

SIEMENS

SIMATIC

Industrial Software Safety Matrix V6.3 SP1

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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.

Proper use of Siemens products

Note the following:

WARNING

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.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

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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Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity 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 cybersecurity 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 cybersecurity measures that may be implemented, please visit

<https://www.siemens.com/global/en/products/automation/topic-areas/industrial-cybersecurity.html>.

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 Cybersecurity RSS Feed under

<https://new.siemens.com/global/en/products/services/cert.html>.

Introduction

Read the following instructions carefully because they contain important information to be observed when installing and using the Safety Matrix V6.3 SP1 option package.

Installation instructions

3.1 Installing the Safety Matrix option package

Software requirements

Operating systems

The following operating systems are now supported on the ES and OS (for Safety Matrix Viewer):

- MS Windows 7 Ultimate with SP1 (64-bit)
- MS Windows 7 Enterprise with SP1 (64-bit)
- MS Windows 7 Professional with SP1 (64-bit)
- MS Windows 10 Enterprise 2015 LTSC
- MS Windows 10 Enterprise 2019 LTSC (64-bit)
- MS Windows Server 2008 R2 with SP1 (64-bit)
- MS Windows Server 2012 R2 Standard
- MS Windows Server 2016 Standard Edition (64-bit)
- MS Windows Server 2016 Datacenter Edition (64-bit)
- MS Windows Server 2019 Standard Edition (64-bit)
- MS Windows Server 2019 Datacenter Edition (64-bit)

Note

Release for Windows Server 2016 or 2019 Datacenter Edition

Windows Server 2016 or 2019 Datacenter Edition (64-bit) is only supported with the SIMATIC Virtualization as a Service (SIVaaS) service contract.

You can find more information in the Industry Online Support under entry ID 109762004.

- Internet link (<https://support.industry.siemens.com/cs/ww/en/view/109762004>)
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3.1 Installing the Safety Matrix option package

Note

Microsoft Updates for the operating systems

Before you start with the installation/upgrade of your computers to Safety Matrix 6.3 SP1, ensure that the currently released updates for the respective operating system are installed.

You can find information on the use of the latest Microsoft security updates in the Industry Online Support under entry ID 18490004:

- Internet link (<https://support.industry.siemens.com/cs/ww/en/view/18490004>)

To ensure secure and stable operation of the operating system, we recommend the installation of the mentioned updates.

Software packages

Note

Installations of older versions of the Safety Matrix components must be uninstalled prior to installing Safety Matrix V6.3 SP1.

You have to install the following software packages to operate Safety Matrix V6.3 SP1:

- PCS 7:
PCS 7 V9.0 SP3 to V9.1 SP1 *
 - S7 F Systems V6.2 Upd1 or higher
 - S7 F Systems Library V1.3 SP1 Upd1 or higher

*CFC V9.0 SP6 Upd1 or higher must be installed on the ES with PCS 7 V9.1 SP1.
PCS 7 V9.1 SP2 or higher

 - S7 F Systems V6.4 or higher
 - S7 F Systems Library V1.3 SP1 Upd1 or higher
- STEP 7:
STEP 7 V5.6 SP2 Upd3 or higher
 - CFC V9.0 SP4 or higher
 - S7 F Systems V6.2 Upd1 or higher
 - S7 F Systems Library V1.3 SP1 Upd1 or higher

STEP 7 V5.7 HF2 or higher

 - CFC V9.0 SP6 Upd1 or higher
 - S7 F Systems V6.4 or higher
 - S7 F Systems Library V1.3 SP1 Upd1 or higher

- *Optional software for offline testing:
 - S7 PLCSIM V5.4 SP3 or higher
 - SIMIT VC V10.2 or higher

Installation options

The following options are available in the setup:

Installation option	Description
Engineering AS and OS	The option is used for installation of all Safety Matrix components on the ES, which means the computer is used for the engineering of AS and OS. This option is used for the installation under SIMATIC PCS 7.
Engineering AS	The option is used for installation of the Safety Matrix components on the ES, which means the computer is used for the engineering of the AS. This option is used: • For installation under SIMATIC STEP 7. • For updating the Safety Matrix Engineering Tool including Safety Matrix Library under PCS 7.
Engineering OS	The option is used for installation of OS components on the ES, which means the computer is used for the configuration of AS and OS and when only the OS is to be updated. This option is used for installation of the OS components Safety Matrix Viewer and Safety Matrix AS-OS Engineering under SIMATIC PCS 7.
Runtime	The option is used for installing the OS component Safety Matrix Viewer on the OS, which means the computer is only used as OS, for example, in OS single-user station system, OS Server, or OS Web Server.

The option packages of the SIMATIC Safety Matrix can also be installed via the SIMATIC Management Console.

3.1 Installing the Safety Matrix option package

Notes on use

4.1 Notes on the optional package

Notes on the Effect tag simulation

If the number of Effects exceeds the number of Causes in a Safety Matrix configuration, it may happen that the simulation of the Effect tags via the Safety Matrix Viewer is not executed successfully. The operation is aborted in this case.

Solution:

In the layout of the Safety Matrix, adjust the number of Causes to the number of Effects (menu command View > Adjust > Layout, "Size" tab).

4.2 Notes on Service Pack 1

Service Pack 1 contains the following additions and corrections:

- Optimizations in the security and stability areas
- Use of the Safety Matrix Viewer on PCS 7 Web client
- Support of SIMIT VC
- Support of the upgrade as described in section 4.4.3 "User scenario 2" and section 4.4.4 "User scenario 3" of the "Safety Matrix V6.3" manual

4.3 Notes on upgrading to Safety Matrix V6.3 SP1

Runtime of the Safety Matrix Library V1.4

Due to functional and safety-related extensions within the Safety Matrix, the new blocks of the Safety Matrix Library V1.4 have a longer runtime compared with the previous versions. Depending on the scope of the Safety Matrix configuration, this leads to a noticeable increase in CPU cycle times and therefore to a higher CPU load as well. You can estimate the runtimes based on the new Safety Matrix blocks via `s7ftime`.

Modified message characteristics of the Safety Matrix

Note that as of Safety Matrix V6.3 with Safety Matrix Library as of V1.4, the bypass alarm is signaled via the central `F_MA_AL` alarm block both for the "Soft Bypass" or "Hard Bypass" action and for the "Suppress Cause" action.

This informs the operator that the cause will not become active when requested.

4.5 Notes on the Programming and Operating Manual "Safety Matrix"

If you want to generate separate messages per cause for the status "Bypass active" or "Suppress active", activate the check box "Place for cause and effect" in the "Properties" dialog of the Safety Matrix, tab "Alarms" (menu command Edit > Properties).

You can then selectively deactivate unneeded message blocks in the Cause or Effect properties ("Alarms" tab, "Place" check box).

4.4 Notes on the documentation

You can find the manuals on the installation storage medium in the directory "`\_Manuals\English`".

You can find current versions of the manuals on the Internet at:

<https://support.industry.siemens.com>

4.5 Notes on the Programming and Operating Manual "Safety Matrix"

In this section you will find corrections and additions to the Programming and Operating Manual "Safety Matrix". The section numbers and the correction/addition are specified.

Additions and corrections to section 6.1.8 "F-channel drivers"

- The table in the section "Integrating F-channel drivers in the Safety Matrix" has been supplemented with the entry:
The channel drivers F_CH_QBI and F_CH_QBO are:
 - Placed in advance (external) and interconnected during transfer
- The footnote of the table has been replaced:
Current description:
*) But not the explicitly named F_CH_AI, F_CH_DI/DO, F_CH_BI/BO
New description:
*) But not the explicitly named F_CH_AI, F_CH_DI/DO, F_CH_BI/BO, F_CH_QBI/BO
- In the section "Customer-specific F-channel drivers", the following entry has been replaced:
Current description:
– F_CH... (but not F_CH_AI, F_CH_DI/DO, F_CH_BI/BO)
New description:
– F_CH... (but not F_CH_AI, F_CH_DI/DO, F_CH_BI/BO, F_CH_QBI/BO)

Addition to Annex B "Resulting cause logic for Degraded Voting"

In the tables in this section, the "Resulting Cause Logic" column mentions the function "(1oo1)".

In these cases, "(1oo1)" stands for an activation of the cause, as there is no longer any "Degraded Voting".

The representation in the Safety Matrix user interface may differ from this.

Correction to section 8.2 "Result of the transfer and overview of the created charts"

In the section "Nested chart of the F-channel drivers ("MatrixName")", the following description has been replaced.

- Current description:
 - *1) If you are using fail-safe DP standard slaves or fail-safe PA field devices in a Safety Matrix, position the F-channel drivers for them manually, and interconnect the F-channel drivers with the Safety Matrix using chart connections to the nested chart of the matrix logic.
- New description:
 - *1) If you are using fail-safe DP standard slaves or fail-safe PA field devices in a Safety Matrix, read section 6.1.8 "F-channel drivers".

