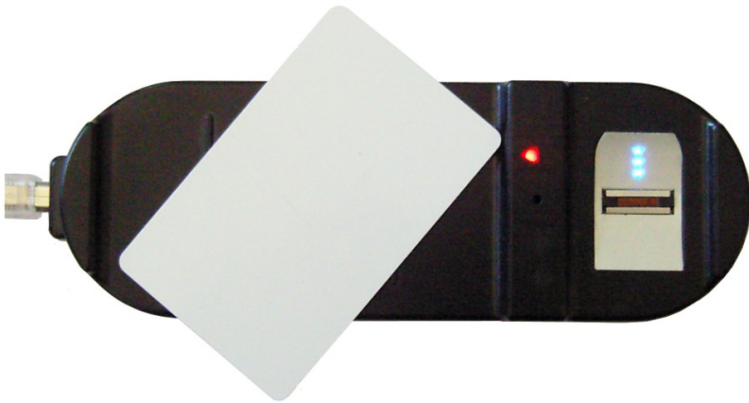


CP-R25 and AS-B01

**MIFARE® Card Programmer/Fingerprint
Swipe Enrollment Station and Software**
Hardware and Software Manual



ROSSLARE
SECURITY PRODUCTS

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Notice and Disclaimer

This manual's sole purpose is to assist installers and/or users in the safe and efficient installation and usage of the system and/or product, and/or software described herein.

BEFORE ATTEMPTING TO INSTALL AND/OR USE THE SYSTEM, THE INSTALLER AND THE USER MUST READ THIS MANUAL AND BECOME FAMILIAR WITH ALL SAFETY REQUIREMENTS AND OPERATING PROCEDURES.

- The system must not be used for purposes other than those for which it was designed.
- The use of the software associated with the system and/or product, if applicable, is subject to the terms of the license provided as part of the purchase documents.
- ROSSLARE exclusive warranty and liability is limited to the warranty and liability statement provided in an appendix at the end of this document.
- This manual describes the maximum configuration of the system with the maximum number of functions, including future options. Therefore, not all functions described in this manual may be available in the specific system and/or product configuration you purchased.
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- All wiring diagrams are intended for reference only, the photograph or graphic of the PCB(s) are intended for clearer illustration and understanding of the product and may differ from the actual PCB(s).

1. Introduction

Rosslare's CP-R25 is a desktop MIFARE® and fingerprint card programmer for MIFARE 1K and 4K RFID proximity cards and tags.

The CP-R25 makes managing fingerprint and MIFARE cards easier and can help facilitate the effective deployment and control of any facility code application, including access control, intrusion, and time and attendance applications.

1.1 The CP-R25 System

The CP-R25 is built for high-security, portability and ease of use, enabling high quality MIFARE and fingerprint enrollment at a low cost.

The CP-R25 programmer is controlled by computer using Rosslare's powerful AS-B01 Programmer software package.

1.2 Desktop Convenience

The CP-R25 is small and lightweight, with a slim and attractive design. It is built for convenience and portability, with a USB 2.0 computer interface, which makes it quick to install and allows it to run without any additional power source.

Designed to sit safely on any desktop, the CP-R25 is sturdily built, with large card and fingerprint trays and surface-gripping rubber feet.

1.3 Intuitive Software System

The AS-B01 is a software application intended for programming MIFARE cards, tags and fingerprints using Rosslare's CP-R25 Desktop Programmer.

The system includes a security authentication system and a real-time operations log.

Using this tool requires basic understanding of MIFARE cards memory architecture and access condition mechanisms.

The software does not support all MIFARE cards features required by the systems using the CP-R25 programmed MIFARE cards.

1.4 Compatibility

The CP-R25 Desktop Programmer and AS-B01 software are compatible with other products, including but not limited to:

- AY-W6260 and AY-W6360 MIFARE Contactless Smart Card Sector Readers Family
- AY-Q6260 and AY-Q6360 Anti-Vandal MIFARE Contactless Smart Card Sector Readers Family
- AY-Bx663 (x=1,3,4) Fingerprint Swipe Match-on-Card Readers Family

1.5 CP-R25 Desktop Programmer

- Enables the user to read, verify, and program MIFARE proximity cards
- Uses a swipe type fingerprint sensor
- Supports USB 2.0 computer connections
- Utilizes LED and buzzer subsystems to indicate programming, card, and power supply status
- Runs a thorough internal diagnostic self-test every time it is powered up

1.6 AS-B01 Software

- Programs fingerprints on User cards
- Programs ID data on User cards
- Produces configuration cards for Rosslare MIFARE readers
- Performs firmware updates on supported desktop programmers
- Maintains a user log to provide feedback to the software user
- Provides password protection
- Indicates valid connections with Desktop Programmer

2. Specifications and Requirements

2.1 CP-R25 Hardware Specifications

Data Specifications

Cards	MIFARE Classic 1K and 4K
RF Frequency	13.56 MHz
Bit Rate	106 kHz

Fingerprint Reader Specifications

Sensor Type	Swipe type UPEK TCS4C-TC50A
Sensor ESD Rating	Sensor technology – Capacitive sensor
Electrostatic Discharge	Up to +/- 15 kV air discharge on the sensor surface
FAR – False Accept Rate	Actual values depend on specific user's finger, usage condition and quality of enrollment. Specification – 0.0010% (1/100000)
FRR – False Reject Rate	Actual values depend on specific user's finger, usage condition and quality of enrollment. Specification – 2% (1/50)

Electrical Specifications

Operating Voltage	5 VDC Via USB
Input Current	Standby – 75 mA Maximum – 160 mA

CP-R25 Physical Specifications

Dimensions (L x W x H)	17.3 x 5.8 x 3.3 cm (6.18 x 2.28 x 1.30 in.)
Weight	309 g (10.89 oz.)

Environmental Data

Operating Temperature Range	10°C to 50°C (50°F to 122°F)
Operating Humidity Range	5% to 93% (non-condensing)

2.2 AS-B01 Software Requirements

Minimum Software Requirements

Operating System	Windows XP SP2
Framework	Microsoft .NET 2
Processor	400 MHz Pentium or equivalent
RAM Memory	512 Mbytes
Free HD Space	1 Gigabyte
Connection Port	USB

3. Installation

3.1 Unpacking the Equipment

The CP-R25 programmer is ready to use immediately "out of the box" and includes a USB cable and documentation.

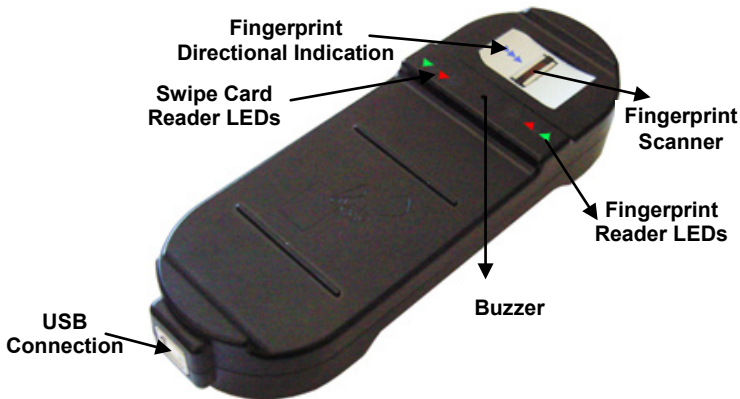
Please confirm all the items listed below are received before beginning. If any items are missing, contact your dealer immediately.

- One CP-R25 Programmer
- One Male A to Male B USB Cable
- One Software CD
- Instruction Manual

3.2 CP-R25 Description

The following figure illustrates the CP-R25 components:

Figure 1: CP-R25 Components



Installation

3.3 AS-B01 Software Installation

The AS-B01 software is included on the installation CD-ROM, which is packaged with the CP-R25 hardware.

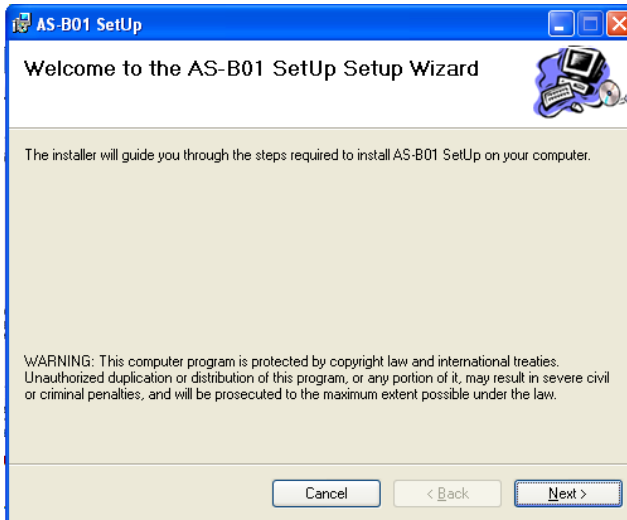
To install the AS-B01 software for the first time:

1. Insert the CD into the computer's CD drive.
2. If the Autoloader does not initiate the installation, open My Computer, double-click on the CD drive icon and then double-click the AS-B01 setup file.

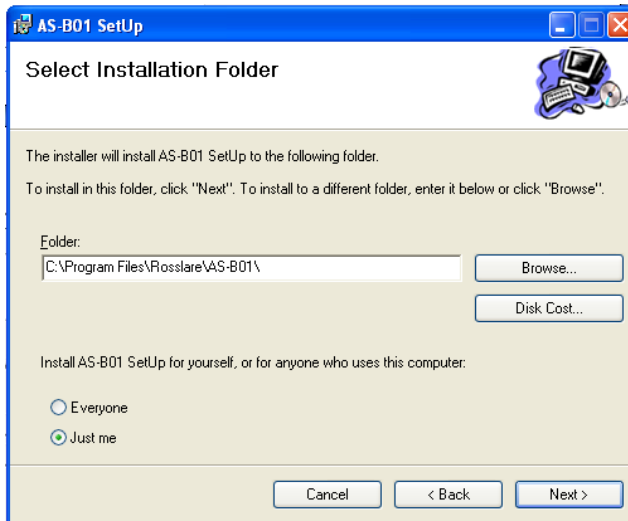


If Microsoft .NET 2 Framework is not installed on the computer, it is installed automatically before beginning the AS-B01 installation.

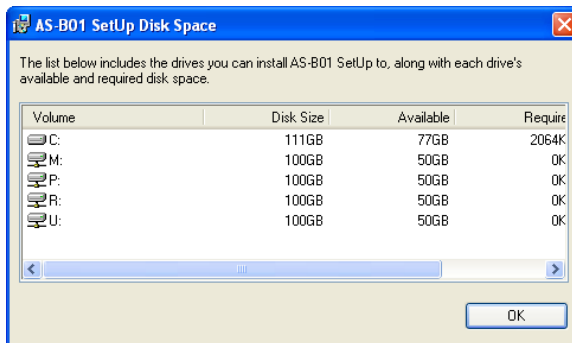
The installation package extracts the installation files. After the files are extracted, the *Welcome to the CP-R25 Setup Wizard* screen opens.



3. Click **Next**.
The *Select Installation Folder* screen opens.



4. [Optional] Click **Disk Cost...** to ensure the computer has sufficient space.
The *AS-B01 Setup Disk Space* window opens.



5. Select the users allowed to use the program, **Everyone** or **Just me**.
For security purposes it is suggested that **Just me** is selected.
6. [Optional] You can change the destination folder of the installation:
 - a. Click **Browse**.
The standard Windows Explorer window opens.
 - b. Navigate to and select the required folder.
7. Click **Next** to continue the installation process.
The *Confirm Installation* screen opens.

Installation

8. Click **Next**.

The installation process is initiated. When the process finishes, the *Installation Complete* screen opens.

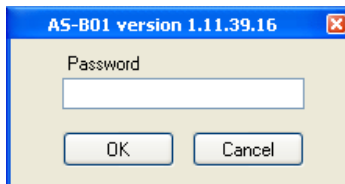
9. Click **Close** to complete the installation process.

3.4 Connecting the CP-R25

Before connecting the CP-R25 hardware, check that the ASB01 software is installed and running

To connect the CP-R25:

1. Click the AS-B01 icon on the desktop or select the program from the Rosslare folder in the **Start** menu. The login dialog opens.

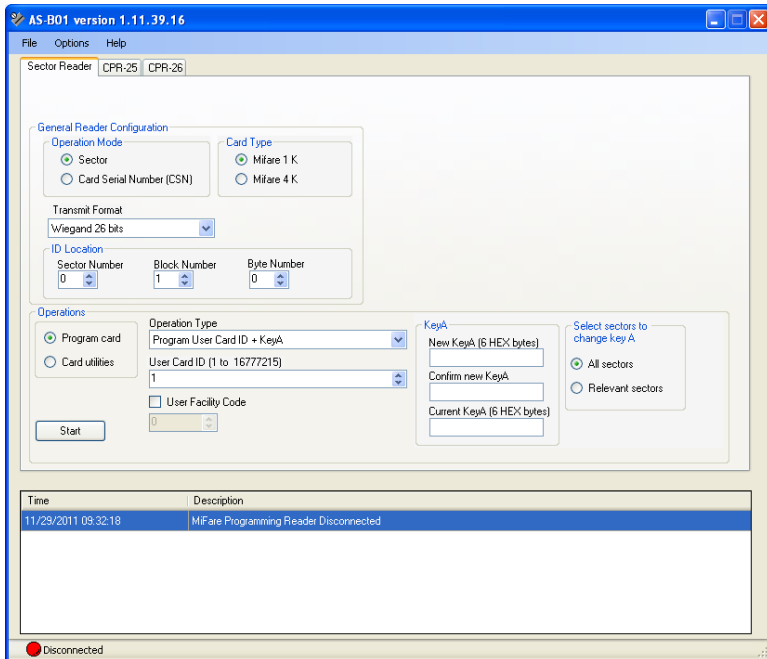


2. Enter a password.
When using the application for the first time, use the default password of "admin".



After initial use, make sure to change the default password to your company's approved password (see Section 7.1).

The AS-B01 software Main Window opens.



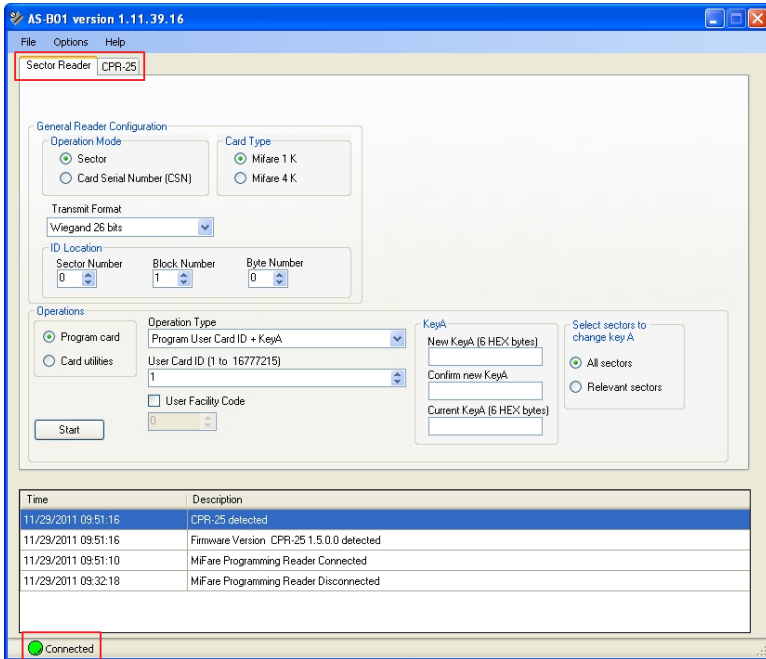
At the bottom left of the main window, the connection indication is red with the description “**Disconnected**”.

3. Connect the Desktop Programmer to a PC using the USB cable – one cable end connects to the PC USB host port output and the other end connects to the USB connector on the Desktop Programmer.

Windows® automatically installs the required drivers. The Desktop Programmer receives its power through the USB; no external power supply is required.

On the AS-B01 main window, the connection indicator at the bottom of the window changes from red to green with the description “**Connected**” to indicate that the CP-R25 Desktop Programmer is connected. In addition, the CPR-26 tab that was previously visible closes, leaving only the CPR-25 tab visible.

Installation



The event log displays a connected message.

If the indicator does not turn green, and the description still indicates **Disconnected** after the USB cable is connected, try disconnecting the USB cable from the Desktop Programmer and reconnecting it.

When the hardware and software are disconnected, the software can only function in demonstration mode.

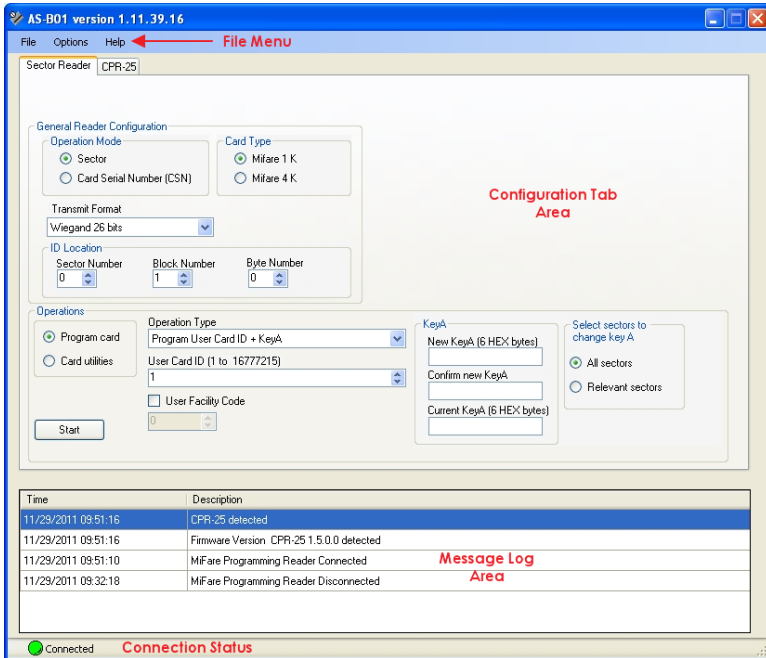
Once the indicator is green and the description is **Connected**, the CP-R25 Desktop Programmer is ready for use.

4. AS-B01 Software Overview and LEDs

This section describes the AS-B01 and CP-R25 LEDs.


4.1 Software Overview

Once the login is completed with the correct password, the main software window opens.



The AS-B01 main window consists of the following functional areas:

- File menu area – Used for general operations such as setting global options on the Desktop Programmer, getting version information, and closing the software.
- Configuration Tab area – The main working area, which is used for entering and displaying all card and swipe configuration parameters.



Note Descriptions for fields requiring parameters under all the tabs are described in Appendix A.

AS-B01 Software Overview and LEDs

There are two programming tabs:

- Sector reader – Used to configure and read sector reader cards. This tab allows configuring both User ID/Card Serial number user cards as well as Reader Configuration cards.
- Swipe reader – Used to write and read cards containing fingerprint templates. This tab also allows creating configuration cards for fingerprint readers.
- Message log area – The event log records all activities and provides the user with real time system monitoring. The information messages may either be operation success or failure messages, or instruction messages such as during fingerprint enrollment.
- Status information area – Indicates connection status with the CP-R25 Desktop Programmer hardware.

4.2 Indication LEDs

Table 1 describes LED behavior on the CP-R25 Programmer (see Figure 1).

Table 1: Indication LEDs

Event	Swipe Card Reader LED	Fingerprint Reader LED	Buzzer	Fingerprint Directional Indication LED
General				
Power on	One red LED lights for several seconds followed by all the LEDs flashing and the buzzer beeps 3 times for the duration of 3 seconds.			
Card Programming				
Card not loaded	Green flashing	All off	Off	All on
Card loaded	On card detection, green turns on for 1 second, then off	All off	On card detection short beep, then off	All on
Write card success	Green on for 3 sec	All off	3 High tone beeps	All on
Write card fail	Red on for 3 seconds	All off	Long buzz	All on

Event	Swipe Card Reader LED	Fingerprint Reader LED	Buzzer	Fingerprint Directional Indication LED
-------	-----------------------	------------------------	--------	--

Fingerprint Scanning

Waiting for fingerprint	Off	Green flashes	Off	Rolling LEDs in circular mode to indicate finger swipe
Read fingerprint success	Off	Green on for 3 sec	3 high-tone beeps	Rolling LEDs in circular mode to indicate finger swipe
Read fingerprint fail	Off	Red on for 3 sec	Long buzz	Turning all LEDs on, and then according to status, leaving all on or going back to circular mode

Read finger timeout – When no finger is passed over the scanner for 30 seconds, the CP-R25 Desktop Programmer goes back to Standby mode of swipe LEDs.

5. Programming Cards and Tags

To configure the MIFARE cards and tags, the Configuration Tab area of the Main Window is used.

Within the Configuration Tab Area, there are three sub-areas whose display changes depending on what options are selected.

Refer to Appendix B for a description of the various fields that appear in the Configuration Tab area.

Two of the sub-areas always appear:

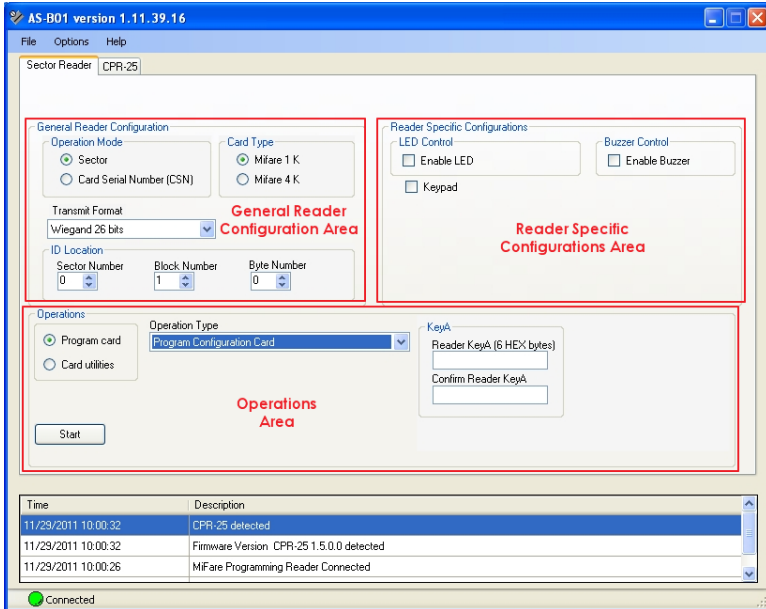
- General Reader Configuration area – This area is the same for all configuration functions
- Operations area – This area varies according to the configuration function being performed. The configuration function is selected in the Operation Type dropdown menu.

The following two sub-areas appear depending on what options are selected in *Operation Mode* and *Operation Type*.

- *Reader Specific Configurations* area – This area is visible when the Sector Reader tab is active and **Program Configuration Card** is selected in *Operation Type*.
- *Finger options* – This area is visible when the CPR-25 tab is active and *Operation Type* is **Program User Card KeyA + template**.

Figure 2 illustrates one of the possible appearances of the Configuration Tab area.

Figure 2: Configuration Tab Area



When programming a MIFARE card or tag, the card or tag is placed on the CP-R25 Desktop Programmer antenna area. Figure 3 illustrates where these areas are located on the CP-R25 Desktop Programmer.

Figure 3: CP-R25 Antenna Areas



Programming Cards and Tags

The CP-R25 Programmer configures three card or tags types:

- Configuration card – This card is used to configure a reader. The Configuration card is simply held up against a reader to automatically program the reader with the relevant security information thus allowing the reader to identify the user cards or tags.
- Master card – This card is used to put the reader into Configuration mode so that a Configuration card can then be used to program the reader.
- User card – This card is used to enable access by presenting the card or tag to the reader. With readers requiring fingerprint identification the same card or tag is used in conjunction with swiping of the fingertip.

5.1 Programming a Master Card

The Master card is used to put the reader into Configuration mode in which a Configuration card is then used to program the reader.

To prepare a Master card:

1. Select either the **Sector Reader** or **CP-R25** tab.
2. In *Operation Type* in the Operations area, select **Create Master Card**.



The Operation Mode field is not relevant for configuring Master card. The default value of Sector can be used.

3. In *Card Type*, select either **MIFARE 1 K** or **MIFARE 4 K**.
4. From the *Transmit Format* dropdown menu, select the applicable transmission format.
5. Place either a blank MIFARE card or a MIFARE card that has been previously used as a Master card on the CP-R25 Desktop Programmer antenna area.
6. Click **Start** to begin programming the MIFARE card.
On completion, a message is displayed in the Message Log area to verify that the programming succeeded.
If the programming is a failure there is a short buzz and the Swipe Card Reader LEDs light red for three seconds.

5.2 Programming a Configuration Card

A Configuration card is used for configuring specific Rosslare MIFARE and Fingerprint reader's operation modes. Holding the Configuration card in front of the reader after presenting the Master card configures that reader. The organization's Configuration card should be kept in a safe place to avoid being copied by unauthorized persons as it stores the organization/site KeyA. It is advisable to create a backup Configuration card and store it in a safe place.

Preparing a sector reader Configuration card requires a KeyA value. Do not expose the KeyA value to any unauthorized personnel while preparing the Configuration card.



Refer to the specific reader's installation manual for a detailed explanation of the various options.

Note

5.2.1 Sector Reader Configuration Cards

A Sector Reader Configuration card allows you to create a configuration card, which is used to configure the various sector readers such as the AY-W6260, AY-W6360, AY-Q6260, and AY-Q6360 units.

To prepare a Sector Reader Configuration card:

1. Select the **Sector Reader** tab.
2. Select the applicable *Operation Mode*, either **Sector** or **Card Serial Number (CSN)**.
3. From the *Operation Type* dropdown menu, select **Program Configuration Card**.
4. In *Card Type*, select either **MIFARE 1 K** or **MIFARE 4 K**.
5. From the *Transmit Format* dropdown menu, select the applicable transmission format.
6. For **Sector** operation mode, select values for the **Sector Number**, **Block Number**, and **Byte Number** fields in *ID Location*.
7. Ensure that *Operations* is set to **Program Card**.
8. Define the *Led and Buzzer Control* behavior by selecting or clearing the **Enable Led** and **Enable Buzzer** checkboxes.
9. For readers with a keypad:
 - a. Select the **Keypad** checkbox.
Additional keypad options appear.
 - b. In the **Backlight options** dropdown menu, select the backlight behavior.
 - c. From the **Transmit Format** dropdown menu, set the keypads' transmission format.
10. For **Sector** mode, enter the KeyA to be used by the reader as the unique KeyA for the organization or site in both the **Reader KeyA** and the **Confirm Reader KeyA** fields.



The KeyA number is hidden by "*" characters, so write down the new key and keep it in a safe place to avoid exposing this secret key to unauthorized personnel. The KeyA value is entered as a 12 hexadecimal digit. The default KeyA is FFFFFFFFFF.

Note

11. Place a blank MIFARE card or a card previously configured as a Configuration card on the CP-R25 Desktop Programmer antenna area.
12. Click **Start** to begin programming the MIFARE card.
On completion, a message appears in the Message Log area to verify that the programming succeeded.

Programming Cards and Tags

If the programming fails, there is a short buzz and the Swipe Card Reader LEDs light red for three seconds.

5.2.2 Fingerprint Swipe Reader Configuration Cards

The Fingerprint Swipe Reader Configuration card allows you to create a Configuration card to configure the various Fingerprint Swipe readers such as the AY-B1663, AY-B3663, and AY-B4663.

To prepare a Biometric Swipe Configuration card:

1. Select the **CPR-25** tab.
2. In *Operation Mode*, select either **Sector** or **Card Serial Number (CSN)**.
3. In *Card Type*, select either **MIFARE 1 K** or **MIFARE 4 K**.
4. From the *Transmit Format* dropdown menu, select the applicable transmission format.
5. For **Sector** operation mode, define the *ID Location* using the **Sector Number**, **Block Number**, and **Byte Number** fields.
6. From the *Operation Type* dropdown menu, select **Program Configuration Card**.
7. Ensure that *Operations* is set to **Program Card**.
8. Define the *Led and Buzzer Control* behavior by selecting or clearing the **Enable Led** and **Enable Buzzer** checkboxes.
9. To enable the *Lockout* feature:
 - a. Select the **Enable** checkbox.
 - b. Define the lockout behavior using the **Attempts** and **Duration** fields.
10. For reports on operational failures, select the **Enable** checkbox under *Failed operation reporting*.
11. In *KeyA*, enter the KeyA to be used by the reader as the unique KeyA for the organization or site in both the **Reader KeyA** and the **Confirm Reader KeyA** fields.



The KeyA number is hidden by "*" characters, so write down the new key and keep it in a safe place to avoid exposing this secret key to unauthorized personnel. The KeyA value is entered as a 12 hexadecimal digit. The default KeyA is FFFFFFFFFF.

12. Place a blank MIFARE card or a card previously configured as a Configuration card on the CP-R25 Desktop Programmer antenna area.
13. Click **Start** to begin programming the MIFARE card.

On completion, a message appears in the Message Log area to verify that the programming succeeded.

If the programming fails, there is a short buzz and the swipe Card Reader LEDs light red for three seconds.

5.3 Programming User Cards or Tags

In this section, both cards and tags are referred to as cards. The card configuration type depends on what level of system security is implemented. The cards configuration depends on the reader type used. There are two reader types that determine what tab to use when configuring the cards:

- Sector reader – Used to configure and read sector reader cards. This tab allows configuring both User ID/card serial number user cards as well as reader configuration cards.
- Swipe reader – Used to write and read cards containing fingerprint templates. The *CP-R25* tab also allows creating configuration cards for fingerprint readers.

The AS-B01 application offers various configuration options including the following:

- For a new MIFARE User card, configuring the Card ID, card key and fingerprint enrollment separately.
- For a previously configured MIFARE User card, configuring the Card ID and card key at the same time.
- For a previously configured MIFARE User card, configuring the Card ID, card key, and fingerprint enrollment at the same time.

Once a card is configured, the Card ID and the KeyA value can be modified, or if required, completely wiped from the card.

5.3.1 Programming a Sector Reader User Card

The first stage of preparing a MIFARE sector read User card is configuring a card ID and card KeyA value. These two configuration values are done simultaneously.

To program a MIFARE Sector Read User card:

1. Select the **Sector Reader** tab.
2. In *Operation Mode*, select the **Sector**.
3. In *Card Type*, select either **MIFARE 1 K** or **MIFARE 4 K**.
4. From the *Transmit Format* dropdown menu, select the applicable transmission format.
5. In *ID Location*, select values for the **Sector Number**, **Block Number**, and **Byte Number** fields.



If the Card Serial Number operation mode is being used by the organization, no programming is available for the user card.

Note

6. Ensure that *Operations* is set to **Program Card**.
7. From the *Operation Type* dropdown menu, select **Program User Card ID + KeyA**.

Programming Cards and Tags

8. Enter the **User Card ID** number or scroll to a value using the Up and Down arrows.
The range of possible values is shown just above the *User Card ID* field.
9. In *KeyA*:
 - a. Enter the KeyA to be used by the reader as the unique KeyA for the organization or site in both the **Reader KeyA** and the **Confirm Reader KeyA** fields.
 - b. Enter the current KeyA of the card being programmed.



- The KeyA number is hidden by "*" characters, so write down the new key and keep it in a safe place to avoid exposing this secret key to unauthorized personnel. The KeyA value is entered as a 12 hexadecimal digit. The default KeyA is FFFFFFFF.
- The current KeyA during a new installation is the default KeyA FFFFFFFF. For existing sites, the current KeyA is the KeyA entered the original site installation. The current KeyA remains active until it is changed after configuring the reader.

10. Place a MIFARE card on the CP-R25 Desktop Programmer antenna area.
11. Click **Start** to begin programming the MIFARE card.
On completion, a message appears in the Message Log area to verify that the programming succeeded.
If the programming fails, there is a short buzz and the swipe Card Reader LEDs lights red for three seconds.
12. To program additional MIFARE User cards, repeat Step 8 and then Steps 10 and 11.

5.3.2 Programming and Enrolling Fingerprint User Card

Before enrolling a card user's fingerprint, the card must have a configured card ID and KeyA value.

There are two options for enrolling fingerprints on a MIFARE User card. Either one or two fingerprints can be programmed on the card. This number of fingerprints is defined by the company security specifications and the card type used.

To enroll fingerprints on a MIFARE User card:

1. Select the **CP-R25** tab.
2. Select the applicable *Operation Mode*, either **Sector** or **Card Serial Number (CSN)**.
3. In *Card Type*, select either **MIFARE 1 K** or **MIFARE 4 K**.
4. From the *Transmit Format* dropdown menu, select the applicable transmission format.
5. For **Sector** operation mode, select values for the **Sector Number**, **Block Number**, and **Byte Number** fields in *ID Location*.
6. Ensure that *Operations* is set to **Program Card**.

7. From the *Operation Type* dropdown menu:
 - a. If *Operation type* is Sector, select **Program User Card ID + KeyA + template**.
 - b. If *Operation type* is **Card Serial Number (CSN)**, select **Program User Card KeyA + template**.
8. For **Sector** *Operation Mode*, enter the **User Card ID** number or scroll to a value using the Up and Down arrows.

The range of possible values is shown just above the *User Card ID* field.

9. In *KeyA*:
 - a. Enter the KeyA to be used by the reader as the unique KeyA for the organization or site in both the **Reader KeyA** and the **Confirm Reader KeyA** fields.
 - b. Enter the current KeyA of the card being programmed.



Note

- The KeyA number is hidden by "*" characters, so write down the new key and keep it in a safe place to avoid exposing this secret key to unauthorized personnel. The KeyA value is entered as a 12 hexadecimal digit. The default KeyA is FFFFFFFFFF.
- The current KeyA during a new installation is the default KeyA FFFFFFFFFF. For existing sites, the current KeyA is the KeyA entered the original site installation. The current KeyA remains active until it is changed after configuring the reader.

10. In *Fingers options*, select the number of fingers per card to enroll onto the MIFARE User card.
11. [Optional] Select the **Verify after enrollment** checkbox to verify the enrolled fingerprints if required. This is usually not required as the CP-R25 Desktop Programmer has an automatic internal verification during enrollment.
12. If needed, select the **Ignore Template** checkbox for a cardholder who is unable to present a finger for verification.

Note that when this option is selected, the parameters in *Finger options* in Step 10 are grayed out.
13. Place a MIFARE card on the CP-R25 Desktop Programmer antenna area.
14. Click **Start** to begin programming the MIFARE card.
15. Instruct the person whose fingerprints are being enrolled to swipe his/her finger on the finger sensor, located on the CP-R25 Desktop Programmer, in the direction indicated by the Fingerprint Directional Indication LEDs.
16. Follow the instructions messages in the Message Log area to repeat the fingerprint swipe process three (3) times.

If enabled in the system settings (see Section 7.2), the system alerts if the card being programmed is not empty. The "The card is not empty. Do you want to overwrite it?" prompt message is displayed. Choose **Continue** or **Cancel**.

Programming Cards and Tags

On a successful completion of all three reads and card programming, 3 short beeps are generated and a success message "Writing template to card succeeded" appears in the Message Log area.

If the programming fails, there is a short buzz and the swipe Card Reader LEDs light red for three seconds.

17. To program and enroll additional user cards, repeat Step 8 and then Steps 13 to 16.

6. Additional Programmer Utilities

The AS-B01 software includes additional utilities that allow you to use the programmer in the best and easiest possible way.

The card utilities are identical for both the Sector Read and CP-R25 tabs. The CP-R25 tab has additional utilities designed specifically for the fingerprint swipe application.

6.1 Card Utilities

The card utilities vary depending on the selection of either **Sector** or **Card Serial Number (CSN)** in *Operation Mode*.

When **Card Serial Number (CSN)** is selected, there are two card utility options available.

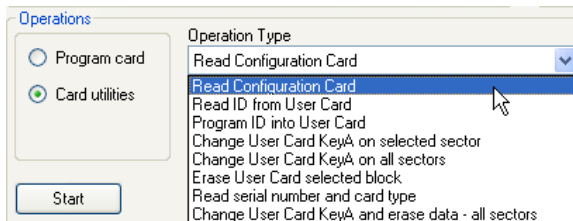
When **Sector** is selected, the same two card utilities are available, plus six additional utilities specific to the Sector type card.

6.1.1 Reading a Configuration Card

This function is used to confirm the card configuration when performing other functions in order to save time and enhance accuracy.

To read the Configuration cards:

1. Select either the **Sector Reader** or **CP-R25** tab.
2. Select the applicable *Operation Mode*, either **Sector** or **Card Serial Number (CSN)**.
3. In *Operations*, select **Card utilities**.
4. In the *Operation Type* field, select **Read Configuration Card** from the dropdown menu.



5. Place the MIFARE Configuration card on the CP-R25 Desktop Programmer antenna area.
6. Click **Start** to begin reading the Configuration card.
The configuration options are displayed on the screen.

Additional Programmer Utilities

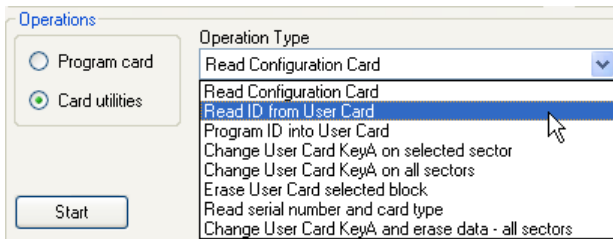
6.1.2 Reading an ID from a User Card

This utility is used to ensure that the MIFARE User card is configured properly.

This option is only available for the **Sector Operation Mode**.

To read an ID from a MIFARE User card:

1. Select either the **Sector Reader** or **CP-R25** tab.
2. *In Operation Mode*, select **Sector**.
3. Select the *Card Type*, either **MIFARE 1 K** or **MIFARE 4 K**.
4. From the *Transmit Format* dropdown menu, select the applicable transmission format.
5. In *Operations*, select **Card utilities**.
6. From the *Operation Type* field dropdown menu, select **Read ID from User Card**.



The **KeyA** and **User Card ID** fields appear.

7. Enter the **KeyA** of the card being read.
8. Place the MIFARE User card on the CP-R25 Desktop Programmer antenna area.
9. Click **Start** to display the card ID in the **MIFARE User Card ID** field.

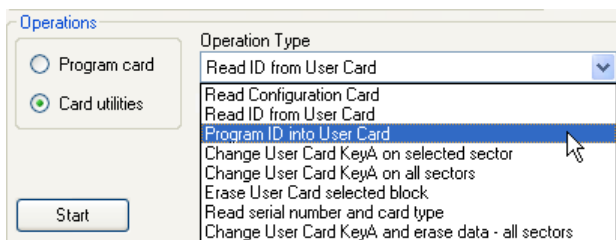
6.1.3 Programming a User Card ID

This utility is used to program the User Card ID into a specific location on the User card without configuring the card template or KeyA.

This option is only available for the **Sector Operation Mode**.

To program an ID into a MIFARE User card:

1. Select either the **Sector Reader** or **CP-R25** tab.
2. *In Operation Mode*, select **Sector**.
3. Select the *Card Type*, either **MIFARE 1 K** or **MIFARE 4 K**.
4. From the *Transmit Format* dropdown menu, select the applicable transmission format.
5. In *Operations*, select **Card utilities**.
6. From the *Operation Type* field dropdown menu, select **Program ID into User Card**.



The **KeyA** and **MIFARE User Card ID** fields appear.

7. Enter the **KeyA** of the card being programmed.
8. Enter the **User Card ID** or scroll to the value using the Up and Down arrows. The value can be between 0 and 16777215.
9. Select values for the **Sector Number**, **Block Number**, and **Byte Number** fields in *ID Location*.
10. Place the MIFARE User card on the CP-R25 Desktop Programmer antenna area.
11. Click **Start** to begin programming procedure.

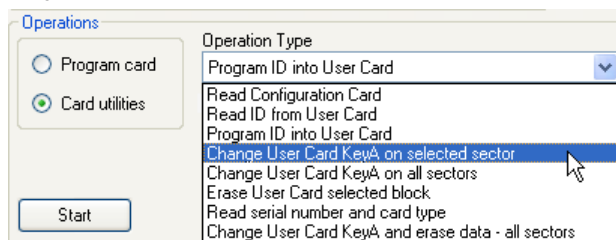
6.1.4 Changing the User Card KeyA in a Specific Sector

Use this utility to change the KeyA value in a specific sector of the User card without changing the card template or User Card ID.

This option is only available for the **Sector Operation Mode**.

To change the KeyA in a specific sector:

1. Select either the **Sector Reader** or **CP-R25** tab.
2. Select the **Sector Operation Mode**.
3. Select the *Card Type*, either **MIFARE 1 K** or **MIFARE 4 K**.
4. Define the *ID Location* using the **Sector Number** field.
5. In *Operations*, select **Card utilities**.
6. From the *Operation Type* field dropdown menu, select **Change User Card KeyA on selected sector**.



The **KeyA** fields are displayed.

Additional Programmer Utilities

7. In *KeyA*:
 - a. Enter the KeyA to be used by the reader as the unique KeyA for the organization or site in both the **Reader KeyA** and the **Confirm Reader KeyA** fields.
 - b. Enter the current KeyA of the card being programmed.



Note

- The KeyA number is hidden by "*" characters, so write down the new key and keep it in a safe place to avoid exposing this secret key to unauthorized personnel. The KeyA value is entered as a 12 hexadecimal digit. The default KeyA is FFFFFFFFFF.
- The current KeyA during a new installation is the default KeyA FFFFFFFFFF. For existing sites, the current KeyA is the KeyA entered the original site installation. The current KeyA remains active until it is changed after configuring the reader.

8. Place the MIFARE User card on the CP-R25 Desktop Programmer antenna area.
9. Click **Start** to program the card with the new KeyA.

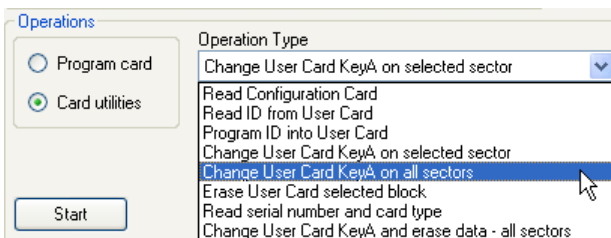
6.1.5 Changing the User Card KeyA in All Sectors

Use this utility to change the KeyA value in all sectors of the User card without changing the card template or User Card ID.

This option is only available for the **Sector Operation Mode**.

To change the KeyA in a specific sector:

1. Select either the **Sector Reader** or **CP-R25** tab.
2. Select the **Sector Operation Mode**.
3. Select the *Card Type*, either **MIFARE 1 K** or **MIFARE 4 K**.
4. In *Operations*, select **Card utilities**.
5. From the *Operation Type* field dropdown menu, select **Change User Card KeyA on all sectors**.



The **KeyA** fields are displayed.

6. In *KeyA*:
 - a. Enter the KeyA to be used by the reader as the unique KeyA for the organization or site in both the **Reader KeyA** and the **Confirm Reader KeyA** fields.
 - b. Enter the current KeyA of the card being programmed.



- The KeyA number is hidden by "*" characters, so write down the new key and keep it in a safe place to avoid exposing this secret key to unauthorized personnel. The KeyA value is entered as a 12 hexadecimal digit. The default KeyA is FFFFFFFFFF.
- The current KeyA during a new installation is the default KeyA FFFFFFFFFF. For existing sites, the current KeyA is the KeyA entered the original site installation. The current KeyA remains active until it is changed after configuring the reader.

7. Place the MIFARE User card on the CP-R25 Desktop Programmer antenna area.
8. Click **Start** to program the card with the new KeyA.

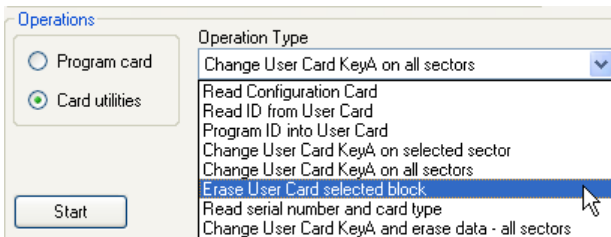
6.1.6 Erasing Specific User Card Data

This utility is used to erase specific information from a defined sector within the card.

This option is only available for the **Sector Operation Mode**.

To erase specific user card data:

1. Select either the **Sector Reader** or **CP-R25** tab.
2. Select the **Sector Operation Mode**.
3. Select the *Card Type*, either **MIFARE 1 K** or **MIFARE 4 K**.
4. In the *Operations* area, select **Card utilities**.
5. From the *Operation Type* field dropdown menu select **Erase User Card selected block**.



The **KeyA** field is displayed.

6. Enter the **KeyA** for the card being read.
7. Place the MIFARE User card on the CP-R25 Desktop Programmer antenna area.
8. Click **Start** to erase the data from the specific sector within the card.

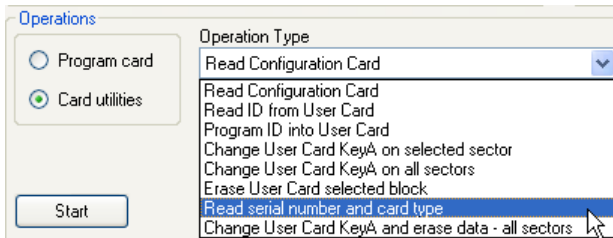
6.1.7 Read Serial Number and Card Type

Each MIFARE card has a Unique Serial Number (UID). Use this utility to see a card's UID and card type.

Additional Programmer Utilities

To read a MIFARE User Card Serial Number and Type:

1. Select either the **Sector Reader** tab or the **CP-R25** tab.
2. From the *Transmit Format* dropdown menu, select the applicable transmission format.
3. In the *Operations* area, select **Card utilities**.
4. From the *Operation Type* field dropdown menu, select **Read serial number and card type**.



The **Serial Number** field appears.

5. Place the MIFARE User card on the CP-R25 Desktop Programmer antenna area.
6. Click **Start** to display the serial number and card type.

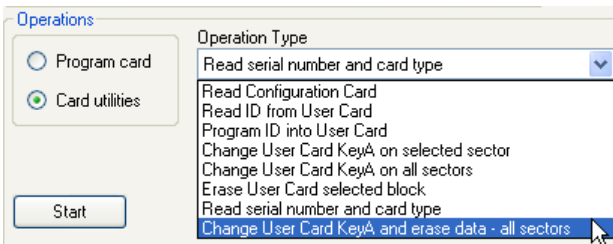
6.1.8 Changing KeyA and Erasing All Data

Use this utility to format a card to define a new KeyA, which is written on all sectors.

This option is only available for the **Sector Operation Mode**.


To format the User card:

1. Select either the **Sector Reader** or **CP-R25** tab.
2. Select the **Sector Operation Mode**.
3. Select the *Card Type*, either **MIFARE 1 K** or **MIFARE 4 K**.
4. In the *Operations* area, select **Card utilities**.
5. From the *Operation Type* field dropdown menu, select **Change User Card KeyA and erase data – all sectors**.



The **KeyA** fields are displayed.


6. In *KeyA*:
 - a. Enter the KeyA to be used by the reader as the unique KeyA for the organization or site in both the **Reader KeyA** and the **Confirm Reader KeyA** fields.
 - b. Enter the current KeyA of the card being programmed.



Note

- The KeyA number is hidden by "*" characters, so write down the new key and keep it in a safe place to avoid exposing this secret key to unauthorized personnel. The KeyA value is entered as a 12 hexadecimal digit. The default KeyA is FFFFFFFFFF.
- The current KeyA during a new installation is the default KeyA FFFFFFFFFF. For existing sites, the current KeyA is the KeyA entered the original site installation. The current KeyA remains active until it is changed after configuring the reader.

7. Place the MIFARE User card on the CP-R25 Desktop Programmer antenna area.
8. Click **Start** to start the formatting procedure.



Note

This operation may take up to 30 seconds for a 1K card and several minutes for a 4K card. Do not close the application or remove the card until you receive a confirmation message.

6.2 Fingerprint Utilities

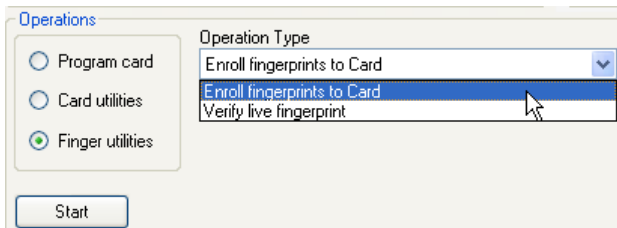
The fingerprint utility allows you to enroll fingerprints to a pre-configured User card without changing the information written on the card or to verify the fingerprint written on to a card.

6.2.1 Enrolling Fingerprints on a Pre-configured User Card

The AS-B01 software allows you to enroll fingerprints onto a card already configured with the User card ID.

To enroll fingerprints to a pre-configured user card:

1. Select the **CP-R25** tab.
2. In the *Operations* area, select **Finger utilities**.
3. From the *Operation Type* dropdown menu, select **Enroll fingerprints to card**.



4. Select the number of fingers per card to enroll.

Additional Programmer Utilities

5. [Optional] In *Finger options*, select the **Verify after enrollment** checkbox to verify the enrolled fingerprints if required. This usually not required as the CP-R25 Desktop Programmer has an automatic internal verification on enrollment.
6. For security reasons, enter the **KeyA** value.
7. Define the *ID Location* using the **Start Sector** field.
8. Place the card on the CP-R25 Desktop Programmer antenna area.
9. Click **Start** to begin programming the MIFARE card.
10. Instruct the person whose fingerprints are being enrolled to swipe his/her finger on the finger sensor, located on the CP-R25 Desktop Programmer, in the direction indicated by the Fingerprint Directional Indication LEDs.
11. Follow the instructions messages in the Message Log area to repeat the fingerprint swipe process three (3) times.



To write the finger template onto a specific card sector, define the sector number by typing or selecting the number in the **Sector Number** field located in the finger options section of the screen.

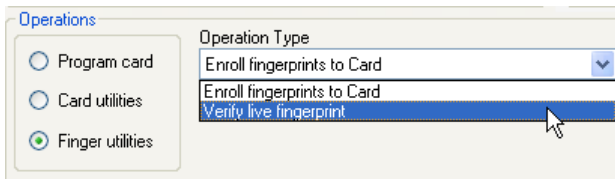
6.2.2 Verifying Fingerprint Enrollment on a User Card

Verifying fingerprint enrollment on a MIFARE User card can be done as a separate function or at the same time an enrollment is preformed.

As an added security measure the CP-R25 Desktop Programmer automatically does an internal verification to ensure accuracy. That is why during the enrollment process, more than one swipe is required.

To verify fingerprint enrollment on a MIFARE User card:

1. Select the **CP-R25** tab.
2. In the *Operations* area, select **Finger utilities**.
3. From the *Operation Type* dropdown menu, select **Verify live fingerprint**.



4. Select the number of fingers that were enrolled for verification.
5. For security reasons, enter the **KeyA** value.
6. Select the sector number that starts the fingerprint template location.
7. Place the card on the CP-R25 Desktop Programmer antenna area.
8. Click **Start** to begin programming the MIFARE card.

9. Instruct the person whose fingerprints are being verified to swipe his/her finger on the finger sensor, located on the CP-R25 Desktop Programmer, in the direction indicated by the Fingerprint Directional Indication LEDs.
10. Follow the instructions messages in the Message Log area to repeat the fingerprint swipe process once for each template.

7. Global Options

This section provides instruction on how to define the software behavior and change the password used to enter the application.

7.1 Change Password

For security reasons, it is highly advisable to change the login password to the AS-B01 software from the default password.

To change the AS-B01 application entry password:

1. In the File menu, click **Options > Change Password**.
The *Change Password* window opens.



2. Complete the fields as required.
Passwords are case sensitive.
For higher security, make sure that the password you choose is more than 4 letters long. Mixing letters and numbers also substantially strengthens the password.
All passwords are hidden by '*' characters to avoid exposing it to an unauthorized user.
3. Click **OK**.
The password is changed.

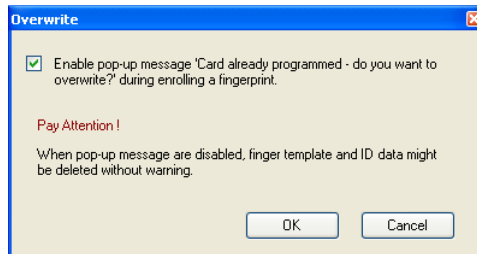
7.2 Card Overwrite

Enabling the Card Overwrite option causes the system to issue a warning when attempting to write information onto a card with data already stored on it.

If disabled, the system overwrites information automatically without warning the user.

To enable the Card Overwrite warning:

1. In the File menu click **Options > Card Overwrite**.
The *Overwrite* window opens.



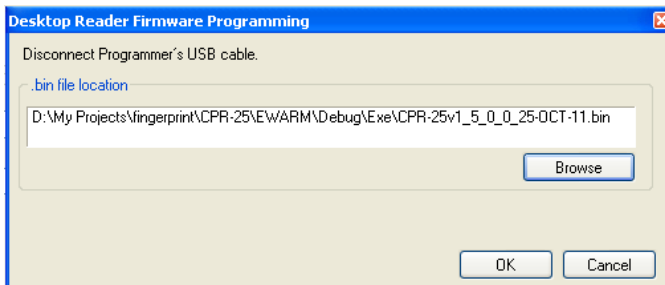
2. Verify that the checkbox is selected.
3. Click **OK**.

7.3 Updating Firmware

You may need to periodically update your firmware.

To update the CP-R25 Desktop Programmer firmware:

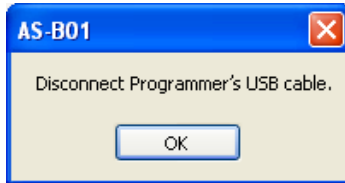
1. In the File menu click **Options > Firmware Programming**.
The *Desktop Reader Firmware Programming* window opens.



2. [Optional] You can change the default firmware location that is displayed in the *.bin file location* field:
 - a. Click **Browse**.
The standard Windows Explorer window opens.
 - b. Navigate to the folder containing the binary firmware file to download.
 - c. Select the binary firmware file.

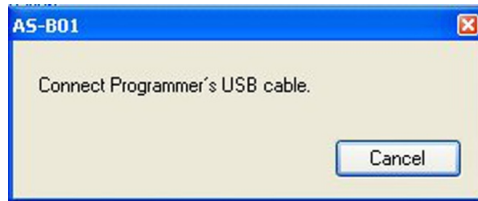
Global Options

3. Make sure the USB cable is disconnected from the CP-R25 Desktop Programmer. If the cable is still connected, a window opens telling you to disconnect the cable.



The indicator at the left bottom side of the screen displays **Disconnected**.

4. Click **OK**.
You return to the *Desktop Reader Firmware Programming* window.
5. Click **OK**.
The Connect Cable window opens.



6. Connect the USB Cable.
7. Wait until the indicator at the left bottom side of the screen displays **Connected**.

The installation automatically begins. On completion, a confirmation screen opens.

8. Click **OK**.
The Desktop firmware is now updated.
Two more messages should immediately follow in the Message window: "MIFARE Programming Reader Disconnected" and "MIFARE Programming Reader Connected".
The Desktop Programmer is now ready for use.



Be careful not to select a wrong firmware file, as it may cause permanent Desktop reader hardware failure.

A. Maintenance

To maximize the lifetime of the product, we recommend following these guidelines as closely as possible.

- Do not expose the unit to water or rain or to humidity over the specified safety level.
- Do not expose the unit to direct sunlight for extended periods. This can cause overheating and system failure.
- Avoid dropping the unit onto the ground. This may cause electromechanical failure.

B. Field Descriptions

The following table describes the various fields that appear in the AS-B01 software application when configuring the CP-R25 Desktop Programmer, MIFARE cards and/or tags:

Table 2: Field Descriptions

Field Name	Description
Card Serial Number (CSN)	In the <i>Operation Mode</i> area this option is selected if the reader has to transmit only the card serial number. Each MIFARE card has a Unique Serial Number (UID) to uniquely identify the card.
Card Type	<ul style="list-style-type: none">• The MIFARE card type determines the size and memory location on the card. There are two options:• MIFARE 1K memory – The 1024 x 8 bit EEPROM memory is organized in 16 sectors with 4 blocks of 16 bytes each. In the erased state the EEPROM cells are read as a logical “0”, in the written state as a logical “1”.• MIFARE 4K memory – The 4096 x 8 bit EEPROM memory is organized in 32 sectors with 4 blocks and 8 sectors with 16 blocks. Each block contains 16 bytes. In the erased state the EEPROM cells are read as a logical “0”, in the written state as a logical “1”.
Confirm Password	Used to confirm a new password entered in the <i>New Password</i> field.
Current Password	Password used to enter the AS-B01 software application, and when changing the password.
Enable Buzzer	Activates or deactivates the reader’s buzzer control.
Enable LED	Activates or deactivates the reader’s LED control.
Failed operation	Enables the reader to transmit to the panel any failed operations. These are then displayed in the Message Log Area of the GUI.
ID Location	All sectors in the MIFARE card contain 3 blocks of 16 bytes for storing data. This parameter defines where the data is stored in these data blocks. The location is defined by the company security specifications.
KeyA Password	Unique key used as a security access code. This code used is specified by the company security policies. The key is entered as a 12 digit hexadecimal value with digit values of 0-9, A-F.
Keypad	Defines the keypad type used to enter codes on an access reader.

Field Name	Description
Lockout Attempts	Defines the number times a user can present a wrong card or swipe an unverified fingerprint before the reader locks the door for a predefined period of time.
Lockout Duration	Defines how long a card is locked out of the system after too many invalid attempts at swiping the card through the reader or fingerprint scanned due to some inconsistencies with the configured card being used.
New Password	Field used to enter a new password. Passwords are case sensitive. For higher security, make sure that the passwords you choose are more than 4 letters. Mixing letters and numbers also substantially strengthens the password.
Reader KeyA	The MIFARE card storage is divided into sectors with each sector being protected by two different keys, KeyA and KeyB. These keys are programmable according to company security specifications. KeyB is not supported.
Sector	In the <i>Operation Mode</i> area this option is selected if the reader has to transmit encrypted data from the card secured memory. More screen options are added when selecting Sector mode including the <i>Reader KeyA</i> and the <i>ID Location</i> fields.
Transmit Format	Wiegand protocol is a secure transmission format where access control is required. The different bit configuration is used to define different security options specified by the company security officer.
MIFARE User Card ID	Unique ID assigned to the card. This ID number is obtained from the company security officer. The ID number is a numeric with a range of 0 – 1677215.

C. Additional MIFARE Card Memory Map Information

C.1 Manufacture Block

This is the first data block (Block 0) of the first sector (Sector 0). It contains the IC manufacturer data. Because of security and system requirements, this block is write-protected after having been programmed by the IC manufacturer at production.

When the Rosslare MIFARE reader operation mode is configured to "card serial number", the Unique ID of the card is read from manufacture block.

C.2 Data Blocks

All sectors contain 3 blocks of 16 bytes for storing data (Sector 0 contains only two data blocks and the read-only manufacturer block).

The data blocks can be configured by the access bits as:

- Read/write blocks (for example, contactless access control)
- Value blocks (for example, electronic purse applications – not supported by AS-B01).

An authentication command must be carried out before any memory operation to allow further commands. Authentication commands are based on KeyA, KeyB, and on Access Condition bits. AS-B01 supports programming only KeyA, thus both Access Bits and KeyB modifications are not supported; their location in Figure 4 is indicated in black.

Figure 4: MIFARE 1K Memory Diagram

Sector	Block	Byte Number within a Block														Description
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	
15	3	Key A														Sector Trailer 15
	2															Data
	1															Data
	0															Data
14	3	Key A														Sector Trailer 14
	2															Data
	1															Data
	0															Data
:	:															
:	:															
:	:															
1	3	Key A														Sector Trailer 1
	2															Data
	1															Data
	0															Data
0	3	Key A														Sector Trailer 0
	2															Data
	1															Data
	0															Manufacturer Block

For further details about MIFARE cards, refer to the NXP Semiconductor MIFARE datasheet.

D. Sample Worksheets

When entering information, the information must be obtained from the company security officer. To assist in preparing the information to be entered, the following sample form can be used.

Employee Security Card Configuration	
Field	Configuration
Employee Name	
Employee ID #	
Employee Company ID	
Employee Dept.	
Card Serial Number (if applicable)	
Reader KeyA	
Transmit Format	
Card Type (1K or 4K)	
ID Location – Sector Number	
ID Location – Block Number	
ID Location – Byte Number	
MIFARE User Card ID	
Number of Fingerprints (1 or 2)	
LED Control	
Buzzer Control	
Lockout Attempts	
Lockout Duration	
Batch Order Code	

E. Limited Warranty

The full ROSSLARE Limited Warranty Statement is available in the Quick Links section on the ROSSLARE website at www.rosslaresecurity.com.

Rosslare considers any use of this product as agreement to the Warranty Terms even if you do not review them.



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