

SIEMENS

SIMATIC

PCS 7 Licenses and configuration limits (V9.0)

Installation Manual

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Valid for PCS 7 as of V9.0

Legal information

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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.

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⚠ 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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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 only form one element of such a concept.

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Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit:

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Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply 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

<http://www.siemens.com/industrialsecurity>.

Preface

Purpose of this documentation

This documentation describes the licensing for the process control system PCS 7.

The following topics are described:

- Selecting the correct licenses, referred to as license keys, for different PCS 7 software products.
- PCS 7 software packages and the required license keys.

Options for accessing PCS 7 documentation

The documentation required for PCS 7 includes the following types:

- **PCS 7 Readme**

The readme file is available in two versions:

- **PCS 7 Readme (offline)**

This version is installed by PCS 7 Setup. The file only contains general information and links to documents on the Internet.

- **PCS 7 Readme (online)**

This version contains all information on the installation and use of PCS 7 in the format which is already familiar to you. The file is only available on the Internet to keep it always up-to-date

Note

The information provided in the *PCS 7 Readme* (online) on the Internet takes precedence over **all** other *PCS 7* documentation.

Read this *PCS 7 Readme* carefully, because it contains important information and amendments on *PCS 7*.

- **PCS 7 System Documentation**

System documentation contains information that covers several products, such as configuration manuals and Getting Started manuals. This documentation serves as a guideline for the overall system and explains the interaction between the individual hardware and software components.

Note the information on "PCS 7 Documentation Portal Setup" in the product overview *Process Control System PCS 7; PCS 7 - Documentation*, Section "Options for accessing the documentation"

- **PCS 7 Product Documentation**

Product documentation contains information about special hardware and software components. The individual documents provide detailed information on the specific component.

Full versions of the documentation are available from the "Technical Documentation SIMATIC PCS 7" website: www.siemens.com/pcs7-documentation (www.siemens.com/pcs7-documentation)

Required basic knowledge

General knowledge in the area of automation engineering and basic knowledge of PCS 7 is required to understand this documentation. It is also assumed that the reader knows how to use computers or other equipment similar to PCs (such as programming devices) with the Windows operating system.

Selecting the correct license keys

3.1 Selecting the correct license keys

Introduction

The **configurable** size of a PCS 7 plant is scalable. The software products for engineering station, operator station, SIMATIC BATCH station, Route Control station and SIMATIC PDM are licensed as follows:

- Version-dependent license
This license enables the associated functionality, e.g. OS server redundancy.
- License type "Count Relevant License" (licenses with scalable size)
These licenses determine the configuration limits of this functionality, for example, OS Runtime 1000 PO. With licenses of the type "Count Relevant License", you can install several license keys whose licensed values are then added up.

Process object

The following applies to licensing of the "PO" process objects in SIMATIC PCS 7:

The following are counted as PCS 7 process object:

- all SFC
- All block instances that meet the following criteria:
 - Instance can be controlled and monitored.
 - Instance generates alarms.
 - Instance is not part of the driver library.

These objects are transferred to the OS and must be licensed.

A block with operator control and monitoring has the attribute "`S7_m_c = true`" in the CFC block properties.

A process object can include the following blocks and objects:

- Blocks for operating and monitoring a system
- Objects for automation
- Objects for signal recording and signal processing

You can find additional information on process objects in the manual *Process Control System PCS 7; Engineering System*, for example in the section "Counting and booking of process object licenses".

3.1 Selecting the correct license keys

Licenses with scalable size (levels per component of the process control system)

The following table shows the levels in which the system size can be changed.

Component of process control system	Levels of licenses		Comment
Engineering system (ES)	Loading of SIMATIC stations	PO: <ul style="list-style-type: none"> • 100 • 1000 • 10000 	"AS RT PO" license key <ul style="list-style-type: none"> • Required for download to the AS, but not for test or S7 PLC Simulation. • Only required once in the case of redundant systems.
Engineering system (ES)	Loading of SIMATIC stations	PO: <ul style="list-style-type: none"> • 0 • 100 • 250 • 500 • 1600 	<ul style="list-style-type: none"> • Upgrade only possible for SE card • SMART SE Card PO 800: Upgrade not possible
Operator station (OS)	PO: <ul style="list-style-type: none"> • 100 • 1000 • 5000 		"OS RT PO" license key <ul style="list-style-type: none"> • Single station system: maximum 5000 PO • OS server: Maximum 12000 PO per OS server • Maximum number of PO = 144000
Archiving with operator station	Archive values: <ul style="list-style-type: none"> • 1500 • 5000 • 10000 • 30000 		Maximum number of archive values that can be archived per second with an OS server / OS single station system: 1000
Process Historian	Note for use of the Process Historian: Only operator stations license keys for archive values.		Archive values from redundant data sources are counted as only one tag each.
Information Server	Clients: <ul style="list-style-type: none"> • 1 • 3 • 5 • 10 		A license is required for each active client connection. A client is any installed plug-in for Microsoft Excel or Word as well as the client of the web application. Client licenses are counted per PC, not per client application. This means only one license is required even if more than one report client of a PC is connected with the information server.
Information Server	Data source access: <ul style="list-style-type: none"> • 1 • 3 		<ul style="list-style-type: none"> • Number of OS servers per Information Server A redundant OS server is counted as one OS server. • The licenses are required if the Information Server directly accesses the OS server (without Process Historian).

3.1 Selecting the correct license keys

Component of process control system	Levels of licenses	Comment
Maintenance Station (MS)	Asset tags (hardware components): <ul style="list-style-type: none"> • 100 • 200 • 1000 	Number of monitored hardware components within a PCS 7 project.
PCS 7 OS Web Option	Web clients: <ul style="list-style-type: none"> • 1 • 5 • 10 	<ul style="list-style-type: none"> • Number of Web clients per Web server • Maximum number of Web clients per PCS 7 project: 100
BATCH stations (batch processes)	Units: <ul style="list-style-type: none"> • 1 • 10 • 50 	Number of units within a PCS 7 project.
BATCH server (Web clients)	Web clients: <ul style="list-style-type: none"> • 1 • 5 	<ul style="list-style-type: none"> • Number of Web clients per BATCH server • One license key per server computer for redundant servers
BATCH server (Work memory)	Loading of work memory is needed for batch processing: <ul style="list-style-type: none"> • 500 MB 	<p>"BATCH Expansion (500MB)" license key</p> <ul style="list-style-type: none"> • If more than 1500 MB of work memory is needed for batch processing, this license key is necessary on a BATCH server PC. • Each license key expands the work memory by 500 MB. When batch processing, this enables the available SIMATIC BATCH Server's work memory to be used almost to its complete capacity. • One license key per server computer for redundant servers • Necessary for the expansion of the usable working memory for batch processing. Information on the required working memory can be found in the manual <i>Process Control System PCS 7; SIMATIC BATCH</i>.
Route Control Station (Route Control)	Routes: <ul style="list-style-type: none"> • 10 • 50 	Number of activated routes in process mode (material transports)
PDM	Number of devices: <ul style="list-style-type: none"> • 10 • 100 • 1000 	Number of configurable devices
SIMATIC Management Console	Assigned PC stations <ul style="list-style-type: none"> • 10 • 50 • 100 	Number of managed computers

See also

Software and license keys for configuration with PCS 7 (Page 31)

Software and license keys for a single-station system with configuration (Page 33)

Software and license keys for Operator Stations (Page 35)

Software and license keys for BATCH Stations (Page 38)

Software and license keys for Route Control Stations (Page 40)

Software and license keys for the SIMATIC Management Console (Page 41)

3.2 Determining the process objects for the SIMATIC station

Information on license key levels is available in the catalog ST PCS 7.

License key for the AS

The required license key for all SIMATIC stations depends on the total number of process objects loaded and configured in a project (multiproject).

When an AS is loaded, the loaded process objects are evaluated. The following procedure shows you how to calculate the number of process objects configured in a project or multiproject.

PCS 7 V7.0 or higher:

The number of process objects loaded into the AS is calculated by the executing application and is subtracted from the available process objects of the license. The value for the number of available process objects is always updated by the executing application. The license key "AS RT PO" of the type "Countable Objects" is used.

For further information, refer to the section titled "Determining the process objects for the automation systems (Page 14)".

Requirement

SIMATIC Manager is open.

Procedure

1. Select the multiproject or project in the component view.
2. Select the **Options >PCS 7 license information** menu command.
The "PCS 7 license information" dialog box opens.
3. Select the entry "Process objects (AS RT PO)" in the left-hand table.

Result

The corresponding number of process objects is displayed in the right-hand window "Configured license objects."

Note

The display of the license objects is based on the multiproject or project selected in the SIMATIC Manager.

The following information is also displayed below the window:

- The existing license.
- The number of licenses currently still available and of process objects that can still be configured with them.

3.3 Determining the process objects for the automation systems

Overview

The following applies to licensing of process objects for the automation system:

Licensing of process objects as of V7.0:

Process objects (PO) requiring licenses include objects that are subject to operator control and monitoring **and** can generate messages. These objects have the block attribute "S7_m_c" and require the "PCS 7 - Runtime License AS" license with the "AS RT PO" license key.

The display in the "PCS 7 license information" dialog window can be used to determine the objects subject to licensing. For a description of the procedure see the section "Determining the process objects for the SIMATIC station (Page 13)".

Additional information

You can find additional information on process objects:

- In the section "Insufficient license key – license key is not installed (Page 27)".
- In the manual *Process Control System PCS 7; Engineering System* for example, in the section "Counting and booking process object licenses".

Installation of the AS RT PO licenses

Select the appropriate AS RT PO license installation for your engineering environment:

1. **AS RT PO license installed on the local engineering PC**

Install the AS RT PO license(s) in sufficient numbers on the engineering PC. The favorites list in the Automation License Manager (see menu "File > Settings") must not contain entries or the PCs listed do not have AS RT PO licenses.

2. **AS RT PO license installed on a license server**

Install the AS RT PO license(s) in sufficient number on the license server PC. The favorites list in the Automation License Manager (see menu "File > Settings") must contain the name of the license server PC. The local engineering PC must not have an AS RT PO license.

Display of objects in the "PCS 7 license information" dialog windows and the statistics function

The displays in the two dialog boxes differ as follows:

- "PCS 7 license information" dialog box
When the "Process objects (AS RT PO)" option is selected, the objects that can be operated and monitored **and** generate messages are displayed in this dialog box. Only these require a license for process operation and the license key "AS RT PO".
- Statistic function in the "Chart Reference Data" dialog box
Statistical values are displayed with the menu command **View > Statistics**. The "Block instances" folder displays all the objects that can be operated and monitored under the entry "of which are OCM capable", **regardless** of whether or not they can generate messages.

You have the following options for opening the "Chart Reference Data" dialog box:

- In the CFC Editor or SFC Editor with the menu command **Options > Chart Reference Data**.
- When the chart folder of an AS is selected in the component view of the chart folder in SIMATIC Manager, with the menu command **Options > Charts > Chart Reference Data**.

PO volume of the CPU 410-5H

In PCS 7 V8.1 or later and CPU 410-5H with firmware version \geq V8.1, you can use the Automation License Manager to increase the PO volume of a CPU 410-5H via an online upgrade of the System Expansion Card.

You can find information about this in the documentation *Process Control System PCS 7; Service Support and Diagnostics* and in the *Automation License Manager*..

3.4 Calculating the process objects for the operator station

Information on license key levels is available in the catalog ST PCS 7.

License keys authorize users to use a specified number of process objects (PO) or archive values on the operator station. This number is listed in the "Validity" column in Automation License Manager.

License key for OS process objects (OS RT PO)

A defined number of process objects can be operated and monitored with this license key. The number of process objects that can be processed depends on the load on the operator station.

Visualization is possible for up to 2 hours on an engineering station without these license keys.

You must transfer the license keys to the OS servers or OS single station systems (also engineering station).

An OS RT PO license key is not required for an OS client.

You can only use the editors for a limited period of time in demo mode.

Example: OS RT PO (Validity: 2000)

Use this license key to increase the number of process objects permitted in process mode by **2000**.

Requirements

- SIMATIC Manager is open.
- The "Compile OS" function is executed in the SIMATIC Manager. The number of configured process objects can then be determined.

Procedure

Proceed as follows to determine the configured and licensed process objects and archive tags of the OS:

1. Select the multiproject or project in the component view.
2. Select the **Tools > PCS 7 License Information** menu command.
The "PCS 7 license information" dialog box opens.
3. Depending on the required information, select the entry in the table on the left:
 - **"OS process objects"** entry
The corresponding number of OS process objects is displayed in the right-hand window "Configured license objects".
 - **"Archive tags"** entry
The corresponding number of OS archive tags is displayed in the right-hand window "Configured archive tags".

Result

Note

The display of the license objects is based on the multiproject or project selected in the SIMATIC Manager.

Insufficient license key

see section "Insufficient license key – license key is not installed (Page 27)"

Extending the number of licensed process objects and archive tags

- You extend the number of licensed processed objects by installing additional OS RT PO license keys on the operator station (OS server or OS single station system).
- The number of licensed archive tags can be increased by installing more "WinCC Archive" license keys on the PC.
- The number of licensed archive tags for each license key is added up. "WinCC Archive" license keys can be combined as required.
- "WinCC Archive" license keys to expand the number of licensed archive tags are available starting with 1500 tags.
- With redundant systems, two archives with the corresponding number of archive tags must be configured.

Note

"WinCC Archive" license keys

Product name for separate order: **"SIMATIC PCS 7, SOFTWARE OS ARCHIVE"**

Example

If you need to archive approximately 11000 archive tags, install the following license keys:

- "WinCC Archive" license key for up to 1500 archive tags
(Basic license type; Single; License type: Count relevant; Validity: 1500)
- "WinCC Archive" license key for up to 10000 archive tags
(Basic license type; Single; License type: Count relevant; Validity: 10000)

This licenses 11500 archive tags.

Additional information

- *WinCC Information System*
- Section "Selecting the correct license keys (Page 9)"
- Section "Determining the archive values for the operator station (Page 18)"

3.5 Determining the archive values for the operator station

Introduction

Note the following conventions:

- The values of process tags of operator stations are referred to as archive tags below.
- The archive values of a process tag are assigned to archive tags.

The total number of archive tags in a project, multiproject, or on an operator station can be determined. You can find information on how to expand the number of licensed archive values in the section "Calculating the process objects for the operator station (Page 16)".

License key for archive tags (WinCC Archive)

The values for a specific number of archive tags can be archived with operator stations using this license key.

- **Example 2: WinCC Archive (Validity: 1500)**
This license key enables you to increase the number of archive tags which can be configured for the archive server by **1500** .
- Archive tags require licensing if any of the following properties is set with respect to the archiving:

Setting related to archiving	Archive tag available in the following archive
Archiving	<ul style="list-style-type: none">• Circular archive
Long-term archiving	<ul style="list-style-type: none">• Circular archive• Long-term archive

- You can configure a maximum of 80 000 archive tags for each operator station.
- You must transfer the license keys to the OS servers or OS single station systems.
- Product name for separate order: "SIMATIC PCS 7, SOFTWARE OS ARCHIVE"

Note

"WinCC Archive" license keys

Product name for separate order: "SIMATIC PCS 7, SOFTWARE OS ARCHIVE"

Using the Process Historian in the PCS 7 plant

The operator stations in a PCS 7 plant can send the archive values to a Process Historian.

The Process Historian can archive the archive tags of all OS servers of a PCS 7 plant.

Note

The Process Historian does not need separate license keys for archive tags of operator stations.

The number of licensed archive tags is derived from the total number of archive tags of all OS servers.

The following license keys are required in the plant to use the Process Historian:

- On operator stations: **WinCC Archive**
- On the Process Historian: **Process Historian**

Additional information

- *WinCC Information System*
- You can find information on how to expand the number of licensed archive values in the section "Calculating the process objects for the operator station (Page 16)".

3.6 Calculating the asset tags (hardware components) for the Maintenance Station

License key for Maintenance Station

The license type of these license keys is "Count relevant license". The licensed scope is added together when several license keys are installed.

This license key allows you to monitor a defined number of diagnostics objects (asset tags).

Example: Existing "Maintenance RT (100)" license key

This license key is sufficient for diagnosing up to 100 hardware components with a Maintenance Station. If you have three Maintenance RT (100) license keys on a Maintenance Station, you will be able to diagnose up to 300 hardware components.

Diagnostics objects

The following diagnostics objects are classed as an asset tag within a PCS 7 project:

- PC station
- Network component with diagnostics capability (for example, switch)
- Automation system (CPU)
- Distributed I/O (ET 200 station)
- Field device with diagnostics capability
- Object in the user diagnostics area (ASSETMON, AssetM)

Note

Diagnostics objects are counted as asset tags.

Diagnostics objects are not counted as process objects (PO) of the operator station. The diagnostics object ASSETMON is an exception.

Requirement

SIMATIC Manager is open.

Procedure

1. Select the multiproject or project in the component view.
2. Select the **Options >PCS 7 license information** menu command.
The "PCS 7 license information" dialog box opens.
3. Select the entry "Diagnostic objects (Maintenance RT)" in the left-hand table.

Result

The corresponding number of diagnostics objects is displayed in the right-hand window "Configured license objects".

Note

The display of the license objects is based on the multiproject or project selected in the SIMATIC Manager.

Insufficient license key

see section "Insufficient license key – license key is not installed (Page 27)"

3.7 Determining the units for the BATCH station

License key for BATCH station

A defined number of units can be operated and monitored with this license key. The number of units that can be processed depends on the utilization of the BATCH server.

Example: BATCH UNITS (Validity: 20)

The license key for BATCH servers is sufficient to configure up to 20 units.

Requirement

SIMATIC Manager is open.

Procedure

1. Select the multiproject or project in the component view.
2. Select the **Options >PCS 7 license information** menu command.
The "PCS 7 license information" dialog box opens.
3. Select the entry "SIMATIC BATCH units" in the left-hand table.

Result

The corresponding number of SIMATIC BATCH units is displayed in the right-hand window "Configured license objects".

Note

The display of the license objects is based on the multiproject or project selected in the SIMATIC Manager.

3.8 Determining the routes for the Route Control station

License key for Route Control station

For the process mode of SIMATIC Route Control, the number of active routes (material transports) is relevant and not the number of configured routes. The number of routes active in process mode is based on the process.

Example: Route Control Routes (Validity: 50)

This license key for Route Control servers can be used to simultaneously activate up to 50 routes in process mode.

Determination of routes

The following options are available for determining the number of routes:

- The status bar in the Route Control center shows how many routes were active at the same time after restarting the Route Control server.
- The number of routes can be determined in the "PCS 7 license information" dialog box in the SIMATIC Manager. More information is available in the following text.

Determining the number of routes in the SIMATIC Manager

1. Select the multiproject or project in the component view.
2. Select the **Tools > PCS 7 License Information** menu command.
The "PCS 7 license information" dialog box opens.
3. Select the entry "Route objects (Route Control Server)" in the left-hand table.
The corresponding number of routes is displayed in the right-hand window "Configured license objects".

Note

The display of the license objects is based on the multiproject or project selected in the SIMATIC Manager.

Insufficient license key

see section "Insufficient license key – license key is not installed (Page 27)"

New license

If you have installed the license, restart the Route Control server.

3.9 Determining the PDM objects for PC stations with SIMATIC PDM

Overview

SIMATIC PDM must be installed before it can be started. The software package contains all SIMATIC PDM software. Depending on the usage scenario, you only need to install certain applications.

The license type of these license keys is "Count relevant license". The licensed scope is added together when several license keys are installed.

This license key allows you to monitor a defined number of diagnostics objects (asset tags).

Example: Existing "Maintenance RT (100)" license key

This license key is sufficient for diagnosing up to 100 hardware components with a Maintenance Station. If you have three Maintenance RT (100) license keys on a Maintenance Station, you will be able to diagnose up to 300 hardware components (Calculating the asset tags (hardware components) for the Maintenance Station (Page 20)).

License for S7 DSGW (data record gateway)

The "SIMATIC PDM Routing" option is not included in the SIMATIC PDM stand alone product package.

Licensing for use of the S7 DSGW (data record gateway) for gateways from the plant bus (Ethernet) to field buses (PROFIBUS) takes place via TAG licenses.

TAG licenses are booked depending on the quantity according to the following rules:

- 10 TAG: per S7 DSGW with a PROFIBUS subnet
- 20 TAG: per S7 DSGW with more than one PROFIBUS subnet
- 10 TAG: per IE/PB link
- 0 TAG: for Ethernet or PROFINET networks

Additional information

You can find additional information on PDM objects:

- In the section "Insufficient license key – license key is not installed (Page 27)".
- In the manual *Process Control System PCS 7; Engineering System* for example, in the section "Counting and booking process object licenses".

Display of objects in the "PCS 7 license information" dialog windows and the statistics function

Product variants for stand-alone use

SIMATIC PDM is available as a stand-alone variant with the "Basic" and "Single Point" licenses and can thus be used independently of SIMATIC S7 or SIMATIC PCS 7.

- The "Single Point" product variant can be used for exactly one field device with a point-to-point connection. A project is permitted to contain a maximum of one object subject to licensing. This product variant cannot be extended with respect to functions or capacity using SIMATIC PDM options. No functional extensions (upgrades) are provided for this variant.
- The "Basic" product variant can be extended with respect to functions and capacity using SIMATIC PDM options. Functional extensions (upgrades) are provided for this variant.

3.10 Determining the number of computers for the SIMATIC Management Station

Information on license key levels is available in the catalog ST PCS 7.

License key for the SIMATIC Management Console (x)

A defined number of computers can be connected with the Management Console with this license key. The connection is only possible if the SIMATIC Management Agent service is installed on the computers in the system. You can apply the functions of the Management Console to the connected computers.

You need one license key object for each managed computer in the Management Console network.

Example: SIMATIC Management Console (scope: 50)

- You need one license key object for the Management Console computer. You can connect an additional 49 computers to the Management Console.

Requirement

The SIMATIC Management Console is open.

Procedure

Select the menu command **View > SMAgent license view**.

The dialog box displays the following information:

- Number of occupied licenses
The number of used SMA license keys shows how many computers are connected to the Management Console.
- Number of free licenses
The number of free SMA license keys shows how many additional computers can be connected to the Management Console.

3.11 Insufficient license key – license key is not installed

Reactions

Below you find the reactions of the PCS 7 components in the following situations:

- Insufficient license key
- Missing license keys
Example for missing license keys are:
 - License key is not installed
 - Access to license key is not possible, for example, license server is not available

License key for the AS

- If the current program contains fewer process objects than the previously downloaded project, the download operation automatically increases the number of available process object licenses. If not enough licenses are available, the license violation generates a corresponding message that must be confirmed. Now you may either terminate the download or continue just the same. The number of the required but unavailable licenses is recorded as a shortage. If you have purchased additional licenses, these missing licenses are included and registered in the ALM at the next download.

License key for OS process objects (OS RT PO)

- Missing license keys
The OS program automatically switches to demo mode.
- Insufficient license key
If you open a project with an insufficient number of configurable process objects, the OS program switches to demo mode automatically.

License key for Maintenance Station

Objects with diagnostic capability are

License key for PC stations with SIMATIC PDM

- Missing license keys for PDM tags
The SIMATIC PDM automatically switches to demo mode.
Without license keys, you can configure a maximum of 4 devices.
- Insufficient license keys for PDM tags
The SIMATIC PDM automatically switches to demo mode.
- Only the license key for options requiring a license (for example, SIMATIC PDM Extended) is missing.
The license-specific functions are not available (for example, routing via S7 DSGW).

Reaction

3.11 Insufficient license key – license key is not installed

If after starting SIMATIC PDM you receive a message stating that demo mode is activated, note the following:

- The SIMATIC PDM status line displays the information "Demo".
- The following function limitations are in effect:
 - The processing of the project with other editors is unrestricted.
 - Objects that are not affected by the infringement of the license conditions can be created.
 - The communication functions to PDM objects are locked.
 - Online dialog boxes of field devices can only be opened "offline".

License key for BATCH station

- Missing license keys
The OS program automatically switches to demo mode.
- Insufficient license key
If you open a project with an insufficient number of configurable process objects, the OS program switches to demo mode automatically.

License key on a BATCH Server PC

- **Behavior in the case of missing "BATCH Web Client" license keys on a BATCH Server PC**
 - If there is no "BATCH Web Client" license key for the BATCH Web Client on a BATCH Server PC, an error message is displayed on the BATCH Web Client when a connection is to be established.
A connection is not possible without a license.
 - If a server is redundant, you will require the license key on each of that server's PCs.

- **Behavior in the case of insufficient "BATCH Expansion (500MB)" license keys on a BATCH Server PC**

BatchCC and OS Controls

From SIMATIC BATCH V9.0 onwards the performance capacity of the BATCH Server will be increased. BATCH Server can process larger quantities (depending upon the work memory and the performance capacity of the PC).

Therefore, the available working memory can be almost completely used by the SIMATIC BATCH system.

When the licensed working memory limit has been exceeded, no batch can be released and no released batch can be started. Furthermore, chained batches, or batches that are programmed for an automatic start, are no longer able to be started.

A message in the PCS 7 OS message system will be generated. Batches that are already running will not be affected.

When enough licensed working memory is again available, you may once more start and release batches.

- As soon as more than 1500 MB of work memory is needed for batch processing, this license key is necessary on a BATCH server PC.
- Each license key expands the work memory by 500 MB. When batch processing, this enables the available SIMATIC BATCH Server's work memory to be used almost to its complete capacity.
- If a server is redundant, you will require the license key on each of that server's PCs.

SIMATIC BATCH API

When the licensed working memory limit has been exceeded, the commands "Start" and "Release" will no longer function and will be rejected in SIMATIC BATCH API.

License key for Route Control station

- **Insufficient license key – server license key is installed**
 - If the Route Control server detects a license key for 30, 100 or 300 routes when powering up, the maximum number of material transports that can occur at any one time is limited to this value.
 - This means when the server receives its 31st, 101st or 301st route request, the Route Control center shows that there is no license key or that it has been exceeded. The Route Control server runs on.
- **Insufficient license key – server license key is not installed**

If there is no license key installed on the Route Control server, the server is limited to a maximum of 300 routes (maximum limit). Since the Route Control server has no information on the actual system size, it adopts a safe stance - you can still run the system without a license. The fact that there is no license is indicated on the Route Control center.

3.11 Insufficient license key – license key is not installed

Licensing of PC stations

4.1 Software and license keys for configuration with PCS 7

Overview

The following tables show the software packages and the required license keys for the engineering station of PCS 7:

You can find information on license key levels in the section "Selecting the correct license keys (Page 9)".

Note

You can learn about the versions for the current program package on the *Process Control System; SIMATIC PCS 7* DVD in the *Process Control System PCS 7; PCS 7 Readme* file (see "Preface (Page 7)").

Engineering station

Designation	License key	Optional	Comment
AS/OS engineering	AS Engineering OS Engineering		
Runtime license AS	AS RT PO		Only required for download
BATCH Engineering	-	X	
Route Control Engineering	Route Control Engineering	X	
Maintenance Station Engineering	Maintenance ES	X	
PDM	PDM Basic PDM Integration in STEP 7 PDM Routing PDM Extended	X	
PDM Tags	PDM TAG	X	Count relevant license
S7 PLC Simulation	S7-PLCSIM	X	
Version Trail	Version Trail	X	
Version Cross Manager	Version Cross Manager	X	
Import/Export Assistant	IEA	X	

4.1 Software and license keys for configuration with PCS 7

Designation	License key	Optional	Comment
Advanced Engineering System	AdvancedES	X	
SIMATIC NET	<ol style="list-style-type: none"> 1. BCE 2. Industrial Ethernet 3. S7-REDCONNECT 	(1st + 2nd) alternative (3rd) X	<ol style="list-style-type: none"> 1. Only for standard Ethernet network adapters (not required for SIMATIC NET CP). 2. When using SIMATIC NET CP, e.g. CP1623. 3. When using high availability connections.

4.2 Software and license keys for a single-station system with configuration

Overview

The following tables show the software packages and the required license keys for a single-station system in PCS 7 with configuration.

- The single-station system includes the engineering station and the operator station (single-station system) as basic functions.
- The following can be installed as optional functions, for example:
 - BATCH station (single-station system)
 - Route Control (single-station system)
 - Maintenance Station (single-station system)
 - PDM

You can find information on license key levels in the section "Selecting the correct license keys (Page 9)".

Note

You can learn about the versions for the current program package on the *Process Control System; SIMATIC PCS 7 DVD* in the *Process Control System PCS 7; PCS 7 Readme* file (see "Preface (Page 7)").

Single-station system

Designation	License key	Optional	Comment
AS/OS engineering	AS Engineering OS Engineering		
Runtime license AS	AS RT PO		Only required for download Count relevant license
OS software single station	OS Single Station Basic		
Runtime License OS	OS RT PO		max. 2000 PO Count relevant license
OS archives ¹⁾	WinCC Archive ¹⁾	X	Count relevant license
BATCH single-station package	BATCH Single Station User BATCH Single Station System	X	
BATCH units	BATCH Units	X	Count relevant license
BATCH server (Web clients)	BATCH Web Client	X	Count relevant license
BATCH server (Work memory)	BATCH Expansion (500MB)	X	Count relevant license
Route Control Engineering	Route Control Engineering	X	

4.2 Software and license keys for a single-station system with configuration

Designation	License key	Optional	Comment
Route Control server	Route Control Server	X	restricted to 30 routes; max. 300 simultaneous material transfer operations
Route Control Center	Route Control Center	X	Licensing for RC client
Route Control routes	Route Control Routes	X	Count relevant license
Maintenance Station Engineering	Maintenance ES	X	
Maintenance Station Runtime Basic Package	Maintenance RT	X	Count relevant license
PDM	PDM Basic PDM Integration in STEP 7 PDM Routing PDM Extended	X	
PDM Tags	PDM TAG	X	Count relevant license
S7 PLC Simulation	S7-PLCSIM	X	
Version Trail	Version Trail	X	
Import/Export Assistant	IEA	X	
SIMATIC NET	1. BCE 2. Industrial Ethernet 3. S7-REDCONNECT	(1st + 2nd) alternative (3rd) X	1. Only for standard Ethernet network adapters (not required for SIMATIC NET CP). 2. When using SIMATIC NET CP, e.g. CP1623. 3. When using high availability connections.

1) Product name for separate order: "SIMATIC PCS 7, SOFTWARE OS ARCHIVE"

4.3 Software and license keys for Operator Stations

Overview

The following tables show the software packages and the required license keys for the following PC stations of PCS 7:

- Operator station (single-station system / redundant single-station system)
- Operation Station server / redundant server
- Operator station client

You can find information on license key levels in the section "Selecting the correct license keys (Page 9)".

Note

You can learn about the versions for the current program package on the *Process Control System; SIMATIC PCS 7* DVD in the *Process Control System PCS 7; PCS 7 Readme* file (see "Preface (Page 7)").

OS single-station system/redundant single-station system

Designation	License key	Optional	Comment
OS software single station	OS Single Station Basic		Not required for non-redundant OS
OS software single station redundancy	OS Single Station Redundancy		In the case of a redundant OS: Alternative license key to "OS Single Station Basic" license key
Runtime License OS	OS RT PO		max. 5000 PO Count relevant license
OS archives ¹⁾	WinCC Archive ¹⁾	X	Count relevant license
OpenPCS 7 for connecting to the local OPC server	OpenPCS 7 Station / OS or OpenPCS 7 Station	X	License key only (without software installation) required.
Web server	1. OS Web Server Basic 2. OS Web Server	X	1. Web server and Web diagnostics server are used alternately. 2. License key for number of Web clients

4.3 Software and license keys for Operator Stations

Designation	License key	Optional	Comment
Web diagnostics server Web diagnostics client	WebDiagnose Server WebDiagnose Client	X	Web server and Web diagnostics server are used alternately.
SIMATIC NET	1. BCE 2. Industrial Ethernet 3. S7-REDCONNECT	(1st + 2nd) alternative (3rd) X	1. Only for standard Ethernet network adapters (not required for SIMATIC NET CP). 2. When using SIMATIC NET CP, e.g. CP1623. 3. When using high availability connections.

1) Product name for separate order: **"SIMATIC PCS 7, SOFTWARE OS ARCHIVE"**

OS server / redundant server

Designation	License key	Optional	Comment
OS software server	OS Server		Not required for non-redundant OS
OS software server redundancy	OS Server Redundancy		In the case of a redundant OS: Alternative license key to "OS Server" license key
Runtime License OS	OS RT PO		Max. PO: 12000 Count relevant license
OS archives ¹⁾	WinCC Archive ¹⁾	X	Count relevant license
Information Server	Information Server		Required for when using an Information Server
Information Server	Information Server - Client Access	X	Count relevant license
Information Server	Information Server - Data-source Access	X	Count relevant license
BATCH server	BATCH Server	X	
BATCH units	BATCH Units	X	Count relevant license
BATCH server (Web clients)	BATCH Web Client	X	Count relevant license
BATCH server (Work memory)	BATCH Expansion (500MB)	X	Count relevant license
Route Control server	Route Control Server	X	restricted to 30 routes; max. 300 simultaneous material transfer operations
Route Control routes	Route Control Routes	X	Count relevant license
OpenPCS 7 for connecting to the local OPC server	OpenPCS 7 Station / OS	X	License key only (without software installation) required. Software installation only necessary for connecting to all OS servers.

Designation	License key	Optional	Comment
Maintenance Station Runtime Basic Package	Maintenance RT	X	Count relevant license
SIMATIC NET	1. BCE 2. Industrial Ethernet 3. S7-REDCONNECT	(1st + 2nd) alternative (3rd) X	1. Only for standard Ethernet network adapters (not required for SIMATIC NET CP). 2. When using SIMATIC NET CP, e.g. CP1623. 3. When using high availability connections.

1) Product name for separate order: **"SIMATIC PCS 7, SOFTWARE OS ARCHIVE"**

OS client

Designation	License key	Optional	Comment
OS software client	OS Client		
Web server	1. OS Web Server Basic 2. OS Web Server	X	1. Web server and Web diagnostics server are used alternately. 2. License key for number of Web clients
Web diagnostics server Web diagnostics client	WebDiagnose Server WebDiagnose Client	X	Web server and Web diagnostics server are used alternately.
BATCH client	BATCH Client	X	
Route Control Center	Route Control Center	X	The license for RC client is either located directly on the client or, alternatively, on the ES.
SFC visualization	SFC Visualization	X	
OpenPCS 7 (OS client)	OpenPCS 7 Station / OS	X	

4.4 Software and license keys for BATCH Stations

Overview

The following tables show the software packages and the required license keys for the following PC stations of PCS 7:

- BATCH server/BATCH redundant server
- BATCH Client

Additional information on the single-station system for BATCH can be found in the section "Software and license keys for a single-station system with configuration (Page 33)".

You can find information on license key levels in the section "Selecting the correct license keys (Page 9)".

Note

You can learn about the versions for the current program package on the *Process Control System; SIMATIC PCS 7* DVD in the *Process Control System PCS 7; PCS 7 Readme* file (see "Preface (Page 7)").

BATCH server/BATCH redundant server

Designation	License key	Optional	Comment
BATCH server	BATCH Server		<ul style="list-style-type: none"> • One license key per server computer for redundant servers
BATCH Basic	BATCH Basic		<ul style="list-style-type: none"> • Alternative to "BATCH Server" license key, restricted functionality; • One license key per server computer for redundant servers
BATCH units	BATCH Units		Count relevant license
BATCH server (Web clients)	BATCH Web Client	X	Count relevant license In the case of redundant servers, the necessary licenses must be available on each server.
BATCH server (Work memory)	BATCH Expansion (500MB)	X	Count relevant license In the case of redundant servers, the necessary licenses must be available on each server.

Designation	License key	Optional	Comment
BATCH API	BATCH API	X	
SIMATIC NET	1. BCE 2. Industrial Ethernet 3. S7-REDCONNECT	(1st + 2nd) alternative (3rd) X	1. Only for standard Ethernet network adapters (not required for SIMATIC NET CP). 2. When using SIMATIC NET CP, e.g. CP1623. 3. When using high availability connections.

BATCH Client

Designation	License key	Optional	Comment
BATCH client	BATCH Client		
BATCH recipe system	BATCH Recipe System	X	Only required if recipes will be created on the BATCH client.

4.5 Software and license keys for Route Control Stations

Overview

The following tables show the software packages and the required license keys for the PC stations of PCS 7 Route Control.

Additional information on the single-station system with Route Control can be found in the section "Software and license keys for a single-station system with configuration (Page 33)".

You can find information on license key levels in the section "Selecting the correct license keys (Page 9)".

Note

You can learn about the versions for the current program package on the *Process Control System; SIMATIC PCS 7 DVD* in the *Process Control System PCS 7; PCS 7 Readme* file (see "Preface (Page 7)").

RC Server

Designation	License key	Optional	Comment
Route Control server	Route Control Server		restricted to 30 routes; max. 300 simultaneous material transfer operations
Route Control routes	Route Control Routes		Count relevant license
SIMATIC NET	<ol style="list-style-type: none"> 1. BCE 2. Industrial Ethernet 3. S7-REDCONNECT 	(1st + 2nd) alternative (3rd) X	<ol style="list-style-type: none"> 1. Only for standard Ethernet network adapters (not required for SIMATIC NET CP). 2. When using SIMATIC NET CP, e.g. CP1623. 3. When using high availability connections.

RC Client

Designation	License key	Optional	Comment
Route Control Center	Route Control Center		The license for RC client is either located directly on the client or, alternatively, on the ES.

4.6 Software and license keys for the SIMATIC Management Console

Overview

The following tables show the software packages and the required license keys for working with the SIMATIC Management Console.

You can find information on license key levels in the section "Selecting the correct license keys (Page 9)".

Note

You can learn about the versions for the current program package on the *Process Control System; SIMATIC PCS 7DVD* in the *Process Control System PCS 7; PCS 7 Readme* file (see "Preface (Page 7)").

Computers with the Management Console

Designation	License key	Optional	Comment
SIMATIC Management Console	SIMATIC Management Console		We recommend only one computer per network with a Management Console
SIMATIC Management Console (x;x;x)	SIMATIC Management Console (x;x;x)		Per managed computer; number of managed computers in the PCS 7 system Count relevant license

Managed computers

Note

License keys for working with the SIMATIC Management Console

You must install the license keys locally so that they are available on the computer with the SIMATIC Management Console.

4.7 Software and license keys for SIMATIC PDM

Overview

SIMATIC PDM is an optional package in SIMATIC PCS 7.

The tables below show the software packages and the required license keys for PC stations with SIMATIC PDM.

You can find information on license key levels in the section "Selecting the correct license keys (Page 9)".

Information on the software packages and license keys for the different PC stations is available in the following sections:

- For the engineering station and PDM in the section "Software and license keys for a single-station system with configuration (Page 33)".
- For a separate PC with SIMATIC PDM in the section "Determining the PDM objects for PC stations with SIMATIC PDM (Page 24)".

SIMATIC PDM

Product name	License key	SIMATIC PCS 7 (ES AS OS BATCH Route Control)	SIMATIC PCS 7 BOX RTX (only AS OS BATCH Route Control)	Comment
Software on the SIMATIC PCS 7 DVD (SIMATIC PDM)		(Z)		
Maintenance Station	Maintenance RT (Z)	(Z)	(Z)	

Product variants for stand-alone use

SIMATIC PDM is available as a stand-alone variant with the "Basic" and "Single Point" licenses and can thus be used independently of SIMATIC S7 or SIMATIC PCS 7.

- The "Single Point" product variant can be used for exactly one field device with a point-to-point connection. A project is permitted to contain a maximum of one object subject to licensing.
This product variant cannot be extended with respect to functions or capacity using SIMATIC PDM options. No upgrades are provided for this variant.
- The "Basic" product variant can be extended with respect to functions and capacity using SIMATIC PDM options. Upgrades are provided for this variant.

Data volumes

5.1 Overview of the quantity structures of PCS 7

Introduction

The section describes the following PCS 7-specific quantity structures:

- Automation systems
- Operator station

Additional information

- Information on the quantity structure of SIMATIC BATCH can be found in the manual *SIMATIC BATCH* in the section "Product introduction and installation > Quantity structures".
- Information on the quantity structure of SIMATIC Route Control can be found in the manual *SIMATIC Route Control* in the section "Appendix > Quantity structures".

5.2 Quantity structures for automation systems of PCS 7

Configuration limits of AS with standard and high availability

The values in the following tables are not AS-specific maximum values for the corresponding position, but rather represent a typical distribution of the available AS total capacity in mixed operation of all positions of a related block.

The tables below show the typical mixed configuration limits for SIMATIC PCS 7 automation systems using the Advanced Process Library (APL)

Mixed configuration limits using the Advanced Process Library (APL)

Table 5-1 Mixed configuration limits for high availability automation systems (basis: Advanced Process Library)

	AS 412H	AS 414H	AS 416H	AS 417H
	V6.0	V6.0	V6.0	V6.0
Analog value measurements	10	100	400	600
Digital value measurements	20	250	800	1000
PID controllers	5	50	150	200
Motors	7	75	200	400
Valves	7	75	200	400
SFC	0	15	100	200
Steps	0	150	1000	2000
Dosing	0	3	25	50
Digital inputs (DI)	30	300	1200	1800
Digital outputs (DO)	10	110	400	650
Analog inputs (AI)	15	150	600	900
Analog outputs (AO)	5	50	200	350
Process objects (PO)	30	350	1200	2000

Table 5-2 Mixed configuration limits for automation systems (basis: Advanced Process Library)

	AS 414-3	AS 414-PN/ DP	AS 416-2	AS 416-3	AS 416-PN/ DP	AS 417-4	PCS 7 ... RTX ¹⁾
	V7.0	V7.0	V7.0	V7.0	V7.0	V7.0	V4.6 (2010)
Analog value measurements	100	100	200	400	400	500	400
Digital value measurements	250	250	450	800	800	1000	800
PID controllers	50	50	75	150	150	180	150
Motors	75	75	100	200	200	350	200
Valves	75	75	100	200	200	350	200

5.2 Quantity structures for automation systems of PCS 7

	AS 414-3	AS 414-PN/ DP	AS 416-2	AS 416-3	AS 416-PN/ DP	AS 417-4	PCS 7 ... RTX ¹⁾
	V7.0	V7.0	V7.0	V7.0	V7.0	V7.0	V4.6 (2010)
SFC	15	15	40	100	100	200	100
Steps	150	150	400	1000	1000	2000	1000
Dosing	3	3	15	25	25	50	25
Digital inputs (DI)	350	350	600	1200	1200	1700	1200
Digital outputs (DO)	100	100	200	400	400	550	400
Analog inputs (AI)	175	175	300	600	600	800	600
Analog outputs (AO)	75	75	100	200	200	250	200
Process objects (PO)	350	350	600	1200	1200	1800	1200

¹⁾ SIMATIC PCS 7 BOX RTX, SIMATIC PCS 7 AS RTX, SIMATIC PCS 7 AS mEC RTX with WinAC RTX.

Mixed configuration limits for AS with CPU 410

The CPU 410 can be used for standard automation systems as well as high availability automation systems. The configuration limits are scalable and depend on the licensing. You define the configuration limits of the CPU 410H with a System Expansion Card.

You can find additional information on this in the system manual *Process Control System PCS 7; PCS 410-5H Process Automation*.

Table 5-3 Mixed configuration limits for automation systems

	AS 410H	
Applied library	Advanced Process Library	
Scalable by means of license	from	to
Analog value measurements	10	600
Digital value measurements	20	1000
PID controllers	5	200
Motors	7	400
Valves	7	400
SFC	0	200
Steps	0	2000
Dosing	0	50
Digital inputs (DI)	30	1800
Digital outputs (DO)	10	650
Analog inputs (AI)	15	900
Analog outputs (AO)	5	350

5.2 Quantity structures for automation systems of PCS 7

	AS 410H	
Applied library	Advanced Process Library	
Scalable by means of license	from	to
Process objects (PO)	30	2600 ¹⁾

¹⁾ In PCS 7 V8.1 or later, you can use the Automation License Manager to increase the PO volume of a CPU 410-5H via an online upgrade of the System Expansion Card (as of firmware version 8.1). The PO volume of the System Expansion Card is limited to 2600 process objects. Starting from this PO volume, the limitation of the PO volume is canceled.

5.3 Quantity structures for the operator station

OS configuration limits (per multiproject)

Information on licensing and process objects "PO" can be found in section "Selecting the correct license keys (Page 9)".

Parameter	Value
Max. number of servers / server pairs in the project (OS, BATCH, Route Control and archive servers)	18
Max. number of automation systems per OS server / server pairs	64
Max. number of OS clients in multi-client operation (per multi-station system)	40 Note: If each OS client has access to all OS servers/server pairs. The maximum number of monitors of these OS clients is limited to 60."
Max. number of monitors per operator station in multi-channel operation	4
Maximum number of permitted monitors for process mode in a system	40
Max. number of OS areas	64
Max. number of windows per monitor	1 up to 16 (adjustable)
Number of trends per trend window	10
OS process picture time-out (100 process symbols)	< 2 s
Max. number of process objects:	
• per OS single-station system	8 500 PO
• per OS server	12 000 PO
• per AS	2 600 PO
• per project	216 000 PO
Max. number of configurable alarms per server / single-station	200 000
Number of process tags:	
• per OS single-station system	approximately 4 500
• per OS server	approximately 7 000
• per multi-station system	approximately 128 000
Integrated high-performance archive system (cyclic buffer)	
Based on Microsoft SQL server for:	
• Process value archiving (per OS server/single-station system)	approximately 1 500/s
• Message archiving (per OS server/single-station system)	Messages as continuous load: ca. 10/s Message burst ca. 3 000 with a duration of 4 s Note: If the time until the next message burst is less than five minutes, messages can be lost.
Long-term archiving	

5.3 Quantity structures for the operator station

Parameter	Value
Process value archiving with SIMATIC Process Historian	For additional information on the configuration limits, refer to the SIMATIC Process Historian documentation. The Process Historian does not need separate license keys for archive tags of operator stations.
Max. number of PCS 7 Web clients	100
Max. number of PCS 7 Web Diagnostics clients	3
Number of maintenance stations	1 maintenance station for monitoring diagnostic variables

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