone and you just want to change the value of Private ID the encoding process will be free.

Private ID

- If “Generat list” or “Text file import” or “Excel file import” has not been selected in data, allows to enter a private ID, it is simply necessary to write the number in the suggested field.
- If “Generat list” or “Text file import” or “Excel file import” has been selected in data, the field is not accessible.

Read operations

- Read UID/Mobile ID: Read UID and chip type of the card detected by the encoder.
  Ex:



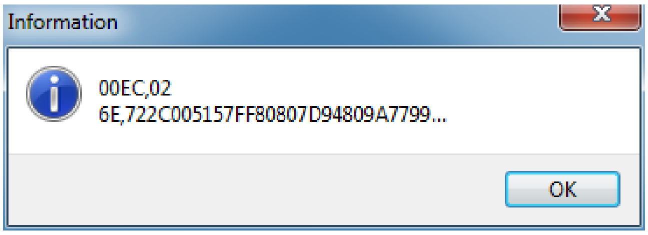
Current operation: STid Mobile ID =308789A0

Status:

100 %

- Read private ID: Read a private ID or templates of the card detected by the reader according to the current configuration, and if the "Copy Read value as data to encode" is checked, the read value is copied into the field to encode.

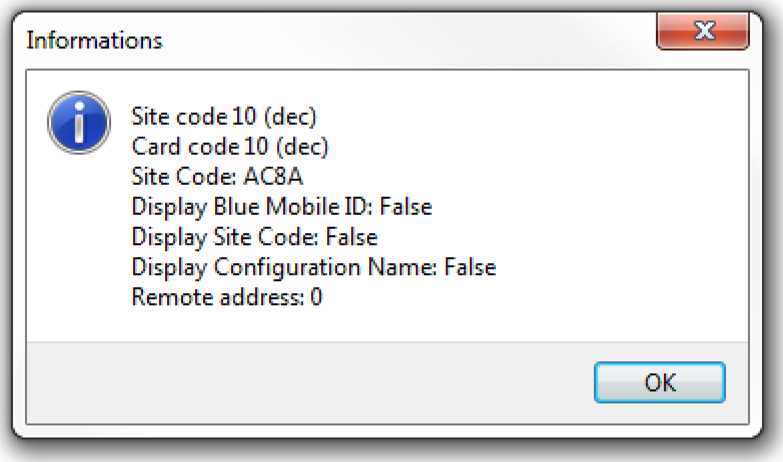
  Example read template:



Information

00EC,02
6E,722C005157FF80807D94809A7799...

Example Read private Mobile ID:



Informations

Site code 10 (dec)
Card code 10 (dec)
Site Code: AC8A
Display Blue Mobile ID: False
Display Site Code: False
Display Configuration Name: False
Remote address: 0

🖨	Print users operations.
💾	Save users operations.
🗙	Delete users operations.

Auto save programming log

If this option is activated, all the operations done are saved in a RTF file. It will be located in the same directory than the .pse settings.

Encoding type

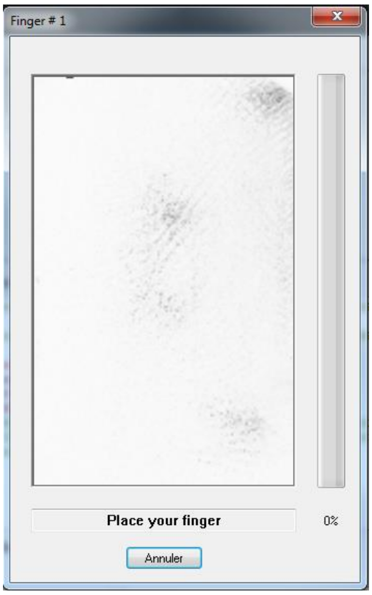
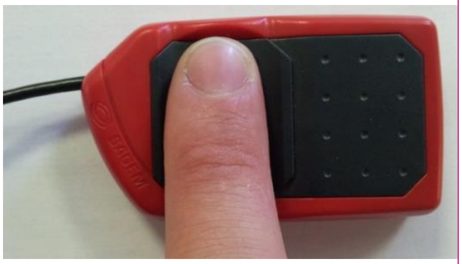
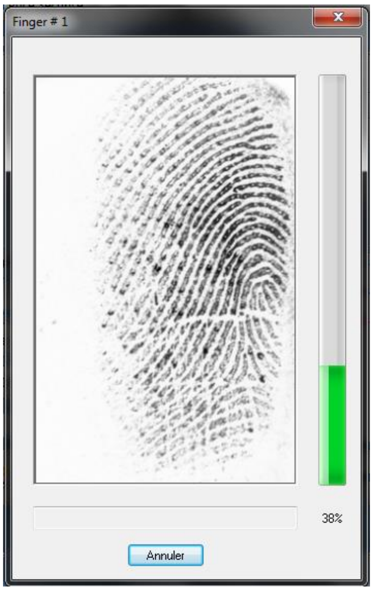
- Private ID: Encode only private ID.
- Private ID + Bio: Encode private ID and biometric.
- Bio: Encode only biometric.

Bio derogation: only avaialble if bio derogation has been enable in the Biometric options of the chip. In this case, a derogation will be encoded in the badge and the encoding process will not require presentation of the finger of the user.

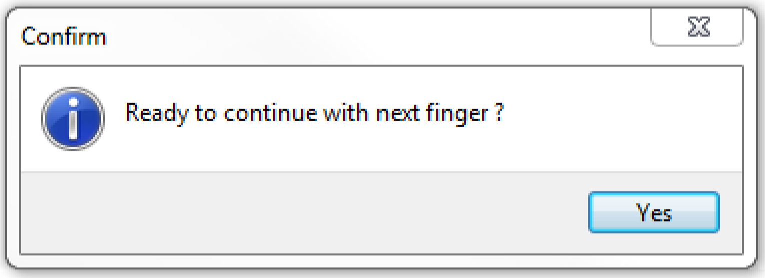
Current config file

Specifies the configuration file currently loaded in SECard and in which the identifiers will be encoded.

Biometric fingerprints encoding

When biometric configuration is enabled and the encoding selected "Bio" or "Private ID + Bio", the software SECard open a window to capture fingerprints.	Then place your finger on the biometric sensor encoder. It must be in red light to indicate that it is ready to read the fingerprint.	When the fingerprint is read, it is displayed on the window and the bar on the right shows the progress of the analysis.
		

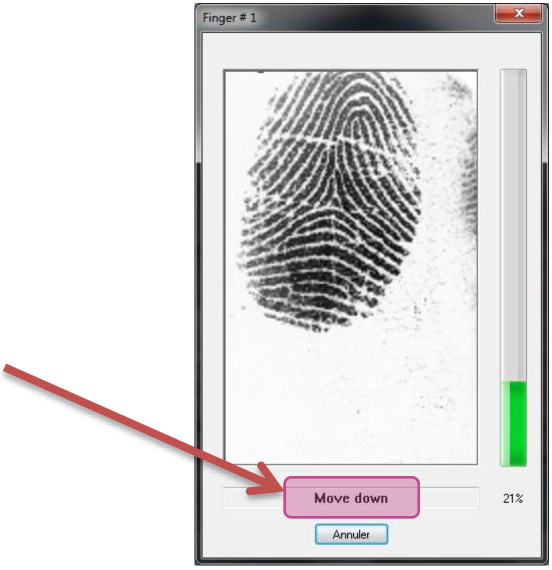
Once the fingerprint is read, the software will ask you to place another finger if the configuration requests it.



Confirm

Ready to continue with next finger ?

If the finger is not placed well, the software will inform you about the problem by indicating you a good placement:



Warning

The biometric sensor has to be connected to an USB port.
The finger has to be clean.
The surface of the sensor has to be clean.

Home
Settings
Reader configuration
Create user cards
Data
Encode
STid Mobile ID+
Tools

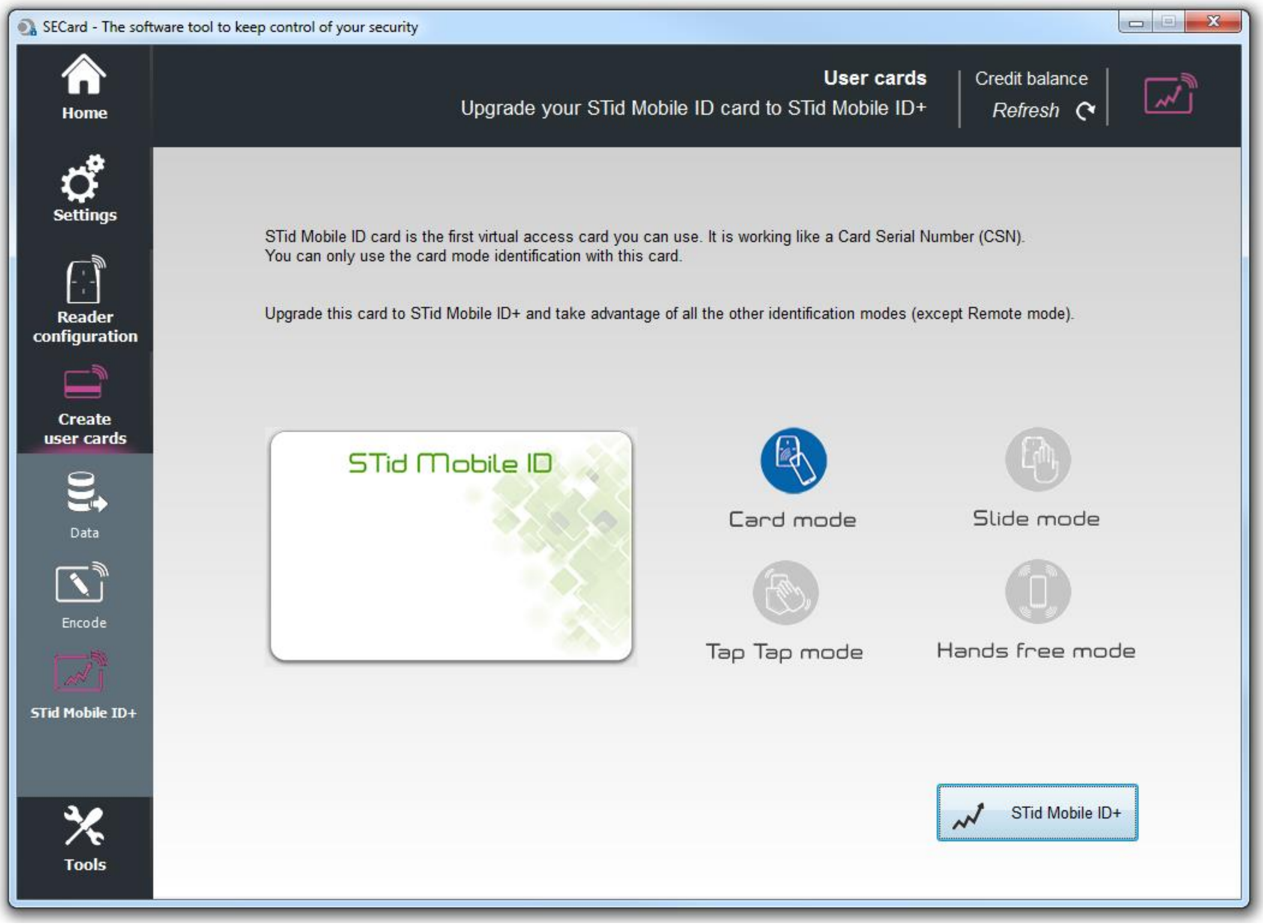
VII. 3 - STid Mobile ID+

When “STid Moible ID” application is installed on the smartphone, the first Mobile ID card available is “STid Mobile ID”.

This card it is working like a Card Serial Number.

Only the “card mode”detection is authorized.

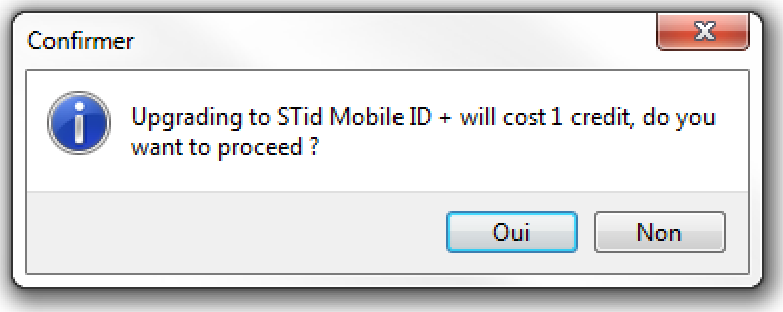
To take the advantage to Slide mode, Tap Tap mode and Hands free mode you can upgrade the STid Mobile ID to STid Mobile ID+. This upgrading will cost 1 credit.



STid Mobile ID card is the first virtual access card you can use. It is working like a Card Serial Number (CSN).
You can only use the card mode identification with this card.

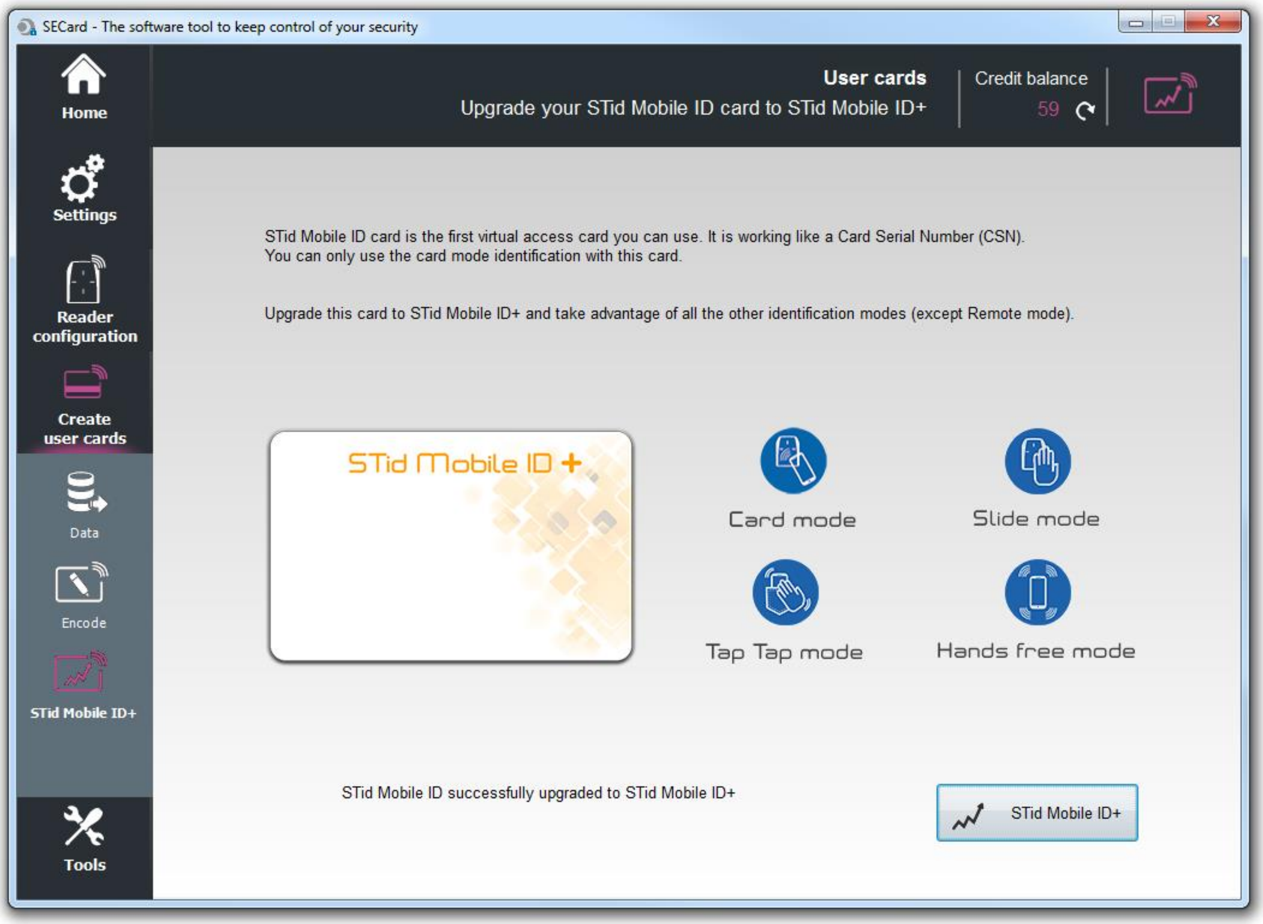
Upgrade this card to STid Mobile ID+ and take advantage of all the other identification modes (except Remote mode).

Click the button STid Mobile ID+ **to upgrade Vcard.**



Confirmer

Upgrading to STid Mobile ID + will cost 1 credit, do you want to proceed ?



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User cards

Upgrade your STid Mobile ID card to STid Mobile ID+

Credit balance 59

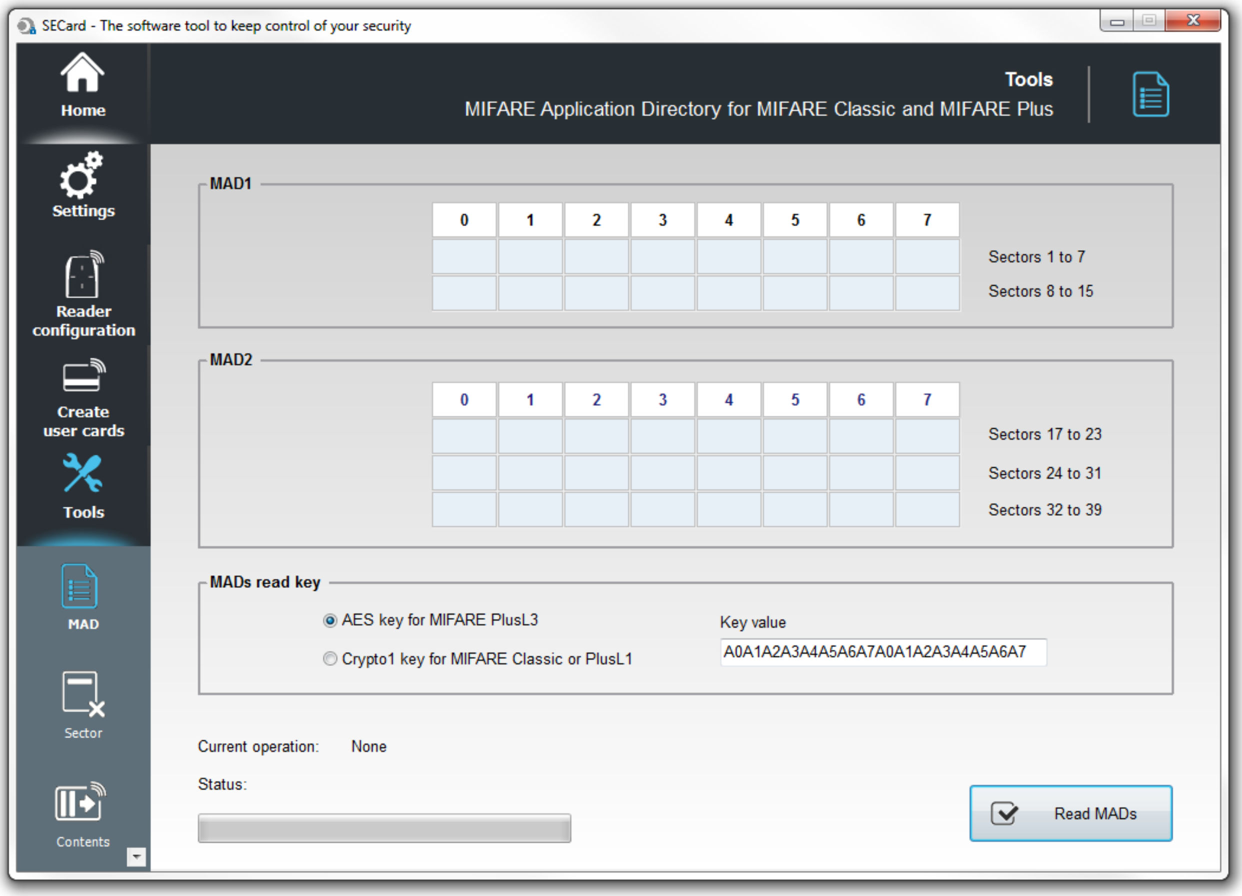
STid Mobile ID card is the first virtual access card you can use. It is working like a Card Serial Number (CSN).
You can only use the card mode identification with this card.

Upgrade this card to STid Mobile ID+ and take advantage of all the other identification modes (except Remote mode).

STid Mobile ID successfully upgraded to STid Mobile ID+

VII. Tools

VIII. 1 - MAD



Tools
MIFARE Application Directory for MIFARE Classic and MIFARE Plus

MAD1

0	1	2	3	4	5	6	7	
								Sectors 1 to 7
								Sectors 8 to 15

MAD2

0	1	2	3	4	5	6	7	
								Sectors 17 to 23
								Sectors 24 to 31
								Sectors 32 to 39

MADs read key

● AES key for MIFARE PlusL3
○ Crypto1 key for MIFARE Classic or PlusL1

Key value: A0A1A2A3A4A5A6A7A0A1A2A3A4A5A6A7

Current operation: None

Status:

Read MADs

Scan a MIFARE® Classic or MIFARE Plus® chip, to read the contents of the MAD and display current AID codes location.

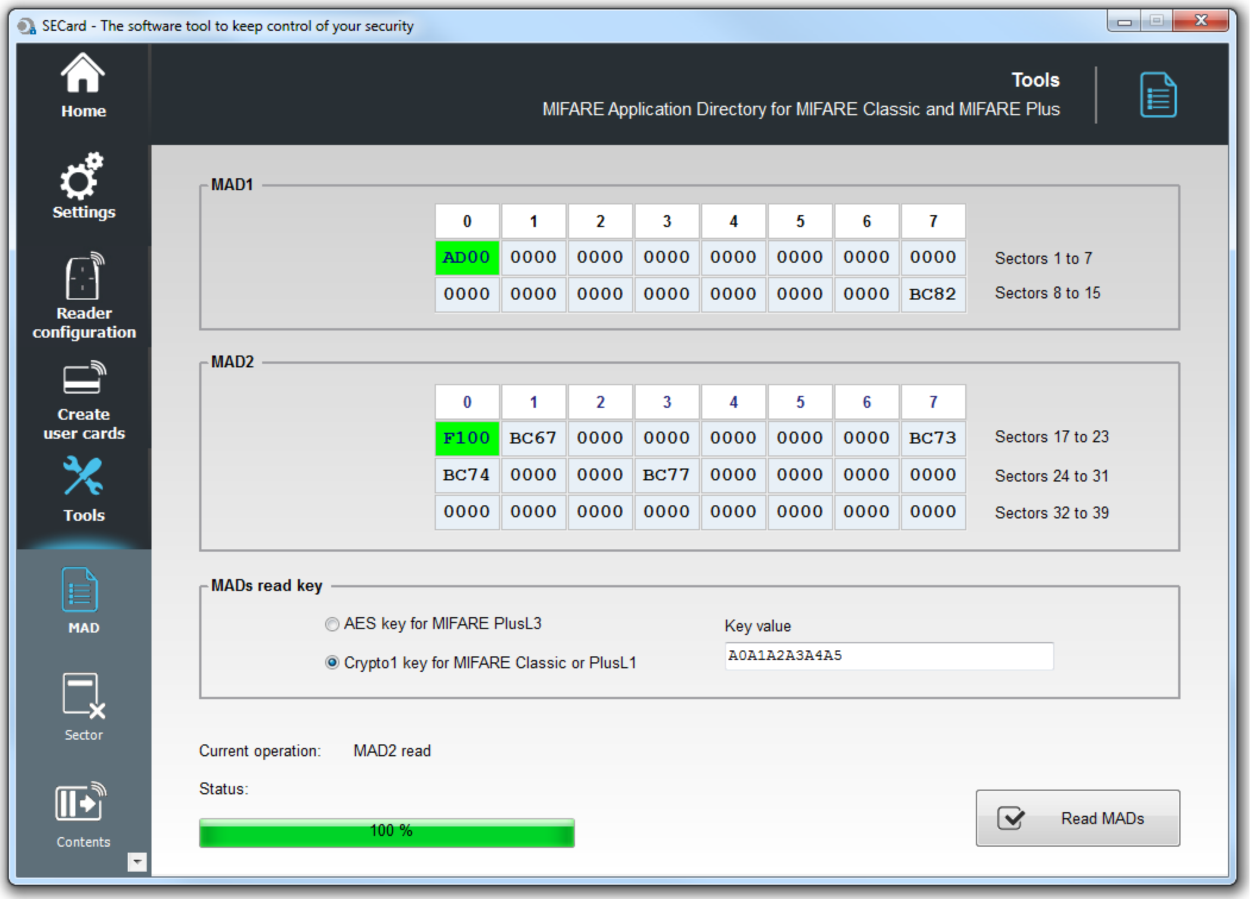
A MAD location containing an AID code means that an application use this sector.
Sectors 0 and 16 are not usable because they store the MAD1 and MAD2 information.

It is necessary to enter the MAD read key value in the "MADs read key" and to select the type of key used:

For MIFARE® Classic or MIFARE Plus® Level1, Crypto 1 key default is A0A1A2A3A4A5.

For MIFARE Plus® Level 3 AES key default is A0A1A2A3A4A5A6A7A0A1A2A3A4A5A6A7.

Successful MAD scan



Tools
MIFARE Application Directory for MIFARE Classic and MIFARE Plus

MAD1

0	1	2	3	4	5	6	7	
AD00	0000	0000	0000	0000	0000	0000	0000	Sectors 1 to 7
0000	0000	0000	0000	0000	0000	0000	BC82	Sectors 8 to 15

MAD2

0	1	2	3	4	5	6	7	
F100	BC67	0000	0000	0000	0000	0000	BC73	Sectors 17 to 23
BC74	0000	0000	BC77	0000	0000	0000	0000	Sectors 24 to 31
0000	0000	0000	0000	0000	0000	0000	0000	Sectors 32 to 39

MADs read key

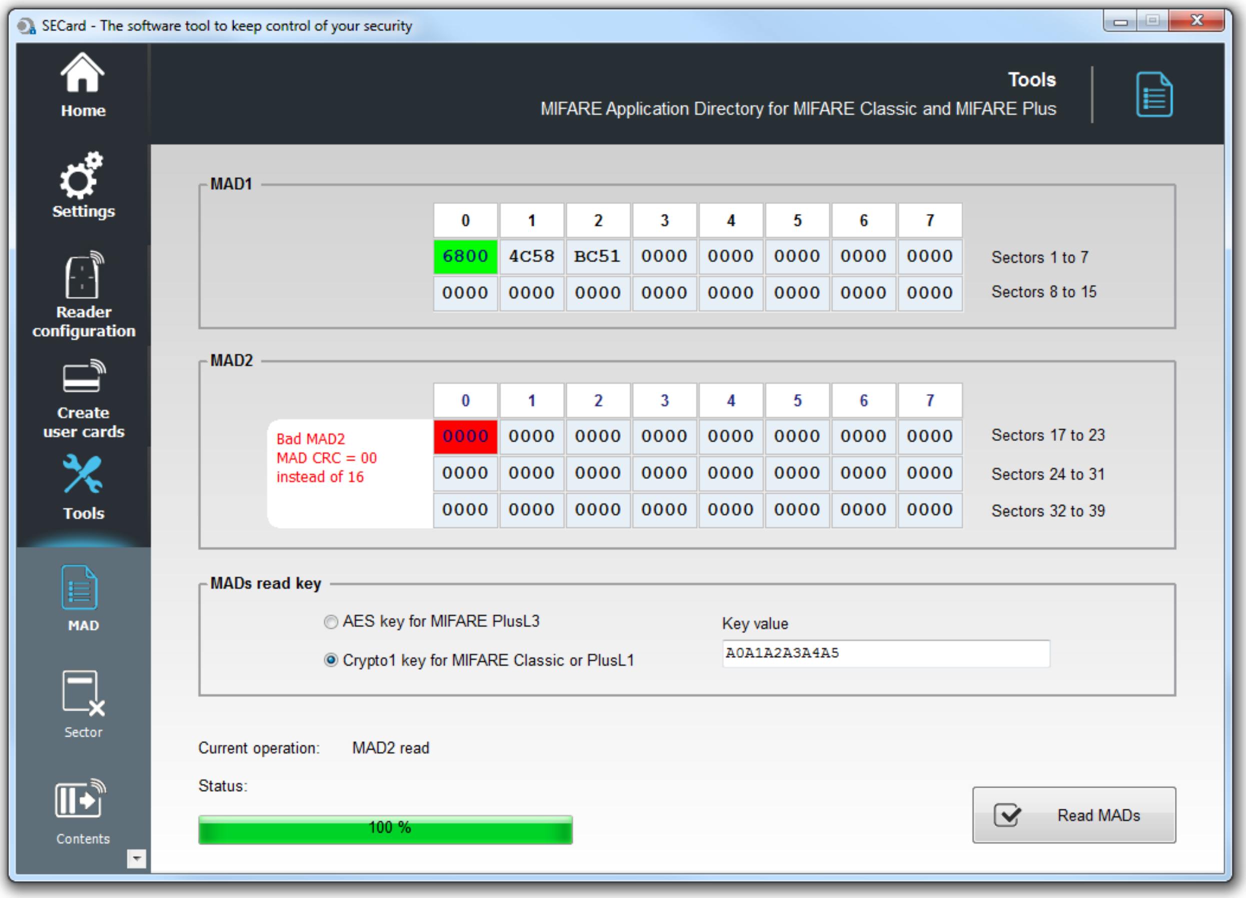
○ AES key for MIFARE PlusL3
● Crypto1 key for MIFARE Classic or PlusL1

Key value: A0A1A2A3A4A5

Current operation: MAD2 read

Status: 100 %

Successful scan MAD but MAD settings NOT OK



Tools
MIFARE Application Directory for MIFARE Classic and MIFARE Plus

MAD1

0	1	2	3	4	5	6	7	
6800	4C58	BC51	0000	0000	0000	0000	0000	Sectors 1 to 7
0000	0000	0000	0000	0000	0000	0000	0000	Sectors 8 to 15

MAD2

Bad MAD2
MAD CRC = 00
instead of 16

0	1	2	3	4	5	6	7	
0000	0000	0000	0000	0000	0000	0000	0000	Sectors 17 to 23
0000	0000	0000	0000	0000	0000	0000	0000	Sectors 24 to 31
0000	0000	0000	0000	0000	0000	0000	0000	Sectors 32 to 39

MADs read key

○ AES key for MIFARE PlusL3
● Crypto1 key for MIFARE Classic or PlusL1

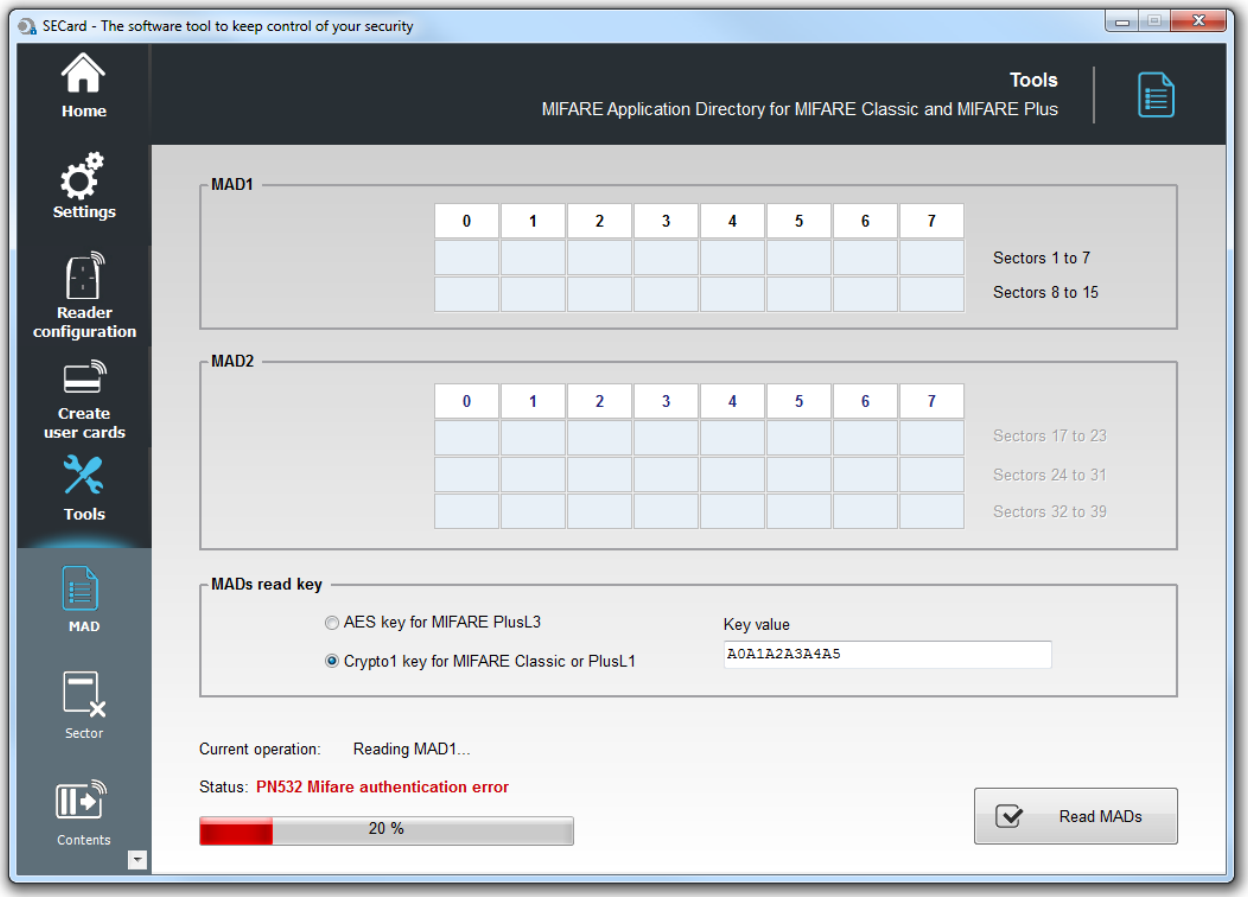
Key value: A0A1A2A3A4A5

Current operation: MAD2 read

Status: 100 %

Encoded CRC+Info hasn’t the right value. Performs encoding with SECard to correct the problem.

Failed to scan MAD: MAD not used or bad read key.



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Tools
MIFARE Application Directory for MIFARE Classic and MIFARE Plus

MAD1

0	1	2	3	4	5	6	7	
								Sectors 1 to 7
								Sectors 8 to 15

MAD2

0	1	2	3	4	5	6	7	
								Sectors 17 to 23
								Sectors 24 to 31
								Sectors 32 to 39

MADs read key

○ AES key for MIFARE PlusL3
● Crypto1 key for MIFARE Classic or PlusL1

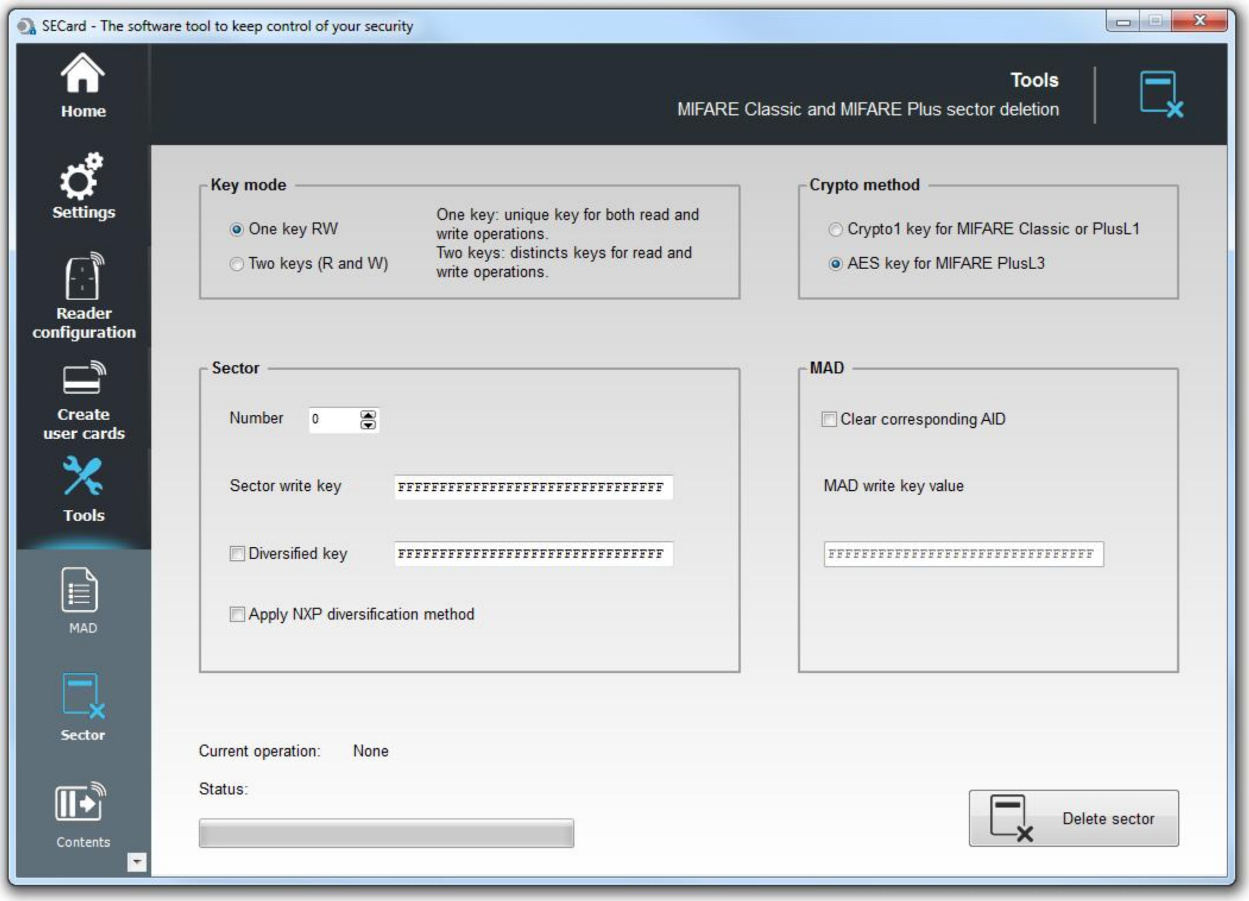
Key value: A0A1A2A3A4A5

Current operation: Reading MAD1...

Status: PN532 Mifare authentication error

20 %

VIII. 2 - Sector



Tools
MIFARE Classic and MIFARE Plus sector deletion

Key mode
- ● One key RW
- ○ Two keys (R and W)

One key: unique key for both read and write operations.
Two keys: distincts keys for read and write operations.

Crypto method
- ○ Crypto1 key for MIFARE Classic or PlusL1
- ● AES key for MIFARE PlusL3

Sector
- Number: 0
- Sector write key: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
- □ Diversified key: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
- □ Apply NXP diversification method

MAD
- □ Clear corresponding AID
- MAD write key value: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

Current operation: None
Status:

Erase one sector of MIFARE® Classic or MIFARE Plus®.

Key mode

Choose the mode in which the sector to be erased has been encoded: one key or two key.

Crypto method

Choose the crypto method for the current chip.

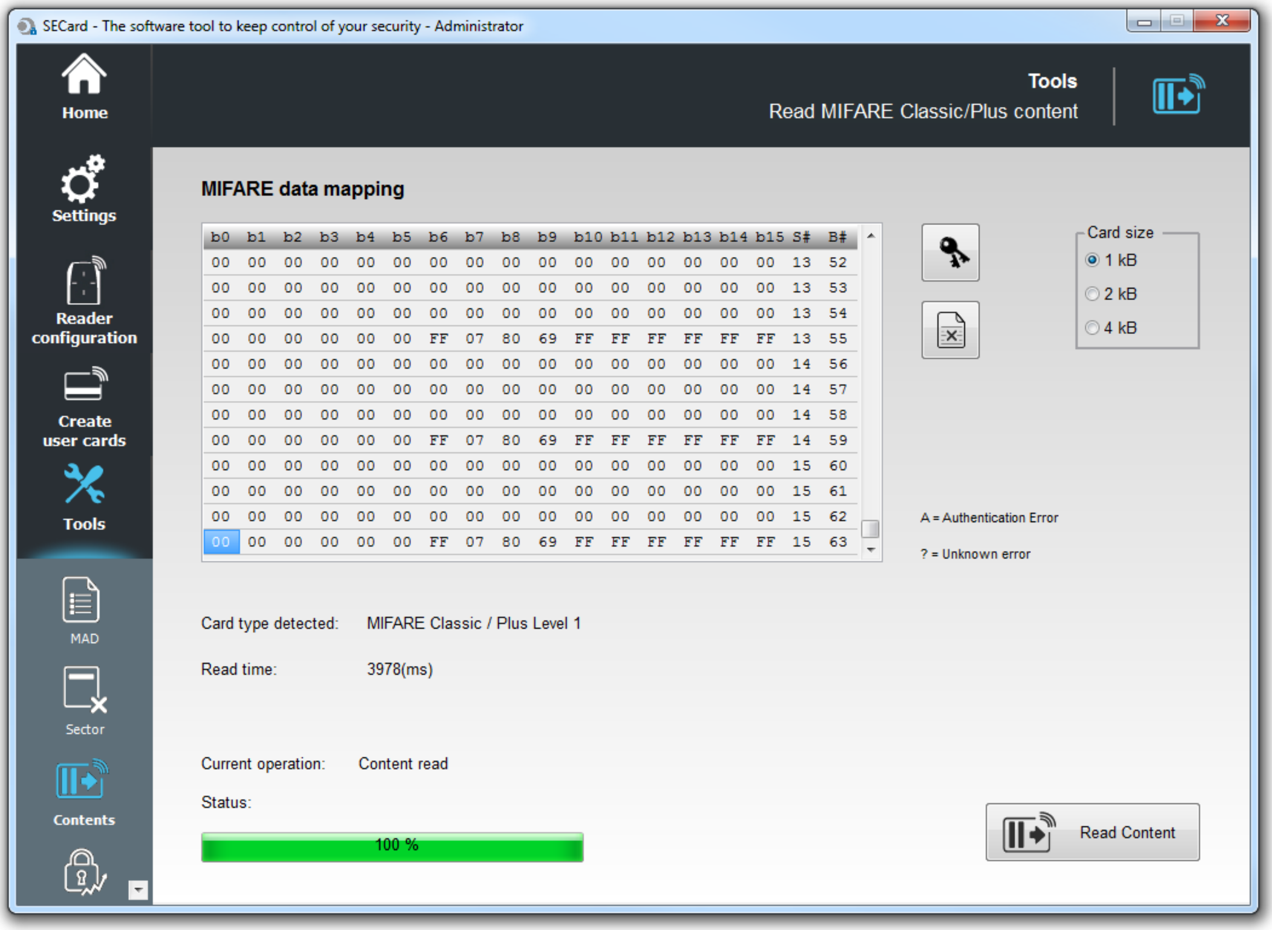
Sector

Choose the sector number to erase and the write key.
It is also necessary to check the "Diversified key" box and fill in the field the value of key if the encoding was performed with a value of diversified key (Apply the method of diversification NXP if diversification has been made by this method check).

MAD

It is possible to clear the corresponding AID in MAD. For this it is necessary to select « *Clear corresponding AID* » and to enter MAD write key value.

VIII. 3 - Contents



MIFARE data mapping

b0	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	b13	b14	b15	S#	B#
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	13	52
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	13	53
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	13	54
00	00	00	00	00	00	FF	07	80	69	FF	FF	FF	FF	FF	FF	13	55
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	14	56
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	14	57
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	14	58
00	00	00	00	00	00	FF	07	80	69	FF	FF	FF	FF	FF	FF	14	59
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	15	60
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	15	61
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	15	62
00	00	00	00	00	00	FF	07	80	69	FF	FF	FF	FF	FF	FF	15	63

Card size
● 1 kB
○ 2 kB
○ 4 kB

Card type detected: MIFARE Classic / Plus Level 1

Read time: 3978(ms)

Current operation: Content read

Status: 100 %

Read the contents of MIFARE® Classic or MIFARE Plus® chip.

Clear the contents of windows.

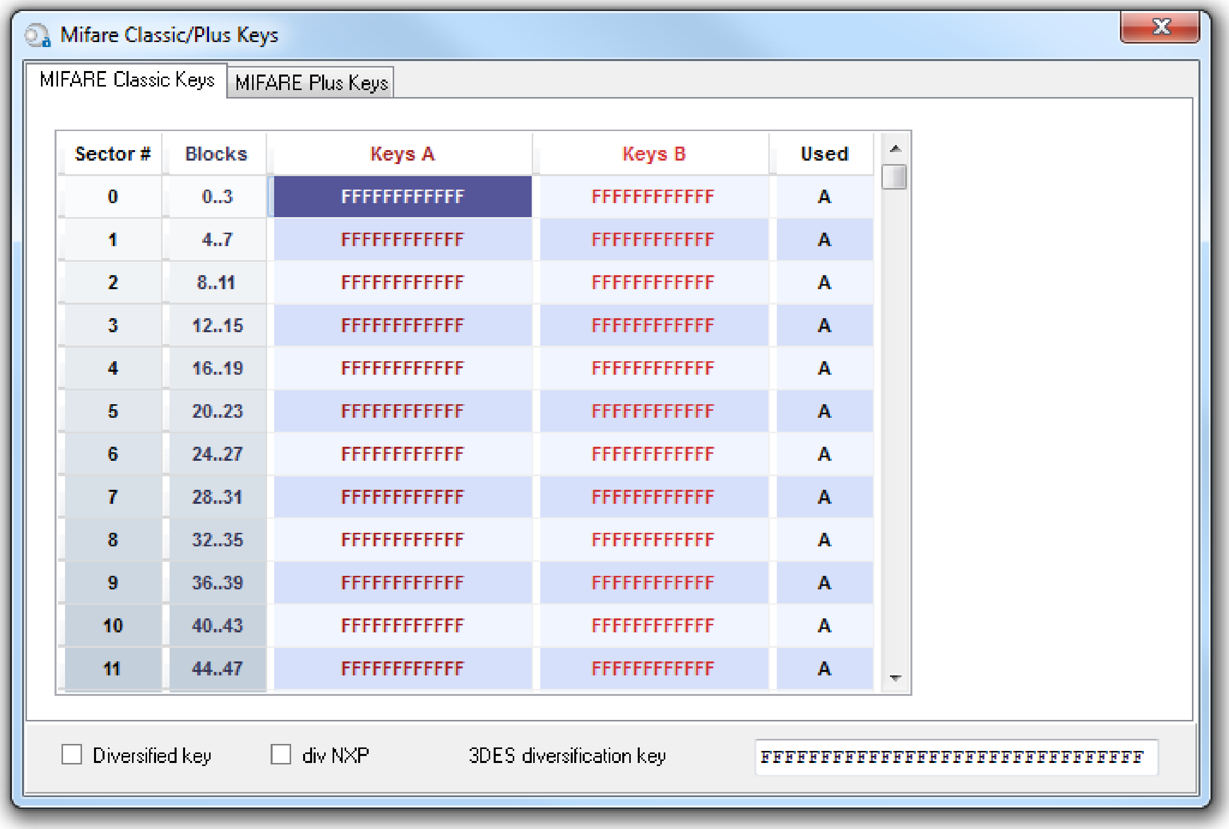
Card Size

Choose the size of the memory chip read.

Note:

It is possible to stop reading using the "Esc" button on the keyboard.

Enter read keys sector(s) and type of key (A read/write key in mode one key or key B read/write key in mode two keys), diversification option is also available:

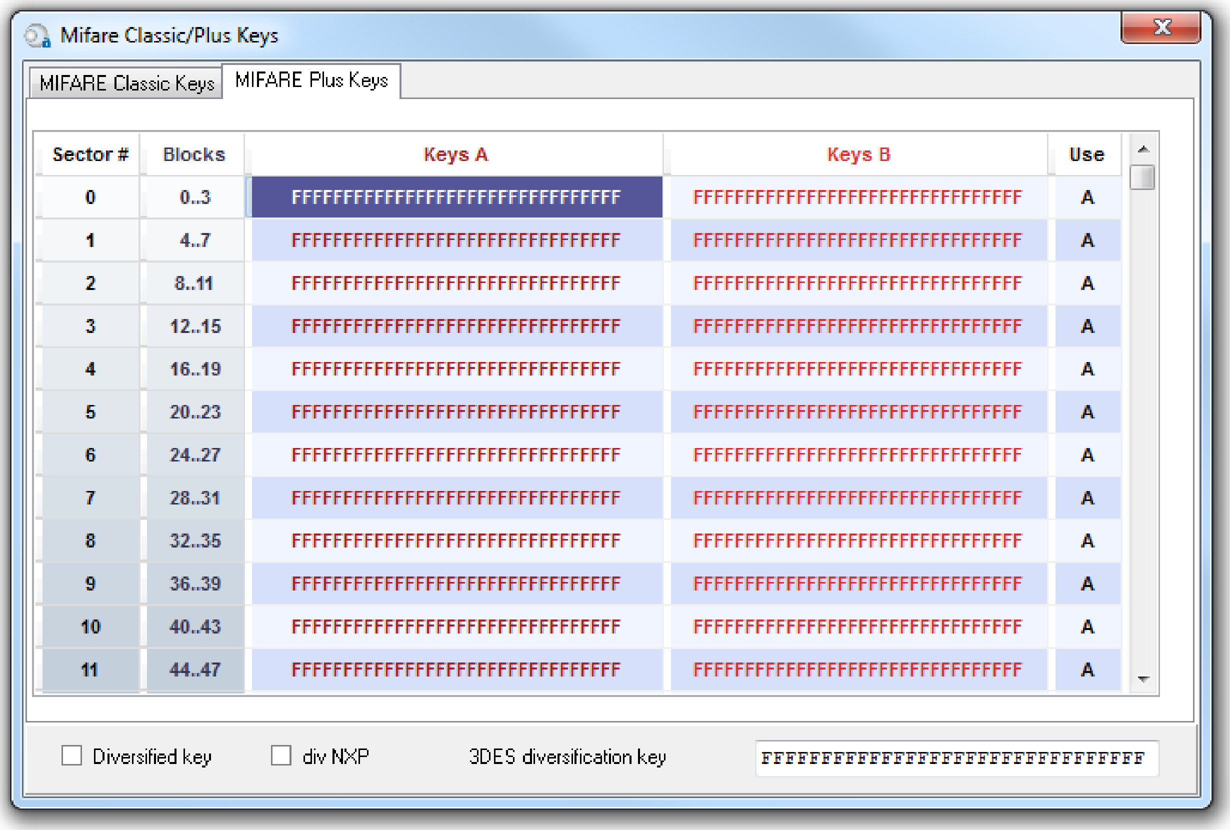


Mifare Classic/Plus Keys

MIFARE Classic Keys | MIFARE Plus Keys

Sector #	Blocks	Keys A	Keys B	Used
0	0..3	FFFFFFFFFFFF	FFFFFFFFFFFF	A
1	4..7	FFFFFFFFFFFF	FFFFFFFFFFFF	A
2	8..11	FFFFFFFFFFFF	FFFFFFFFFFFF	A
3	12..15	FFFFFFFFFFFF	FFFFFFFFFFFF	A
4	16..19	FFFFFFFFFFFF	FFFFFFFFFFFF	A
5	20..23	FFFFFFFFFFFF	FFFFFFFFFFFF	A
6	24..27	FFFFFFFFFFFF	FFFFFFFFFFFF	A
7	28..31	FFFFFFFFFFFF	FFFFFFFFFFFF	A
8	32..35	FFFFFFFFFFFF	FFFFFFFFFFFF	A
9	36..39	FFFFFFFFFFFF	FFFFFFFFFFFF	A
10	40..43	FFFFFFFFFFFF	FFFFFFFFFFFF	A
11	44..47	FFFFFFFFFFFF	FFFFFFFFFFFF	A

☐ Diversified key ☐ div NXP 3DES diversification key FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF



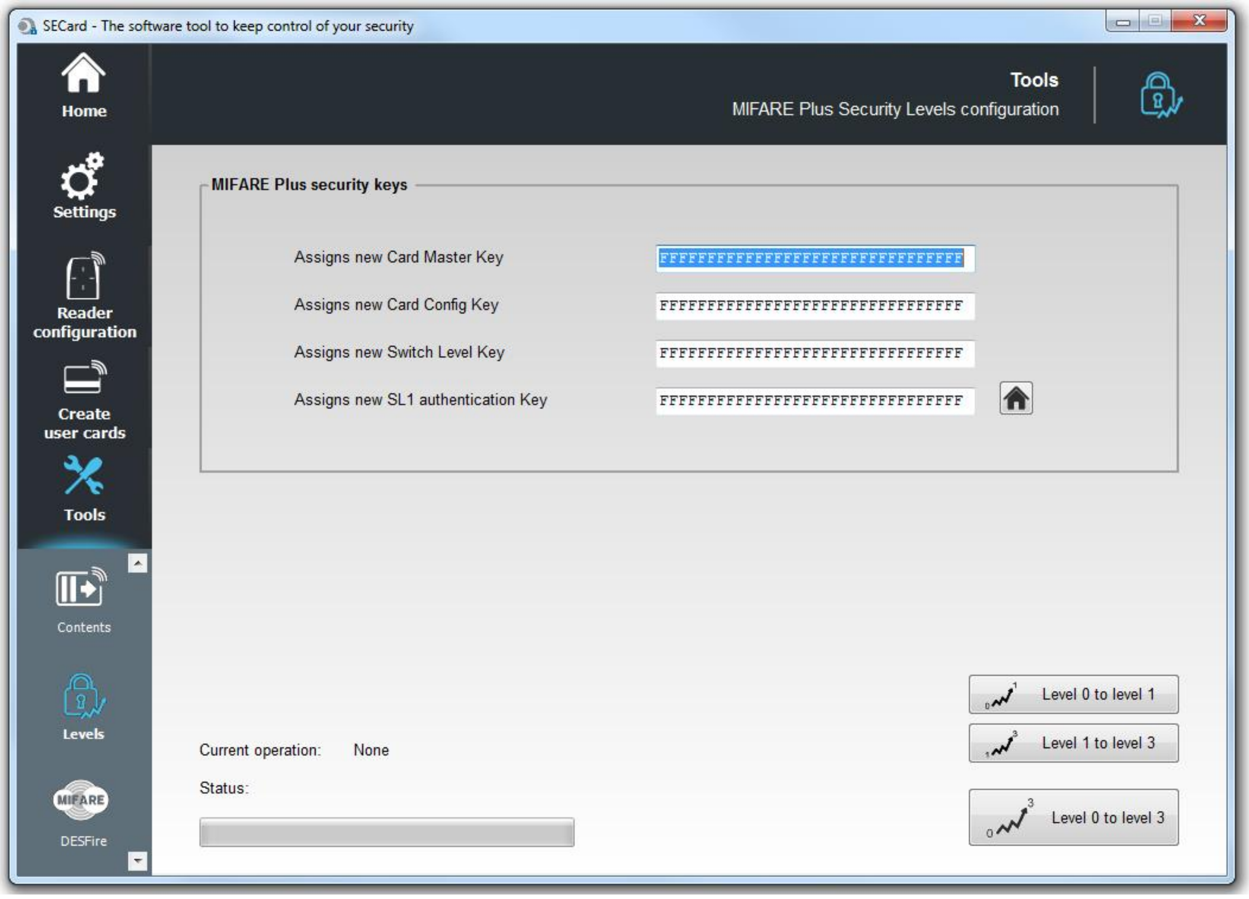
Mifare Classic/Plus Keys

MIFARE Classic Keys | MIFARE Plus Keys

Sector #	Blocks	Keys A	Keys B	Use
0	0..3	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	A
1	4..7	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	A
2	8..11	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	A
3	12..15	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	A
4	16..19	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	A
5	20..23	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	A
6	24..27	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	A
7	28..31	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	A
8	32..35	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	A
9	36..39	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	A
10	40..43	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	A
11	44..47	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	A

☐ Diversified key ☐ div NXP 3DES diversification key FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

VIII. 4 - Levels



SECard - The software tool to keep control of your security

Tools
MIFARE Plus Security Levels configuration

MIFARE Plus security keys

Assigns new Card Master Key	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Assigns new Card Config Key	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Assigns new Switch Level Key	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Assigns new SL1 authentication Key	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

Current operation: None

Status:

Switch manually the security level of MIFARE Plus® chip:

- From Level 0 to Level1
- From Level 1 to Level 3
- From Level 0 to Level 3

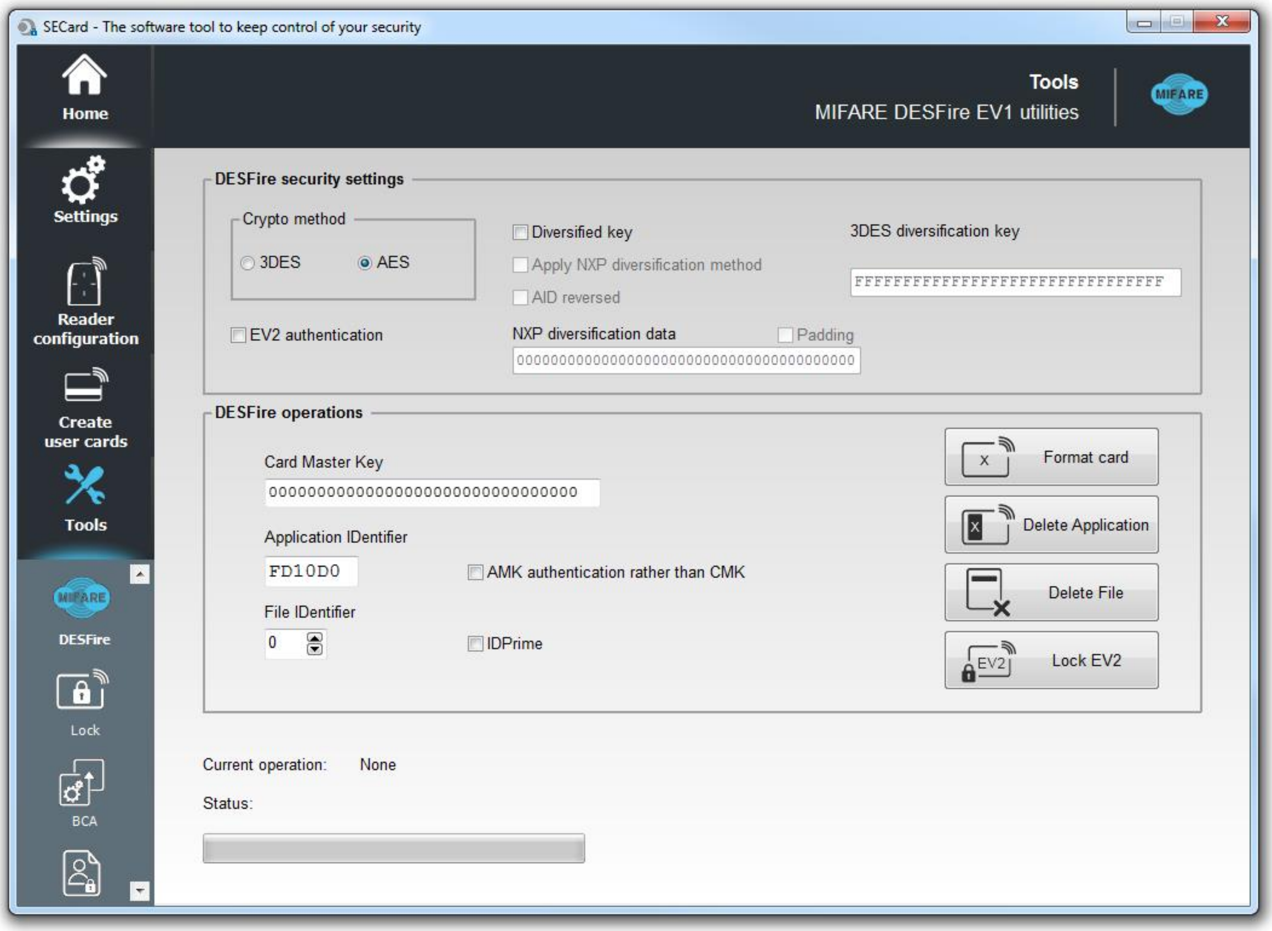
To perform a change of level, it is necessary to fill the four key fields.

MIFARE Plus® chip keys defaults are:”FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF”, it is recommended to change to optimize security.

Warning

Card can only be switched upwards to higher security level.

VIII. 5 - DESFire



SECard - The software tool to keep control of your security

Tools

MIFARE DESFire EV1 utilities

DESFire security settings

Crypto method: ○ 3DES ● AES

□ Diversified key

□ Apply NXP diversification method

□ AID reversed

3DES diversification key: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

□ EV2 authentication

NXP diversification data: 000000000000000000000000000000000000000000 □ Padding

DESFire operations

Card Master Key: 00000000000000000000000000000000

Application IDentifier: FD10D0

□ AMK authentication rather than CMK

File IDentifier: 0

□ IDPrime

Format card

Delete Application

Delete File

Lock EV2

Current operation: None

Status:

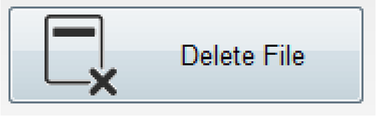
Format the chip, delete an application created on the MIFARE® DESFire® EV1/EV2 chip or delate file into an application.

DESFire® security settings

Choose the authentication method used for the master key and select the possible options for diversification.

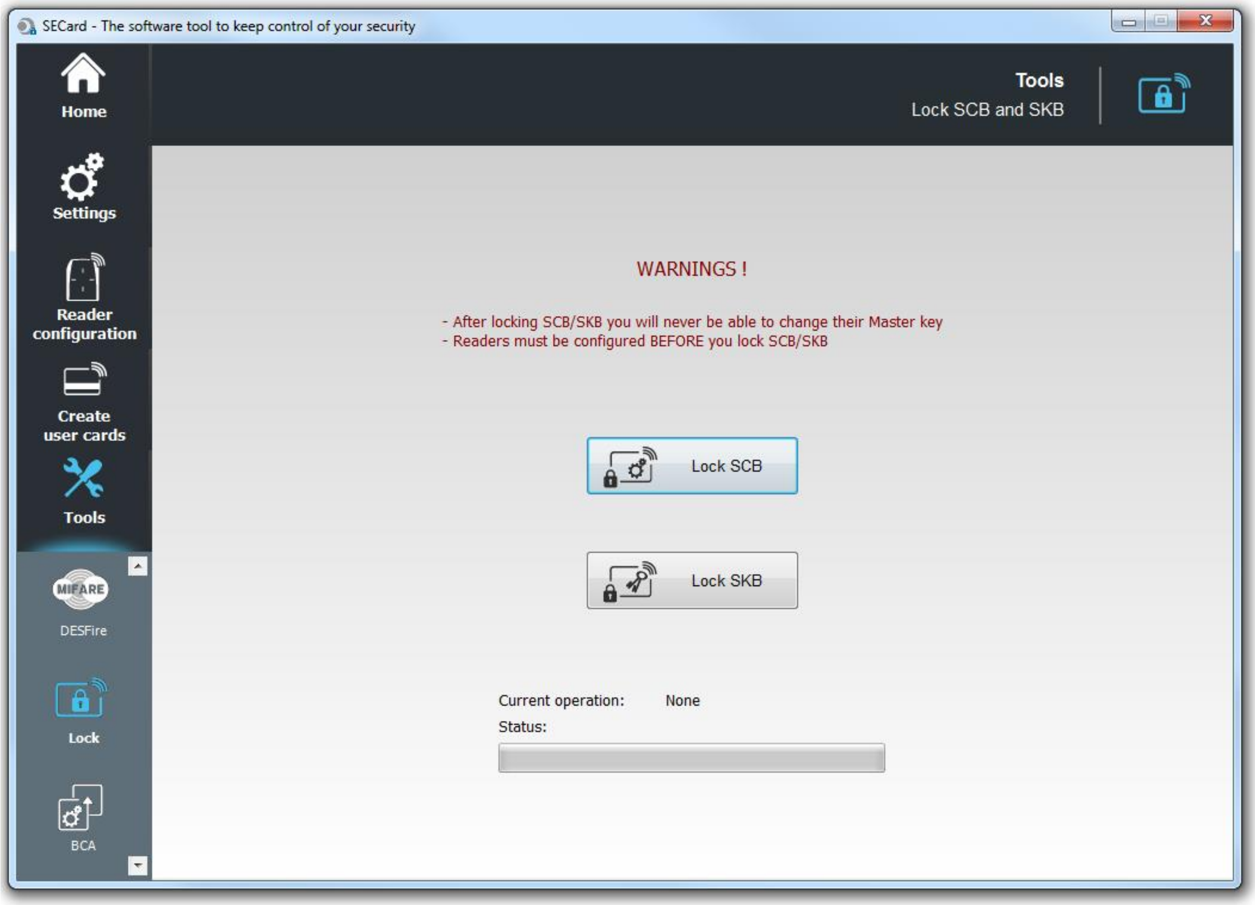
DESFire® operations

Format card	- Select security settings of DESFire (cryptographic method, diversification, if . - Set the Card Master key value. **Warning** When you format the chip, all data will be lost. Formatting does not change the master key.
Delete Application	- Select security settings of DESFire (cryptographic method and diversification. - Set the Card Master key value or application master key value according the settings of your chip. - Set the application identifier (AID) **Warning** When you delete an application, all included files will be deleted

	- Select security settings of the application containing the file (cryptographic method and diversification. - Set the Card Master key value or application master key value - Set the application identifier (AID) - Set the file ID number to delete.
	Locks a DESFire® EV2 in Secure messaging EV2 mode. The communication with the chip can then be done only in EV2. - Set the Card Master key value. - Select the crypto of the card master key **Warning** **This operation is definitive, no possible ‘CANCEL’**

To delete an application or a file on IDPrime card, tick the IDPrime box to work with DESFire® emulation.

VIII. 6 - Lock



WARNINGS !

- After locking SCB/SKB you will never be able to change their Master key
- Readers must be configured BEFORE you lock SCB/SKB

Current operation: None

Status:

Warning

It is recommended to use SECard 3.5.1 or higher to use the SCB / SKB / SCB RW Lock function as previous version could prevent the reading of the locked card by the reader.

Lock SCB and SKB cards, this will permanently lock the possibility to change further the master key of cards.

Once the SCB card locked, it will be only possible to configure the readers that have been configured with this configuration card, it will not be possible anymore to configure readers with factory key or another key.

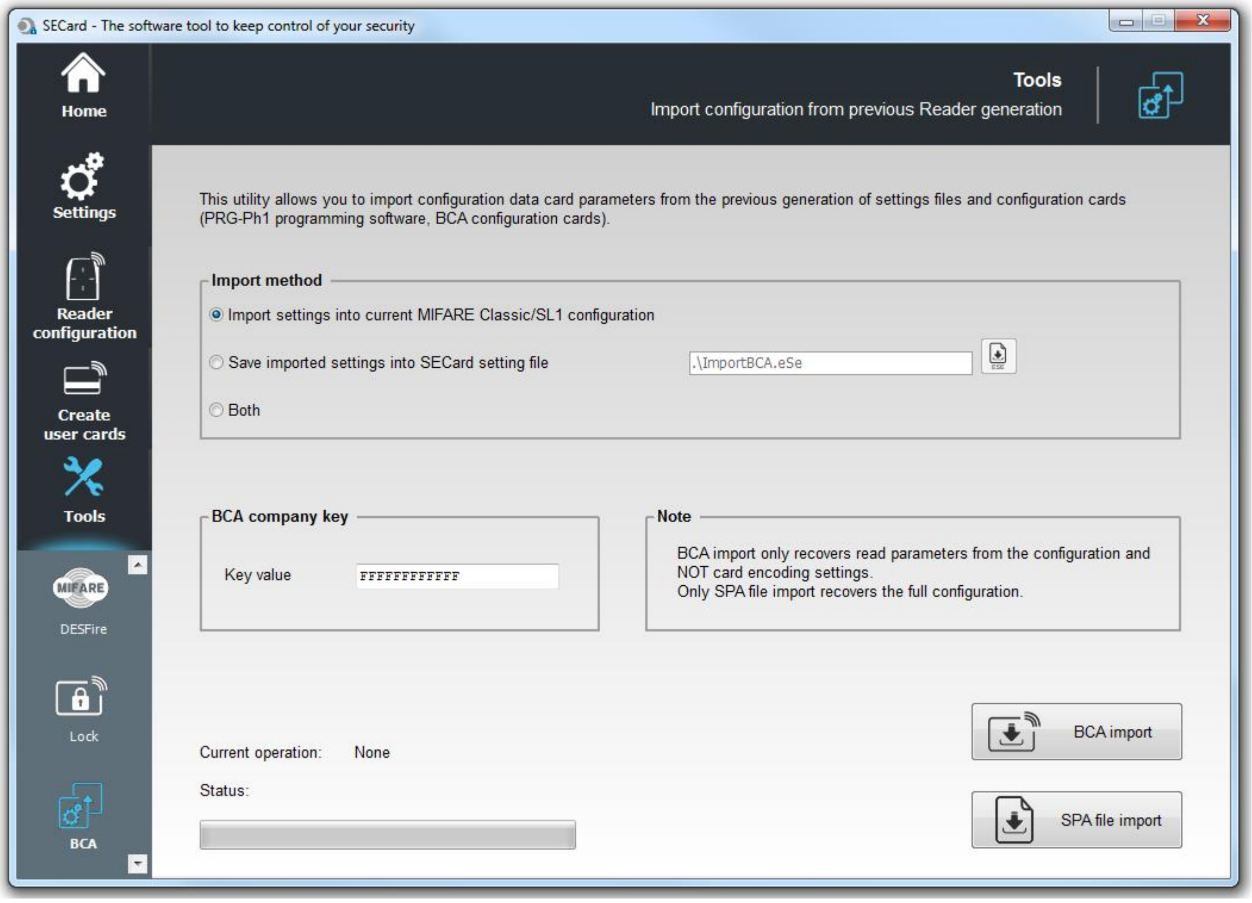
Warning

Before the lock operation, it is necessary to configure the readers by these cards. If not, these cards will be unusable.

Warning

This operation is definitive, no possible ‘CANCEL’.

VIII. 7 - BCA



Tools
Import configuration from previous Reader generation

This utility allows you to import configuration data card parameters from the previous generation of settings files and configuration cards (PRG-Ph1 programming software, BCA configuration cards).

Import method

● Import settings into current MIFARE Classic/SL1 configuration

○ Save imported settings into SECard setting file .\ImportBCA.eSe

○ Both

BCA company key

Key value FFFFFFFFFFFF

Note

BCA import only recovers read parameters from the configuration and NOT card encoding settings.
Only SPA file import recovers the full configuration.

Current operation: None

Status:

The new generation of standard readers (E) must be configured to read a private ID in the MIFARE classic® chip as the previous generation (A).

Two import tools are proposed, according to a BCA configuration card or a .spa configuration file create with PRG-PH1.
In both cases, only MIFARE® Classic configuration is imported.

Import method

1 - Import settings into current MIFARE® Classic/SL1 configuration:
The MIFARE® Classic parameters are filled into this dedicated window of “SCB” wizard.

2 - Save imported settings into SECard settings file:
The MIFARE® Classic parameters are saved into a new .eSe file (ImportBCA.eSe by default), different from the one used for the general configuration.

Both = 1 + 2

BCA company key

It is absolutely necessary to know the company key of BCA card to enter it in this field.
BCA company key on 6 bytes will be imported into the SCB key field with a zero padding left to reach 16 bytes.

The key values of BCE card will be copied in the array of values read "Crypto1keys" of SKB card. The SKB master key will be defined with SECard.

BCA import

Imports **only** the parameters necessary for the readers to read user cards.

Warning

Some parameters are not taken into account (these are not referenced in the BCA) such as key changes and MAD parameters.

This import does not allow tocreate new user cards.

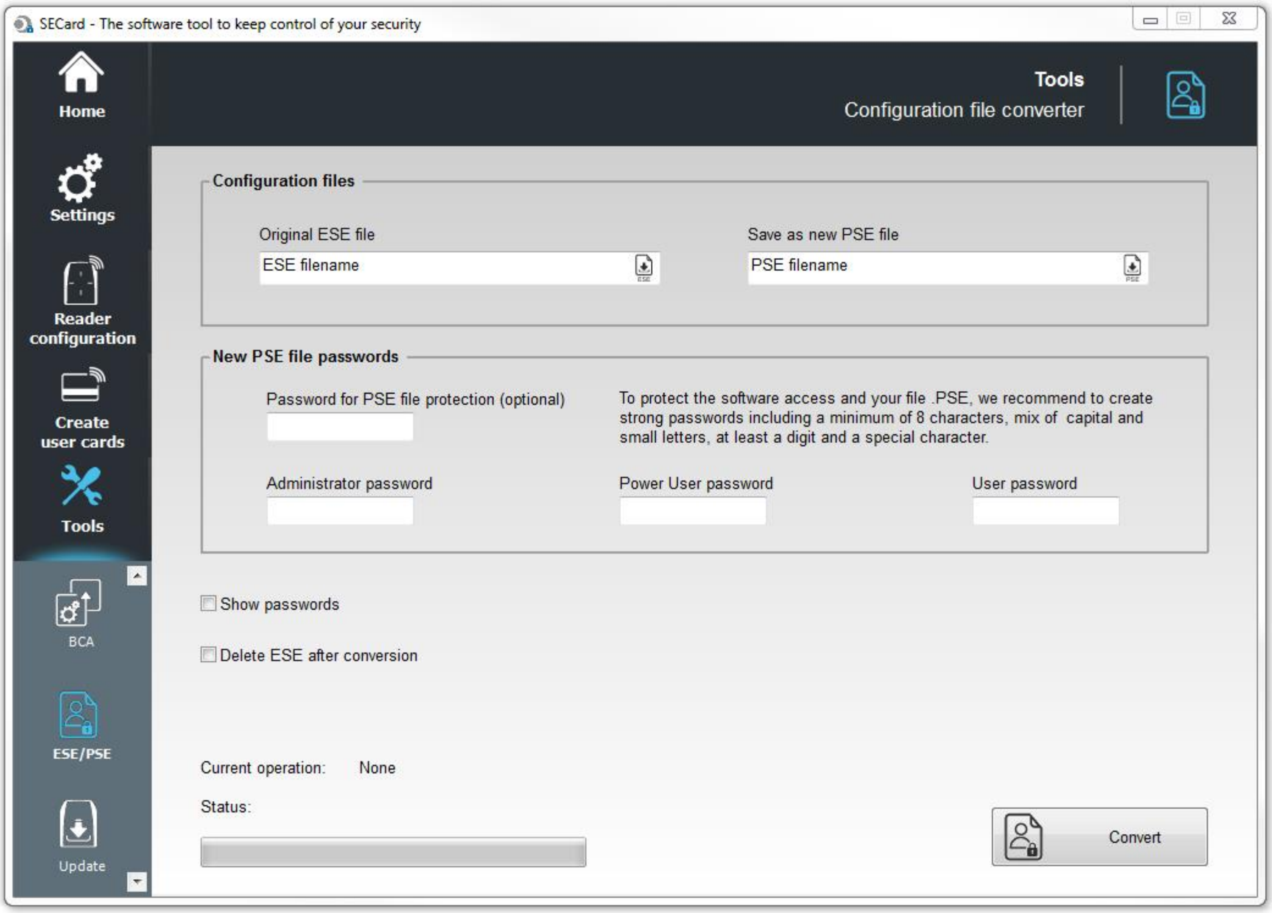
SPA file import

Imports **all** the parameters necessary for the reader to read user cards **AND** all write parameters needed to create new users cards.

Note:

- Secure Plus parameters will not be imported because this functionality is differently implemented in SECard
- If .spa file is protected by password it is required to enter it.

VIII. 8 - ESE/PSE



Original ESE file: ESE filename

Save as new PSE file: PSE filename

Password for PSE file protection (optional)

To protect the software access and your file .PSE, we recommend to create strong passwords including a minimum of 8 characters, mix of capital and small letters, at least a digit and a special character.

Administrator password

Power User password

User password

□ Show passwords

□ Delete ESE after conversion

Current operation: None

Status:

Configuration files created with previous version of SECard were “.eSe” files. From V2.0.x version, the configuration files format are “.PSE Protected Settings”.
Login and read passwords are into this file.

This tool allows you to import “.eSe” configuration files and convert them into “.pse” by adding logins and read passwords.

Configuration files

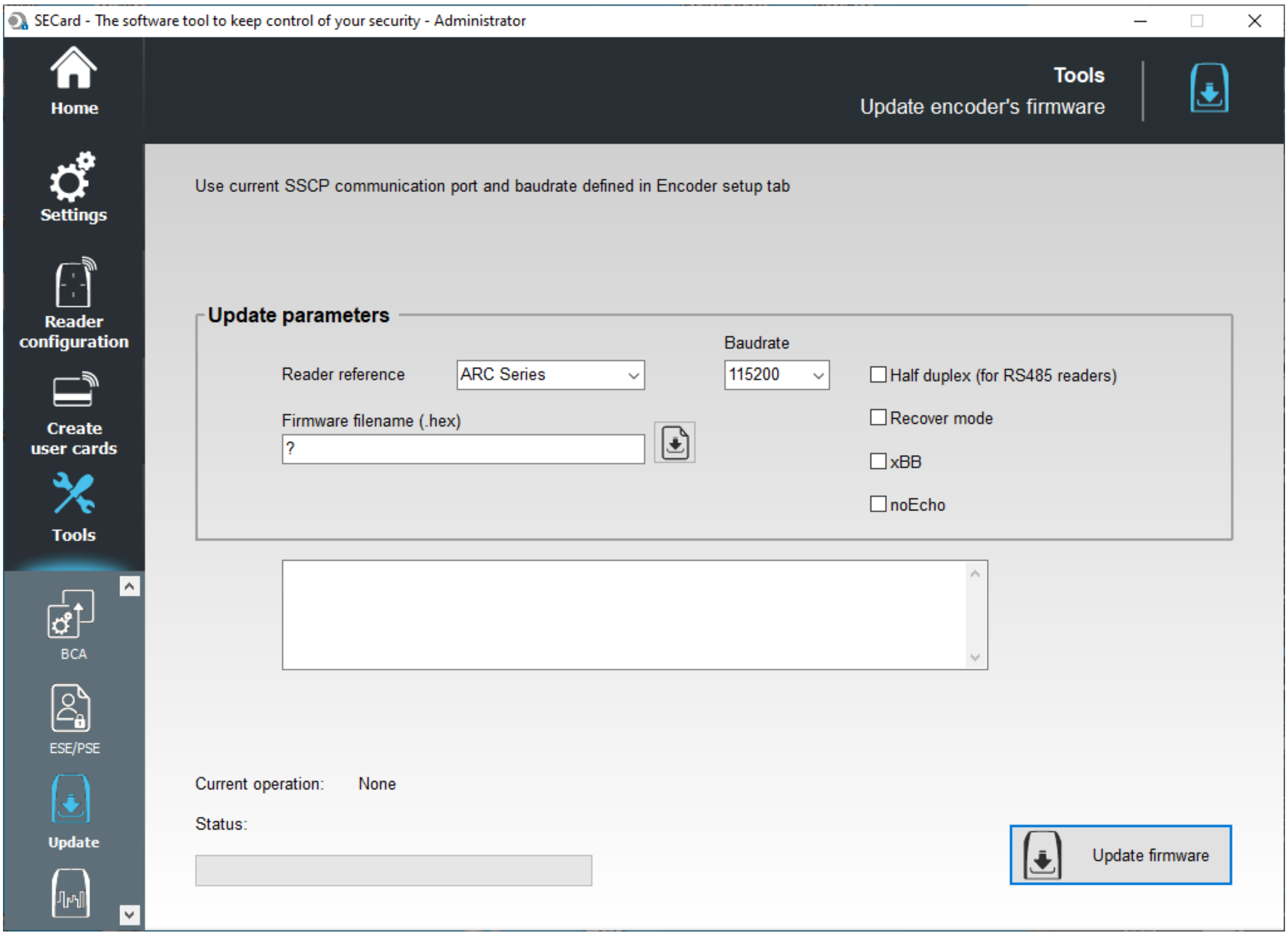
Select the “.ese” configuration file to import, and assign a new “.pse” name.

New PSE file passwords

It is necessary to enter Administrator, Power User and User passwords.

Note: to show passwords, check the “Show passwords” before assigning the first password.

VIII. 9 - Update


SECard - The software tool to keep control of your security - Administrator
Home
Settings
Reader configuration
Create user cards
Tools
BCA
ESE/PSE
Update
Tools
Update encoder's firmware
Update firmware

Use current SSCP communication port and baudrate defined in Encoder setup tab

Update parameters

Reader reference: ARC Series

Baudrate: 115200

Firmware filename (.hex): ?

□ Half duplex (for RS485 readers)
□ Recover mode
□ xBB
□ noEcho

Current operation: None

Status:

Upgrade the firmware of readers **with a series connection**.

Warning: DLL FlashMagicARM, FlashMagicARMCortex and nrfutil.exe (present in the root folder SECard) are required.

The communication port is to be set in the Setting tab ***II.** 1 - Encoder.*

Update parameters

- Reader reference: choose the reader reference to upgrade.
- Baudrate: choose de baudrate of reprogramming.
- Firmware filename: download the firmware file.
- Half Duplex (RS485 readers).
- Recover mode: if programming failed, retry with “recover mode” checked (only for R/S 31 readers).
- xBB: check this case if the reader is a 5BB or 7BB protocol (firmware min Z05).
- noEcho: "removes" echo from reprog commands and therefore greatly reduces reprog time.

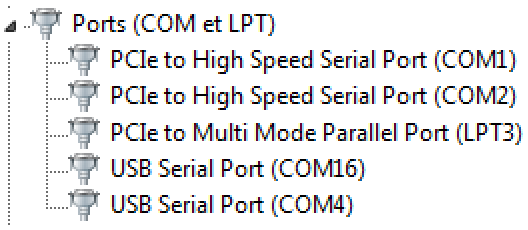
When all parameters are filled, power on the reader and click the Update button:

- while the LED blinks orange for serial readers
- at any time for TTL readers

Note: for RS485 readers, use a fast interface (by default, baudrate set to 38400).

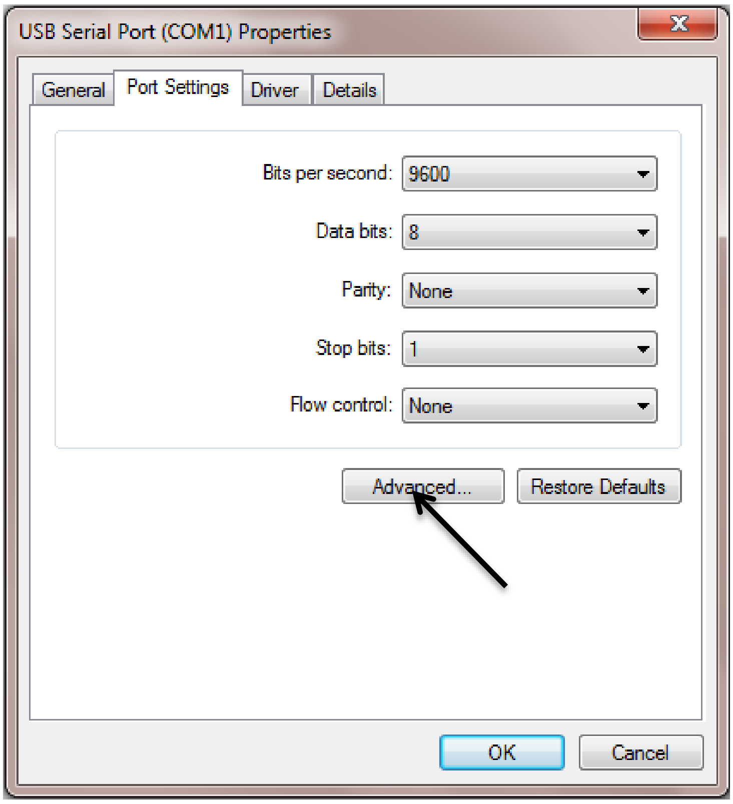
Update a read/write reader: example ARCW33APH57AA

Communication port setting for RS485/USB converter:



- Ports (COM et LPT)
  - PCIe to High Speed Serial Port (COM1)
  - PCIe to High Speed Serial Port (COM2)
  - PCIe to Multi Mode Parallel Port (LPT3)
  - USB Serial Port (COM16)
  - USB Serial Port (COM4)

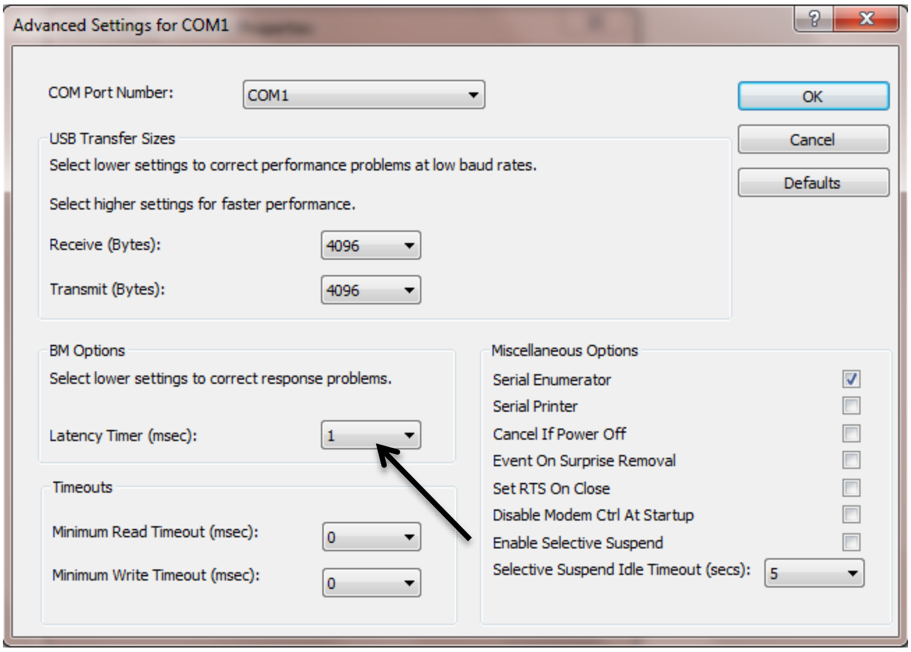
Double click on the good COM port number.



USB Serial Port (COM1) Properties

Bits per second:	9600
Data bits:	8
Parity:	None
Stop bits:	1
Flow control:	None

Open Advanced…



Advanced Settings for COM1

COM Port Number: COM1

USB Transfer Sizes

Select lower settings to correct performance problems at low baud rates.

Select higher settings for faster performance.

Receive (Bytes): 4096

Transmit (Bytes): 4096

BM Options

Select lower settings to correct response problems.

Latency Timer (msec): 1

Timeouts

Minimum Read Timeout (msec): 0

Minimum Write Timeout (msec): 0

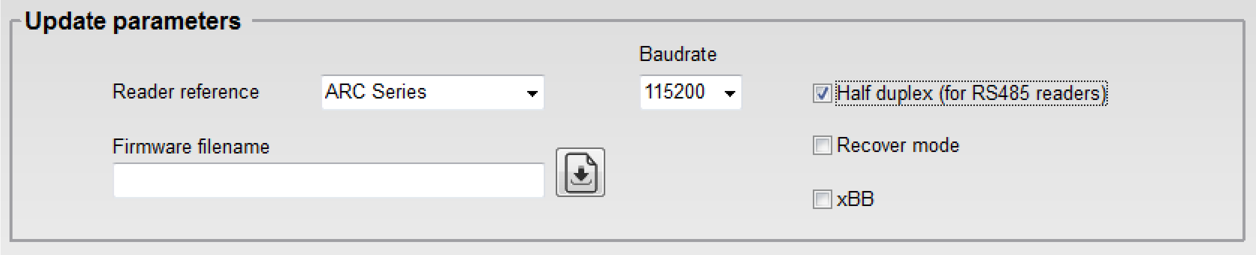
Miscellaneous Options

Serial Enumerator	☑
Serial Printer	□
Cancel If Power Off	□
Event On Surprise Removal	□
Set RTS On Close	□
Disable Modem Ctrl At Startup	□
Enable Selective Suspend	□
Selective Suspend Idle Timeout (secs):	5

Put Latency on “1”

Update a read/write reader: example ARC-W33-A-PH5/7AA

1- Select ARC series + Half Duplex + Load the firmware



Update parameters

Reader reference: ARC Series

Baudrate: 115200

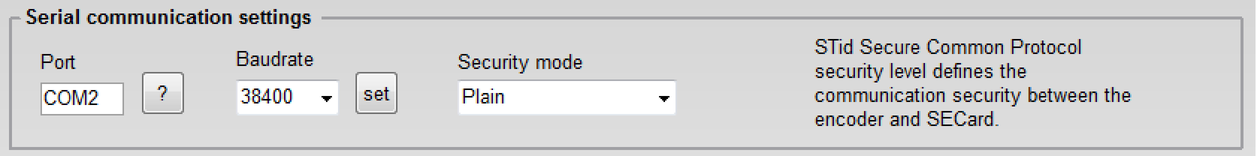
☑ Half duplex (for RS485 readers)

Firmware filename:

☐ Recover mode

☐ xBB

2- Configure the COM port
Note: with W reader you can use CTRL + ?



Serial communication settings

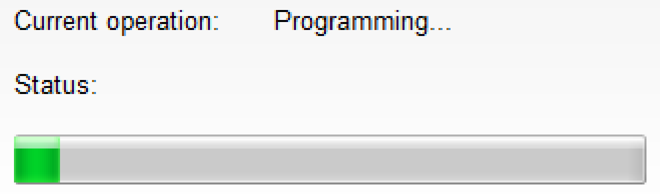
Port: COM2

Baudrate: 38400

Security mode: Plain

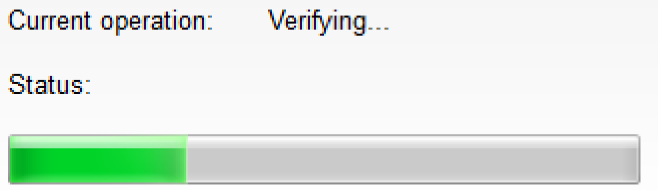
STid Secure Common Protocol security level defines the communication security between the encoder and SECard.

3- Click on Update Firmware, the LED reader light white (for ARC1/ARC1S the color LED is not define)



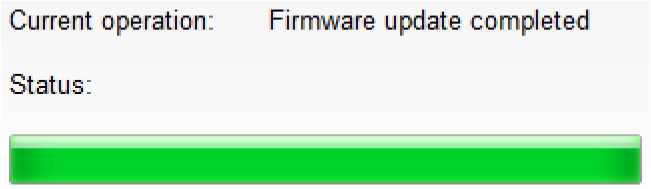
Current operation: Programming...

Status:



Current operation: Verifying...

Status:

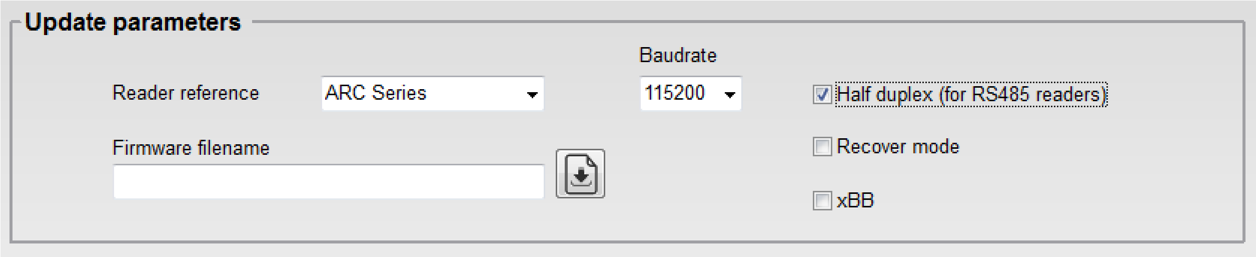


Current operation: Firmware update completed

Status:

Update a read only serial reader: example ARC-R33-A-PH5/7AB

1- Select ARC Series + Half Duplex + Load the firmware



Update parameters

Reader reference: ARC Series

Baudrate: 115200

☑ Half duplex (for RS485 readers)

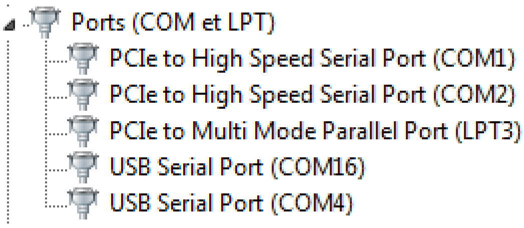
Firmware filename:

□ Recover mode

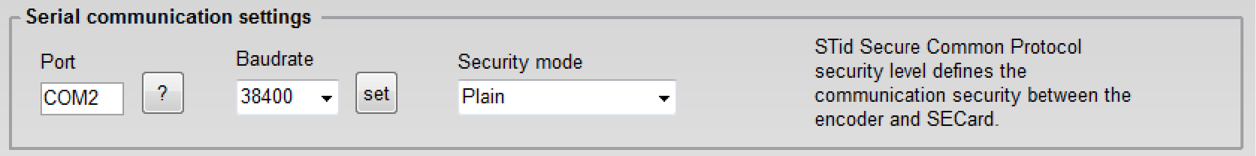
□ xBB

2- Configure the COM port at 38400 baud

Note: with R reader search the com port number on your list:



- Ports (COM et LPT)
  - PCIe to High Speed Serial Port (COM1)
  - PCIe to High Speed Serial Port (COM2)
  - PCIe to Multi Mode Parallel Port (LPT3)
  - USB Serial Port (COM16)
  - USB Serial Port (COM4)



Serial communication settings

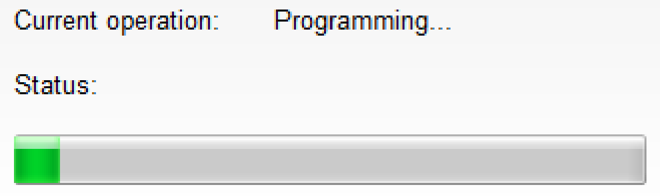
Port: COM2

Baudrate: 38400

Security mode: Plain

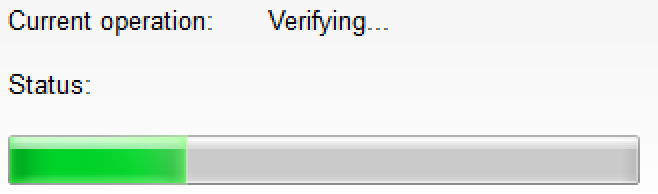
STid Secure Common Protocol security level defines the communication security between the encoder and SECard.

3- Power on the reader and click on Update Firmware while the LED blinks orange.



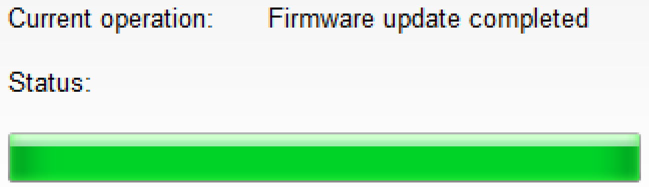
Current operation: Programming...

Status:



Current operation: Verifying...

Status:

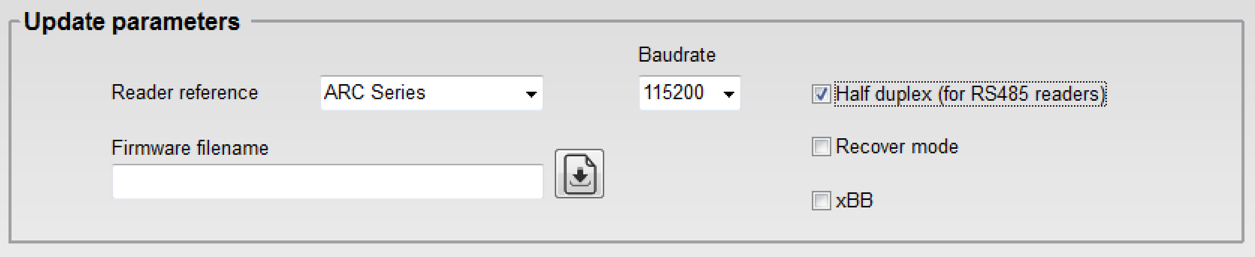


Current operation: Firmware update completed

Status:

Update a read only TTL reader: example ARC-R31-A-PH5/2b

1- Select ARC Series + Half Duplex (the TTL reader are update by the RS485 serial link) + Load the firmware



Update parameters

Reader reference: ARC Series

Baudrate: 115200

☑ Half duplex (for RS485 readers)

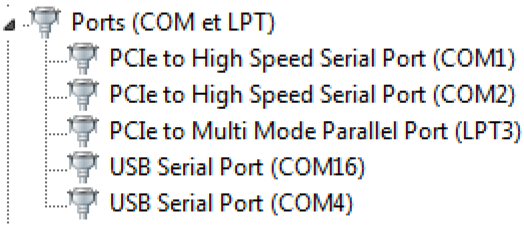
Firmware filename:

☐ Recover mode

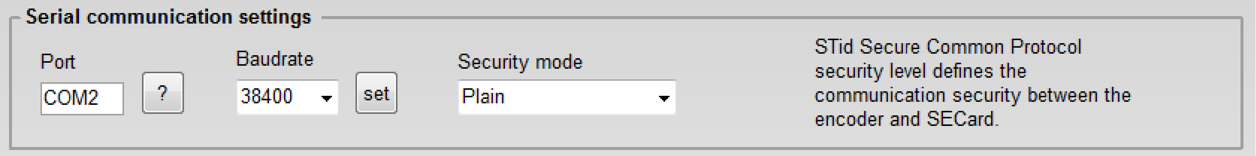
☐ xBB

2- Configure the COM port at 38400 baud

Note: with R reader search the com port number on your list:



- Ports (COM et LPT)
  - PCIe to High Speed Serial Port (COM1)
  - PCIe to High Speed Serial Port (COM2)
  - PCIe to Multi Mode Parallel Port (LPT3)
  - USB Serial Port (COM16)
  - USB Serial Port (COM4)



Serial communication settings

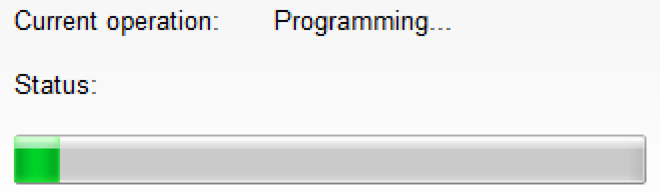
Port: COM2 ?

Baudrate: 38400 set

Security mode: Plain

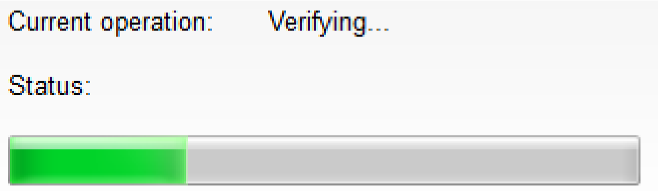
STid Secure Common Protocol security level defines the communication security between the encoder and SECard.

3- Click on Update Firmware.



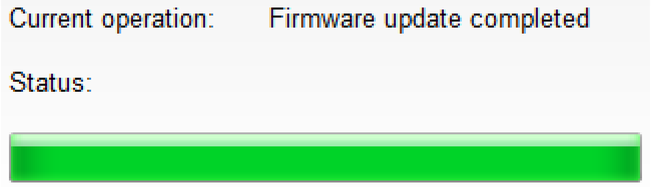
Current operation: Programming...

Status:



Current operation: Verifying...

Status:

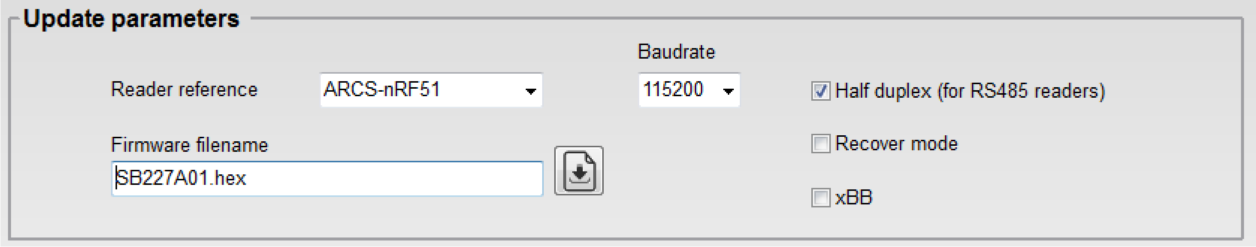


Current operation: Firmware update completed

Status:

Update the BTSmart chip: example with ARCS-R31-A-BT1/xx

1- Select ARCS-nRF51 + Half Duplex (the TTL reader are update by the RS485 serial link) + Load the firmware



Update parameters

Reader reference: ARCS-nRF51

Baudrate: 115200

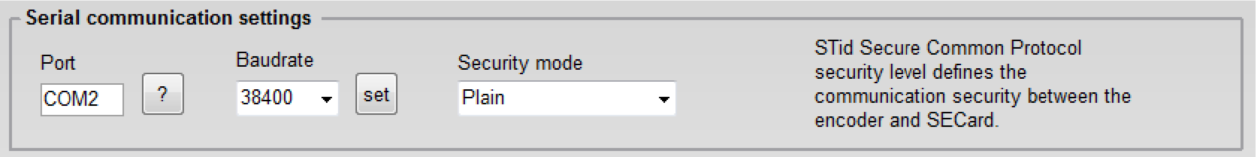
☑ Half duplex (for RS485 readers)

Firmware filename: SB227A01.hex

□ Recover mode

□ xBB

2- Configure the COM port at 38400 baud



Serial communication settings

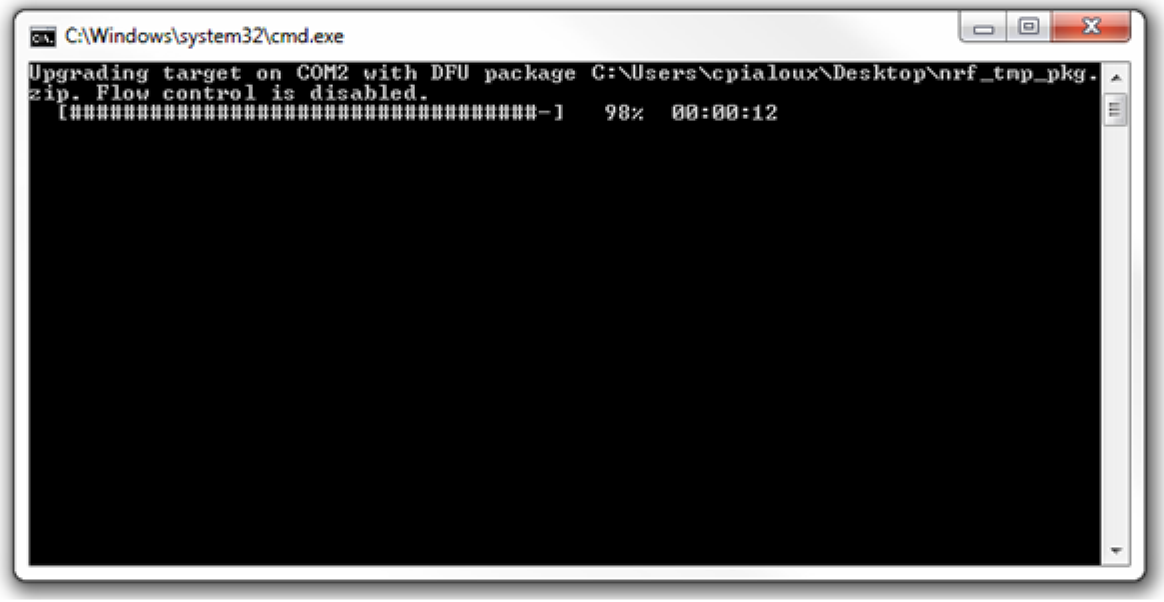
Port: COM2

Baudrate: 38400

Security mode: Plain

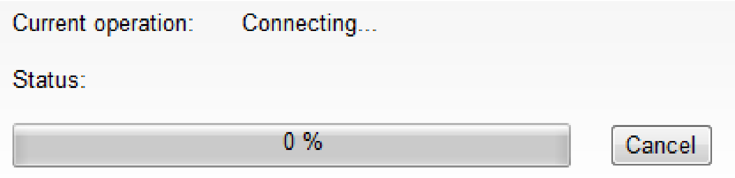
STid Secure Common Protocol security level defines the communication security between the encoder and SECard.

3- Click on Update Firmware.
A DOS Windows will open:



C:\Windows\system32\cmd.exe

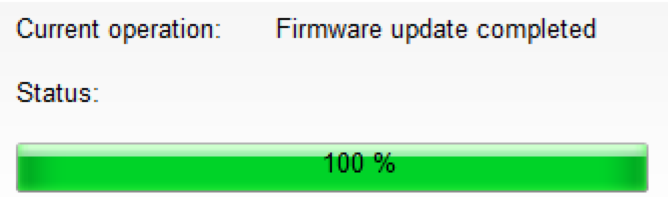
```
Upgrading target on COM2 with DFU package C:\Users\cpialoux\Desktop\nrf_tmp_pkg.
zip. Flow control is disabled.
  [######################################-]    98%   00:00:12
```



Current operation: Connecting...

Status:

0 %

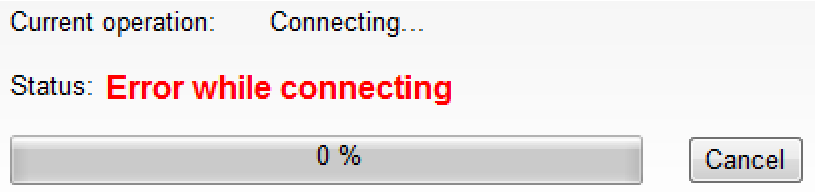


Current operation: Firmware update completed

Status:

100 %

Update error message

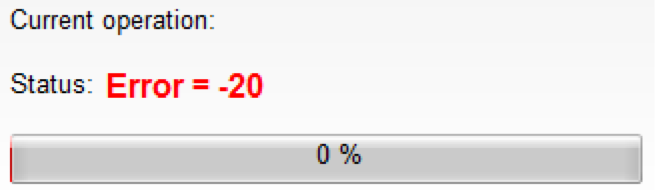
- 

  Current operation: Connecting...

  Status: Error while connecting

  - Check the COM port number
  - Check the Baudrate
  - Click on Update while the LED blinks orange for serial reader

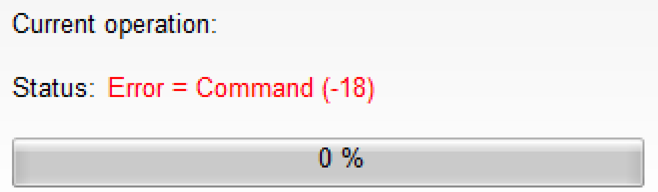
- During update if connection is break or power is off you have the message:

  Current operation:

  Status: Error = -20

  In this case you must power off the reader, select Recover mode, power on the reader and click on update firmware

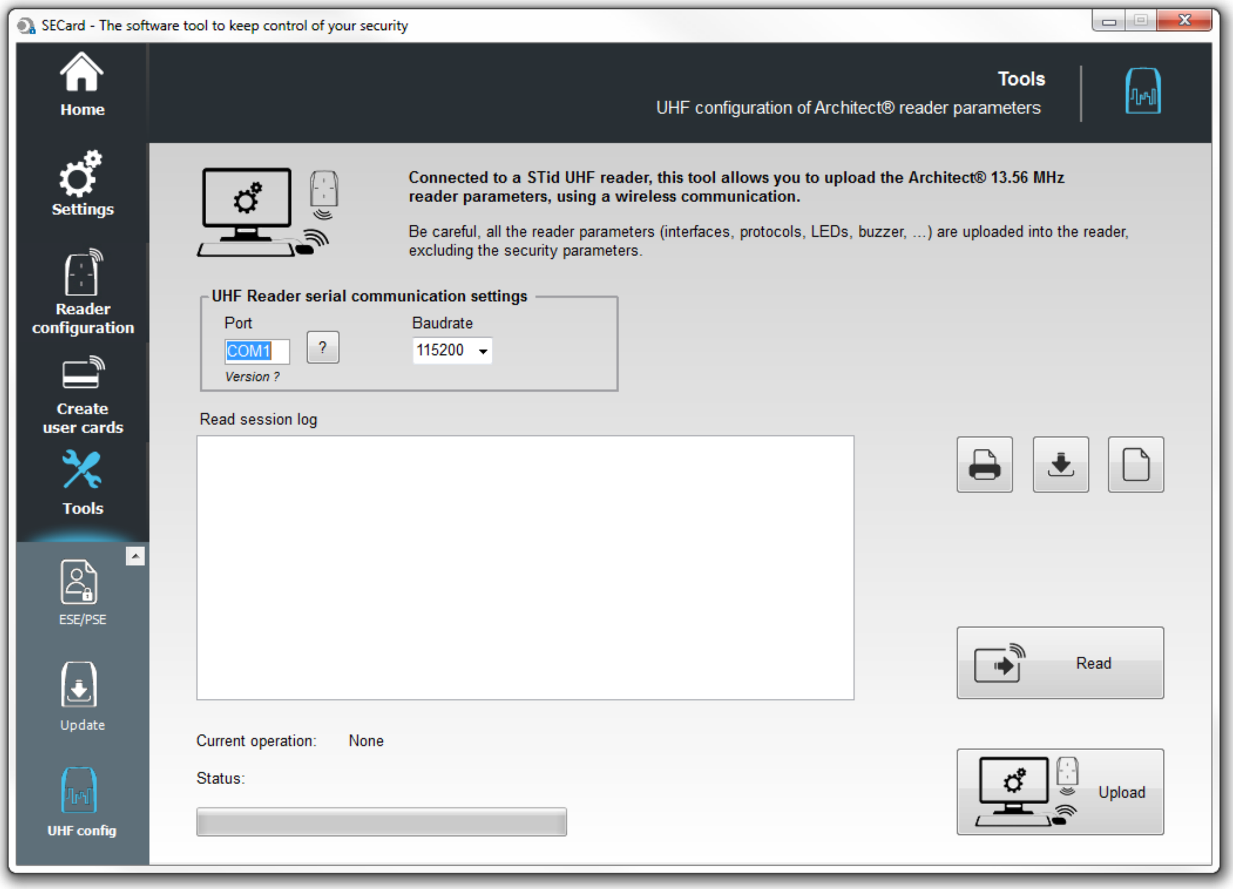
- 

  Current operation:

  Status: Error = Command (-18)

  - Check if the DLL FlashMagicARM and/or FlashMagicARMCortex are present in the root folder SECard.

VIII. 10 - UHF config



UHF configuration of Architect® reader parameters

Connected to a STid UHF reader, this tool allows you to upload the Architect® 13.56 MHz reader parameters, using a wireless communication.

Be careful, all the reader parameters (interfaces, protocols, LEDs, buzzer, ...) are uploaded into the reader, excluding the security parameters.

UHF Reader serial communication settings

Port: COM1 ?

Version ?

Baudrate: 115200

Read session log

Current operation: None

Status:

Read / write reader parameters of the current configuration in the UHF chip of ARC reader.

No key or any security is managed by this feature.

The tool uses the UHF write key filled in reader parameters to securely write the memory chip.

🖨	Print user’s operations.
⭳	Save user’s operations.
🗋	Clear user’s operations.

Enter the communication port and baudrate of UHF reader.

Warning

The read / write operations of the ARC UHF chip can only be done at power off, and with a UHF STid reader.

When the reader is power on, the UHF chip is automatically desactivate.

SECARD

USER MANUAL

Part 2: Technical

T1 - SECard configurable readers

T1.1 - SCB configurable

SECard has a mode for creating SCB card (Secured Configuration Badge).
With "*SCB*" cards we can configure according to reader security settings, all Architect® and WAL read only STid readers.

Reference type: ARCS-**R**3x-X/BT1-xx or ARCS-**S**3x-X/BT1-xx

T1.2 - OCB configurable

SECard has a mode for creating OCB card (osdp^{TM} Configuration Badge).
With "*OCB*" cards we can configure according to reader security settings, all Architect® and WAL osdp^{TM} STid readers.

Reference type: ARCS-W33-x/BT1-**7OS** firmware Z05 min

T1.3 - SCB R/W configurable

SECard has a mode for creating SCB R/W card.
With " SCB R/W " cards we can configure according to reader security settings, read and write Bluetooth® Architect® STid readers.

Reference type: ARCS-W33-x/BT1-**7AA**

T2 - About readers

T2.1 - Powering up read only reader

At power up the reader enters an initialization phase:

1) Activating LED white and activates buzzer for 100 ms.

2) Activating LED and buzzer according the code to indicate reader type and firmware version.

3) LED is blinking 20 times (waiting for an update). **Only available for RS232, RS485 and USB readers**.

4) For ARCS Blue only: Activating white fixed LED during Bluetooth® initialization.

Firmware version is denoted by the following color codes:

Red	**= +10**
Orange	**= +5**
Green	**= +1**

Firmware version must match with the one written on the label on the back of the reader.

Reader type is indicated by the buzzer following the code:

Long Beep	**= +5**
Short Beep	**= +1**

By adding beep heard (ex.1 long + 1 short = 6) the type of reader is obtained according to the table below:

Beep sum	Reader Type
1	R31/103 & Reader+INT-R33F/103
2	R31/PH1 only ARC1
3	R31/PH5 & R31/PH1 & Reader+INT-R33F/PH5
4	S31/PH5 & Reader+INT-S33F/PH5
5	Reader +INT-R33-E/PH5
6	R32/PH5 & R35/PH5 & R33/PH5
7	S32/PH5 & S35/PH5 & S33/PH5
8	Reader +INT-E-7AA/7AB
9	R33/PH1 only ARC1

T2.2 - Readers configuration

- R31/103 readers can only retrieve configuration from SCB after the initialization phase. So, you have to turn off reader, present a SCB, and turn the power on.
  Other readers retrieve configuration without the need to restart.

  To point out that reader successfully gets settings from SCB, reader beeps 5 times and LED is blinking quickly.

  Reader give some information about retrieving settings from SCB:

  - If the SCB version is greater than the SCB version defined by the firmware:
    ➔ LED is flashing red and buzzer is activated for 1 second.

  - If the SCB version is compatible with the SCB version defined by the firmware:
    ➔ LED is flashing green and buzzer is quickly emitting 5 beeps.

- SE8/SE8M
  If an old SCB/OCB that does not activate 125 kHz is presented in front of a reader equipped with an SE8M, the reader will operate normally at 13.56 MHz.

  If a reader already has an old configuration and an SE8M is then connected to the reader, the SE8M will not work until a new SCB/OCB is presented in front of the reader.

  If a reader equipped with an SE8M receives an SCB/OCB with activation of an SE8, the 125kHz of the SE8M will not be activated. Same operation, if a reader equipped with an SE8 receives a configuration for an SE8M. ➔The reader will flash red 3 times to indicate that the wrong type of reader has been activated by the SCB/OCB. The 13.56 MHz part will be functional.

T2.3 - ARC1 reader

- Specific reference ARC1-R31-A/PH1-xx and ARC1-R31-B/PH1-xx are able to read:

• MIFARE® Classic	-	Chip serial number or private Id
• MIFARE Plus®	-	Only chip serial number
• MIFARE® DESFire® EV1	-	Only chip serial number
• MIFARE Ultralight® C	-	Only chip serial number
• CPS3	-	Chip serial number or private Id contained in an Elementary File
• ISO14443-3B	-	Chip serial number PUPI

- Other ARC1 references read the same chip than other readers.

Note:
ARC One reader is configured as an ARC reader except in these three cases:

- If the Pulse mode is selected, the ARC1's LED will be fixed on the selected color.

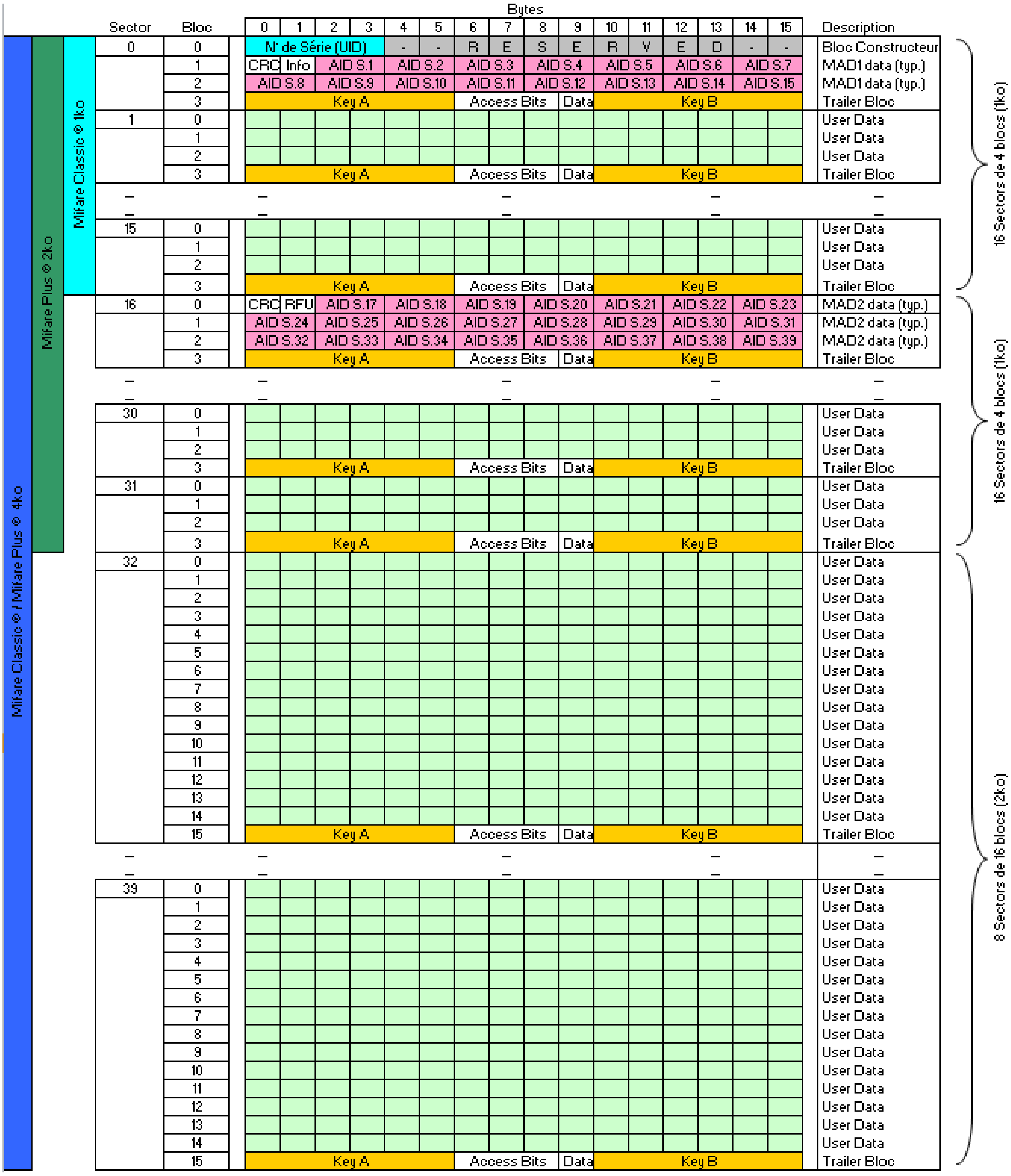
- If the ECO mode is selected, only the Scan time will be impacted (no impact on the LED brightness).

- If Biometric, Keypad and/or Touch Screen options are activated, they will not be taken into account.

T3 - About RFID chips

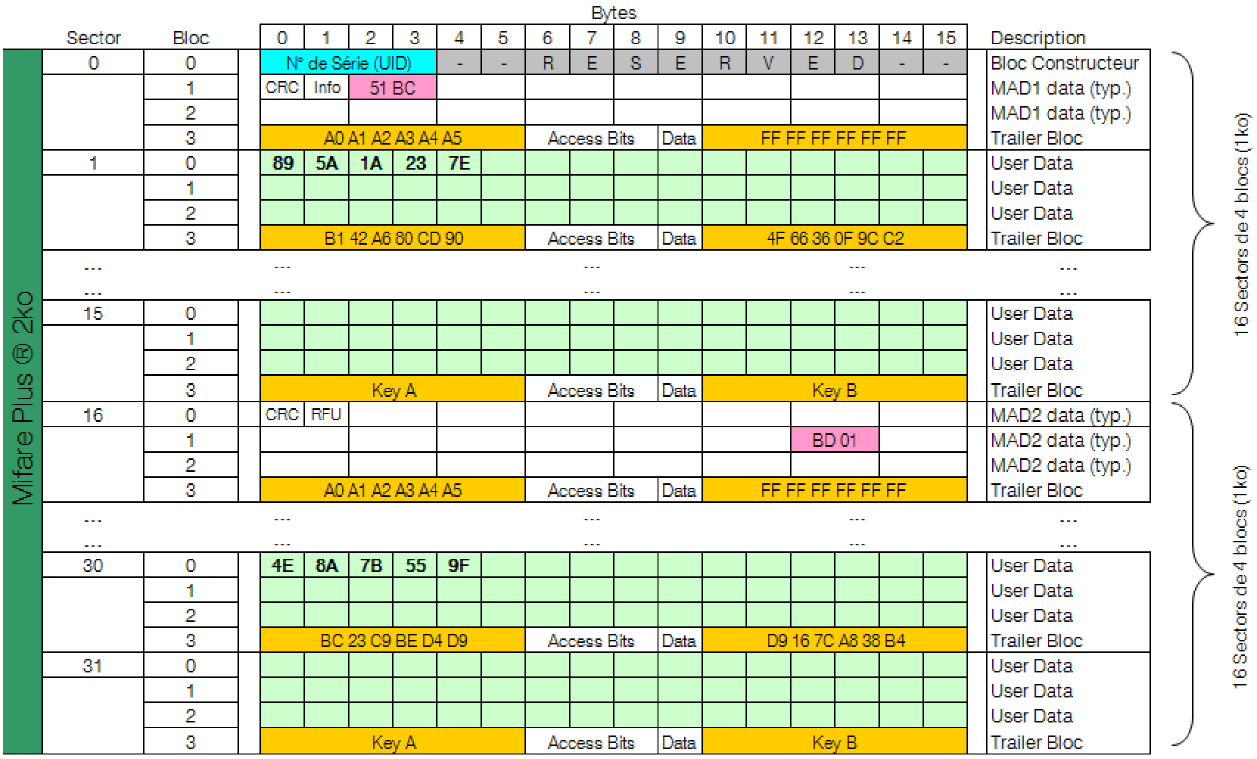
T3.1 - MIFARE® Classic and MIFARE Plus® memories mapping

Global memory map



					Bytes																	
			Sector	Bloc	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Description	
Mifare Classic ® / Mifare Plus ® 4ko	Mifare Plus ® 2ko	Mifare Classic ® 1ko	0	0	N° de Série (UID)				-	-	R	E	S	E	R	V	E	D	-	-	Bloc Constructeur	16 Sectors de 4 blocs (1ko)
				1	CRC	Info	AID S.1		AID S.2		AID S.3		AID S.4		AID S.5		AID S.6		AID S.7		MAD1 data (typ.)	
				2	AID S.8		AID S.9		AID S.10		AID S.11		AID S.12		AID S.13		AID S.14		AID S.15		MAD1 data (typ.)	
				3	Key A						Access Bits			Data	Key B						Trailer Bloc	
			1	0																	User Data	
				1																	User Data	
				2																	User Data	
				3	Key A						Access Bits			Data	Key B						Trailer Bloc	
			–	–	–							–						–			–	
			–	–	–							–						–			–	
			15	0																	User Data	
				1																	User Data	
				2																	User Data	
				3	Key A						Access Bits			Data	Key B						Trailer Bloc	
			16	0	CRC	RFU	AID S.17		AID S.18		AID S.19		AID S.20		AID S.21		AID S.22		AID S.23		MAD2 data (typ.)	16 Sectors de 4 blocs (1ko)
				1	AID S.24		AID S.25		AID S.26		AID S.27		AID S.28		AID S.29		AID S.30		AID S.31		MAD2 data (typ.)	
				2	AID S.32		AID S.33		AID S.34		AID S.35		AID S.36		AID S.37		AID S.38		AID S.39		MAD2 data (typ.)	
				3	Key A						Access Bits			Data	Key B						Trailer Bloc	
			–	–	–							–						–			–	
			–	–	–							–						–			–	
			30	0																	User Data	
				1																	User Data	
				2																	User Data	
				3	Key A						Access Bits			Data	Key B						Trailer Bloc	
			31	0																	User Data	
				1																	User Data	
				2																	User Data	
				3	Key A						Access Bits			Data	Key B						Trailer Bloc	
			32	0																	User Data	8 Sectors de 16 blocs (2ko)
				1																	User Data	
				2																	User Data	
				3																	User Data	
				4																	User Data	
				5																	User Data	
				6																	User Data	
				7																	User Data	
				8																	User Data	
				9																	User Data	
				10																	User Data	
				11																	User Data	
				12																	User Data	
				13																	User Data	
				14																	User Data	
				15	Key A						Access Bits			Data	Key B						Trailer Bloc	
			–	–	–							–						–			–	
			–	–	–							–						–			–	
			39	0																	User Data	
				1																	User Data	
				2																	User Data	
				3																	User Data	
				4																	User Data	
				5																	User Data	
				6																	User Data	
				7																	User Data	
				8																	User Data	
				9																	User Data	
				10																	User Data	
				11																	User Data	
				12																	User Data	
				13																	User Data	
				14																	User Data	
				15	Key A						Access Bits			Data	Key B						Trailer Bloc	

Example of partitioned memory: MIFARE Plus® Level 1



Sector	Bloc	Bytes																Description
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0	N° de Série (UID)				-	-	R	E	S	E	R	V	E	D	-	-	Bloc Constructeur
	1	CRC	Info	51 BC														MAD1 data (typ.)
	2																	MAD1 data (typ.)
	3	A0 A1 A2 A3 A4 A5						Access Bits			Data	FF FF FF FF FF FF						Trailer Bloc
1	0	89	5A	1A	23	7E												User Data
	1																	User Data
	2																	User Data
	3	B1 42 A6 80 CD 90						Access Bits			Data	4F 66 36 0F 9C C2						Trailer Bloc
...		...							...						...			...
...		...							...						...			...
15	0																	User Data
	1																	User Data
	2																	User Data
	3	Key A						Access Bits			Data	Key B						Trailer Bloc
16	0	CRC	RFU															MAD2 data (typ.)
	1													BD 01				MAD2 data (typ.)
	2																	MAD2 data (typ.)
	3	A0 A1 A2 A3 A4 A5						Access Bits			Data	FF FF FF FF FF FF						Trailer Bloc
...		...							...						...			...
...		...							...						...			...
30	0	4E	8A	7B	55	9F												User Data
	1																	User Data
	2																	User Data
	3	BC 23 C9 BE D4 D9						Access Bits			Data	D9 16 7C A8 38 B4						Trailer Bloc
31	0																	User Data
	1																	User Data
	2																	User Data
	3	Key A						Access Bits			Data	Key B						Trailer Bloc

Mifare Plus ® 2ko

16 Sectors de 4 blocs (1ko)

16 Sectors de 4 blocs (1ko)

In this case, MIFARE Plus® Level 1 chip contains two different encoded informations in sector 1 and 30, protected by two different keys.

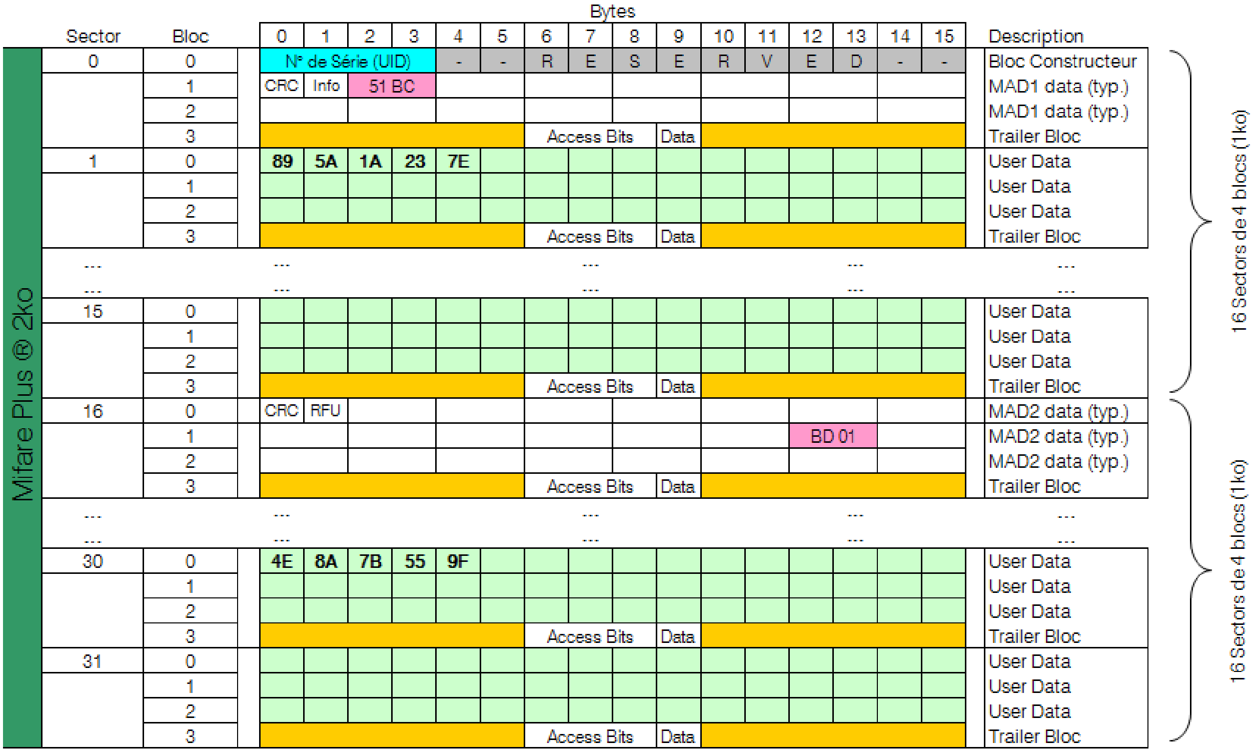
Each information is indexed in MAD at their respective location.

- ✓ Key A MAD: « *A0 A1 A2 A3 A4 A5* »
- ✓ Key B MAD: « *FF FF FF FF FF FF* »

- ✓ Sector 1 Key A: « B1 42 A6 80 CD 90 »
- ✓ Sector 2 Key B: « 4F 66 36 0F 9C C2 »

- ✓ Sector 30 Key A: « BC 23 C9 BE D4 D9 »
- ✓ Sector 30 Key B: « D9 16 7C A8 38 B4 »

Example of partitioned memory: MIFARE Plus® Level 3



Mifare Plus ® 2ko

Sector	Bloc	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Description	
0	0	N° de Série (UID)				-	-	R	E	S	E	R	V	E	D	-	-	Bloc Constructeur	16 Sectors de 4 blocs (1ko)
	1	CRC	Info	51 BC														MAD1 data (typ.)	
	2																	MAD1 data (typ.)	
	3							Access Bits			Data							Trailer Bloc	
1	0	89	5A	1A	23	7E												User Data	
	1																	User Data	
	2																	User Data	
	3							Access Bits			Data							Trailer Bloc	
...		...							...						...			...	
...		...							...						...			...	
15	0																	User Data	
	1																	User Data	
	2																	User Data	
	3							Access Bits			Data							Trailer Bloc	
16	0	CRC	RFU															MAD2 data (typ.)	16 Sectors de 4 blocs (1ko)
	1													BD 01				MAD2 data (typ.)	
	2																	MAD2 data (typ.)	
	3							Access Bits			Data							Trailer Bloc	
...		...							...						...			...	
...		...							...						...			...	
30	0	4E	8A	7B	55	9F												User Data	
	1																	User Data	
	2																	User Data	
	3							Access Bits			Data							Trailer Bloc	
31	0																	User Data	
	1																	User Data	
	2																	User Data	
	3							Access Bits			Data							Trailer Bloc	

Bytes

In this case, MIFARE Plus® Level 3 chip contains two different encoded informations in sector 1 and 30, protected by two different keys.

Level 3 *AES* keys are not stored in the 4th bloc of each sector, but in a specific memory area.

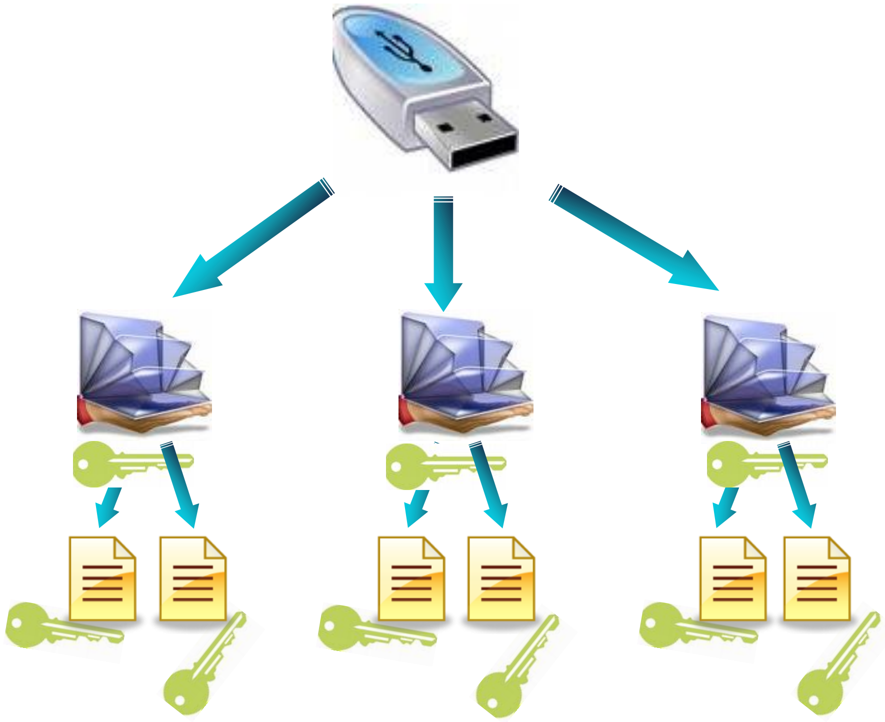
- ✓ Key A *AES* MAD: « *A0 A1 A2 A3 A4 A5 A6 A7 A0 A1 A2 A3 A4 A5 A6 A7* »
- ✓ Key B *AES* MAD: « *FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF* »

- ✓ Sector 1 AES Key A: « 11 10 8F 86 3E EA 98 5E CB 0C 4D 91 5E 0A 95 24 »
- ✓ Sector 1 AES Key B: « 9B E4 90 91 D7 45 B7 4A 7C 25 80 D3 52 5C 2D 6E»

- ✓ Sector 30 AES Key A: « 9A 55 AC 3F F7 AB 1C F5 BF 20 E6 73 60 29 F0 16 »
- ✓ Sector 30 AES Key B: « AA 20 40 AB FC 16 E2 49 BE FE 3F B3 42 5E 59 BE »

T3.2 - MIFARE® DESFire® and MIFARE® DESFire® EV1/2 chips memory mapping

Global memory mapping



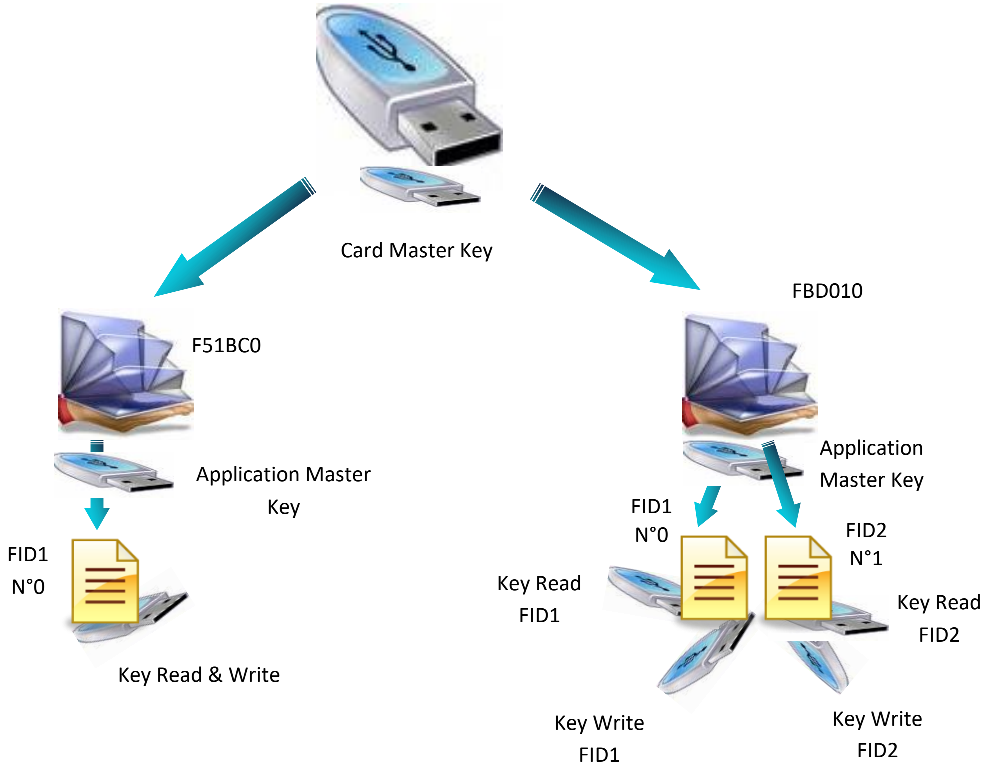
→ One root application.

→ Up to 28 applications.

→ Up to 32 files per application.

→ Up to 14 keys per application. Independent use for each file. (SECard use the maximum, 14 keys per application).

Example of partitioned memory



T3.3 - MIFARE Ultralight® and Ultralight® C memories mapping

Global memory mapping

			Bytes				
			0	1	2	3	Pages
Mifare UltraLight C ®	Mifare UltraLight ®	Chip serial Number 7 bytes	CSN0	CSN1	CSN2	BCC0	0
			CSN3	CSN4	CSN5	CSN6	1
		Internal Lock bytes	BCC1	INTERNAL	LOCK0	LOCK1	2
		OTP	OTP0	OTP1	OTP2	OTP3	3
		Data Read / Write	Data0	Data1	Data2	Data3	4
			...	...	...	...	...
			...	...	...	Data47	15
			Data48	Data49	...	...	16
			...	...	...	...	17
			...	...	...	...	...
			...	...	...	...	...
			...	...	...	...	...
			...	...	...	...	...
			...	...	...	...	...
			...	...	...	...	...
			...	...	...	...	...
			...	...	...	...	...
			...	...	Data142	Data143	39
		Lock bytes Auth. Configuration Counter	LOCK / AUTH / COUNTER				40-43
		Security Key	3DES AUTHENTICATION KEY				44-47

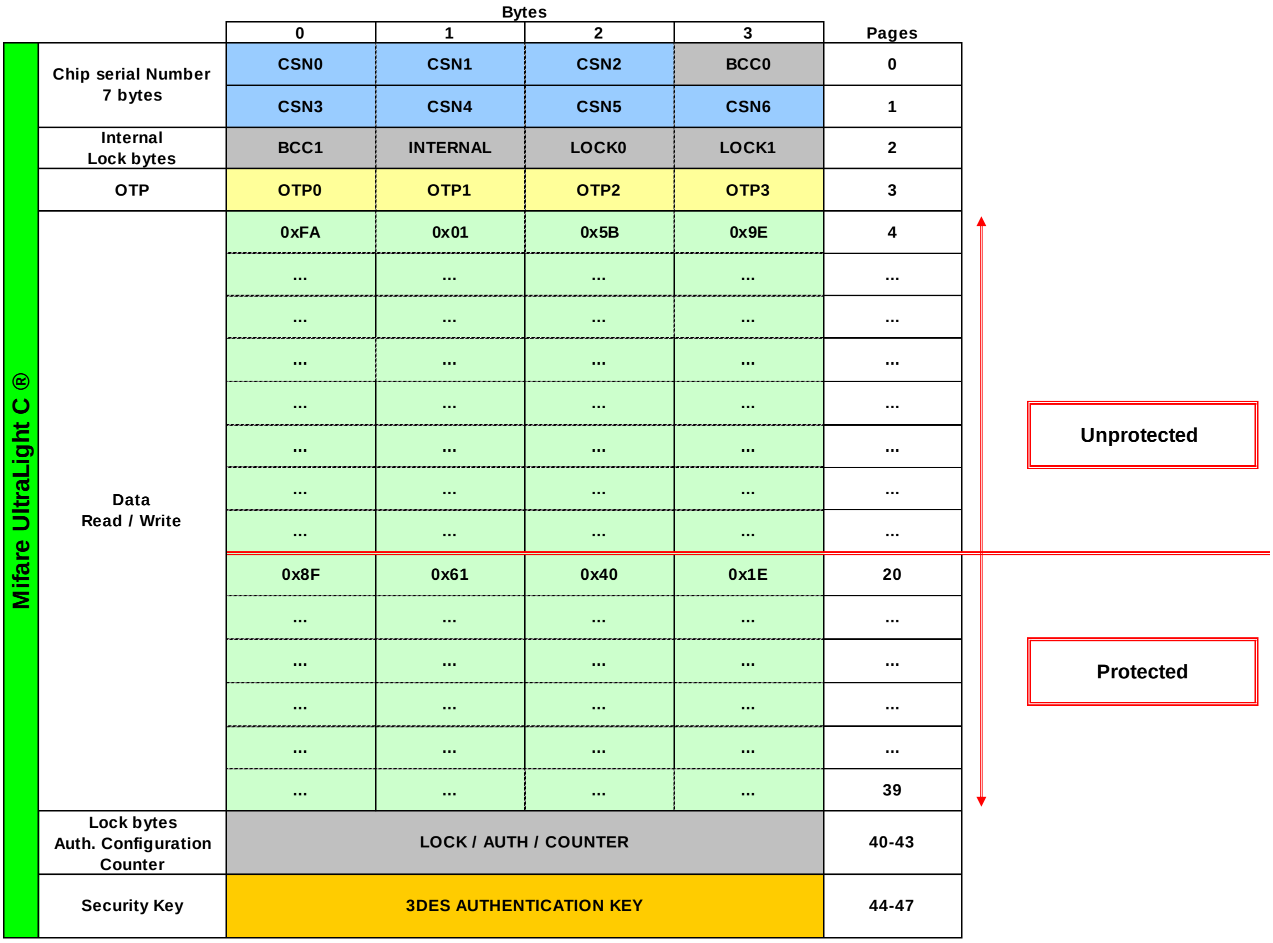
- ✓ MIFARE Ultralight® and Ultralight® C memory is divided into *Pages* of 4 bytes each.

- ✓ Read/Write part starts at *Page* 4. *Page* 3 is an OTP zone (One Time Programming). It can be encoded only once.

- ✓ Locking write operations or blocking of authentication (Lock bytes) are always made from a age to the last.

  Example: Locking write operations or blocking of authentication (Lock bytes) are always made from a page to the last.

Example of partitioned memory



		Bytes				
		0	1	2	3	Pages
Mifare UltraLight C ®	Chip serial Number 7 bytes	CSN0	CSN1	CSN2	BCC0	0
		CSN3	CSN4	CSN5	CSN6	1
	Internal Lock bytes	BCC1	INTERNAL	LOCK0	LOCK1	2
	OTP	OTP0	OTP1	OTP2	OTP3	3
	Data Read / Write	0xFA	0x01	0x5B	0x9E	4
		...	...	...	...	...
		...	...	...	...	...
		...	...	...	...	...
		...	...	...	...	...
		...	...	...	...	...
		...	...	...	...	...
		...	...	...	...	...
		0x8F	0x61	0x40	0x1E	20
		...	...	...	...	...
		...	...	...	...	...
		...	...	...	...	...
		...	...	...	...	...
		...	...	...	...	39
	Lock bytes Auth. Configuration Counter	LOCK / AUTH / COUNTER				40-43
	Security Key	3DES AUTHENTICATION KEY				44-47

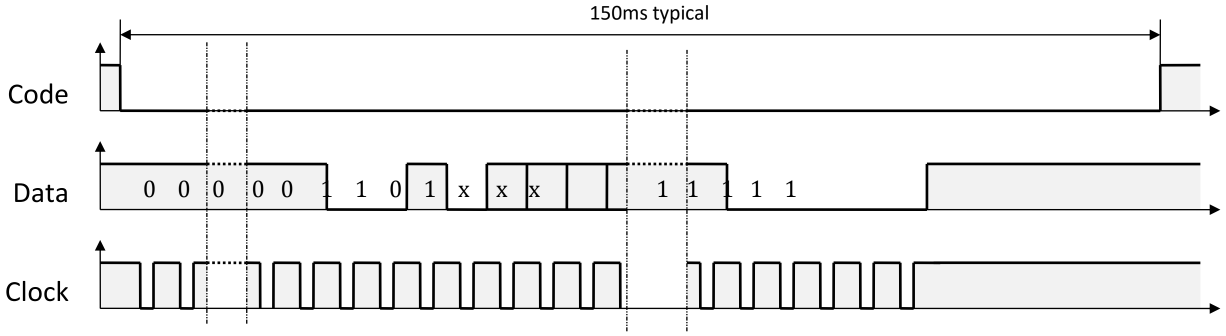
In the case above, the area from page 4 to page 41 included, is not read protected and do not require authentication with the 3DES key. The private code located in Page 4 will be readable without any constraint.

However, the area from Page 42 to Page 47 is protected. The private code located in Page 42 can only be read after authentication with the 3DES key.

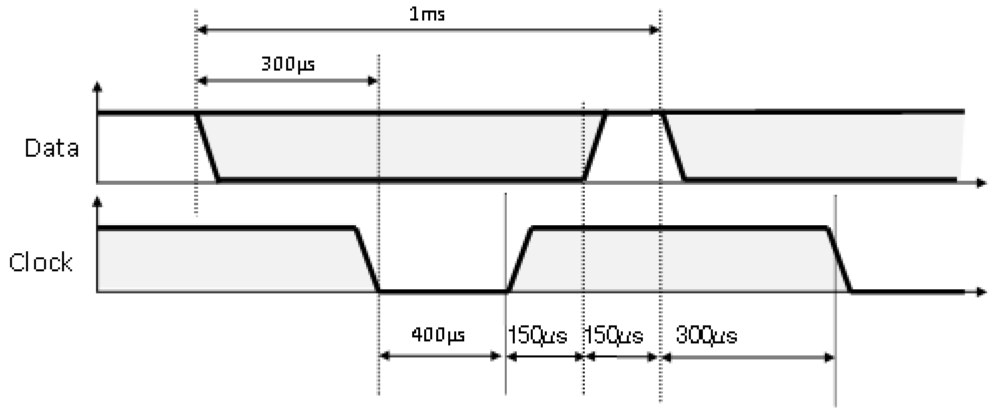
T4 - About TTL communication protocols

T4.1 - ISO2 Clock&Data protocol

Chronograms



Clock details



Message structure *(2B & 2H)*

Leading zeroes	*Start Sentinel*	*Datas*	*End Sentinel*	*LRC*	*Trailing zeroes*

Message description

The frame is made of a first series of 16 zero followed by synchronization characters of 5 bits (4 bits, LSB first, plus 1 parity bit). It ends the frame with trailing zero without a clock. The message consists of the following:

Start Sentinel:	1 character 1011b (0x0B) – parity bit 0. Transmission 1101 0
Data:	According to ID type: 13 or 10 decimal characters
End Sentinel:	1 character 1111b (0x0F) - parity bit 1. Transmission 1111 1
LRC:	1 control character, which is the « XOR » of all characters.

2B protocol (13 characters)

Reading an ID of 5 bytes (40 bits) and convert to decimal.

Variant	Decoding	Full frame of 112 bits	Values
2B	*Decimal (BCD)*	*13 characters*	*0 to 9*

Example:

For a hexadecimal user code of « 0x187E775A7F », the output code will be: « *0105200966271* ».
Frame sent by reader will be:

000...	1101 0	0000 1	1000 0	0000 1	1010 1	. . . .	0110 1	0100 0	1110 0	1000 0	1111 1	1111 1	000...
	B	*0*	*1*	*0*	*5*	*2 0 09 6*	*6*	*2*	*7*	*1*	*F*	*F*	
Zero	*S.S*	*Char.1*	*Char.2*	*Char.3*	*Char.4*	*Char ….*	*Char.10*	*Char.11*	*Char.12*	*Char.13*	*E.S*	*LRC*	*Zero*

2H protocol (10 characters)

Reading an ID of 4 bytes (32 bits) and convert to decimal.

Variant	Decoding	Full frame of 97 bits	Values
2H	*Decimal (BCD)*	*10 characters*	*0 to 9*

Example:

For a hexadecimal user code of « 0x06432F1F», the output code will be: « *0105066271* ».

Frame sent by reader will be:

000...	1101 0	0000 1	1000 0	0000 1	1010 1	. . . .	0110 1	0100 0	1110 0	1000 0	1111 1	0010 1	000...
	B	*0*	*1*	*0*	*5*	*0 6*	*6*	*2*	*7*	*1*	*F*	*4*	
Zero	*S.S*	*Char .1*	*Char .2*	*Char .3*	*Char .4*	*Char ….*	*Char .7*	*Char .8*	*Char .9*	*Char .10*	*E.S*	*LRC*	*Zero*

In the case of 5 bytes (40 bits) ID, reader will truncate the MSB byte (8 bits) before decimal conversion.

Specific reading for 125kHz identifier

Detection mode UID: 5-byte reading then converted to decimal and truncated to 10-characters

Detection mode Private ID: 5-byte reading then truncates to 4 and converted to decimal

2S Crosspoint protocol (10 characters)

Only available for low frequency part (125 kHz) of hybrid reader (BF5)

Variant	Decoding	Full frame of 112 bits	Values
2S	*Decimal (BCD)*	*9-10 characters*	*0 à 9*

BCD characters in frame are computed using:

- consider 3 Less Significant Byte.
- converting these hexadecimal byte into binary.
- inverting each bits of each byte

b7	b6	b5	b4	b3	b2	b1	b0	b7	b6	b5	b4	b3	b2	b1	b0	b7	b6	b5	b4	b3	b2	b1	b0
b6	b4	b7	b5	b1	b3	b0	b2	b6	b4	b7	b5	b5	b3	b0	b6	b1	b3	b1	b2	b4	b2	b0	b7
0	1	0	0	0	0	0	1	1	0	1	0	0	1	0	1	1	1	0	1	1	0	1	1
1	0	0	0	0	0	1	0	0	0	1	1	0	1	1	1	0	0	1	0	1	1	1	1

Byte [2] Byte [1] Byte [0]

- Converting binary value into hexadecimal then in BCD.

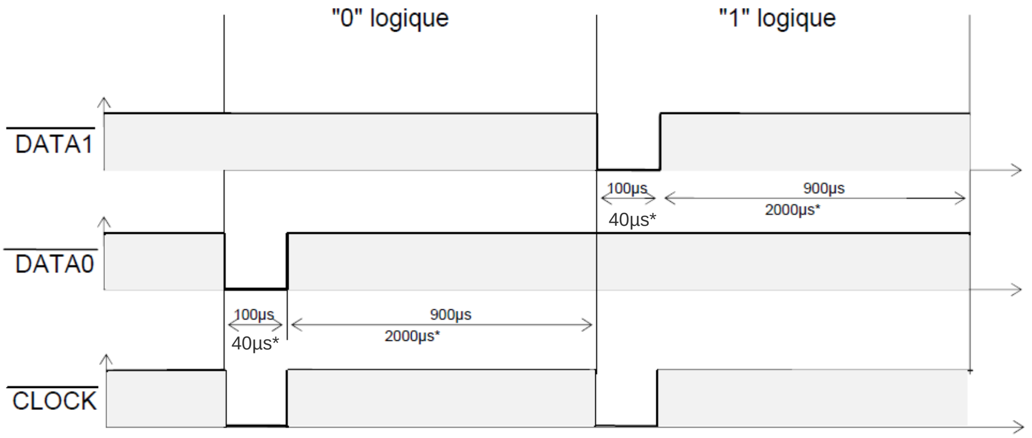
<u>Example</u>

For an id « 0x0A0041A5DB»:

SOURCE	41	A5	DB	0100 0001	1010 0101	1101 1011
Coding	82	37	2F	1000 0010	0011 0111	0010 1111

T4.2 - Wiegand Protocol

Chronograms



* variant 3i timings

Wiegand 3i protocol

Variant	Decoding	24 bits data	Values
3i	*Hexadecimal*	*6 characters*	*0 to F*

Message structure

Bit 1	Bit 2 ... Bit 25	Bit 26
Even parity from bit 2 to bit 13	*Data (24 bits)*	*Odd parity from bit 4 to bit 25*

Message description

The frame consists of 26 bits as follows:

First parity: *1 bit even parity of next 12 bit*
Data: *6 hexadecimal characters " MSB first "*
Last parity: *1 bit odd parity of previous 12 bits*

Example: for the hexadecimal code « *0x0FC350* », frame sent will be:

0	0000	1111	1100	0011	0101	0000	1
	0	*F*	*C*	*3*	*5*	*0*	
Parity	*Char.1*	*Char.2*	*Char.3*	*Char.4*	*Char.5*	*Char.6*	*Parity*

Note:
A site code is generally associated with the third octet (byte [2]). In the example above, it is 0x0F or 15 in decimal (up to 255 decimal - 0xFF in hexadecimal).

The card code is generally associated with the first and second byte (byte [1] and byte [0]). In the example above, it is 0xC350, 50000 in decimal (decimal max is 65535 - 0xFFFF in hexadecimal).

Wiegand 3CB protocol

Bit 1 ... Bit 40	Bit 41... Bit 44
Data « MSB first »	*LRC*

Message description

The frame consists of 44 bits as follows:

Data: 10 *hexadecimal characters « MSB first »*
LRC : *1 control char , all characters « XORed»*

Example: for the hexadecimal code « *0x01001950C3* », frame sent will be:

0000	0001	0000	0000	0001	1001	0101	0000	1100	0011	0011
0	*1*	*0*	*0*	*1*	*9*	*5*	*0*	*C*	*3*	*3*
Char.1	*Char.2*	*Char.3*	*Char.4*	*Char.5*	*Char.6*	*Char.7*	*Char.8*	*Char.9*	*Char.10*	*LRC*

Wiegand 3CA protocol

Bit 1 ... Bit 36	Bit 37... Bit 36
Data « MSB first »	*LRC*

Message description

The frame consists of 36 bits as follows:

Data: *8 hexadecimal characters « MSB first » (32 bits)*
LRC: *1 control char, all characters « XORed »*

Example: for the hexadecimal code « *0x001950C3* », the frame sent will be:

0000	0000	0001	1001	0101	0000	1100	0011	0010
0	*0*	*1*	*9*	*5*	*0*	*C*	*3*	*2*
Char.1	*Char.2*	*Char.3*	*Char.4*	*Char.5*	*Char.6*	*Char.7*	*Char.8*	*LRC*

Note: in the case of 5 bytes (40 bits) ID, reader will truncate the MSB byte (8 bits) before decimal conversion.

Wiegand 3LA protocol

Same as « *Wiegand 3CA* » WITHOUT LRC.

Wiegand 3LB protocol

Same as « *Wiegand 3CB* » WITHOUT LRC.

Wiegand 3T protocol

Bit 1 … Bit 8	Bit 9 … Bit 64	Bit 65… Bit 68
Chip type	*Data « MSB first »*	*LRC*

The frame consists of 68 bits as follows:

RFId Chip Type:	*1byte (8 bits)*
Data:	*14 hexadecimal characters « MSByte first » (56 bits)*
LRC:	*1 control character, all characters (4 bits) « XORed»*

« *Chip type*» indicates the type of chip read by the reader:

○ 0x40	➔	MIFARE® Classic
○ 0x41	➔	MIFARE® DESFire® / DESFire® Ev1
○ 0x42	➔	125 kHz (EM/Nedap/HID) + 125 kHz multi
○ 0x43	➔	MIFARE Ultralight® / Ultralight® C
○ 0x44	➔	MIFARE Plus® Level 0 / Level 2 / Level 3
○ 0x45	➔	PUPI ISO 14443-3B
○ 0x46	➔	CPS3
○ 0x47	➔	Moneo
○ 0x4A	➔	3.25 MHz chips (only range E)
○ 0x4E	➔	HCE
○ 0x50	➔	Undefined chip
○ 0x60	➔	BLE (Bluetooth Smart)
○ 0x70	➔	Wrench
○ 0x80	➔	Matrix Code (in UID mode)

Example for MIFARE® DESFire® chip:

For the hexadecimal code « 0x80AF01001950C3 », frame sent will be 0x4180AF01001950C3 B.

Example for MIFARE® Classic chip:

For the hexadecimal code « 0xA771FE4C », frame sent will be 0x40 000000A771FE4C 6.

Note:

- ✓ It is not possible to force site code in « UID » mode.
- ✓ In « PrivateID » mode, there is no Chip type sent. Only data (8 bytes) are sent.

Wiegand 3Eb Protocol

Variant	Decoding	32 bits data	Values
34 bits	*Hexadecimal*	*8 characters*	*0 to F*

<u>Message structure</u>

Bit 1	Bit 2 ... Bit 33	Bit 34
Even parity from bit 2 to bit 17	*Data (32 bits)*	*Odd parity from bit 18 to bit 33*

<u>Message description</u>

The frame consists of 34 bits as follows:

First parity: *1 bit even parity of next 16 bit*
Data: *8 hexadecimal characters " MSB first "*
Last parity: *1 bit odd parity of previous 16 bits*

Wiegand 3W Protocol

Variant	Decoding	32 bits data	Values
35 bits	*Hexadecimal*	*8 characters*	*0 to F*

<u>Message structure</u>

Bit 1-2	Bit 3 ... Bit 34	Bit 35
2 Even parity	*Data (32 bits)*	*Odd parity 5*

Wiegand 3V Protocol

Variant	Decoding	32 bits data	Values
37 bits	*Hexadecimal*	*8 characters*	*0 to F*

<u>Message structure</u>

Bit 1	Bit 2 ... Bit 36	Bit 37
Even parity from bit 2 to bit 19	*Data (35 bits)*	*Odd parity from bit 19 to bit 36*

<u>Message description</u>

The frame consists of 37 bits as follows:

First parity: *1 bit even parity of next 18 bit*
Data: 9 *hexadecimal characters " MSB first "*
Last parity: *1 bit odd parity of previous 18 bits*

<u>Exemple</u>

For hexadecimal code« *0x 0F3129DD3B* », frame is :

1	111	0011	0001	0010	1001	1101	1101	0011	1011	0
	7	*3*	*1*	*2*	*9*	*D*	*D*	*3*	*B*	
Parity	*Char.1*	*Char.2*	*Char.3*	*Char.4*	*Char.5*	*Char.6*	*Char.7*	*Char.8*	*Char.9*	*Parity*

T4.3 - Enciphered Wiegand protocol

The S31 readers send the enciphered information on a 128 bits Wiegand + 4 bits LRC (LRC in plain). The *AES* algorithm is used for this encryption AES key is that defined in “easy secure or Wiegand encryption AES key”, it must necessarily be different from 0xFF…FF.

Each frame is composed by a 12 bytes data packet, a random value coded on 2 bytes and a CRC-CCITT 16 bits (polynomial 0x1021, Initial value 0xFFFF).

If an ID value is more than 12 bytes, several frames will be emitted as shown below:

Data	***Random value***	***CRC***
12 bytes	***2 bytes***	***2 bytes***

Frame1 enciphered

Data	***Random value***	***CRC***
12 bytes	***2 bytes***	***2 bytes***

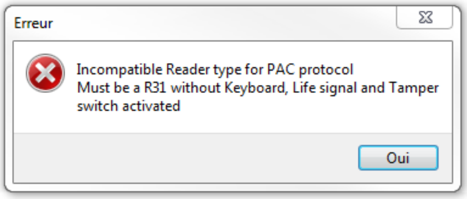
Frame 2 enciphered

Data	***Random value***	***CRC***
12 bytes	***2 bytes***	***2 bytes***

Frame 3 enciphered

T4.4 - PAC / PAC64 protocol

PAC/PAC64 protocols are available for read-only TTL readers (R31). There is no compatibility with the interfaces (INT or secure mode S31).



Incompatible Reader type for PAC protocol
Must be a R31 without Keyboard, Life signal and Tamper switch activated

Several options are not supported in these protocols:

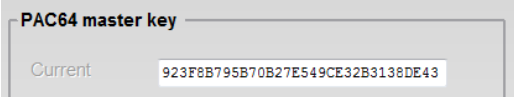
- No keypad mode.
- No management of life and tears signals.

Protocole PAC

- Available for all types of chips.
- No authentication.
- Scramble output.
- 4-byte data transmitted on the Tx output of the reader.

Protocole PAC64

- Only available for DESFire® et Mobile ID.
- For UID DESFire: reading the UID after authentication with the card master key and then sending data obfuscated on the output Tx.
- For Private ID DESFire: read data based on SECard security principles and then send data obfuscated on the output Tx.
- For Mobile ID: read data based on SECard security principles and then send data obfuscated on the output Tx.
- The PAC64 key used for authentication and obfuscation is to be set in SECard:



PAC64 master key
Current 923F8B795B70B27E549CE32B3138DE43

- 7-byte data transmitted on the Tx output of the reader. Byte 8 is calculated by the protocol and corresponds to the encryptionindex.

T5 - Serial communication protocol

T5.1 - Unidirectional communication mode

In this mode, the data are sent plainly. The communication is made from the reader to the system.

LED and buzzer are managed by the reader through the configuration in the *SCB* card.

It is possible to configure the structure of the message sent by the reader through the box "*Serial configuration*" and with the following:

✓ No leading zero:	Add on the frame leading zero (on start of frame).
✓ STX+ETX:	Add STX (0x02) and ETX (0x03) on start and end of the frame.
✓ CR+LF:	Carriage return option (0x0D + 0x0A)
✓ LRC:	Checksum byte by XORing of all previously characters without the STX.
✓ ASCII:	If this option is activated, the Data will be sent in ASCII mode.
✓ Base:	Data sent in decimal or hexadecimal format.
✓ Baudrate:	9600, 19200, 38400, 57600 or 115200 bauds.

"Data" part is the identifier code read or keys reader Card or Key mode

1 byte	***X bytes****	***1 byte***	***1 byte***	***1 byte***	***1 byte***
STX	*Data**	*LRC*	*0x0D*	*0x0A*	*ETX*

**Concerning the keypad reader, refer to T6 - About keypad readers*T6 - About keypad readers

✓ Wrenching Signal: If the option is activated, and if the state on the input "*SW*" or of accelerometer changes, the reader will send the byte *0xAA*.

✓ Life signal: If the option *"Life signal*" is activated, the reader will send a byte every minute to indicate its presence:

- Generic signal:	0x50
- Specific signal LXS/MXS/ATX:	0x50
- Specific signal LXE:	0x54
- Specific signal MS:	0x52
- Specific signal LXC:	0x55
- Specific signal WAL:	0x56
- Specific signal ARC:	0x61

Note:

- ✓ R33E/PH5 and S33E/PH5 readers are not addressable in this mode.
- ✓ The data size is doubled if the *ASCII* is activated.
- ✓ The field "*Size"* allows the modification of the data size sent by the reader.

T5.2 - Bidirectional communication mode

In this mode, the communication is done from the reader to the system for the transmission of the data and from the system to the reader for the LEDs and buzzer management.

In an idle state, the reader is going to manage the LEDs and buzzer according the configuration defined in the tab “*Default LED action*”.

Maximum 2 readers on the same BUS is recommended.

When reading a valid code (depending on the configuration defined in the wizard SCB), it is transmitted to system by the reader. It is then possible at this time and for a period of 1.5s to command the buzzer and LED via the transmission of a frame of the system

Note: Sign, Enciphered and Sign AND Enciphered mode are accessible only with readers *S32E, S35E/PH5* and *S33E/PH5*.
At the powering and after configure reader with SCB, the reader initiates communication (depending on the mode) with the host. If an error occurs in the communication process, the initialization of the communication is restarted every minute.
In this mode, the communication is done according the STid *SSCP* protocol. Consequently, it is possible to communicate in 4 different security modes:

- ✓ Plain
- ✓ Signed
- ✓ Encephered
- ✓ Signed and Encephered

✓ Plain

Data sent plainly

Complete frame sent by the reader

#02	Len	CTRL	CMD	Reserved	L$_{out}$	Data$_{out}$	CRC
1 byte	2 bytes	2 bytes	4 bytes	2 bytes	2 bytes	L$_{out}$ bytes	2 bytes

Complete frame sent by the system

#02	Len	CTRL	ACK	L$_{in}$	Data$_{in}$	Status	CRC
1 byte	2 bytes	2 bytes	2 bytes	2 bytes	L$_{in}$ bytes	2 bytes	2 bytes

✓ Signed

Data sent plainly and signed.
The signature algorithm used will be the reduced version of *HMAC-SHA-1*, i.e. the **first 10 bytes**).

Complete frame sent by the reader

#02	Len	CTRL	CMD	Reserved	L$_{out}$	Data$_{out}$	HMAC-SHA-1$_{k}$ (Commande)	CRC
1 byte	2 bytes	2 bytes	4 bytes	2 bytes	2 bytes	L$_{out}$ bytes	10 bytes	2 bytes

Complete frame sent by the system

#02	Len	CTRL	ACK	L$_{in}$	Data$_{in}$	Status	Signature HMAC-SHA-1$_{k}$ (Réponse)	CRC
1 byte	2 bytes	2 bytes	2 bytes	2 bytes	L$_{in}$ bytes	2 bytes	10 bytes	2 bytes

- ✓ **Enciphered**

Data sent enciphered.
The encryption algorithm used is *AES* using a 128 bits key

Complete frame sent by the reader

#02	Len	CTRL	C (Command)	..	C (Command) cont /end	Padding	Initialisation vector	CRC
1 byte	2 bytes	2 bytes	(k-1)*16 bytes	..	16-x bytes	X bytes	16 bytes	2 bytes

Complete frame sent by the system

#02	Len	CTRL	C (Respons)	..	C (Respons) cont /end	Padding	Initialisation vector	CRC
1 byte	2 bytes	2 bytes	(k-1)*16 bytes	..	16-x bytes	X bytes	16 bytes	2 bytes

- ✓ **Signed and enciphered**

Data sent signed and enciphered using the same algorithms described above.

Complete frame sent by the reader

#02	Len	CTRL	C (Command)	..	C (Command) cont/end	Padding	Initialisation vector	Signature	CRC
1 byte	2 bytes	2 bytes	(k-1)*16 bytes	..	16-x bytes	X bytes	16 bytes	10 bytes	2 bytes

Complete frame sent by the system

#02	Len	CTRL	C (Respons)	..	C (Respons) cont/end	Padding	Initialisation vector	Signature	CRC
1 byte	2 bytes	2 bytes	(k-1)*16 bytes	..	16-x bytes	X bytes	16 bytes	10 bytes	2 bytes

T5.2.1 Mutual authentication

The authentication and encryption communication system is based on two different session keys.

The two keys are generated during host / reader authentication from one random element and two known user keys for the reader and host.

A method for generating session keys **(k_C, k_S)** from user keys **(K_C, K_S)** therefore needs to defined (the user keys are used solely for generating session keys). This mechanism uses a specific encrypted dialogue for mutual authentication between the partners, before the session keys **(k_C, k_S)** are generated.
Where:

- ✓ **k_S** is the session key used for the *10-byte HMAC-SHA-1* signature algorithm
- ✓ **k_C** is the session key used for the *16-byte AES* cryptography algorithm
- ✓ **K_S** is the user key used to generate the *10-byte HMAC-SHA-1* signature key **(k_S)**
- ✓ **K_C** is the user key used to generate the *16-byte AES* cryptography key **(k_C)**

Warning

The default keys values are:
***K_S* = 0x FFFFFFFFFFFFFFFFFFFF**
***K_C* = 0x FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF**

We recommend changing the default values to improve the security

The initialization of the mutual authentication is done by the reader when the field "*Security Mode*" is not "*Plain*". This procedure is described in the documentation of the protocol SSCP:

- ✓ Spec_Protocole_5AA-7AA_MIFARE_GLOBAL_Vx.x.pdf

<u>Please ask us for these documents.</u>

T5.2.2 Message structure

The information transmitted by the host is formatted as follows:

#02	***Len***	***CTRL***	***CMD***	***Reserved***	***L_{out}***	***Data$_{out}$***	***CRC***
1 byte	**2 bytes**	**2 bytes**	**4 bytes**	**2 bytes**	**2 bytes**	**L_{out} bytes**	**2 bytes**

# 02	Start Of Frame (SOF) delimiter (on byte 02h)		
Len	Defines the length of the command to be sent (two bytes)		
CTRL	Two-byte word, with one byte that defines the serial link type used (RS485 or RS232) and one byte that defines the communication mode (plain text, encrypted, signed etc.…).		
	CTRL @	Defines the serial link type used (RS232 or RS485) (bit 0) and the reader address in the case of an RS485 link (bit 7 to bit 1)	***b7 – b1***: ***Reader Adress RS485*** ***1111 111 to 0000 000*** ***b0***: ***Serial link*** ***“0” RS232*** ***“1” RS485***
	CTRL Mode	Defines the communication mode (one byte).	○ 00h ➔ Non-secure mode - message sent in plain text. ○ 01h ➔ Signed mode ○ 02h ➔ Encrypted mode ○ 03h ➔ Signed and encrypted mode
CMD	Four-byte word, with two bytes that define the command type (reader, *Mifare DESFire* & *DESFire Ev1, Mifare Classic, Mifare Ultralight C* or *Mifare PLUS*) and two bytes that define the Command code to be sent.		
	RFU	1 byte	00h
	Type	Defines the command type (one byte)	00h ➔ Reader command 01h ➔ *Mifare Classic* command 02h ➔ *Mifare DESFire & DESFire Ev1* command 03h ➔ *Mifare Plus* command 05h ➔ *Mifare Ultralight C* command 09h ➔ *CPS3* command 0Bh ➔ *Biometric* command
	Code	Defines the Command code to be sent to the reader (two bytes)	
Reserved	AAh 55h (two bytes).		
L_{out}	Defines the length of data sent by the host (two bytes)		
Data$_{out}$	Represents the data sent by the host (e.g. in the case of a write command) (L_{out} bytes).		
CRC	CRC-^{16}-CCITT $_{[Len….Command]}$ ***[Polynomial “$x^{16} + x^{12} + x^{5} + 1$”*** 0x1021] ; ***Initial value 0xFFFF***		

The information transmitted by the reader is formatted as follows:

#02	*Len*	*CTRL*	*ACK*	*L_{in}*	*Data$_{in}$*	*Status*	*CRC*
1 byte	2 bytes	2 bytes	2 bytes	2 bytes	L_{in} bytes	2 bytes	2 bytes

# 02	Start Of Frame (SOF) delimiter (on byte 02h)		
Len	Defines the length of the command to be sent (two bytes)		
CTRL	Two-byte word, with one byte that defines the serial link type used (RS485 or RS232) and one byte that defines the communication mode (plain text, encrypted, signed etc.…).		
	CTRL @	Defines the serial link type used (RS232 or RS485) (bit 0) and the reader address in the case of an RS485 link (bit 7 to bit 1)	***b7 – b1*** ***Reader Adress RS485*** ***1111 111 to 0000 000*** ***b0*** ***Serial link*** ***“0” RS232*** ***“1” RS485***
	CTRL Mode	Defines the communication mode (one byte).	○ 00h ➔ Non-secure mode - message sent in plain text. ○ 01h ➔ Signed mode ○ 02h ➔ Encrypted mode ○ 03h ➔ Signed and encrypted mode
ACK	Start of Frame acknowledgement, identical to the Command code sent by host		
L_{in}	Defines the length of data to be received by the host (two bytes).		
Data$_{in}$	Data sent by the reader in response to the host command (L_{in} bytes).		
Status	Two-byte word, representing the status type (reader, *Mifare DESFire* & *DESFire Ev1, Mifare Classic, Mifare PLUS* or *Mifare Ultralight C*) and the command result code.		
	RFU	1 byte	00h
	Type	Defines the command type (one byte)	00h ➔ Reader command 01h ➔ *Mifare Classic* command 02h ➔ *Mifare DESFire & DESFire Ev1* command 03h ➔ *Mifare Plus* command 05h ➔ *Mifare Ultralight C* command 09h ➔ *CPS3* command 0Bh ➔ *Biometric* command
	Code	Defines the error code sent (one byte)	
CRC	CRC-^{16}-CCITT $_{\text{[Len….Command]}}$ ***[Polynomial “$x^{16} + x^{12} + x^{5} + 1$”*** 0x1021] ; ***Initial value 0xFFFF***		

T5.2.3 Available commands in plain mode

Output_Protocol

Description

This command is sent by the reader when it reads a valid tag and / or pin number. It's transmitted in hexadecimal. This return of this function informs the reader on the state to be applied to LED and buzzer.

Reader: CTRL CMD AAh 55h L_{out} $Data_{out}$

CMD *2 bytes*: 01h 00h

L_{out} *2 bytes:* $Data_{Len}$ Equal to the number of bytes of Data

$Data_{out}$ *x bytes*: Id value read in hexadecimal.

System: CMD L_{in} LedColor LedDuration BuzzerDuration 00h 00h

CMD *2 bytes*: 01h 00h

L_{in}*2 bytes*: 00h 03h (LedColor + LedDuration + BuzzerDuration)

LedColor *1 byte:* Byte indicating the LED color.
[00h … 03h]

- 00h Led off
- 01h Green Led
- 02h Red Led
- 03h Orange Led

LedDuration *1 byte*: This byte defines the LED colour-change duration in multiples of 100 ms [00h … FFh] where the value FFh keeps the LED on with the same colour for an indefinite period (until the next reader reset or the next time a value other than FFh is sent).

BuzzerDuration *1 byte*: This byte defines the buzzer activation duration in multiples of 100 ms [00h … FFh] where the value FFh keeps the buzzer on for an indefinite period (until the next reader reset or the next time a value other than FFh is sent).

Note

The reader has a 1.5s timeout to receive the response of the system for the control of LEDs and buzzer. Once this deadline has passed, it will not accept any frame until the next issue of the Output_Protocol order.

Life_Signal

Description

This command is sent by the reader each minute to keep the system informed about its presence.

Reader: CTRL CMD AAh 55h L_{out} $Data_{out}$

CMD *2 bytes*: 01h 02h

L_{out} *2 bytes:* 00h 02h Equal to the number of bytes of Data

$Data_{out}$ *2 bytes:* 00h + XXh ; with XXh:

- 01h Generic signal
- 01h Specific signal for LXS/LXC/MXS/ATX
- 03h Specific signal for MS
- 05h Specific signal for LXE
- 06h Specific signal for LXC
- 07h Specific signal for ARC

System: CMD L_{in} 00h 00h

CMD *2 bytes:* 01h 02h

L_{in} *2 bytes:* 00h 00h

Note

It is necessary to activate this option through the SCB Wizard of SECard software.

Wrenching_Signal

Description

This command is sent by the reader when it detects a state changing on the input "*SW*". That informs the system about an potential wrenching of the reader.

Reader: CTRL CMD AAh 55h L_{out} 00h

CMD *2 bytes:* 01h 03h

L_{out} *2 bytes:* 00h 01h Equal to the number of bytes of Data

System: CMD L_{in} 00h 00h 00h 00h

CMD *2 bytes:* 01h 03h

L_{in} *2 bytes:* 00h 00h

Note

It is necessary to activate this option through the SCB Wizard of SECard software.

Read_input

Description

This command is sent periodically by the reader to the system. It allows the system to control the activation of the LEDs and buzzer.

Reader: CTRL CMD AAh 55h 00h

CMD *2 bytes:*	01h 04h

System: CMD L_{in} LedGreen LedRed Buzzer 00h 00h

CMD *2 bytes:*	01h 04h
L_{in} *2 bytes:*	00h 03h
LedGreen *1 byte*:	01h inactive 00h active
LedRed *1 byte* :	01h inactive 00h active
Buzzer *1 byte:*	01h inactif 00h actif

Note

It is necessary to activate this option with desired pooling through the SCB Wizard of SECard software.

T5.2.4 Available commands in secured communication modes

The following commands are available in secured SSCP communication mode (i.e. Signed, Enciphered, Signed+Enciphered). In these communication modes you can also use all the command that use Plain mode.

Authenticate

Description

This command performs authentication for Signature AND/OR Encipherment with reader. It generates session's keys from user keys for selected SSCP communication mode.

ResetAuthenticate

Description

This command reset authentication for Signature AND Encipherment between reader and host.

ChangeReaderKeys

Description

This command allows you to change user keys for Signature AND/OR Encipherment with reader.

They are described in *SSCP documentation*:

- ✓ Spec_Protocole_5AA-7AA_MIFARE_GLOBAL_Vx.x_FR

Please ask us for these documents.

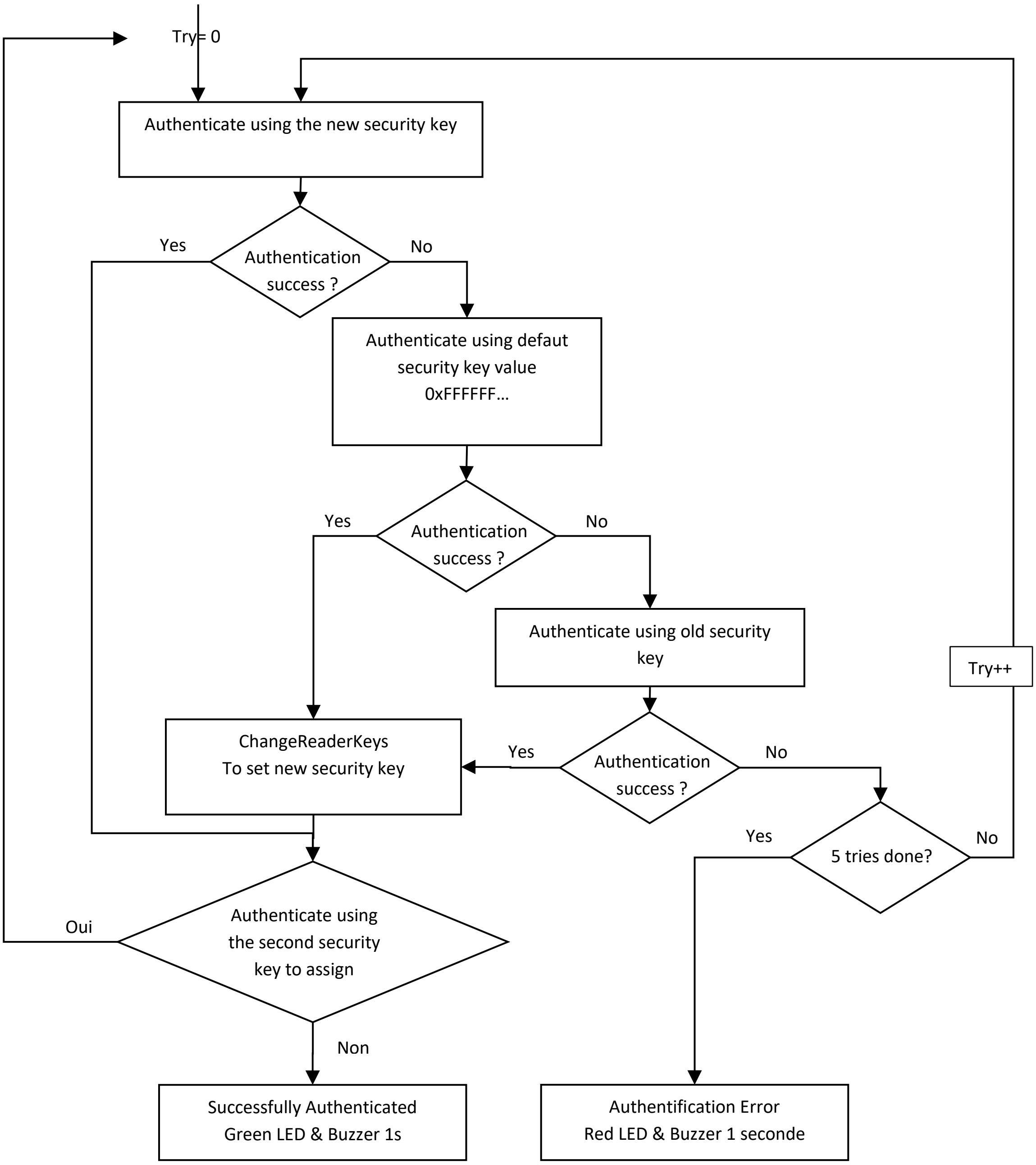
T5.2.5 Modification of the user keys

The encipherment *AES* “*Enc Key”* and signature “*Sign Key*” key be changed through SECard by ticking the case “*Change”* and filling the field with the new keys.

The modification is done through the specific reader command (***ChangeReaderKeys*** described in *SSCP* documentations – transmitted signed and enciphered).
This procedure is sent to the system from the reader when it detects a changing through the *SCB* card.

The security key is:

- ✓ Enciphering key for Enciphered communication
- ✓ Signing key for Signed
- ✓ Both for Enciphered and Signed communication, in this case Authentication procedure has to be done two times, one per key.


Try= 0
Authenticate using the new security key
Yes
Authentication success ?
No
Authenticate using defaut security key value 0xFFFFFF…
Yes
Authentication success ?
No
Authenticate using old security key
Try++
ChangeReaderKeys To set new security key
Yes
Authentication success ?
No
Yes
5 tries done?
No
Oui
Authenticate using the second security key to assign
Non
Successfully Authenticated Green LED & Buzzer 1s
Authentification Error Red LED & Buzzer 1 seconde

T6 - About keypad readers

T6.1 - TTL Readers - R31 - Card OR Keys

The reader works in mode a Card OR Key. If a valid card is presented or if a key is pushed (according the encoding mode), the code will be sent immediately, followed by a short beep of the reader.

About the encoding mode type 4, a keys sequence written is confirmed by pushing the key **'★'**. In this case, the code is transmitted according the encoding mode. There is a Timeout between two keys pushing for 6 seconds. If it happens, the sequence is cancelled.

Formats available

- **'1': « 4 bits framed »**
  Value is coded by 4 bits which are sent within a frame according the chosen protocol.

Format ISO2 LSB … MSB		
'0'	0000	0x00
'1'	1000	0x01
'2'	0100	0x02
'3'	1100	0x03
'4'	0010	0x04
'5'	1010	0x05
'6'	0110	0x06
'7'	1110	0x07
'8'	0001	0x08
'9'	1001	0x09
'#'	1101	0x0B

Format WIEGAND MSB … LSB		
'0'	0000	0x00
'1'	0001	0x01
'2'	0010	0x02
'3'	0011	0x03
'4'	0100	0x04
'5'	0101	0x05
'6'	0110	0x06
'7'	0111	0x07
'8'	1000	0x08
'9'	1001	0x09
'#'	1011	0x0B

In this case, 4 bits are sent LSB First within a frame according the chosen protocol. For more details, refer to the specification protocols.

Example: Frame of the key '5' according the protocol ISO2 / 2b.

In this case, 4 bits are sent MSB First within a frame according the chosen protocol. For more details, refer to the specification protocols**.**

Example: Frame of the key '5' according the protocol Wiegand / 3i.

000…	1101 0	1010 1	1111 1	xxxx x	000…
Zeros	**Start**	**'5'**	**End**	**LRC**	**Zeros**

0	0000	0000	0000	0000	0000	0101	1
Parity	**'0'**	**'0'**	**'0'**	**'0'**	**'0'**	**'5'**	**Parity**

✓ **‘2’** : **« 4 bits »**
Value is coded by 4 bits only which are sent according the chosen protocol.

Format ISO2 LSB … MSB		
‘0’	0000	0x00
‘1’	1000	0x01
‘2’	0100	0x02
‘3’	1100	0x03
‘4’	0010	0x04
‘5’	1010	0x05
‘6’	0110	0x06
‘7’	1110	0x07
‘8’	0001	0x08
‘9’	1001	0x09
‘#’	1101	0x0B

In this case, 4 bits are sent LSB First within a frame according the chosen protocol. For more details, refer to the specification protocols.

Example: Frame of the key ‘4’ according the protocol ISO2 / 2b.

0010
‘4’

Format WIEGAND MSB … LSB		
‘0’	0000	0x00
‘1’	0001	0x01
‘2’	0010	0x02
‘3’	0011	0x03
‘4’	0100	0x04
‘5’	0101	0x05
‘6’	0110	0x06
‘7’	0111	0x07
‘8’	1000	0x08
‘9’	1001	0x09
‘#’	1011	0x0B

In this case, 4 bits are sent MSB First within a frame according the chosen protocol. For more details, refer to the specification protocols**.**

Example: Frame of the key ‘4’ according the protocol Wiegand / 3i.

0100
‘4’

✓ **‘3’** : **« 8 bits »**
Value is coded by 8 bits which are sent according the chosen protocol (default configuration)

Format ISO2 LSB … MSB		
‘0’	11110000	0xF0
‘1’	01111000	0xE1
‘2’	10110100	0xD2
‘3’	00111100	0xC3
‘4’	11010010	0xB4
‘5’	01011010	0xA5
‘6’	10010110	0x96
‘7’	00011110	0x87
‘8’	11100001	0x78
‘9’	01101001	0x69

In this case, 8 bits are sent LSB First according the timings of chosen protocol. For more details, refer to the specification protocols.

Example: Frame of the key ‘4’ according the protocol ISO2 / 2b.

11010010
‘4’

Format WIEGAND MSB … LSB		
‘0’	11110000	0xF0
‘1’	11100001	0xE1
‘2’	11010010	0xD2
‘3’	11000011	0xC3
‘4’	10110100	0xB4
‘5’	10100101	0xA5
‘6’	10010110	0x96
‘7’	10000111	0x87
‘8’	01111000	0x78
‘9’	01101001	0x69

In this case, 8 bits are sent MSB First according the timings of chosen protocol. For more details, refer to the specification protocols.

Example: Frame of the key ‘4’ according the protocol Wiegand 3i.

10110100
‘4’

- **‘4’ : « X touche Trame »**
  4 bits keys framed – n keys within a frame according the chosen protocol.

Format ISO2 LSB … MSB		
‘0’	0000	0x00
‘1’	1000	0x01
‘2’	0100	0x02
‘3’	1100	0x03
‘4’	0010	0x04
‘5’	1010	0x05
‘6’	0110	0x06
‘7’	1110	0x07
‘8’	0001	0x08
‘9’	1001	0x09

In this case, 4 bits of n keys are sent LSB First within a frame according the chosen protocol. For more details, refer to the specification protocols. Only the keys ‘0’ to ‘9’ are available.

‘★’ Confirms the sequence. If **x=8**, the procedure is automatically confirmed and the code is sent.

‘#’ Cancels the current sequence.

Example: ‘4’ ‘5’ ‘9’ ‘★’ keys are pushed. The frame sent is 4 bits by keys according the protocol ISO2 / 2b.

000…	1101 0	0010 0	1010 1	1001 1	1111 1	xxxx x	000…
Zeros	**Start**	**‘4’**	**‘5’**	**‘9’**	**End**	**LRC**	**Zeros**

Format WIEGAND MSB … LSB		
‘0’	0000	0x00
‘1’	0001	0x01
‘2’	0010	0x02
‘3’	0011	0x03
‘4’	0100	0x04
‘5’	0101	0x05
‘6’	0110	0x06
‘7’	0111	0x07
‘8’	1000	0x08
‘9’	1001	0x09

In this case, 4 bits of n keys are sent MSB First within a frame according the chosen protocol. For more details, refer to the specification protocols. Only the keys ‘0’ to ‘9’ are available

‘★’ Confirms the sequence. If **x=8**, the procedure is automatically confirmed and the code is sent.

‘#’ Cancels the current sequence.

Example: ‘4’ ‘5’ ‘9’ ‘★’ keys are pushed. The frame sent is 4 bits by keys according the protocol Wiegand 3i.

0	0000	0000	0000	0100	0101	1001	1
Parity	**‘0’**	**‘0’**	**‘0’**	**‘4’**	**‘5’**	**‘9’**	**Parity**

Note

- *Maximum number of key = 8*
- *****xmax*** *= 6 maximum number of key for Wiegand 3i protocol. In this case values of keys are not automatically sent. It is necessary to confirm the sequence.*

T6.2 - TTL - R31 Reader - Card AND Keys

A keys sequence is requested (1 up to 9 keys depending of the configuration with keys **'1'** up to **'9'** only). There is a timeout of 6 seconds between the strikes of 2 digits. If the timeout is reached or keys **'★'** and **'#'** are pushed, the entire operation is aborted and needs to be entered (indicated by a sound and the red Led blinks).

When the pin number has been entered, the CLA is waiting for a card and for 6 seconds, for a card. During this waiting, the buzzer beeps.

All the data are sent when the sequence (card AND keys) is complete according the current protocol.

Key n°1 *4 bits Format*	Key n°2 *4 bits Format*	…	Identifier *n bits Format* *protocol size*

Example:
3 keys: 7, 8, 9 / Identifier 0x11223344 in hexadecimal, 287454020 in decimal
3CB-Wiegand protocol ➔ ouput = 0x**789***0011223344*(+LRC)
Iso 2b protocol ➔ output = **789***0000287454020*

T6.3 -TTL - S31 Reader - Card AND Keys

Keys and UID / Id will be sent to that following enciphered frames.

Data	***Random value***	***CRC***
12 bytes	***2 bytes***	***2 bytes***

Frame key

+

Data	***Random value***	***CRC***
12 bytes	***2 bytes***	***2 bytes***

Frame1

Data	***Random value***	***CRC***
12 bytes	***2 bytes***	***2 bytes***

Frame 2

Data	***Random value***	***CRC***
12 bytes	***2 bytes***	***2 bytes***

Frame …

T6.4 -TTL - S31 Reader - Card OR Keys

Keys enciphered frame and UID/Id enciphered frame will be sent independently. They are enciphered using «Enciphered Weigand output key».

Data	***Random value***	***CRC***
12 bytes	***2 bytes***	***2 bytes***

Enciphered frame1

Data	***Random value***	***CRC***
12 bytes	***2 bytes***	***2 bytes***

Enciphered frame2

Data	***Random value***	***CRC***
12 bytes	***2 bytes***	***2 bytes***

Lest Enciphered frame

Example for key 1 pressed

Value is coded by 4 bits which are sent within a frame according the chosen protocol.
Data (12o) = 0x10 00 00 00 00 00 00 00 00 00 00 00

Value is coded by 4 bits only which are sent according the chosen protocol
Data (12o) = 0x10 00 00 00 00 00 00 00 00 00 00 00

Value is coded by 8 bits which are sent according the chosen protocol.
Data (12o) = 0xE1 00 00 00 00 00 00 00 00 00 00 00

Example for key 1, 5, 7 pressed

4 bits keys framed – n keys within a frame according the chosen protocol.
Protocol W3i: Data (12o) = 0x00 01 57 00 00 00 00 00 00 00 00 00
Protocol W3Ca: Data (12o) = 0x00 00 01 57 00 00 00 00 00 00 00 00
Protocol ISO2B: Data (12o) = 0x00 00 00 01 57 00 00 00 00 00 00 00

T6.5 - RS232 / RS485 - R32/S32/R33/S33 Readers - Card OR Keys

No difference between hexadecimal and decimal mode.

The data are coded by 8 bits as shown below:

Value of the key **MSB … LSB**		
‘0’	11110000	0xF0
‘1’	11100001	0xE1
‘2’	11010010	0xD2
‘3’	11000011	0xC3
‘4’	10110100	0xB4
‘5’	10100101	0xA5
‘6’	10010110	0x96
‘7’	10000111	0x87
‘8’	01111000	0x78
‘9’	01101001	0x69

Mono directional mode

Refer to the chapter *T5.1 - Unidirectional communication mode* for more details about the options of the frame.

Regarding the Card OR Keys configuration, the structure of the frame is:

1 byte	***1 byte*** *	***1 byte***	***1 byte***	***1 byte***	***1 byte***
STX	*Key code*	*LRC*	*0x0D*	*0x0A*	*ETX*

**Doubled if the ASCII option is activated.*

Bidirectional mode

Refer to the chapter

T5.2 - Bidirectional communication mode for more details about the bi-directional communication of the reader.

In Card OR Keys mode, the card data is sent through the ***Output_Protocol.*** The **<u>keyboard data</u>** are sent through the command described below:

Output_Keyboard

<u>Description</u>

This command is generated by the reader when you press a keyboard key in Card OR Key mode.

<u>Reader</u>: CTRL CommandCode AAh 55h L_{out} Data$_{out}$

CommandCode *2 bytes:*	01h 07h
L_{out} *2 bytes:*	00h 03h
Data$_{out}$ *3 bytes:*	00h 01h “Value of key pressed 8 bits format”.

<u>System</u>: ACK L_{in} 00h 00h

ACK *2 bytes:*	01h 07h
L_{in} *2 bytes:*	00h 00h

<u>Example for key 0 and RS485 address 0</u>:
Reader sends: 02 00 0B 01 00 00 00 01 07 AA 55 00 03 00 01 F0 03 75.
System answers: 02 00 04 01 00 01 07 00 00 46 7C.

T6.6 - RS232 / RS485 - R32/S32/R33/S33 Readers - Card AND Keys

The encoding key is in 8bits format, number of key to press is configured by the configuration card SCB.

Mono directional mode

Refer to the chapter *T5.1 - Unidirectional communication mode* for more details about the options of the frame.

Regarding the Card AND Keys configuration, the structure of the frame is:

1 byte	***X bytes***	***X bytes***	***1 byte***	***1 byte***	***1 byte***	***1 byte***
STX	*Key code**	*Data**	*LRC*	*0x0D*	*0x0A*	*ETX*

**Doubled if the ASCII option is activated.*

Example in mode Card AND Keys:

✓ 3 keys:	*7, 8 et 9*
✓ Identifier:	0x11223344 in hexadécimal and 287454020 in decimal.
✓ Protocol size:	5 bytes
✓ Output hexadecimal format:	0x*877869* 11223344
✓ Output decimal format:	*877869*0000287454020

Bidirectional mode

Refer to the chapter

T5.2 - Bidirectional communication mode for more details about the bi directional communication of the reader

In Card AND Keys mode, the card data is sent through the ***Output_Protocol.***

T7 - Biometric data format

T7.1 - Biometric Templates format

The information which contains the fingerprints data is contained into a specific MIFARE® DESFire® EV1/2 file or in sectors 32 up to 39 for MIFARE Plus® Level 3 and defined in the “*Biometric*” part.

- ✓ When it is created, SECard defines the size according to: Number of fingers * 170 bytes.
- ✓ The biometric templates are written according to the Morpho Sagem format (PK_COMP).
- ✓ Mapping of the MIFARE® DESFire® EV1 file or MIFARE Plus® Level 3 sectors:

MSB *LSB*

[**LenTotale**] | [**Nb Template**] | [**LenTemplate**$_x$ **| Template**$_x$] ^{n}

- ✓ **LenTotale** is the total lenght data to write on the chip on 2 bytes.
- ✓ **Nb Template** is the template number (max 5), on 1 byte.
- ✓ **LenTemplate**$_x$ is the size of the Xth template on 1 byte.
- ✓ **Template**$_x$ is the Xth template with **LenTemplate**$_x$.
- ✓ n is the number of templates.

Number of MIFARE Plus® Level 3 sectors to be written depends on the numbers of fingers to be encoded. The maximum size is: 2+5*(1+170) = 857 bytes. (cf. Sagem).

T7.2 - Biometric derogation

From version 3.1, you can activate a biometric derogation template when encoding a user card.

The user will not be asked to encode their fingerprints, a derogation template will be encoded instead.

This option allows you to set the reader whether to authorize or not the user cards using the biometric derogation.

When the biometric derogation is activated, the cards can be encoded “on-the-fly” if the system is designed to do so.

$$\mathrm{TemplateDerogation} = \mathrm{SHA2}(\mathrm{salt}\ |\mathrm{UID}, \mathrm{UIDLen})$$

- ✓ **salt** 16 bytes private fixed value
- ✓ **UID** chip serial number
- ✓ **UIDLen** lenght of UID

T8 - Management of biometric + Keypad

T8.1 - Biometric with templates into the user card

Mode 1: Key **OR** (Card **AND** biometric).

The operation is identical to Card OR Key, with the addition of the reading of the fingerprint after reading the card.

Mode 2: Key **AND** (Card **AND** biometric).

The operation is identical to Card AND Key, with the addition of the reading of the fingerprint after reading the card.

T8.2 - Biometric with data into the reader

Mode 1: Key **OR** biometric.

Mode 2: Key **AND** biometric.

T9 - Biometric data into the reader

In this mode the biometric templates are store in the Sagem Biometric module.

The module makes the matching of the fingerprints read and fingerprints store in memory without the template goes back to the reader. This mode is compatible with all chip technologies available in SECard.

The users number is set to maximum 500 users with two fingers saved per user.
Three cards are required to manage the reader in this mode. The Master key used to protect this three card is the key defined in Company key (SCB master key) and diversified.

Warning

The ID size max registered into the biometric module is 24 bytes.

If you used Biometric Data into reader the Private ID encoded must be on 24 bytes max.

The first step before initializing the database, is to present the configuration card SCB to configure the reader into "Biometric Data into reader" mode.

Initialize user data base

This card is used to initialize the biometric user databate into the module.

Operating mode

With TouchScreen reader default text are		Without TouchScreen
	- *Userbase initialization in progress*. - *Successful userbase initialization*	The green LED is activated and buzzer emit two long BIP to indicate that the card was taken into account by the reader.
If an error occurs during the procedure:		
	- *Userbase initialization failure* - *Biometrics sensor not detected or not configured*	The red LED is lights and the buzzer is activated 1s. the reader returns into its original operating mode.

Warning

Initialize user database erase the current database

Add user

This card is used to add an user into the module database. User's templates are associated with its user ID (UID or Private ID).
When the Add_User card is detected by the reader, it goes into enrollment mode for 6sec and awaits a user card.
If the user card is compatible with the site configuration, the reader retrieves the user ID and the biometric module goes ON to enroll two fingers.
The two templates are store into the module memory, associating them to the user ID.

Operating mode

With TouchScreen reader default text are	Without TouchScreen
When the Add_User card is detected by the reader	
Present the user credential to add	The white LED lights.
When the User card is read	
Scan 2 fingers *2 secondes per finger* *3 times each finger*	The green LED lights and buzzer is activated 400ms, then White LED lights and user must present its first finger 3 times then user must present its second fingers 3 times (biometric module on and off successively for entering each finger).
When the enrollment is finished	
Successful enrolment	The green LED lights and buzzer is activated 400ms
If an error occurs during the procedure:	
Enrolment failure	The red LED is lights and the buzzer is activated 1s. The reader returns into its original operating mode.

Remove user

This card is used to remove an user from the module database.

When the Remove_User card is detected by the reader, it goes into erase mode for 6sec and awaits a user card.
If the user card is compatible with the site configuration, the reader remove the user attached to the user ID read.

With TouchScreen reader default text are	Without TouchScreen
- When the Remove_User card is detected by the reader: *Present the user credential to delete*	- When the Remove_User card is detected by the reader, the white LED lights. - When the User card is read, green LED lights and buzzer is activated 400ms, then white LED lights during erasing of the templates from the memory.
When the erasing is finished	
User deleted	The green LED lights and buzzer is activated 400ms
If an error occurs during the procedure:	
Deletion failure	The red LED is lights and the buzzer is activated 1s. the reader returns into its original operating mode.

Other text on TouchScreen reader:

Indicate that the database is empty	*Caution, empty database*
Indicate that the database is full	*Caution Full userbase*
Indicate that the database does not exist	*No recorded userbase*
Indicate that the badge ID is already present in the database	*User credential already registered*
Indicate that the templates are already present in the database	*Fingerprints already registered*

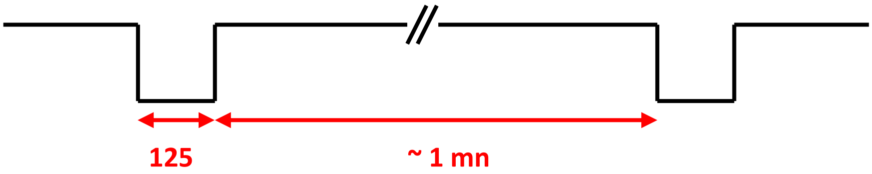
T10 - Life signal function

T10.1 - TTL- Readers

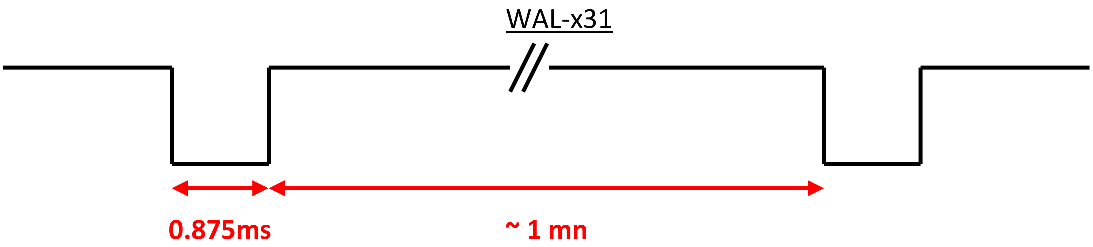
When this feature is enabled, the reader sends a signal about every minute on the Data/DATA1 lines.

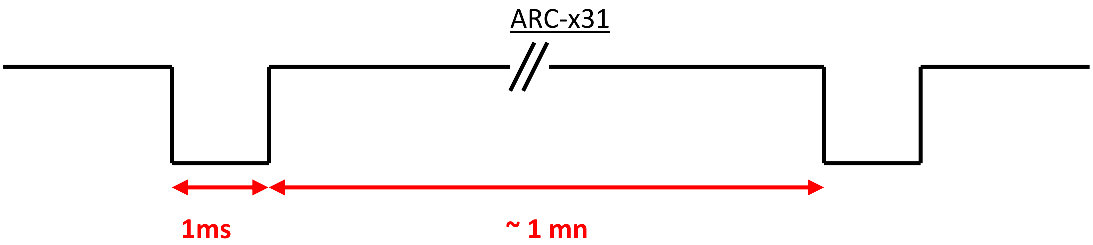
The life signal can be activated in a generic (Generic life signal - a life signal common to all readers) and (Specific life signal – life signal different for each reader).

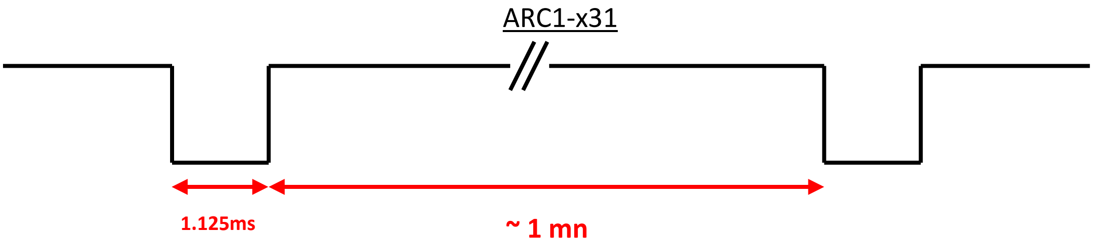
***Generic life signal**:*

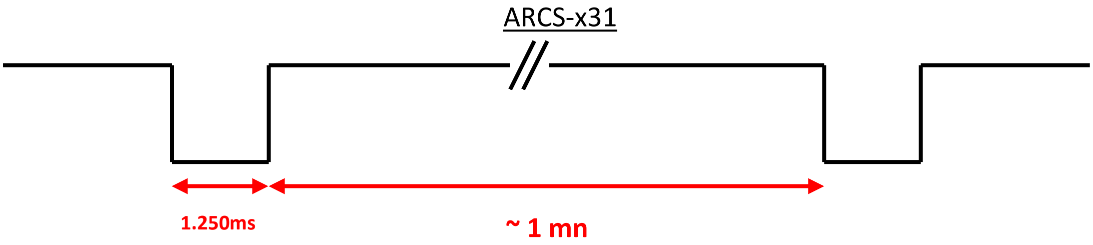


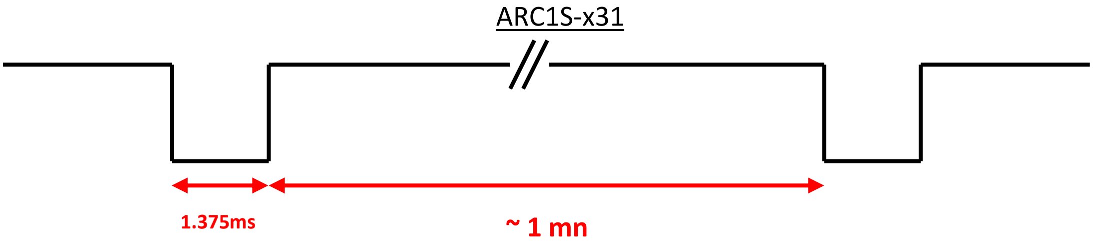
***Specific life signal**:*



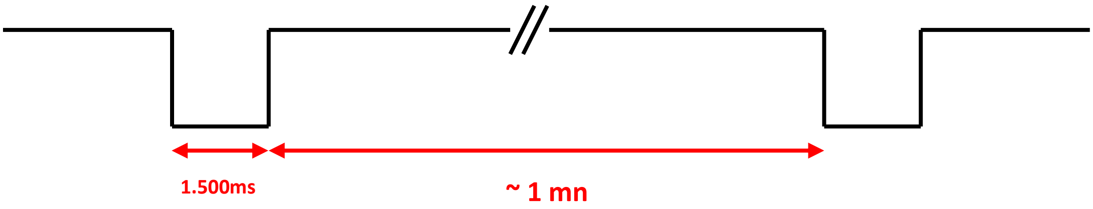




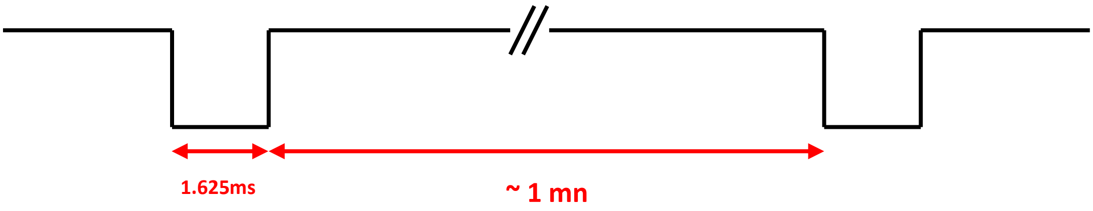




MS2-x31



MS2S-x31



T10.2 - Bidirectional serial reader

Reader send in plain on the serial link the command code 0x0102.

Data = x * 125us (example: for ARC-R32/R33, x = 8)

T10.3 - Unidirectional serial reader

Reader send on the serial kink the command code:

Generic: 0x50

Specific:

ARC-R32/R33= 0x61

ARC1-R33 = 0x62

ARCS-R33 = 0x63

ARC1S-R33 = 0x64

MS2-R31 = 0x65

MS2S-R31 = 0x66

Specific Gamme E:

LXS-R32/R33= 0x50

MS-R31 = 0x52

LXE-R32/R33 = 0x54

LXC-R32/R33 = 0x55

WAL-R32/R33 = 0x56

T11 - Tamper switch signal

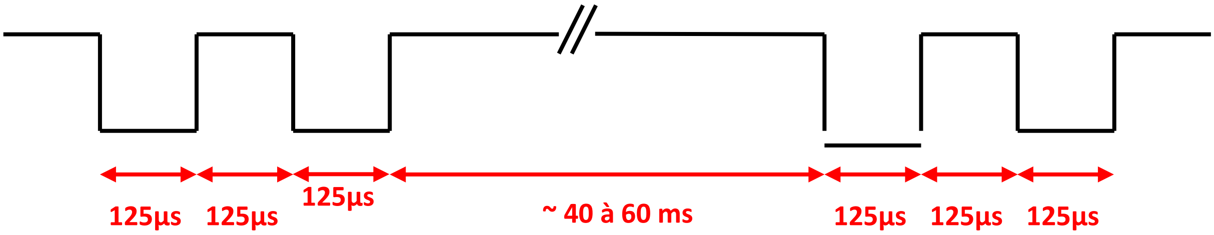
When this feature is enabled, the reader remembers (at startup) its initial state of « ***Switch*** » input or accelerometer.

T11.1 - TTL- Readers

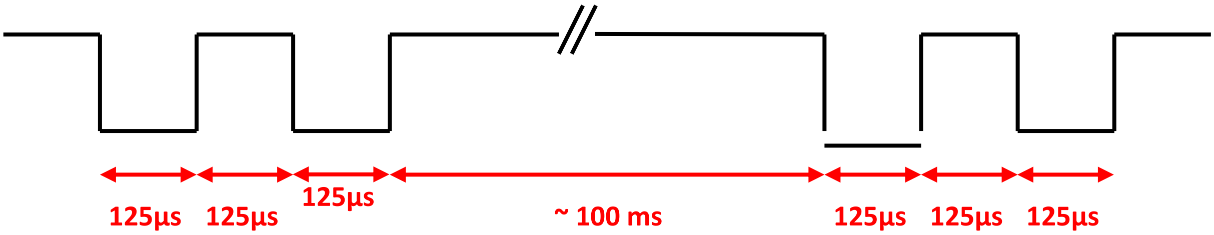
At each moment when that state changes, the reader sends a Tamper signal to the line « ***Data/Data 1*** ».

During the breakout, by default or if the option is enabled, the shape of the signal on the line "Data / Data 1" is as follows:

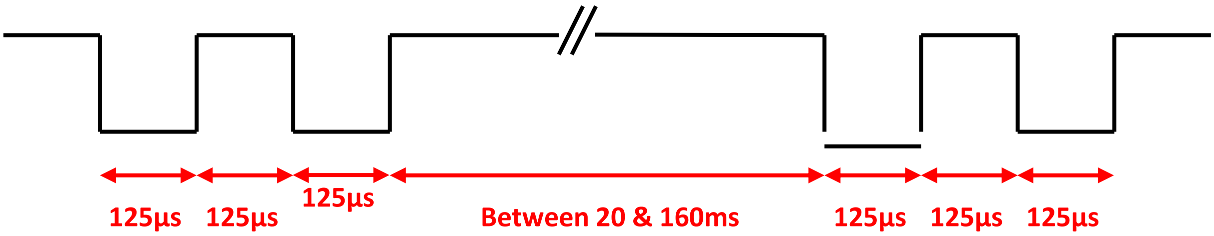
R31-X & S31-X



R33-X + INT-R33



R33-X + INT-R33-F



T11.2 - Bidirectional serial reader

Reader send in plain on the serial kink the command code 0x0103

T11.3 - Unidirectional serial reader

Reader send on the serial kink the command code 0xAA

T12 - Tamper switch ID

When this feature is enabled, the reader remembers (at startup) its initial state of accelerometer.

Specific ID sent when reader is wrenched, value in conformance with current protocol. This specific ID is sending only one time each time the reader is wrenched.

Value of the specific ID:

- 16 bytes max for Wiegand and serial readers
- 10 bytes max for ISO readers

Note: If the protocol size is above this value, reader padd with 0.

T13 - Mutual Life / Tamper switch Signal

Only available on R31/S31 and R33+INTR33E readers

When this option is activated, the reader emits each second a specific life signal. The format of this one depends on the current protocol.

If the "*Switch"* input or accelerometer state changes, the emitted signal changes also. The data "*Tamper*" is sent in the frame instead the "*Life*" data.

✓ *Example of a life signal (operating mode – without wrenching) emitted each second:*

- ISO2 Protocol:

  Start Sentinel + Life data byte + End Sentinel + LRC

- Wiegand :

  Life data byte + LRC

✓ *Example of a wrenching emitted each second:*

- ISO2 Protocol:

  Start Sentinel + Tamper data byte + End Sentinel + LRC

- Wiegand :

  Tamper data byte + LRC

Note:

This option is not available on the 26 bits Wiegand (3i).

If this option is activated, the delay of the led blinking cannot be more than 400 ms.

T14 - Command Line

T14.1 - Description

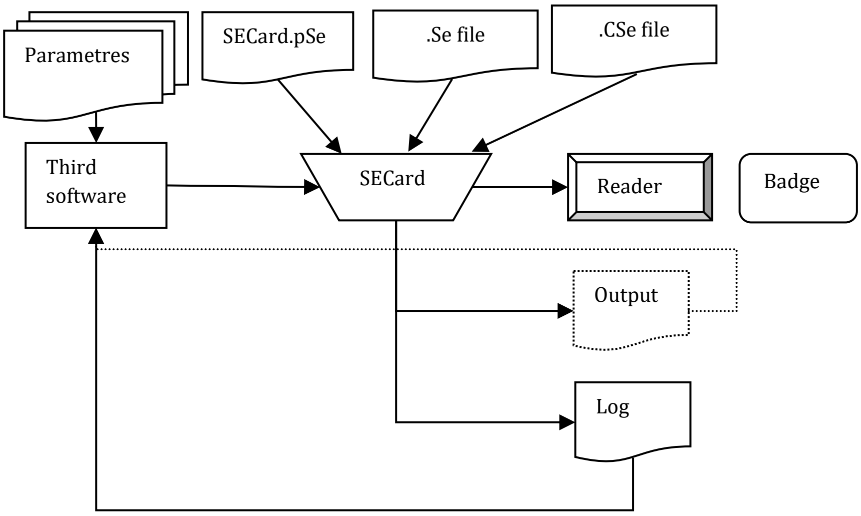
SECard includes a “command line” mode which allows work in background tasks and which allows interfacing with another application.

SECard allows to:

1. Load specific configuration.
2. Use current configuration.
3. Make tags encoding and reading.
4. Provide the results in a user file.
5. Save all operations.

“Command line” mode thus allows interfacing tags encoding/reading (or any operation that SECard known to make), with third application.
Simply configure application to launch SECard with correct parameters.

The process is summarized in the following diagram:



T14.2 - User instructions

To execute SECard in “command line” just:

- launch secard.exe in “Windows Command Line” with parameters.
- or made a batch file using secard.exe with parameters.
- or launch secard.exe via another application that allows you to enter parameters. This last method will be used in “customizing badges” software.

The command line is:

```
secard[.exe] -u userid -p password [-a action] [-i|I config.Se] [-q PSEPassword] [-o outputfile.txt] [-l|L logfile.log] [-d dataTOencode] [-h] -v
```

Parameters:

-u: specifies the user who will launch SECard, this parameter is required if not -I

1=User
2=Power user
3=Administrator

-p: specifies password used by -u, this parameter is required if not -I

-q: specifies password used for eSe file if locked

-a: specifies the action to achieve by SECard:

UEncode	encode user tag, -d required
URead	read user tag, -o required
UID	read tag UID,-o required
KEncode	encode SKB
KRead	read SKB,-o required
CEncode	encode SCB
CRead	read SCB,-o required
CSe2PSE	convert CSE file into PSE file

-b: specifies the communication baudrate of the encoder

0 : 9600 ; 1 : 19200 ; 2 : 38400 ; 3 : 57600 ; 4 : 115200

-d: specifies the user data to encode, text string representing ID (hex/dec).
Warning, this chain must be compatible with the current configuration file automatically loaded by SECard, or SE/CSE file imported.

-i|I: import a configuration file .Se in plain, and fills the corresponding parameters in SECard.
Executed before the action defined by -a.
If the parameters -I is used then the import configuration file is encrypted and contains the login and password associated (parameters -u and -p and -q are ignored).

-o: name of output file containing the operations made by –a, if the action done is CSe2PSE the output file will be PSE file creates.

-l|L: name of log file containing the status of all operations made by -a. l for display short log (OK|NOK) or L for complete log.

-v: verbose log, used with -l|L. Specifies whether the log should be in verbose mode.
The user running the command line must be logged in as an administrator or power user with reader and RFID keys management rights, otherwise the log will be classic.
Caution: verbose log generates a file (SECard_VerboseLOG.txt) that contains the keys values of RFID and readers.

-h: displays help in DOS windows if launched from DOS, in windows message if launch from windows with IHM (exclusive, the rest are ignored).

SECard command line is not blocking, it returns immediately.
So that there is no accessing problem to reader/configuration, the command line is exclusive; there can be more than one at the same time.
However, there may be another classic SECard (no command line) to run (be careful sharing the communication port).

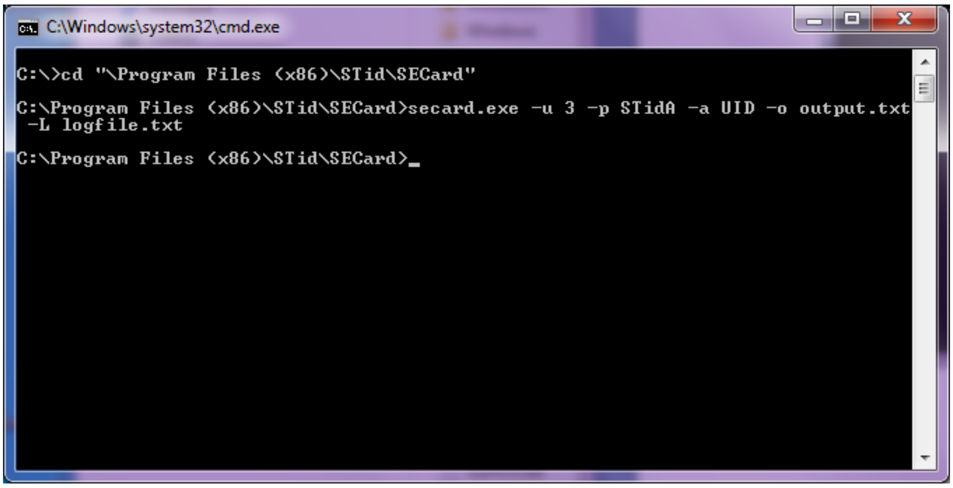
In command line mode, SECard uses automatically the default file setting or the one chosen by user. Thus, it will suffice to define and save the user configuration by running SECard in Classic mode so that it is loaded automatically when you launch SECard.

T14.3 - Control consol

Open Windows command console: execute cmd.exe
Select the SECard install directory:

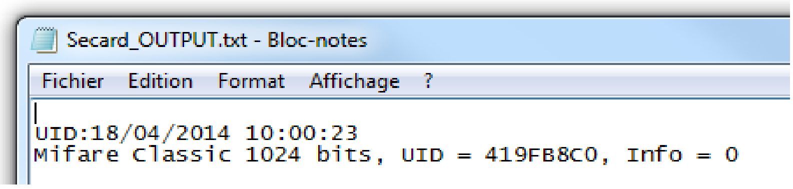
```
cd \Program Files\STid\Secardvxxx\ or  cd \Program Files (x86)\SECardvxx\
```

Then enter the desired command line.
For example if you want to read UID:
Put a RFID tag in front of the reader switched on and configured in SECard, then type:



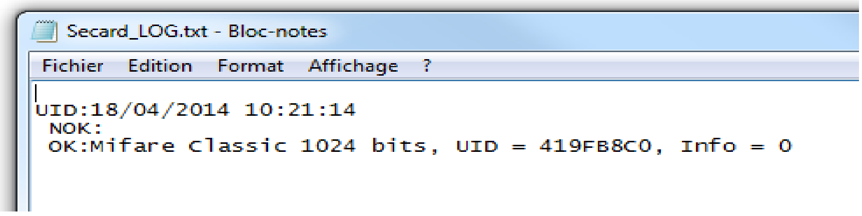
```
C:\>cd "\Program Files (x86)\STid\SECard"

C:\Program Files (x86)\STid\SECard>secard.exe -u 3 -p STidA -a UID -o output.txt
 -L logfile.txt

C:\Program Files (x86)\STid\SECard>_
```

The result of the operation (so the tag UID presented to the reader) is written to the file output.txt.


Secard_OUTPUT.txt - Bloc-notes
Fichier Edition Format Affichage ?

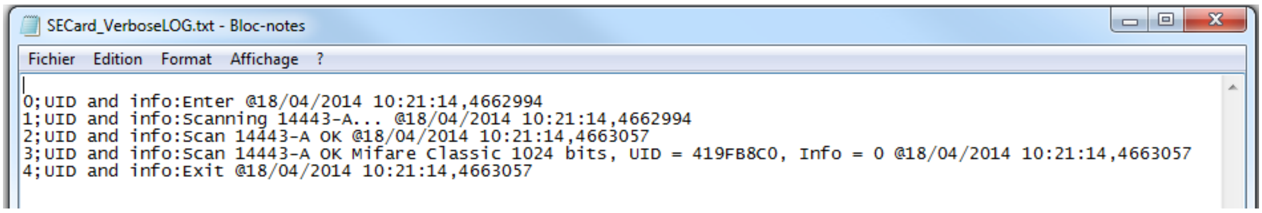
```
UID:18/04/2014 10:00:23
Mifare Classic 1024 bits, UID = 419FB8C0, Info = 0
```

If the operation it is successful, will be recorded in the log file logfile.txt.


Secard_LOG.txt - Bloc-notes
Fichier Edition Format Affichage ?

```
UID:18/04/2014 10:21:14
 NOK:
 OK:Mifare Classic 1024 bits, UID = 419FB8C0, Info = 0
```

If the log is verbose log, file log is:


SECard_VerboseLOG.txt - Bloc-notes
Fichier Edition Format Affichage ?

```
0;UID and info:Enter @18/04/2014 10:21:14,4662994
1;UID and info:Scanning 14443-A... @18/04/2014 10:21:14,4662994
2;UID and info:Scan 14443-A OK @18/04/2014 10:21:14,4663057
3;UID and info:Scan 14443-A OK Mifare Classic 1024 bits, UID = 419FB8C0, Info = 0 @18/04/2014 10:21:14,4663057
4;UID and info:Exit @18/04/2014 10:21:14,4663057
```

T14.4 - Batch file

With batch files (executable by the command interpreter of Windows command console) and commands accepted by SECard a multitude of scenarios is possible.

For example, to retrieve the UID of ten tags, the batch file (UIDof10.cmd) is:

```
REM @echo off
for /l %%d in (1,1,10) ^
do (secard.exe -u 3 -p STidA -a UID –o output.txt –L logfile.txt)
```

The UID of ten tags will be collected and added sequentially to the file output.txt.
Be careful to be in phase with the presentation of different tag to reader. You can add a sleep for x seconds with ping command ping 127.0.0.1 –n x just after secard.exe:

```
REM @echo off
for /l %%d in (1,1,10) ^
do (secard.exe -u 3 -p STidA -a UID –o output.txt –L logfile.txt
ping 127.0.0.1 –n 5)
```

To encode IDs contained in a text file IDsList.txt (one ID per line) you can use the following batch file:

```
@echo off
for /F %%i in (IDsList.txt) ^
do (
echo Present the tag to be program with %%i
secard.exe -u 3 -p STidA -a UEncode -o output.txt -L log.txt -d %%i
echo 5 seconds to take following tag
ping 127.0.0.1 -n 5 > NUL
```

T14.5 - Third application

Setting

It is possible to use SECard with command line in third application (for example printing application).

For this, run application, create the design of the card by referring to the manual of application.
Select or activate “Smart Card” then select “Command Line”. Configure the use of RFID.
Select secard.exe it’s typically located in c:\Program Files\STid\SeCard Vx.x.x\SeCard.exe.
Set the location of the return, if this file does not exist, create the file CMDlineLOG.txt.
Then define the access to value (static value or database values).
Remains to inquire the arguments:

Note: If the parameters –o &/or –l|L used with files with long names &/or contain spaces or special characters it must be enclosed by " ".

- -u 3 -p STidA –a UEncode –o “C:\Program Files (x86)\STid\SeCard\output.txt” –l “C:\Program Files (x86)\STid\SeCard\cmdlinelog.txt”

- -d 11223344 or –d < database value >

Error handling

- **Third application cannot communicate with SECard**

  Check that SECard was launched by the third application: open “Task manager” of Windows and check that SECard appears (at least for a moment) in the process list. If this is not the case, check your command line and the address to the file SECard.exe.

  If SECard is launched but it still does not work, you must start SECard with the -L option instead of -l followed by the name of the log file. SECard then record all operations effected before the close. Retry the operation. Check the contents of the log file:

  - "Data received length error (too short)": communication port is misconfigured in SECard. Open SECard classic and change the port to match it with your RFID coupler, check the seed, save the settings file before closing.

  - “Bad parameter file, (.eSe) corrupt or invalid communication port”: SECard current settings file is not registered correctly for the command line. With a text editor, open the file SECard.gcf which located in the SECard installation directory. Search key “Settings” in the “File”.
    Check that the name using an absolute path, that is to say of the form « C:\Program Files(x86)\STid\SECard\SECard.eSe » and NOT as « .\SECard.eSe »(which is the default configuration during installation).
    If this is not the case, it must be modified for these two possibilities, either directly in the file SECard.gcf or open SECard classically, go to the menu "File" and to "save" the settings file the desired location (it is possible to overwrite the default settings if this is the one used).

- **SECard cannot communicate with third application**

  Communication between SECard and application is done through the log file, if the communication is broken is that there is a problem with the file used.
  Check that the file name defined as the file back in the third-party application is the same as the name of the log file defined by the SECard command line and check that his name is well enclosed by " " if it contains spaces or special characters. Check access rights to this file.

T14.6 - Import configuration file

The following file determines all parameters compatible with the import configuration file in clear, and encrypted when launching from the SECard command line.
As it stands, this file specifies all drive parameters, SSCP and only the DESFire parameters.

If ACCESSLevel and Password values are not defined in the import configuration file and command line indicates –I option then SECard use the default values, that is to say ACCESSLevel = 3 and Password=StidA

```
;; SECard command line import configuration file
;; defines all parameters available in SECard command line mode from V3.5.0

[Login]
;Values are ONLY defined if import configuration file is Encrypted (.CSe)
;Access level : 1=User, 2=PowerUser, 3=Administrator
ACCESSLevel=3
;Password for corresponding user
Password=STidA

;If command line action is "CSe2PSE" you have to defined passwords that will be saved in PSE file
PSEUserPassword=STidU_123
PSEPowerUserPassword=STidP_123
PSEAdministratorPassword=STidA_123
;Read (Open) password is unconstrained, default is empty (no password)
PSEReadPassword=


;PowerUser Rights : 1=Enable, else disable
;Load/Save configuration file
LSconf=0
;Reset conf counters
Rcc=0
;Create/Read SKB
CRSKB=0
;Create/Read SCB
CRSCB=0
;Create/Read User cards
CRUserCards=0
;Manage Reader communication keys
MRCKeys=0
;Manage RFID keys
MRFIDKeys=0


[ReaderFamily]
;0 for LXS family
;1 for ARC family
;2 for WAL family
ReaderFamilyID=1

[CompatibilityVersion]
; Override .gcf compatibility mode

; For LXS family
; 0 = SeCard v1.1.x or Unknown;
; 1 = SeCard v1.2.x
; 2 = SeCard v1.3.x
; 3 = SeCard v1.4.x
; 4 = SeCard v1.4B.x
CompatibilityVersion= 3
```

```
; For ARC family
; 0 = SECard v2.0.0
; 1 = SECard v2.1.0
; 2 = SECard v2.2.0
; 3 = SECard v3.0.0
; 4 = SECard v3.1.0
; 5 = SECard v3.2.0
; 6 = SECard v3.3.0
ARCCompatibilityVersion=3

; For WAL family
; 0 = SECard v2.1.0
; 1 = SECard v2.2.0
WALCompatibilityVersion=0


[SSCP]
COMPort=COM19

;Baudrate = 9600,19200,38400,57600,115200
Baudrate=38400

;Security mode, Plain=0, Sign=1, Enc=2, SignEnc=3
SecurityMode=0

;To use SecurityMode>0 we need keys !
;WARNING: if you use SSCP keys, this file should be enciphered to CSe file
SSCPSignKey=A087754B7547481094BE
SSCPEncKey=E74A540FA07C4DB1B46421126DF7AD36




[Reader]
;SCB company key
SCBKey=FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Change=0
SCBNewKey=FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

;Reader reference
;0=R31E/103
;1=R31E/Ph5/Ph1
;2=S31E/Ph5
;3=R33E/Ph5 + INT-R33E
;4=R32E,R35E/Ph5
;5=S32E,S35E/Ph5
;6=R33E/Ph5
;7=S33E/Ph5
;8=S33E/Ph5+INT-E-7AA/7AB
ReaderReference=1

;BiometricActivation available for R31E/103,R31E/Ph5/Ph1 and S31E/Ph5  readers
BiometricActivation=0

;Save user keys in memory
SaveEEPROM=0

;Erase keys at tamper switch activation
EraseKeys=0

;Tamper switch signal activation
TamperSwitch=0
```

```
;On tamper activation keeps LED red as default
TamperKeepLEDRed=0

;Mutual life signal and Tamper switch signals available for R31E/103,R31E/Ph5/Ph1,S31E/Ph5 and
R33/Ph5+INT-R33E readers
Mutual=0
;Life signal 1 byte
Life=0C
;Tamper signal 1 byte
Tamper=1C

;KeyPad activation available for
R31E/103,R31E/Ph5/Ph1,S31E/Ph5,R32E,R35E/Ph5,S32E,S35E/Ph5,R33E/Ph5,S33E/Ph5
KeyPadActivation=0

;If keypad activated Badges/keys mode
;MKmode, =0 Badge OR Key, =1 Badge AND Key
BKmode=0

;KeypadFormat 0=4bits framed, =1 4 b, 2=8 b,3=4b Keys framed
KeypadFormat=2

;KeyPad nb keys [1..9]
KeyPadNbKeys=1

;Enable/disable Tagtype
MIFAREClassicTagEnable=0
MIFAREPlusTagEnable=0
MIFAREDESFireTagEnable=1
MIFAREUltraLightTagEnable=0
CPS3TagEnable=0
MoneoTagEnable=0
125kHzTagEnable=0
NFC_HCEEnable=0

;V3.0.0
;TagType
BlueMobileID=1
;Blue MobileID Configuration Activation
BlueMobileIDActivation=1
;DESFire Confiugration Activation
DESFireConfigurationActivation=1

;PUPI ISO14443-3B
PUPIEnable=0
PUPIMSB=1
PUPISign=0
PUPISignKey=FFFFFFFFFFFFFFFFFFFF

;UID/ID range, From=To=RandgeFrom=00000000=Disabled
RandgeFrom=00000000
RandgeTo=00000000

;SiteCode
ReaderSiteCode=10BF

;Protocol data size
ProtocolSize=5

;For R31/S31/INT-R33E
;ProtocolID 0=W3i (24bits),1=Iso 2H (32bits),2=Iso 2S (32bits),3=Iso 2B (40bits),4=W3Ca (32bits),5=W3Cb
(40bits),6=W3La (32bits),7=W3Lb (40bits),8=W3T (64bits),9=Iso custom size,10=Wiegand LRC custom
size,11=Wiegand custom size,12=Wiegand 34 bits - 3Eb,13=Wiegand 35 bits - 3W,14=Wiegand 37 bits - 3V,
;+V3.3.0  16=PAC 32bits-5Pa, 17=PAC 64bits-5Pb
```

```
ProtocolID=5

;For R32/S32/R33/S33
;SerialConfiguration
;Baudrate : 0=9600,1=19200,2=38400,3=57600,4=115200
SCBaudrate=0
SCRS485Adr=0
SCBidirectionnal=0
;Radix : 0=Hexa, 1=Decimal
SCBase=0

SCNoLeadingZeros=1
SCASCII=1
SCLRC=0
SCCRLF=1
SCSTXETX=0

;Security mode (SSCP bidirectional) Plain=0, Sign=1, Enc=2, SignEnc=3
SCSecurityMode=0
SCSignKey=FFFFFFFFFFFFFFFFFFFF
SCChangeSignKey=0
SCNewSignKey=FFFFFFFFFFFFFFFFFFFF
SCEncKey=FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
SCChangeEncKey=0
SCNewEncKey=FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

;Life signal :0=Disabled, 1=Generic,2=Specific
LifeSignal=0

;Output encipherment AES key for S31 reader
OutEncKey=000102030405060708090A0B0C0D0E0F
OutEncChange=0
OutNewEncKey=000102030405060708090A0B0C0D0E0F

;;For LXS Family
;Default LED action Color: Off=0, Green=1,Red=2,Orange=3
DefActLED=3
DefActLEDBlink=0
DefActLEDBlinkDuration=4
;Card detection action LEd Color: Off=0, Green=1,Red=2,Orange=3
DetActLED=3
;For WAL reader, used only if WALDetectionLEDBlinkTimes=0
DetActLEDDuration=4
DetActBuzzDuration=4

;;For WAL Family, LED Color in RGB, allowed values are only 00 or FF for each byte
;Yellow,use DefActLEDBlink and DefActLEDBlinkDuration to select blinking
WALDefaultLEDColor=FFFF00

;Yellow
WALDetectionLEDColor=FFFF00
; Nb of LED blink at badge detection, cannot be used if DetActLEDDuration >0
; so to use it set DetActLEDDuration to 0 and set blink times here
WALDetectionLEDBlinkTimes=0


;;For ARC Family
;;use SECard selection color window to get RGB code of a color
;Default LED action Color: RGB 3 bytes hexa
;orange
ARCDefLEDColor=FF6400
;0=Off,1=Fixed,2=Blinking,3=Pulse,4=Rainbow
ARCDefLEDMode=1
;Blink duration [1..31] x100ms
```

```
ARCDefLEDBlinkDuration=4
;Pulse speed
;Slow=0, Medium=1, Fast=2
ARCPulseSpeed=1
;Card detection action LED Color: RGB 3 bytes hexa
;Green
ARCDetectionLEDColor=00FF00
;BlinkTimes [0..5]
ARCDetectionBlinkTimes=0
;ARCDetection LED duration x100ms
ARCDetectionLEDduration=4
;ARCDetection Buzzer duration x100ms
ARCDetectionBuzzerduration=4

;Added in V3.0.0 For ARC-S ARC1-S and ARC1 v2, user can select buzzer sound level
;0=Low, 1=Medium, 2=Loud
BuzzerSoundLevel=2

;;External control LED Color available for ARC and WAL series
;For ARC : RGB 3 bytes hexa
;For WAL : RGB 3 bytes hexa, allowed values = FF or 00
;Blue
ExtLED1Color=0000FF
;Yellow
ExtLED2Color=FFFF00
;Pink
ExtLED1LED2Color=FF00FF


;;For ARC and WAL Families AccelerometerSensitivity defines accelerometer sensibility
;0=Low,1=Normal,2=High
AccelerometerSensitivity=1

;Direct buzzer
DirectBuzzer=0
;Enable external LED/Buzzer control
EnableExtBuzzLED=0
;Polling period x100ms
ExtPolPeriod=1


;Biometric settings
; Security level [1..3] 3 is highest security
BioSecurityLevel=1
; Threshold level [0..10]
BioThreshold=5
; Nb of finger to enroll [1..5]
BioNb2Enroll=1
; Nb of finger to check [1..5] <= BioNb2Enroll
BioNb2Check=1
; Minutiae capture consolidation
BioConsolidation=0

; V3.3.0
; Duress biometric, 0 = disabled, 1 = enabled
BioDuress=0
; Auto change serial communication key 0 = disabled, 1 = enabled. For serial bidirectional readers or INTx
AutoChangeSerialCommKey=1

;ARC Enable Eco mode
ARCEco=0
;ARC DENY UHF configuration
ARCDenyUHF=0
```

```
;;Authenticated Encryption, available for ARC from firmware version Z02
;and WAL from firmware version Z18
;EnableAE = 1 to Enable AuthenticateEncryption and 0 to disable
EnableAE=0
;If AE enabled, enter User key 16bytes
AEKey=FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

;;Touch Screen enable=1, disable=0, available for ARC-C/F with Screen
EnableTS=0
;;ARC with screen defines actions and associates texts, images can only be load with SECard in normal mode (no CMDline)
;Enable(1) disable(0) Events
ARCTS_BadgeDetectionEvent=0
ARCTS_TamperingEvent=0
ARCTS_ExtLED1Event=0
ARCTS_ExtLED2Event=0
ARCTS_ExtLED1and2Event=0
;Default Text
;Text colors are in Red/Green/Blue 3 bytes hexa
ARC_TSTextColor0=0000FF
ARC_TSText1_0=Present your
ARC_TSText2_0=credential
ARC_TSText3_0=
;Badge detection text
ARC_TSTextColor1=00FF00
ARC_TSText1_1=Authorized card
ARC_TSText2_1=
ARC_TSText3_1=
;Tamper switch activation text
ARC_TSTextColor2=FF0000
ARC_TSText1_2=Alert
ARC_TSText2_2=Attempted tampering
ARC_TSText3_2=
;Biometric template
;NO TEXT for bio, hard coded in reader
ARC_TSTextColor3=000000
ARC_TSText1_3=Place your finger
ARC_TSText2_3=on the sensor
ARC_TSText3_3=
;External LED1 action text
ARC_TSTextColor4=FF0000
ARC_TSText1_4=Authorized access
ARC_TSText2_4=
ARC_TSText3_4=
;External LED2 action text
ARC_TSTextColor5=FF0000
ARC_TSText1_5=Access denied
ARC_TSText2_5=
ARC_TSText3_5=
;External LED1+LED2 action text
ARC_TSTextColor6=FF0000
ARC_TSText1_6=Free access
ARC_TSText2_6=
ARC_TSText3_6=
;ARC Reader with TS default Language
;0 for French, 1=for English
ReaderLANG=1
;ARC Reader with TS, display Ring
;1 to display
ARCTS_DisplayRing=0
;If keypad is active, you can choose to enable ScramblePad (set to 1)
ARCTS_ScramblePad=0

;Encoding type, used with UEncode command line parameter
```

```
; 0 = PId, 1 = PId AND Biometric template, 2 = Only Biometric
; See DESFire settings for Biometric template location and security
EncodingType=0


;ARC TouchScreen Display Option
;Keypad=0, DefaultImage=1
DisplayOption=0

;Blue Mobile ID Reader Configuration
;Configuration name, max 14 chars
BlueMobileIDReaderConfigurationName=AyConfigNameB
;Configuration Site Code 2 hexdecimal bytes
BlueMobileIDReaderConfigurationSiteCode=92AD
;Identification modes, disable=0, enable=1
IdModeBadge=1
IdModeSlide=0
IdModeTapTap=0
IdModeHandsFree=0
IdModeRemote=0
;Identification mode distances
;0=Contact, 1=0.2m, 2=0.3m, 3=0.5m
IdModeBadgeDistance=0
;0=Very Low, 1=Low, 2=Medium, 3=High, 4=Very high distance
IdModeSlideDistance=0
;Less than 3m=0, less than 5m=1, less than 10m=2, less than 15m=3
IdModeTapTapDistance=0
;Less than 3m=0, less than 5m=1, less than 10m=2
IdModeHandsFreeDistance=0
;Less than 3m=0, less than 10m=1, less than 15m=2, less than 20m=3
IdModeRemoteDistance=0
;Remote options =0 for Remote 1, =1 for Remote 2
IdModeRemoteOptions=0
;Requires smartphone unlocking to authenticated
;NOT required=0, required=1
BlueMobileIDReaderConfigurationRequiresUnlocking=0
;STid Mobile ID CSN configuration activation, 0 =disable, 1=enable
STidMobileIDCSN=0


;;Added in SECard V3.1.0, begin

;TamperSwitchAsProtocol define the tamper signal a the protocol, 1 to enable
;Can be selected only if Classic Tamper switch is NOT selected and if Common frame for Tamper and Life
signal is NOT selected
TamperSwitchAsProtocol=0

;If TamperSwitchAsProtocol=1, the TamperSignalValue must be set
;1 to 16 hexa bytes or 1 to 10 digits decimal, radix is defined by the current Reader's protocol
TamperSignalValue=0A0B0C0D0E

;Rotation of the screen of the ARC with Touchscreen, set to 1 to enable
ARCTS_Rotation=0

;ARC keypad backlight, set to 1 to enable
ARCKeypadBacklight=0
;ARC on keypad pressed Buzzer, set to 1 to enable
ARCOnKeypadPressedBuzz=0
;ARC on keypad pressed flicker, set to 1 to enable
ARCOnKeypadPressedFlicker=0

;ARC Bluetooth LED flashes at BT connection, set to 1 to enable
ARCBlueLightAtBTConnection=0
;If ARCBlueLightAtBTConnection=1, change the LED color, RGB 3 bytes hexa, default=FFFFFF=White
```

```
ARCBlueBTConnectionColor=FFFFFF
;ARC Bluetooth Mode/Algo, 0=STid Mobile ID, 1=Orange PackID, 2=STid Open API
ARCBlueMode=0

;;Added in SECard V3.1.0, end


;;Added in SECard V3.2.0, begin
;Affect the LED brightness, 0=Normal brightness, 1=subdued light
ARCSubduedLED=0
;;Added in SECard V3.2.0, end


;;Added in SECard V3.4.0, begin
;Biometric FakeFinger Detection (MorphoSagemIdemiaDevice/SupremaDevice), 0=Disabled, 1 =Low/Weak,
2=Medium/Normal, 3=High/Strong,4 Critical
BioFFD=0

;Mute all reader sound, to mute set to 1
MuteAll=0

;CardDetectionCloseRelay close relay @ card detection during a delay, duration is in second from 1 to 20
CardDetectionCloseRelay=0
CardDetectionCloseRelayDuration=1

;BlueTooth External Hand, hand detection managed by external
BTExternalHand=0
;Manage additionnal SAK and ATQA for specific smartphone, up to 3 new ATQASAK (hex value), 000000
means not used, 4578A9 means new SAK=45 and new ATQA=78A9
ATQASAK1=000000
ATQASAK2=000000
ATQASAK3=000000

;;Added in SECard V3.4.0, end


;;Added in SECard V3.5.0, begin
; Reader Matrix Code settings  : disable=0, enable=1
DataMatrix=1
QRCode=1
AztecCode=1
Code128=1

;0=hex , 1=dev, 2=ASCII
MaxtrixCodeFormat=1

;DataMatrix Lightning Brightness  0/1
DataMatrixLB=1
;DataMatrix Lightning Target/aim  0,1,2
DataMatrixLT=2
;DataMatrix Detection sensitivity 0,1,2
DataMatrixDS=1
;DataMatrix Ambien light 0,1,2
DataMatrixAL=1


;;Added in SECard V3.5.0, end

[DESFire]
;Detection type: 0=UID, 1=PrivateID, 2=Private ID but UID
DetectionType=1

;Key mode: 0=One key per file (RW), 1=Two keys per file (R and W)
KeyMode=0
```

```
;Crypto mode: 0=3DES, 1=AES, 2=AES but 3DES
CryptoMode=0

;Card Master Key
;change : 0=No change, 1=Change with NewCMK
CMK=00000000000000000000000000000000
ChangeCMK=0
NewCMK=00000000000000000000000000000000

;Application Master Key
;change : 0=No change, 1=Change with NewAMK
AMK=00000000000000000000000000000000
ChangeAMK=0
NewAMK=00000000000000000000000000000000

;Diversification
;3DES diversification key
;Enablediv=0 NO div , = 1 div enabled
;alsoCMK also diversify CMK , =0 No, =1 Enable
;NXP diversification 32 bytes padding, =0 No NXP, =1 NXP enable

Enablediv=0
3DESdivK=FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
alsoCMK=0
NXP=0

;Added in SECard V2.2.0
;NXP Padding, active if NXP=1, 20 bytes of padding data
;If you want to read/encode French CIMS card your have to set to
8000000000000000000000000000000000000000
NXPPadding=0000000000000000000000000000000000000000

;Added in SECard V2.2.0
;If NXP diversification is selected you can also modify the MSB/LSB read direction of AID to compute diversified
key
;If you want to read/encode French CIMS card your have to set to 1
AIDreversed=0

;Added in SECard V2.2.0
;FID1 Data type 0=RAW classical type and can be encoded, 1=ASCII Decimal value cannot be encoded
FID1DataType=0

;Added in SECard V3.0.0
;For NXP diversification (NXP=1), consider data as input or padding, and determine to use K1 or K2 of CMAC
sub keys
;0 for padding (K2), 1 for input (K1)
InputPadd=0

;Added in SECard V3.0.0
;In case of RandomID DESFire, allow user to specify a key nb/value to get the real UID using the GetUID
DESFire function
;GetUIDKeyNb=0 means AMK
GetUIDKeyNb=0
GetUIDCurrentKeyValue=00000000000000000000000000000000
ChangeGetUIDKeyValue=0
GetUIDNewKeyValue=00000000000000000000000000000000

;Format DESFire card before encoding, need CMK
;=1 Format , =0 NOT format
Format=0

;RandomID, =0 no RandomID, =1 Configure DEFire to RandomID
RandomID=0
```

```
;MSB first, =0 No, =1 Yes, Most Significant Byte First
MSBFirst=0

;Free Application Directory allowed=1 (No authentication required), no=0 (need authentication)
FreeAppDir=0

;Added in SECard V3.0.0
;Free Creation/deletion of AID's files
FreeCD=0
;DESFire Communication mode, 0=Plain, 1=MACed and 2=FullyEncphered (default value)
CommMode=2

;AID 3 bytes application identifier
AID=F51BC0

;Authenticate with Key Itself before Change Key value
;0=Use AMK
;1=Use KeyItself
DESFireChangeKeyKeyIDItself=0

;FID1 settings
FID1ID=0
FID1KeyID=0
;AsFID2: to encode FID1 with FID2 settings (keys)
AsFID2=0

;Keys used in KeyMode=0 (One RW key)
FID1RWKey=00000000000000000000000000000000
FID1ChangeRWKey=0
FID1NewRWKey=00000000000000000000000000000000
;+keys used in KeyMode=1 (Two keys R and W)
FID1WKeyID=2
FID1WKey=00000000000000000000000000000000
FID1ChangeWKey=0
FID1NewWKey=00000000000000000000000000000000

;Private ID/UID to encode/read
FID1size=5
FID1offset=0

;FID2 settings
FID2Enabled=0
FID2ID=0
FID2KeyID=3
;Concatenate=1: to encode/read FID1 data+FID2
;First= not Concatenate; to encode/read First FID read (authenticated)
Concatenate=0

;Write =0 NOT write FID2, =1 WRITE FID2 after (but in the same process) FID1
WriteFID2=0

;Keys used in KeyMode=0 (One RW key)
FID2RWKey=00000000000000000000000000000000
FID2ChangeRWKey=0
FID2NewRWKey=00000000000000000000000000000000
;+keys used in KeyMode=1 (Two keys R and W)
FID2WKeyID=4
FID2WKey=00000000000000000000000000000000
FID2ChangeWKey=0
FID2NewWKey=00000000000000000000000000000000

;Private ID/UID to encode/read
FID2size=5
```

```
FID2offset=0

;Biometric template location and security
;Biometric template location is forced into PId AID, and the security used is the same crypto as the PId
BioFIDId=2

;BioFIDId Read/Write keys (One key mode)
BioFIDRWKeyId=1
BioFIDRWKey=00000000000000000000000000000000
ChangeBioFIDRWKey=0
BioFIDRWNewKey=00000000000000000000000000000000

;BioFIDId Write keys (Two keys mode)
BioFIDWKeyId=2
BioFIDWKey=00000000000000000000000000000000
ChangeBioFIDWKey=0
BioFIDWNewKey=00000000000000000000000000000000

;Added in SECard V3.1.0, Biometric exemption : 0=Disable, 1=Enable exemption
DESFireBioExemption=0

;Added in SECard V3.1.0, Diversification for ID¨Prime MD3811, only used for SCB and NOT for DESFire
emulation PrivateID encoding
DESFireIDPrimeDiversification=0


;;Added in SECard V3.2.0, begin
; DESFire EV mode : 0=EV1 mode  only, 1=EV2 else EV1 mode, 2=EV2 mode only
DESFireEVMode=0

; If card and selected EV mode is EV2 then user can choose to lock card in EV2 mode only by setting
DESFireLockEV2Mode=1
DESFireLockEV2Mode=0

; If card is an EV2 then user can choose to use DESFire EV2 Proximity Check by setting
DESFireEV2ProxCheck=1
DESFireEV2ProxCheck=0
; and defines max time to get a response from the chip, in multiple of 100 µs
DESFireEV2ProxCheckRespTime=20

;;Added in SECard V3.2.0, end

;; SECard v3.5.0
; UID MSB First ofr DESFire UID read mode, 0=disabled, 1=enabled
DESFireUIDMSBFirst=0
; If selected crypto is 3DES user can select divAV1 diversification; set to 1 to enable
DESFiredivAV1=0

[BlueMobileID]
;Added in SECard V3.0.0
;Virtual access card name max 14 characters
BMIDVCardName=AyVCardNamB

;Blue Mobile ID Read mode, 0 = PrivateID, 1=From DESFire configuration
;if From DESFire configuration is selected, all BlueMobileID settings will be ignored and replaced by DESFire
configuration
BMIDReadMode=0

;Keytype, 0=one key, 1=two keys
BMIDKeyType=0

;KeyValues, all key are 16 hexa bytes, *Change* = 0 for non change, =1 for changing
BMIDCurrentRWK=00000000000000000000000000000000
BMIDChangeRWK=0
```

```
BMIDNewRWK=00000000000000000000000000000000
;Write keys are only used if Keytype=1
BMIDCurrentWriteK=00000000000000000000000000000000
BMIDChangeWriteK=0
BMIDNewWriteK=00000000000000000000000000000000

;Data size/offset/reverse
BMIDDataSize=5
BMIDDataOffset=0
BMIDDataReverse=0

;Display options , 0=disable, 1=enable
BMIDDisplayConfName=1
BMIDDisplaySiteCode=1
BMIDDisplayDisplayID=1
BMIDDisplayDisplayRemote1=1
BMIDDisplayDisplayRemote2=0
;Added in SECard v3.2.1, ask user to first unlock (=1) his smartphone before authentication
BMIDLockVCard=0
;Added in SECard v3.3.0, forbid user (=1) to delete VCard from the mobile app
BMIDProhibitVCardDeletion=0



;;Added in SECard V3.1.0, begin
; If ARCBlueMode=1=OrangePackID, CompanyId = 2 hexa bytes, ServiceId = 4 hexa bytes, AccessId = 6 hexa bytes, TX power integer value
BTS_OrangePackID_CompanyId=0000
BTS_OrangePackID_ServiceId=00000000
BTS_OrangePackID_AccessId=000000000000
;BTS TXPower in dbm : 0=-16, 1=-12, 2=-8, 3=-4, 4=0, 5=4
BTS_OrangePackID_TXPower=2
;;Added in SECard V3.1.0, end


;;Added in SECard V3.2.0, begin
;If ARCBlueMode=2=Open Mobile Protocol
;Complete local name, max 5 char
OMP_CLN=ARCoa
;Site Code two hexa bytes
OMP_SiteCode=51BC
;3 General purpose bytes
OMP_GPBS=000000
;To enable secure communication set to 1
OMP_SecureComm=0
;To set TX power dbm : 0=-16, 1=-12,2=-8,3=-4,4=0,5=4
OMP_TXPower=5
;To set CompanyID : two hexadecimal bytes, STid ID by default
OMP_CompanyId=51BC

;;Added in SECard V3.2.0, end

;;Added in SECard v3.4.0
;Request user for biometric smartphone unlock before any authentication
BMIDBioLockVCard=0
```

T14.7 - Securing the command line mode

To secure the command line operation, it must be secure:

- The import configuration file, loaded with -i parameters
- The login by securing the parameters –u et –p that appear in plain

Note: If the import configuration file is used in encrypted then just put the parameters –u et –p as data in this file.

Changes to the files .gcf

The addition of the security in command line mode involves modifications of the data (for illustrative purposes) in SeCard.gcf file.

```
[Login]
ACCESSLevel=2

[File]
Settings=.\SeCard.pSe
Location=0

[Serial Number]
SN=AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
PN=xxx……

[Lang]
;1033=Us
;1036=Fr
LangID=1036


[CompatibilityVersion]
eSe_SCB=1

[CommandLineRSA]
; This section ONLY exhibits values integrated in SeCard, none of them is used.
; This is just to remind the values defined in Manual/Specifications.

; RSA decryption for command line configuration file import
; fixed public exponent e = 010001(hex)
; keyLen : 1=1024bits, 2=2048bits, 4=4096 bits

; Key for RSA 1024 bits
;RSA_pub1=3CA377661F13DE29E51E9C2B94CBB7F58EEE4B40377FA3FE22A0EC37F965E7D810E64CC01F3
3391B7FB6A85AC13CEC7D16EA07B07ACA67934A39C79985D13FC0B1599FEB435721CA4192A31AB805D82
39DC52D1F7F55DED1452DC2309824AB655E719371BD9A103D6AC0308EEEDEAE57E0B14B978DA47A2DBE
73377471132D05
;RSA_priv1=PRIVATE

; Key for RSA 2048 bits
```

```
;RSA_pub2=E511A50D7CE6C94D37B99EA0206F5CBDB1402C5D20BA92CEFDF29C1D553A645BCAD3C2D118
068F7AF1EB49D577C76E170993291ABA56E1E4DC1119539D8EBA635140DCD51B6F36A949FA7E88594683
8796FFC09DC57CD1B1B0649F9B15B5610934EAF62DD0B51BA327F7C65E28EC400D6380E9F9CA0C3D6C4F
AEBB1F6CCA2FFBDB4199A6DDF2E43A761AEA83DFF176909AE772DC453CFA9D54C24600E3B2B8ABB2574
9D610B5DC85E9146E59AB46AB07A87B6C1F813A53DDCB5C6119BB6ABAEAB3788B0F2B23382A6FB8B617
77AF67C4F1606AC199A0BDB40A4B0BE5C104D773293790D64743028C79C88C61E76C90460696D8CD42AA
E7718246DC1B1B38F329
;RSA_priv2=PRIVATE

; Key for RSA 4096 bits
;RSA_pub4=5EE503A29011327ECC85F50144CEB2009663DCE96A1EE2C20E065067DCF5D2585FB4ECA532E
DB213A7859F32398958C37088563A0795E482DFD67929EF5C6195DECE80B9D55E54F0644C3A90DFEBDCE
01D84255B3BA4A4B4499D409F00C82065645D1096B07C0466C8BF52C037CD360FB068895D5787825F50FC
A1307058087D7BA045517F7BA4C9B4A9357A1C409ED2FB2C3425FE8F6FCAD6344CF8E798BFB87A417A83
27BC443E8D6F32211758F50A74AC56B2E3EFFBA38AE087E3844AA742864F3C64AB182E6D4A5F2346648F3
1796146B705A2B5B02EA867247258560DAC206F4CE9040C458B81197E051A1EB7A40C81A6D3A39A4CCB6
EC1667CDCC77F2C0C4D74CE98D9BC0DA4C3088E7348F4E1B20AC13B9D099ACEF1A720C2CF41B06E7B316
DBCBE167A2F0CC69FABED315C308307CF8AD7BC2FCA14861E92CC51DD0654A66639766BC2BF42F5D39A7
2FBB1594CBC20073AFDEE531226024DF3CAF4790BA147FE71315672751AED93833EFC915B7B8A9DF9387
6C53B466B72553F8C7B84B32CD19C00BAF61F9902A346D2F1ABF0223CC21C1EEFC5838B7B4859F983A530
14693838B45B08CF65F1E9BFB8B5AC420F595ADAEE893F854174D51749F31C074E61A9806080A0184F1C2
C0D11AA82367C8C9B1299D4FB7F3A271BDF5811C8B9A17843288CA390ADCFBD28E7DDD0C8611B02F959
AAB9703BF595FA1B46CF77

;RSA_priv4=PRIVATE
```

Encryption of .Se file in .CSe

To encrypt the import configuration file use the DLL CmdLineLib.dll.

The DLL, its user manual and two sample applications are available in the folder SECard

T15 – Recommendations for the Configuration Cards management

T15.1 - Definition

SECARD can create 3 types of configuration cards:

- The « SCB » cards which carry the configuration data for Read-Only readers (“R”)
- The « SCB RW » which carry the configuration for read-write (“W”) readers for STid Mobile ID management (Bluetooth)
- The « SKB » which holds the private key set that can be used in read-write (“W”) readers by index

These configuration cards are vital to the security of your access control installation as they contain essential and critical security information. Despite the intrinsic security of the cards in which the data is stored, it is better to follow some best practice recommendations.

T15.2 - Best practices

Here is the basic list of recommendations to follow to ensure a proper protection of the configuration cards:

1. Provide the configuration cards only to trusted and entitled personnel
2. Count, and ensure complete nominative traceability of the configuration cards allocation, whether it is for storage, use or modification
3. Ensure safe storage (safe)
4. Lock the configuration cards after using them (cf.VIII. 6 - Lock) – or destroy them, knowing that the most important element for your configuration management is the configuration file made with Secard (.PSE file cf.T16 - Recommendation to save the configuration files PSE), with which you will be able to recreate configuration cards as many time as you need.

   Important information: a brand-new reader, from factory, has to be initialized with your private configuration key before looking the configuration cards. The locking mechanism eliminates all transport keys used in the very first reader configuration process. Once locked, all the protection keys are private ad user defined

Generally speaking, it is better to safeguard all the components of the configuration card production:

1. Limit and define people authorized to know secrets
2. Configuration files, their protection, storage and the conditions required to use them
3. Configuration cards: production, use, locking and storage
4. Encoding tools: activation of all the security mechanism available: encryption and authentication of the data between the software and the encoder *(ref.*II. 1 - Encoder*)*.

T15.3 - Exemple of a configuration Card Lifecycle

As an illustration, here is what could be a typical configuration card lifecycle:

1. Configuration Card creating
2. New Reader (from factory) programming with Configuration Card
3. Configuration Card Lock
4. Possibility to modify the configuration and/or keys of the readers already configured with the same configuration card (locked)
5. If the necessity arises to configure new readers (from factory), creation of a new configuration card with the only purpose to set the private configuration key. Then the locked configuration card can be used to program all the configuration.
6. Once the new readers are configured, the unlocked card is: locked, safely stored destroyed physically or formatted/erased.
7. It is recommended to manage two distinct authorization for the use of the locked and unlocked configuration cards.

With SKB cards, a first card with only the configuration key can be used to initialize the readers in a safe zone. The goal is to safeguard operations with the configuration key. Once this is done a locked SKB can be used with all the private keys. This principle can also been applied to SCB / SCBRW cards.

T16 - Recommendation to save the configuration files PSE

T16.1- Definition

Configuration files .pSe are files created by SECard. They contain all the configuration settings of the readers, RFID chips setting and login SECard password. These files are encrypted with AES-CBC and are therefore unusable without SECard. Of over .pSe files can be locked by read password, one will be asked to open. This password uses a hash key.

T16.2 - Use

The default .pse configuration file (comes with SECard) is file Secard.pSe, that is located in the SECard installation directory.

At the first opening of SECard it is necessary to fill in the fields on the communication with the RFID encoder (STR-xx).

It's possible to save these settings (and all other) in another file. PSe using a file name and a directory different from the default. The last file PSe used will be automatically loaded to open SECard.

T16.3 - Recommendations

.pse files contain sensitive data, it is therefore necessary to consider, backup and archiving. It is therefore advised to follow the recommendations:

- Use pse locked files with different login password.
- Limit the diffusion of these files
- Save files pSe on a computer other than the one used to encode
- Archive pSe files on a media unmodifiable (CD / DVD)
- In the last option the user can retrieve the current settings and save the list of parameters in a text file, which is protected by a third method (eg rtf file product can be zipped, encrypted and backed up by the entity in charge security).

Users who have access to SECard and can open files pSe have access to the data they contain therefore the values of security settings (key values, cryptography used ...), so be careful that these people are trained to using SECard and that they are of confidence (authorized..).

T17 - Glossary

- ✓ **AES:** *Advanced Encryption Standard*. Encryption algorithm using a public key of 128, 192 or 256 bits. SECard uses 128 bits keys.
- ✓ **ADF:** Application Dedicated File.
- ✓ **APK:** Android Package file.
- ✓ **Application:** Application contains data files.
- ✓ **Application Master Key:** Application master key of MIFARE® DESFire® and MIFARE® DESFire®EV1 RFId chips.
- ✓ **Authentication:** Security mechanism based on an algorithm (AES, Crypto1 etc. ...) using a key.
- ✓ **BCC:** Check Byte of CSN. Used by MIFARE Ultralight® and MIFARE Ultralight® C.
- ✓ **Card Master Key:** Card master key MIFARE® DESFire® and MIFARE® DESFire®EV1.
- ✓ **Company key:** Protecting key of « *SCB* » badge and reader it configure.
- ✓ **Crypto1:** Private Encryption Algorithm (*NXP*) based on 48 bits key. Used by MIFARE® Classic® and MIFARE Plus® Level 1.
- ✓ **CSN:** Chip Serial Number
- ✓ **DF:** Dedicated File
- ✓ **EF:** Elementary file
- ✓ **Encoding:** User code in chip memory writing.
- ✓ **FCP:** File Control Parameter
- ✓ **FID:** *File Identifier*. File number.
- ✓ **Format:** MIFARE® DESFire® and MIFARE® DESFire®EV1 chips format.
- ✓ **HCE:** Host Card Emulation.
- ✓ **Lock Bytes:** Used by MIFARE Ultralight® and MIFARE Ultralight® C chips.
- ✓ **MAD:** Mifare® Application Directory. For more details, please refer to the *NXP* documentation AN10787 MIFARE® Application Directory (MAD).pdf.
- ✓ **Mifare Plus Levels:** Security levels of MIFARE Plus® chip.
    - ➢ **Level 0:** MIFARE Plus® configuration security level
    - ➢ **Level 1:** MIFARE® Classic® Compatibility level. Use *Crypto1*algorithm.
    - ➢ **Level 2:** Not used by SECard. Intermediate level.
    - ➢ **Level 3:** Strong security level. Use *AES* encryption algorithm.
- ✓ **NFC: Near Field Communication**
- ✓ **OTP:** *One Time Programming*.
- ✓ **Private ID:** Private (user) Code.
- ✓ **PUPI:** 14443-B chip serial number.
- ✓ **SCB:** Secured Configuration Badge for TTL readers.
- ✓ **SSCP:** STid Secure Common Protocol.
- ✓ **SKB:** Secured Key Bundle contains AES-3DES-Crypto1 keys, it is used by RS232 RS485 and USB readers to deal with indexed security keys.
- ✓ **UID:** Unique ID, unique chip identification number.
- ✓ **3DES:** *Triple Data Encryption Standard.* DES variant, the algorithm is based on two keys of 56 bits.
- ✓ **Diversification keys -** For more details, please refer to the following *NXP* documents:

  MIFARE® DESFire® EV1 and MIFARE Plus®: AN-165310.pdf MEthode NXP MIFARE® SAM
  MIFARE® Classic : P5DF072EV2.pdf §8.6.1
  MIFARE Ultralight® C: P5DF072EV2.pdf §8.6.2

SECard V3.5 evolution – Firmware version Z16 / osdp-Z09

Date	Description
01/10/2020	**Added:** - Compatibility SCB/OCB with SE9 Matrix Code module. - Compatibility SCB/OCB with SE8M 125kHz multi module. - In DESFire settings, possibility to manage separately the reading direction for Private ID and UID. - Diversification according to NXP AN0148 (3DES) – Div AV1 for DESFire chip. - Compatibility SCB/OCB for touch screen readers with SE8/SE8M module. - Touch screen reader compatibility with Nordics characters Å å Ö ö Æ æ Ø ø Ä ä. **Added OCB:** - Possibility to set the SCBK secure channel key with OCB card configuration. - Protocol Raw: possibility to Justify data to left or to right
	Modification:
	Suppression

SECard V3.5.1 evolution

Date	Description
11/12/2020	**Added:** - Possibility to select Reverse for STidMobileID (CSN).
	Modification:
	Suppression

REVISION

Date	Version	Description
25/03/2014	*5.0*	*Creation.*
18/04/2014	*5.1*	*Changing screen printed following the removal of the question mark "About"* *"Mutual Life and Wrenching signal" added for R33+INTR33E (p25, 37, 128)* *Verbose mode added in command line (p130-132)*
03/12/2014	*5.2*	*Reference ARC USB reader added / Security certificate installation added / Compatibility table modified / Warning on administrator rights added /Step by step for "Save as" added / Wizard SCB WAL print screen added / Table of chip available to create SCB / Wizard SCB WAL added / Authenticate encryption for ARC added / Red LED on tearing added / Scramble option added / Step 7 in wizard SCB ARC added / Authenticated encryption key added / Note about formatting DESfire added / ARC-F added / File Se modified / All print screen changed.*
02/03/2015	*5.3*	*Security certificate delivered by a trusted certificate authority instead of the certificate STid/ Chip activation added in settings file for command line*
14/12/2015	*5.4*	*Part1:New compatibility version added (p9) / Modification of the passwords (p17-19) / ARC1 added (p50) / Biometric data into reader added in Wizard ARC (p58-59) / Data type to read added for DESFire FID ID1 (p69) / Diversification NXP with AID reversed and padding added (p72) / NFC-HCE setting sand keys added in Wizard LXS, WAL & ARC (p86-89) / "Key Ceremony creation mode" added for SKB(p96-99) / Creation of Biometric Configuration Card BCC added (p100-103) /* *Part2: ARC1 added (p126-p131) / Chip type HCE added in Wiegand 3T (p143) / Biometric Data into reader added (p162-164) / File Se modified/* *All print screen changed.*
19/12/2016	*6.0*	*Part 1: I.4 Windows installation location of user files added // I.6 Compatibility modified // II.2 Blue Mobile ID encoding added // II.4 Credit Request added // III.5 SCB ARC wizard: Blue Mobile ID options added // III.7 Mifare DESFire settings: configuration Blue mobile, communication mode added // III.8 Mifare DESFire keys: NXP diversification data, Diversified Key Random added // III.11 Mifare Classic settings: Biometric template sector added // III.15 Blue Mobile ID settings added // III.15 Blue Mobile IDkeys added // VI.1 Data: Random list added // VI.2:Encode Blue Mobile ID added // VI.3 STid Mobile ID+ added // VII.9 Update: example added.* *Part 2: T2.1: Powering up modified // T4.2: Protocol 3T BLE added // T5.2.2 Message structure modified // T10 Life signal function: specific signal added// T11 Tamper switch: specific signal added // T13.6 Import configuration file: new reader parameters added // SECard Evolution added.*
04/08/2017	*6.1*	*Part 1 : I.5 Compatibility modified // III Upload SCB via serial added // III.5 LED light at Bluetooth® connection // Keypad Options // Screen Rotation // Orange Pack ID // III.7 /9/11 derogation biometrics // III.8 IDPrime diversification //III.12 MAD key A // III.15 Read mode Blue // III.17 Orange Pack ID added // IV.3 Index keys assignation // VI.2 bio Derogation // VII.5 delete DESFire file*
23/10/2017	*6.2*	*Tools DESFire Delete Application and File for IDPrime added // -b to specify the Baudrate in command line*
19/03/2018	*6.3*	*Part 1 : I.5 Compatibility modified // II-2 user rights Use tools added for power user // II-3 File: Password generator added // II-4 Credits: Delete VCard and dynamic credit counter // III IHM modification // Step 6 of the configuration wizard : option to attenuate the LEDs added // Step 8 of the configuration wizard : Open Mobile Protocol added // In STidMobileID 2 new thresholds in card mode added // III-7 Predefined configurations DESFire & mode EV2 added // III-15- Add print Open Mobile Protocol // VII-5 DESFire tools lock EV2 added* *Part 2: T4.2 Protocol 3Eb 3V 3W added// T13.6 Modified configuration import file*
09/07/2018	*6.4*	*Addition: NFC Mobile ID*
11/12/2018	*7.0*	*Addition: OCB // R/W SCB // serial configuration RW reader/ / PAC &PAC64 protocol // Duress biometric // Deletion of all pages related to standard readers*
03/01/2020	*7.1*	*Addition related SECard v3.4 release.*
01/10/2020	*7.2*	*Addition related SECard v3.5 release.*
11/12/2020	*7.2.1*	*Addition related SECard v3.5.1 release.// Added: Recommendations for the configuration Cards*

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