STEP 7 Professional
Programming and configuring according to IEC 61131-3

simatic SOFTWARE

SIEMENS
STEP 7 Professional, STEP 7 V5.2

Introduction

STEP 7® Professional

STEP 7 Professional is the programming and configuring software designed for professional use with SIMATIC® controllers. It supports the user through all the stages of a development process for automation solutions, such as:

- Installation and management of projects
- Configuring and parameter assignment of hardware and communications
- Symbol management
- Program generation for SIMATIC S7 target systems
- Loading programs on target systems
- Testing the automation plant
- Plant fault diagnostics

STEP 7 Professional consists of the following:

- The STEP 7 basic package including the well-proven LAD, FBD and STL languages
- S7-GRAPH for graphic programming of sequential controls
- S7-SCL, the high-level language for programming even the most complex tasks
- S7-PLCSIM for off-line simulation of an automation solution.

STEP 7 Professional includes all the programming languages complying with the international IEC 61131-3 standard and therefore enables cross-company standardization and helps save high software engineering overheads.

STEP 7 Professional permits both programming of the PLC-based SIMATIC S7 and C7 controllers and the controllers for PC-based automation, SIMATIC WinAC®. This gives the user freedom of choice when selecting a hardware platform and the opportunity to use hybrid software configurations.

STEP 7 Professional executes under the MS Windows 95/98/Me/NT 4.0/XP Professional operating systems and is adapted to the graphics and object-oriented functionality.

The following description presents the functions of STEP 7 V5.2 and the associated engineering software.

STEP 7 V5.2 basic package

STEP 7 is the basic package for configuring and programming SIMATIC programmable controllers. It includes powerful tools and functions for the varied tasks involved in an automation project.

Major components:

- SIMATIC Manager; for integrated management of all tools and data of an automation project
- Program editor; for generating the user program in the LAD, FBD and STL languages
- Symbol editor; for managing global variables
- Hardware configuration; for configuring and parameterizing the hardware
- Hardware diagnostics; for a better overview of the state of the automation system
- NetPro; for setting up a data link via MPI or PROFIBUS
STEP 7 V5.2
Functions

SIMATIC Manager
The SIMATIC Manager organizes all the data pertaining to an automation project, irrespective of the target system (SIMATIC S7/C7/WinAC). The SIMATIC Manager automatically starts the tools required for executing the selected data.

Some of the functions of the SIMATIC Manager in STEP 7 V5.2:

Block consistency test
If the interfaces or the code of individual blocks have to be modified or supplemented during program development or subsequently, the required input for the corrections may be extremely high. The block consistency test handles a large portion of this work for you. In the case of blocks whose consistency cannot be corrected automatically, the function guides you to the positions to be changed in the associated editor where you can carry out the required modifications. All block inconsistencies are eliminated step-by-step, and the blocks then compiled.

Leading symbols
Symbols can be edited and modified using the symbol editor. The SIMATIC Manager can be used to determine whether the symbol (e.g. SYM_A) or the absolute value (e.g. I0.0) is the decisive-criterion when a block is opened. If the symbolic address leads, it is particularly easy to port an existing program to another hardware with different addresses.

Multi-project function
The multi-project function permits flexible and time-optimized configuring of plants. Projects may consist of several subprojects that can be accessed and modified locally by different users at the same time. The system supports linking of the projects. Generation of a multi-project-wide communications subnet, for example, can be executed centrally for the entire multi-project.
STEP 7 V5.2
Functions

Language Support
This function is particularly interesting for customers dealing in export. The function supports the creation and handling of project texts in several languages. The texts to be translated are exported from STEP 7, processed using an ASCII editor or spreadsheet program (e.g. MS EXCEL), and subsequently imported back into STEP 7. A project is then available in different languages. You can switch between the various languages in the SIMATIC Manager.

The following texts can be stored in several languages:
- Block titles and comments
- Network titles and comments
- Line comments from STL programs
- Comments from symbol tables, tables for variable declarations, user-defined data types and data blocks
- Comments, status names and transition names in HiGraph programs
- Extensions to step names and comments in S7-GA THAP programs
- Message texts generated by STEP 7
- System text libraries

Saving of project data on the CPU
In addition to the actual application program, the complete project data can be saved on the CPU’s memory card. These data can be simply read for servicing purposes. They need not be stored on the programming device. The danger that different versions could be interchanged is therefore eliminated.

Online help
The extensive on-line help supports the user with STEP 7. The "start page" symbol in the help on STEP 7 can be used to display the info portal, which gives you direct access to major topics of the on-line help, such as:
- Getting started with STEP 7
- Configuring & programming
- Testing and debugging
- SIMATIC on the Internet

Program editor
The program editor is the programming interface for the user program. The LAD (ladder diagram), FBD (function block diagram) and STL (instruction list) programming languages are available. Special features of the STEP 7 program editor include:

Symbol browser
When editing logic operations, the symbol names need no longer be typed on the keyboard. They can be selected simply by clicking on the desired element in the symbol browser. At this point, you can also generate or adapt the symbol definition without having to open the complete symbol table.

Symbol browser for selecting global and local symbols
Forcing variables

In the program editor, binary inputs and bit memories can be assigned buttons that enable fast and easy forcing of these operands, simply by clicking a mouse button. This function can also be accessed from WinCC.

Symbol editor

The symbol editor is used to organize all global variables. For example, symbolic designations and comments on process signals, bit memories and blocks can be defined.

Special features of the symbol editor include:

- Clearly structured symbol table

  The symbol table includes all the symbols defined for a project. The special characteristics of the symbols are represented in a clear manner and are easy to edit. Special features, such as ambiguous symbols are marked with graphic symbols. Powerful filters support the user.

  The symbol table is available for all STEP 7 applications.
STEP 7 V5.2

Functions

Hardware configuration

The HW-Konfig (hardware configuration) tool is used to configure and parameterize the hardware of a project. Special functions of HW-Konfig include:

STEP 7 goes Internet

The link with the Internet product information system provides current information on the hardware used at any point of time:

- Detail information; technical data, FAQs and documentation on the modules used are directly accessible from the help function of HW-Konfig
- Updating of the hardware catalog; new hardware components can be transferred directly from the Internet into STEP 7 without having to install a comprehensive service pack.

Configuration in RUN (CiR)

CiR enables you to make certain modifications in the hardware configuration of a plant even during operation.

To do this, the process need not be stopped for more than one second. CiR elements must be defined in the hardware configuration and replaced step by step with real objects when the process is in the RUN state again. A prerequisite is the use of a S7-400® or S7-400H CPU.

Examples of permissible changes in the configuration:

- Adding or removing modules in the modular PROFIBUS DP slave ET 200M
- Reparameterization of ET 200M modules
- Adding of PROFIBUS DP or PROFIBUS PA slaves

Further information is included in the “Hardware configuration changes in RUN mode” product brief, Order No. 6ZB5310-0KT01-0BA0.
Hardware diagnostics

Hardware diagnostics provide an overview of the current state of an automation system. The hardware components generate diagnostics information that can be evaluated in STEP 7.

Functions of the hardware diagnostics include:

- **Signaling system faults**

  The function "Signal system errors" offers a convenient method for displaying the diagnostics information provided by the controller's hardware components in the form of messages. The required blocks and message texts are automatically generated by STEP 7. It is only necessary to load the generated blocks into the CPU. Transfer of the diagnostics texts to SIMATIC HMI® devices does not require any programming.

  For further information on diagnostics refer to the "Diagnostics – Locate and eliminate faults rapidly" product brief, Order No. 6ZB5310-0JS01-0BA1.

NetPro

The STEP 7 NetPro tool can be used to configure plant communications. Possible options include:

- Configuration of time-triggered cyclic data transmission via MPI:
  - Selection of communications partners
  - Entering data source and data destination in a table
  - Generation of all blocks to be loaded (SDBs) and transmission to all CPUs is automatic.
- Configuration of event-triggered data transmission
- Definition of communications links
- Selection of communications / function blocks in the integrated block library
- Parameterization of the selected communications / function blocks in the familiar programming language.

The drivers required for Industrial Ethernet® and PROFIBUS CPs (NCM) are an integral part of NetPro.

Special functions of NetPro include:

- **Import/Export**

  Interconnections can be imported and exported in NetPro together with the station data. NetPro can automatically link the interconnections that are re-loaded into the programming device.
S7-GRAPH
Programming of sequential controls

S7-GRAPH: sequential controls - no problem
The SIMATIC software package S7-GRAPH is based on the STEP 7 programming software. It is used for sequences with alternate or parallel steps. The sequences are configured and programmed clearly and rapidly on a standardized user interface (according to IEC 61131-3, DIN EN 61131).

The process is described graphically, and divided into individual steps with an easily comprehensible scope of functions. Actions can be defined for the steps, and their execution controlled. Transitions control the conditions required for the next step. Interlock and monitoring conditions are defined for each step.

An interlock includes the prerequisites for execution of actions, and monitoring conditions serve to detect faults in the sequence.

Advantages compared to LAD, FBD, STL
- Clear configuring of the process in the draft phase; also advantageous in all other process phases
- LAD, FBD and STL are mainly used for logic controls. With S7-GRAPH, the process sequence is of major importance
- Clear graphic representation of process using sequence chains; this results in easy maintenance and adaptation of programs if necessary
- Troubleshooting with integral diagnostics functions results in minimization of expensive down times,
- in particular for manufacturing processes

Design
An S7-GRAPH sequence chain block consists of the sequence chains and a general administrative section. S7-GRAPH offers various compiler options for minimizing the memory requirements depending on the functionality required (diagnostics, interlocks, monitors).

Functions
S7-GRAPH has been certified in accordance with IEC 61131-3 and PLCopen Base-Level. The software permits programming according to this standard and has the following functionalities:

- Different views with compact display of sequence chains:
  - Overview diagram
  - Single-page display
  - Detail display pertaining to a step
- Flexible design of sequential controls; simultaneous and alternative branching, branches within sequence chains, activation and deactivation of step
- All sub-sequencers can be arranged side by side to permit simultaneous monitoring of their states.
- Good performance through selective processing of steps. The processing time required for a sequence of steps is independent of the number of steps
- Synchronization of automatic and manual mode;
  the process is no longer synchronous if its state was modified in manual mode. S7-GRAPH supports you in identifying synchronization points to resume automatic mode. The relevant steps are marked. Transitions or interlocks can be defined as criteria.
- User-defined interface;
  two possibilities are available for the call interface of the sequence block:
  - Predefined parameter sets; either mini, standard or maxi can be selected
  - User-defined parameters for flexible adaptation to the application.

Editing functions
- Programming in LAD or FBD;
  all transitions, interlocks and monitoring conditions can be programmed in LAD or FBD
• Extensive scope of language elements for simple programming of conditions and actions; simple arithmetic commands (+, -) or counters/timers can also be directly programmed as an action in the step.
• Consecutive numbering of steps on request.

Testing and debugging functions
• The consistency check of STEP 7 is fully available for S7-GRAPH. The "Block consistency test" function can be used to check S7-GRAPH blocks for inconsistencies after a program modification.
• Online functions; display of active steps, status of interlocking, monitoring and self-enabling conditions, as well as executed actions.

Process diagnostics
S7-GRAPH enables fast, specific diagnostics of process faults. This gives operators and maintenance personnel comprehensive support in debugging and troubleshooting. Downtimes are reduced and plant availability increased.

In principle, various diagnostics options are available:
• Sequential controls can be displayed on-line in WinCC. The function is implemented by means of an OCX, i.e. the graphics need not be emulated in WinCC. They can be imported from S7-GRAPH (S7-GRAPH Viewer).
• With detailed diagnostics functions, S7-GRAPH enables you to jump direct from WinCC to the cross-reference list of S7-GRAPH and to the currently active step. From V5.2, this function can be set to read-only for safety reasons.

• S7-GRAPH permits storage of diagnostics-relevant information, such as message texts and message numbers even at the configuration stage. This information is displayed by ProAgent® during operation. ProAgent is available as optional package for SIMATIC ProToolPro® and WinCC.

Documentation functions
• Compact, clear printing of sequence chains; each page of the printout contains references to the adjacent pages.
• Linking to project-wide documenta- tion system (DOCPRO).

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S7-GRAPH

| Display | Vector graphics |
| Sequence control/structure | Control in function block, structure in data block |
| Sequences per function block | 8 |
| Steps per sequence | 250 |
| Parallel branches | 250 |
| Alternative branches | 250 |
| Transition | 32 conditions |
| Step | 32 interlocking conditions |
| | 32 monitoring conditions |
| | 100 actions with system-internal qualifiers |

Memory requirement in CPU

| for sequence management | typically 8 to 11 KB |
| for the sequence | n x 16 bytes to n x 150 bytes, depending on the functionality selected (n = number of steps per sequence) |
S7-SCL
High-level language programming

Application
S7-SCL (Structured Control Language) is a high-level language based on PASCAL for programmable controllers. S7-SCL corresponds to the high-level text language ST (Structured Text), defined in DIN EN/IEC 61131-3. S7-SCL is particularly suitable for programming complex algorithms and mathematical functions, or for data processing tasks. S7-SCL permits:

- Simple, fast program development hardly prone to errors by application of powerful language elements such as IF...THEN...ELSE.
- Improved comprehensibility by improved readability and structure.
- Creation of symbolic programs ensures problem-free modification and reusability.
- Simplified program testing at high language level using debugger.

The user is then able to formulate solutions for all automation tasks cost-effectively and within a short time. The software can be used for all SIMATIC S7-300 (recommended from CPU 314 onwards), SIMATIC S7-400 and SIMATIC C7 automation systems.

Principle of operation
S7-SCL programs are programmed as ASCII sources and are therefore easy to import and export. The S7-SCL editor provides various templates which need only be filled in:

- Templates for blocks (e.g. function blocks and data blocks) and the related calls.
- Templates for block comments, parameters and constants.
- Templates for control structures (IF, CASE, FOR, WHILE, REPEAT) which contain the exact syntax.

Extremely efficient programming is possible using these templates.

Functions
S7-SCL has been assigned the Base Level certificate of PLCopen and possesses the following functionalities:

- Integral user interface with editor, compiler and debugger.
- Language elements from high-level language programming, e.g. loops, alternative branches and branch distributors.
- S7-SCL blocks can be saved in libraries for further processing in other languages.
- PLC-typical language extensions, e.g. addressing of inputs and outputs, or starting and scanning of timers and counters.
- Elementary and self-defined data types for clear structuring of user programs. Symbols and comments additionally increase the clarity.
- Full-symbol programming and saving of the complete program in a source file.
- Generation of an optimized code with only a little compiler input.
- Display of cross-references.
- User program test possible in high-level language (as is the case with the other PLC languages).
- Linking of symbols also in the debugger.
- Linking to the project-wide documentation system (DOCPRO).
- Simple selection of library blocks; a corresponding dialog window supports navigation in the library. Following selection of a block, the parameter template of the function is automatically copied into the processed file, and it is only necessary to enter the parameters.
- Automatic formatting of input by indentation; colored identification of keywords for language and comments; the program remains clear and easy to read.
- Debugger with “Step into” functionality; improved test resulting from facility to jump to the called blocks during the test.

1) Certification for the Reusability Level of PLCopen available soon.
S7-PLCSIM
The simulation tool

Introduction
Simulation systems can be used to effectively support the development of products and subsequent implementation of these products. In the world of automation, a simulated test environment with associated PLC and process can reduce the duration of the commissioning phase, thus reducing costs. If programming errors are detected early, and if the software is debugged and optimized prior to being loaded into the plant, the programs will show higher quality, and run much smoother. Simulation systems can also be used to test edited programs prior to the programs being loaded into the PC on-site.

In addition, S7-PLCSIM can assist you when converting from SIMATIC S5 to SIMATIC S7. Existing S5 programs can be tested for S7 purposes before installing an S7 controller. It is then possible to assess what the costs will be.

Application
SIMATIC S7-PLCSIM is the simulation system in the world of Totally Integrated Automation. It is fully integrated in STEP 7 and provides a simulated plant environment. It lets you test user blocks and programs for S7-300® and S7-400 on a programming device or PC – even without existing target hardware, i.e. without CPU, signal modules etc. You can simulate online access operations and use the test functions of the programming tools just as if a CPU were present. The entire program test can be done in the programmer's office.

The following programming languages and engineering software are compatible with S7-PLCSIM:
- LAD, FBD, STL
- S7-GRAPH
- S7-HiGraph
- S7-SCL
- CFC (and SFC)
- S7-PDIAG
- WinCC (installed locally)

Principle of operation
S7-PLCSIM processes the user program like a real CPU. Compared to a real CPU, you can choose between the operating modes "Continuous operation" and "Single step".

While the program is running, it is possible to monitor and edit a number of process variables (e.g. you can turn on or off arbitrary inputs and outputs). S7-PLCSIM additionally provides human-machine interface functions with the built-in STEP 7 variable table (VAT).

Interfacing to process simulation
The S7-ProSim interface lets you hook up an external process simulation system. This interface provides dynamic access to process variables.

S7-ProSim uses ActiveX control and can thus operate with all ActiveX-capable Windows applications, e.g. Visual Basic for Application, or Excel.
IEC 61131-3

Introduction
The purpose of the international standard IEC 61131 is to produce worldwide, future-oriented standardization in the sector of programmable controllers. It has been accepted as the European standard and the German standard DIN EN 61131. It is therefore the successor to various national standards.

Advantages of worldwide standardization
- Savings in software engineering as a result of cross-vendor standardization
- More efficient training
- Portability of application program to devices from different vendors is the long-term goal

The standard IEC 61131-3
Components of IEC 61131
The standard IEC 61131 consists of seven different parts:
1. General specification of terms and functional features for a PLC
2. Electrical, mechanical and functional requirements of a PLC
3. Programming languages for a PLC
   - Global PLC programming languages
   - Common language elements and programming rules (multi-language)
4. Guidelines for PLC users for many different project phases
5. Standard blocks for communication between PLCs from different vendors
6. Fuzzy Control
7. Guidelines for application and implementation of programming languages

Standardized programming languages
- Instruction list (IL)
  - Assembler-based language for programming with optimized memory and runtime requirements
  - Primarily used in Europe
  - Only a small, hardware-independent set of basic commands is standardized
- Ladder diagram (LD)
  - Graphic representation corresponding to circuit diagrams
  - Initially developed in the USA as a PLC language
- Function block diagram (FBD)
  - Analog to logic diagrams
  - Used in Europe parallel to STL
- Sequential function chart (SFC)
  - Description of sequence chains in the form of steps and transitions
  - Structured text (ST)
  - High-level language for complex calculations and algorithms
  - Based on Pascal with PLC-specific extensions
- Program configuration
  - Graphic and text-based linking of function blocks to generate a program
  - Definition of different sequence levels (tasks)
  - Primarily used so far for process engineering
- Common conventions
  - Programming and communications model
  - Character set and keywords
  - Elementary data types (e.g. BOOL, REAL) and combined data types (ARRAY, STRUCTURE)
  - Declaration of variables
  - Functions
  - Function blocks
  - Parameter transfer
  - Program configuration and tasks

Criteria for standardized software
- Documentation of elements generated according to the standard
- Definition of specific limits (e.g. symbol length, number of blocks)
- Features can be implemented which are not part of the standard
- Elements which could be confused with the standard must not be implemented
PLCopen

Organization

On the basis of this standard, various suppliers and users of control and programming systems have joined together in the international organization PLCopen which forces the use and spreading of programming according to IEC 61131.

Siemens is working actively with PLCopen, and has included PLC programming into the IEC 61131 standard.

The long-term goal of PLCopen is the multi-vendor portability of application programs. Further PLCopen working groups are occupied with further components of the IEC 61131 standard (e.g. training or motion control).

Certification of the programming systems from different vendors is an important prerequisite for software portability.

For this purpose, PLCopen has redefined the Compliance Levels:

- Conformity Level (CL)
- A certified PLC vendor uses a programming language that conforms with IEC 61131-3, i.e. the data types and instructions used are implemented in line with IEC 61131-3
- Reusability Level (RL)
- The blocks generated in a certified programming language can be transferred to another system that is also certified for the Reusability Level. They can execute on this system provided that common data types and instructions are used.

Independent institutes assign the respective certificate following the application of test procedures.

STEP 7 - conforms with IEC 61131-3 and is compatible with STEP 5

In the context of SIMATIC industrial software, STEP 7 and the associated engineering software provide programming software for SIMATIC S7, which is largely in conformance with the standard. In STEP 7, the programming languages have been extended at various points in accordance with the standard to offer users optimum programming convenience and full utilization of the S7 controllers.

Furthermore, compatibility with STEP 5 was of greater importance at certain points than compatibility with the standard (especially in STL).

The following table contains the most important information on compliance with the standard. Points where STEP 7 deviates from the standard, exhibiting a separate face, are explained in detail.

Exact information on compliance with the standard is included in tabular form in a file which is part of the STEP 7 product.

1) PLCopen Reusability Level available soon
Additional Software

In addition to the functions included in STEP 7 Professional, further powerful software is available with tailored functions to permit programming of automation functions to be as convenient as possible:

- **Engineering software**:
  - Task-oriented software for convenient configuring and programming just as you wish

- **Runtime Software**:
  - Completely programmed solutions which can be called from the application program

- **Human Machine Interface**:
  - Operator control and visualization software especially for SIMATIC

### Engineering software

- **S7-HiGraph**
  - to describe asynchronous processors using status graphs. This representation provides comprehensive flexibility, and therefore can be easily understood by machine builders (technologists), commissioning engineers and servicing engineers.

- **CFC (continuous function chart)**
  - for generation of automation applications using a technology plan. Ready-to-use blocks are available in a library, and new blocks can be programmed in addition

- **S7-PDIAG**
  - for configuring of process diagnostics for SIMATIC S7. Increases the availability of machines and production plants, and supports local fault analysis and troubleshooting

### Runtime software

- **Standard PID Control**
  - for integration of continuous PID controllers, pulse controllers and step controllers into the application program

- **Modular PID Control**
  - preferably for use with closed-loop control applications in the medium and upper performance ranges and for process engineering. Almost any control structure can be implemented by linking the supplied standard function blocks.

- **PID Self Tuner**
  - for extension of existing PID controllers into self-tuning PI or PID controllers. Ideal for use with temperature controls, also suitable for level and flow controls.

- **Fuzzy Control++**
  - to generate fuzzy systems for SIMATIC S7 and SIMATIC WinCC. Fuzzy systems are used where processes cannot be described mathematically, or only with great difficulty, where sequences and processes are unpredictable, where non-linearities occur, but where knowledge of the process is present.

### Easy Motion Control

- Low-cost package for easy, position-controlled positioning. Can be used with any variable-speed drive.

### Software redundancy

- software package for design of fault-tolerant controls on a software basis. Can be used for applications with low switching speed requirements, e.g. control of water power plants, cooling circuits, traffic flows, level control, data acquisition.

### PRODAVE MPI

- the toolbox for transfer of process data between SIMATIC S7, SIMATIC C7 and a programming device or PC. For automatic handling of data transfer using MPI/PP1.

### Human-machine interface

- **SIMATIC WinCC**
  - the PC-based operator control and visualization system. The basic configuration already includes industrial functions for signalling events, archiving measured values, logging all process and configuration data.

- **SIMATIC ProTool/Lite**
  - uniform configuring software for all SIMATIC panels and the HMI component of SIMATIC C7.

- **SIMATIC ProTool/Pro**
  - PC-based operator control and visualization solution for the machine environment, comprising the SIMATIC ProTool/Pro RT runtime software for PC-based systems and the SIMATIC ProTool/Pro Configuration (CS) configuration software.

- **SIMATIC ProAgent**
  - specific, fast diagnostics of process faults in plants and machines for SIMATIC S7 and SIMATIC HMI.
Software Update Service

What does the software update service provide?
SIMATIC industrial software is continuously being developed and improved. The software update service is the simplest way to make the most of these improvements. It guarantees that you will be automatically sent all new software versions released after you order the software update service. This means that your software is always in tune with the latest technologies.

You only need to order the software update service once, it will then be automatically extended by a year at a time. This saves logistics costs. Investments into new software can be taken into consideration at an early stage when planning your budget, and can be written off more easily.

Even if you only get one delivery a year, the software update service is better value than ordering a single upgrade.

What is supplied?
- All new software versions released after you order the software update service (usually several deliveries per year).
- SIMATIC Customer Support Knowledge Base CD-ROM, complete with FAQs, tips & tricks and downloads (3 x per year).

How do you order the software update service?
- The software update service is simply ordered like any other product.
- As a prerequisite, you must have the current software version.
- One software update service is ordered for each software license installed.
- The software update service is valid for one year after the order date.
- It is automatically extended by a year at a time unless notice is given three months before it is due to expire.
- An annual fee is charged for each licence.

The software update service is available for the following products:

- Configuration and program development
  - STEP 7 Lite
  - STEP 7
  - S7-SCL
  - S7-GRAPH
  - STEP 7 Professional
  - S7-HiGraph
  - CFC
  - DOCPRO
  - iMap
- Testing, maintenance and diagnostics
  - S7-PDIAG
  - S7-PLCSIM
  - TeleService
- Runtime software
  - Modular PID Control
  - Standard PID Control
- Human-machine interface
  - ProToolLite
  - ProTool
  - ProTool/Pro
  - WinCC
  - ProAgent
- Industrial communications
  - NET Software
Service & Support

Online support
The comprehensive Internet information system that is available 24 hours a day covers product support, service & support services and support tools in the Support Shop: www.siemens.com/automation/service&support

Technical support
Competent advice concerning all technical problems, with a wide spectrum of customer-tailored services all around our products and systems:
Tel.: +49 (0)180-50 50 222
E-Mail: ad.support@siemens.com

Technical consulting
Support in planning and designing a project: from a detailed actual-state analysis and target definition to consulting in product and systems issues and developing your automation solution.
If you have any questions on these services, contact your regional sales partner. You can find him/her through our
• Helpline:
  Tel.: +49 (0) 180-50 50 11
• Internet site:
  www.siemens.com/automation/service&support

Configuring and software engineering
Support in configuring and developing through services tailored to your needs - from configuration to implementation of an automation project.
If you have any questions on these services, contact your regional sales partner. You can find your contact through our
• Helpline:
  Tel.: +49 (0) 180-50 50 11
• Internet site:
  www.siemens.com/automation/service&support

On-site service
Services concerning commissioning and maintenance as an important prerequisite for plant availability:
Tel.: +49 (0) 180-50 50 444

Optimization and modernization
Specialist services all around optimization and modernization to increase productivity or save costs.
If you have any questions on these services, contact your regional sales partner. You can find your contact through our
• Helpline:
  Tel.: +49 (0) 180-50 50 11
• Internet site:
  www.siemens.com/automation/service&support

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