



SIMATIC

Process Control System PCS 7 PCS 7 Industry Library Readme V9.0 SP1 (online)

Readme

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V9.0 SP1

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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.

Proper use of Siemens products

Note the following:

WARNING

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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 constitute one element of such a concept.

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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>.

Overview

Note

Read these notes carefully; they contain information that will be important to you and upgrades to the Industry Library.

The information given in this Readme file takes precedence over all the PCS 7 manuals.

Notes on installation

3.1 Scope of delivery

The scope of delivery includes the following library:

- SIMATIC PCS 7 Industry Library for PCS 7 V9.0 SP3
- SIMATIC PCS 7 Industry Library for STEP 7 V5.6 SP2
- SIMATIC PCS 7 Industry Library for SIMATIC HMI WinCC V15 SP1 Comfort
- SIMATIC PCS 7 Industry Library for SIMATIC HMI WinCC flexible 2008 SP3 Standard or Advanced

Note

The software includes the necessary blocks for the AS as well as the required picture objects, faceplates and functions for the OS.

The setup installs the libraries with the AS blocks as well as the faceplates for operator control and monitoring of plant objects (block icons, group picture).

Faceplates in the project must be updated with the OS project editor, "Basis data" tab.

3.2 Hardware requirements

The installation is subject to the listed conditions.

The Industry Library for PCS 7 requires:

- The requirements of the SIMATIC PCS 7 Advanced Process Library V9.0 +SP3 apply.

The Industry Library for S7 requires:

- Recommendation for use of the library as of S7-315 PN/DP and as of firmware V3.1 and higher

The Industry Library for WinCC Comfort requires:

- Recommendation for use of the library as of TP1200 (12") and higher

Industry Library for STEP 7 Professional requires:

- Recommendation for use of the library as of CPU 1515-2 PN with FW V2.1

3.3 Software requirements

The blocks of the Industry Library for PCS 7 require at least:

- SIMATIC PCS 7 V9.0 +SP3 with installed Industry Library V9.0 for PCS 7

The blocks of the Industry Library for S7 require at least:

- SIMATIC PCS 7 V9.0 +SP3 with installed Industry Library V9.0 for S7

or

- STEP 7 V5.6, SIMATIC CFC V9.0, AS-OS-Engineering V9.0 and SIMATIC WinCC V7.4 SP1 Upd1 with installed Industry Library V9.0

The function blocks of the Industry Library for TIA Portal require at least:

- SIMATIC Step7 Professional V15 SP1

Note

Installation requirement

The update/service pack installation terminates when no Industry Library V9.0 is present on the target system.

Note

Installation of TIA Portal and PCS 7 (Side-by-Side installation) and use of WinCC Comfort

The Side-by-Side installation and use of WinCC Comfort require PCS 7 V9.0 SP3 and TIA Portal V15 SP1 .

Note

Use with PCS 7 V9.1

The **PCS 7 Industry Library V9.0 SP1** is approved for **PCS 7 V9.1** subject to the following conditions:

- You have upgraded your project according to "**Software update without utilization of new functions**" and
 - use at least the PCS 7 Advanced Process Library and PCS 7 Basis Library V9.0.3 Update 4
-

3.4 Installing PCS 7 Industry Library

Note

Before you install the software, (full version of the V9.0), **Versions <V9.0** of the Industry Library must be uninstalled (see section Uninstalling PCS 7 Industry Library (Page 12)).

When an Update oder Service Pack Version is installed, the setup program checks to determine whether the full version is installed. If an installation of the full version is not found, the installation terminates.

Installation under Windows Server 2016/19 Standard Edition (64-bit)

Installation via the system setup is not possible. To install **Industry Library V9.0** on a computer with Windows Server 2016/2019 , you must install each product separately using the respective product setup program. Always install the AS product setup before the OS product setup.

You can find the product setups on the DVD in the "**86_IL_PCS_7_V90**" directory.

Update installations can also be installed directly via the system setup under Windows Server 2016 .

Exit all applications before you start setup.

Place the DVD in the drive and start the "Setup" program of the PCS 7 Industry Library. Install the Engineering and Runtime packages on the ES. The Runtime components must also be installed on every OS computer. You will receive all further information during the installation process.

The library is copied to the same drive on which the PCS 7 basic software is installed. Installation requires about 400 MB of free memory on the hard disk.

After the installation, you can find the blocks of the PCS 7 Industry Library in the libraries "Industry Lib PCS 7 V90" or "Industry Lib S7 V90".

Note

The version of the PCS 7 Industry Library you need depends on the version of the PCS 7 Advanced Process Library used in the project. The version of IL must be adapted to match the APL version used and is neither backward nor upward compatible unless specified otherwise in the section "Software requirements".

Note

Use with PCS 7 V9.1

The **PCS 7 Industry Library V9.0 SP1** is also approved for **PCS 7 V9.1** subject to the following conditions:

- You have upgraded your project according to "**Software update without utilization of new functions**" and
 - use at least the PCS 7 Advanced Process Library and PCS 7 Basis Library V9.0.3 Update 4
-

The following components are installed by the setup:

- Industry Library for PCS 7 in the directory ...\\SIEMENS\\STEP7\\S7LIBS\\IL_PCS_7
- Industry Library for S7 in the directory ...\\SIEMENS\\STEP7\\S7LIBS\\IL_S7
- WinCC faceplates (block icons, group pictures, loops) in the directory ...\\SIEMENS\\WINCC\\Options\\PDL\\IL_PCS7 or ...\\IL_S7
- WinCC project functions in the directory ...\\SIEMENS\\WINCC\\aplib\\IL_PCS7 or ...\\IL_S7
- Function blocks for TIA Communication (IndustryLibTIA_V15) in the directory ...\\SIEMENS\\INDUSTRY LIBRARY
- Online help in the directory ...\\SIEMENS\\STEP7\\S7LIBS\\IL_PCS7_V90 or ...\\IL_S7_V90
- The user documentation in the directory ...\\SIEMENS\\STEP7\\S7MANUAL\\IL_PCS7 or ...\\IL_S7
- Library: WinCC Comfort Faceplates (IL_PCS7_V15.zal15_1 and IL_S7_V15.zal15_1) in the directory ...\\SIEMENS\\INDUSTRY LIBRARY
- Block configuration for FxCtrl and Xfer in directory ...\\SIEMENS\\IL_PCS7\\sys

To **update your AS project**, copy the blocks to your project. Then perform a block type import.

3.5 Uninstalling PCS 7 Industry Library

You have to remove software in accordance with the MS Windows guidelines.

To do so, open the software management in the Windows Control Panel (Windows Start menu: Start → Setting → Control Panel → Software). Select the function "Uninstall or change a program" and then the component you want to uninstall.

New features and changes as compared to previous versions

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Note

For possible behavior changes in earlier versions, please refer to the readme of the previous version.

4.1 Version 9.0

4.1.1 What's New in Version 9.0?

IL for PCS 7:

- New block **VoteDiL** to increase the availability of analog process values.
- New block **ILck4x3** for logical combination of up to 8 input signals across up to 3 levels.
- New block **ILck8x4** for logical combination of up to 16 input signals across up to 4 levels.
- New block **RcvH_AnaVal** for coordinated communication between fault-tolerant and non-fault-tolerant controllers.
- New block **RcvH_DigVal** for coordinated communication between fault-tolerant and non-fault-tolerant controllers.
- New block **SndH_AnaVal** for coordinated communication between fault-tolerant and non-fault-tolerant controllers.
- New block **SndH_DigVal** for coordinated communication between fault-tolerant and non-fault-tolerant controllers.
- Function upgrade of the **MonAn08** and **MonAnDi** blocks with gradient monitoring.
- The rapid stop is now also displayed at the block icon for the valves **VlvDsL** and **VlvDiv**.
- The "Forcing operating states" function can also be used in local mode for the block **VlvDsL**.
- The status of the inputs for automatic addressing, such as `StartAut`, `StopAut`, `OpenAut`, `CloseAut`, etc., can also be evaluated at the following blocks: **VlvDsL** and **VlvDiv**.
- The blocks **MonAnDi** and **MonAn08** can be set to bypass mode. Switch on/off can be locked by means of a separate input. Optionally, a bypass value can be assigned to the output. An interlock input can be actively bypassed using an interconnection between the `BypassAct` output and the `ByPLix` input at one of the interlock blocks **Intlk02**, **Intlk04**, **Intlk08**, **Intlk16**, **ILck8x4** and **ILck4x3**.
- For the expansion of the bypass function, the parameter view and preview, the area in the faceplate for "Display and operator control interface" as well as the block icons of the following blocks were adapted: **MonAnDi**, **MonAn08**

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- Optionally, pulse control can be disabled at the following blocks with local mode Localsetting 2/4: **VlvDsL**.
- Control in local mode can be set to switch or pushbutton operation at the block **VlvDsL**.
- The AOTC function was expanded by the input of digital values. This affects the following blocks: **Aggr16**, **Aggr08**, **VlvDiv**, **VlvDsL**, **TimeSwitch**, **OptiOT**
- The call button for the batch view is locked in the "Display and operator control interface" area depending on whether a block is used by Batch (BatchID <>0) This affects all blocks with batch capability.
- In the standard views of the **MonAnDi** and **MonAn08** blocks, more than 16 characters can be input for the `FlutxTmIn` parameters through automatic adaptation of the character set.
- The size of the faceplates can be adjusted from 50% to 200% with the scaling factor `@APLFaceplateScaleFactor`.

IL for S7:

- New **S7SndDig** block for coordinated communication between S7-300/ S7-1500 and S7-400 controllers.
- New **S7RcvDig** block for coordinated communication between S7-300/ S7-1500 and S7-400 controllers.
- New **S7SndAna** block for coordinated communication between S7-300/ S7-1500 and S7-400 controllers.
- New **S7RcvAna** block for coordinated communication between S7-300/ S7-1500 and S7-400 controllers.
- New block **S7SndHDig** for coordinated communication between S7-300/ S7-1500 and fault-tolerant S7-400 controllers.
- New block **S7RcvHDig** for coordinated communication between S7-300/ S7-1500 and fault-tolerant S7-400 controllers.
- New block **S7SndHAna** for coordinated communication between S7-300/ S7-1500 and fault-tolerant S7-400 controllers.
- New block **S7RcvHAna** for coordinated communication between S7-300/ S7-1500 and fault-tolerant S7-400 controllers.
- The block **S7VlvMot** has been upgraded by a maintenance switch.

4.1.2 Changes in version 9.0

IL for PCS 7:

- The IL for PCS 7 now supports Advanced Process Library V9.0.
- The documentation of the **SPCurve**, **PolyCurve** and **ParaCtrl/ParaMem** blocks has been revised, especially with respect to the usage and interconnection of a data block.
- The `TimeMode` parameter at the **VoteAnL** block has been enhanced with the time function "Time controlled On" (`TimeMode = 4`).

- At the **VoteAnL** block the initial detection at `TimeMode = 1` (off-delay) is not carried out until after the delay time has expired. The delay time was not taken into consideration previously.
- The panel blocks have been adapted to the blocks of APL V9.0.

IL for S7:

- At **S7PIDCon** the messages in "Out of Service" are suppressed.

4.1.3 Update information for version 9.0

The following applies to the software update from V8.2 SP1 to version 9.0:

1.	Make Textual Interconnections	Yes
2.	Compile AS	Complete compilation
3.	Download AS program	Complete download
4.	AS STOP necessary	Yes (AS STOP is not necessary if a CPU 410-5H with TCiR is used)
5.	Compile OS	Complete compilation

Note**Updating the blocks from the PCS 7 Industry Library with TCiR**

"Type import - Changed default value" dialog box

- If information on changed internal local default values in the static area is displayed during type import in the dialog box, these changes are not relevant. A complete download in STOP mode is not necessary.
- If information on changed default values is displayed at block I/Os during type import in the dialog box, these new default values must be applied in the "Update Block Types" dialog.

List of blocks

Table 4-1 List of blocks IL for PCS 7:

Name	Number	Block version	Interface change (AS STOP is not necessary if a CPU 410-5H with TCiR is used)	Code change
AccuS	FB1111	5.0	No	No
Aggr08	FB1114	5.0	No	No
Aggr16	FB1113	5.0	No	No
APC_MpList	FB1184	5.0	No	No
APC_MV	FB1182	5.0	Yes	Yes
APC_OpSP	FB1181	5.0	No	Yes
APC_Supervisor	FB1180	5.0	No	Yes

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ASRcvH	FB1117	5.0	No	No
ASSendH	FB1116	5.0	No	No
CalcPwrL	FB1193	5.0	No	Yes
CalcTHX	FB1159	5.0	Yes	Yes
CalcWatP	FB1144	5.0		No
F_TRIG	FB9	1.3	No	No
HxFct	FB1147	5.0	No	No
IL_BR	FB1152	5.0	No	No
IL_BS	FB1151	5.0	No	No
ILck4x3L	FB1133	5.0		New block type
ILck8x4L	FB1134	5.0		New block type
LdMgmt8	FB1191	5.0	No	Yes
MonAn08	FB1102	5.0	No	Yes
MonAnDi	FB1104	5.0	No	Yes
OptiOT	FB1150	5.0	No	No
ParaCtrl	FB1185	5.0	No	Yes
ParaMem	FB1186	5.0	No	Yes
PCalcWatP	FB1146	5.0	No	No
PeakMon	FB1190	5.0	No	Yes
PHxFct	FB1149	5.0	No	No
PMonAn08	FB1118	5.0	No	Yes
PMonAnDi	FB1119	5.0	No	Yes
PMonAnL	FB1120	5.0	Yes	Yes
PMonDi08	FB1122	5.0	No	No
PMonDiL	FB1121	5.0	Yes	Yes
PMotL	FB1107	5.0	Yes	Yes
PMotRevL	FB1108	5.0	Yes	Yes
PMotSpdCL	FB1110	5.0	Yes	Yes
PMotSpdL	FB1109	5.0	Yes	Yes
PolyCurve	FB1156	5.0	No	Yes
PolygonExt	FB1155	5.0	No	Yes
POpAnL	FB1123	5.0	Yes	Yes
POpD	FB1131	5.0	Yes	Yes
PPIDL	FB1138	5.0	Yes	Yes
PulseCon	FB1192	5.0	No	Yes
PUsrM	FB1132	5.0	No	No
PVlvL	FB1136	5.0	Yes	Yes
PVlvMotL	FB1143	5.0	Yes	Yes
PVlvPosL	FB1137	5.0	Yes	Yes
RcvH_AnaVal	FB1173	5.0		New block type
RcvH_DigVal	FB1171	5.0		New block type
SelFp	FB1154	5.0	No	No
SelStr	FB1106	5.0	Yes	Yes
SimAn	FB1100	5.0	No	No

SimDi	FB1101	5.0	No	No
SndH_AnaVal	FB1172	5.0		New block type
SndH_DigVal	FB1170	5.0		New block type
SPCurve	FB1141	5.0	No	Yes
SplRng4	FB1175	5.0	No	Yes
TimeSwitch	FB1142	5.0	No	Yes
UsrM	FB1112	5.0	No	No
VlvDiv	FB1127	5.0	Yes	Yes
VlvDsL	FB1103	5.0	Yes	Yes
VoteAnL	FB1129	5.0	Yes	Yes
VoteDiL	FB1130	5.0	Yes	Yes
SelB	FC602	5.0	Yes	Yes
SelByt	FC604	5.0	Yes	Yes
SelC	FC608	5.0	Yes	Yes
SelDI	FC607	5.0	Yes	Yes
SelDW	FC606	5.0	Yes	Yes
SelI	FC603	5.0	Yes	Yes
SelR	FC601	5.0	Yes	Yes

Table 4-2 List of blocks IL for S7:

Name	Number	Block version	Interface change (AS STOP is not necessary if a CPU 410-5H with TCiR is used)	Code change
S7AccuS	FB269	2.0	No	Yes
S7Aggr08	FB277	2.0	No	No
S7Average	FB270	2.0	No	No
S7CalcWatP	FB264	2.0	No	No
S7Get	FB1198	2.0	No	No
S7HxFct	FB267	2.0	No	No
S7MonAn	FB271	2.0	No	No
S7MonAn08	FB272	2.0	No	No
S7MonAnDi	FB273	2.0	No	No
S7MonAnGrad	FB274	2.0	No	No
S7MonDi	FB275	2.0	No	No
S7MonDi08	FB276	3.0	No	No
S7Mot	FB258	2.0	No	Yes
S7MotRev	FB259	2.0	No	Yes
S7MotSpd	FB260	2.0	No	Yes
S7MotSpdC	FB261	3.0	No	Yes
S7MV3P	FB262	3.0	No	Yes
S7MVLd	FB302	2.0	No	No
S7OpA	FB278	2.0	No	No

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S7OpD	FB279	2.0	No	No
S7PCalcWatP	FB282	3.0	No	No
S7PHxFct	FB285	3.0	No	No
S7PIDCon	FB265	2.0	No	No
S7PMonAn	FB286	3.0	No	No
S7PMonAn08	FB287	3.0	No	No
S7PMonAnDi	FB288	3.0	No	No
S7PMonAn-Grad	FB289	3.0	No	No
S7PMonDi	FB290	3.0	No	No
S7PMonDi08	FB291	3.0	No	No
S7PMot	FB292	3.1	No	Yes
S7PMotRev	FB293	3.1	No	Yes
S7PMotSpd	FB294	3.1	No	Yes
S7PMotSpdC	FB295	3.1	No	Yes
S7PMV3P	FB296	3.0	No	No
S7POpA	FB297	3.0	No	No
S7POpD	FB298	3.0	No	No
S7PPID	FB283	3.0	No	Yes
S7PUsrM	FB309	1.0	No	No
S7Put	FB1199	2.0	No	No
S7PVlv	FB301	3.0	No	No
S7PVlvMot	FB307	3.0	No	Yes
S7RcvAna	FB333	1.0		New block type
S7RcvDig	FB331	1.0		New block type
S7RcvHAna	FB337	1.0		New block type
S7RcvHDig	FB335	1.0		New block type
S7SndAna	FB332	1.0		New block type
S7SndDig	FB330	1.0		New block type
S7SndHAna	FB336	1.0		New block type
S7SndHDig	FB334	1.0		New block type
S7SplitRange	FB303	2.0	No	No
S7TiSwitch	FB308	1.0	No	No
S7UusrM	FB280	2.0	No	No
S7Vlv	FB263	2.0	No	Yes
S7VlvMot	FB306	3.0	Yes	Yes
S7ASTimeBCD	FC261	1.0	Yes	Yes
S7ConvAbRe	FC256	1.0	No	No
S7ConvCF	FC257	1.0	No	No
S7SelB	FC258	1.0	Yes	Yes
S7SelI	FC259	1.0	Yes	Yes
S7SelR	FC262	1.0	Yes	Yes

Note

- If "No" is listed in the column "Interface change" and in the column "Code change", only attributes, message texts and/or version number have been changed.
- If "Yes" is listed in the column "Interface change" and "No" in the column "Code change", the interfaces were prepared for a future function.

4.2 Version 9.0 Update 1

4.2.1 Changes in Version 9.0 Update 1

IL for PCS 7:

- The IL for PCS 7 can now be used with **TIA Portal V14 SP1 Update 4**.
- For the interlock blocks **ILck4x3L** and **ILck8x4L**, a set input NotUsed =1 no longer has any influence on the status of the Out . ST output, and the blocks are now taken into account by the PCS 7 process tag browser.
- The APL blocks **And04** and **Or04** have been removed from the library. The blocks are already contained in the APL.

IL for S7:

- The display of the **S7VlvMot** block icon has been improved.
- The **S7VlvMot** block now also supports the feature repair switch.
- The enumeration texts for the **S7UsrM** are shown in Runtime.
- The appearance of the **S7PPID** block icon has been improved.
- The operator control enable **S7MotRev** has been improved for WinCC Comfort.

IL for TIA

- The simulation is displayed in the overview in faceplates for the **OpAnL** and **VlvL** blocks.

4.2.2 Update information for Version 9.0 Update 1

The following applies to the software update from V9.0 to Version 9.0 Update 1:

1.	Compile AS	Complete compilation
2.	Download AS program	Download changes

3.	AS STOP required	No
4.	Compile OS	Complete compilation

Note**Updating the blocks from the PCS 7 Industry Library with TCiR**

"Type import - Changed default value" dialog box

- If information on changed internal local default values in the static area is displayed during type import in the dialog box, these changes are not relevant. A complete download in STOP mode is not necessary.
- If information on changed default values is displayed at block I/Os during type import in the dialog box, these new default values must be applied in the "Update Block Types" dialog.

List of blocks

Table 4-3 List of blocks IL for PCS 7:

Name	Number	Block version	Interface change (AS STOP is not necessary if a CPU 410-5H with TCiR is used)	Code change
AccuS	FB1111	5.0	No	No
Aggr08	FB1114	5.0	No	No
Aggr16	FB1113	5.0	No	No
APC_MpList	FB1184	5.0	No	No
APC_MV	FB1182	5.0	No	No
APC_OpSP	FB1181	5.0	No	No
APC_Supervi- sor	FB1180	5.0	No	No
ASRcvH	FB1117	5.0	No	No
ASSendH	FB1116	5.0	No	No
CalcPwrL	FB1193	5.0	No	No
CalcTHX	FB1159	5.0	No	No
CalcWatP	FB1144	5.0	No	No
F_TRIG	FB9	1.3	No	No
HxFct	FB1147	5.0	No	No
IL_BR	FB1152	5.0	No	No
IL_BS	FB1151	5.0	No	No
ILck4x3L	FB1133	5.0	No	Yes
ILck8x4L	FB1134	5.0	No	Yes
LdMgmt8	FB1191	5.0	No	No
MonAn08	FB1102	5.0	No	No
MonAnDi	FB1104	5.0	No	Yes
OptiOT	FB1150	5.0	No	No
ParaCtrl	FB1185	5.0	No	No

ParaMem	FB1186	5.0	No	No
PCalcWatP	FB1146	5.0	No	No
PeakMon	FB1190	5.0	No	No
PHxFct	FB1149	5.0	No	No
PMonAn08	FB1118	5.0	No	Yes
PMonAnDi	FB1119	5.0	No	Yes
PMonAnL	FB1120	5.0	No	Yes
PMonDi08	FB1122	5.0	No	No
PMonDiL	FB1121	5.0	No	Yes
PMotL	FB1107	5.0	No	Yes
PMotRevL	FB1108	5.0	No	Yes
PMotSpdCL	FB1110	5.0	No	Yes
PMotSpdL	FB1109	5.0	No	Yes
PolyCurve	FB1156	5.0	No	No
PolygonExt	FB1155	5.0	No	No
POpAnL	FB1123	5.0	No	No
POpD	FB1131	5.0	No	No
PPIDL	FB1138	5.0	No	Yes
PulseCon	FB1192	5.0	No	No
PUsrM	FB1132	5.0	No	No
PVlvL	FB1136	5.0	No	No
PVlvMotL	FB1143	5.0	No	Yes
PVlvPosL	FB1137	5.0	No	Yes
RcvH_AnaVal	FB1173	5.0	No	No
RcvH_DigVal	FB1171	5.0	No	No
SelFp	FB1154	5.0	No	No
SelStr	FB1106	5.0	No	No
SimAn	FB1100	5.0	No	No
SimDi	FB1101	5.0	No	No
SndH_AnaVal	FB1172	5.0	No	No
SndH_DigVal	FB1170	5.0	No	No
SPCurve	FB1141	5.0	No	No
SplRng4	FB1175	5.0	No	No
TimeSwitch	FB1142	5.0	No	No
UsrM	FB1112	5.0	No	No
VlvDiv	FB1127	5.0	No	No
VlvDsL	FB1103	5.0	No	No
VoteAnL	FB1129	5.0	No	No
VoteDiL	FB1130	5.0	No	No
SelB	FC602	5.0	No	No
SelByt	FC604	5.0	No	No
SelC	FC608	5.0	No	No
SelDI	FC607	5.0	No	No
SelDW	FC606	5.0	No	No

Sell	FC603	5.0	No	No
SelR	FC601	5.0	No	No

Table 4-4 List of blocks IL for S7:

Name	Number	Block version	Interface change (AS STOP is not necessary if a CPU 410-5H with TCiR is used)	Code change
S7AccuS	FB269	2.0	No	No
S7Aggr08	FB277	2.0	No	No
S7Average	FB270	2.0	No	No
S7CalcWatP	FB264	2.0	No	No
S7Get	FB1198	2.0	No	No
S7HxFct	FB267	2.0	No	No
S7MonAn	FB271	2.0	No	No
S7MonAn08	FB272	2.0	No	No
S7MonAnDi	FB273	2.0	No	No
S7MonAnGrad	FB274	2.0	No	No
S7MonDi	FB275	2.0	No	No
S7MonDi08	FB276	3.0	No	No
S7Mot	FB258	2.0	No	No
S7MotRev	FB259	2.0	No	Yes
S7MotSpd	FB260	2.0	No	No
S7MotSpdC	FB261	3.0	No	No
S7MV3P	FB262	3.0	No	No
S7MVLd	FB302	2.0	No	No
S7OpA	FB278	2.0	No	No
S7OpD	FB279	2.0	No	No
S7PCalcWatP	FB282	3.0	No	No
S7PHxFct	FB285	3.0	No	No
S7PIDCon	FB265	2.0	No	No
S7PMonAn	FB286	3.0	No	No
S7PMonAn08	FB287	3.0	No	No
S7PMonAnDi	FB288	3.0	No	No
S7PMonAn- Grad	FB289	3.0	No	No
S7PMonDi	FB290	3.0	No	No
S7PMonDi08	FB291	3.0	No	No
S7PMot	FB292	3.1	No	No
S7PMotRev	FB293	3.1	No	Yes
S7PMotSpd	FB294	3.1	No	No
S7PMotSpdC	FB295	3.1	No	No
S7PMV3P	FB296	3.0	No	No

S7POpA	FB297	3.0	No	No
S7POpD	FB298	3.0	No	No
S7PPID	FB283	3.0	No	No
S7PUsrM	FB309	1.0	No	No
S7Put	FB1199	2.0	No	No
S7PVLv	FB301	3.0	No	No
S7PVLvMot	FB307	3.0	No	No
S7RcvAna	FB333	1.0	No	No
S7RcvDig	FB331	1.0	No	No
S7RcvHAna	FB337	1.0	No	No
S7RcvHDig	FB335	1.0	No	No
S7SndAna	FB332	1.0	No	No
S7SndDig	FB330	1.0	No	No
S7SndHAna	FB336	1.0	No	No
S7SndHDig	FB334	1.0	No	No
S7SplitRange	FB303	2.0	No	No
S7TiSwitch	FB308	1.0	No	No
S7UsrM	FB280	2.0	No	No
S7VLv	FB263	2.0	No	No
S7VLvMot	FB306	3.0	No	Yes
S7ASTimeBCD	FC261	1.0	No	No
S7ConvAbRe	FC256	1.0	No	No
S7ConvCF	FC257	1.0	No	No
S7SelB	FC258	1.0	No	No
S7SelI	FC259	1.0	No	No
S7SelR	FC262	1.0	No	No

Note

- If "No" is listed in the column "Interface change" and in the column "Code change", only attributes, message texts and/or version number have been changed.
- If "Yes" is listed in the column "Interface change" and "No" in the column "Code change", the interfaces were prepared for a future function.

4.3 Version 9.0 SP1

4.3.1 What's new in Version 9.0 SP1?

IL for PCS 7:

Integration of the BRAUMAT Library into the Industry Library:

- New **ApMotL** block for controlling APLMotL blocks.
- New **ApMotRevL** block for controlling APLMotRevL blocks.
- New **ApMotSpdCL** block for controlling APLMotSpdCL blocks.
- New **ApVlvL** block for controlling APLVlvL blocks.
- New **ApVlvAnl** block for controlling APLVlvAnl blocks.
- New **ApVlvDS** block for controlling VlvDsL blocks.
- New **ApCmGen** block for controlling drive blocks of any kind.
- New **ApPIDConL** block for controlling APLPidConL blocks.
- New **FxCtrl** block for a function-based control of control modules and signals.
- New **FxSigBin** block adapter for up to 4 binary signals for an upstream FxCtrl block.
- New **FxSigInt** block adapter for controlling and/or monitoring a control module using an integer control value.
- New **FxDef16 / 32 / 64** blocks for storing function and CM type definitions.
- New **FxShare** block for accessing up to 16 units via the FxCtrl block.
- New **BatchIf** block for batch generation from the PLC level.
- New **UnitIf** block for communication with the SIMATIC BATCH UNIT_PLC block and the lower-level interface blocks of the EqmIf equipment modules.
- New **EqmIf** block for communication with the upstream UnitIf block and the lower-level Control Modules.
- New **CmDec** block for providing batch-based information from a CmData data structure to control modules.
- New **CmEnc** block for providing batch-based information from a control module to a CmData data structure.
- New **Tank** block for managing the states of tanks and vessels.
- New **TcCtrl** block for controlling the cooling zones (solenoid valves) of a tank working together, for example, with an SFC based on the level and the preselected temperature zones.
- New **TcTsSel** block for determining unambiguous temperature feedback of the available, released or selected temperature sensors.
- New **TcCzSel** block for determining unambiguous activation of the available, released or selected cooling zones.
- New **TcCfg** block for configuring the available temperature sensors and cooling zones (each 1...8) and their level thresholds.
- New **MonDin** block for monitoring binary values.
- New **MonMof** block for monitoring binary and analog values.
- New **MidStr** block for converting a material ID into a String.
- New **StrMid** block for converting Strings into material IDs.
- New **OpAn16** block for the operation of 16 analog values.

- New **OpA16Dec** block for converting the input structure into 16 real values. The block is used in connection with OpAn16.
- New **OpEnum** block for the operation of an ENUM value.
- New **PuPa** block for pulsing valve groups.
- New **Qing** block for managing a list of material movements.
- New **Xfer** block for bumpless activation and switching routes.
- New **TimerXP** block for conditioning a digital input signal.

New communication blocks

- New **TCPCon** block for establishing TCP connections.
- New **TRcv_AnaVal** block for receiving analog values including QualityCode.
- New **TRcv_DigVal** block for receiving binary values including QualityCode.
- New **TSnd_AnaVal** block for sending analog values including QualityCode.
- New **TSnd_DigVal** block for sending binary values including QualityCode.

4.3.2 Changes to Version 9.0 SP1

IL for PCS 7:

- The IL for PCS 7 can now be used with **TIA Portal V15 SP1 Update 2**.
- The heating, cooling and humidifying outputs of the **CalcTHX** block are now set correctly when relative humidity is selected (FeatureBit 6=0) and the display in the faceplate has been corrected.
- The comments of the **RDBlNoExOut**, **RDBlNoOut**, **RDSenNoExOut**, **RDSenNoOut** I/Os of the **SPCurv** block have been revised.
- The call of additional faceplates with **ParaCtrl** has been corrected. Changed file: @PG_ParaCtrl_Standard.PDL.
- **PolygonExt** The analog values (selection of values and breakpoints) cannot be controlled in the standard view of the faceplate. Changed file: @PG_PolygonExt_Standard.PDL.
- "!undef.!" was displayed as the unit for **ParaCtrl/ParaMem** for values without a unit. Now, no unit is displayed as in the APL. Changed files: @PG_ParaCtrl_Standard_List_Item.PDL, @PG_ParaCtrl_Parameter_List_Item.PDL
- The operation of the hysteresis of the **MonAn08** block has been corrected. Changed file: @PG_MonAn08_Standard.PDL.
- **VlvDsL** showed an error in the block icon if **FbkOpenOut** =1 and **FbkCloseOut** =1.
- During manual input and output of values at the **PolyCurve** block, digits after the decimal point were not applied, only the integer part. Changed files: @PG_PolyCurve_OA_Setpoint_Value.PDL, @PG_SpCurve_OA_Setpoint_Value.PDL

- The trends for: **MonAn08**, **MonAnDi**, **HxFct**, **OptiOT**, **VlvDsL**, **SPCurve**, **TimeSwitch**, **APC_OpSP**, **VlvDiv**, **PeakMon**, **CalcPwrL**, **LdMgmt**, **VoteAnL**, **VoteDiL**, **CalcWatP** are now correctly display when no icon has been created.
Changed files: @PG_APC_OpSP.PDL, @PG_CalcPwrL.PDL, @PG_CalcWatP.PDL, @PG_HxFct.PDL, @PG_LdMgmt8.PDL, @PG_MonAn08.PDL, @PG_MonAnDi.PDL, @PG_OptiOT.PDL, @PG_PeakMon.PDL, @PG_SPCurve.PDL, @PG_TimeSwitch.PDL, @PG_VlvDiv.PDL, @PG_VlvDsl.PDL, @PG_VoteAnL.PDL, @PG_VoteDiL.PDL
- at the **ILck4x3L** and **ILck8x4L** blocks, the status of the **Out** output is correctly formed even if the first interlock input is not connected.
- The block icons of **MonAn08** now correctly display high/low alarm. Changed files: @PCS7TypicalsIL_PCS_7.PDL, @TemplateIL_PCS_7.PDL
- An **EventTs** alarm is now shown in the block icon for **MonAnDi** and **MonAn08**.
- The high/low warning of **MonAnDi** is now correctly processed in the OOS operating mode.
- The bar display of **MonAnDi** with **PV_xx_En** = 0 now behaves like the bar display of **MonAnL**. Changed file: @PG_MonAnDi_Standard.PDL
- When the following blocks are switched to the "Out of service" mode depending on the feature bit, process signals such as feedback signal, control signal, and limit shutdown signal of the status simulation (16#60) are output:
VlvDiv, **VlvDsL**, **LdMgmt8**, **PeakMon**, **CalcTHx**, **HxFct**, **VoteAnL**, **VoteDiL**, **MonAn08**, **MonAnDi**, **Aggr08**, **Aggr16**.
- Depending on the feature bit, the limit value is grayed out in the limit view for the following blocks when the limit is switched off (example: **PV_Lim1En** = 0):
MonAn08, **MonAnDi**, **VoteAnL**, **PeakMon**, **CalcPwrL**.

IL for S7:

- **S7VlvMot**: When **FeatureBit 13** = 1 (activate analog operation) is set, outputs **Close / Open** are now set for **CloseForce / OpenForce** die until the corresponding **FbClose / FbOpen** feedback is received.
- On a client, the enumerations of the **S7UsrM** block are now correctly displayed for the user level.
- The operation of **S7OpD** when OpenOS or Telecontrol is installed has been improved.
Changed file: @PG_S7OpD_Standard.PDL.
- The communication blocks **S7RcvAna**, **S7RcvDig**, **S7SndAna**, **S7SndDig**, **S7SndHAna**, **S7SndHDig**, **S7RcvHAna**, **S7RcvHDig**, **S7Put**, **S7Get** now call FBs **BSEND**, **BRCV**, **Put**, **Get** instead of the SFBs.
- The output **QSIM** of the **S7MonAn** block is now set during operation.

4.3.3 Update Information for Version 9.0 SP1

The following applies to the software update from V9.0 Update 2 to version 9.0 SP1:

1.	Compile AS	Complete compilation
2.	Download AS program	Download changes
3.	AS STOP required	No
4.	Compile OS	Complete compilation

Note

Updating the blocks from the PCS 7 Industry Library with TCiR

"Type import - Changed default value" dialog box

- If information on changed internal local default values in the static area is displayed during type import in the dialog box, these changes are not relevant. A complete download in STOP mode is not necessary.
- If information on changed default values is displayed at block I/Os during type import in the dialog box, these new default values must be applied in the "Update Block Types" dialog.

List of blocks

Table 4-5 List of changed IL blocks for PCS 7:

Name	Number	Block version	Interface change (AS STOP is not necessary if a CPU 410-5H with TCiR is used)	Code change
MonAn08	FB1102	5.1	No	Yes
VlvDsL	FB1103	5.1	No	Yes
MonAnDi	FB1104	5.1	No	Yes
Aggr16	FB1113	5.1	No	Yes
Aggr08	FB1114	5.1	No	Yes
VlvDiv	FB1127	5.1	No	Yes
VoteDiL	FB1130	5.1	No	Yes
ILck4x3L	FB1133	5.1	No	Yes
ILck8x4L	FB1134	5.1	No	Yes
SPCurv	FB1141	5.1	No	Yes
HxFct	FB1147	5.1	No	Yes
CalcTHX	FB1159	5.1	No	Yes
PeakMon	FB1190	5.1	No	Yes
LdMgmt8	FB1191	5.1	No	Yes
VoteAnL	FB1192	5.1	No	Yes
CalcPwrL	FB1193	5.1	No	Yes

Table 4-6 List of changed IL blocks for S7:

Name	Number	Block version	Interface change (AS STOP is not necessary if a CPU 410-5H with TCIr is used)	Code change
S7VlvMot	FB306	3.1	No	Yes
S7UsrM	FB280	2.0	No	Yes
S7MonAn	FB294	2.1	No	Yes
S7SndDig	FB330	1.0	Yes	Yes
S7RcvDig	FB331	1.0	Yes	Yes
S7SndAna	FB332	1.0	Yes	Yes
S7RcvAna	FB333	1.0	Yes	Yes
S7SndHDig	FB334	1.0	Yes	Yes
S7RcvHDig	FB335	1.0	Yes	Yes
S7SndHAna	FB336	1.0	Yes	Yes
S7RcvHAna	FB337	1.0	Yes	Yes

Note

- If "No" is listed in the column "Interface change" and in the column "Code change", only attributes, message texts and/or version number have been changed.
- If "Yes" is listed in the column "Interface change" and "No" in the column "Code change", the interfaces were prepared for a future function.

NOTICE

In V 9.0 SP1, the library contains the changed function blocks FB 1198 (S7Put) and FB 1199 (S7Get). These blocks cause an AS stop during an upgrade. If the function blocks FB 1198 (S7Put) and FB 1199 (S7Get) are contained in the project or are planned for the configuration, the function blocks from V 9.0 must be used as an alternative.

Information on configuration and operation

Industry Library for PCS 7:

- The Industry Library for PCS 7 is an expansion of the **PCS 7 Advanced Process Library (APL)**. The supplied blocks can only be used in connection with the blocks of the APL.
- The **Xfer** block and the connected Route Control blocks must have the same function ID.
- When selecting a destination tank, the **Qing** block only supports the destination tank name for selecting the destination.
- In this version, filtering of tanks is not enabled for the **Qing** block.
- Feature Bit 2 "Display of CM instance name 1 = CFC name (Process tag) according to default" and Feature Bit 3 "Display of CM instance name 1 = Block name" are not supported for the 'Display of **FxCtrl**' in the **UnitIf** faceplate.
- To open the help of the Industrial Library block configuration for **FxCtrl** and **Xfer** block, use the block help of the CFC and navigate to the corresponding location.
- **Aggr08** There is a dependency between Feature.Bit6 and Feature.Bit7. Feature.Bit7 only has an effect when Feature.Bit6 = 1. The function of Feature.Bit7 is therefore not "1 = Switchover of the master unit during an interval" as stated in the manual, but "Step enable to the next available unit switched on".

Industry Library for TIA

- Some graphic objects are used in the faceplates and icons in different resolutions. This leads to compiler warnings, e.g.
"The '**Back_Mot_** (picture name)' graphic is used in different resolutions. This may lead to pixelation on the HMI device".
These warnings have no functional effects.

Memo view

- The button for opening the configured documents is also shown as operable if no documents have been configured.

Notes on the documentation

- The terms or message classes Alarm, Warning, Tolerance or the corresponding acronyms in icons and colors used in the documentation are not valid when using user-configured message classes.
These terms and colors depend on the project-specific setting.
The user-configured alarm classes are only supported by block icons from the template pictures "@PCS7TypicalsAPLV8.PDL" or template "@TemplateAPLV8.PDL" .

Change history of PCS 7 Industry Library

Changes since delivery release of PCS 7 Industry Library Readme (Online)

Version	Edition	Change
2017-05-16 (ONLINE)	05/2017	Delivery status PCS 7 Industry Library V9.0
2018-02-26 (ONLINE)	02/2018	Delivery status PCS 7 Industry Library V9.0 Update 1
2019-03-19 (ONLINE)	03/2019	Note on WinCC Comfort in section on hardware requirements removed.
2020-07-02 (ONLINE)	07/2020	Delivery status PCS 7 Industry Library V9.0 SP 1
2020-10-30 (ONLINE)	10/2020	Delivery status PCS 7 Industry Library V9.0 SP 1 (update)
2021-04-27 (ONLINE)	04/2021	Delivery status PCS 7 Industry Library V9.0 SP 1 (update)

