SIEMENS

SIMATIC Ident

RFID systems SIMATIC RF1000

Configuration Manual

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Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

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The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

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Note the following:

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Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Introduction

1

Purpose of this document

This documentation describes how you create a configuration for the SIMATIC RF1000 readers, adapt it and transfer it to the readers. This manual is aimed at users, commissioning engineers and configuration engineers who work with the SIMATIC RF1000 readers in the areas of configuration, engineering and commissioning and who were trained on the software components specified in the manual. Using this manual, you can adapt the standard configuration of the SIMATIC RF1000 readers to your needs.

Note

Trained personnel

Note that this manual is aimed exclusively at personnel trained with the software components specified in the manual.

Scope of validity of this documentation

These operating instructions are valid for the SIMATIC RF1040R (6GT2831-6CA60), RF1060R (6GT2831-6AA60) and RF1070R (6GT2831-6BA60) as of firmware version V2.03.03 and describe the delivery state as of 04/2023.

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Orientation in the documentation

You can find additional information on installing, connecting, commissioning and programming, as well as the technical specifications of the RF1000 readers, in the operating instructions "SIMATIC RF1000 (https://support.industry.siemens.com/cs/ww/en/ps/24223/man)".

The software components described in this manual are contained in the "RF1000_ConfigTool.exe" file. In addition, you may need the demo application "RF1000R.exe" ("AccessControlDemo.exe"). You can find the two files on the pages of the Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/24223/dl).

Decommissioning

Decommission the device properly to prevent unauthorized persons from accessing confidential data in the device memory.

To do this, restore the factory settings on the device.

You can find detailed information on this in the "SIMATIC RF1000" operating instructions.

General safety information 2

2.1 Safety information

NOTICE
Creation, saving and forwarding of configuration files created with the Config editor Observe the following notes when creating, saving and forwarding configuration files created with the Config editor: • Always encrypt "*.balcfg" files with a password before forwarding these files. In this way, you make sure that no unauthorized persons have access to the files. • Only use passwords with a high password strength. Avoid weak passwords, e.g. password1, 123456789, abcdefgh. • Define rules for the assignment of passwords. • Make sure that all passwords are protected and inaccessible to unauthorized personnel and that you can always link the assigned passwords clearly to the associated configuration files. This can be ensured with password manager software, for example. • Make sure that you transfer the password via a different channel than the configuration file (e.g. by SMS or telephone). • Only forward configuration files to 3rd parties or to readers in productive operation as "*.bec" files. "*.bec" files are encrypted to protect them from unauthorized access during transfer to other devices. • Do not pass on the Config Security Code generated automatically in the project to 3rd parties. Make sure that all codes are protected and inaccessible to unauthorized personnel. This can be ensured with password manager software, for example.

Note on firmware/software support

Check regularly for new firmware/software versions or security updates and apply them. After the release of a new version, previous versions are no longer supported and are not maintained.

2.2 Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary

and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit
https://www.siemens.com/industrialsecurity.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under
https://www.siemens.com/cert.

Description

3

Companies have been using RFID-based identification card systems for years. With the increasing need for security and growing requirements for documentation, solutions are demanded with which access to machines and plants can be controlled on a user-specific basis. You can implement these requirements in access secured areas by using the SIMATIC RF1040R, RF1060R and RF1070R readers and an employee ID card so that machines and plants must be released with an employee ID before they can be operated. With an appropriate configuration, the data on the transponders/cards can be encrypted and read only by those devices that have the appropriate key. The readers can adapt flexibly to your security requirements. This allows a finely graded access concept to be implemented or user-specific information and instructions to be stored – all with one card.

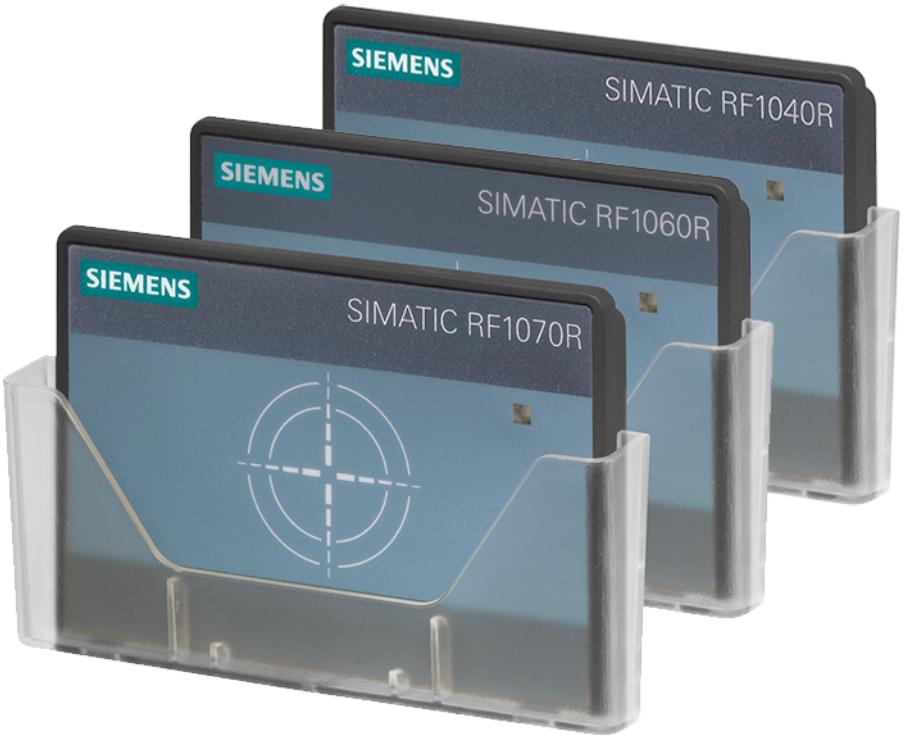

Figure 3-1 Product photos of the SIMATIC RF1000 reader

Configuration of the readers

The following sections describe how you install software required to configure the SIMATIC RF1000 readers and create a configuration, adapt it and transfer it to the readers.

Downloading and starting software

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The software for configuring the SIMATIC RF1000 readers and the associated transponders or card types consists of the following components:

- Config editor
- Uploader

Both software components are contained in the "RF1000_ConfigTool.exe" file, which you can download from the pages of the Siemens Industry Online Supports (https://support.industry.siemens.com/cs/ww/en/ps/24223/dl). This file also contains a sample configuration for configuring your RF1000 readers (see also section "Preset configuration cards (Page 37)").

Downloading and starting the software

Follow these steps to download and start the configuration software:

1. Download the "RF1000_ConfigTool.exe" file to your PC.
2. Run the file and save it under the desired target directory.
   It is a self-extracting ZIP file.
3. Start the application by double-clicking on the file "config_editor.exe".

Result: The configuration software is started.

Note

Functional scope of configuration software

The procedure for creating, adapting and transferring a configuration using the configuration software is described below. All other functions of the configuration software that are not described in more detail are not supported by the SIMATIC RF1000 readers or should only be used by trained personnel.

License and configuration cards

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License cards

You can transfer a HID license to a SIMATIC RF1040R reader using a license card. Note that a single license is saved on each license card which you can transfer to a reader once. With this process, the license card is automatically linked to the serial number of the reader.

The following options are available for transferring a license card to a reader using a license card:

- Using the demo application ("AccessControlDemo.exe")
  Start the demo application, click the "Start" button and select the "Read Data (auto)" or "Configcard"check box while the license card is in the antenna field of the reader.
- Programming your own application using the "Autoread_SetMode" or "vhl_select()" function with "AllowConfig = true"
  When programming your own application, you need to set the "param = 1" tag when calling the "exec_command" function and then hold the license card in the antenna field of the reader. After you have transferred the license, the reader automatically restarts.

"RF1100T" configuration card

Using configuration cards, you can transfer reader configurations (e.g. memory areas, addresses, passwords, write permissions, etc.) and "Autoread" configurations to RF1000 readers. A configuration with several functions can be transferred from the configuration card to the reader.

The following options are available for changing the configuration of a reader using a configuration card:

- Using the demo application ("AccessControlDemo.exe")
  Start the demo application, click the "Start" button and select the "Configcard" check box while the configuration card is in the antenna field of the reader.
- Programming your own application using the "vhl_select" function
  When programming your own application, you need to set the "AllowConfig = true" tag when calling the function "vhl_select" and then hold the configuration card in the antenna field of the reader. After you have changed the configuration, the reader automatically restarts. After the restart, you need to set the "AllowConfig" parameter back to "false".
- Automatically with enabled "Autoread" mode
  With the RF1070R reader, the "Autoread" mode is switched on in the factory as of product version AS:F. In the delivery state of the reader, hold the configuration card in front of the reader after switching on the power.

An existing configuration in which "Autoread" mode is still active can only be replaced by a configuration with the same Config Security Code and Customer Key Signature. This prevents accidental overwriting. Note that working with the "vhl_select" command ("AllowConfig = false") or transferring a VHL configuration switches off "Autoread" mode. In this case, the configuration card can only be read in again using the demo application and the "vhl_select" function (with "AllowConfig = true") or after the reader is reset to factory settings ("syscmd_reset").

The rewritable configuration cards are supplied in packs of five. Two of the supplied cards are unwritten, while three cards are written with sample configurations. You can find detailed information on this in the section "Preset configuration cards (Page 37)". You can also order configuration cards with preset, customer-specific configurations. To do this, please contact Service & Support (Page 39).

VHL functions

VHL stands for "Very High Level". VHL functions have a higher priority and are valid for all card systems supported by the reader. The card system-specific details are in the VHL functions of a configuration. By using VHL functions it is possible, for example, to change the card system without having to adapt the code to the application - provided that the configuration stored in the reader has been adapted accordingly.

Identification card for LEGIC systems

When using encrypted LEGIC systems/cards, you need an identification card to transfer reader configurations to the reader. For this purpose, contact the project owner or the original project supplier.

Creating and transferring a configuration

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Via the configuration, you define the entire behavior of the reader within your project. In most cases, you can conveniently create the configuration yourself with our Config editor and Uploader software components and transfer it to the readers. If you prefer to receive the configuration cards with preconfigured, customer-specific configurations, contact Service & Support.

A configuration typically consists of two components:

- Project settings (RFID Interface)
  They define how the reader interacts with the transponder or card (e.g. employee ID card).
- Device settings (Host Interface)
  They define how the reader interacts with the host system and the user (transponder/card owner) (e.g. feedback via LED and acoustic signal generator).

Basic procedure

The basic procedure to create a configuration and transfer it to the reader is described below. This overview helps you to follow the individual steps. The subsequent sections contain a more detailed description of these steps.

1. Create a configuration
   - Create project settings.
     You can create new settings using the Config editor or open them via an existing configuration.
   - Create device settings.
     You can create new settings using the Config editor or open them via an existing configuration.

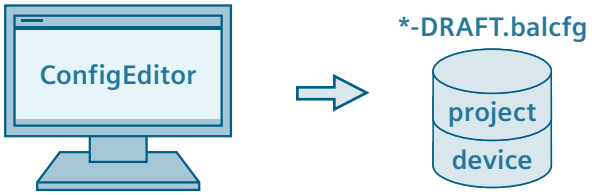

Figure 6-1 Creating a configuration

2. Test and finalize your configuration.

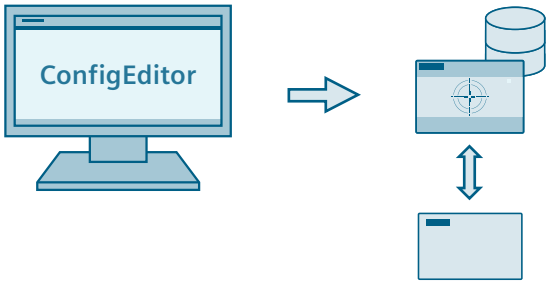

Figure 6-2 Testing a configuration

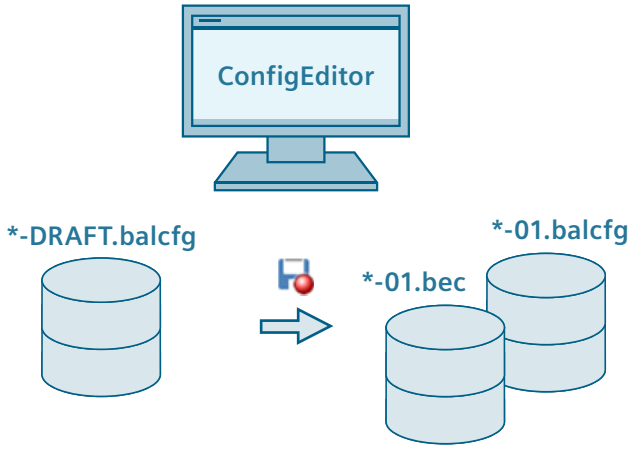

Figure 6-3 Finalizing a configuration

3. Transfer your finalized configuration to the reader.
   You can transfer this using the Uploader or a configuration card.

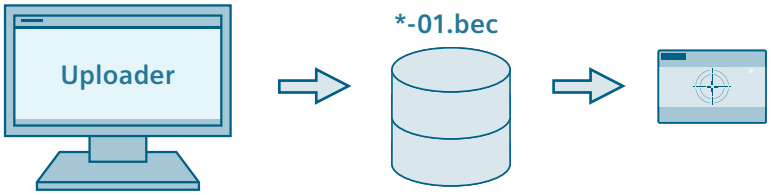

Figure 6-4 Transferring a configuration via computer and Uploader

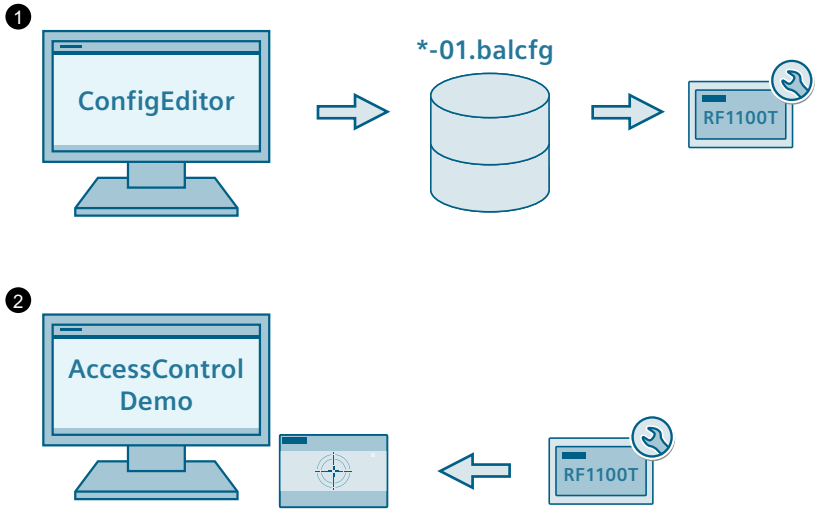

Figure 6-5 Transferring a configuration via configuration card and demo application

Creating project settings

In the project settings ("Extend Configuration > Add ..."), you define how the reader interacts with the transponder or the card (depending on the card type). This includes, for example, which data should be read from the transponder/card and how it is converted.

Creating device settings

In the device settings ("Extend Configuration > Settings > Device Settings"), you define how the reader interacts with the host system and the user. This includes the protocol via which the reader communicates with the host system. If you have already received a configuration (e.g. from your host system provider), this part is usually already covered. You can optionally define the feedback of the reader (e.g. LED and acoustic signal generator).

If the factory device settings meet your requirements fully, you can skip this step.

Testing, finalizing and transferring the configuration

Before you use the configuration on productive readers, we recommend that you test it in a test environment. If you have tested your configuration and it is ready, you can prepare it for use by finalizing the configuration ("File > Save As...(Finalize)"). During finalization, a file is also generated for productive use.

The following options are available to prepare the configuration for use:

- Transfer the finalized configuration file to the reader using a computer and the Config editor.
- Alternatively, you can create a configuration card on which you save the finalized configuration file. Using the configuration card and the demo application ("RF1000R.exe"/"AccessControlDemo.exe"), you can then transfer the configuration to permanently installed readers.

6.1 Creating a configuration

6.1.1 Creating new project settings

The creation of a new project setting ("Extend Configuration > Add...") is described below.

Requirements

- The Config editor has been installed on your computer.
- An RF1000 reader that you can connect to your computer.
- A transponder or a card (e.g. employee ID card).

Creating a project setting

Follow these steps to create a new project setting:

1. Open the Config editor by double-clicking the "config_editor.exe" file.
2. In the popup window, click the "New" button.
   Response: The "Administrative Information" page opens.
3. Enter the administrative information of your project.
   This information will facilitate you in the identification, assignment and management of your projects.
   - Enter a name for your project.
     For example, the name of the building or the department in which the reader is to be installed.
   - Do not select the check box "Follow Baltech Naming Convention".
   - Add a description of the project.
     For example, a brief summary of the intended behavior of the reader.
4. To add new components to the project, click the "Extend Configuration > Add ..." button on the left.
   In this area, you can define the response of the reader to the different transponder types. No other settings are necessary to work with the ISO transponders of the SIMATIC Ident product family (ISO 15693 / MDS D and ISO 14443 / MDS E).
   Note: As soon as the first configuration of a project has been created, a Config Security Code is assigned to the project.

5. Make sure that no error messages are displayed in the "Validation Errors and Messages" area. If error messages are displayed, resolve them.
6. To save the project setting, click the icon ("Save current configuration"). The configuration is saved as draft. It is advisable to retain the suffix "-DRAFT" as part of the file name. This suffix will help you to maintain an overview of your versions later. When the project is finalized later, the suffix is automatically deleted or replaced.

Result: The configuration setting has been created and saved on the PC as "*.balcfg" file. This file format is used for all editable files of a project.

Note

Meaning of the "Draft Version" note

The "Draft Version (Must not be distributed)" note, highlighted in yellow, is displayed under the menu bar in the Config editor. This note shows you that the currently open configuration file has not yet been saved or has been saved as draft version ("*.-DRAFT.balcfg" file). As soon as the file has been finalized, the note has a green background.

Note

Protect configuration with a password

With the "File > Set Password..." menu, you have the option to assign a password to encrypt the "*.balcfg" file. Note that you need to then save the file again for the password to be activated.

Always use a password if you want to send the file to another person for further editing, especially if you have already added project or security settings. Make sure that you transfer the password via a different channel than the configuration file (e.g. by SMS or telephone).

Specific project settings

Configuration Components

All components assigned to the project are displayed in the "Configuration Components" list. You can add new components to a project with the "Extend Configuration" button. You can rename or delete existing components using the right mouse button.

Config Security Code (CSC)

The Config Security Code (CSC) is intended to ensure that a reader cannot be reconfigured, i.e. manipulated, for example through contactless reconfiguration of the reader by a potential attacker using a configuration card. For this reason, a CSC is assigned to each project by means of a random generator as soon as a project setting has been created for the first time. If an existing configuration is opened and a change is made to it, i.e. a new version is created, the CSC remains the same as that of the previous version. This ensures that updates of the configuration are accepted by the reader.

In the factory state, no CSC is set in the reader. This ensures that any configuration of the reader can be loaded once at the beginning. If the loaded configuration has then set a CSC, afterwards you can only load configurations that have the same CSC into the reader. Logically, this is only possible if you know the CSC or you have the configuration file in "*.balcfg" format, in which the correct CSC was stored.

If you want to configure the reader for another project, you need to perform a Factory Reset, which restores the factory configuration and deletes the CSC.

In principle, it is possible to edit the CSC manually in the Config editor. However, you should only do this before the first versioning of a project configuration. If the CSC changes between two versions, this has the result that you can no longer update the reader, among other consequences. Direct transfer of a configuration file ("*.balcfg") to a reader connected to the computer is still possible, however, because the CSC is not checked in this case.

Note that the CSC cannot be read out of the reader, a "*.bec" file or the configuration card. It can only be read out of the "*.balcfg" file in plain text.

6.1.2 Opening and editing existing project settings

There are various scenarios where it makes sense to open existing (finalized) configurations. For example, in order to:

- Update an existing configuration
  If you want to update an existing configuration, you can create a new version of it.
- Use an existing configuration as template
  If you wish to use an existing configuration as template for another configuration, you can create a copy and edit it as required.
- Import configuration component(s) from an existing configuration
  This is useful, for example, in complex applications when you wish to add the same configuration component (e.g. project or device settings) to multiple configuration files. In this case, you can create the component in one configuration file and then import it into another.

These three scenarios for opening and editing an existing configuration are described below.

Requirements

- The Config editor has been installed on your computer.
- An RF1000 reader that you can connect to your computer.
- A transponder or a card (e.g. employee ID card).

Update an existing configuration

Follow these steps to open an existing configuration and adapt it:

1. Open the Config editor by double-clicking the "config_editor.exe" file.
2. In the popup window, click the "Open..." button and select the configuration file ("*.balcfg") of which you want to create a new version.
   Note that the selected configuration file needs to be finalized, i.e. it cannot be a "DRAFT" version.
3. Click the "Create New Version" button.
   Response: A new draft version of the configuration is created.

4. Make the desired changes to the configuration.
   - To edit an existing component, click on the corresponding entry on the left.
   - To delete an existing component, right-click on the corresponding entry on the left.
   - To add a new component, click the "Extend Configuration" button.
     In this area, you can define the response of the reader to the different transponder types.
5. In the "Administrative Information" in the "Description of Changes for this Version" field, enter a description of which changes were made compared to the previous version.
6. To save the configuration, click the  icon ("Save as...(Draft)").
   The configuration with the imported components is saved as draft. It is advisable to retain the suffix "-DRAFT" as part of the file name. This suffix will help you to maintain an overview of your versions later. When the project is finalized later, the suffix is automatically deleted or replaced.

Result: The configuration has been created and saved on the PC as "*.-Draft.balcfg" file. This file format is used for all editable files of a project.

Note

Retain the standard versioning of file names

The version information that is automatically added to the file name helps you to maintain an overview of your configuration versions. The "DRAFT" files are always so-called "work in progress" files, while files with version numbers have a defined state.

This versioning system ensures unique naming of the configuration versions, because it prevents two competing versions with the same version number from being created.

Use an existing configuration as template

Follow these steps to open an existing configuration and adapt it:

1. Open the Config editor by double-clicking the "config_editor.exe" file.
2. In the popup window, click the "Open..." button and select the configuration file ("*.balcfg") which you want to use as template.
   Note that the selected configuration file needs to be finalized, i.e. it cannot be a "DRAFT" version.
3. Click the "Derive Project" button.
   If this option is not available, please finalize the configuration first, as described in section "Testing and finalizing a configuration (Page 25)".
   Response: A draft copy of the configuration is created. In this draft copy, the administrative information was removed from the template configuration and a new Config Security Code was created for the file.

4. Enter the administrative information of your project.
   This information will facilitate you in the identification, assignment and management of your projects or configurations.
   - Enter a name for your project.
     For example, the name of the building or the department in which the reader is to be installed.
   - Do not select the check box "Follow Baltech Naming Convention".
   - Add a description of the project.
     For example, a brief summary of the intended behavior of the reader.
5. To add new components to the project, click the "Extend Configuration" button on the left.
   In this area, you can define the response of the reader to the different transponder types.
6. To save the configuration, click the  icon ("Save as...(Draft)").
   The configuration with the imported components is saved as draft. It is advisable to retain the suffix "-DRAFT" as part of the file name. This suffix will help you to maintain an overview of your versions later. When the project is finalized later, the suffix is automatically deleted or replaced.

Result: The configuration has been created and saved on the PC as "*.-Draft.balcfg" file. This file format is used for all editable files of a project.

Import configuration component(s) from an existing configuration

Follow these steps to open an existing configuration and adapt it:

1. Open the Config editor by double-clicking the "config_editor.exe" file.
2. In the popup window, click the "Open..." button and select the configuration file ("*.balcfg") into which you want to import a component.
3. In the left part of the screen, click the "Extend Configuration > Import from File" button.
4. Select the "*.balcfg" file that contains the component to be imported and click the "Import" button.
   Note: If the selected file contains more than one component, please select the desired components.
5. You are asked whether you want to import the administrative information also.
   - If you want to retain the project name and the Config Security Code of the project that is being edited, click "No".
   - If you want to apply the project name and the Config Security Code of the imported configuration file, click "Yes".

   Response: The selected components are added to the new configuration. They are listed in the left part of the screen.

6. Optional: If you have not imported any administrative information, enter the administrative information of your project now.
   This information will facilitate you in the identification, assignment and management of your projects or configurations.
   - Enter a name for your project.
     For example, the name of the building or the department in which the reader is to be installed.
   - Do not select the check box "Follow Baltech Naming Convention".
   - Add a description of the project.
     For example, a brief summary of the intended behavior of the reader.
7. To save the project setting, click the  icon ("Save as...(Draft)").
   The configuration with the imported components is saved as draft. It is advisable to retain the suffix "-DRAFT" as part of the file name. This suffix will help you to maintain an overview of your versions later. When the project is finalized later, the suffix is automatically deleted or replaced.

Result: The configuration has been created and saved on the PC as "*.-Draft.balcfg" file. This file format is used for all editable files of a project.

6.1.3 Creating new device settings

In the device settings, you define the protocol for communication between reader and host. If you use "Autoread" mode, you can optionally also configure reader feedback (e.g. LED and acoustic signal generator). The creation of new device settings ("Extend Configuration > Settings > Device Settings") is described below.

Factory device settings

The RF1000 readers are delivered with factory device settings (e.g. transmission speed). If the factory device settings do not meet your needs, you need to create your own device settings and overwrite the factory device settings with them.

Using multiple reader types in your project

You may use multiple reader types with different host protocols and/or different user feedback (LEDs and beepers) in one project. If this is the case and the factory device settings do not meet your needs, you need to create individual device settings for the different readers or their tasks.

Requirement

The Config editor has been installed on your computer.

Creating a new device setting

Follow these steps to create a new device setting:

1. Open the Config editor by double-clicking the "config_editor.exe" file.
2. In the popup window, click the "Open..." button and select the configuration file ("*.balcfg") for which you want to create device settings.
3. In the left part of the screen, click the "Extend Configuration > Settings > Device Settings" button.
   Note: Note that only one device setting can be assigned to each configuration file. If the configuration file already has a device setting component, you need to remove it before you can create a new one.
4. Fill out the device settings according to your requirements.
   The various device setting parameters are described below.

Device settings: Host protocol

To make the host protocol settings, follow these steps:

1. In the "Protocol" drop-down list, select the protocol that uses the host system to communicate with the reader.
2. Leave the "EnabledIfDefinedRules" option enabled in the "Autoread" drop-down list.
3. Depending on the selected protocol, you need to specify the protocol parameters.
   The documentation of your host system usually contains information on which protocol parameters need to be set and how.

The protocols specified below are relevant for the ISO transponders of the SIMATIC Ident product family (ISO 15693 / MDS D and ISO 14443 / MDS E).

Table 6-1 Description of the host protocols

Protocol	Protocol description	Parameters
BrpHid	USB/HID	None
BrpSerial	RS232 / Virtual COM interface	• Serial Baudrate: Specify the number of bits transferred per second. • Parity: Specify whether an even, odd or no parity bit is used.
RawSerial	RS232 / Virtual COM interface The communication is unidirectional, i.e. the reader sends a number that can be processed by any software that supports serial communication.	• Serial Baudrate: Specify the number of bits transferred per second. Note: The baud rate should match the baud rate defined in your application. • Parity: Specify whether an even, odd or no parity bit is used. • Prefix & Postfix: Specify the characters to be appended to the edition before transfer to the host system.
Keyboard Emulation	The reader output emulates keyboard strokes.	• Prefix & Postfix: Specify the characters to be appended to the edition before transfer to the host system.

Device settings: LED/beeper settings

Note

Use only possible in "Autoread" mode

Defining feedback in the device settings is optional, but only possible in "Autoread" mode.

Follow these steps to make the settings for the LED and the beeper:

1. Select the "LED / Beeper settings" check box.
2. Click on the  icon at the bottom margin of the event list.
3. In the "Event" drop-down list, select an event for which the reader should output a signal, e.g. when a transponder/an access card is switched on or accepted.
4. In the "Beeper" and "LED" areas, define the signal that is to be output for the selected event.

Other device settings

The "Extend Configuration > Settings" menu has other device settings that are generally not needed for work with the RF1000 readers in the area of access control.

- Black Whitelist
  Using this function, you can block or allow specific transponders/access cards for communication with the reader based on their UIDs.
- Prioritize CardType Detection Order
  Using this function, you can define which transponders/card types are handled with priority during the read operation.
- Security Settings (BRP Communication)
  Using this function, you can set up encrypted communication for all protocols and block services for different protocol access. If this function is activated, note that further communication via the Config editor may no longer be possible.

6.2 Testing and finalizing a configuration

Testing a configuration

After you have finalized your configuration, we recommend also testing it in a test environment that is set up corresponding to your future productive environment. For the test, use the same reader type that you will use later in the productive environment.

Follow these steps to transfer your configuration for a test with your host system to a reader:

1. Open the desired configuration file ("*.balcfg") in the Config editor.
2. Connect the reader to your computer.

3. In the menu bar, click the "Deploy Config > Transfer configuration to reader..." entry.
4. Select the desired reader in the list and click "Select".
   If multiple interfaces are displayed in the list, select the "HID" entry.

Result: The configuration file is transferred to the reader. You receive a corresponding message as soon as the transfer is complete.

You can then test the configured functions with the reader.

Note

Draft mode

Configurations in "draft mode" are intended for temporary use until the tests have been completed. As soon as you have a version ready for release, you should finalize it. You then hand over the file generated during the finalization process (*.bec) to other parties or put it into productive use. This helps you to differentiate between drafts and released versions and adds a key so that the configuration is protected during transfer with RF1000 readers.

Finalizing a configuration

Before you hand over a configuration to other parties or put your configuration into productive use, you should finalize the configuration file. The following happens in this step:

- The "*.balcfg" file is "frozen".
  The "-DRAFT" suffix in the file name is replaced by a version number. This helps you to differentiate a version in productive use from a draft version. Changes can then only be made by creating a new version.
- A "*.bec" file is created.
  The prerequisite for creating a "*.bec" file is that a reader is connected to the computer. Only files with this file format should be transferred to readers in productive operation. "*.bec" files are encrypted to protect them from unauthorized access during transfer to other devices. Note that the "*.bec" file cannot be edited further.

NOTICE

Differentiation of file formats

Using the Config editor, you can save your created configurations (project and device settings) as "*.balcfg" file and/or as "*.bec" file. The format in which the file is saved is decisive for the further steps that you intend to perform with the file.

- "*.balcfg" file
  Files with this format can be edited further.
  Always use a password if you want to send the file to another person for further editing, especially if you have already added project or security settings. Make sure that you transfer the password via a different channel than the configuration file (e.g. by SMS or telephone). With the "File > Set Password..." menu, you can assign a password to encrypt the file. Note that you need to then save the file again for the password to be activated.
- "*.bec" file
  Files with this file format are encrypted and cannot be edited further. Use this file format to transfer configurations to your readers.

The function "Save as...(Draft)" generates a "*.balcfg" file as "DRAFT" version. The "Save as (Finalize)" function creates a finalized "*.balcfg" file and a "*.bec" file.

Alternatively, you can create a "*.bec" file as "DRAFT" version at any time using the "Deploy Config > Create encrypted *.bec file..." function. Note that a reader needs to be connected to your computer for this purpose. This function is recommended for creating an encrypted but not finalized "*.bec" file for test purposes.

If multiple readers are connected to the computer, you can select the desired reader to which the finalized and encrypted file will be transferred using the "Deploy Config > Select encryption reader..." function.

Follow these steps to finalize the configuration:

1. Open the Config editor by double-clicking the "config_editor.exe" file.
2. In the popup window, click the "Open..." button and select the configuration file ("*.balcfg").
3. Connect an RF1000 reader to your computer.
   Using this reader and the Customer Key Signature stored on it, the file is encrypted so that it can be used exclusively by RF1000 readers.
4. To save and finalize the configuration, click the icon ("Save as (Finalize)").
5. Click the "Save" button.
   Retain the existing file name and the version number that is automatically added to the file name as part of the file name. This helps you to maintain an overview of your finalized versions.

Result: The configuration file is saved and the note in the upper part of the window has a green background. This indicates that the file was saved with the "Finalized" status and therefore cannot be edited further. In addition, the Customer Key Signature "76365887" is assigned to the configuration file. This signature is identical for all RF1000 readers. Using this signature, 1:1 assignment of configuration file to RF1000 reader is possible.

Only use the "*.bec" file or a "*.balcfg" file saved on a configuration card to distribute the configuration to your readers.

6.3 Creating a configuration card

Requirement

- A configuration card
  You can obtain configuration cards from the Siemens Industry Mall (https://mall.industry.siemens.com/) (article number: 6GT2300-0CC00-0AX0). If you already have a configuration card that you no longer need, you can overwrite it with a new configuration.
- A configuration file in "*.balcfg" file format
  Note: Use of a "*.bec" file is not possible.

Creating a configuration card

Follow these steps to transfer the configuration file to a configuration card:

1. Connect a reader to your computer.
2. Open the Config editor by double-clicking the "config_editor.exe" file.
3. Open the desired configuration file ("*.balcfg").
4. In the menu bar, click the "Deploy Config > Create ConfigCard..." entry.
5. Place the configuration card on the connected reader.

Result: The configuration is transferred to the card. You receive a corresponding message as soon as the transfer is complete. You can then remove the card from the reader and transfer the configuration to other readers using the configuration card.

We recommend that you clearly label the configuration card, for example with the project name incl. version ID as this is displayed after successful creation of the configuration card (see graphic below). This will facilitate identification and assignment of the configuration card later. Note that it will no longer be possible later to read out the project name and version ID from the configuration card.



Figure 6-6 Example of configuration card labeling

6.4 Transferring a finalized configuration

The following options are available to you for transferring a finalized configuration to a reader:

- Transfer configuration via configuration card and demo application.
- Transfer configuration via computer and Uploader.

Transferring finalized configuration via configuration card and demo application

Requirements

- The demo application "RF1000R.exe" ("AccessControlDemo.exe") has been installed on your computer.
- An RF1000 reader that you can connect to your computer.
- A configuration card with a finalized "*.balcfg" file.

Procedure

Follow these steps to transfer your configuration to a reader via configuration card:

1. Open the demo application by double-clicking the "AccessControlDemo.exe" file.
2. Click the "Start" button.
3. Select the "Configcard" check box.
4. Hold the configuration card to the reader that you want to configure.

Result: The configuration file is transferred to the reader. While the card is being processed, the LED on the reader lights up in yellow and a continuous audio signal is generated, followed by a short pause and the signal indicating the result of the transfer. As soon as the transfer has been completed successfully, the LED on the reader turns green after the short pause and a single audio signal is generated at the same time. If the transfer failed, the LED on the reader turns red after the short pause and several short audio signals are generated at the same time.

Alternatively, with the RF1070R as of product version AS:F, you can also transfer the finalized configuration via configuration card (without demo application). You can find information on this in the section "License and configuration cards (Page 13)".

Transferring finalized configuration via computer and Uploader

Requirements

- The Uploader has been installed on your computer.
- An RF1000 reader that you can connect to your computer.
- A configuration file in "*.bec" file format

Procedure

Follow these steps to transfer your configuration to a reader via computer:

1. Open the Uploader by double-clicking the "bf2uploader.exe" file.
2. Click on the "Browse" button on the top right and select the desired configuration file ("*.bec").
3. Connect the reader to your computer.
4. Click the "Select Reader" button.
5. Select the desired reader in the list and click "Select".
   If multiple interfaces are displayed in the list, select the "HID" entry.
6. Click the "Start Update" button.

Result: The configuration file is transferred to the reader. As soon as the update has been completed, the reader automatically performs a restart and the reader information is updated.

As soon as the operation is complete, disconnect the reader and continue with the next one if necessary.

Causes and error correction

The following table provides an overview of the causes and their possible solutions if the transfer via configuration card failed.

Table 6-2 Causes and error correction with configuration transfer via configuration card

LED signal	Acoustic signal	Cause	Solution
--	--	"Autoread" mode was not configured.	Configure "Autoread" mode.
		"Autoread" mode is disabled.	Enable "Autoread" mode.
		The configuration card does not match the reader type.	Make sure that you are using a configuration card suitable for the reader.

LED signal	Acoustic signal	Cause	Solution
	7x	The configuration card was removed from the antenna field of the reader too early.	Repeat the process. Do not remove the configuration card from the antenna field of the reader until the yellow LED goes out.
		The configuration card is defective.	Use a different configuration card or contact Siemens Support.
	7x + 1x	The Config Security Code of the configuration file does not match the code stored in the reader.	Check the Config Security Code and make sure that it matches the code stored in the reader.
	7x + 2x	The Customer Key Signature of the configuration file does not match the signature stored in the reader.	Check the Customer Key Signature and make sure that it matches the signature stored in the reader. If necessary, contact Siemens Support.

Transferring a license

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The following options are available to you for transferring a license to a reader:

- Transfer via license card and demo application.

Transfer via license card and demo application

Requirements

- The demo application "RF1000R.exe" ("AccessControlDemo.exe") has been installed on your computer.
- An RF1000 reader that you can connect to your computer.
- A license card

Procedure

Follow these steps to transfer a license to a reader via license card:

1. Open the demo application by double-clicking the "AccessControlDemo.exe" file.
2. Click the "Start" button.
3. Select the "Read Data (auto)" or "Configcard" check box.
4. Hold the license card to the reader to which you want to transfer the license.

Result: The license is transferred to the reader. While the card is being processed, the LED on the reader lights up in yellow and a continuous audio signal is generated, followed by a short pause and the signal indicating the result of the transfer. If the transfer has been completed successfully, the LED on the reader lights up yellow for five seconds before it turns green after the short pause and a single audio signal is generated at the same time. If the reader already has a license, the LED on the reader lights up yellow for two seconds before it turns green after the short pause and a single audio signal is generated at the same time. If the transfer failed, the LED on the reader turns red after the short pause and several short audio signals are generated at the same time.

Causes and error correction

The following table provides an overview of the causes and their possible solutions if the transfer via license card failed.

Table 7-1 Causes and error correction with license transfer via license card

LED signal	Acoustic signal	Cause	Solution
--	--	"Autoread" mode was not configured.	Configure "Autoread" mode.
		"Autoread" mode is disabled.	Enable "Autoread" mode.
		The "vhl_select" function with the "AllowConfig = true" tag was not called.	Call the function.
		The license card does not match the reader type.	Make sure that you are using a license card suitable for the reader.
 	1x (3 s) 4x + 1x	The license on this license card was already transferred to another reader.	Use a license card with a valid license.
	7x	The license card was removed from the antenna field of the reader too early.	Repeat the process. Do not remove the license card from the antenna field of the reader until the yellow LED goes out.
		The license card is defective.	Use a different license card or contact Siemens Support.

Updating the firmware

8

Requirements

- The Uploader has been installed on your computer.
- An RF1000 reader that you can connect to your computer.
- An update file in "*.bf2" file format

Updating the firmware

Follow these steps to perform a firmware update of the reader:

1. Open the Uploader by double-clicking the "bf2uploader.exe" file.
2. Click on the "Browse" button on the top right and select the desired configuration file ("*.bf2").
3. Connect the reader to your computer.
4. Click the "Select Reader" button.
5. Select the desired reader in the list and click "Select".
   If multiple interfaces are displayed in the list, select the "HID" entry.
6. Click the "Start Update" button.

Result: The firmware update is performed. As soon as the update has been completed, the reader automatically performs a restart and the reader information is updated.

Appendix A

A

A.1 Preset configuration cards

The rewritable configuration cards (6GT2300-0CC00-0AX0) are supplied in packs of five. Two of the supplied cards are unwritten, while three cards are written with sample configurations. The configuration cards preset with sample configurations are labeled on the back.

The following sample configurations are stored on the preset configuration cards:

- 10575-0000-3159-01_Baudrate_9600_Setting_-_no_Parity
  With this configuration, the transmission speed (serial baud rate) of the reader is changed to 9600 baud.
- 10575-0009-0000-01_Autoread_User_Mem_16_Byte
  With this configuration, "Autoread" mode is enabled to read out the 16 byte user memory. Without adjustments to the configuration file, this works exclusively with unencrypted transponders (e.g. ISO 15693 transponders / MDS D).
- 10575-0010-3158-01_Keyboard_Emulation_Autoread_UID
  With this configuration, the "Keyboard" mode of the reader is enabled. With this mode, the UIDs of the read transponders can be read in as directly visible in every application (e.g. MS Word or MS Excel).

These sample configurations are also available to you for download with the "RF1000_ConfigTool.exe" file on the Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/24223/dl) pages. If the configuration cards written with the sample configurations are overwritten accidentally, you can restore them using this file.

Based on this sample configuration, you can also create your own adapted customer configurations with the Config editor - as described in section "Opening and editing existing project settings (Page 20)".

Service & Support

B

Industry Online Support

In addition to the product documentation, you are supported by the comprehensive online information platform of Siemens Industry Online Support at the following Internet address:
Link: (https://support.industry.siemens.com/cs/de/en/)

Apart from news, you will also find the following there:

- Project information: Manuals, FAQs, downloads, application examples etc.
- Contacts, Technical Forum
- The option to submit a support request:
  Link: (https://support.industry.siemens.com/My/ww/en/requests)
- Our service offer:
  Right across our products and systems, we provide numerous services that support you in every phase of the life of your machine or system - from planning and implementation to commissioning, through to maintenance and modernization.

You will find contact data on the Internet at the following address:
Link: (https://www.automation.siemens.com/aspa_app/?ci=yes&lang=en)

"Industrial Identification" homepage

You can find the latest general information about our identification systems on the Internet at our Homepage (www.siemens.com/ident).

Online catalog and ordering system

The online catalog and the online ordering system can also be found on the Industry Mall home page (https://mall.industry.siemens.com).

SITRAIN - Training for Industry

The training offer includes more than 300 courses on basic topics, extended knowledge and special knowledge as well as advanced training for individual sectors - available at more than 130 locations. Courses can also be organized individually and held locally at your location.

You will find detailed information on the training curriculum and how to contact our customer consultants at the following Internet address:

Link: (https://new.siemens.com/global/en/products/services/industry/sitrain.html)