

SIEMENS

SIMATIC

Process Control System PCS 7 SIMATIC Route Control - Readme V8.2 Update 3 (online)

Readme

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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.

Qualified Personnel

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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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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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/industrialsecurity>.

Scope of delivery

Depending on the scope of the order:

Product	License type	Version
Route Control Server	Single	V8.2
Route Control 10 Routes	Count-relevant	
Route Control 50 Routes	Count-relevant	
Route Control Engineering	Floating	V8.2
Route Control Center	Floating	V8.2

SIMATIC Route Control consists of:

- Route Control Library
- Route Control Engineering (configuration interface including Route Control Wizard)
- Route Control Server
- Route Control Faceplate
- Route Control Center
- Route Control Route Log

The authorizations (license keys) are included on the supplied USB medium.

Additional information:

- This readme file
- What's new? file
- Online help files
- User manual in electronic form

Requirements and general information

3.1 AS requirements

Hardware requirements

Route Control supports the CPU types 416 and 417 (including fail-safe automation systems):

- CPU 416-3 (note: small quantity framework with approx. 30 routes)
- CPU 417-4
- CPU 417-4H
- CPU 410-5H Process Automation
- PCS 7 BOX

SIMATIC Route Control has been tested with S7 F Systems and SIMATIC Safety Matrix for compatibility.

Software requirements

Route Control requires at least firmware version 3.1.0 for all CPUs.

3.2 OS requirements

Hardware requirements

Route Control V8.2 is based on PCS 7 V8.2.

You can find recommendations on the hardware for PC stations in the manual *SIMATIC Process Control System PCS 7; PC Configuration*.

Software requirements

SIMATIC Route Control requires PCS 7 V8.2.

The software requirements for PCS 7 V8.2 apply.

3.3 Copyright notices

- Copyright © 2001 SCA Software International S.A.
- Copyright © 1998 Written by Chris Maunder (chrismaunder@codeguru.com)
- Copyright © 2000 AniWorld, IncWritten by Caroline Englebienne of AniWorld, Inc.

Installation

4.1 Software

Requirements

The requirements that apply to PCS 7 V8.2 also apply to the installation and operation of SIMATIC Route Control.

You can learn about these requirements in the PCS 7 Readme.

SIMATIC Route Control requires the PCS 7 operating system for client and server.

The following software is required to use SIMATIC Route Control components:

PC operating system	<ul style="list-style-type: none"> • Windows Server 2008 R2(x64) • Windows 7 Ultimate (x64) • Windows 7 Ultimate (x86) • Windows Server 2012 R2 • Windows10 Enterprise 2015 LTSB (x64)
Internet Explorer	Microsoft Internet Explorer 11
TCP/IP configured	Windows system settings
CFC	Installed during the PCS 7 System Setup
SIMATIC Logon	Optional
PCS 7 OS	Installed during the PCS 7 System Setup

Installation

The SIMATIC Route Control components are installed by using the PCS 7 or the Route Control system setup.

You can choose between two types of installation - depending on the system setup used:

- Package installation
- User-defined installation

Select the package installation if you want to install a client, a server, or an engineering station. You can then specify the products in each case (BATCH, WinCC, Route Control, etc.).

With a user-defined installation, in contrast, you can select individual functional packages of the products. Specific to Route Control, these are: Base, Engineering, Server, Client, Library, Faceplate, WinCC Options and Getting Started. Note that Server, Client and Engineering require other packages (e.g. Base). Any dependencies are automatically considered in the package installation by the RC system setup.

Note

During the installation, the PCS 7 system setup configures five user groups for Route Control.

- The user performing the installation is automatically assigned to the group RC_MAINTENANCE.
 - The application for viewing the route protocol is part of a Route Control client.
-

4.2 Authorizations

You need license keys for the following components:

- Route Control Server
- Route Control Routes
For 10 or 50 material transports, can be combined for a maximum of 300 material transports
- Route Control Engineering
- Route Control Center

Software update

5.1 Update of the AS blocks

Overview

To upgrade the SIMATIC Route Control software from V8.1 to V8.2, select "Update" in the setup.

You can find information about the new features in the What's new file.

Note the following when updating a Route Control project from V8.1 to V8.2:

Note

The update of the AS blocks in your projects **does not require a CPU stop**.

- Conversion of the SIMATIC Route Control database is not required.
- Update the AS blocks in your projects that use RC functions.
Copy the new AS blocks from the installed RC library into the S7 projects in which RC functionality is used.
Update their CFCs with a block-type import. This requires a Compile OS operation. Compile and download the charts to the automation systems involved.

Block update

We recommend that you update the blocks.

Note

If you still want to continue working with AS blocks prior to V8.2, this is possible. You forgo the corrections and innovations of the new library in this case, however.

You can learn about the restrictions in the readme file of the respective version.

New functions and system properties

6.1 SIMATIC Route Control V8.2

You will find information on new and/or enhanced features of SIMATIC Route Control V8.2 in the What's new file.

6.2 SIMATIC Route Control V8.2 Update 1

Siemens Security Advisory for SIMATIC Route Control:

You will find information on the closed security vulnerability on the Internet (www.siemens.com/cert/advisories) in the security advisory: "SSA-378531: Vulnerabilities in SIMATIC WinCC, PCS 7, WinCC in TIA Portal".

Installation

Before the installation, close the running Route Control applications on the installation computer.

Then start the update setup.

The update setup installs the required or selected components.

S7 blocks

The installed Route Control library does not contain any new blocks.

It is therefore **not** necessary to update your S7 projects.

See also

www.siemens.com/cert/advisories (www.siemens.com/cert/advisories)

6.3 SIMATIC Route Control V8.2 Update 2

Installation

Before the installation, close the running Route Control applications on the installation computer.

Then start the update setup.

The update setup installs the required or selected components.

S7 blocks

The installed Route Control library contains new blocks.

Updating of your S7 projects is recommended.

Improvements and extensions

Update 2 for Route Control 8.2 contains the following improvements:

- This online readme contains information about the automatic start of the Route Control Server and about warnings when loading with CFC (see below).
- In order to better recognize modified project data the changeover between Daylight Saving Time and standard time has been adapted in Route Control Center.
- The periodic pulsing of elements has been improved with regard to the activation/deactivation of the controlling mode.
- At the "QSERV_IP" output of the RC_IF_CFG/FB850 block, the address of the terminal bus is also output following master/standby changeover operations of the RC server. This allows the RC client to automatically connect to the RC master.

To use these improvements, it is also necessary to update the Route Control blocks.

During setup, a new Route Control library is also installed.

If you want to continue using the Route Control library that is already installed, you should back it up prior to installation!

We recommend updating the blocks, stopping the CPU is NOT necessary!

Installation of the new blocks

The following blocks were changed in the Route Control library and must therefore be updated in the user projects:

The following block has been modified in its function:

- FB 805 / RC_ROUTE_TIME

The following blocks manage the version of the AS blocks used and were therefore upgraded to Version 8.2 Update 2:

- DB 100 / RC_CFG
- FB 809 / RC_ROUTE_STATES
- FB 856 / RC_MASTER_BUFFER

The following blocks had to be compiled again due to their dependency on DB100/ RC_CFG (and in the process received a new time stamp):

- FB 801 / RC_ROUTE
- FB 803 / RC_ROUTE_RCE_ON
- FB 806 / RC_ROUTE_XC_SEND
- FB 812 / RC_TG34_TG36
- FB 816 / RC_ROUTE_XC_SND_ORDER
- FB 817 / RC_ROUTE_XC_PE_ACTV
- FB 818 / RC_ROUTE_GET_EXT_PE
- FB 850 / RC_IF_CFG
- FB 852 / RC_MASTER_FUNC

Updating the S7 projects

- Close all the current routes before downloading the automation systems!
- Copy at least the Route Control blocks listed above from the installed Route Control library to the block folders of the user projects.

Note

It is also possible to copy **all** the Route Control blocks (FB, FC, DB, UDT) from the newly installed RC Version 8.2 Update 2 Route Control library to your user projects.

Open a CFC in every user project.

- Import the copied (see above) block types.
- Compile and download (with user data blocks) the automation systems (We recommend complete compilation and delta download.)
- Restart the Route Control server.

6.4 SIMATIC Route Control V8.2 Update 3

Installation

Before the installation, close the running Route Control applications on the installation computer.

Then start the update setup.

The update setup installs the required or selected components.

Improvements and extensions

Update 3 for Route Control 8.2 contains the following improvements:

- The list of CPU types that can be used with Route Control was updated.
- Problems with AS cross-coupling in systems with more than 16 AS per project were fixed. (See also **S7 blocks**)
- After connections that were created by the RC Wizard are deleted and the RC Wizard is restarted, these connections are created again by the RC Wizard. In these cases, the address of the new connection is now also stored in the RC database.
- For systems on which ONLY one Route Control server is installed, all messages of the RC server are now displayed in WinCC.

S7 blocks

The following notes regarding the S7 blocks ONLY apply to systems that already contain more than 16 AS per (multi-)project or that are to be upgraded to this number.

Cross-coupling (XC) requires initialized connections. (Allocate memory, create address lists, etc.)

This was previously only possible with fewer than 16 AS.

To remedy this problem, the two blocks

- FB 896 / RC_XC_INIT
- FB 897 / RC_XC_DIAG

have been changed.

For systems that use Route Control with more than 16 AS per (multi-)project, it is therefore necessary to upgrade the new blocks in the S7 projects.

The FB 896 / RC_XC_INIT for initializing the cross-coupling connections is only executed by restarting the AS.

This means that an **AS stop** is required for the new blocks.

However, this does not represent a limitation because the increase in the number of automation systems in Route Control systems always requires a restart of the automation systems.

NOTICE
In RC projects with fewer than 16 automation systems, the blocks do NOT need to be updated.
However, this can still be done.
An AS restart is only necessary if new and therefore more than 16 automation systems are to be included in the project.

Installation of the new blocks

During setup, a new Route Control library is also installed.

If you want to continue using the Route Control library that is already installed, you should back it up first. As described above, the following blocks were changed in the Route Control library and must therefore be updated in the user projects:

Functional changes in the following blocks:

- FB896 / RC_XC_INIT
- FB897 / RC_XC_DIAG

The following blocks manage the version of the AS blocks used and were therefore upgraded to Version 8.2 Update 3:

- DB 100 / RC_CFG
- FB 809 / RC_ROUTE_STATES
- FB 856 / RC_MASTER_BUFFER

The following blocks had to be compiled again due to their dependency on DB100/ RC_CFG (and in the process received a new time stamp):

- FB 801 / RC_ROUTE
- FB 803 / RC_ROUTE_RCE_ON
- FB 806 / RC_ROUTE_XC_SEND
- FB 812 / RC_TG34_TG36
- FB 816 / RC_ROUTE_XC_SND_ORDER
- FB 817 / RC_ROUTE_XC_PE_ACTV
- FB 818 / RC_ROUTE_GET_EXT_PE
- FB 850 / RC_IF_CFG
- FB 852 / RC_MASTER_FUNC

Updating the S7 projects

- Close all the current routes before downloading the automation systems!
- Copy at least the Route Control blocks listed above from the installed Route Control library to the block folders of the user projects.

Note

It is also possible to copy **all** Route Control blocks (FB, FC, DB, UDT) from the newly installed RC Version 8.2 Update 3 Route Control library to your user projects.

Open a CFC in every user project.

- Import the copied (see above) block types.
- Compile and download the automation systems (with user data blocks)
(Please observe the above-mentioned notes regarding AS stop in this regard.
We recommend complete compilation and complete download).
- Restart the Route Control server.

Installation of the SCS component

- In the redundant mode of the RC server, difficulties may arise in certain circumstances when assuming the master role of the RC server due to problems with redundancy monitoring.
These problems can be avoided by installing an updated version of the WinCC component SCS.
For compatibility reasons, this is **not** part of the Route Control 8.2 Update 3.
You need to upgrade to PCS7 version 8.2 SP1 in order to use this new SCS version.

Special considerations and usage notes

Getting Started

The description in the "Getting Started" contained in Route Control 8.2 still contains the version number 8.0.

The procedure described for creating an example project is also valid for version 8.2, however.

AS ID

The high limit for the value of the AS ID (input RC_AS_ID at block RC_IF_CFG) has been reduced.

The values 1 to 213 (instead of 1 to 239) are now possible.

Supplementary information about the automatic start of the RC-Servers

If the Route Control server functionality is to be activated and deactivated depending on WinCC, the following settings are required:

- Entry of the Route Control Server in the startup list of WinCC
- Setting the "Route Control server startup dependent on WinCC Runtime" parameter in Route Control Engineering
- RESETTING of the "Turn on automatic activation" parameter in the shortcut menu of the Route Control server dialog.

Load warnings in CFC

Various blocks of the Route Control library have to be executed in both cyclic mode (OB1, cyclic interrupts, etc.) and also in the startup branches (OB100...).

To ensure that a block has been installed and operates in multiple execution levels (i.e. organization blocks), the "s7_tasklist" block attribute is used to determine in which OB the blocks are to be placed IN ADDITION to the slot.

An example:

The RC_IF_CFG (FB850) block is the central Route Control block in an AS. It is normally installed in a cyclic interrupt OB35 because it also controls the AS – server communication (dependent on a fast cycle).

However, it must also be installed in the free cycle OB (OB1), in the timeout OB (OB80), in the programming error OB (OB121) and in various startup OBs (OB 100 / warm restart, OB101 / hot restart, OB102 / cold restart).

But: not all system configurations (for example, the CPU type 410-5H) support the startup types described above; however, the RC blocks must be installed in all of the startup OBs possible in the CPUs.

This can lead to a warning that a block is installed in an execution level that is not available when downloading the AS.

You can ignore this warning.

Error message with "Save as" for a PCS7 project

If the function mentioned above is executed without the executing user having logged on to SIMATIC LOGON, a difficult to understand error message appears and the saving operation is aborted.

To avoid this, the user must be logged on

- via SIMATIC Logon and belong
- to the group "RC_Maintenance".

Messages of the RC Server

Due to imprecise wording (in the German version) and resulting imprecise translations of three messages from the RC Server, these messages can be misinterpreted.

Message	German	Comment
3000001	RC Svr: F Hochlauf	The „F“ stands for the German word „Fehler“ and not for "F-system".
3000006	RC Svr: F Projektierung laden	
3000007	RC Svr: F Keine Lizenz gefunden	
	English	Comment
3000001	RC Svr: F startup	The „F“ stands for the German word „Fehler“ and not for "F-system" and should have been translated as „Error“.
3000006	RC Svr: Loading F configuration	
3000007	RC Svr: No F license found	
	French	Comment
3000001	Svr RC : erreur au démarrage	Messages are correct.
3000006	Svr RC : erreur au chargement de la configuration	
3000007	Svr RC : aucune licence trouvée	
	Italian	Comment
3000001	Svr RC Svr: avviamento E	The „E“ stands for the German word „Fehler“ and should have been translated as „Errore“.
3000006	Svr RC: carica progettazione E	
3000007	Svr RC: licenza E non trovata	
	Spanish	Comment
3000001	SRC: Arranque E	The „E“ stands for the German word „Fehler“ and should have been translated as „Error“.
3000006	SRC: cargar configuración E	
3000007	SRC: no se ha encontrado ninguna licencia E	

CPU 410 5H and CPU 410 SMART

As a result of an internal change to CPU identifiers, the Route Control wizard writes the following warning to the protocol for some of the abovementioned CPU types:

Warning: This CPU (CPU type / firmware) has not been officially released for Route Control although it is interpreted as a valid Route Control CPU in the following steps. Please read the information provided in the documentation.

Please ignore this warning. The stated CPU types are identified as valid CPUs and used by the Route Control wizard.

