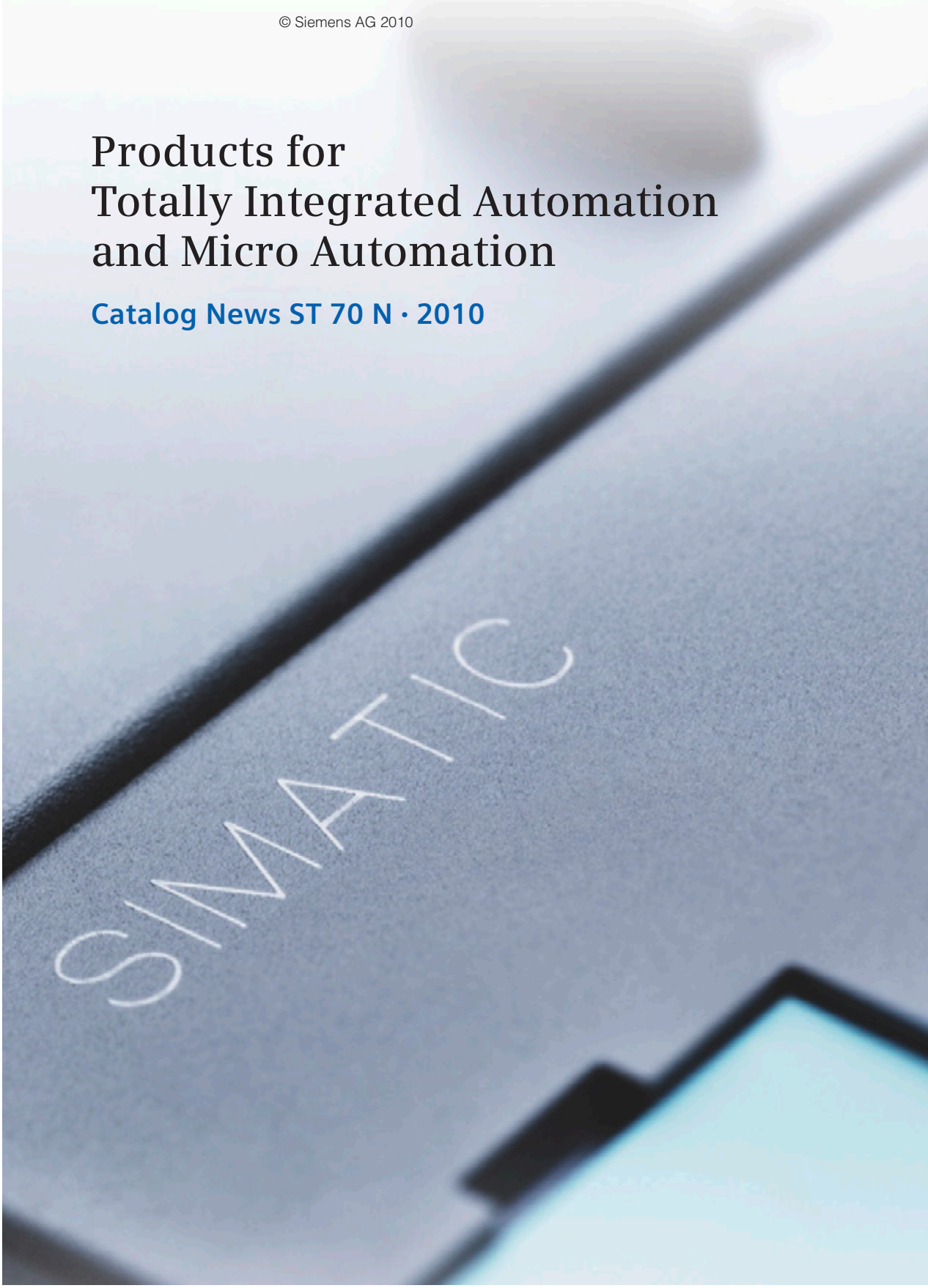
Products for Totally Integrated Automation and Micro Automation

Catalog News ST 70 N · 2010



SIMATIC

Answers for industry.

SIEMENS

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SIMATIC
Products for Totally Integrated Automation and Micro Automation

Catalog News ST 70 N · 2010

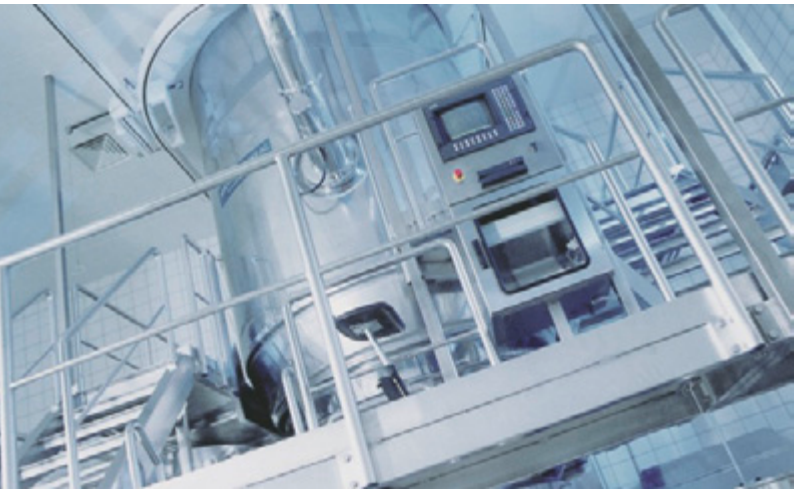
The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with DIN EN ISO 9001 (Certified Registration No.1323-QM). The certificate is recognized by all IQNet countries.

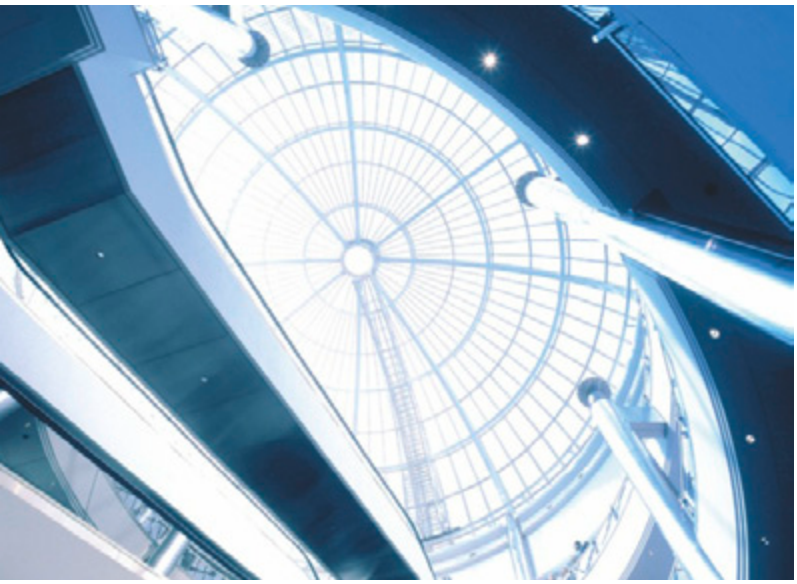
Supersedes:
Catalog ST 70 N · April 2009

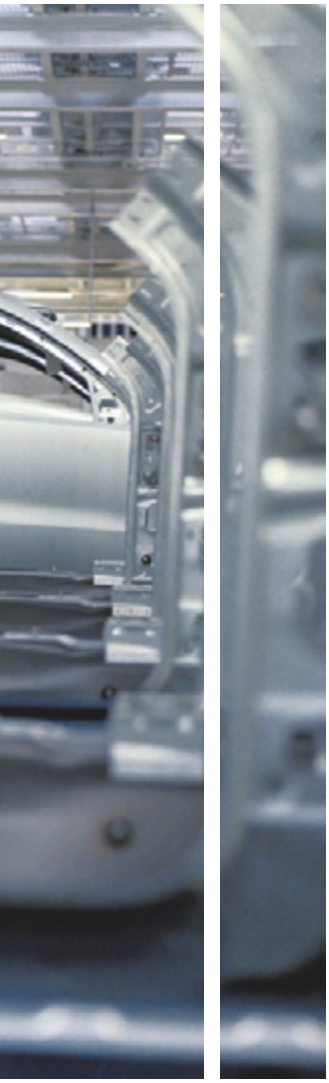
Refer to the Industry Mall for current updates of this catalog:
www.siemens.com/industrymall

The products contained in this catalog can also be found in the e-Catalog CA 01.
Order No.:
E86060-D4001-A510-C8-7600

Please contact your local Siemens branch







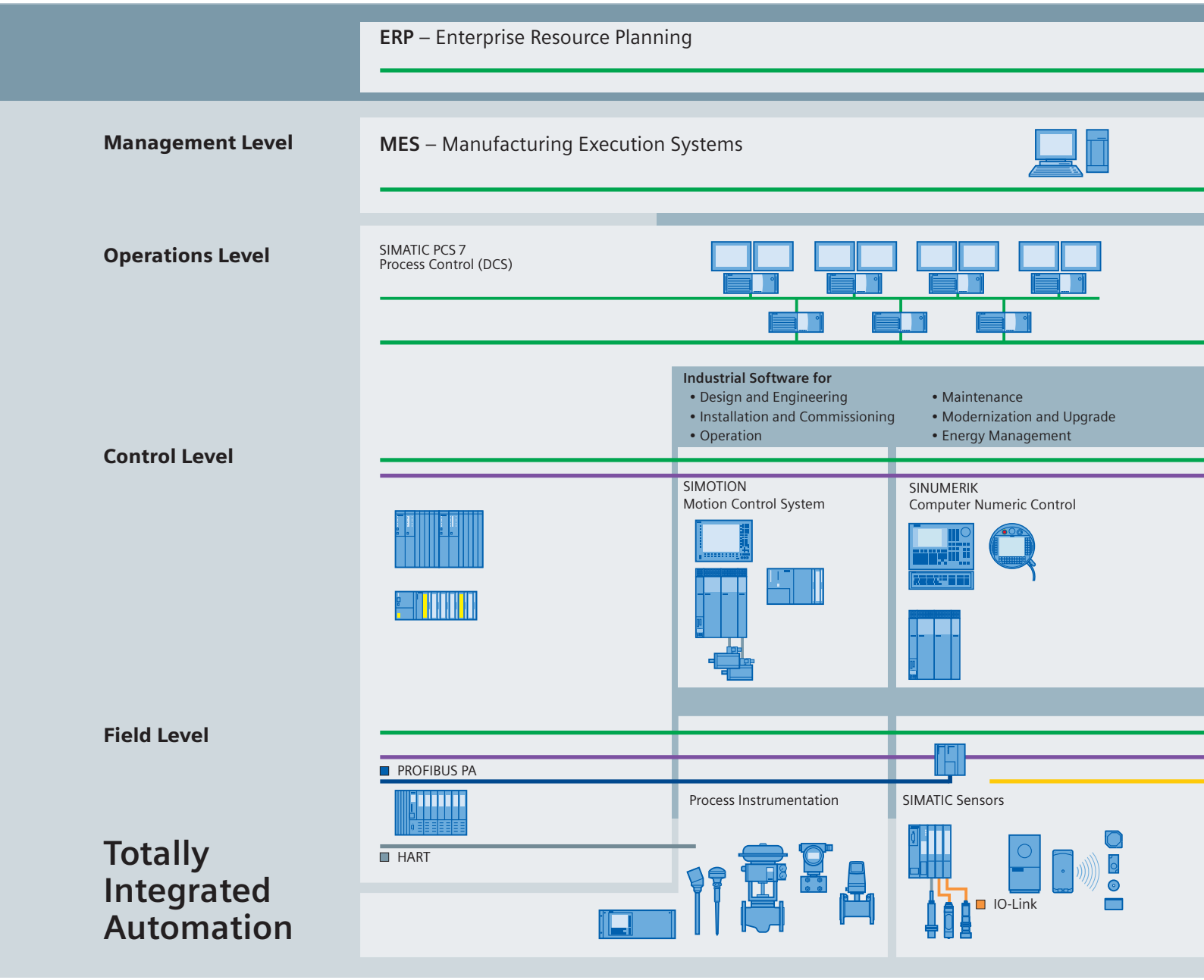
Answers for industry.

Siemens Industry answers the challenges in the manufacturing and the process industry as well as in the building automation business. Our drive and automation solutions based on Totally Integrated Automation (TIA) and Totally Integrated Power (TIP) are employed in all kinds of industry. In the manufacturing and the process industry. In industrial as well as in functional buildings.

Siemens offers automation, drive, and low-voltage switching technology as well as industrial software from standard products up to entire industry solutions. The industry software enables our industry customers to optimize the entire value chain – from product design and development through manufacture and sales up to after-sales service. Our electrical and mechanical components offer integrated technologies for the entire drive train – from couplings to gear units, from motors to control and drive solutions for all engineering industries. Our technology platform TIP offers robust solutions for power distribution.

The high quality of our products sets industry-wide benchmarks. High environmental aims are part of our eco-management, and we implement these aims consistently. Right from product design, possible effects on the environment are examined. Hence many of our products and systems are RoHS compliant (Restriction of Hazardous Substances). As a matter of course, our production sites are certified according to DIN EN ISO 14001, but to us, environmental protection also means most efficient utilization of valuable resources. The best example are our energy-efficient drives with energy savings up to 60 %.

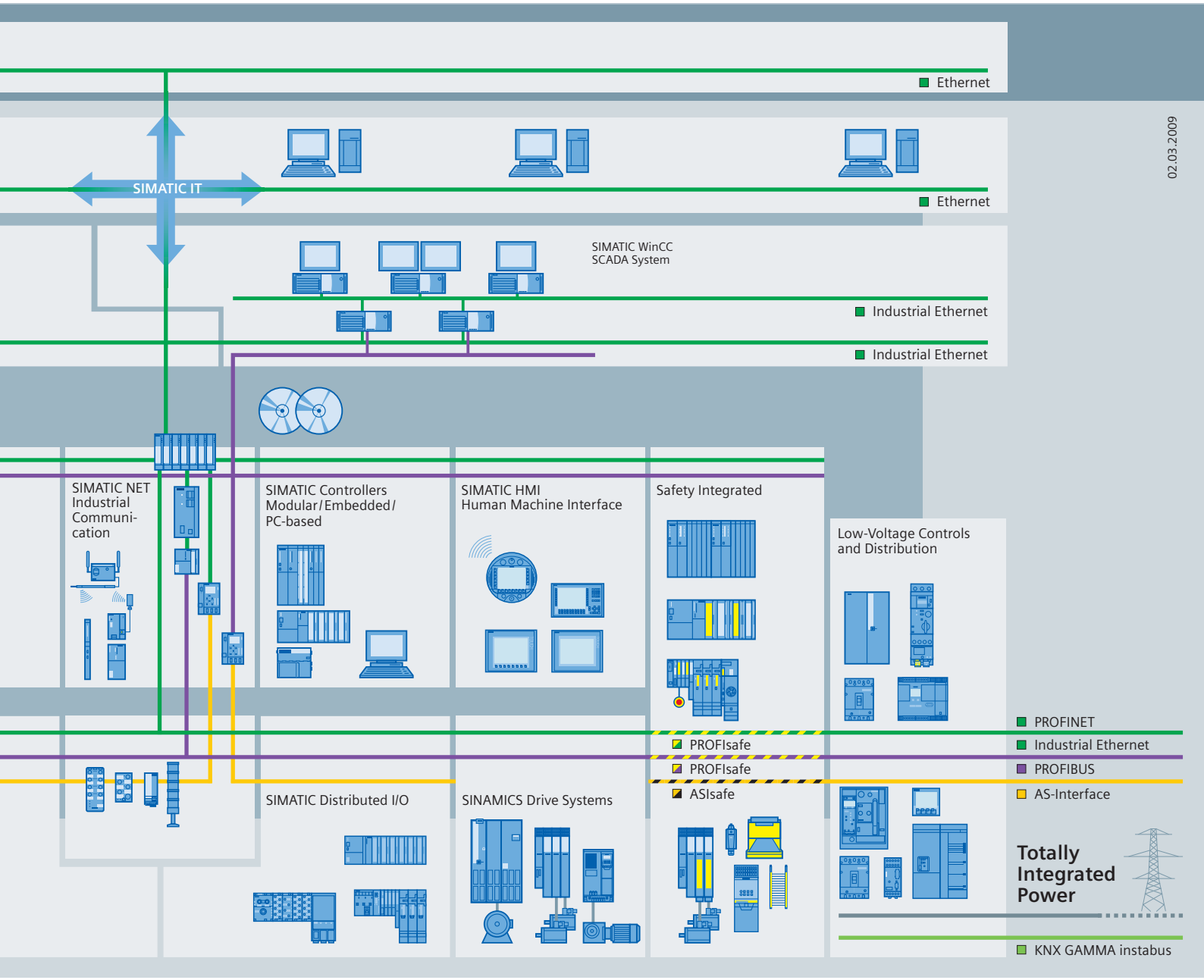
Check out the opportunities our automation and drive solutions provide. And discover how you can sustainably enhance your competitive edge with us.



Setting standards in productivity and competitiveness.

Totally Integrated Automation.

Thanks to Totally Integrated Automation, Siemens is the only provider of an integrated basis for implementation of customized automation solutions – in all industries from inbound to outbound.



TIA is characterized by its unique continuity.

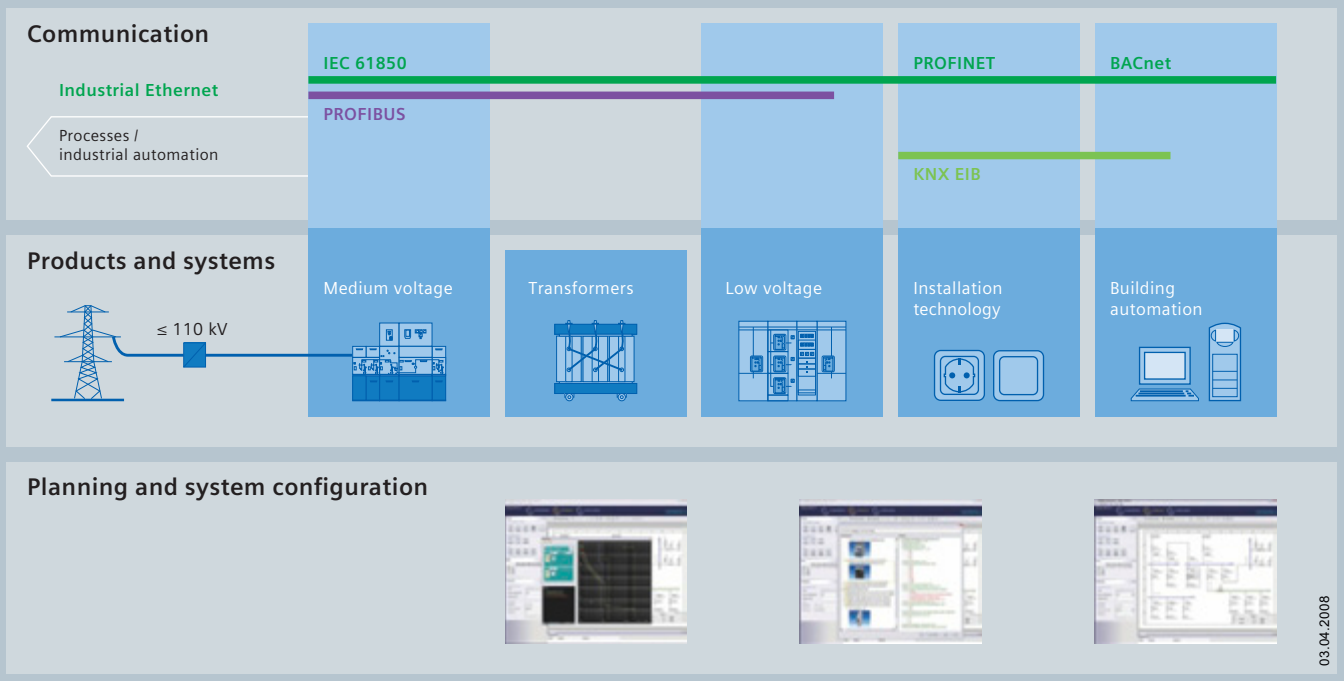
It provides maximum transparency at all levels with reduced interfacing requirements – covering the field level, production control level, up to the corporate management level. With TIA you also profit throughout the complete life cycle of your plant – starting with the initial planning steps through operation up to modernization, where we offer a high measure of investment security resulting from continuity in the further development of our products and from reducing the number of interfaces to a minimum.

The unique continuity is already a defined characteristic at the development stage of our products and systems.

The result: maximum interoperability – covering the controller, HMI, drives, up to the process control system. This reduces the complexity of the automation solution in your plant. You will experience this, for example, in the engineering phase of the automation solution in the form of reduced time requirements and cost, or during operation using the continuous diagnostics facilities of Totally Integrated Automation for increasing the availability of your plant.

Integrated power distribution from one source.

Totally Integrated Power.



Electrical power distribution in buildings requires integrated solutions. Our response: Totally Integrated Power. This means innovative and integrated, interface-optimized products and systems which have been optimally coordinated and complemented with communication and software modules that link power distribution to building automation or industrial automation. Totally Integrated Power accompanies power distribution projects from one end to the other. From A to Z.
From the planning to the building's use: Totally Integrated Power offers significant advantages in every project stage and to everyone involved in the project – the investors, electrical planning engineers, electricians, users and building facility managers.

Our portfolio comprises everything from engineering tools to the matching hardware: from switchgear and distribution systems for medium voltage to transformers, from switching and circuit-protection devices to low-voltage switchgear and busbar trunking systems, as far as to the small distribution board and the wall outlet. It goes without saying that both the medium-voltage switchgear, which requires no maintenance, and the low-voltage switchgear are type-tested, and their busbar connections, too. Comprehensive protection systems ensure the safety of man and machine at any time.

Much more than a catalog. The Industry Mall.

You have a catalog in your hands that will serve you well for selecting and ordering your products. But have you heard of the electronic online catalog (the Industry Mall) and all its benefits? Take a look around it sometime:

www.siemens.com/industrymall

Selecting

Find your products in the structure tree, in the new "Bread-crumb" navigation or with the integral search machine with expert functions. Electronic configurators are also integrated into the Mall. Enter the various characteristic values and the appropriate product will be displayed with the relevant order numbers. You can save configurations, load them and reset them to their initial status.

Ordering

You can load the products that you have selected in this way into the shopping basket at a click of the mouse. You can create your own templates and you will be informed about the availability of the products in your shopping cart. You can load the completed parts lists directly into Excel or Word.

Delivery status

When you have sent the order, you will receive a short e-mail confirmation which you can print out or save. With a click on "Carrier", you will be directly connected to the website of the carrier where you can easily track the delivery status.

Added value due to additional information

So you have found your product and want more information about it? In just a few clicks of the mouse, you will arrive at the image data base, manuals and operating instructions. Create your own user documentation with My Documentation Manager.
Also available are FAQs, software downloads, certificates and technical data sheets as well as our training programs. In the image database you will find, depending on the product, 2D/3Dgraphics, dimension drawings and exploded drawings, characteristic curves or circuit diagrams which you can download.

Convinced? We look forward to your visit!

LOGO! Logic module

2

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

SIPLUS LOGO! Modular basic versions

Overview

- The space-saving basic variants
- Interface for the connection of expansion modules, up to 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- With connection option for LOGO! text display TD (can be connected to all LOGO! 0BA6 basic versions)

For further technical documentation on SIPLUS, see:

http://www.siemens.com/siplus-extreme/techdoku

Environmental conditions	SIPLUS extreme		
Ambient temperature range	-25 to +60/+70 °C[1]		
Relative humidity	100% Dewing, condensation and icing permissible		
Contaminant concentration	EN60721-3-3 3C4 and ISA S71.04 G1, G2, G3, GX		
		Constant load	Limit value[2]
	SO_2	4.8 ppm	17.8 ppm
	H_2S	9.9 ppm	49.7 ppm
	Cl	0.2 ppm	1.0 ppm
	HCl	0.66 ppm	3.3 ppm
	HF	0.12 ppm	2.4 ppm
	NH	49 ppm	247 ppm
	O_3	0.1 ppm	1.0 ppm
	NO_x	5.2 ppm	10.4 ppm
	At RH < 75%, condensation permitted		
Saline fog	Saline fog test (EN 60068-2-52)		
Mechanically active substances	EN60721-3-3 3S4		
• Dust (suspended substance content)	4.0 mg/m²h		
• Dust (precipitation)	40 mg/m²h incl. conductive sand/dust ("Arizona dust")		
Biologically active substances	EN60721-3-3 3B2 Mildew growth, Fungus, excluding fauna		

1) Depends on the product family
2) 30 min/day

	SIPLUS LOGO! 24	SIPLUS LOGO! 12/24RC	SIPLUS LOGO! 24RC	SIPLUS LOGO! 230RC
Order No.	**6AG1 052-1CC00-2BA6**	**6AG1 052-1MD00-2BA6**	**6AG1 052-1HB00-2BA6**	**6AG1 052-1FB00-2BA6**
Order No. based on	**6ED1 052-1CC00-0BA6**	**6ED1 052-1MD00-0BA6**	**6ED1 052-1HB00-0BA6**	**6ED1 052-1FB00-0BA6**
Ambient temperature range	- 25 to + 70 °C - 25 to + 55 °C (for applications with cUL approval), condensation permissible			
Environmental conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX1). For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/2) or go to www.siemens.com/siplus-extreme			
Approvals	CE, cUL			
Technical specifications	The technical data of the standard product apply with the exception of the environmental conditions.			

Technical specifications

	6AG1 052-1CC00-2BA6	6AG1 052-1MD00-2BA6	6AG1 052-1HB00-2BA6	6AG1 052-1FB00-2BA6
Supply voltages				
Rated value				
• 12 V DC		Yes		
• 24 V DC	Yes	Yes	Yes	
• 115 V DC				Yes
• 230 V DC				Yes

Technical specifications (continued)

	6AG1 052-1CC00-2BA6	6AG1 052-1MD00-2BA6	6AG1 052-1HB00-2BA6	6AG1 052-1FB00-2BA6
Rated value (continued)				
• permissible range, lower limit (DC)	20.4 V	10.8 V	20.4 V	100 V
• permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	253 V
• 24 V AC			Yes	
• 115 V AC				Yes
• 230 V AC				Yes
• permissible range, lower limit (AC)			20.4 V	85 V
• permissible range, upper limit (AC)			26.4 V	265 V
Time of day				
Time switching clocks				
• Power reserve		80 h	80 h	80 h
Digital inputs				
Number of digital inputs	8; Of which 4 can be used in analog mode (0 to 10 V)	8; Of which 4 can be used in analog mode (0 to 10 V)	8	8
Digital outputs				
Number of digital outputs	4; Transistor	4; Relay	4; Relay	4; Relay
Short-circuit protection	Yes; electrical (1 A)	No; external fusing necessary	No; external fusing necessary	No; external fusing necessary
Relay outputs				
Switching capacity of contacts				
• with inductive load, max.		3 A	3 A	3 A
• with resistive load, max.	0.3 A	10 A	10 A	10 A
EMC				
• Emission of radio interference acc. to EN 55 011 (limit class B)	Yes	Yes	Yes	Yes
Degree of protection				
IP20	Yes	Yes	Yes	Yes
Standards, approvals, certificates				
CSA approval	Yes	Yes	Yes	Yes
developed according to IEC1131-3	Yes	Yes	Yes	Yes
FM approval	Yes	Yes	Yes	Yes
according to VDE 0631	Yes	Yes	Yes	Yes
Marine approval	Yes	Yes	Yes	Yes
UL approval	Yes	Yes	Yes	Yes
Dimensions and weight				
Dimensions and weight				
• Mounting	on 35 mm DIN rail, 4 spacing units wide	on 35 mm DIN rail, 4 spacing units wide	on 35 mm DIN rail, 4 spacing units wide	on 35 mm DIN rail, 4 spacing units wide
• Width	72 mm	72 mm	72 mm	72 mm
• Height	90 mm	90 mm	90 mm	90 mm
• Depth	55 mm	55 mm	55 mm	55 mm

SIPLUS LOGO! Modular basic versions

Ordering data		Order No.
SIPLUS LOGO! 24 (extended temperature range and medial exposure) 24 V DC power supply, 8x 24 V DC digital inputs, of which 4 can be used in analog mode (0 ... 10 V), 4x 24 V DC digital outputs, 0.3 A; 200 function blocks can be interlinked, modular expansion capability		**6AG1 052-1CC00-2BA6**
SIPLUS LOGO! 12/24RC (extended temperature range and medial exposure) 12/24 V DC power supply, 8x 12/24 V DC digital inputs, of which 4 can be used in analog mode (0 ...10 V), 4x 10 A relay outputs, integral time switch; 200 function blocks can be interlinked, modular expansion capability		**6AG1 052-1MD00-2BA6**
SIPLUS LOGO! 24RC (extended temperature range and medial exposure) 24 V AC/DC power supply, 8x 24 V AC/DC digital inputs, 4x 10 A relay outputs, integral time switch; 200 function blocks can be interlinked, modular expansion capability		**6AG1 052-1HB00-2BA6**
SIPLUS LOGO! 230RC (extended temperature range and medial exposure) 115/230 V AC/DC power supply, 8x 115/230 V AC/DC digital inputs, 4x 10 A relay outputs, integral time switch; 200 function blocks can be interlinked, modular expansion capability		**6AG1 052-1FB00-2BA6**
Accessories		
SIPLUS LOGO! TD text display (extended temperature range -10 ... +60 °C and medial load) 4-line text display, can be connected to all LOGO! 0BA6 Basic and Pure versions, including connecting cable		**6AG1 055-4MH00-2BA0**
LOGO! manual		
German		**6ED1 050-1AA00-0AE7**
English		**6ED1 050-1AA00-0BE7**
French		**6ED1 050-1AA00-0CE7**
Spanish		**6ED1 050-1AA00-0DE7**
Italian		**6ED1 050-1AA00-0EE7**
Chinese		**6ED1 050-1AA00-0KE7**

		Order No.
LOGO! memory card Program module for copying, with know-how protection		**6ED1 056-1DA00-0BA0**
LOGO! battery card Battery module for backing up the integral real-time clock (not LOGO! 24)		**6ED1 056-6XA00-0BA0**
LOGO! memory/battery card Combined program and battery module, with know-how protection and for backing up the integral real-time clock (not LOGO! 24)		**6ED1 056-7DA00-0BA0**
LOGO! PROM Programming device for modules		**6AG1 057-1AA01-0BA6**
LOGO!Soft Comfort V6.0 For programming on the PC in LAD/FBD; executes on Windows 98 SE and higher, Linux, MAC OSX; on CD-ROM	A	**6ED1 058-0BA02-0YA0**
LOGO!Soft Comfort V6.0 Upgrade Upgrade from V1.0 to V6.0	A	**6ED1 058-0CA02-0YE0**
LOGO! PC cable For program transfer between LOGO! and the PC		**6ED1 057-1AA00-0BA0**
LOGO! USB PC cable For transferring the program between LOGO! and PC, including driver on CD-ROM	B	**6ED1 057-1AA01-0BA0**
LOGO! modem cable Adapter cable for analog modem communication		**6ED1 057-1CA00-0BA0**
LOGO! Mounting set For use in a front panel with Plexiglas pane and gasket		
• Mounting set 4 WM		**6AG1 057-1AA00-0AA0**
• Mounting set 4 WM with keys		**6AG1 057-1AA00-0AA3**
• Mounting set 8 WM		**6AG1 057-1AA00-0AA1**
• Mounting set 8 WM with keys		**6AG1 057-1AA00-0AA2**
SIPLUS upmiter power supply unit for dependable operation of SIPLUS devices supplied by the battery of internal combustion engines		**6AG1 053-1AA00-2AA0**

A: Subject to export regulations: AL: N and ECCN: EAR99S
B: Subject to export regulations: AL: N and ECCN: EAR99T

Overview

- Basic variants optimized for costs
- Interface for the connection of expansion modules, up to 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- With connection option for LOGO! text display TD (can be connected to all LOGO! 0BA6 basic versions)

For further technical documentation on SIPLUS, see:

http://www.siemens.com/siplus-extreme/techdoku

	SIPLUS LOGO! 24o	SIPLUS LOGO! 12/24RCo	SIPLUS LOGO! 24RCo	SIPLUS LOGO! 230RCo
Order No.	**6AG1 052-2CC00-2BA6**	**6AG1 052-2MD00-2BA6**	**6AG1 052-2HB00-2BA6**	**6AG1 052-2FB00-2BA6**
Order No. based on	**6ED1 052-2CC00-0BA6**	**6ED1 052-2MD00-0BA6**	**6ED1 052-2HB00-0BA6**	**6ED1 052-2FB00-0BA6**
Ambient temperature range	- 25 to + 70 °C - 25 to + 55 °C (for applications with cUL approval), condensation permissible			
Environmental conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX1). For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/2) or go to www.siemens.com/siplus-extreme			
Approvals	CE, cUL			
Technical specifications	The technical data of the standard product apply with the exception of the environmental conditions.			

Technical specifications

	6AG1 052-2CC00-2BA6	6AG1 052-2MD00-2BA6	6AG1 052-2HB00-2BA6	6AG1 052-2FB00-2BA6
Supply voltages				
Rated value				
• 12 V DC		Yes		
• 24 V DC	Yes	Yes	Yes	
• 115 V DC				Yes
• 230 V DC				Yes
• permissible range, lower limit (DC)	20.4 V	10.8 V	20.4 V	100 V
• permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	253 V
• 24 V AC			Yes	
• 115 V AC				Yes
• 230 V AC				Yes
• permissible range, lower limit (AC)			20.4 V	85 V
• permissible range, upper limit (AC)			26.4 V	265 V

Technical specifications (continued)

	6AG1 052-2CC00-2BA6	6AG1 052-2MD00-2BA6	6AG1 052-2HB00-2BA6	6AG1 052-2FB00-2BA6
Time of day				
Time switching clocks				
• Number		8	8	8
• Power reserve		80 h	80 h	80 h
Digital inputs				
Number of digital inputs	8; Of which 4 can be used in analog mode (0 to 10 V)	8; Of which 4 can be used in analog mode (0 to 10 V)	8	8
Digital outputs				
Number of digital outputs	4; Transistor	4; Relay	4; Relay	4; Relay
Short-circuit protection	Yes; electrical (1 A)	No; external fusing necessary	No; external fusing necessary	No; external fusing necessary
Relay outputs				
Switching capacity of contacts				
• with inductive load, max.		3 A	3 A	3 A
• with resistive load, max.	0.3 A	10 A	10 A	10 A
EMC				
• Emission of radio interference acc. to EN 55 011 (limit class B)		Yes	Yes	Yes
Degree of protection				
IP20	Yes	Yes	Yes	Yes
Standards, approvals, certificates				
CSA approval	Yes	Yes	Yes	Yes
developed according to IEC1131-3	Yes	Yes	Yes	Yes
FM approval	Yes	Yes	Yes	Yes
according to VDE 0631	Yes	Yes	Yes	Yes
Marine approval	Yes	Yes	Yes	Yes
UL approval	Yes	Yes	Yes	Yes
Dimensions and weight				
Dimensions and weight				
• Mounting	on 35 mm DIN rail, 4 spacing units wide	on 35 mm DIN rail, 4 spacing units wide	on 35 mm DIN rail, 4 spacing units wide	on 35 mm DIN rail, 4 spacing units wide
• Width	72 mm	72 mm	72 mm	72 mm
• Height	90 mm	90 mm	90 mm	90 mm
• Depth	55 mm	55 mm	55 mm	55 mm

Ordering data	Order No.
SIPLUS LOGO! 24o (extended temperature range and medial exposure) 24 V DC power supply, 8x digital inputs 24 V DC, of which 4 can be used in analog mode (0 ...10 V), 4x digital outputs 24 V DC, 0.3 A; without display and keyboard; 200 function blocks can be interlinked, modular expansion capability	**6AG1 052-2CC00-2BA6**
SIPLUS LOGO! 12/24RCo (extended temperature range and medial exposure) 12/24 V DC power supply, 8x digital inputs 12/24 V DC, of which 4 can be used in analog mode (0 ... 10 V), 4x relay outputs 10 A, integral time switch; without display and keyboard; 200 function blocks can be interlinked, modular expansion capability	**6AG1 052-2MD00-2BA6**
SIPLUS LOGO! 24RCo (extended temperature range and medial exposure) 24 V AC/DC power supply, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, integral time switch; without display and keyboard; 130 function blocks can be interlinked, modular expansion capability	**6AG1 052-2HB00-2BA6**
SIPLUS LOGO! 230RCo (extended temperature range and medial exposure) 115/230 V AC/DC power supply, 8x digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integral time switch; without display and keyboard; 200 function blocks can be interlinked, modular expansion capability	**6AG1 052-2FB00-2BA6**
Accessories	
SIPLUS LOGO! TD text display (extended temperature range -10 ... +60 °C and medial load) 4-line text display, can be connected to all LOGO! 0BA6 Basic and Pure versions, including connecting cable	**6AG1 055-4MH00-2BA0**

		Order No.
LOGO! manual		
German		**6ED1 050-1AA00-0AE7**
English		**6ED1 050-1AA00-0BE7**
French		**6ED1 050-1AA00-0CE7**
Spanish		**6ED1 050-1AA00-0DE7**
Italian		**6ED1 050-1AA00-0EE7**
Chinese		**6ED1 050-1AA00-0KE7**
LOGO! memory card Program module for copying, with know-how protection		**6ED1 056-1DA00-0BA0**
LOGO! battery card Battery module for backing up the integral real-time clock (not LOGO! 24)		**6ED1 056-6XA00-0BA0**
LOGO! memory/battery card Combined program and battery module, with know-how protection and for backing up the integral real-time clock (not LOGO! 24)		**6ED1 056-7DA00-0BA0**
LOGO! PROM Programming device for modules		**6AG1 057-1AA01-0BA6**
LOGO!Soft Comfort V6.0 For programming on the PC in LAD/FBD; executes on Windows 98 SE and higher, Linux, MAC OSX; on CD-ROM	A	**6ED1 058-0BA02-0YA0**
LOGO!Soft Comfort V6.0 Upgrade Upgrade from V1.0 to V6.0	A	**6ED1 058-0CA02-0YE0**
LOGO! PC cable For program transfer between LOGO! and the PC		**6ED1 057-1AA00-0BA0**
LOGO! USB PC cable For transferring the program between LOGO! and PC, including driver on CD-ROM	B	**6ED1 057-1AA01-0BA0**
LOGO! modem cable Adapter cable for analog modem communication		**6ED1 057-1CA00-0BA0**
LOGO! Mounting set For use in a front panel with Plexiglas pane and gasket		
• Mounting set 4 WM		**6AG1 057-1AA00-0AA0**
• Mounting set 4 WM with keys		**6AG1 057-1AA00-0AA3**
• Mounting set 8 WM		**6AG1 057-1AA00-0AA1**
• Mounting set 8 WM with keys		**6AG1 057-1AA00-0AA2**
SIPLUS upmiter power supply unit for dependable operation of SIPLUS devices supplied by the battery of internal combustion engines		**6AG1 053-1AA00-2AA0**

A: Subject to export regulations: AL: N and ECCN: EAR99S
B: Subject to export regulations: AL: N and ECCN: EAR99T

LOGO! Modular analog expansion modules

Overview

- Expansion modules for the connection to LOGO! Modular
- With digital inputs and outputs, analog inputs or analog outputs

Technical specifications

	6ED1 055-1MM00-0BA1
Supply voltages	
Rated value	
• 12 V DC	No
• 24 V DC	Yes
Analog outputs	
Number of analg outputs	2
Output ranges, voltage	
• 0 to 10 V	Yes
EMC	
• Emission of radio interference to EN 55 011 (limit class B)	Yes
Environmental requirements	
Operating termperature	
• min.	0 °C
• max.	55 °C
Degree of protection	
IP 20	Yes
Standards, approvals, certificates	
CSA approval	Yes
Developed to IEC1131	Yes
FM approval	Yes
to VDE 0631	Yes
Marine approval	Yes
UL Approval	Yes
Dimensions and weight	
Dimensions	
• Mounting	on 35 mm DIN rail, 2 spacing units wide
• Width	36 mm
• Height	90 mm
• Depth	55 mm

Ordering data

		Order No.
LOGO! AM2 AQ Supply voltage 24 V DC, 2 analog outputs, 0 ... 10 V, 0/4 ... 20 mA	C	**6ED1 055-1MM00-0BA1**
Accessories		
LOGO! Manual		
German		**6ED1 050-1AA00-0AE7**
English		**6ED1 050-1AA00-0BE7**
French		**6ED1 050-1AA00-0CE7**
Spanish		**6ED1 050-1AA00-0DE7**
Italian		**6ED1 050-1AA00-0EE7**
Chinese		**6ED1 050-1AA00-0KE7**
LOGO! memory card for copying, with know-how protection		**6ED1 056-5CA00-0BA0**
LOGO!Soft Comfort V6.0 For programming on the PC in LAD/FBD; executes on Windows 98 SE and higher, Linux, MAC OSX; on CD-ROM	A	**6ED1 058-0BA02-0YA0**
LOGO!Soft Comfort V6.0 upgrade Upgrade from V1.0 to V6.0	A	**6ED1 058-0CA02-0YE0**
LOGO! PC cable For program transfer between LOGO! and the PC		**6ED1 057-1AA00-0BA0**

A: Subject to export regulations: AL: N and ECCN: EAR99S
C: Subject to export regulations: AL: N and ECCN: EAR99H

Overview

- Expansion modules for connection to LOGO! Modular
- With digital inputs and outputs, analog inputs, or analog outputs

For further technical documentation on SIPLUS, see:

http://www.siemens.com/siplus-extreme/techdoku

	SIPLUS LOGO! DM8 24	SIPLUS LOGO! AM2 AQ	SIPLUS LOGO! DM16 24R
Order No.	**6AG1 055-1PB00-2BY0**	**6AG1 055-1MM00-2BY1**	**6AG1 055-1NB10-2BA0**
Order No. based on	**6ED1 055-1CB00-0BA0**	**6ED1 055-1MM00-0BA1**	**6ED1 055-1NB10-0BA0**
Ambient temperature range	- 25 to + 70 °C - 25 to + 55 °C (for applications with cUL approval), condensation permissible		
Environmental conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX1). For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 2/2) or go to www.siemens.com/siplus-extreme		
Approvals	CE, cUL	CE, cUL (available soon)	
Technical specifications	The technical data of the standard product apply with the exception of the environmental conditions.		

Technical specifications

	6AG1 055-1PB00-2BY0	6AG1 055-1NB10-2BA0	6AG1 055-1MM00-2BY1
Supply voltages			
Rated value			
• 12 V DC	Yes		No
• 24 V DC	Yes	Yes	Yes
• permissible range, lower limit (DC)	10.8 V	20.4 V	
• permissible range, upper limit (DC)	28.8 V	28.8 V	
Digital inputs			
Number of digital inputs	4	8	
Input voltage			
• for signal "0"		< 5 V DC	
• for signal "1"		> 12 V DC	
Input current			
• for signal "0", max. (permissible quiescent current)		1 mA	
• for signal "1", typ.		2 mA	
Input delay (for rated value of input voltage)			
• for standard inputs			
- at "0" to "1", max.		1.5 ms	
- at "1" to "0", max.		1.5 ms	

Technical specifications (continued)

	6AG1 055-1PB00-2BY0	6AG1 055-1NB10-2BA0	6AG1 055-1MM00-2BY1
Digital outputs			
Number of digital outputs	4	8; Relay	
Short-circuit protection	Yes; electrical (1 A)	No; external fusing necessary	
Lamp load, max.		1 000 W; 500 W at 115 V AC	
Controlling a digital input		Yes	
Parallel switching of 2 outputs			
• for increased power		No	
Switching frequency			
• with resistive load, max.		2 Hz	
• with inductive load, max.		0,5 Hz	
• mechanical, max.		10 Hz	
Relay outputs			
Switching capacity of contacts			
• with inductive load, max.		3 A	
• with resistive load, max.		5 A	
• Thermal continuous current, max.	0,3 A		
Analog outputs			
Number of analg outputs			2
Output ranges, voltage			
• 0 to 10 V			Yes
EMC			
• Emission of radio interference acc. to EN 55 011 (limit class B)	Yes	Yes	Yes
Degree of protection			
IP20	Yes	Yes	Yes
Standards, approvals, certificates			
CSA approval	Yes	Yes	Yes
developed according to IEC1131-3	Yes	Yes	Yes
FM approval	Yes	Yes	Yes
according to VDE 0631	Yes	Yes	Yes
Marine approval	Yes	Yes	Yes
UL approval	Yes	Yes	Yes
Dimensions and weight			
Dimensions and weight			
• Mounting	on 35 mm DIN rail, 2 spacing units wide	on 35 mm DIN rail, 4 spacing units wide	on 35 mm DIN rail, 2 spacing units wide
• Width	36 mm; 2 DU	72 mm; 4 DU	36 mm
• Height	90 mm	90 mm	90 mm
• Depth	55 mm	53 mm	55 mm

Ordering data		Order No.
SIPLUS LOGO! DM8 24 (extended temperature range and medial exposure) Supply voltage 24 V DC, 4x digital inputs 124 V DC, 4x digital outputs 24 V DC, 0.3 A, temperature range -40 ... +70 °C		**6AG1 055-1PB00-2BY0**
SIPLUS LOGO! DM16 24R (extended temperature range and medial exposure) Supply voltage 24 V DC, 8x digital inputs 24 V DC, 8x relay outputs 5 A, temperature range -25 ... +70 °C		**6AG1 055-1NB10-2BA0**
SIPLUS LOGO! AM2 AQ (extended temperature range and medial exposure) 24 V DC power supply, 2x analog inputs 0 ... 10 V, 0/4 ... 20 mA, 10-bit resolution, temperature range -40 ... +70 °C		**6AG1 055-1MM00-2BY1**

Accessories		Order No.
LOGO! manual		
German		**6ED1 050-1AA00-0AE7**
English		**6ED1 050-1AA00-0BE7**
French		**6ED1 050-1AA00-0CE7**
Spanish		**6ED1 050-1AA00-0DE7**
Italian		**6ED1 050-1AA00-0EE7**
Chinese		**6ED1 050-1AA00-0KE7**
LOGO! memory card for copying, with know-how protection		**6ED1 056-5CA00-0BA0**
LOGO!Soft Comfort V6.0 For programming on the PC in LAD/FBD; executes on Windows 98 SE and higher, Linux, MAC OSX; on CD-ROM	A	**6ED1 058-0BA02-0YA0**
LOGO!Soft Comfort V6.0 upgrade Upgrade from V1.0 to V6.0	A	**6ED1 058-0CA02-0YE0**
LOGO! PC cable For program transfer between LOGO! and the PC		**6ED1 057-1AA00-0BA0**

A: Subject to export regulations: AL: N and ECCN: EAR99S

SIMATIC S7-200

3

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

CP 243-1

Overview

ISO	TCP	PN	MRP	IT	IP-R	PG/OP	S7
				●		●	●

- Connection of S7-200 to Industrial Ethernet
  - 1 x RJ45 interface for 10/100 Mbit/s full/half duplex connection with autosensing/autonegotiation and autocrossover function
- Communication services:
  - PG/OP communication
  - S7 communication
- Configuration, remote programming and service with STEP 7 Micro/WIN over Industrial Ethernet possible (program upload and program download, status)
- CPU/CPU communication over Industrial Ethernet possible (client + server, eight S7 connections + one PG connection)
- IT communication
  - Web function
  - E-mail function
  - FTP client function for program-controlled data communication (e.g. DOS, UNIX, Linux, embedded systems)
- FTP server
- An S7 OPC server (e.g. SOFTNET-S7 or S7-1613) allows PLC data to be further processed in PC applications

Technical specifications

	6GK7 243-1EX01-0XE0
Product type designation	**CP 243-1**
Transmission rate	
Transmission rate at interface 1	10 … 100 Mbit/s
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with Industrial Ethernet	1
• for power supply	1
Design of electrical connection	
• at interface 1 in accordance with Industrial Ethernet	RJ45 port
• for power supply	3-pin terminal strip
Supply voltage, current consumption, power loss	
Type of power supply	DC
Power supply	
• 1 from backplane bus	5 V
• External	24 V
Relative positive tolerance at 24 V DC	20%
Relative negative tolerance at 24 V DC	15%
Current consumed	
• from backplane bus at 5 V DC, typical	0.06 A
• from external power supply with 24 V DC	
- Typical	0.053 A
- Maximum	0.06 A
Effective power loss	1.5 W

	6GK7 243-1EX01-0XE0
Product type designation	**CP 243-1**
Permitted ambient conditions	
Ambient temperature	
• With vertical installation during operating phase	0 … 45 °C
• With horizontal installation during operating phase	0 … 55 °C
• During storage	-40 … +70 °C
• During transport	-40 … +70 °C
Ambient temperature - Note	-
Relative humidity at 25 °C without condensation during operating phase, maximum	95%
Design, dimensions and weights	
Module format	S7-200 compact module, double-width
Width	71.2 mm
Height	80 mm
Depth	62 mm
Net weight	0.15 kg
Product properties, functions, components General	
Maximum number of modules per CPU	1
Number of modules - Note	-

Technical specifications (continued)

	6GK7 243-1EX01-0XE0
Product type designation	**CP 243-1**
Performance data	
Performance data S7 communication	
Number of possible connections for S7 communication	
• Maximum	8
• Maximum with PG connections	1
• Maximum with PG/OP connections	8
Number of possible connections for S7 communication - Note	-
Performance data IT functions	
Number of possible connections	
• as client with FTP, maximum	1
• as server with HTTP, maximum	4
• as e-mail client, maximum	1

	6GK7 243-1EX01-0XE0
Product type designation	**CP 243-1**
Number of e-mails with 1024 characters of e-mail client, maximum	32
Number of access privileges of access protection function	8
Storage capacity of user memory as FLASH memory file system	8 Mibyte
Number of possible write cycles of flash memory cells	100,000
Product functions Management, configuration, programming	
Product function: MIB support	No
Protocol is supported SNMP v1	No
Configuration software required	STEP 7-Micro/WIN V4.0 SP8 and higher

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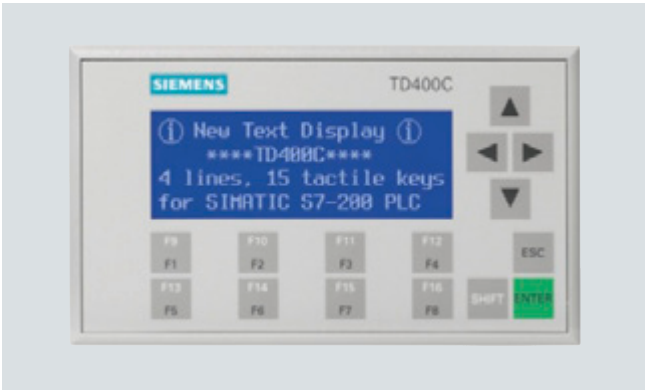
Ordering data		Order No.
CP 243-1 communications processor for connection of SIMATIC S7-200 to Industrial Ethernet; for S7 communication, PG communication, E-mail and WWW server; with electronic manual on CD-ROM German, English, French, Italian, Spanish		**6GK7 243-1EX01-0XE0**
SOFTNET Edition 2008 for Industrial Ethernet Software for S7 and open communication, incl. OPC server, PG/OP communication and NCM PC, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English		
SOFTNET-S7 Edition 2008 for Industrial Ethernet up to 64 connections		
• Single license for 1 installation	D	**6GK1 704-1CW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version		**6GK1 704-1CW00-3AL0**
• Upgrade from Edition 2006 and higher to Edition 2008	D	**6GK1 704-1CW00-3AE0**
• Upgrade from V6.0, V6.1, V6.2 or V6.3 to Edition 2008	D	**6GK1 704-1CW00-3AE1**
SOFTNET-S7 Lean Edition 2008 for Industrial Ethernet up to 8 connections		
• Single license for 1 installation	D	**6GK1 704-1LW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version		**6GK1 704-1LW00-3AL0**
• Upgrade from Edition 2006 and higher to Edition 2008	D	**6GK1 704-1LW00-3AE0**
• Upgrade from V6.0, V6.1, V6.2 or V6.3 to Edition 2008	D	**6GK1 704-1LW00-3AE1**
S7-1613 Edition 2008 Software for S7 and open communication, incl. PG/OP communication, OPC server and NCM PC; up to 120 connections, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; for CP 1613/CP 1613 A2/ CP 1623; German/English		
• Single license for 1 installation	D	**6GK1 716-1CB71-3AA0**
S7-1613 Edition 2008 (continued)		
• Software Update Service for 1 year, with automatic extension; requirement: Current software version		**6GK1 716-1CB00-3AL0**
• Upgrade S7-1613, Edition 2006 or higher, to S7-1613 Edition 2008	D	**6GK1 716-1CB00-3AE0**
• Upgrade S7-1613 from V6.0, V6.1, V6.2 or V6.3 to S7-1613 Edition 2008	D	**6GK1 716-1CB00-3AE1**
STEP 7-Micro/WIN V4 programming software *Target system:* All CPUs of the SIMATIC S7-200 *Prerequisite:* Windows 2000/XP on PG or PC *Type of delivery:* German, English, French, Spanish, Italian, Chinese; with online documentation		
• Single license	A	**6ES7 810-2CC03-0YX0**
• Upgrade Single License[1]	A	**6ES7 810-2CC03-0YX3**
IE FC TP Standard Cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter		**6XV1 840-2AH10**
FO Standard Cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter		**6XV1 873-2A**
SCALANCE X204-2 Industrial Ethernet switch Industrial Ethernet switches with integral SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports, IE FC RJ45 plugs, RJ45 plugs for Industrial Ethernet with rugged metal enclosure and integral insulation displacement contacts for the connection of the Industrial Ethernet FC installation cables		**6GK5 204-2BB10-2AA3**
IE FC RJ45 Plug 180 180° cable outlet		
• 1 unit		**6GK1 901-1BB10-2AA0**
• 10 units		**6GK1 901-1BB10-2AB0**
• 50 units		**6GK1 901-1BB10-2AE0**

A: Subject to export regulations: AL: N and ECCN: EAR99S
D: Subject to export regulations: AL: N and ECCN: 5D992

[1] Upgrade for all previous STEP 7-Micro/WIN and STEP 7-Micro/DOS versions

Overview



- More screen space and extremely good readability thanks to backlit four-line display
- Customizable operator interface with 15 tactile keys
- Acoustic and visual feedback from key operation
- Optimal support of the S7-200:
  - Direct connection to the S7-200 interface via supplied cable
  - No separate power supply required
  - Parameterization with STEP 7-Micro/WIN V4 SP6

Technical specifications

	6AV6 640-0AA00-0AX1
Product type designation	Text Display TD 400C
Supply voltage	
Supply voltage	24 V DC
permissible range	DC
Memory	
Usable memory for user data	No info
Configuration	
Configuration tool	MicroWin (to be ordered separately)
Display	
Display type	STN, Black/White
Size	3.7"
Resolution (WxH in pixel)	192 x 64
Backlighting	
• MTBF backlighting (at 25 °C)	about 20,000 hours
Operating mode	
Control elements	Membrane keyboard
Function keys, programmable	15 function keys
Membrane keyboard	Yes
Ambient conditions	
Temperature	
• Operation	0 °C to +50 °C
• Transport, storage	-20 °C to +60 °C
Degree of protection	
Front	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)
Rear	IP20
Certifications & standards	
Certifications	CE, FM Class I Div. 2, UL, C-TICK, NEMA 4, NEMA 4x, NEMA 12
Interfaces	
Interfaces	1 x RS485 (max. 187.5 Mbit/s)
Functionality under WinCC flexible	
Security	
• Number of user groups	1
Dimensions and weight	
Weight	
• Weight	0.33 kg

Ordering data

		Order No.
TD 400C Text Display	C	**6AV6 640-0AA00-0AX1**
with customized operator interface on the device front; for connecting to SIMATIC S7-200; can be used from STEP 7-Micro/WIN V4 SP6, incl. connecting cable		
Promotion package	B	**6ES7 298-1AA20-0YA3**
Consisting of:		
• TD 400C		
• SIMATIC S7-200		
• SIMATIC STEP 7 Micro/WIN V4.0		
• Simulator module		
• Memory module		
• PPI cable		
• CD-ROM with documentation		
• TANOS Box		
Connecting cables		**6ES7 901-3EB10-0XA0**
for connecting TD 100C/TD 200C or TD 400C to S7-200		
Blank foils		**6AV6 671-0AP00-0AX0**
for printing customized key-board layouts; 2 perforated films per sheet; 10 sheets per pack		
Accessories		
Accessories for supplementary ordering		See Catalog ST 80

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H

SIMATIC S7-1200

4

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

S7-1200

Overview

- The new modular miniature controller from the SIMATIC S7 family
- Consisting of:
  - controller with integrated PROFINET interface for communication with programming device, HMI or other SIMATIC controllers
  - powerful, integrated technology functions such as counting, measuring, closed-loop control, and motion control
  - integrated digital and analog inputs/outputs
  - signal boards for direct use in a controller
  - signal modules for expansion of controllers by input/output channels
  - communication modules for expansion of controllers by communications interfaces
  - accessories, e.g. power supply, switch module or SIMATIC Memory Card
- The miniature controller that offers maximum automation at minimum cost
- Extremely simple installation, programming and operation
- Large-scale integration, space-saving, powerful
- Suitable for small to medium-size automation engineering applications
- Can be used both for simple controls and for complex automation tasks
- All CPUs can be used in stand-alone mode, in networks and within distributed structures
- Suitable for applications where programmable controllers would not have been economically viable in the past
- With exceptional real-time performance and powerful communication options

Application

The SIMATIC S7-1200 is the controller for open-loop and closed-loop control tasks in mechanical equipment manufacture and plant construction. It combines maximum automation and minimum cost.

Due to the compact modular design with a high performance at the same time, the SIMATIC S7-1200 is suitable for a wide variety of automation applications. Its range of use extends from the replacement of relays and contactors up to complex automation tasks in networks and within distributed structures.

The S7-1200 also increasingly opens up areas for which special electronics was previously developed for economical reasons.

Application examples include, for example:

- Placement systems
- Conveyor systems
- Elevators and escalators
- Material transportation equipment
- Metalworking machinery
- Packaging machines
- Printing machines
- Textile machines
- Mixing systems
- Freshwater treatment plants
- Wastewater treatment plants
- External displays
- Electricity distribution stations
- Room temperature control
- Heating/cooling system control
- Energy management
- Fire protection systems
- Air conditioning
- Lighting control
- Pump control
- Security/access control systems

Design

The SIMATIC S7-1200 family consists of the following modules:

- 3 compact controllers with graded performances in different versions as wide-range AC or DC controllers
- 2 signal boards (analog and digital) for low-cost modular controller expansion directly on the CPU, with retention of the mounting space
- 13 different digital and analog signal modules
- 2 communication modules (RS232/RS485) for communication via point-to-point connection
- Ethernet switch with 4 ports for implementation of many different network topologies
- PS 1207 stabilized power supply units, line voltage 115/230 V AC, rated voltage 24 V DC

Mechanical features

- Rugged, compact plastic enclosure
- Easily accessible connection and control elements, protected by front flaps
- Removable connection terminals, also for analog or digital expansion modules

Device features

- International standards:
  SIMATIC S7-1200 complies with the standards according to VDE, UL, CSA and FM (Class I, Category 2; Danger zone groups A, B, C and D, T4A). The quality management system used during production is certified according to ISO 9001

Design (continued)

Communication

The SIMATIC S7-1200 is equipped with different communication mechanisms:

- Integral PROFINET interface
- Point-to-point connection via communication modules

PROFINET interface

The integral PROFINET interface permits communication with:

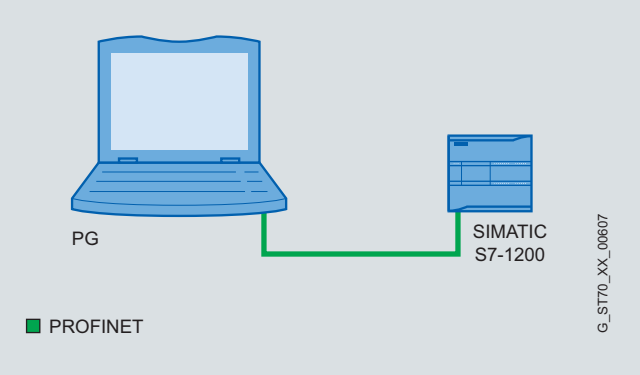
- Programming device
- HMI devices
- Other SIMATIC controllers

The following protocols are supported:

- TCP/IP
- ISO-on-TCP
- S7 communication

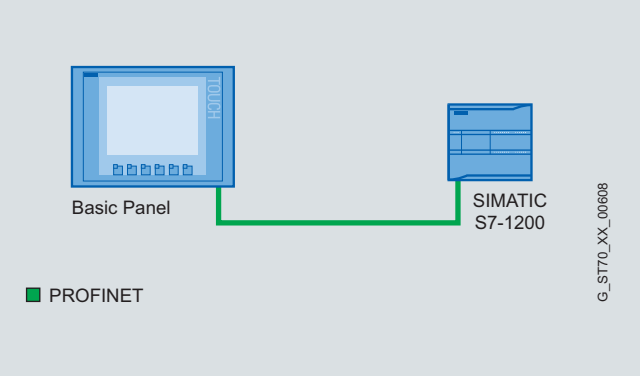
The following can be connected:

Field PG programming device and PCs via standard CAT5 cable.



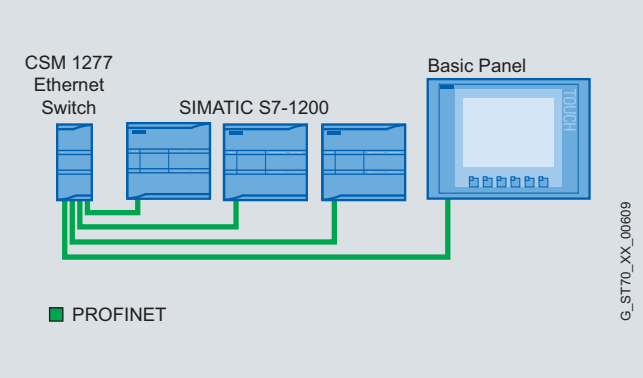
Connection between PG and CPU of SIMATIC S7-1200

- SIMATIC HMI Basic Panels



Connection between Basic Panel and CPU of SIMATIC S7-1200

- Further SIMATIC S7-1200 controllers

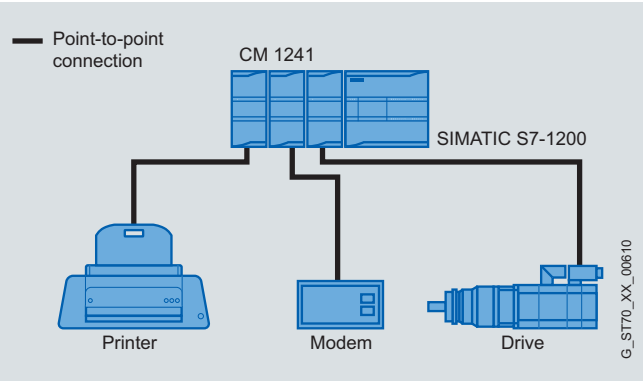


Connection of several devices via CSM 1277 Ethernet switch

Point-to-point interface, freely-programmable interface mode

Communication modules permit communication via point-to-point connections. The RS232 and RS485 physical transmission media are used. Data transmission is carried out in the "Freeport" mode of the CPU. A user-specific, bit-oriented communication protocol is used (e.g. ASCII protocol, USS, or MODBUS).

Any terminal equipment with a serial interface can be connected, e.g. drives, printers, bar code readers, modems, etc.



Point-to-point connection via CM 1241 in programmable interface mode

S7-1200

Function

The S7-1200 is characterized by:

- Extremely simple starter solution:
  Special starter packages and introductions facilitate familiarization.
- Uncomplicated operation:
  Powerful standard commands which are simple to use, together with the user-friendly programming software, reduce the programming overhead to a minimum.
- Exceptional real-time characteristics:
  Special interrupt functions, fast counters, and pulse outputs permit use even with time-critical processes.

The SIMATIC S7-1200 meets national and international standards:

- UL 508
- CSA C22.2 No. 142
- FM Class I, div. 2, group A, B, C, D; T4A Class I, Zone 2, IIC, T4
- VDE 0160
- EN 61131-2
- Requirements of the EMC directive in accordance with EN 50081-1, 50081-2 and 50082-2

Technical specifications

General technical specifications	
Degree of protection	IP20 acc. to IEC 529
Ambient temperature	
• Operation (95% humidity)	
- horizontal installation	0 ... 55 °C
- vertical installation	0 ... 45 °C
• Transportation and storage	-40 ... +70 °C
- with 95% humidity	25 ... 55 °C
Insulation	
• 5/24 V DC circuits	500 V AC test voltage
• 115/230 V AC circuits to ground	1500 V AC test voltage
• 115/230 V AC circuits to 115/230 V AC circuits	1500 V AC test voltage
• 230 V AC circuits to 5/24 V DC circuits	1500 V AC test voltage
• 115 V AC circuits to 5/24 V DC circuits	1500 V AC test voltage
Electromagnetic compatibility	Requirements of the EMC directive
• Noise immunity acc. to EN 50082-2	Test acc. to: IEC 801-2, IEC 801-3, IEC 801-4, EN 50141, EN 50204, IEC 801-5, VDE 0160
• Emitted interference acc. to EN 50081-1 and EN 50081-2	Test according to EN 55011, Class A, Group 1

General technical specifications	
Mechanical strength	
• Vibrations, test acc. to / tested with	IEC 68, Part 2-6: 10 ... 57 Hz; constant amplitude 0.3 mm; 58 ... 150 Hz; constant acceleration 1 g (mounted on DIN rail) or 2 g (mounted in switchboard); mode of vibration: frequency sweeps with a sweep rate of 1 octave/minute; duration of vibration: 10 frequency sweeps per axis in each direction of the three mutually perpendicular axes
• Shocks, test acc. to / tested with	IEC 68, Part 2-27/half-sine: magnitude of shock 15 g (peak value), duration 11 ms, 6 shocks in each of the three mutually perpendicular axes

Environmental conditions	SIPLUS extreme		
Ambient temperature range	-25 to +60/+70 °C[1]		
Relative humidity	100% Dewing, condensation and icing permissible		
Contaminant concentration	EN60721-3-3 3C4 and ISA S71.04 G1, G2, G3, GX[2]		
		Constant load	Limit value[3]
	SO_2	4.8 ppm	17.8 ppm
	H_2S	9.9 ppm	49.7 ppm
	Cl	0.2 ppm	1.0 ppm
	HCl	0.66 ppm	3.3 ppm
	HF	0.12 ppm	2.4 ppm
	NH	49 ppm	247 ppm
	O_3	0.1 ppm	1.0 ppm
	NO_x	5.2 ppm	10.4 ppm
	At RH < 75%, condensation permitted		
Saline fog	Saline fog test (EN 60068-2-52)		
Mechanically active substances	EN60721-3-3 3S4		
• Dust (suspended substance content)	4.0 mg/m²h		
• Dust (precipitation)	40 mg/m²h incl. conductive sand/dust ("Arizona dust")		
Biologically active substances	EN60721-3-3 3B2 Mildew growth, Fungus, excluding fauna		

1) Depends on the product family
2) ISA -S71.04 severity level GX from October 2010
3) 30 min/day

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

Overview

- The clever compact solution
- With 10 integral input/outputs
- Expandable by:
  - 1 signal board (SB)
  - max. 3 communication modules (CM)

Design

The compact CPU 1211C has:

- 3 device versions with different power supply and control voltages.
- Integrated power supply either as wide-range AC or DC power supply (85 to 264 V AC or 24 V DC)
- Integrated 24 V encoder/load current supply:
  For direct connection of sensors and encoders. With 300 mA output current also for use as load power supply.
- 6 integrated digital inputs 24 V DC (current sinking/current sourcing (IEC type 1 current sinking)).
- 4 integrated digital outputs, either 24 V DC or relay.
- 2 integrated analog inputs 0 to 10 V.
- 2 pulse outputs (PTO) with a frequency of up to 100 kHz.
- Pulse-width modulated outputs (PWM) with a frequency of up to 100 kHz.
- Integrated Ethernet interface (TCP/IP native, ISO-on-TCP)
- 3 fast counters (100 kHz), with parameterizable enable and reset inputs, can be used simultaneously as up and down counters with separate inputs or for connecting incremental encoders.
- Expansion by additional communication interfaces, e.g. RS485 or RS232
- Expansion by analog or digital signals directly on the CPU via signal board (with retention of CPU mounting dimensions)
- Optional memory expansion (SIMATIC Memory Card)
- PID controller with auto-tuning functionality
- Integral real-time clock
- Interrupt inputs:
  For extremely fast response to rising or falling edges of process signals.
- Removable terminals on all modules
- Simulator (optional):
  For simulating the integrated inputs and for testing the user program.

Device versions

Version	Supply voltage	Input voltage DI	Output voltage DO	Output current
• DC/DC/DC	24 V DC	24 V DC	24 V DC	0.5 A, transistor
• DC/DC/relay	24 V DC	24 V DC	5 … 30 V DC / 5 … 250 V AC	2 A; 30 W DC / 200 W AC
• AC/DC/relay	85 … 264 V AC	24 V DC	5 … 30 V DC / 5 … 250 V AC	2 A; 30 W DC / 200 W AC

CPU 1211C

Function

- Comprehensive instruction set:
  A wide range of operations facilitate programming:
  - basic operations such as binary logic operations, result allocation, save, count, create times, load, transfer, compare, shift, rotate, create complement, call subprogram (with local variables)
  - integral communication commands (e.g. USS protocol, Modbus RTU, S7 communication "T-Send/T-Receive" or Freeport)
  - user-friendly functions such as pulse-width modulation, pulse sequence function, arithmetic functions, floating point arithmetic, PID closed-loop control, jump functions, loop functions and code conversions
  - mathematical functions, e.g. SIN, COS, TAN, LN, EXP
- Counting:
  User-friendly counting functions in conjunction with the integrated counters and special commands for high-speed counters open up new application areas for the user
- Interrupt processing:
  - edge-triggered interrupts (activated by rising or falling edges of process signals on interrupt inputs) support a rapid response to process events
  - time-triggered interrupts
  - counter interrupts can be triggered when a setpoint is reached or when the direction of counting changes
  - communication interrupts allow the rapid and easy exchange of information with peripheral devices such as printers or bar code readers
- Password protection
- Test and diagnostics functions:
  Easy-to-use functions support testing and diagnostics, e.g. online/offline diagnostics
- "Forcing" of inputs and outputs during testing and diagnostics:
  Inputs and outputs can be set independently of cycle and thus permanently, for example, to test the user program
- Motion Control in accordance with PLCopen for simple movements
- Library functionality

Programming

The STEP 7 Basic programming package permits complete programming of all S7-1200 controllers and the associated I/O.

Technical specifications

	6ES7 211-1BD30-0XB0	6ES7 211-1AD30-0XB0	6ES7 211-1HD30-0XB0
Product-type designation	CPU 1211C AC/DC/Relay	CPU 1211C DC/DC/DC	CPU 1211C DC/DC/Relay
Product version			
associated programming package	STEP 7 Basic V10.5	STEP 7 Basic V10.5	STEP 7 Basic V10.5
Supply voltages			
Rated value			
• 24 V DC		Yes	Yes
• permissible range, lower limit (DC)		20.4 V	20.4 V
• permissible range, upper limit (DC)		28.8 V	28.8 V
• 120 V AC	Yes		
• 230 V AC	Yes		
• permissible range, lower limit (AC)	85 V		
• permissible range, upper limit (AC)	264 V		
• permissible frequency range, lower limit	47 Hz		
• permissible frequency range, upper limit	63 Hz		
Load voltage L+			
• Rated value (DC)		24 V	24 V
• permissible range, lower limit (DC)		20.4 V	20.4 V
• permissible range, upper limit (DC)		28.8 V	28.8 V
Current consumption			
Current consumption (rated value)	60 mA at 120 V AC 30 mA at 240 V AC	300 mA; Typical	300 mA; Typical
Current consumption, max.	180 mA at 120 V AC 90 mA at 240 V AC	0.9 A; 24 V DC	0.9 A; 24 V DC
Inrush current, max.	20 A; at 264 V	12 A; 28.8 V DC	12 A; 28.8 V DC
Current output to backplane bus (DC 5 V), max.	750 mA; 5 V DC max. for SM and CM	750 mA; 5 V DC max. for SM and CM	750 mA; 5 V DC max. for SM and CM
Power loss			
Power loss, typ.	10 W	8 W	8 W
Memory			
Available project memory/user memory	25 kbyte	25 kbyte	25 kbyte

Technical specifications (continued)

	6ES7 211-1BD30-0XB0	6ES7 211-1AD30-0XB0	6ES7 211-1HD30-0XB0
Product-type designation	CPU 1211C AC/DC/Relay	CPU 1211C DC/DC/DC	CPU 1211C DC/DC/Relay
Work memory			
• integrated	25 kbyte	25 kbyte	25 kbyte
• expandable	No	No	No
Load memory			
• integrated	1 Mbyte	1 Mbyte	1 Mbyte
• expandable	24 Mbyte; with SIEMENS Memory Card	24 Mbyte; with SIEMENS Memory Card	24 Mbyte; with SIEMENS Memory Card
Backup			
• present	Yes; entire project maintenance-free in the integral EEPROM	Yes; entire project maintenance-free in the integral EEPROM	Yes; entire project maintenance-free in the integral EEPROM
• without battery	Yes	Yes	Yes
CPU/ blocks			
Number of blocks (total)	DBs, FCs, FBs, counters, timers). Up to 65,535 blocks can be addressed. There is no limit, use of the entire work memory	DBs, FCs, FBs, counters, timers). Up to 65,535 blocks can be addressed. There is no limit, use of the entire work memory	DBs, FCs, FBs, counters, timers). Up to 65,535 blocks can be addressed. There is no limit, use of the entire work memory
OB			
• Number, max.	Limited only by RAM for code	Limited only by RAM for code	Limited only by RAM for code
CPU/ processing times			
for bit operations, min.	0.1 µs; / instruction	0.1 µs; / instruction	0.1 µs; / instruction
for word operations, min.	12 µs; / instruction	12 µs; / instruction	12 µs; / instruction
for floating point arithmetic, min.	18 µs; / instruction	18 µs; / instruction	18 µs; / instruction
Data areas and their retentivity			
retentive data area in total (incl. times, counters, flags), max.	2 048 byte	2 048 byte	2 048 byte
Flag			
• Number, max.	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area
Address area			
I/O address area			
• I/O address area, overall	1024 bytes for inputs / 1024 bytes for outputs	1024 bytes for inputs / 1024 bytes for outputs	1024 bytes for inputs / 1024 bytes for outputs
• overall	1 024 byte	1 024 byte	1 024 byte
• Outputs	1 024 byte	1 024 byte	1 024 byte
Process image			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte
Digital channels			
• integrated channels (DI)	6	6	6
• integrated channels (DO)	4	4	4
Analog channels			
• Integrated channels (AI)	2	2	2
• Integrated channels (AO)	0	0	0
Hardware configuration			
Number of modules per system, max.	3 communication modules, 1 signal board	3 communication modules, 1 signal board	3 communication modules, 1 signal board

Technical specifications (continued)

	6ES7 211-1BD30-0XB0	6ES7 211-1AD30-0XB0	6ES7 211-1HD30-0XB0
Product-type designation	CPU 1211C AC/DC/Relay	CPU 1211C DC/DC/DC	CPU 1211C DC/DC/Relay
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes
• Backup time	240 h; Typical	240 h; Typical	240 h; Typical
• Deviation per day, max.	60 s/month at 25°C	60 s/month at 25°C	60 s/month at 25°C
Test commissioning functions			
Status/control			
• Status/control variable	Yes	Yes	Yes
• Variables	Inputs/outputs, memory bits, DB, distributed I/Os, timers, counters	Inputs/outputs, memory bits, DB, distributed I/Os, timers, counters	Inputs/outputs, memory bits, DB, distributed I/Os, timers, counters
Forcing			
• Forcing	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
• as server	Yes	Yes	Yes
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
Number of connections			
• overall	15; dynamically	15; dynamically	15; dynamically
1st interface			
Type of interface	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Isolated	Yes	Yes	Yes
automatic detection of transmission speed	Yes	Yes	Yes
Autonegotiation	Yes	Yes	Yes
Autocrossover	Yes	Yes	Yes
CPU/ programming			
Configuration software			
• STEP 7	STEP 7 Basic V10.5	STEP 7 Basic V10.5	STEP 7 Basic V10.5
Programming language			
• LAD	Yes	Yes	Yes
• FBD	Yes	Yes	Yes
Cycle time monitoring			
• can be set	Yes	Yes	Yes
Digital inputs			
Number of digital inputs	6; Integrated	6; Integrated	6; Integrated
• of which, inputs usable for technological functions	3; HSC (High Speed Counting)	3; HSC (High Speed Counting)	3; HSC (High Speed Counting)
m/p-reading	Yes	Yes	Yes
Number of simultaneously controllable inputs			
• All mounting positions - Concurrently controllable inputs, up to 40 °C	6	6	6

Technical specifications (continued)

	6ES7 211-1BD30-0XB0	6ES7 211-1AD30-0XB0	6ES7 211-1HD30-0XB0
Product-type designation	CPU 1211C AC/DC/Relay	CPU 1211C DC/DC/DC	CPU 1211C DC/DC/Relay
Input voltage			
• Rated value, DC	24 V	24 V	24 V
• for signal "0"	5 V DC at 1 mA	5 V DC at 1 mA	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA	15 V DC at 2.5 mA	15 V DC at 2.5 mA
Input current			
• for signal "1", typ.	1 mA	1 mA	1 mA
Input delay (for rated value of input voltage)			
• for standard inputs			
- parameterizable	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in 4 groups	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in 4 groups
- at "0" to "1", min.	0.2 ms	0.2 ms	0.2 ms
- at "0" to "1", max.	12.8 ms	12.8 ms	12.8 ms
• for interrupt inputs			
- parameterizable	Yes	Yes	Yes
• for counter/technological functions			
- parameterizable	Single phase : 3 at 100 kHz, differential: 3 at 80 kHz	Single phase : 3 at 100 kHz, differential: 3 at 80 kHz	Single phase : 3 at 100 kHz, differential: 3 at 80 kHz
Cable length			
• Cable length, shielded, max.	500 m; 50 m for technological functions	500 m; 50 m for technological functions	500 m; 50 m for technological functions
• Cable length unshielded, max.	300 m; For technological functions: No	300 m; For technological functions: No	300 m; For technological functions: No
Digital outputs			
Number of digital outputs	4; Relay	4	4; Relay
• of which high-speed outputs		2; 100 kHz Pulse Train Output	
Short-circuit protection	No; to be provided externally	No; to be provided externally	No; to be provided externally
Limitation of inductive shutdown voltage to		L+ (-48 V)	
Switching capacity of the outputs			
• with resistive load, max.	2 A	0.5 A	2 A
• on lamp load, max.	30 W DC; 200 W AC	5 W	30 W DC; 200 W AC
Output voltage			
• for signal "0" (DC), max.		0.1 V; with 10k ohms load	
• for signal "1", min.		20 V	
Output current			
• for signal "1" rated value		0.5 A	
• for signal "0" residual current, max.		0.1 mA	
Output delay with resistive load			
• 0 to "1", max.	10 ms; max.	1 µs; max.	10 ms; max.
• 1 to "0", max.	10 ms; max.	5 µs; max.	10 ms; max.
Parallel switching of 2 outputs			
• for increased power	No		No
Switching frequency			
• of the pulse outputs, with resistive load, max.	1 Hz	100 kHz	1 Hz
Cable length			
• Cable length, shielded, max.	500 m	500 m	500 m
• Cable length unshielded, max.	150 m	150 m	150 m

Technical specifications (continued)

	6ES7 211-1BD30-0XB0	6ES7 211-1AD30-0XB0	6ES7 211-1HD30-0XB0
Product-type designation	CPU 1211C AC/DC/Relay	CPU 1211C DC/DC/DC	CPU 1211C DC/DC/Relay
Relay outputs			
Number of relay outputs	4		4
Number of operating cycles	mechanically 10 million, at rated load voltage 100,000		mechanically 10 million, at rated load voltage 100,000
Analog inputs			
Number of analog inputs	2	2	2
Number of analog inputs for voltage/current measurement	2		2
Cable length, shielded, max.	100 m; twisted and shielded	100 m; twisted and shielded	100 m; twisted and shielded
Input ranges			
• Voltage	Yes	Yes	Yes
Input ranges (rated values), voltages			
• 0 to +10 V	Yes	Yes	Yes
• Input resistance (0 to 10 V)	≥100k ohms	≥100k ohms	≥100k ohms
Analog value creation			
Integrations and conversion time/ resolution per channel			
• Resolution with overrange (bit including sign), max.	10 bit	10 bit	10 bit
• Integration time, parameterizable	Yes	Yes	Yes
• Conversion time (per channel)	625 µs	625 µs	625 µs
Formation of analog values (in isochronous mode)			
Cable length			
• Max. cable length, shielded	10 m; twisted	10 m; twisted	10 m; twisted
Encoder supply			
24 V encoder supply			
• 24 V	permissible range: 20.4 to 28.8 V	permissible range: 20.4 to 28.8 V	permissible range: 20.4 to 28.8 V
Encoder			
Connectable encoders			
• 2-wire BEROS	Yes	Yes	Yes
Integrated Functions			
Number of counters	3	3	3
Counter frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency meter	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes
PID controller	Yes	Yes	Yes
Number of alarm inputs	4	4	4
Number of pulse outputs		2	
Limit frequency (pulse)		100 kHz	
Operator control and monitoring			
Display			
• integrated	No	No	No
Galvanic isolation			
Galvanic isolation digital inputs			
• Galvanic isolation digital inputs	500 V AC for 1 minute	500 V AC for 1 minute	500 V AC for 1 minute
• between the channels, in groups of	1	1	1

Technical specifications (continued)

	6ES7 211-1BD30-0XB0	6ES7 211-1AD30-0XB0	6ES7 211-1HD30-0XB0
Product-type designation	CPU 1211C AC/DC/Relay	CPU 1211C DC/DC/DC	CPU 1211C DC/DC/Relay
Galvanic isolation digital outputs			
• Galvanic isolation digital outputs	Yes; Relays	Yes	Relays
• between the channels	No	No	No
• between the channels, in groups of	1	1	1
Permissible potential difference			
between different circuits	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC
EMC			
Interference immunity against discharge of static electricity			
• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	Yes	Yes	Yes
- Test voltage with air discharge	8 kV	8 kV	8 kV
- Test voltage with contact discharge	6 kV	6 kV	6 kV
Interference immunity to cable-borne interference			
• on the supply lines acc. to IEC 61000-4-4	Yes	Yes	Yes
• Interference immunity on signal lines acc. to IEC 61000-4-4	Yes	Yes	Yes
Immunity to surge voltages			
• on the supply lines acc. to IEC 61000-4-5	Yes	Yes	Yes
Immunity to conducted interference, induced by high-frequency fields			
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6	Yes	Yes	Yes
Emission of radio interference in accordance with EN 55 011			
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes; Group 1	Yes; Group 1	Yes; Group 1
• Emission of radio interference acc. to EN 55 011 (limit class B)	Yes	Yes	Yes
Climatic and mechanical conditions for storage and transport			
Climatic conditions for storage and transport			
• Free fall			
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package
• Temperature			
- permissible temperature range	-40 °C ... +70 °C	-40 °C ... +70 °C	-40 °C ... +70 °C
• Relative humidity			
- permissible range (without condensation) at 25 °C	95%	95%	95%

Technical specifications (continued)

	6ES7 211-1BD30-0XB0	6ES7 211-1AD30-0XB0	6ES7 211-1HD30-0XB0
Product-type designation	CPU 1211C AC/DC/Relay	CPU 1211C DC/DC/DC	CPU 1211C DC/DC/Relay
Mechanical and climatic conditions during operation			
Climatic conditions during operation			
• Temperature			
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted 95% rel. humidity, no condensation	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted 95% rel. humidity, no condensation
- permissible temperature change	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min
• Atmospheric pressure acc. to IEC 60068-2-13			
- permissible atmospheric pressure	1080 ... 795 hPa	1080 ... 795 hPa	1080 ... 795 hPa
- permissible operating altitude	-1000m ... 2000m	-1000m ... 2000m	-1000m ... 2000m
• Concentration of pollutants			
- SO_2 at RH < 60% without condensation	< 0.5 ppm	< 0.5 ppm	< 0.5 ppm
- H_2S at RH < 60% without condensation	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm
Environmental requirements			
Operating temperature			
• min.	0 °C	0 °C	0 °C
• max.	55 °C	55 °C	55 °C
• vertical installation, min.	0 °C	0 °C	0 °C
• vertical installation, max.	45 °C	45 °C	45 °C
• horizontal installation, min.	0 °C	0 °C	0 °C
• horizontal installation, max.	55 °C	55 °C	55 °C
Storage/transport temperature			
• min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
Air pressure			
• Operation, min.	795 hPa	795 hPa	795 hPa
• Operation, max.	1 080 hPa	1 080 hPa	1 080 hPa
• Storage/transport, min.	660 hPa	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa	1 080 hPa
Relative humidity			
• Operation, max.	95 %; no condensation	95 %; no condensation	95 %; no condensation
Vibrations			
• Vibrations	2*g* wall mounting, 1*g* DIN rail	2*g* wall mounting, 1*g* DIN rail	2*g* wall mounting, 1*g* DIN rail
• Operation, checked according to IEC 60068-2-6	Yes	Yes	Yes
Shock test			
• checked according to IEC 60068-2-27	Yes; IEC 68, Part 2-27 half-sine: Strength of the shock 15 g (peak value), duration 11 ms	Yes; IEC 68, Part 2-27 half-sine: Strength of the shock 15 g (peak value), duration 11 ms	Yes; IEC 68, Part 2-27 half-sine: Strength of the shock 15 g (peak value), duration 11 ms
Degree of protection			
IP20	Yes	Yes	Yes
Standards, approvals, certificates			
CE mark	Yes	Yes	Yes
C-TICK	Yes	Yes	Yes
cULus	Yes	Yes	Yes
FM approval	Yes	Yes	Yes

Technical specifications (continued)

	6ES7 211-1BD30-0XB0	6ES7 211-1AD30-0XB0	6ES7 211-1HD30-0XB0
Product-type designation	CPU 1211C AC/DC/Relay	CPU 1211C DC/DC/DC	CPU 1211C DC/DC/Relay
Dimensions and weight			
Dimensions			
• Width	90 mm	90 mm	90 mm
• Height	100 mm	100 mm	100 mm
• Depth	75 mm	75 mm	75 mm
Weight			
• Weight, approx.	420 g	370 g	380 g

4

Ordering data

		Order No.
CPU 1211C **Compact CPU, AC/DC/relay**; integrated program/data memory 25 kbyte, load memory 1 Mbyte; wide-range power supply 85 ... 264 V AC; Boolean execution times 0.1 µs per operation; 6 digital inputs, 4 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules and 1 signal board; digital inputs can be used as HSC at 100 kHz	C	**6ES7 211-1BD30-0XB0**
CPU 1211C **Compact CPU, DC/DC/DC**; integrated program/data memory 25 kbyte, load memory 1 Mbyte; power supply 24 V DC; Boolean execution times 0.1 µs per operation; 6 digital inputs, 4 digital outputs, 2 analog inputs; expandable by up to 3 communication modules and 1 signal board; digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	C	**6ES7 211-1AD30-0XB0**
CPU 1211C **Compact CPU, DC/DC/relay**; integrated program/data memory 25 kbyte, load memory 1 Mbyte; power supply 24 V DC; Boolean execution times 0.1 µs per operation; 6 digital inputs, 4 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules and 1 signal board; digital inputs can be used as HSC at 100 kHz	C	**6ES7 211-1HD30-0XB0**

		Order No.
Accessories		
SB 1221 signal board		
4 inputs, 5 V DC, 200 kHz	C	**6ES7 221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	C	**6ES7 221-3BD30-0XB0**
SB 1222 signal board		
4 outputs, 5 V DC, 0.1 A, 200 kHz	C	**6ES7 222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	C	**6ES7 222-1BD30-0XB0**
SB 1223 signal board		
2 inputs, 24 V DC, IEC type 1 active high; 2 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	C	**6ES7 223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	C	**6ES7 223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	C	**6ES7 223-3BD30-0XB0**
SB 1232 signal board 1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	C	**6ES7 232-4HA30-0XB0**
Simulator (optional)		
8 input switches, for CPU 1211C / CPU 1212C	C	**6ES7 274-1XF30-0XA0**
SIMATIC Memory Card (optional)		
2 MB	C	**6ES7 954-8LB00-0AA0**
24 MB		**6ES7 954-8LF00-0AA0**
Terminal block (spare part)		
For CPU 1211/1212		
For DI, with 14 screws, tin-plated; 4 units	C	**6ES7 292-1AH30-0XA0**
For DO, with 8 screws, tin-plated; 4 units	C	**6ES7 292-1AP30-0XA0**
For AI, with 3 screws, tin-plated; 4 units	C	**6ES7 292-1BC30-0XA0**

C: Subject to export regulations: AL: N and ECCN: EAR99H

CPU 1211C

Ordering data

		Order No.
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**

B: Subject to export regulations: AL: N and ECCN: EAR99T

		Order No.
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

Overview

- The superior compact solution
- With 14 integral input/outputs
- Expandable by:
  - 1 signal board (SB)
  - 2 signal modules (SM)
  - Max. 3 communication modules (CM)

Design

The compact CPU 1212C has:

- 3 device versions with different power supply and control voltages
- Integrated power supply either as wide-range AC or DC power supply (85 to 264 V AC or 24 V DC)
- Integrated 24 V encoder/load current supply:
  For direct connection of sensors and encoders. With 300 mA output current also for use as load power supply
- 8 integrated digital inputs 24 V DC (current sinking/current sourcing (IEC type 1 current sinking))
- 6 integrated digital outputs, either 24 V DC or relay
- 2 integrated analog inputs 0 to 10 V
- 2 pulse outputs (PTO) with a frequency of up to 100 kHz
- Pulse-width modulated outputs (PWM) with a frequency of up to 100 kHz
- Integrated Ethernet interface (TCP/IP native, ISO-on-TCP)
- 4 fast counters (3 with max. 100 kHz; 1 with max. 30 kHz), with parameterizable enable and reset inputs, can be used simultaneously as up and down counters with 2 separate inputs or for connecting incremental encoders
- Expansion by additional communication interfaces, e.g. RS485 or RS232
- Expansion by analog or digital signals directly on the CPU via signal board (with retention of CPU mounting dimensions)
- Expansion by a wide range of analog and digital input and output signals via signal modules
- Optional memory expansion (SIMATIC Memory Card)
- PID controller with auto-tuning functionality
- Integral real-time clock
- Interrupt inputs:
  For extremely fast response to rising or falling edges of process signals
- Removable terminals on all modules
- Simulator (optional):
  For simulating the integrated inputs and for testing the user program

Device versions

Version	Supply voltage	Input voltage DI	Output voltage DO	Output current
• DC/DC/DC	24 V DC	24 V DC	24 V DC	0.5 A, transistor
• DC/DC/relay	24 V DC	24 V DC	5 … 30 V DC / 5 … 250 V AC	2 A; 30 W DC / 200 W AC
• AC/DC/relay	85 … 264 V AC	24 V DC	5 … 30 V DC / 5 … 250 V AC	2 A; 30 W DC / 200 W AC

CPU 1212C

Function

- Comprehensive instruction set:
  A wide range of operations facilitate programming:
  - basic operations such as binary logic operations, result allocation, save, count, create times, load, transfer, compare, shift, rotate, create complement, call subprogram (with local variables)
  - integral communication commands (e.g. USS protocol, Modbus RTU, S7 communication "T-Send/T-Receive" or Freeport)
  - user-friendly functions such as pulse-width modulation, pulse sequence function, arithmetic functions, floating point arithmetic, PID closed-loop control, jump functions, loop functions and code conversions
  - mathematical functions, e.g. SIN, COS, TAN, LN, EXP
- Counting:
  User-friendly counting functions in conjunction with the integrated counters and special commands for high-speed counters open up new application areas for the user
- Interrupt processing:
  - edge-triggered interrupts (activated by rising or falling edges of process signals on interrupt inputs) support a rapid response to process events.
  - time-triggered interrupts.
  - counter interrupts can be triggered when a setpoint is reached or when the direction of counting changes.
  - communication interrupts allow the rapid and easy exchange of information with peripheral devices such as printers or bar code readers
- Password protection
- Test and diagnostics functions:
  Easy-to-use functions support testing and diagnostics, e.g. online/offline diagnostics
- "Forcing" of inputs and outputs during testing and diagnostics:
  Inputs and outputs can be set independently of cycle and thus permanently, for example, to test the user program
- Motion Control in accordance with PLCopen for simple movements
- Library functionality

Programming

The STEP 7 Basic programming package permits complete programming of all S7-1200 controllers and the associated I/O.

Technical specifications

	6ES7 212-1BD30-0XB0	6ES7 212-1AD30-0XB0	6ES7 212-1HD30-0XB0
Product-type designation	CPU 1212C AC/DC/Relay	CPU 1212C DC/DC/DC	CPU 1212C AC/DC/Relay
Product version			
associated programming package	STEP 7 Basic V10.5	STEP 7 Basic V10.5	STEP 7 Basic V10.5
Supply voltages			
Rated value			
• 24 V DC		Yes	Yes
• permissible range, lower limit (DC)		20.4 V	20.4 V
• permissible range, upper limit (DC)		28.8 V	28.8 V
• 120 V AC	Yes		
• 230 V AC	Yes		
• permissible range, lower limit (AC)	85 V		
• permissible range, upper limit (AC)	264 V		
• permissible frequency range, lower limit	47 Hz		
• permissible frequency range, upper limit	63 Hz		
Load voltage L+			
• Rated value (DC)	24 V	24 V	24 V
• permissible range, lower limit (DC)	5 V	20.4 V	5 V
• permissible range, upper limit (DC)	250 V	28.8 V	250 V
Current consumption			
Current consumption (rated value)	80 mA at 120 V AC 40 mA at 240 V AC		175 mA; Typical
Current consumption, max.	240 mA at 120 V AC 120 mA at 240 V AC	1.2 A; 24 V DC	1.2 A; 24 V DC
Inrush current, max.	20 A; at 264 V	12 A; 28.8 VDC	12 A; At 28.8 V
Current output to backplane bus (DC 5 V), max.	1 000 mA; 5 V DC max. for SM and CM	1 000 mA; 5 V DC max. for SM and CM	1 000 mA; 5 V DC max. for SM and CM
Power loss			
Power loss, typ.	11 W	9 W	9 W
Memory			
Available project memory/user memory	25 kbyte	25 kbyte	25 kbyte

Technical specifications (continued)

	6ES7 212-1BD30-0XB0	6ES7 212-1AD30-0XB0	6ES7 212-1HD30-0XB0
Product-type designation	CPU 1212C AC/DC/Relay	CPU 1212C DC/DC/DC	CPU 1212C AC/DC/Relay
Work memory			
• integrated	25 kbyte	25 kbyte	25 kbyte
• expandable	No	No	No
Load memory			
• integrated	1 Mbyte	1 Mbyte	1 Mbyte
• expandable	24 Mbyte; with SIEMENS Memory Card	24 Mbyte; with SIEMENS Memory Card	24 Mbyte; with SIEMENS Memory Card
Backup			
• present	Yes; entire project maintenance-free in the integral EEPROM	Yes; entire project maintenance-free in the integral EEPROM	Yes; entire project maintenance-free in the integral EEPROM
• without battery	Yes	Yes	Yes
CPU/ blocks			
Number of blocks (total)	DBs, FCs, FBs, counters, timers). Up to 65,535 blocks can be addressed. There is no limit, use of the entire work memory	DBs, FCs, FBs, counters, timers). Up to 65,535 blocks can be addressed. There is no limit, use of the entire work memory	DBs, FCs, FBs, counters, timers). Up to 65,535 blocks can be addressed. There is no limit, use of the entire work memory
OB			
• Number, max.	Limited only by RAM for code	Limited only by RAM for code	Limited only by RAM for code
CPU/ processing times			
for bit operations, min.	0.1 µs; / instruction	0.1 µs; / instruction	0.1 µs; / instruction
for word operations, min.	12 µs; / instruction	12 µs; / instruction	12 µs; / instruction
for floating point arithmetic, min.	18 µs; / instruction	18 µs; / instruction	18 µs; / instruction
Data areas and their retentivity			
retentive data area in total (incl. times, counters, flags), max.	2 048 byte	2 048 byte	2 048 byte
Flag			
• Number, max.	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area
Address area			
I/O address area			
• I/O address area, overall	1024 bytes for inputs / 1024 bytes for outputs	1024 bytes for inputs / 1024 bytes for outputs	1024 bytes for inputs / 1024 bytes for outputs
• overall	1 024 byte	1 024 byte	1 024 byte
• Outputs	1 024 byte	1 024 byte	1 024 byte
Process image			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte
Digital channels			
• integrated channels (DI)	8	8	8
• integrated channels (DO)	6	6	6
Analog channels			
• Integrated channels (AI)	2	2	2
• Integrated channels (AO)	0	0	0
Hardware configuration			
Number of modules per system, max.	3 communication modules, 1 signal board, 2 signal modules	3 communication modules, 1 signal board, 2 signal modules	3 communication modules, 1 signal board, 2 signal modules

Technical specifications (continued)

	6ES7 212-1BD30-0XB0	6ES7 212-1AD30-0XB0	6ES7 212-1HD30-0XB0
Product-type designation	CPU 1212C AC/DC/Relay	CPU 1212C DC/DC/DC	CPU 1212C AC/DC/Relay
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes
• Backup time	240 h; Typical	240 h; Typical	240 h; Typical
• Deviation per day, max.	60 s/month at 25°C	60 s/month at 25°C	60 s/month at 25°C
Test commissioning functions			
Status/control			
• Status/control variable	Yes	Yes	Yes
• Variables	Inputs/outputs, memory bits, DB, distributed I/Os, timers, counters	Inputs/outputs, memory bits, DB, distributed I/Os, timers, counters	Inputs/outputs, memory bits, DB, distributed I/Os, timers, counters
Forcing			
• Forcing	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
• as server	Yes	Yes	Yes
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
Number of connections			
• overall	15; dynamically	15; dynamically	15; dynamically
1st interface			
Type of interface	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Isolated	Yes	Yes	Yes
automatic detection of transmission speed	Yes	Yes	Yes
Autonegotiation	Yes	Yes	Yes
Autocrossover	Yes	Yes	Yes
CPU/ programming			
Configuration software			
• STEP 7	STEP 7 Basic V10.5	STEP 7 Basic V10.5	STEP 7 Basic V10.5
Programming language			
• LAD	Yes	Yes	Yes
• FBD	Yes	Yes	Yes
Cycle time monitoring			
• can be set	Yes	Yes	Yes
Digital inputs			
Number of digital inputs	8; Integrated	8; Integrated	8; Integrated
• of which, inputs usable for technological functions	4; HSC (High Speed Counting)	4; HSC (High Speed Counting)	4; HSC (High Speed Counting)
m/p-reading	Yes	Yes	Yes
Number of simultaneously controllable inputs			
• All mounting positions - Concurrently controllable inputs, up to 40 °C	8	8	8

Technical specifications (continued)

	6ES7 212-1BD30-0XB0	6ES7 212-1AD30-0XB0	6ES7 212-1HD30-0XB0
Product-type designation	CPU 1212C AC/DC/Relay	CPU 1212C DC/DC/DC	CPU 1212C AC/DC/Relay
Input voltage			
• Rated value, DC	24 V	24 V	24 V
• for signal "0"	5 V DC at 1 mA	5 V DC at 1 mA	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA	15 V DC at 2.5 mA	15 V DC at 2.5 mA
Input current			
• for signal "1", typ.	1 mA	1 mA	1 mA
Input delay (for rated value of input voltage)			
• for standard inputs			
- parameterizable	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four
- at "0" to "1", min.	0.2 ms	0.2 ms	0.2 ms
- at "0" to "1", max.	12.8 ms	12.8 ms	12.8 ms
• for interrupt inputs			
- parameterizable	Yes	Yes	Yes
• for counter/technological functions			
- parameterizable	Single phase : 3 at 100 kHz, 1 at 30 kHz differential: 3 at 80 kHz, 1 at 30 kHz	Single phase : 3 at 100 kHz, 1 at 30 kHz differential: 3 at 80 kHz, 1 at 30 kHz	Single phase : 3 at 100 kHz, 1 at 30 kHz differential: 3 at 80 kHz, 1 at 30 kHz
Cable length			
• Cable length, shielded, max.	500 m; 50 m for technological functions	500 m; 50 m for technological functions	500 m; 50 m for technological functions
• Cable length unshielded, max.	300 m; For technological functions: No	300 m; For technological functions: No	300 m; For technological functions: No
Digital outputs			
Number of digital outputs	6; Relay	6	6; Relay
• of which high-speed outputs		2; 100 kHz Pulse Train Output	
Short-circuit protection	No; to be provided externally	No; to be provided externally	No; to be provided externally
Limitation of inductive shutdown voltage to		L+ (-48 V)	
Switching capacity of the outputs			
• with resistive load, max.	2 A	0.5 A	2 A
• on lamp load, max.	30 W DC; 200 W AC	5 W	30 W DC; 200 W AC
Output voltage			
• for signal "0" (DC), max.		0.1 V; with 10k ohms load	
• for signal "1", min.		20 V	
Output current			
• for signal "1" rated value		0.5 A	
• for signal "0" residual current, max.		0.1 mA	
Output delay with resistive load			
• 0 to "1", max.	10 ms; max.	1 µs	10 ms; max.
• 1 to "0", max.	10 ms; max.	5 µs	10 ms; max.
Switching frequency			
• of the pulse outputs, with resistive load, max.	1 Hz	100 kHz	1 Hz
Cable length			
• Cable length, shielded, max.	500 m	500 m	500 m
• Cable length unshielded, max.	150 m	150 m	150 m

Technical specifications (continued)

	6ES7 212-1BD30-0XB0	6ES7 212-1AD30-0XB0	6ES7 212-1HD30-0XB0
Product-type designation	CPU 1212C AC/DC/Relay	CPU 1212C DC/DC/DC	CPU 1212C AC/DC/Relay
Relay outputs			
Number of relay outputs	6		6
Number of operating cycles	mechanically 10 million, at rated load voltage 100,000		mechanically 10 million, at rated load voltage 100,000
Analog inputs			
Number of analog inputs	2	2	2
Cable length, shielded, max.	100 m; twisted and shielded	100 m; twisted and shielded	100 m; twisted and shielded
Input ranges			
• Voltage	Yes	Yes	Yes
Input ranges (rated values), voltages			
• 0 to +10 V	Yes	Yes	Yes
• Input resistance (0 to 10 V)	≥100k ohms	≥100k ohms	≥100k ohms
Analog value creation			
Integrations and conversion time/ resolution per channel			
• Resolution with overrange (bit including sign), max.	10 bit	10 bit	10 bit
• Integration time, parameterizable	Yes	Yes	Yes
• Conversion time (per channel)	625 µs	625 µs	625 µs
Formation of analog values (in isochronous mode)			
Cable length			
• Max. cable length, shielded	10 m; twisted	10 m; twisted	10 m; twisted
Encoder supply			
24 V encoder supply			
• 24 V	permissible range: 20.4 to 28.8 V	permissible range: 20.4 to 28.8 V	permissible range: 20.4 to 28.8 V
Encoder			
Connectable encoders			
• 2-wire BEROS	Yes	Yes	Yes
Integrated Functions			
Number of counters	4	4	4
Counter frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency meter	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes
PID controller	Yes	Yes	Yes
Number of alarm inputs	4	4	4
Number of pulse outputs		2	
Limit frequency (pulse)		100 kHz	
Operator control and monitoring			
Display			
• integrated	No	No	No
Galvanic isolation			
Galvanic isolation digital inputs			
• Galvanic isolation digital inputs	500 V AC for 1 minute	500 V AC for 1 minute	500 V AC for 1 minute
• between the channels, in groups of	1	1	1

Technical specifications (continued)

	6ES7 212-1BD30-0XB0	6ES7 212-1AD30-0XB0	6ES7 212-1HD30-0XB0
Product-type designation	CPU 1212C AC/DC/Relay	CPU 1212C DC/DC/DC	CPU 1212C AC/DC/Relay
Galvanic isolation digital outputs			
• Galvanic isolation digital outputs	Yes; Relays	Yes	Relays
• between the channels	No	No	No
• between the channels, in groups of	2	2	1
Permissible potential difference			
between different circuits	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC
EMC			
Interference immunity against discharge of static electricity			
• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	Yes	Yes	Yes
- Test voltage with air discharge	8 kV	8 kV	8 kV
- Test voltage with contact discharge	6 kV	6 kV	6 kV
Interference immunity to cable-borne interference			
• on the supply lines acc. to IEC 61000-4-4	Yes	Yes	Yes
• Interference immunity on signal lines acc. to IEC 61000-4-4	Yes	Yes	Yes
Immunity to surge voltages			
• on the supply lines acc. to IEC 61000-4-5	Yes	Yes	Yes
Immunity to conducted interference, induced by high-frequency fields			
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6	Yes	Yes	Yes
Emission of radio interference in accordance with EN 55 011			
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes; Group 1	Yes; Group 1	Yes; Group 1
• Emission of radio interference acc. to EN 55 011 (limit class B)	Yes	Yes	Yes
Climatic and mechanical conditions for storage and transport			
Climatic conditions for storage and transport			
• Free fall			
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package
• Temperature			
- permissible temperature range	-40 °C ... +70 °C	-40 °C ... +70 °C	-40 °C ... +70 °C
• Relative humidity			
- permissible range (without condensation) at 25 °C	95%	95%	95%

Technical specifications (continued)

	6ES7 212-1BD30-0XB0	6ES7 212-1AD30-0XB0	6ES7 212-1HD30-0XB0
Product-type designation	CPU 1212C AC/DC/Relay	CPU 1212C DC/DC/DC	CPU 1212C AC/DC/Relay
Mechanical and climatic conditions during operation			
Climatic conditions during operation			
• Temperature			
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
- permissible temperature change	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min
• Atmospheric pressure acc. to IEC 60068-2-13			
- permissible atmospheric pressure	1080 ... 795 hPa	1080 ... 795 hPa	1080 ... 795 hPa
- permissible operating altitude	-1000m ... 2000m	-1000m ... 2000m	-1000m ... 2000m
• Concentration of pollutants			
- SO_2 at RH < 60% without condensation	< 0.5 ppm	< 0.5 ppm	< 0.5 ppm
- H_2S at RH < 60% without condensation	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm
Environmental requirements			
Operating temperature			
• Min.	0 °C	0 °C	0 °C
• max.	55 °C	55 °C	55 °C
• vertical installation, min.	0 °C	0 °C	0 °C
• vertical installation, max.	45 °C	45 °C	45 °C
• horizontal installation, min.	0 °C	0 °C	0 °C
• horizontal installation, max.	55 °C	55 °C	55 °C
Storage/transport temperature			
• Min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
Air pressure			
• Operation, min.	795 hPa	795 hPa	795 hPa
• Operation, max.	1 080 hPa	1 080 hPa	1 080 hPa
• Storage/transport, min.	660 hPa	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa	1 080 hPa
Relative humidity			
• Operation, max.	95 %; no condensation	95 %; no condensation	95 %; no condensation
Vibrations			
• Vibrations	2*g* panel mount, 1*g* DIN rail mount	2*g* panel mount, 1*g* DIN rail mount	2*g* panel mount, 1*g* DIN rail mount
• Operation, checked according to IEC 60068-2-6	Yes	Yes	Yes
Shock test			
• checked according to IEC 60068-2-27	Yes; 15 G, 11 ms pulse, 6 shocks in each of 3 axes	Yes; 15 G, 11 ms pulse, 6 shocks in each of 3 axes	Yes; 15 G, 11 ms pulse, 6 shocks in each of 3 axes
Degree of protection			
IP20	Yes	Yes	Yes
Standards, approvals, certificates			
CE mark	Yes	Yes	Yes
C-TICK	Yes	Yes	Yes
cULus	Yes	Yes	Yes
FM approval	Yes	Yes	Yes

Technical specifications (continued)

	6ES7 212-1BD30-0XB0	6ES7 212-1AD30-0XB0	6ES7 212-1HD30-0XB0
Product-type designation	CPU 1212C AC/DC/Relay	CPU 1212C DC/DC/DC	CPU 1212C AC/DC/Relay
Dimensions and weight			
Dimensions			
• Width	90 mm	90 mm	90 mm
• Height	100 mm	100 mm	100 mm
• Depth	75 mm	75 mm	75 mm
Weight			
• Weight, approx.	425 g	370 g	385 g

4

Ordering data

		Order No.
CPU 1212C **Compact CPU, AC/DC/relay**; integral program/data memory 25 kbyte, load memory 1 Mbyte; wide-range power supply 85 ... 264 V AC; Boolean execution times 0.1 µs per operation; 8 digital inputs, 6 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules, 2 signal modules and 1 signal board; digital inputs can be used as HSC at 100 kHz	C	**6ES7 212-1BD30-0XB0**
CPU 1212C **Compact CPU, DC/DC/DC**; integrated program/data memory 25 kbyte, load memory 1 Mbyte; power supply 24 V DC; Boolean execution times 0.1 µs per operation; 8 digital inputs, 6 digital outputs, 2 analog inputs; expandable by up to 3 communication modules, 2 signal modules, and 1 signal board; digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	C	**6ES7 212-1AD30-0XB0**
CPU 1212C **Compact CPU, DC/DC/relay**; integrated program/data memory 25 kbyte, load memory 1 Mbyte; power supply 24 V DC; Boolean execution times 0.1 µs per operation; 8 digital inputs, 6 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules, 2 signal modules, and 1 signal board; digital inputs can be used as HSC at 100 kHz	C	**6ES7 212-1HD30-0XB0**

B: Subject to export regulations: AL: N and ECCN: EAR99T

		Order No.
Accessories		
SB 1221 signal board		
4 inputs, 5 V DC, 200 kHz	C	**6ES7 221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	C	**6ES7 221-3BD30-0XB0**
SB 1222 signal board		
4 outputs, 5 V DC, 0.1 A, 200 kHz	C	**6ES7 222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	C	**6ES7 222-1BD30-0XB0**
SB 1223 signal board		
2 inputs, 24 V DC, IEC type 1 active high; 2 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	C	**6ES7 223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	C	**6ES7 223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	C	**6ES7 223-3BD30-0XB0**
SB 1232 signal board 1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	C	**6ES7 232-4HA30-0XB0**
Simulator (optional)		see CPU 1211C, page 4/13
SIMATIC Memory Card (optional)		
2 MB	C	**6ES7 954-8LB00-0AA0**
24 MB		**6ES7 954-8LF00-0AA0**
Extension cable for two-tier configuration for connecting digital/analog signal modules; length 2 m	C	**6ES7 290-6AA30-0XA0**
Starter box CPU 1212C AC/DC/relay Complete offer SIMATIC S7-1200, starter box, comprising: CPU 1212C AC/DC/relay, simulator, STEP 7 BASIC CD, manual CD, info material, in Systainer	B	**6ES7 212-1BD30-4YB0**
Terminal block (spare part)		see CPU 1211C, page 4/13

C: Subject to export regulations: AL: N and ECCN: EAR99H

CPU 1212C

Ordering data

		Order No.
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**

B: Subject to export regulations: AL: N and ECCN: EAR99T

		Order No.
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

Overview

- The compact high-performance CPU
- With 24 integral input/outputs
- Expandable by:
  - 1 signal board (SB)
  - 8 signal modules (SM)
  - max. 3 communication modules (CM)

Design

The compact CPU 1214C has:

- 3 device versions with different power supply and control voltages
- Integrated power supply either as wide-range AC or DC power supply (85 to 264 V AC or 24 V DC)
- Integrated 24 V encoder/load current supply:
  For direct connection of sensors and encoders. With 400 mA, the output current can also be used as load power supply
- 14 integrated digital inputs 24 V DC (current sinking/current sourcing (IEC type 1 current sinking))
- 10 integrated digital outputs, either 24 V DC or relay
- 2 integrated analog inputs 0 to 10 V
- 2 pulse outputs (PTO) with a frequency of up to 100 kHz
- Pulse-width modulated outputs (PWM) with a frequency of up to 100 kHz
- Integrated Ethernet interface (TCP/IP native, ISO-on-TCP)
- 6 fast counters (3 with max. 100 kHz; 3 with max. 30 kHz), with parameterizable enable and reset inputs, can be used simultaneously as up and down counters with 2 separate inputs or for connecting incremental encoders
- Expansion by additional communication interfaces, e.g. RS485 or RS232
- Expansion by analog or digital signals directly on the CPU via signal board (with retention of CPU mounting dimensions)
- Expansion by a wide range of analog and digital input and output signals via signal modules
- Optional memory expansion (SIMATIC Memory Card)
- PID controller with auto-tuning functionality
- Integral real-time clock
- Interrupt inputs:
  For extremely fast response to rising or falling edges of process signals
- Removable terminals on all modules
- Simulator (optional):
  For simulating the integrated inputs and for testing the user program

Device versions

Version	Supply voltage	Input voltage DI	Output voltage DO	Output current
• DC/DC/DC	24 V DC	24 V DC	24 V DC	0.5 A, transistor
• DC/DC/relay	24 V DC	24 V DC	5 … 30 V DC / 5 … 250 V AC	2 A; 30 W DC / 200 W AC
• AC/DC/relay	85 … 264 V AC	24 V DC	5 … 30 V DC / 5 … 250 V AC	2 A; 30 W DC / 200 W AC

CPU 1214C

Function

- Comprehensive instruction set:
  A wide range of operations facilitate programming:
  - basic operations such as binary logic operations, result allocation, save, count, create times, load, transfer, compare, shift, rotate, create complement, call subprogram (with local variables)
  - integral communication commands (e.g. USS protocol, Modbus RTU, S7 communication "T-Send/T-Receive" or Freeport)
  - user-friendly functions such as pulse-width modulation, pulse sequence function, arithmetic functions, floating point arithmetic, PID closed-loop control, jump functions, loop functions and code conversions
  - mathematical functions, e.g. SIN, COS, TAN, LN, EXP
- Counting:
  User-friendly counting functions in conjunction with the integrated counters and special commands for high-speed counters open up new application areas for the user
- Interrupt processing:
  - edge-triggered interrupts (activated by rising or falling edges of process signals on interrupt inputs) support a rapid response to process events
  - time-triggered interrupts
  - counter interrupts can be triggered when a setpoint is reached or when the direction of counting changes
  - communication interrupts allow the rapid and easy exchange of information with peripheral devices such as printers or bar code readers
- Password protection
- Test and diagnostics functions:
  Easy-to-use functions support testing and diagnostics, e.g. online/offline diagnostics
- "Forcing" of inputs and outputs during testing and diagnostics:
  Inputs and outputs can be set independently of cycle and thus permanently, for example, to test the user program
- Motion Control in accordance with PLCopen for simple movements
- Library functionality

Programming

The STEP 7 Basic programming package permits complete programming of all S7-1200 controllers and the associated I/O.

Technical specifications

	6ES7 214-1BE30-0XB0	6ES7 214-1AE30-0XB0	6ES7 214-1HE30-0XB0
Product-type designation	CPU 1214C AC/DC/Relay	CPU 1214C DC/DC/DC	CPU 1214C DC/DC/Relay
Product version			
associated programming package	STEP 7 Basic V10.5	STEP 7 Basic V10.5	STEP 7 Basic V10.5
Supply voltages			
Rated value			
• 24 V DC		Yes	Yes
• permissible range, lower limit (DC)		20.4 V	20.4 V
• permissible range, upper limit (DC)		28.8 V	28.8 V
• 120 V AC	Yes		
• 230 V AC	Yes		
• permissible range, lower limit (AC)	85 V		
• permissible range, upper limit (AC)	264 V		
• permissible frequency range, lower limit	47 Hz		
• permissible frequency range, upper limit	63 Hz		
Load voltage L+			
• Rated value (DC)	24 V	24 V	24 V
• permissible range, lower limit (DC)	5 V	20.4 V	5 V
• permissible range, upper limit (DC)	250 V	28.8 V	250 V
Current consumption			
Current consumption (rated value)	100 mA at 120 VAC 50 mA at 240 VAC		500 mA; Typical
Current consumption, max.	300 mA at 120 VAC 150 mA at 240 VAC	1.5 A; 24 VDC	1.2 A; 24 VDC
Inrush current, max.	20 A; at 264 V	12 A; at 28.8 V	12 A; at 28.8 V
Current output to backplane bus (DC 5 V), max.	1 600 mA; 5 V DC max. for SM and CM	1 600 mA; 5 V DC max. for SM and CM	1 600 mA; 5 V DC max. for SM and CM
Power loss			
Power loss, typ.	14 W	12 W	12 W
Memory			
Available project memory/user memory	50 Kibyte	50 Kibyte	50 Kibyte

Technical specifications (continued)

	6ES7 214-1BE30-0XB0	6ES7 214-1AE30-0XB0	6ES7 214-1HE30-0XB0
Product-type designation	CPU 1214C AC/DC/Relay	CPU 1214C DC/DC/DC	CPU 1214C DC/DC/Relay
Work memory			
• integrated	50 kbyte	50 kbyte	50 kbyte
• expandable	No	No	No
Load memory			
• integrated	2 Mbyte	2 Mbyte	2 Mbyte
• expandable	24 Mbyte; with SIEMENS Memory Card	24 Mbyte; with SIEMENS Memory Card	24 Mbyte; with SIEMENS Memory Card
Backup			
• present	Yes; entire project maintenance-free in the integral EEPROM	Yes; entire project maintenance-free in the integral EEPROM	Yes; entire project maintenance-free in the integral EEPROM
• without battery	Yes	Yes	Yes
CPU/ blocks			
Number of blocks (total)	DBs, FCs, FBs, counters, timers). Up to 65,535 blocks can be addressed. There is no limit, use of the entire work memory	DBs, FCs, FBs, counters, timers). Up to 65,535 blocks can be addressed. There is no limit, use of the entire work memory	DBs, FCs, FBs, counters, timers). Up to 65,535 blocks can be addressed. There is no limit, use of the entire work memory
OB			
• Number, max.	Limited only by RAM for code	Limited only by RAM for code	Limited only by RAM for code
CPU/ processing times			
for bit operations, min.	0.1 µs; / instruction	0.1 µs; / instruction	0.1 µs; / instruction
for word operations, min.	12 µs; / instruction	12 µs; / instruction	12 µs; / instruction
for floating point arithmetic, min.	18 µs; / instruction	18 µs; / instruction	18 µs; / instruction
Data areas and their retentivity			
retentive data area in total (incl. times, counters, flags), max.	2 048 byte	2 048 byte	2 048 byte
Flag			
• Number, max.	8 kbyte; Size of bit memory address area	8 kbyte; Size of bit memory address area	8 kbyte; Size of bit memory address area
Address area			
I/O address area			
• I/O address area, overall	1024 bytes for inputs / 1024 bytes for outputs	1024 bytes for inputs / 1024 bytes for outputs	1024 bytes for inputs / 1024 bytes for outputs
• overall	1 024 byte	1 024 byte	1 024 byte
• Outputs	1 024 byte	1 024 byte	1 024 byte
Process image			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte
Digital channels			
• integrated channels (DI)	14	14	14
• integrated channels (DO)	10	10	10
Analog channels			
• Integrated channels (AI)	2	2	2
• Integrated channels (AO)	0	0	0
Hardware configuration			
Number of modules per system, max.	3 comm. modules, 1 signal board, 8 signal modules	3 comm. modules, 1 signal board, 8 signal modules	3 comm. modules, 1 signal board, 8 signal modules

Technical specifications (continued)

	6ES7 214-1BE30-0XB0	6ES7 214-1AE30-0XB0	6ES7 214-1HE30-0XB0
Product-type designation	CPU 1214C AC/DC/Relay	CPU 1214C DC/DC/DC	CPU 1214C DC/DC/Relay
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes
• Backup time	240 h; Typical	240 h; Typical	240 h; Typical
• Deviation per day, max.	60 s/month at 25°C	60 s/month at 25°C	60 s/month at 25°C
Test commissioning functions			
Status/control			
• Status/control variable	Yes	Yes	Yes
• Variables	Inputs/outputs, memory bits, DB, distributed I/Os, timers, counters	Inputs/outputs, memory bits, DB, distributed I/Os, timers, counters	Inputs/outputs, memory bits, DB, distributed I/Os, timers, counters
Forcing			
• Forcing	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
• as server	Yes	Yes	Yes
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
Number of connections			
• overall	15; dynamically	15; dynamically	15; dynamically
1st interface			
Type of interface	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Isolated	Yes	Yes	Yes
automatic detection of transmission speed	Yes	Yes	Yes
Autonegotiation	Yes	Yes	Yes
Autocrossover	Yes	Yes	Yes
CPU/ programming			
Configuration software			
• STEP 7	STEP 7 Basic V10.5	STEP 7 Basic V10.5	STEP 7 Basic V10.5
Programming language			
• LAD	Yes	Yes	Yes
• FBD	Yes	Yes	Yes
Cycle time monitoring			
• can be set	Yes	Yes	Yes
Digital inputs			
Number of digital inputs	14; Integrated	14; Integrated	14; Integrated
• of which, inputs usable for technological functions	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)
m/p-reading	Yes	Yes	Yes
Number of simultaneously controllable inputs			
• Mounting position - Concurrently controllable inputs, up to 40 °C	14	14	14

Technical specifications (continued)

	6ES7 214-1BE30-0XB0	6ES7 214-1AE30-0XB0	6ES7 214-1HE30-0XB0
Product-type designation	CPU 1214C AC/DC/Relay	CPU 1214C DC/DC/DC	CPU 1214C DC/DC/Relay
Input voltage			
• Rated value, DC	24 V	24 V	24 V
• for signal "0"	5 V DC at 1 mA	5 V DC at 1 mA	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA	15 V DC at 2.5 mA	15 V DC at 2.5 mA
Input current			
• for signal "1", typ.	1 mA	1 mA	1 mA
Input delay (for rated value of input voltage)			
• for standard inputs			
- parameterizable	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four
- at "0" to "1", min.	0.2 ms	0.2 ms	0.2 ms
- at "0" to "1", max.	12.8 ms	12.8 ms	12.8 ms
• for interrupt inputs			
- parameterizable	Yes	Yes	Yes
• for counter/technological functions			
- parameterizable	Single phase : 3 at 100 kHz, 3 at 30 kHz differential: 3 at 80 kHz, 3 at 30 kHz	Single phase : 3 at 100 kHz, 3 at 30 kHz differential: 3 at 80 kHz, 3 at 30 kHz	Single phase : 3 at 100 kHz, 3 at 30 kHz differential: 3 at 80 kHz, 3 at 30 kHz
Cable length			
• Cable length, shielded, max.	500 m; 50 m for technological functions	500 m; 50 m for technological functions	500 m; 50 m for technological functions
• Cable length unshielded, max.	300 m; For technological functions: No	300 m; For technological functions: No	300 m; For technological functions: No
Digital outputs			
Number of digital outputs	10; Relay	10	10; Relay
• of which high-speed outputs		2; 100 kHz Pulse Train Output	
Short-circuit protection	No; to be provided externally	No; to be provided externally	No; to be provided externally
Limitation of inductive shutdown voltage to		L+ (-48 V)	
Switching capacity of the outputs			
• with resistive load, max.	2 A	0.5 A	2 A
• on lamp load, max.	30 W DC; 200 W AC	5 W	30 W DC; 200 W AC
Output voltage			
• for signal "1", min.		20 V	
Output current			
• for signal "1" rated value		0.5 A	
• for signal "0" residual current, max.		0.1 mA	
Output delay with resistive load			
• 0 to "1", max.	10 ms; max.	1 µs	10 ms; max.
• 1 to "0", max.	10 ms; max.	5 µs	10 ms; max.
Switching frequency			
• of the pulse outputs, with resistive load, max.	1 Hz	100 kHz	1 Hz
Cable length			
• Cable length, shielded, max.	500 m	500 m	500 m
• Cable length unshielded, max.	150 m	150 m	150 m

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Technical specifications (continued)

	6ES7 214-1BE30-0XB0	6ES7 214-1AE30-0XB0	6ES7 214-1HE30-0XB0
Product-type designation	CPU 1214C AC/DC/Relay	CPU 1214C DC/DC/DC	CPU 1214C DC/DC/Relay
Relay outputs			
Number of relay outputs	10		10
Number of operating cycles	mechanically 10 million, at rated load voltage 100,000		mechanically 10 million, at rated load voltage 100,000
Analog inputs			
Number of analog inputs	2	2	2
Cable length, shielded, max.	100 m; twisted and shielded	100 m; twisted and shielded	100 m; twisted and shielded
Input ranges			
• Voltage	Yes	Yes	Yes
Input ranges (rated values), voltages			
• 0 to +10 V	Yes	Yes	Yes
• Input resistance (0 to 10 V)	≥100 kohms	≥100 kohms	≥100 kohms
Analog value creation			
Integrations and conversion time/ resolution per channel			
• Resolution with overrange (bit including sign), max.	10 bit	10 bit	10 bit
• Integration time, parameterizable	Yes	Yes	Yes
• Conversion time (per channel)	625 µs	625 µs	625 µs
Formation of analog values (in isochronous mode)			
Cable length			
• Max. cable length, shielded	10 m; twisted	10 m; twisted	10 m; twisted
Encoder supply			
24 V encoder supply			
• 24 V	permissible range: 20.4 to 28.8 V	permissible range: 20.4 to 28.8 V	permissible range: 20.4 to 28.8 V
Encoder			
Connectable encoders			
• 2-wire BEROS	Yes	Yes	Yes
Integrated Functions			
Number of counters	6	6	6
Counter frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency meter	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes
PID controller	Yes	Yes	Yes
Number of alarm inputs	4	4	4
Number of pulse outputs		2	
Limit frequency (pulse)		100 kHz	
Operator control and monitoring			
Display			
• integrated	No	No	No
Galvanic isolation			
Galvanic isolation digital inputs			
• Galvanic isolation digital inputs	500 V AC for 1 minute	500 V AC for 1 minute	500 V AC for 1 minute
• between the channels, in groups of	1	1	1

Technical specifications (continued)

	6ES7 214-1BE30-0XB0	6ES7 214-1AE30-0XB0	6ES7 214-1HE30-0XB0
Product-type designation	CPU 1214C AC/DC/Relay	CPU 1214C DC/DC/DC	CPU 1214C DC/DC/Relay
Galvanic isolation digital outputs			
• Galvanic isolation digital outputs	Relays	Yes	Relays
• between the channels	No	No	No
• between the channels, in groups of	2	2	1
Permissible potential difference			
between different circuits	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC
EMC			
Interference immunity against discharge of static electricity			
• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	Yes	Yes	Yes
- Test voltage with air discharge	8 kV	8 kV	8 kV
- Test voltage with contact discharge	6 kV	6 kV	6 kV
Interference immunity to cable-borne interference			
• on the supply lines acc. to IEC 61000-4-4	Yes	Yes	Yes
• Interference immunity on signal lines acc. to IEC 61000-4-4	Yes	Yes	Yes
Immunity to surge voltages			
• on the supply lines acc. to IEC 61000-4-5	Yes	Yes	Yes
Immunity to conducted interference, induced by high-frequency fields			
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6	Yes	Yes	Yes
Emission of radio interference in accordance with EN 55 011			
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes; Group 1	Yes; Group 1	Yes; Group 1
• Emission of radio interference acc. to EN 55 011 (limit class B)	Yes	Yes	Yes
Climatic and mechanical conditions for storage and transport			
Climatic conditions for storage and transport			
• Free fall			
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package
• Temperature			
- permissible temperature range	-40 °C ... +70 °C	-40 °C ... +70 °C	-40 °C ... +70 °C
• Relative humidity			
- permissible range (without condensation) at 25 °C	95%	95%	95%

Technical specifications (continued)

	6ES7 214-1BE30-0XB0	6ES7 214-1AE30-0XB0	6ES7 214-1HE30-0XB0
Product-type designation	CPU 1214C AC/DC/Relay	CPU 1214C DC/DC/DC	CPU 1214C DC/DC/Relay
Mechanical and climatic conditions during operation			
Climatic conditions during operation			
• Temperature			
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
- permissible temperature change	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min
• Atmospheric pressure acc. to IEC 60068-2-13			
- permissible atmospheric pressure	1080 ... 795 hPa	1080 ... 795 hPa	1080 ... 795 hPa
- permissible operating altitude	-1000m ... 2000m	-1000m ... 2000m	-1000m ... 2000m
• Concentration of pollutants			
- SO_2 at RH < 60% without condensation	< 0.5 ppm	< 0.5 ppm	< 0.5 ppm
- H_2S at RH < 60% without condensation	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm
Environmental requirements			
Operating temperature			
• Min.	0 °C	0 °C	0 °C
• max.	55 °C	55 °C	55 °C
• vertical installation, min.	0 °C	0 °C	0 °C
• vertical installation, max.	45 °C	45 °C	45 °C
• horizontal installation, min.	0 °C	0 °C	0 °C
• horizontal installation, max.	55 °C	55 °C	55 °C
Storage/transport temperature			
• Min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
Air pressure			
• Operation, min.	795 hPa	795 hPa	795 hPa
• Operation, max.	1 080 hPa	1 080 hPa	1 080 hPa
• Storage/transport, min.	660 hPa	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa	1 080 hPa
Relative humidity			
• Operation, max.	95 %; no condensation	95 %; no condensation	95 %; no condensation
Vibrations			
• Vibrations	2*g* panel mount, 1*g* DIN rail mount	2*g* panel mount, 1*g* DIN rail mount	2*g* panel mount, 1*g* DIN rail mount
• Operation, checked according to IEC 60068-2-6	Yes	Yes	Yes
Shock test			
• checked according to IEC 60068-2-27	Yes; 15 *g*, 11 ms pulse, 6 shocks in each of 3 axes	Yes; 15 *g*, 11 ms pulse, 6 shocks in each of 3 axes	Yes; 15 *g*, 11 ms pulse, 6 shocks in each of 3 axes
Degree of protection			
IP20	Yes	Yes	Yes
Standards, approvals, certificates			
CE mark	Yes	Yes	Yes
C-TICK	Yes	Yes	Yes
cULus	Yes	Yes	Yes
FM approval	Yes	Yes	Yes

Technical specifications (continued)

	6ES7 214-1BE30-0XB0	6ES7 214-1AE30-0XB0	6ES7 214-1HE30-0XB0
Product-type designation	CPU 1214C AC/DC/Relay	CPU 1214C DC/DC/DC	CPU 1214C DC/DC/Relay
Dimensions and weight			
Dimensions			
• Width	110 mm	110 mm	110 mm
• Height	100 mm	100 mm	100 mm
• Depth	75 mm	75 mm	75 mm
Weight			
• Weight, approx.	455 g	415 g	435 g

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Ordering data

		Order No.
CPU 1214C Compact CPU, AC/DC/relay; integral program/data memory 50 kbyte, load memory 2 Mbyte; wide-range power supply 85 ... 264 V AC; Boolean execution times 0.1 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules, 8 signal modules and 1 signal board; digital inputs can be used as HSC at 100 kHz	C	**6ES7 214-1BE30-0XB0**
CPU 1214C Compact CPU, DC/DC/DC; integrated program/data memory 50 kbyte, load memory 2 Mbyte; power supply 24 V DC; Boolean execution times 0.1 µs per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board; digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	C	**6ES7 214-1AE30-0XB0**
CPU 1214C Compact CPU, DC/DC/relay; integrated program/data memory 50 kbyte, load memory 2 Mbyte; power supply 24 V DC; Boolean execution times 0.1 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board; digital inputs can be used as HSC at 100 kHz	C	**6ES7 214-1HE30-0XB0**

		Order No.
Accessories		
SB 1221 signal board		
4 inputs, 5 V DC, 200 kHz	C	**6ES7 221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	C	**6ES7 221-3BD30-0XB0**
SB 1222 signal board		
4 outputs, 5 V DC, 0.1 A, 200 kHz	C	**6ES7 222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	C	**6ES7 222-1BD30-0XB0**
SB 1223 signal board		
2 inputs, 24 V DC, IEC type 1 active high; 2 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	C	**6ES7 223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	C	**6ES7 223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	C	**6ES7 223-3BD30-0XB0**
SB 1232 signal board	C	**6ES7 232-4HA30-0XB0**
1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits		
Simulator (optional)		
14 input switches, for CPU 1214C	C	**6ES7 274-1XH30-0XA0**
SIMATIC Memory Card (optional)		
2 MB	C	**6ES7 954-8LB00-0AA0**
24 MB		**6ES7 954-8LF00-0AA0**
Extension cable for two-tier configuration	C	**6ES7 290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m		
Terminal block (spare part)		
For CPU 1214		
For DI, with 20 screws, tin-plated; 4 units	C	**6ES7 292-1AV30-0XA0**
For DO, with 12 screws, tin-plated; 4 units	C	**6ES7 292-1AM30-0XA0**
For AI, with 3 screws, tin-plated; 4 units	C	**6ES7 292-1BC30-0XA0**

C: Subject to export regulations: AL: N and ECCN: EAR99H

CPU 1214C

Ordering data

		Order No.
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**

B: Subject to export regulations: AL: N and ECCN: EAR99T

		Order No.
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

Overview SIPLUS CPU 1211C

- The clever compact solution
- With 10 integral input/outputs
- Expandable by:
  - 1 signal board (SB)
  - max. 3 communication modules (CM)

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

For ordering information see page 4/38.

SIPLUS CPU 1211C			
Order No.	**6AG1 211-1BD30-5XB0** **6AG1 211-1BD30-2XB0**	**6AG1 211-1BD30-5XB0** **6AG1 211-1BD30-2XB0**	**6AG1 211-1HD30-5XB0** **6AG1 211-1HD30-2XB0**
Order No. based on	**6ES7 211-1BD30-0XB0**	**6ES7 211-1AD30-0XB0**	**6ES7 211-1HD30-0XB0**
Ambient temperature range	-25 ... +55 °C/+70 °C; condensation permissible		
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme		
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.		

[1] ISA -S71.04 severity level GX from October 2010

SIPLUS CPU 1211C, CPU 1212C, CPU 1214C

Overview SIPLUS CPU 1212C

- The superior compact solution
- With 14 integral input/outputs
- Expandable by:
  - 1 signal board (SB)
  - 2 signal modules (SM)
  - Max. 3 communication modules (CM)

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

For ordering information see page 4/38.

SIPLUS CPU 1212C			
Order No.	**6AG1 212-1BD30-5XB0** **6AG1 212-1BD30-2XB0**	**6AG1 212-1AD30-5XB0** **6AG1 212-1AD30-2XB0**	**6AG1 212-1HD30-5XB0** **6AG1 212-1HD30-2XB0**
Order No. based on	**6ES7 212-1BD30-0XB0**	**6ES7 212-1AD30-0XB0**	**6ES7 212-1HD30-0XB0**
Ambient temperature range	-25 ... +55 °C/+70 °C; condensation permissible		
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme		
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.		

[1] ISA -S71.04 severity level GX from October 2010

Overview SIPLUS CPU 1214C

- The compact high-performance CPU
- With 24 integral input/outputs
- Expandable by:
  - 1 signal board (SB)
  - 8 signal modules (SM)
  - max. 3 communication modules (CM)

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

For ordering information see page 4/38.

SIPLUS CPU 1214C			
Order No.	**6AG1 214-1BE30-5XB0** **6AG1 214-1BE30-2XB0**	**6AG1 214-1AE30-5XB0** **6AG1 214-1AE30-2XB0**	**6AG1 214-1HE30-5XB0** **6AG1 214-1HE30-2XB0**
Order No. based on	**6ES7 214-1BE30-0XB0**	**6ES7 212-1AE30-0XB0**	**6ES7 212-1HE30-0XB0**
Ambient temperature range	-25 ... +55 °C/+70 °C; condensation permissible		
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme		
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.		

[1] ISA -S71.04 severity level GX from October 2010

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Ordering data

		Order No.
SIPLUS CPU 1211C Compact CPU, AC/DC/relay		
(extended temperature range and medial exposure)		
Compact CPU, AC/DC/relay; integral program/data memory 25 KB, load memory 1 MB; wide-range power supply 85 ... 264 V AC; Boolean execution times 0.1 ms per operation; 6 digital inputs, 4 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules and 1 signal board; digital inputs can be used as HSC at 100 kHz		
• Ambient temperature -25 ... +70 °C; number of simultaneously controllable inputs and outputs max. 50%; Signal Board cannot be used	C	**6AG1 211-1BD30-2XB0**
• Ambient temperature -25 ... +55 °C; without restrictions; Signal Board can be used	C	**6AG1 211-1BD30-5XB0**
SIPLUS CPU 1211C Compact CPU, DC/DC/DC		
(extended temperature range and medial exposure)		
integral program/data memory 25 KB, load memory 1 MB; power supply 24 V DC; Boolean execution times 0.1 ms per operation; 6 digital inputs, 4 digital outputs, 2 analog inputs; expandable by up to 3 communication modules, 2 signal modules and 1 signal board; digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) with 100 kHz		
• Ambient temperature -25 ... +70 °C; number of simultaneously controllable inputs and outputs max. 50%; Signal Board cannot be used	C	**6AG1 211-1AD30-2XB0**
• Ambient temperature -25 ... +55 °C; without restrictions; Signal Board can be used	C	**6AG1 211-1AD30-5XB0**
SIPLUS CPU 1211C Compact CPU, DC/DC/relay		
(extended temperature range and medial exposure)		
integral program/data memory 25 KB, load memory 1 MB; power supply 24 V DC; Boolean execution times 0.1 ms per operation; 6 digital inputs, 4 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules and 1 signal board; digital inputs can be used as HSC at 100 kHz		
• Ambient temperature -25 ... +70 °C; number of simultaneously controllable inputs and outputs max. 50%; Signal Board cannot be used	C	**6AG1 211-1HD30-2XB0**
• Ambient temperature -25 ... +55 °C; without restrictions; Signal Board can be used	C	**6AG1 211-1HD30-5XB0**
SIPLUS CPU 1212C Compact CPU, AC/DC/relay		
(extended temperature range and medial exposure)		
integral program/data memory 25 KB, load memory 1 MB; wide-range power supply 85 ... 264 V AC; Boolean execution times 0.1 ms per operation; 8 digital inputs, 6 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules, 2 signal modules and 1 signal board; digital inputs can be used as HSC at 100 kHz		
• Ambient temperature -25 ... +70 °C; number of simultaneously controllable inputs and outputs max. 50%; Signal Board cannot be used	C	**6AG1 212-1BD30-2XB0**
• Ambient temperature -25 ... +55 °C; without restrictions; Signal Board can be used	C	**6AG1 212-1BD30-5XB0**

C: Subject to export regulations: AL: N and ECCN: EAR99H

Ordering data		Order No.
SIPLUS CPU 1212C Compact CPU, DC/DC/DC		
(extended temperature range and medial exposure)		
integral program/data memory 25 KB, load memory 1 MB; power supply 24 V DC; Boolean execution times 0.1 ms per operation; 8 digital inputs, 6 digital outputs, 2 analog inputs; expandable by up to 3 communication modules, 2 signal modules and 1 signal board; digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) with 100 kHz		
• Ambient temperature -25 ... +70 °C; number of simultaneously controllable inputs and outputs max. 50%; Signal Board cannot be used	C	**6AG1 212-1AD30-2XB0**
• Ambient temperature -25 ... +55 °C; without restrictions; Signal Board can be used	C	**6AG1 212-1AD30-5XB0**
SIPLUS CPU 1212C Compact CPU, DC/DC/relay		
(extended temperature range and medial exposure)		
integral program/data memory 25 KB, load memory 1 MB; power supply 24 V DC; Boolean execution times 0.1 ms per operation; 8 digital inputs, 6 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules, 2 signal modules and 1 signal board; digital inputs can be used as HSC at 100 kHz		
• Ambient temperature -25 ... +70 °C; number of simultaneously controllable inputs and outputs max. 50%; Signal Board cannot be used	C	**6AG1 212-1HD30-2XB0**
• Ambient temperature -25 ... +55 °C; without restrictions; Signal Board can be used	C	**6AG1 212-1HD30-5XB0**
SIPLUS CPU 1214C Compact CPU, AC/DC/relay		
(extended temperature range and medial exposure)		
integral program/data memory 50 KB, load memory 2 MB; wide-range power supply 85 ... 264 V AC; Boolean execution times 0.1 ms per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules, 8 signal modules and 1 signal board; digital inputs can be used as HSC at 100 kHz		
• Ambient temperature -25 ... +70 °C; number of simultaneously controllable inputs and outputs max. 50%; Signal Board cannot be used	C	**6AG1 214-1BE30-2XB0**
• Ambient temperature -25 ... +55 °C; without restrictions; Signal Board can be used	C	**6AG1 214-1BE30-5XB0**
SIPLUS CPU 1214C Compact CPU, DC/DC/DC		
(extended temperature range and medial exposure)		
integral program/data memory 50 KB, load memory 2 MB; power supply 24 V DC; Boolean execution times 0.1 ms per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs; expandable by up to 3 communication modules, 8 signal modules and 1 signal board; digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) with 100 kHz		
• Ambient temperature -25 ... +70 °C; number of simultaneously controllable inputs and outputs max. 50%; Signal Board cannot be used	C	**6AG1 214-1AE30-2XB0**
• Ambient temperature -25 ... +55 °C; without restrictions; Signal Board can be used	C	**6AG1 214-1AE30-5XB0**

C: Subject to export regulations: AL: N and ECCN: EAR99H

SIPLUS CPU 1211C, CPU 1212C, CPU 1214C

Ordering data		Order No.
SIPLUS CPU 1214C Compact CPU, DC/DC/relay		
(extended temperature range and medial exposure)		
Compact CPU, DC/DC/relay; integral program/data memory 50 KB, load memory 2 MB; power supply 24 V DC; Boolean execution times 0.1 ms per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules, 8 signal modules and 1 signal board; digital inputs can be used as HSC at 100 kHz		
• Ambient temperature -25 ... +70 °C; number of simultaneously controllable inputs and outputs max. 50%; Signal Board cannot be used	C	**6AG1 214-1HE30-2XB0**
• Ambient temperature -25 ... +55 °C; without restrictions; Signal Board can be used	C	**6AG1 214-1HE30-5XB0**

C: Subject to export regulations: AL: N and ECCN: EAR99H

	Order No.
Accessories	see S7-1200 CPUs, pages 4/13, 4/23, 4/33

Overview

- Digital inputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the relevant task
- For subsequent expansion of the system with additional inputs

Application

Digital input modules allow the connection of the controller to digital signals of the process.

This provides users with the following advantages:

- Optimum adaptation:
  With signal modules which can be mixed as desired, users can adapt their controllers exactly to the relevant task. This avoids superfluous investments. Modules with 8, 16, and 32 input/output channels are available.
- Flexibility:
  If the task is expanded subsequently, the controller can be upgraded. Updating of the user program is extremely simple.

Function

The SM 1221 digital input signal modules convert the level of the external digital signals from the process into the internal signal level of the S7-1200.

Technical specifications

	6ES7 221-1BF30-0XB0	6ES7 221-1BH30-0XB0
Product type designation	SM 1221 DI 8x24 V DC	SM 1221 DI 16x24 V DC
Supply voltages		
Rated value		
• 24 V DC	Yes	Yes
• permissible range, lower limit (DC)	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V
Power supply to the transmitters		
• present	Yes	Yes
Current consumption		
from backplane bus 5 V DC, max.	105 mA	130 mA
Digital inputs		
• from load voltage L+ (without load), max.	4 mA; per channel	4 mA; per channel
Power loss		
Power loss, typ.	1.5 W	2.5 W
Connection method		
required front connector	Yes	Yes
Digital inputs		
Number of digital inputs	8	16
• in groups of	2	4
Number of simultaneously controllable inputs		
• all mounting positions		
- Concurrently controllable inputs, up to 40 °C	8	16

	6ES7 221-1BF30-0XB0	6ES7 221-1BH30-0XB0
Product type designation	SM 1221 DI 8x24 V DC	SM 1221 DI 16x24 V DC
Number of simultaneously controllable inputs		
• horizontal installation		
- up to 40 °C, max.	8	16
- up to 50 °C, max.	8	16
• vertical installation		
- up to 40 °C, max.	8	16
Input characteristic curve acc. to IEC 1131, Type 1	Yes	Yes
Input voltage		
• Rated value, DC	24 V	24 V
• for signal "0"	5 V DC at 1 mA	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA	15 V DC at 2.5 mA
Input current		
• for signal "0", max. (permissible quiescent current)	1 mA	1 mA
• for signal "1", min.	2.5 mA	2.5 mA
• for signal "1", typ.	4 mA; Typical	4 mA; Typical
Input delay (for rated value of input voltage)		
• for standard inputs		
- parameterizable	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four
• for interrupt inputs		
- parameterizable	Yes	Yes

Technical specifications (continued)

	6ES7 221-1BF30-0XB0	6ES7 221-1BH30-0XB0
Product type designation	SM 1221 DI 8x24 V DC	SM 1221 DI 16x24 V DC
Cable length		
• Cable length, shielded, max.	500 m	500 m
• Cable length unshielded, max.	300 m	300 m
Digital outputs		
Number of digital outputs	0	0
Interrupts/diagnostics/ status information		
Alarms		
• Alarms	Yes	Yes
• Diagnostic alarm	Yes	Yes
Diagnoses		
• Diagnostic functions	Yes	Yes
• Monitoring the supply voltage to the electronics	Yes	Yes
Diagnostics indication LED		
• for status of inputs	Yes	Yes
• for maintenance	Yes	Yes
• Status indicator digital input (green)	Yes	Yes
Galvanic isolation		
Galvanic isolation digital inputs		
• between the channels, in groups of	2	4
Climatic and mechanical conditions for storage and transport		
Climatic conditions for storage and transport		
• Free fall		
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package
• Temperature		
- permissible temperature range	-40 °C ... +70 °C	-40 °C ... +70 °C
• Air pressure acc. to IEC 60068-2-13		
- permissible atmospheric pressure	1080 to 660 hPa	1080 to 660 hPa
• Relative humidity		
- permissible range (without condensation) at 25 °C	95%	95%

	6ES7 221-1BF30-0XB0	6ES7 221-1BH30-0XB0
Product type designation	SM 1221 DI 8x24 V DC	SM 1221 DI 16x24 V DC
Mechanical and climatic conditions during operation		
Climatic conditions during operation		
• Temperature		
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
- permissible temperature change	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min
Degree of protection		
IP20	Yes	Yes
Standards, approvals, certificates		
CE mark	Yes	Yes
C-TICK	Yes	Yes
FM approval	Yes	Yes
Mechanics		
Type of housing (front)		
• Plastic	Yes	Yes
Dimensions and weight		
Dimensions		
• Width	45 mm	45 mm
• Height	100 mm	100 mm
• Depth	75 mm	75 mm
Weight		
• Weight, approx.	170 g	210 g

Ordering data

		Order No.
SM 1221 digital input signal module		
8 inputs, 24 V DC, isolated, current sourcing/sinking	C	**6ES7 221-1BF30-0XB0**
16 inputs, 24 V DC, isolated, current sourcing/sinking	C	**6ES7 221-1BH30-0XB0**
Accessories		
Extension cable for two-tier configuration	C	**6ES7 290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m		
Terminal block (spare part)		
for 8/16-channel digital signal modules		
with 7 screws, zinc-plated; 4 pcs.	C	**6ES7 292-1AG30-0XA0**
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

4

SB 1221 digital input module

Overview

- Digital inputs as a supplement to the integral I/O of SIMATIC S7-1200 CPUs
- Can be plugged directly into the CPU

Application

The SB 1221 Signal Board digital input modules enable connection of the controller to digital process signals.

Design

The Signal Boards are plugged straight into the holder on the front of the S7-1200-CPU.

- Mounting:
  Signal Boards are plugged direct into the SIMATIC S7-1200-CPU and linked electrically and mechanically with the CPU in this way.
- The installation dimensions of the CPU remain unchanged.
- On all Signal Boards, replacement is facilitated by removable terminals ("permanent wiring").

Function

The SB 1221 Signal Board digital input/output modules convert the level of the external digital signals from the process to the internal signal level of the S7-1200.

Technical specifications

	6ES7 221-3AD30-0XB0	6ES7 221-3BD30-0XB0
Product type designation	SB 1221 4xDI 5 V DC 200 kHz	SB 1221 4xDI 24 V DC 200 kHz
Supply voltages		
Power supply to the transmitters		
• Supply current, max.	4 mA; per channel	4 mA; per channel
Current consumption		
from backplane bus 5 V DC, typ.	50 mA	50 mA
Power loss		
Power loss, typ.	1 W	1 W
Digital inputs		
Number of digital inputs	4	4
• in groups of	1	1
Number of simultaneously controllable inputs		
• all mounting positions		
- Concurrently controllable inputs, up to 40 °C	4	4
Input characteristic curve acc. to IEC 1131, Type 1	Yes	
Input characteristic curve acc. to IEC 1131, Type 2		Yes
Input voltage		
• Rated value, DC	5 V	24 V
• for signal "0"	0 to 1 V	0 to 5 V
• for signal "1"	2 to 6 V	15 to 30 V
Input current		
• for signal "0", max. (permissible quiescent current)	3 mA	2 mA
• for signal "1", min.	6 mA	5.8 mA
• for signal "1", typ.		14 mA

	6ES7 221-3AD30-0XB0	6ES7 221-3BD30-0XB0
Product type designation	SB 1221 4xDI 5 V DC 200 kHz	SB 1221 4xDI 24 V DC 200 kHz
Input delay (for rated value of input voltage)		
• for standard inputs		
- parameterizable	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four
- at "0" to "1", max.	2 µs	2.5 µs
• for interrupt inputs		
- parameterizable	Yes	Yes
• for counter/technological functions		
- parameterizable	Yes	Yes
Cable length		
• Cable length, shielded, max.	50 m	50 m; Standard input: 500 m, high-speed counters: 50 m
Short-circuit protection	No	
Interrupts/diagnostics/ status information		
Alarms		
• Alarms	Yes	Yes
Diagnoses		
• Diagnostic functions	Yes	Yes
Input delay (for rated value of input voltage)		
Diagnostics indication LED		
• for status of inputs	Yes	Yes

Technical specifications (continued)

	6ES7 221-3AD30-0XB0	6ES7 221-3BD30-0XB0
Product type designation	SB 1221 4xDI 5 V DC 200 kHz	SB 1221 4xDI 24 V DC 200 kHz
Climatic and mechanical conditions for storage and transport		
Climatic conditions for storage and transport		
• Free fall		
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package
• Temperature		
- permissible temperature range		-40 °C ... +70 °C
• Air pressure acc. to IEC 60068-2-13		
- permissible atmospheric pressure	1080 ... 660hPa	1080 ... 660hPa
• Relative humidity		
- permissible range (without condensation) at 25 °C	95%	95%
Mechanical and climatic conditions during operation		
Climatic conditions during operation		
• Temperature		
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
Degree of protection		
IP20	Yes	Yes
Mechanics		
Type of housing (front)		
• Plastic	Yes	Yes
Dimensions and weight		
Dimensions		
• Width	38 mm	38 mm
• Height	62 mm	62 mm
• Depth	21 mm	21 mm
Weight		
• Weight, approx.	40 g	40 g

Ordering data

		Order No.
SB 1221 Signal Board digital input modules		
4 inputs, 5 V DC, 200 kHz	C	**6ES7 221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	C	**6ES7 221-3BD30-0XB0**
Accessories		
Terminal block (spare part)		
for Signal Board		
with 6 screws, gold-plated; 4 pcs.	C	**6ES7 292-1BF30-0XA0**
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8BH0**
English	B	**6ES7 298-8FA30-8AH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

SM 1222 digital output module

Overview

- Digital outputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the relevant task
- For subsequent expansion of the system with additional outputs

Application

Digital output modules permit the output of digital signals from the controller to the process.

This provides users with the following advantages:

- Optimum adaptation:
  With signal modules which can be mixed as desired, users can adapt their controllers exactly to the relevant task. This avoids superfluous investments. Modules with 8, 16, and 32 input/output channels are available.
- Flexibility:
  If the task is expanded subsequently, the controller can be upgraded. Updating of the user program is extremely simple.

Function

The SM 1222 digital output signal modules convert the internal signal level of the SIMATIC S7-1200 into the external signal level required by the process.

Technical specifications

	6ES7 222-1BF30-0XB0	6ES7 222-1BH30-0XB0	6ES7 222-1HF30-0XB0	6ES7 222-1HH30-0XB0
Product type designation	SM1222 DQ 8x24 V DC	SM1222 DQ 16x24 V DC	SM 1222 DQ 8xRelay	SM1222 DQ 16xRelay
Supply voltages				
Rated value				
• permissible range, lower limit (DC)	20.4 V	20.4 V	5 V	5 V
• permissible range, upper limit (DC)	28.8 V	28.8 V	30 V	30 V
Current consumption				
from backplane bus 5 V DC, max.	120 mA	140 mA	120 mA	135 mA
Digital inputs				
• from load voltage L+ (without load), max.			11 mA / relay coil used	11 mA / relay coil used
Power loss				
Power loss, typ.	1.5 W	2.5 W	4.5 W	8.5 W
Connection method				
required front connector	Yes	Yes	Yes	Yes
Digital inputs				
Number of digital inputs	0	0	0	0
Digital outputs				
Number of digital outputs	8	16	8	16
• in groups of	1	1	2	1
Short-circuit protection	No; to be provided externally	No; to be provided externally	No; to be provided externally	No; to be provided externally
Limitation of inductive shutdown voltage to	typ. (L+) -48 V	typ. (L+) -48 V		
Switching capacity of the outputs				
• with resistive load, max.	0.5 A	0.5 A	2 A	2 A
• on lamp load, max.	5 W	5 W	30 W DC; 200 W AC	30 W DC; 200 W AC

Technical specifications (continued)

	6ES7 222-1BF30-0XB0	6ES7 222-1BH30-0XB0	6ES7 222-1HF30-0XB0	6ES7 222-1HH30-0XB0
Product type designation	SM1222 DQ 8x24 V DC	SM1222 DQ 16x24 V DC	SM 1222 DQ 8xRelay	SM1222 DQ 16xRelay
Output voltage				
• Rated value (AC)			5 to 250 V AC	5 to 250 V AC
• Rated value (DC)	24 V	24 V	5 to 30 V DC	5 to 30 V DC
• for signal "0" (DC), max.	0.1 V; with 10 kohms Load	0.1 V; with 10k ohms Load		
• for signal "1", min.	20 V DC	20 V DC		
Output current				
• for signal "1" rated value	0.5 A	0.5 A		
• for signal "1" permissible range, max.			2 A	2 A
• for signal "0" residual current, max.	10 µA	10 µA		
Output delay with resistive load				
• 0 to "1", max.	50 µs	50 µs	10 ms	10 ms
• 1 to "0", max.	200 µs	200 µs	10 ms	10 ms
Aggregate current of outputs (per group)				
• horizontal installation - up to 50 °C, max.	4 A; Current per mass	8 A; Current per common	10 A; Current per common	10 A; Current per common
Cable length				
• Cable length, shielded, max.	500 m	500 m	500 m	500 m
• Cable length unshielded, max.	150 m	150 m	150 m	150 m
Relay outputs				
Number of relay outputs			8	16
Rated input voltage of relay L+ (DC)			24 V	24 V
Number of operating cycles			mechanically 10 million, at rated load voltage 100,000	mechanically 10 million, at rated load voltage 100,000
Switching capacity of contacts				
• with inductive load, max.	0.5 A	0.5 A	2 A	2 A
• on lamp load, max.	5 W	5 W	30 W DC; 200 W AC	30 W DC; 200 W AC
• with resistive load, max.	0.5 A	0.5 A	2 A	2 A
Interrupts/diagnostics/ status information				
Alarms				
• Alarms	Yes	Yes	Yes	Yes
• Diagnostic alarm	Yes	Yes	Yes	Yes
Diagnoses				
• Diagnostic functions	Yes	Yes	Yes	Yes
• Monitoring the supply voltage to the electronics	Yes	Yes	Yes	Yes
Diagnostics indication LED				
• for status of outputs	Yes	Yes	Yes	Yes
• for maintenance	Yes	Yes	Yes	Yes
• Status indicator digital output (green)	Yes	Yes	Yes	Yes
Galvanic isolation				
Galvanic isolation digital outputs				
• between the channels			Relay, dry contact	Relay, dry contact
• between the channels, in groups of	1	1	2	4
• between the channels and the back-plane bus	500 V AC	500 V AC	1500 V AC for 1 minute	1500 V AC for 1 minute
Permissible potential difference				
between different circuits			750 V AC for 1 minute	750 V AC for 1 minute

Technical specifications (continued)

	6ES7 222-1BF30-0XB0	6ES7 222-1BH30-0XB0	6ES7 222-1HF30-0XB0	6ES7 222-1HH30-0XB0
Product type designation	SM1222 DQ 8x24 V DC	SM1222 DQ 16x24 V DC	SM 1222 DQ 8xRelay	SM1222 DQ 16xRelay
Climatic and mechanical conditions for storage and transport				
Climatic conditions for storage and transport				
• Free fall				
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package
• Temperature				
- permissible temperature range	-40 °C ... +70 °C	-40 °C ... +70 °C	-40 °C ... +70 °C	-40 °C ... +70 °C
• Air pressure acc. to IEC 60068-2-13				
- permissible atmospheric pressure	1080 to 660hPa	1080 to 660hPa	1080 to 660hPa	1080 to 660hPa
• Relative humidity				
- permissible range (without condensation) at 25 °C	95%	95%	95%	95%
Mechanical and climatic conditions during operation				
Climatic conditions during operation				
• Temperature				
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
- permissible temperature change	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min
Degree of protection				
IP20	Yes	Yes	Yes	Yes
Standards, approvals, certificates				
CE mark	Yes	Yes	Yes	Yes
C-TICK	Yes	Yes	Yes	Yes
FM approval	Yes	Yes	Yes	Yes
Mechanics				
Type of housing (front)				
• Plastic	Yes	Yes	Yes	Yes
Dimensions and weight				
Dimensions				
• Width	45 mm	45 mm	45 mm	45 mm
• Height	100 mm	100 mm	100 mm	100 mm
• Depth	75 mm	75 mm	75 mm	75 mm
Weight				
• Weight, approx.	180 g	220 g	190 g	260 g

Ordering data

		Order No.
SM 1222 digital output signal module		
8 outputs, 24 V DC; 0.5 A, 5 W, isolated	C	**6ES7 222-1BF30-0XB0**
16 outputs, 24 V DC; 0.5 A, 5 W, isolated	C	**6ES7 222-1BH30-0XB0**
8 relay outputs, 5 ... 30 V DC/ 5 ... 250 V AC, 2 A, 30 W DC/200 W AC	C	**6ES7 222-1HF30-0XB0**
16 relay outputs, 5 ... 30 V DC/ 5 ... 250 V AC, 2 A, 30 W DC/200 W AC	C	**6ES7 222-1HH30-0XB0**
Accessories		
Extension cable for two-tier configuration	C	**6ES7 290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m		
Terminal block (spare part)		
for 8/16-channel digital signal modules		
with 7 screws, zinc-plated; 4 pcs.	C	**6ES7 292-1AG30-0XA0**
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8BH0**
English	B	**6ES7 298-8FA30-8AH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H

		Order No.
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

SB 1222 digital output module

Overview

- Digital outputs as a supplement to the integral I/O of SIMATIC S7-1200 CPUs
- Can be plugged directly into the CPU

Application

The SB 1222 Signal Board digital output modules enable the digital signals of the controller to be output to the process.

Design

The Signal Boards are plugged straight into the holder on the front of the S7-1200-CPU.

- Mounting:
  Signal Boards are plugged direct into the SIMATIC S7-1200-CPU and linked electrically and mechanically with the CPU in this way.
- The installation dimensions of the CPU remain unchanged.
- On all Signal Boards, replacement is facilitated by removable terminals ("permanent wiring").

Function

The SB 1222 Signal Board digital input/output modules convert the internal signal level of the S7-1200 to the external signal level required for the process.

Technical specifications

	6ES7 222-1AD30-0XB0	6ES7 222-1BD30-0XB0
Product type designation	SB 1222 4xDQ 5 V DC 200 kHz	SB 1222 4xDQ 24 V DC 200 kHz
Supply voltages		
Power supply to the transmitters		
• Supply current, max.	4 mA; per channel	4 mA; per channel
Current consumption		
from backplane bus 5 V DC, typ.	50 mA	50 mA
Power loss		
Power loss, typ.	1 W	1 W
Digital outputs		
Number of digital outputs	4	4
• in groups of	1	1
Short-circuit protection	No	No
Switching capacity of the outputs		
• with resistive load, max.	0.1 A	0.1 A
Output voltage		
• Rated value (DC)	5 V	24 V
• for signal "0" (DC), max.	0.4 V	0.1 V; with 10k ohms load
• for signal "1", min.	L+ (-0.5 V)	20 V
• for signal "1" (DC), max.	6 V	
Output current		
• for signal "1" rated value	0.1 A	0.1 A
• for signal "1" permissible range, max.	0.11 A	
• for signal "0" residual current, max.		10 µA

	6ES7 222-1AD30-0XB0	6ES7 222-1BD30-0XB0
Product type designation	SB 1222 4xDQ 5 V DC 200 kHz	SB 1222 4xDQ 24 V DC 200 kHz
Load resistance range		
• upper limit	5 Ω	10 Ω
Cable length		
• Cable length, shielded, max.	50 m	50 m
Interrupts/diagnostics/ status information		
Alarms		
• Alarms	Yes	Yes
Diagnoses		
• Diagnostic functions	Yes	Yes
Diagnostics indication LED		
• for status of outputs	Yes	Yes
Climatic and mechanical conditions for storage and transport		
Climatic conditions for storage and transport		
• Free fall		
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package
• Atmospheric pressure acc. to IEC 60068-2-13		
- permissible atmospheric pressure	1080 bis 660hPa	1080 bis 660hPa
• Relative humidity		
- permissible range (without condensation) at 25 °C	95%	95%

Technical specifications (continued)

	6ES7 222-1AD30-0XB0	6ES7 222-1BD30-0XB0
Product type designation	SB 1222 4xDQ 5 V DC 200 kHz	SB 1222 4xDQ 24 V DC 200 kHz
Mechanical and climatic conditions during operation		
Climatic conditions during operation		
• Temperature		
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
Degree of protection		
IP20	Yes	Yes

	6ES7 222-1AD30-0XB0	6ES7 222-1BD30-0XB0
Product type designation	SB 1222 4xDQ 5 V DC 200 kHz	SB 1222 4xDQ 24 V DC 200 kHz
Mechanics		
Type of housing (front)		
• Plastic	Yes	Yes
Dimensions and weight		
Dimensions		
• Width	38 mm	38 mm
• Height	62 mm	62 mm
• Depth	21 mm	21 mm
Weight		
• Weight, approx.	40 g	40 g

Ordering data

		Order No.
SB 1222 Signal Board digital output modules		
4 outputs, 5 V DC, 0.1 A, 200 kHz	C	**6ES7 222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	C	**6ES7 222-1BD30-0XB0**
Accessories		
Terminal block (spare part)		
for Signal Board		
with 6 screws, gold-plated; 4 pcs.	C	**6ES7 292-1BF30-0XA0**
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8BH0**
English	B	**6ES7 298-8FA30-8AH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**

		Order No.
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

SM 1223 digital input/output module

Overview

- Digital inputs and outputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the relevant task
- For subsequent expansion of the system with additional inputs and outputs

Application

Digital input/output modules permit:

- Connection of the controller to digital signals of the process
- Output of digital signals from the controller to the process

This provides users with the following advantages:

- Optimum adaptation:
  With signal modules which can be mixed as desired, users can adapt their controllers exactly to the relevant task. This avoids superfluous investments. Modules with 8, 16, and 32 input/output channels are available.
- Flexibility:
  If the task is expanded subsequently, the controller can be upgraded. Updating of the user program is extremely simple

Function

The SM 1223 digital input/output signal modules convert

- the level of the external digital signals from the process into the internal signal level of the S7-1200 and
- the internal signal level of the S7-1200 into the external signal level required by the process.

Technical specifications

	6ES7 223-1BH30-0XB0	6ES7 223-1BL30-0XB0	6ES7 223-1PH30-0XB0	6ES7 223-1PL30-0XB0
Product type designation	SM 1223 DI 8x24 V DC, DQ 8x24 V DC	SM 1223 DI 16x24 V DC, DQ 16x24 V DC	SM 1223 DI 8x24 V DC, DQ 8xRelay	SM 1223 DI 16x24 V DC, DQ 16xRelay
Supply voltages				
Rated value				
• 24 V DC	Yes	Yes	Yes	Yes
• permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	28.8 V
Power supply to the transmitters				
• present	Yes	Yes	Yes	Yes
Current consumption				
from backplane bus 5 V DC, max.	145 mA	185 mA	145 mA	180 mA
Digital inputs				
• from load voltage L+ (without load), max.	4 mA; per channel	4 mA; per channel	4 mA / input 11 mA / relay	4 mA / input 11 mA / relay
Power loss				
Power loss, typ.	2.5 W	4.5 W	5.5 W	10 W
Connection method				
required front connector	Yes	Yes	Yes	Yes
Digital inputs				
Number of digital inputs	8	16	8	16
• in groups of	2	2	2	2
Number of simultaneously controllable inputs				
• all mounting positions - Concurrently controllable inputs, up to 40 °C	8	16	8	16

Technical specifications (continued)

	6ES7 223-1BH30-0XB0	6ES7 223-1BL30-0XB0	6ES7 223-1PH30-0XB0	6ES7 223-1PL30-0XB0
Product type designation	SM 1223 DI 8x24 V DC, DQ 8x24 V DC	SM 1223 DI 16x24 V DC, DQ 16x24 V DC	SM 1223 DI 8x24 V DC, DQ 8xRelay	SM 1223 DI 16x24 V DC, DQ 16xRelay
Number of simultaneously controllable inputs				
• horizontal installation				
- up to 40 °C, max.	8	16	8	16
- up to 50 °C, max.	8	16	8	16
• vertical installation				
- up to 40 °C, max.	8	16	8	16
Input characteristic curve acc. to IEC 1131, Type 1	Yes	Yes	Yes	Yes
Input voltage				
• Rated value, DC	24 V	24 V	24 V	24 V
• for signal "0"	5 V DC at 1 mA	5 V DC at 1 mA	5 V DC at 1 mA	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA	15 V DC at 2.5 mA	15 V DC at 2.5 mA	15 V DC at 2.5 mA
Input current				
• for signal "0", max. (permissible quiescent current)	1 mA	1 mA	1 mA	1 mA
• for signal "1", min.	2.5 mA	2.5 mA	2.5 mA	2.5 mA
• for signal "1", typ.	4 mA; Typical	4 mA; Typical	4 mA; Typical	4 mA; Typical
Input delay (for rated value of input voltage)				
• for standard inputs				
- parameterizable	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four
• for interrupt inputs				
- parameterizable	Yes	Yes	Yes	Yes
Cable length				
• Cable length, shielded, max.	500 m	500 m	500 m	500 m
• Cable length unshielded, max.	300 m	300 m	300 m	300 m
Digital outputs				
Number of digital outputs	8	16	8	16
• in groups of	1	1	2	4
Short-circuit protection	No; to be provided externally	No; to be provided externally	No; to be provided externally	No; to be provided externally
Limitation of inductive shutdown voltage to	L+ (-48 V)	L+ (-48 V)		
Switching capacity of the outputs				
• with resistive load, max.	0.5 A	0.5 A	2 A	2 A
• on lamp load, max.	5 W	5 W	30 W DC; 200 W AC	30 W DC; 200 W AC
Output voltage				
• Rated value (AC)			5 to 250 V AC	5 to 250 V AC
• Rated value (DC)	24 V	24 V	5 to 30 V DC	5 to 30 V DC
• for signal "0" (DC), max.	0.1 V; with 10 kohms Load	0.1 V; with 10 kohms Load		
• for signal "1", min.	20 V DC	20 V DC		
Output current				
• for signal "1" permissible range, max.	0.5 A	0.5 A	2 A	2 A
• for signal "0" residual current, max.	10 µA	10 µA		
Output delay with resistive load				
• 0 to "1", max.	50 µs	50 µs	10 ms	10 ms
• 1 to "0", max.	200 µs	200 µs	10 ms	10 ms

Technical specifications (continued)

	6ES7 223-1BH30-0XB0	6ES7 223-1BL30-0XB0	6ES7 223-1PH30-0XB0	6ES7 223-1PL30-0XB0
Product type designation	SM 1223 DI 8x24 V DC, DQ 8x24 V DC	SM 1223 DI 16x24 V DC, DQ 16x24 V DC	SM 1223 DI 8x24 V DC, DQ 8xRelay	SM 1223 DI 16x24 V DC, DQ 16xRelay
Aggregate current of outputs (per group)				
• horizontal installation - up to 50 °C, max.	4 A; Current per mass	8 A; Current per mass	10 A; Current per mass	8 A; Current per mass
Cable length				
• Cable length, shielded, max.	500 m	500 m	500 m	500 m
• Cable length unshielded, max.	150 m	150 m	150 m	150 m
Relay outputs				
Number of relay outputs			8	16
Rated input voltage of relay L+ (DC)			24 V	24 V
Number of operating cycles			mechanically 10 million, at rated load voltage 100 000	mechanically 10 million, at rated load voltage 100 000
Switching capacity of contacts				
• with inductive load, max.	0.5 A	0.5 A	2 A	2 A
• on lamp load, max.	5 W	5 W	30 W DC; 200 W AC	30 W DC; 200 W AC
• with resistive load, max.	0.5 A	0.5 A	2 A	2 A
Interrupts/diagnostics/ status information				
Alarms				
• Alarms	Yes	Yes	Yes	Yes
• Diagnostic alarm	Yes	Yes	Yes	Yes
Diagnoses				
• Diagnostic functions	Yes	Yes	Yes	Yes
• Monitoring the supply voltage to the electronics	Yes	Yes	Yes	Yes
Diagnostics indication LED				
• for status of inputs	Yes	Yes	Yes	Yes
• for status of outputs	Yes	Yes	Yes	Yes
• for maintenance	Yes	Yes	Yes	Yes
• Status indicator digital output (green)	Yes	Yes	Yes	Yes
• Status indicator digital input (green)	Yes	Yes	Yes	Yes
Galvanic isolation				
Galvanic isolation digital inputs				
• between the channels, in groups of	2	2	2	2
Galvanic isolation digital outputs				
• between the channels			Relays	Relays
• between the channels, in groups of	1	1	2	4
• between the channels and the back-plane bus	500 V AC	500 V AC	1500 V AC for 1 minute	1500 V AC for 1 minute
Permissible potential difference				
between different circuits			750 V AC for 1 minute	750 V AC for 1 minute
Climatic and mechanical conditions for storage and transport				
Climatic conditions for storage and transport				
• Free fall - Max. height of fall (in packaging)	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package

Technical specifications (continued)

	6ES7 223-1BH30-0XB0	6ES7 223-1BL30-0XB0	6ES7 223-1PH30-0XB0	6ES7 223-1PL30-0XB0
Product type designation	SM 1223 DI 8x24 V DC, DQ 8x24 V DC	SM 1223 DI 16x24 V DC, DQ 16x24 V DC	SM 1223 DI 8x24 V DC, DQ 8xRelay	SM 1223 DI 16x24 V DC, DQ 16xRelay
Climatic conditions for storage and transport				
• Temperature				
- permissible temperature range	-40 °C ... +70 °C	-40 °C ... +70 °C	-40 °C ... +70 °C	-40 °C ... +70 °C
• Atmospheric pressure acc. to IEC 60068-2-13				
- permissible atmospheric pressure	1080 to 660hPa	1080 to 660hPa	1080 to 660hPa	1080 to 660hPa
• Relative humidity				
- permissible range (without condensation) at 25 °C	95%	95%	95%	95%
Mechanical and climatic conditions during operation				
Climatic conditions during operation				
• Temperature				
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
- permissible temperature change	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min	5 °C ... 55 °C, 3 °C/min
Degree of protection				
IP20	Yes	Yes	Yes	Yes
Standards, approvals, certificates				
CE mark	Yes	Yes	Yes	Yes
C-TICK	Yes	Yes	Yes	Yes
FM approval	Yes	Yes	Yes	Yes
Mechanics				
Type of housing (front)				
• Plastic	Yes	Yes	Yes	Yes
Dimensions and weight				
Dimensions				
• Width	45 mm	70 mm	45 mm	70 mm
• Height	100 mm	100 mm	100 mm	100 mm
• Depth	75 mm	75 mm	75 mm	75 mm
Weight				
• Weight, approx.	210 g	310 g	230 g	350 g

SM 1223 digital input/output module

Ordering data

		Order No.
SM 1223 digital input/output signal module		
8 inputs, 24 V DC, IEC type 1 current sinking; 8 24 V DC transistor outputs, 0.5 A, 5 W	C	**6ES7 223-1BH30-0XB0**
16 inputs, 24 V DC, IEC type 1 current sinking; 16 24 V DC transistor outputs, 0.5 A, 5 W	C	**6ES7 223-1BL30-0XB0**
8 inputs, 24 V DC, IEC type 1 current sinking; 8 relay outputs, 5 ... 30 V DC/ 5 ... 250 V AC, 2 A, 30 W DC/200 W AC	C	**6ES7 223-1PH30-0XB0**
16 inputs, 24 V DC, IEC type 1 current sinking; 16 relay outputs, 5 ... 30 V DC/ 5 ... 250 V AC, 2 A, 30 W DC/200 W AC	C	**6ES7 223-1PL30-0XB0**
Accessories		
Extension cable for two-tier configuration	C	**6ES7 290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m		
Terminal block (spare part)		
for 8/16-channel digital signal modules		
with 7 screws, zinc-plated; 4 pcs.	C	**6ES7 292-1AG30-0XA0**

		Order No.
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

SB 1223 digital input/output module

Overview

- Digital inputs and outputs as supplement to the integral I/O of the SIMATIC S7-1200 CPUs
- Can be plugged direct into the CPU

Application

The SB 1223 digital input/output signal module permits:

- Connection of the controller to digital signals of the process
- Output of digital signals from the controller to the process.

Design

The signal boards are plugged directly into the receptacle on the front of each S7-1200 CPU.

- Mounting:
  Signal boards are plugged directly into the SIMATIC S7-1200 CPU and are thus electrically and mechanically connected to the CPU
- The CPU mounting dimensions remain unchanged
- All signal boards are easy to replace thanks to removable connecting terminals ("independent wiring")

Function

The SB 1223 digital input/output signal board converts

- the level of the external digital signals from the process into the internal signal level of the S7-1200 and
- the internal signal level of the S7-1200 into the external signal level required by the process

Technical specifications

	6ES7 223-0BD30-0XB0	6ES7 223-3AD30-0XB0	6ES7 223-3BD30-0XB0
Product type designation	SB 1223 DI 2x24 V DC, DQ 2x24 V DC	SB 1223 2xDI / 2xDQ 5 V DC 200kHz	SB 1223 2xDI / 2xDQ 24 V DC 200kHz
Supply voltages			
Rated value			
• permissible range, lower limit (DC)	20.4 V		
• permissible range, upper limit (DC)	30 V		
Power supply to the transmitters			
• Supply current, max.	4 mA; per channel	4 mA; per channel	4 mA; per channel
Current consumption			
from backplane bus 5 V DC, typ.	50 mA	50 mA	50 mA
Power loss			
Power loss, typ.	1 W	1 W	1 W
Digital inputs			
Number of digital inputs	2	2	2
• in groups of	1	1	1
Number of simultaneously controllable inputs			
• all mounting positions - Concurrently controllable inputs, up to 40 °C	2	2	2
Input characteristic curve acc. to IEC 1131, Type 1	Yes	Yes	Yes
Input voltage			
• Rated value, DC	24 V	5 V	24 V
• for signal "0"	0 to 5 V	0 to 1 V	0 to 5 V
• for signal "1"	15 to 30 V	2 to 6 V	15 to 30 V
Input current			
• for signal "0", max. (permissible quiescent current)	1 mA	3 mA	2 mA
• for signal "1", min.		6 mA	5.8 mA
• for signal "1", typ.	0.5 A		14 mA

SB 1223 digital input/output module

Technical specifications (continued)

	6ES7 223-0BD30-0XB0	6ES7 223-3AD30-0XB0	6ES7 223-3BD30-0XB0
Product type designation	SB 1223 DI 2x24 V DC, DQ 2x24 V DC	SB 1223 2xDI / 2xDQ 5 V DC 200kHz	SB 1223 2xDI / 2xDQ 24 V DC 200kHz
Input delay (for rated value of input voltage)			
• for standard inputs			
- parameterizable	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four
- at "0" to "1", max.	2 µs	2 µs	2.5 µs
- at "1" to "0", max.	10 µs		
• for interrupt inputs			
- parameterizable	Yes	Yes	Yes
• for counter/technological functions			
- parameterizable	Yes	Yes	Yes
Cable length			
• Cable length, shielded, max.	500 m	50 m	50 m for technological functions
• Cable length unshielded, max.	300 m		
Digital outputs			
Number of digital outputs	2	2	2
• in groups of	1	1	1
Short-circuit protection	No	No	No
Switching capacity of the outputs			
• with resistive load, max.	0.5 A	0.1 A	0.1 A
• on lamp load, max.	5 W		
Output voltage			
• Rated value (DC)	24 V	5 V	24 V
• for signal "0" (DC), max.	0.1 V; with 10k ohms load	0.4 V	0.1 V; with 10 kohms load
• for signal "1", min.	20 V	L+ (-0.5 V)	20 V
• for signal "1" (DC), max.		6 V	
Output current			
• for signal "1" rated value	0.5 A	0.1 A	0.1 A
• for signal "1" permissible range, max.		0.11 A	
• for signal "0" residual current, max.	10 µA		10 µA
Load resistance range			
• upper limit	0.6 Ω	5 Ω	10 Ω
Cable length			
• Cable length, shielded, max.	500 m	50 m	50 m
• Cable length unshielded, max.	150 m		
Interrupts/diagnostics/ status information			
Alarms			
• Alarms	Yes	Yes	Yes
Diagnoses			
• Diagnostic functions	Yes	Yes	Yes
Diagnostics indication LED			
• for status of inputs	Yes	Yes	Yes
• for status of outputs	Yes	Yes	Yes

Technical specifications (continued)

	6ES7 223-0BD30-0XB0	6ES7 223-3AD30-0XB0	6ES7 223-3BD30-0XB0
Product type designation	SB 1223 DI 2x24 V DC, DQ 2x24 V DC	SB 1223 2xDI / 2xDQ 5 V DC 200kHz	SB 1223 2xDI / 2xDQ 24 V DC 200kHz
Climatic and mechanical conditions for storage and transport			
Climatic conditions for storage and transport			
• Free fall			
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package
• Air pressure acc. to IEC 60068-2-13			
- permissible atmospheric pressure	1080 to 660 hPa	1080 to 660 hPa	1080 to 660 hPa
• Relative humidity			
- permissible range (without condensation) at 25 °C	95%	95%	95%
Mechanical and climatic conditions during operation			
Climatic conditions during operation			
• Temperature			
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
Degree of protection			
IP20	Yes	Yes	Yes
Mechanics			
Type of housing (front)			
• Plastic	Yes	Yes	Yes
Dimensions and weight			
Dimensions			
• Width	38 mm	38 mm	38 mm
• Height	62 mm	62 mm	62 mm
• Depth	21 mm	21 mm	21 mm
Weight			
• Weight, approx.	40 g	40 g	40 g

SB 1223 digital input/output module

Ordering data

		Order No.
SB 1223 digital input/output signal board		
2 inputs, 24 V DC, IEC type 1 current sinking; 2 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	C	**6ES7 223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	C	**6ES7 223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	C	**6ES7 223-3BD30-0XB0**
Accessories		
Terminal block (spare part)		
for signal board		
with 6 screws, gold-plated; 4 pcs.	C	**6ES7 292-1BF30-0XA0**
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H

		Order No.
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

Overview SIPLUS SM 1221 digital input modules

- Digital inputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the relevant task
- For subsequent expansion of the system with additional inputs

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

SIPLUS SM 1221		
Order No.	**6AG1 221-1BF30-2XB0**	**6AG1 221-1BH30-2XB0**
Order No. based on	**6ES7 221-1BF30-0XB0**	**6ES7 221-1BH30-0XB0**
Ambient temperature range	-25 ... +70 °C; condensation permissible	
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme	
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.	

[1] ISA -S71.04 severity level GX from October 2010

Overview SIPLUS SM 1222 digital output modules

- Digital outputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the relevant task
- For subsequent expansion of the system with additional outputs

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

SIPLUS SM 1222				
Order No.	**6AG1 222-1BF30-2XB0**	**6AG1 222-1BH30-2XB0**	**6AG1 222-1HF30-2XB0**	**6AG1 222-1HH30-2XB0**
Order No. based on	**6ES7 222-1BF30-0XB0**	**6ES7 222-1BH30-0XB0**	**6ES7 222-1HF30-0XB0**	**6ES7 222-1HH30-0XB0**
Ambient temperature range	-25 ... +70 °C; condensation permissible			
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme			
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.			

[1] ISA -S71.04 severity level GX from October 2010

4

Overview SIPLUS SM 1223 digital input/output module

- Digital inputs and outputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the relevant task
- For subsequent expansion of the system with additional inputs and outputs

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

SIPLUS SM 1223				
Order No.	**6AG1 223-1BH30-2XB0**	**6AG1 223-1PH30-2XB0**	**6AG1 223-1PL30-2XB0**	**6AG1 223-1BL30-2XB0**
Order No. based on	**6ES7 223-1BH30-0XB0**	**6ES7 223-1PH30-0XB0**	**6ES7 223-1PL30-0XB0**	**6ES7 223-1BL30-0XB0**
Ambient temperature range	-25 ... +70 °C; condensation permissible			
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme			
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.			

1) ISA -S71.04 severity level GX from October 2010

Ordering data

		Order No.
SIPLUS SM 1221 **Digital input module**		
(extended temperature range and medial exposure)		
8 inputs, 24 V DC, isolated, current sourcing/sinking; from +60 °C to +70 °C number of simultaneously controllable inputs and outputs max. 50%	C	**6AG1 221-1BF30-2XB0**
16 inputs, 24 V DC, isolated, current sourcing/sinking; from +60 °C to +70 °C number of simultaneously controllable inputs and outputs max. 50%	C	**6AG1 221-1BH30-2XB0**
SIPLUS SM 1222 **Digital output module**		
(extended temperature range and medial exposure)		
8 outputs, 24 V DC; 0.5 A, 5 W, isolated	C	**6AG1 222-1BF30-2XB0**
16 outputs, 24 V DC; 0.5 A, 5 W, isolated	C	**6AG1 222-1BH30-2XB0**
8 relay outputs, 5 ... 30 V DC/5 ... 250 V AC, 2 A, 30 W DC/200 W AC; from +60 °C to +70 °C number of simultaneously controllable inputs and outputs max. 50%	C	**6AG1 222-1HF30-2XB0**
16 relay outputs, 5 ... 30 V DC/5 ... 250 V AC, 2 A, 30 W DC/200 W AC; from +60 °C to +70 °C number of simultaneously controllable inputs and outputs max. 50%	C	**6AG1 222-1HH30-2XB0**

		Order No.
SIPLUS SM 1223 **Digital input/output module**		
(extended temperature range and medial exposure)		
8 inputs, 24 V DC, IEC type 1 current sinking; 8 24 V DC transistor outputs, 0.5 A, 5 W from +60 °C to +70 °C number of simultaneously controllable inputs and outputs max. 50%	C	**6AG1 223-1BH30-2XB0**
16 inputs, 24 V DC, IEC type 1 current sinking; 16 24 V DC transistor outputs, 0.5 A, 5 W	C	**6AG1 223-1BL30-2XB0**
8 inputs, 24 V DC, IEC type 1 current sinking; 8 relay outputs, 5 ... 30 V DC/5 ... 250 V AC, 2 A, 30 W DC/200 W AC; from +60 °C to +70 °C number of simultaneously controllable inputs and outputs max. 50%	C	**6AG1 223-1PH30-2XB0**
16 inputs, 24 V DC, IEC type 1 current sinking; 16 relay outputs, 5 ... 30 V DC/5 ... 250 V AC, 2 A, 30 W DC/200 W AC; from +60 °C to +70 °C number of simultaneously controllable inputs and outputs max. 50%	C	**6AG1 223-1PL30-2XB0**
Accessories		see S7-1200 digital modules, pages 4/45, 4/49, 4/56

C: Subject to export regulations: AL: N and ECCN: EAR99H

SIPLUS SB 1223 digital input/output module

Overview

- Digital inputs and outputs as supplement to the integral I/O of the SIMATIC S7-1200 CPUs
- Can be plugged direct into the CPU

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

	SIPLUS SB 1223
Order No.	**6AG1 223-0BD30-5XB0**
Order No. based on	**6ES7 223-0BD30-0XB0**
Ambient temperature range	-25 ... +55 °C; condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

[1] ISA -S71.04 severity level GX from October 2010

Ordering data

		Order No.
Digital input/output module Signal Board SIPLUS SB 1223		
(extended temperature range and medial exposure)		
2 inputs, 24 V DC, IEC type 1 current sinking; two 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	C	**6AG1 223-0BD30-5XB0**
Accessories		see S7-1200 digital modules, page 4/60

C: Subject to export regulations: AL: N and ECCN: EAR99H

4

SM 1231 analog input module

Overview

- Analog inputs for SIMATIC S7-1200
- With extremely short conversion times
- For connecting analog sensors without additional amplifiers
- For solving even more complex automation tasks

Application

The SM 1231 analog input signal modules allow the connection of the controller to analog signals of the process.

This provides users with the following advantages:

- Optimal adaptation:
  With analog signal modules, users can optimally adapt their controllers even to more complex tasks.
- Direct connection of sensors:
  Up to 14 bit resolution and different input ranges permit the connection of sensors without additional amplifier.
- Flexibility:
  If the task is expanded subsequently, the controller can be upgraded. Updating of the user program is extremely simple.

Design

The signal modules have the same design features as the basic devices.

- Installation on DIN rails:
  The modules are snapped onto the rail next to the CPU on the right and are electrically and mechanically connected to each other and to the CPU by the integral slide mechanism.
- Direct installation:
  Horizontal or vertical mounting on DIN rail or direct mounting in the cabinet using integral lugs.

Function

The SM 1231 analog input signal modules convert analog signals from the process into digital signals for internal processing by the SIMATIC S7-1200.

Technical specifications

	6ES7 231-4HD30-0XB0	6ES7 231-4HF30-0XB0
Product type designation	SM 1231 AI 4 x13 bit	SM 1231 AI 8 x 13 bit
Supply voltages		
Rated value		
• 24 V DC	Yes	Yes
Current consumption		
Current consumption, typ.	45 mA	45 mA
from backplane bus 5 V DC, typ.	80 mA	90 mA
Power loss		
Power loss, typ.	1.5 W	1.5 W
Connection method		
required front connector	Yes	Yes
Analog inputs		
Number of analog inputs	4; Current or voltage differential inputs	8; Current or voltage differential inputs
permissible input frequency for current input (destruction limit), max.	± 35 V	± 35 V
permissible input current for voltage input (destruction limit), max.	40 mA	40 mA
Cycle time (all channels) max.	625 µs	625 µs
Technical unit for temperature measurement adjustable		
• Voltage	Yes; ±10 V, ±5 V, ±2.5 V	Yes; ±10 V, ±5 V, ±2.5 V
• Current	Yes; 0 to 20 mA	Yes; 0 to 20 mA
• Thermocouple	No	No
• Resistance thermometer	No	No
• Resistance	No	No
Input ranges (rated values), voltages		
• -10 V to +10 V	Yes	Yes
• Input resistance (-10 V to +10 V)	≥9 Mohms	≥9 Mohms
• -2.5 V to +2.5 V	Yes	Yes
• Input resistance (-2.5 V to +2.5 V)	≥9 Mohms	≥9 Mohms
• -5 V to +5 V	Yes	Yes
• Input resistance (-5 V to +5 V)	≥9 Mohms	≥9 Mohms
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	Yes
• Input resistance (0 to 20 mA)	≥ 250 ohms	≥ 250 ohms
Voltage input		
• permissible input voltage for voltage input (destruction limit), max.	35 V	35 V

Technical specifications (continued)

	6ES7 231-4HD30-0XB0	6ES7 231-4HF30-0XB0
Product type designation	SM 1231 AI 4 x13 bit	SM 1231 AI 8 x 13 bit
Current input		
• permissible input current for current input (destruction limit), max.	40 mA	40 mA
Temperature compensation		
• Temperature compensation parameterizable	No	No
Analog outputs		
Number of analog outputs	0	0
Analog value creation		
Integrations and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	12 bit; + sign	12 bit; + sign
• Integration time, parameterizable	Yes	Yes
• Interference voltage suppression for interference frequency f1 in Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz
Smoothing of measured values		
• parameterizable	Yes	Yes
• Step: None	Yes	Yes
• Step: Low	Yes	Yes
• Step: Medium	Yes	Yes
• Step: High	Yes	Yes
Errors/accuracies		
Temperature error (relative to input area)	25°C ±0.1% to 55°C ±0.2% total measurement range	25°C ±0.1% to 55°C ±0.2% total measurement range
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input area	+/- 0,1 %	+/- 0,1 %
• Current, relative to input area	+/- 0,1 %	+/- 0,1 %
Interference voltage suppression for f = n x (fl +/- 1%), fl = interference frequency		
• common mode voltage, max.	12 V	12 V
Interrupts/diagnostics/ status information		
Alarms		
• Alarms	Yes	Yes
• Diagnostic alarm	Yes	Yes
Diagnoses		
• Diagnostic functions	Yes	Yes
• Monitoring the supply voltage to the electronics	Yes	Yes
• Wire break	No	No

	6ES7 231-4HD30-0XB0	6ES7 231-4HF30-0XB0
Product type designation	SM 1231 AI 4 x13 bit	SM 1231 AI 8 x 13 bit
Diagnostics indication LED		
• for status of inputs	Yes	Yes
• for maintenance	Yes	Yes
Galvanic isolation		
Galvanic isolation analog outputs		
• between the channels and the power supply of the electronics	No	No
Climatic and mechanical conditions for storage and transport		
Climatic conditions for storage and transport		
• Free fall		
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package
• Temperature		
- permissible temperature range	-40 °C ... +70 °C	-40 °C ... +70 °C
• Atmospheric pressure acc. to IEC 60068-2-13		
- permissible atmospheric pressure	1080 to 660 hPa	1080 to 660 hPa
• Relative humidity		
- permissible range (without condensation) at 25 °C	95%	95%
Mechanical and climatic conditions during operation		
Climatic conditions during operation		
• Temperature		
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
• Air pressure acc. to IEC 60068-2-13		
- permissible atmospheric pressure	1080 ... 795 hPa	1080 ... 795 hPa
• Concentration of pollutants		
- SO2 at RH < 60% without condensation	< 0.5 ppm	< 0.5 ppm
- H2S at RH < 60% without condensation	< 0.1 ppm	< 0.1 ppm
Degree of protection		
IP20	Yes	Yes
Standards, approvals, certificates		
CE mark	Yes	Yes
C-TICK	Yes	Yes
FM approval	Yes	Yes

SM 1231 analog input module

Technical specifications (continued)

	6ES7 231-4HD30-0XB0	6ES7 231-4HF30-0XB0
Product type designation	SM 1231 AI 4 x13 bit	SM 1231 AI 8 x 13 bit
Mechanics		
Type of housing (front)		
• Plastic	Yes	Yes
Dimensions and weight		
Dimensions		
• Width	45 mm	45 mm
• Height	100 mm	100 mm
• Depth	75 mm	75 mm
Weight		
• Weight, approx.	180 g	180 g

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

Ordering data

		Order No.
SM 1231 analog input signal module		
4 analog inputs ±10 V, ±5 V, ±2.5 V, or 0 ... 20 mA; 12 bits + sign	C	**6ES7 231-4HD30-0XB0**
8 analog inputs ±10 V, ±5 V, ±2.5 V, or 0 to 20 mA; 12 bits + sign	C	**6ES7 231-4HF30-0XB0**
Accessories		
Extension cable for two-tier configuration for connecting digital/analog signal modules; length 2 m	C	**6ES7 290-6AA30-0XA0**
Terminal block (spare part) for 8/16-channel analog signal modules with 7 screws, gold-plated; 4 pcs.	C	**6ES7 292-1BG30-0XA0**
S7-1200 automation system, System Manual For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software *Target system:* SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

Overview

- Analog outputs for SIMATIC S7-1200
- With extremely short conversion times
- For connecting analog actuators without additional amplifiers
- For solving even more complex automation tasks

Application

SM 1232 analog output signal modules permit the use of analog outputs.

This provides users with the following advantages:

- Optimal adaptation:
  With analog signal modules, users can optimally adapt their controllers even to more complex tasks
- Direct connection of actuators:
  Up to 14 bit resolution permit the connection of actuators without an additional amplifier
- Flexibility:
  If the task is expanded subsequently, the controller can be upgraded. Updating of the user program is extremely simple

Design

The signal modules have the same design features as the basic devices.

- Installation on DIN rails:
  The modules are snapped onto the rail next to the CPU on the right and are electrically and mechanically connected to each other and to the CPU by the integral slide mechanism.
- Direct installation:
  Horizontal or vertical mounting on DIN rail or direct mounting in the cabinet using integral lugs.

Function

SM 1232 analog output signal modules convert digital signals of the SIMATIC S7-1200 into signals for controlling the respective process.

Technical specifications

	6ES7 232-4HB30-0XB0	6ES7 232-4HD30-0XB0
Product type designation	SM 1232 AQ 2x14 bit	SM 1232 AQ 4 x 14bit
Supply voltages		
Rated value		
• 24 V DC	Yes	Yes
Current consumption		
Current consumption, typ.	45 mA	45 mA
from backplane bus 5 V DC, typ.	80 mA	80 mA
Power loss		
Power loss, typ.	1.5 W	1.5 W
Connection method		
required front connector	Yes	Yes
Analog inputs		
Number of analog inputs	0	
Analog outputs		
Number of analog outputs	2; Current or voltage	4; Current or voltage
Output ranges, voltage		
• -10 to +10 V	Yes	Yes

	6ES7 232-4HB30-0XB0	6ES7 232-4HD30-0XB0
Product type designation	SM 1232 AQ 2x14 bit	SM 1232 AQ 4 x 14bit
Output ranges, current		
• 0 to 20 mA	Yes	Yes
Load impedance (in rated range of output)		
• with voltage outputs, min.	1 000 Ω	1 000 Ω
• with current outputs, max.	600 Ω	600 Ω
Analog value creation		
Measurement principle	Differential	Differential
Integrations and conversion time/ resolution per channel		
• Resolution (incl. overrange)	Voltage: 14 bits; Current : 13 bits	Voltage: 14 bits; Current : 13 bits
• Integration time, parameterizable	Yes	Yes
• Interference voltage suppression for interference frequency f1 in Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz

Technical specifications (continued)

	6ES7 232-4HB30-0XB0	6ES7 232-4HD30-0XB0
Product type designation	SM 1232 AQ 2x14 bit	SM 1232 AQ 4 x 14bit
Errors/accuracies		
Temperature error (relative to output area)	25°C ±0.3% to 55°C ±0.6% total measurement range	25°C ±0.3% to 55°C ±0.6% total measurement range
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to output area	+/- 0,3 %	+/- 0,3 %
• Current, relative to output area	+/- 0,3 %	+/- 0,3 %
Interference voltage suppression for f = n x (fl +/- 1%), fl = interference frequency		
• common mode voltage, max.	12 V	12 V
Interrupts/diagnostics/ status information		
Alarms		
• Alarms	Yes	Yes
• Diagnostic alarm	Yes	Yes
Diagnoses		
• Diagnostic functions	Yes	Yes
• Monitoring the supply voltage to the electronics	Yes	Yes
• Wire break	Yes	Yes
• Short circuit	Yes	Yes
Diagnostics indication LED		
• for status of inputs	Yes	Yes
• for maintenance	Yes	Yes
Climatic and mechanical conditions for storage and transport		
Climatic conditions for storage and transport		
• Free fall		
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package
• Temperature		
- permissible temperature range	-40 °C ... +70 °C	-40 °C ... +70 °C
• Atmospheric pressure acc. to IEC 60068-2-13		
- permissible atmospheric pressure	1080 to 660hPa	1080 to 660hPa
• Relative humidity		
- permissible range (without condensation) at 25 °C	95%	95%

	6ES7 232-4HB30-0XB0	6ES7 232-4HD30-0XB0
Product type designation	SM 1232 AQ 2x14 bit	SM 1232 AQ 4 x 14bit
Mechanical and climatic conditions during operation		
Climatic conditions during operation		
• Temperature		
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
• Air pressure acc. to IEC 60068-2-13		
- permissible atmospheric pressure	1080 ... 795 hPa	1080 ... 795 hPa
• Concentration of pollutants		
- SO_2 at RH < 60% without condensation	< 0.5 ppm	< 0.5 ppm
- H_2S at RH < 60% without condensation	< 0.1 ppm	< 0.1 ppm
Degree of protection		
IP20	Yes	Yes
Standards, approvals, certificates		
CE mark	Yes	Yes
C-TICK	Yes	Yes
FM approval	Yes	Yes
Mechanics		
Type of housing (front)		
• Plastic	Yes	Yes
Dimensions and weight		
Dimensions		
• Width	45 mm	45 mm
• Height	100 mm	100 mm
• Depth	75 mm	75 mm
Weight		
• Weight, approx.	180 g	180 g

Ordering data

		Order No.
SM 1232 analog output signal module		
2 analog outputs, ±10 V with 14 bits or 0 ... 20 mA with 13 bits	C	**6ES7 232-4HB30-0XB0**
4 analog outputs, ±10 V with 14 bits or 0 to 20 mA with 13 bits	C	**6ES7 232-4HD30-0XB0**
Accessories		
Extension cable for two-tier configuration	C	**6ES7 290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m		
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

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http://www.siemens.com/simatic/printmaterial

4

SB 1232 analog output module

Overview

- Analog output for the SIMATIC S7-1200
- Can be plugged direct into the CPU

Application

The SB 1232 analog output signal board permits the use of analog outputs.

This provides users with the following advantages:

- Optimal adaptation:
  Signal boards can be used where space is limited or if only a few additional inputs/outputs are required. Each S7-1200 CPU can be modularly expanded by a signal board. This does not increase the mounting space required for the controller.
- Direct connection of sensors and actuators:
  Up to 14 bit resolution and different output ranges permit the connection of actuators without additional amplifier.
- Flexibility:
  If the task is expanded subsequently, the controller can be upgraded. Updating of the user program is extremely simple.

Design

The signal boards are plugged directly into the receptacle on the front of each S7-1200 CPU.

- Mounting:
  Signal boards are plugged directly into the SIMATIC S7-1200 CPU and are thus electrically and mechanically connected to the CPU.
- The CPU mounting dimensions remain unchanged.
- All signal boards are easy to replace thanks to removable connecting terminals ("independent wiring").

Function

The SB 1232 analog output signal board converts digital signals of the S7-1200 into analog signals for the process.

Technical specifications

	6ES7 232-4HA30-0XB0
Product type designation	SB 1232 1 x AO
Supply voltages	
Power supply to the transmitters	
• Supply current, max.	25 mA
Current consumption	
from backplane bus 5 V DC, typ.	15 mA
Power loss	
Power loss, typ.	1.5 W
Analog outputs	
Number of analog outputs	1
Cycle time (all channels) max.	Voltage: 300 µS (R), 750 µS (1 uF) Current: 600 ms (1 mH); 2 ms (10 mH)
Output ranges, voltage	
• -10 to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes

	6ES7 232-4HA30-0XB0
Product type designation	SB 1232 1 x AO
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 000 Ω
• with current outputs, max.	600 Ω
Analog value creation	
Measurement principle	Differential
Integrations and conversion time/ resolution per channel	
• Resolution (incl. overrange)	V / 12 bits, I / 11 bits
Smoothing of measured values	
• parameterizable	Yes
Analog value generation (in isochronous mode)	
Cable length	
• Max. cable length, shielded	10 m; twisted
Errors/accuracies	
Temperature error (relative to output area)	25°C ±0.5% ... 55°C ±1%

Technical specifications (continued)

	6ES7 232-4HA30-0XB0
Product type designation	SB 1232 1 x AO
Interrupts/diagnostics/ status information	
Alarms	
• Alarms	Yes
Diagnoses	
• Diagnostic functions	Yes
Diagnostics indication (LED)	
• for status of outputs	Yes
Climatic and mechanical conditions for storage and transport	
Climatic conditions for storage and transport	
• Free fall	
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package
• Atmospheric pressure acc. to IEC 60068-2-13	
- permissible atmospheric pressure	1080 to 660hPa
• Relative humidity	
- permissible range (without condensation) at 25 °C	95%
Mechanical and climatic conditions during operation	
Climatic conditions during operation	
• Temperature	
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
Degree of protection	
IP20	Yes
Mechanics	
Type of housing (front)	
• Plastic	Yes
Dimensions and weight	
Dimensions	
• Width	38 mm
• Height	62 mm
• Depth	21 mm
Weight	
• Weight, approx.	40 g

Ordering data

		Order No.
SB 1232 analog output signal board		
1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	C	**6ES7 232-4HA30-0XB0**
Accessories		
Terminal block (spare part)		
for signal board		
with 6 screws, gold-plated; 4 pcs.	C	**6ES7 292-1BF30-0XA0**
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

More information

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SM 1234 analog input/output module

Overview

- Analog inputs and outputs for the SIMATIC S7-1200
- With extremely short conversion times
- For connecting analog actuators and sensors without additional amplifiers
- For solving even more complex automation tasks

Application

SM 1234 analog input/outputs permit the use of analog inputs/outputs.

This provides users with the following advantages:

- Optimal adaptation:
  With analog and digital expansion modules, users can optimally match their controllers even to more complex tasks
- Direct connection of sensors and actuators:
  Up to 14 bit resolution plus sign and different input/output ranges permit the connection of sensors and actuators without an additional amplifier
- Flexibility:
  If the task is expanded subsequently, the controller can be upgraded. Updating of the user program is extremely simple

Design

The SM 1234 analog input/output signal modules have the same design features as the basic devices.

- Installation on DIN rails:
  The modules are snapped onto the rail next to the CPU on the right and are electrically and mechanically connected to each other and to the CPU by the integral slide mechanism.
- Direct installation:
  Horizontal or vertical mounting on DIN rail or direct mounting in the cabinet using integral lugs.

Function

The SM 1234 analog input/output signal modules

- convert analog signals from the process into digital signals for internal processing by the SIMATIC S7-1200.
- convert digital signals of the SIMATIC S7-1200 into signals for controlling the respective process.

Technical specifications

	6ES7 234-4HE30-0XB0
Product type designation	SM 1234 AI 4 x13 bit AQ 2 x14 bit
Supply voltages	
Rated value	
• 24 V DC	Yes
Current consumption	
Current consumption, typ.	60 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	2 W
Connection method	
required front connector	Yes
Analog inputs	
Number of analog inputs	4; Current or voltage differential inputs
permissible input frequency for current input (destruction limit), max.	± 35 V
permissible input current for voltage input (destruction limit), max.	40 mA
Cycle time (all channels) max.	625 µs
Technical unit for temperature measurement adjustable	
• Voltage	Yes; ±10 V, ±5 V, ±2.5 V
• Current	Yes; 0 to 20 mA
• Thermocouple	No
• Resistance thermometer	No
• Resistance	No
Input ranges (rated values), voltages	
• -10 V to +10 V	Yes
• Input resistance (-10 V to +10 V)	≥9 Mohms
• -2.5 V to +2.5 V	Yes
• Input resistance (-2.5 V to +2.5 V)	≥9 Mohms
• -5 V to +5 V	Yes
• Input resistance (-5 V to +5 V)	≥9 Mohms
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• Input resistance (0 to 20 mA)	≥ 250 ohms
Voltage input	
• permissible input voltage for voltage input (destruction limit), max.	35 V

Technical specifications (continued)

	6ES7 234-4HE30-0XB0
Product type designation	SM 1234 AI 4 x13 bit AQ 2 x14 bit
Current input	
• permissible input current for current input (destruction limit), max.	40 mA
Temperature compensation	
• Temperature compensation parameterizable	No
Analog outputs	
Number of analog outputs	2; Current or voltage
Output ranges, voltage	
• -10 to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 000 Ω
• with current outputs, max.	600 Ω
Analog value creation	
Measurement principle	Differential
Integrations and conversion time/ resolution per channel	
• Resolution (incl. overrange)	Voltage: 14 bits; Current : 13 bits
• Resolution with overrange (bit including sign), max.	12 bit; + sign
• Integration time, parameterizable	Yes
• Interference voltage suppression for interference frequency f1 in Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz
Smoothing of measured values	
• parameterizable	Yes
• Step: None	Yes
• Step: Low	Yes
• Step: Medium	Yes
• Step: High	Yes
Errors/accuracies	
Temperature error (relative to input area)	25°C ±0.1% to 55°C ±0.2% total measurement range
Temperature error (relative to output area)	25°C ±0.3% to 55°C ±0.6% total measurement range
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input area	+/- 0,1 %
• Current, relative to input area	+/- 0,1 %

	6ES7 234-4HE30-0XB0
Product type designation	SM 1234 AI 4 x13 bit AQ 2 x14 bit
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to output area	+/- 0,3 %
• Current, relative to output area	+/- 0,3 %
Interference voltage suppression for f = n x (fI +/- 1%), fI = interference frequency	
• common mode voltage, max.	12 V
Interrupts/diagnostics/ status information	
Alarms	
• Alarms	Yes
• Diagnostic alarm	Yes
Diagnoses	
• Diagnostic functions	Yes
• Monitoring the supply voltage to the electronics	Yes
• Wire break	Yes
• Short circuit	Yes
Diagnostics indication (LED)	
• for status of inputs	Yes
• for status of outputs	Yes
• for maintenance	Yes
Galvanic isolation	
Galvanic isolation analog outputs	
• between the channels and the power supply of the electronics	No
Climatic and mechanical conditions for storage and transport	
Climatic conditions for storage and transport	
• Free fall	
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package
• Temperature	
- permissible temperature range	-40 °C ... +70 °C
• Atmospheric pressure acc. to IEC 60068-2-13	
- permissible atmospheric pressure	1080 to 660 hPa
• Relative humidity	
- permissible range (without condensation) at 25 °C	95%

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Technical specifications (continued)

	6ES7 234-4HE30-0XB0
Product type designation	SM 1234 AI 4 x13 bit AQ 2 x14 bit
Mechanical and climatic conditions during operation	
Climatic conditions during operation	
• Temperature	
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
• Atmospheric pressure acc. to IEC 60068-2-13	
- permissible atmospheric pressure	1080 ... 795 hPa
• Concentration of pollutants	
- SO_2 at RH < 60% without condensation	< 0.5 ppm
- H_2S at RH < 60% without condensation	< 0.1 ppm
Degree of protection	
IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
C-TICK	Yes
FM approval	Yes
Mechanics	
Type of housing (front)	
• Plastic	Yes
Dimensions and weight	
Dimensions	
• Width	45 mm
• Height	100 mm
• Depth	75 mm
Weight	
• Weight, approx.	220 g

Ordering data

		Order No.
SM 1234 analog input/output signal module		
4 analog inputs, ±10 V, ±5 V, ±2.5 V, or 0 ... 20 mA, 12 bits + sign; 2 analog outputs, ±10 V with 14 bits or 0 ... 20 mA with 13 bits	C	**6ES7 234-4HE30-0XB0**
Accessories		
Extension cable for two-tier configuration	C	**6ES7 290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m		
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

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http://www.siemens.com/simatic/printmaterial

Overview

- To measure temperatures easily and with high accuracy
- 7 common thermocouple types can be used
- Also for measurement of analog signals with low level (±80 mV)
- Easy to retrofit in existing systems

Field of application

The SM 1231 thermocouple module is a highly accurate temperature sensor using standard thermocouples. Low-level analog signals in the range of ±80 mV can also be detected. The SM 1231 thermocouple modules can be used with the CPU of the S7-1200 series.

Construction

The SM 1231 thermocouple modules have the same construction features as other modules in the S7-1200 series: Mounting on DIN rails:

- The modules are snapped onto the rails next to the CPU on the right and are connected to each other and to the CPU 12xx by means of the integrated backplane bus.
- Direct installation:
  The module can also be screwed directly to the wall using the pre-drilled holes. This installation method is recommended in cases of high vibration load.
- Thermocouples:
  In each case, 4 thermocouples of types J, K, T, E, R, S and N can be used. They are connected directly to the module without amplifiers.
- Installation site
- Thermocouple modules should be installed in locations with low fluctuations in temperature to ensure the highest measurement and repeat accuracy.

Function

- Different measuring ranges:
  Thermocouples of types J, K, T, E, R, S and N;
  Analog signal recording ±80 mV.
- Testing for open lines.
- Faults caused by contact voltages at the connection between thermocouple and module are prevented; when recording analog signals (±80 mV), the compensation is automatically deactivated.
- Temperature scale:
  The measured temperature can be displayed in °C or °F.

Technical specifications

	6ES7 231-5QD30-0XB0
Product type designation	Thermocouple module SM 1231
Current consumption	
from load voltage L+ (no-load), max.	60 mA
from 5 V DC backplane bus, max.	87 mA
Power loss	
Power loss, typ.	1.8 W
Connection system	
pluggable IO terminals	Yes
Analog inputs	
Number of analog inputs	4
Max. cable length, shielded	100 m; to sensor
Cable loop resistance	100 Ω
Refresh time (all channels)	405 ms
Input ranges (rated values), voltages	
• -80 mV to +80 mV	Yes
Input ranges (rated values), thermocouples	
• Type E	Yes
• Type J	Yes
• Type K	Yes
• Type N	Yes
• Type R	Yes
• Type S	Yes
• Type T	Yes
Input ranges (rated values), resistors	
• permissible input voltage for voltage input (destruction limit), max.	30 V
Formation of analog values	
Measuring principle	Sigma-Delta
Integration and conversion time/ resolution per channel	
• Resolution with overrange (bits including sign), max.	16 bits; temperature 0.1 °C / 0.1 °F
• Noise suppression for interference frequency f1 in Hz	85 dB at 50 / 60 / 400 Hz
Range of conversion values that can be displayed	
• bipolar signals	-27 648 to +27 648
Errors/accuracies	
Cold connection point	+/-1.5 °C
Repeat accuracy in settled state at 25 °C (relative to input range)	+/- 0.05 %
Operational limit over entire temperature range	
• Voltage, related to the output range	+/- 0.1 %

SM 1231 Thermocouple module

Technical specifications (continued)

	6ES7 231-5QD30-0XB0
Product type designation	Thermocouple module SM 1231
Noise suppression for f = n x (fl +/- 1 %), fl = interfering frequency	
• Common-mode voltage, max.	120 V; AC
• Common-mode interference, min.	120 dB; at AC 120 V
Isolation	
Isolation of analog inputs	
• Isolation analog inputs	Yes
Dimensions and weight	
Dimensions	
• Width	45 mm
• Height	100 mm
• Depth	75 mm
Weight	
• Weight, approx.	180 g

Ordering data

		Order No.
Thermocouple module SM 1231	C	**6ES7 231-5QD30-0XB0**
Inputs +/- 80 mV, resolution 15 bit + sign, thermocouple types J, K, S, T, R, E, N; 4 inputs		
Accessories		
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

Overview

- To measure temperatures easily and with high accuracy
- 4 inputs
- The most common resistance temperature detectors can be used
- Easy to retrofit in existing systems

Field of application

The SM 1231 RTD modules permit high-precision temperature recording using standard resistance temperature detectors. They can be used with CPU 1211, 1212 and 1214.

Construction

The SM 1231 RTD modules have the same construction features as other modules in the S7-1200 series:

- Mounting on DIN rails:
  The modules are snapped onto the rails next to the CPU on the right and are connected to each other and to the CPU 12xx by means of the integrated backplane bus.
- Direct installation:
  The module can also be screwed directly to the wall using the pre-drilled holes. This installation method is recommended in cases of high vibration load.
- The most common resistance temperature detectors can be used: Pt 100, Pt 200, Pt 500, Pt 1000, Pt 10000, Ni 100, Ni 120, Ni 1000, Cu 10, FS 150, FS 30, FS 600. The resistance temperature detectors are connected directly to the module without amplifiers, whereby they must all be of the same type. The detectors can be connected with 2, 3 or 4 lines.
- Installation site:
  The RTD module should be installed in locations with low fluctuations in temperature to ensure the highest measurement and repeat accuracy.
- DIP switches:
  The required settings, e.g. selection of the connected resistance detectors, are made using the DIP switches on the module.

Function

- Resistance temperature detectors of types Pt 100, Pt 200, Pt 500, Pt 1000, Pt 10000, Ni 100, Ni 120, Ni 1000, Cu 10, FS 150, FS 30, FS 600.
- Temperature scale:
  The measured temperature can be displayed in °C or °F.

Technical specifications

	6ES7 231-5PD30-0XB0
Product type designation	SM 1231 RTD signal module
Current consumption	
from load voltage L+ (no load), max.	60 mA
from 5 V DC backplane bus, max.	87 mA
Power loss	
Power loss, typ.	1.8 W; sensor: 1 mW
Connection system	
pluggable IO terminals	Yes
Analog inputs	
Number of analog inputs	4
Max. cable length, shielded	100 m; to sensor
Cable loop resistance	20 Ω; max. 2.7 Ω for Cu
Refresh time (all channels)	405 ms; 700 ms for Pt10000
Input ranges (rated values), resistance thermometer	
• Cu 10	Yes
• Ni 10	Yes
• Ni 1000	Yes
• Ni 120	Yes
• Pt 100	Yes
• Pt 1000	Yes
• Pt 10000	Yes
• Pt 200	Yes
• Pt 500	Yes
Input ranges (rated values), resistors	
• 0 to 150 Ω	Yes
• 0 to 300 Ω	Yes
• 0 to 600 Ω	Yes
• permissible input voltage for voltage input (destruction limit), max.	30 V; DC 30 V (sensor), DC 5 V (source)
Formation of analog values	
Measuring principle	Sigma-Delta
Integration and conversion time/resolution per channel	
• Resolution with overrange (bits including sign), max.	16 bits; temperature 0.1 °C / 0.1 °F
• Noise suppression for interference frequency f1 in Hz	85 dB at 50 / 60 / 400 Hz
Range of conversion values that can be displayed	
• bipolar signals	-27 648 to +27 648
Errors/accuracies	
Repeat accuracy in settled state at 25 °C (relative to input range)	+/- 0.05 %

Technical specifications (continued)

	6ES7 231-5PD30-0XB0
Product type designation	SM 1231 RTD signal module
Operational limit over entire temperature range	
• Voltage, related to the output range	+/- 0.1 %
Noise suppression for f = n x (fl +/- 1 %), fl = interfering frequency	
• Common-mode voltage, max.	0 V
• Common-mode interference, min.	120 dB; at AC 120 V
Isolation	
Isolation of analog inputs	
• Isolation analog inputs	Yes
Dimensions and weight	
Dimensions	
• Width	45 mm
• Height	100 mm
• Depth	75 mm
Weight	
• Weight, approx.	220 g

Ordering data

		Order No.
SM 1231 RTD signal module 4 inputs for resistance temperature detectors Pt100/200/500/1000/10000, Ni100/120/1000, Cu10; resistors 150/300/600 ohms, resolution 15 bits + sign	C	**6ES7 231-5PD30-0XB0**
Accessories		
S7-1200 automation system, System Manual For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software *Target system:* SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

Overview SIPLUS SM 1231 analog input module

- Analog inputs for SIMATIC S7-1200
- With extremely short conversion times
- For connecting analog sensors without additional amplifiers
- For solving even more complex automation tasks

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

	SIPLUS SM 1231
Order No.	**6AG1 231-4HD30-2XB0**
Order No. based on	**6ES7 231-4HD30-0XB0**
Ambient temperature range	-25 ... +70 °C; condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

1) ISA -S71.04 severity level GX from October 2010

Overview SIPLUS SM 1232 analog output module

- Analog outputs for SIMATIC S7-1200
- With extremely short conversion times
- For connecting analog actuators without additional amplifiers
- For solving even more complex automation tasks

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

	SIPLUS SM 1232
Order No.	**6AG1 232-4HB30-2XB0**
Order No. based on	**6ES7 232-4HB30-0XB0**
Ambient temperature range	-25 ... +70 °C; condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

1) ISA -S71.04 severity level GX from October 2010

SIPLUS SM 1231, SM 1232, SM 1234

Overview SIPLUS SM 1234 analog input/output module

- Analog inputs and outputs for the SIMATIC S7-1200
- With extremely short conversion times
- For connecting analog actuators and sensors without additional amplifiers
- For solving even more complex automation tasks

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

	SIPLUS SM 1234
Order No.	**6AG1 234-4HE30-2XB0**
Order No. based on	**6ES7 234-4HE30-0XB0**
Ambient temperature range	-25 ... +70 °C; condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

[1] ISA -S71.04 severity level GX from October 2010

Ordering data

		Order No.
Analog input module Signal Module SIPLUS SM 1231 (extended temperature range and medial exposure)		
4 analog inputs ±10 V, ±5 V, ±2.5 V, or 0 ... 20 mA 12 bit + sign; from +60 °C to +70 °C number of simultaneously controllable inputs and outputs max. 50%	C	**6AG1 231-4HD30-2XB0**
Analog output module Signal Module SIPLUS SM 1232 (extended temperature range and medial exposure)		
2 analog outputs, ±10 V with 14 bit or 0 ... 20 mA with 13 bit; from +60 °C to +70 °C number of simultaneously controllable inputs and outputs max. 50%	C	**6AG1 232-4HB30-2XB0**
Analog input/output module Signal Module SIPLUS SM 1234 (extended temperature range and medial exposure)		
4 analog inputs, ±10 V, ±5 V, ±2.5 V, or 0 ... 20 mA, 12 bit + sign; 2 analog outputs, ±10 V with 14 bit or 0 ... 20 mA with 13 bit	C	**6AG1 234-4HE30-2XB0**
Accessories		see S7-1200 analog modules, pages 4/66, 4/69, 4/74

C: Subject to export regulations: AL: N and ECCN: EAR99H

SIPLUS SB 1232 analog output module

Overview

- Analog output for the SIMATIC S7-1200
- Can be plugged direct into the CPU

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

	SIPLUS SB 1232
Order No.	**6AG1 232-4HA30-5XB0**
Order No. based on	**6ES7 232-4HA30-0XB0**
Ambient temperature range	-25 ... +55 °C; condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

[1] ISA -S71.04 severity level GX from October 2010

Ordering data

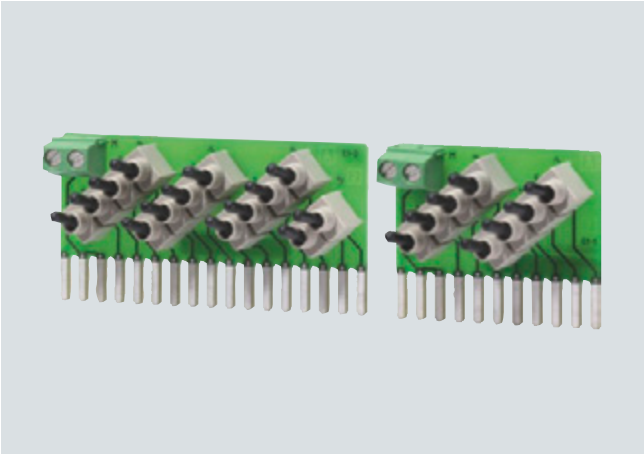
		Order No.
Analog output module Signal Board SIPLUS SB 1232 (extended temperature range and medial exposure)		
1 analog output, ±10 V with 12 bit or 0 ... 20 mA with 11 bit	C	**6AG1 232-4HA30-5XB0**
Accessories		see S7-1200 analog modules, page 4/71

C: Subject to export regulations: AL: N and ECCN: EAR99H

4

SIM 1274 simulator

Overview



- Simulator module for program testing during commissioning and ongoing operation
- Simulation of 8 or 14 inputs

Application

The SM 1274 simulator modules for SIMATIC S7-1200 provide users with the opportunity for testing user programs during commissioning and ongoing operation.

Design

The input simulators are mounted on the terminal block instead of the digital inputs.

The front of the module contains:

- Input status selector switch
- Connecting brackets for secure connection with the terminal block

Function

Program execution can be specifically influenced by setting the inputs.
The CPU reads the set input signal statuses, and processes them in the user program. The subsequent response of the controller allows conclusions to be drawn concerning program execution.

Technical specifications

	6ES7 274-1XH30-0XA0	6ES7 274-1XF30-0XA0
Product type designation	SIM 1274 14 Ch DI Simulator	SIM 1274 8 Ch DI Simulator
Supply voltages		
Rated value		
• 24 V DC	Yes	Yes
Degree of protection		
IP20	Yes	Yes

Ordering data

		Order No.
Digital input simulator SIM 1274 simulator module (optional)		
with 14 input switches, for CPU 1214C	C	**6ES7 274-1XH30-0XA0**
with 8 input switches, for CPU 1211C, CPU 1212C	C	**6ES7 274-1XF30-0XA0**
Accessories		
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

Overview

- For quick, high-performance serial data exchange via point-to-point connection
- Implemented protocols: ASCII, USS drive protocol, Modbus RTU
- Additional protocols can also be loaded
- Simple parameterization with STEP 7 Basic

Application

The CM 1241 communication modules are used for quick, high-performance serial data exchange via point-to-point connection.

Point-to-point connection is possible to, e.g.:

- SIMATIC S7 automation systems and the systems of many other manufacturers
- Printers
- Robot controls
- Modems
- Scanners
- Bar code readers, etc.

Design

The CM 1241 communication modules have the same design features as the basic devices.

- Installation on DIN rails:
  The modules are snapped onto the rail next to the CPU on the right and are electrically and mechanically connected to each other and to the CPU by the integral slide mechanism.
- Direct installation:
  Horizontal or vertical mounting on DIN rail or direct mounting in the cabinet using integral lugs.

The communication modules are equipped with the following:

- Status LEDs for indicating “Send”, “Receive” and “Error”
- Communication interfaces:
  Available for the RS232 and RS485 physical transmission media

Function

The following standard protocols are available on the CM 1241 communication modules:

- ASCII:
  For interfacing to third-party systems with simple transmission protocols, e.g. protocols with start and end characters or with block check characters. The interface handshake signals can be called and controlled via the user program.
- MODBUS:
  For communication according to the MODBUS protocol with RTU format:
  - MODBUS master:
    Master-slave interfacing with SIMATIC S7 as master.
  - MODBUS slave:
    Master-slave interfacing with SIMATIC S7 as slave; message frame traffic from slave to slave not possible.
- USS drive protocol:
  Instructions for connection of USS protocol drives are especially supported. In this case, drives exchange data over RS485. It is then possible to control these drives, and to read and write parameters.

Further drivers for downloading are also available.

Parameterization

Parameterization of the CM 1241 communication module is particularly user-friendly and simple with STEP 7 Basic:

- The user assigns the module characteristics via a parameterization environment integrated in STEP 7 Basic, e.g.:
  - the implemented protocol drivers that are used.
  - the driver-specific characteristics that are used.

Technical specifications

	6ES7 241-1CH30-0XB0	6ES7 241-1AH30-0XB0
Product type designation	CM 1241 RS485	CM 1241 RS232
Supply voltages		
Rated value		
• 24 V DC	Yes	Yes
• permissible range, lower limit (DC)	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V
Current consumption		
Current consumption, max.	220 mA; from L5+; logic	220 mA; from L5+; logic
Power loss		
Power loss, typ.	1.1 W	1.1 W
Interfaces		
Number of interfaces	1	1
Interface physics, RS 232C (V.24)		Yes
Interface physics, RS 422/RS 485 (X.27)	Yes	
Point-to-point		
Cable length, max.	1 000 m	10 m

Technical specifications (continued)

	6ES7 241-1CH30-0XB0	6ES7 241-1AH30-0XB0
Product type designation	CM 1241 RS485	CM 1241 RS232
Integrated protocol driver		
• ASCII	Yes; available as library function	
• USS	Yes; available as library function	
Climatic and mechanical conditions for storage and transport		
Climatic conditions for storage and transport		
• Free fall		
- Max. height of fall (in packaging)	0.3 m; five times, in shipping package	0.3 m; five times, in shipping package
• Temperature		
- permissible temperature range	-40 °C ... +70 °C	-40 °C ... +70 °C
• Air pressure acc. to IEC 60068-2-13		
- permissible atmospheric pressure	1080 to 660hPa	1080 to 660hPa
• Relative humidity		
- permissible range (without condensation) at 25 °C	95%	95%
Mechanical and climatic conditions during operation		
Climatic conditions during operation		
• Temperature		
- permissible temperature range	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted	0 °C ... 55 °C when horizontally mounted 0 °C ... 45 °C when vertically mounted
- permissible temperature change	5 °C ... 55 °C, 3 °C/ min	5 °C ... 55 °C, 3 °C/ min
• Air pressure acc. to IEC 60068-2-13		
- permissible atmospheric pressure	1080 ... 795 hPa	1080 ... 795 hPa
Software		
Runtime software		
• Target system		
- S7-1200	Yes	Yes
Dimensions and weight		
Dimensions		
• Width	30 mm	30 mm
• Height	100 mm	100 mm
• Depth	75 mm	75 mm
Weight		
• Weight, approx.	150 g	150 g

Ordering data

		Order No.
CM 1241 communication module		
Communication module for point-to-point connection, with one RS485 interface	C	**6ES7 241-1CH30-0XB0**
Communication module for point-to-point connection, with one RS232 interface	C	**6ES7 241-1AH30-0XB0**
Accessories		
S7-1200 automation system, System Manual		
For SIMATIC S7-1200 and STEP 7 Basic		
German	B	**6ES7 298-8FA30-8AH0**
English	B	**6ES7 298-8FA30-8BH0**
French	B	**6ES7 298-8FA30-8CH0**
Spanish	B	**6ES7 298-8FA30-8DH0**
Italian	B	**6ES7 298-8FA30-8EH0**
Chinese	B	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book		
Brief instructions		
German	B	**6ES7 298-8FA30-8AQ0**
English	B	**6ES7 298-8FA30-8BQ0**
French	B	**6ES7 298-8FA30-8CQ0**
Spanish	B	**6ES7 298-8FA30-8DQ0**
Italian	B	**6ES7 298-8FA30-8EQ0**
Chinese	B	**6ES7 298-8FA30-8KQ0**
STEP 7 Basic engineering software		
Target system: SIMATIC S7-1200 controllers and the associated I/O. The WinCC Basic which is included permits configuration of the SIMATIC Basic Panels *Requirement:* MS Windows XP SP3 / MS Windows Vista SP1 *Type of delivery:* German, English, with online documentation		
Single license	D	**6ES7 822-0AA00-0YA0**
STEP 7 Basic Software Update Service, 1 year	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

More information

Brochures

Information material for downloading can be found in the Internet:

http://www.siemens.com/simatic/printmaterial

Overview

- Unmanaged switch for connecting a SIMATIC S7-1200 to an Industrial Ethernet network with a line, tree or star topology
- Multiplication of Ethernet interfaces on a SIMATIC S7-1200 for additional connection of up to three programming devices, operator controls, and further Ethernet nodes
- Simple, space-saving mounting on the SIMATIC S7-1200 mounting rail
- Low-cost solution for implementing small, local Ethernet networks
- Connection without any problems using RJ45 standard connectors
- Simple and fast status display via LEDs on the device
- Integral autocrossover function permits use of uncrossed connecting cables

Benefits

get Designed for Industry

- Reduction in assembly costs and mounting space compared to use of external network components
- Fast commissioning, as no configuration is necessary
- Flexible expansion of the network by simply inserting the CSM

Application

The CSM 1277 is an Industrial Ethernet switch of compact design for use in the SIMATIC S7-1200. The CSM 1277 can be used to multiply the Ethernet interface of the SIMATIC S7-1200 for simultaneous communication with operator panels, programming devices, other controllers, or the office world.

The CSM 1277 and the SIMATIC S7-1200 controller can be used to implement simple automation networks at low cost.

Design

The CSM 1277 compact switch module offers all advantages of the SIMATIC S7-1200 design:

- Compact design;
  the rugged plastic enclosure contains:
  - 4 x RJ45 sockets for connecting to Industrial Ethernet
  - 3-pole plug-in terminal strip for connection of the external 24 V DC supply on the top
  - LEDs for diagnostics and for status display of the Industrial Ethernet ports
- Simple mounting on the mounting rail of the S7-1200
- Fanless and therefore low-maintenance design
- The module can be replaced without using a programming device

Function

- Multiplication of Ethernet interfaces of the SIMATIC S7-1200
- Design of a small, local Industrial Ethernet network with three further nodes
- Automatic detection of data transfer rate by means of auto-sensing and autocrossover functions
- LEDs for diagnostics and for status display

Network topology and network configuration

Various network topologies can be implemented using the CSM 1277 compact switch module:

- Connection of SIMATIC S7-1200 in linear topology:
  at least one RJ45 connection of the SIMATIC S7-1200 remains vacant, e.g. for connecting a programming device (PG)
- Connection of SIMATIC S7-1200 to a higher-level network in a tree/star topology:
  at least two RJ45 connections of the SIMATIC S7-1200 remain vacant, e.g. for connecting a programming device/operator panel (PG/OP)
- Design of a small, local network with a SIMATIC S7-1200 and three further Ethernet nodes

Configuration

The CSM 1277 compact switch module is an unmanaged switch and need not be configured.

Diagnostics

The following information is displayed on LEDs on the device:

- Power
- Port status
- Data traffic

CSM 1277 unmanaged

Technical specifications

	6GK7 277-1AA00-0AA0
Product type designation	**CSM 1277**
Data transmission rate	
Transmission rate 1	10 Mbit/s
Transmission rate 2	100 Mbit/s
Interfaces	
Maximum number of electrical/ optical connections for network components or terminal equipment	4
Number of electrical connections	
• For network components or terminal equipment	4
• For power supply	1
Design of electrical connection	
• For network components or terminal equipment	RJ45 port
• For power supply	3-pin terminal block
Supply voltage, current consumption, power loss	
Type of power supply	DC
Supply voltage, external	24 V
• Minimum	19.2 V
• Maximum	28.8 V
Current consumption, maximum	0.07 A
Product component: fusing of power supply input	Yes
Type of fusing of power supply input	0.5 A / 60 V
Effective power loss at 24 V with DC	1.6 W
Permitted ambient conditions	
Ambient temperature	
• During operating phase	0 … 60 °C
• During storage	-40 … +70 °C
• During transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	95 %
IP degree of protection	IP 20

	6GK7 277-1AA00-0AA0
Product type designation	**CSM 1277**
Design, dimensions and weights	
Type of construction	SIMATIC S7-1200 device design
Width	45 mm
Height	100 mm
Depth	75 mm
Net weight	0.15 kg
Type of mounting	
• 35 mm DIN rail mounting	Yes
• Wall mounting	No
• S7-300 rail mounting	No
Product properties, functions, components General	
Product function: switch-managed	No
Standards, specifications, approvals	
Standard	
• For EMC from FM	FM3611: Class 1, Division 2, Group A, B, C, D / T.., CL.1, Zone 2, GP. IIC, T.. Ta
• For Ex zone	EN 600079-15:2005, EN 600079-0:2006, II 3 G Ex nA II T4, KEMA 08 ATEX 0003 X
• For CSA and UL safety	UL 508, CSA C22.2 No. 142
• For emitted interference	EN 61000-6-4
• For noise immunity	EN 61000-6-2
Certificate of suitability	EN 61000-6-2, EN 61000-6-4
• CE mark	Yes
• C-Tick	Yes

Ordering data

	Order No.
CSM 1277 compact switch module Unmanaged switch for connecting a SIMATIC S7-1200 and up to three further nodes to Industrial Ethernet with 10/100 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, diagnostics on LEDs, S7-1200 module including electronic manual on CD-ROM	**6GK7 277-1AA00-0AA0**
Accessories	
IE TP Cord RJ45/RJ45 TP cable 4 x 2 with 2 RJ45 connectors	
• 0.5 m	**6XV1 870-3QE50**
• 1 m	**6XV1 870-3QH10**
• 2 m	**6XV1 870-3QH20**
• 6 m	**6XV1 870-3QH60**
• 10 m	**6XV1 870-3QN10**
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 1000 m, minimum order quantity 20 m	**6XV1 840-2AH10**
IE FC stripping tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1 901-1GA00**
IE FC Outlet RJ45 For connecting Industrial Ethernet FC cables and TP cords; graduated prices for 10 and 50 units or more	**6GK1 901-1FC00-0AA0**
SIMATIC NET Manual Collection Electronic manuals on communications systems, protocols, products; on DVD; German/English	**6GK1 975-1AA00-3AA0**

More information

To assist in selecting the right Industrial Ethernet switches as well as configuration of modular variants, the Switch Selection Tool is available as a free download at:

http://support.automation.siemens.com/WW/view/en/39134641

SIPLUS CM 1241 communication module

Overview

- For quick, high-performance serial data exchange via point-to-point connection
- Implemented protocols: ASCII, USS drive protocol, Modbus RTU
- Additional protocols can also be loaded
- Simple parameterization with STEP 7 Basic

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

	SIPLUS CM 1241	
Order No.	**6AG1 241-1CH30-2XB0**	**6AG1 241-1AH30-2XB0**
Order No. based on	**6ES7 241-1CH30-0XB0**	**6ES7 241-1AH30-0XB0**
Ambient temperature range	-25 ... +70 °C; condensation permissible	
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme	
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.	

[1] ISA -S71.04 severity level GX from October 2010

Ordering data

		Order No.
SIPLUS CM 1241 communication module		
(extended temperature range and medial exposure)		
Communication module for point-to-point connection, with one RS485 interface	C	**6AG1 241-1CH30-2XB0**
Communication module for point-to-point connection, with one RS232 interface	C	**6AG1 241-1AH30-2XB0**
Accessories		see CM 1241 communication module, page 4/84

C: Subject to export regulations: AL: N and ECCN: EAR99H

Overview

- Stabilized power supply for SIMATIC S7-1200
- In S7-1200 design
- Input 120/230 V AC, output 24 V DC/2.5 A

Technical specifications

	PM 1207 power supply
Order No.	6EP1 332-1SH71
Input voltage, rated value	120/230 V AC (autoranging)
• Range	85…132 V/176...264 V AC
Mains buffering	> 20 ms (at 93/187 V)
Line frequency, rated value	50/60 Hz
• Range	47…63 Hz
Input current, rated value	1.2/0.67 A
• Switch-on current (25 °C)	< 13 A
• Recommended miniature circuit-breaker	16 A characteristic B, 10 A characteristic C
Output voltage, rated value	24 V DC
• Tolerance	± 3%
• Residual ripple	< 150 mVpp
• Adjustment range	No
Output current, rated value	2.5 A
Approx. efficiency at rated values	83%
Connectable in parallel	Yes, 2 units
Electronic short-circuit protection	Yes, automatic restart
Radio suppression level (EN 55022)	Class B
Status display	Green LED for "24 V OK"
Line harmonic limitation (EN 61000-3-2)	Not applicable
Degree of protection (EN 60529)	IP20
Safety class	Class 1
Galvanic isolation	SELV acc. to EN 60950 and EN 50178
Ambient temperature	0 … +60 °C
Transport/storage temperature	-25 … +85 °C
Mounting	Standard mounting rail EN 60715 35x7.5/15
Dimensions (W x H x D) in mm	70 x 100 x 75
Approx. weight	0.3 kg
Certification	CE, cULus

Ordering data

Ordering data	Order No.
PM 1207 power supply Input 120/230 V AC, output 24 V DC/2.5 A	**6EP1 332-1SH71**

SIPLUS PM 1207 power supply

Overview

- Stabilized power supply for SIMATIC S7-1200
- In S7-1200 design
- Input 120/230 V AC, output 24 V DC/2.5 A

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

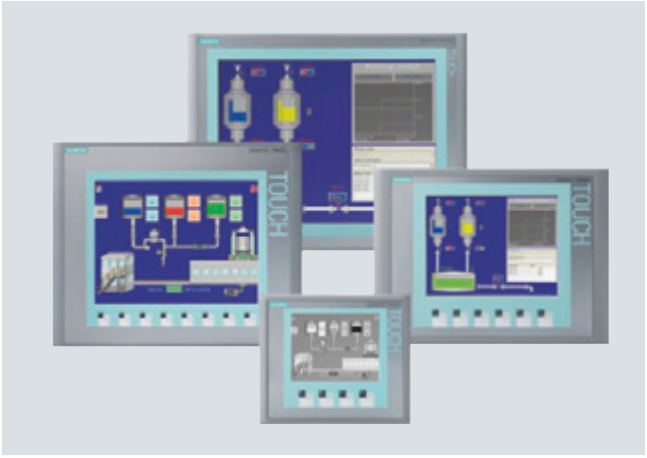
	SIPLUS PM 1207
Order No.	**6AG1 332-1SH71-7AA0**
Order No. based on	**6EP1 332-1SH71**
Ambient temperature range	-25 ... +70 °C; condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 4/4) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

[1] ISA -S71.04 severity level GX from October 2010

Ordering data

	Order No.
SIPLUS PM 1207 power supply (extended temperature range and medial exposure) Input 120/230 V AC, output 24 V DC/2.5 A; Derating from +55°C ... +70 °C to 1.5 A output current	**6AG1 332-1SH71-7AA0**

Overview



- The ideal entry level series of 3.8" to 15" for operating and monitoring compact machines and plants
- Clear process representation thanks to use of pixel-graphics displays
- Intuitive operation using Touch and tactile function keys
- Equipped with all the necessary basic functions such as alarm logging, recipe management, plots, vector graphics, and language switching
- Simple connection to the controller via integral Ethernet interface or separate version with RS485/422

Benefits

- Integral component of Totally Integrated Automation (TIA): Increased productivity, minimum engineering overhead, reduction in life-cycle costs
  - Can be used even where installation space is restricted thanks to vertical configuring (4" and 6" devices)
  - Short configuring and commissioning times
  - Service-friendly thanks to maintenance-free design and long service life of the backlighting display
- Simple and user-friendly representation of process values thanks to, for example, input/output fields, vector graphics, trend curves, bar charts, text and bitmaps
- Graphics library available with off-the-shelf picture objects
- Can be used worldwide:
  - 32 languages can be configured (incl. Asian and Cyrillic character sets)
  - You can switch between up to 5 languages online
  - Language-dependent texts and graphics

Application

The SIMATIC HMI Basic Panels can be used wherever compact machines and plants are controlled and monitored locally - in production, process and building automation alike. They are used in the most diverse sectors and applications.

Design

The SIMATIC HMI Basic Panels are installation-compatible with the existing touch devices of the product family of Panels and Multi Panels.

- KTP400 Basic mono
  3.8" STN mono
  1 Ethernet interface (TCP/IP)
  Touch screen and 4 tactile function keys
- KTP600 Basic mono
  5.7" STN mono
  1 Ethernet interface (TCP/IP)
  Touch screen and 6 tactile function keys
- KTP600 Basic color
  5.7" TFT with 256 colors
  1 Ethernet interface (TCP/IP) or 1 RS 485/422 interface (separate version)
  Touch screen and 6 tactile function keys
- KTP1000 Basic color
  10.4" TFT with 256 colors
  1 Ethernet interface (TCP/IP) or 1 RS 485/422 interface (separate version)
  Touch screen and 8 tactile function keys
- TP1500 Basic color
  15.1" TFT with 256 colors
  1 Ethernet interface (TCP/IP)
  Touch screen
- No slot for SD/CF/MultiMedia Card, no USB interface

Function

- Input/output fields
  for displaying and modifying process parameters
- Buttons
  are used for direct triggering of functions and actions. Up to 16 functions can be configured simultaneously on buttons.
- Graphics
  can be used as icons instead of text to "label" function keys or buttons. They can also be used as full-screen background images.
  The configuration tool contains a library with extensive graphics and diverse objects. All editors with an OLE interface can be used as graphics editors, e.g. PaintShop, Designer or CorelDraw, etc.
- Vector graphics
  Simple geometric basic forms (line, circle and rectangle) can be created direct in the configuring tool
- Fixed texts
  for labeling function keys, process images and process values in different font sizes
- Curve functions and bars
  are used for graphical display of dynamic values
- Language switching:
  - 5 online languages, 32 configuration languages including Asian and Cyrillic character sets
  - language-dependent texts and graphics
- User administration (security) in accordance with the requirements of the different sectors
  - authentication with user ID and password
  - user-group-specific rights

Function (continued)

- Signaling system
  - discrete alarms
  - analog messages
  - freely definable message classes (e.g. status/fault messages) for defining acknowledgment response and displaying message events
  - message history
- Recipe management
- Help texts
  for process screens, messages and variables
- Arithmetic functions
- Limit value monitoring
  for reliable process control of inputs and outputs
- Indicator light
  for indicating machine and plant statuses
- Scheduler for global function execution in case of global events
- Template concept for creation of screen templates (screen elements configured in the template appear in every screen)
- Simple maintenance and configuration thanks to:
  - backup/restore of configuration, operating system and firmware on a PC using ProSave
  - configuration download via MPI/PROFIBUS DP or Ethernet
  - automatic transfer identification
  - individual contrast setting and calibration (except KTP600)
  - clean screen
  - no battery required

Configuration

Configuration is implemented with the engineering software SIMATIC WinCC flexible 2008 Compact or with WinCC Basic V10.5, which is a component of STEP 7 Basic V10.5 (only PROFINET-based device versions).

Integration

The Basic Panels can be connected to:

- SIMATIC S7 controllers
- Non-Siemens controllers (applies for DP devices)
  - Allen Bradley DF1
  - Modicon Modbus RTU
  - Mitsubishi FX[1)]
  - Omron Hostlink/Multilink[1)]
- Non-Siemens controllers (non-Siemens drivers for PN devices)
  - Modicon Modbus TCP/IP[1)]

[1)] WinCC flexible 2008 SP2 and higher

Note:
Further information can be found under "System interfaces".

Technical specifications

	6AV6 647-0AA11-3AX0	6AV6 647-0AB11-3AX0	6AV6 647-0AD11-3AX0	6AV6 647-0AF11-3AX0	6AV6 647-0AG11-3AX0
Product type designation	KTP400 Basic mono PN	KTP600 Basic mono PN	KTP600 Basic color PN	KTP1000 Basic color PN	TP1500 Basic color PN
Supply voltage					
Supply voltage	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC
permissible range	+19.2 V to +28.8 V DC	+19.2 V to +28.8 V DC	+19.2 V to +28.8 V DC	+19.2 V to +28.8 V DC	+19.2 V to +28.8 V DC
Rated current	0.07 A	0.24 A	0.35 A	0.6 A	0.24 A
Memory					
Type	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	512 KB usable memory for user data	512 KB usable memory for user data	512 KB usable memory for user data	1024 KB usable memory for user data	1024 KB usable memory for user data
Time of day					
Clock					
• Type	Software clock, not battery backed	Software clock, not battery backed	Software clock, not battery backed	Software clock, not battery backed	Software clock, not battery backed
Protocols					
Protocols (terminal link)					
• Sm@rtAccess	No	No	No	No	No
Configuration					
Configuration tool	WinCC flexible Compact Version 2008 SP1 or higher or WinCC Basic V10.5 (to be ordered separately)	WinCC flexible Compact Version 2008 SP1 or higher or WinCC Basic V10.5 (to be ordered separately)	WinCC flexible Compact Version 2008 SP1 or higher or WinCC Basic V10.5 (to be ordered separately)	WinCC flexible Compact Version 2008 SP1 or higher or WinCC Basic V10.5 (to be ordered separately)	WinCC flexible Compact Version 2008 SP1 or higher or WinCC Basic V10.5 (to be ordered separately)

Technical specifications (continued)

	6AV6 647-0AA11-3AX0	6AV6 647-0AB11-3AX0	6AV6 647-0AD11-3AX0	6AV6 647-0AF11-3AX0	6AV6 647-0AG11-3AX0
Product type designation	KTP400 Basic mono PN	KTP600 Basic mono PN	KTP600 Basic color PN	KTP1000 Basic color PN	TP1500 Basic color PN
Display					
Display type	STN, gray scales	STN, gray scales	TFT, 256 colors	TFT, 256 colors	TFT, 256 colors
Size	3.8" (76.8 mm x 57.6 mm)	5.7" (115.2 mm x 86.4 mm)	5.7" (115.2 mm x 86.4 mm)	10.4" (211.2 mm x 158.4 mm)	15" (304.1 mm x 228.1 mm)
Resolution (WxH in pixel)	320 x 240	320 x 240	320 x 240	640 x 480	1024 x 768
Backlighting					
• MTBF backlighting (at 25 °C)	Approx. 30000 hours	about 50,000 hours	about 50,000 hours	about 50,000 hours	about 50,000 hours
Operating mode					
Control elements	Membrane keyboard	Membrane keyboard	Membrane keyboard	Membrane keyboard	Touch screen
Function keys, programmable	4 function keys	6 function keys	6 function keys	8 function keys	None
Connection for mouse/ keyboard/barcode reader	- / - / -	- / - / -	- / - / -	- / - / -	- / - / -
Touch operation					
• Touch screen	analog, resistive	analog, resistive	analog, resistive	analog, resistive	analog, resistive
• Numeric/alphabetical input	Yes (on-screen keyboard) / Yes (on-screen keyboard)	Yes (on-screen keyboard) / Yes (on-screen keyboard)	Yes (on-screen keyboard) / Yes (on-screen keyboard)	Yes (on-screen keyboard) / Yes (on-screen keyboard)	Yes (on-screen keyboard) / Yes (on-screen keyboard)
Ambient conditions					
Mounting position	vertical	vertical	vertical	vertical	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °	+/- 35 °	+/- 35 °	+/- 35 °	+/- 35 °
max. relative humidity (in %)	90 %	90 %	90 %	90 %	90 %
Temperature					
• Operation (vertical installation)	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C
• Operation (max. tilt angle)	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
Degree of protection					
Front	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)
Rear	IP20	IP20	IP20	IP20	IP20
Certifications & standards					
Certifications	CE, UL, cULus, NEMA 4, NEMA 4x, NEMA 12	CE, UL, cULus, NEMA 4, NEMA 4x, NEMA 12	CE, UL, cULus, NEMA 4, NEMA 4x, NEMA 12	CE, UL, cULus, NEMA 4, NEMA 4x, NEMA 12	CE, UL, cULus, NEMA 4, NEMA 4x, NEMA 12
I/O					
I/O devices	None	None	None	None	None
Type of output					
LED colors	None	None	None	None	None
Acoustics	Sound signal	Sound signal	Sound signal	Sound signal	Sound signal
Interfaces					
Interfaces	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)
PC card slot	No	No	No	No	No
CF card slot	No	No	No	No	No
Multi Media Card slot	No	No	No	No	No
USB	No	No	No	No	No
Ethernet	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)

Technical specifications (continued)

	6AV6 647-0AA11-3AX0	6AV6 647-0AB11-3AX0	6AV6 647-0AD11-3AX0	6AV6 647-0AF11-3AX0	6AV6 647-0AG11-3AX0
Product type designation	KTP400 Basic mono PN	KTP600 Basic mono PN	KTP600 Basic color PN	KTP1000 Basic color PN	TP1500 Basic color PN
Processor					
Processor	RISC 32 bit, 75 MHz	RISC 32 bit, 75 MHz	RISC 32 bit, 75 MHz	RISC 32-bit, 200 MHz	RISC 32-bit, 200 MHz
Functionality under WinCC flexible					
Applications/options	None	None	None	None	None
Number of Visual Basic Scripts	Not possible	Not possible	Not possible	Not possible	Not possible
Task planner	Yes	Yes	Yes	Yes	Yes
Help system	Yes	Yes	Yes	Yes	Yes
Status/control	Not possible	Not possible	Not possible	Not possible	Not possible
Message system					
• Number of messages	200	200	200	200	200
• Bit messages	Yes	Yes	Yes	Yes	Yes
• Analog messages	Yes	Yes	Yes	Yes	Yes
• Message buffer	Ring buffer (n x 256 entries), non-retentive[1)]	Ring buffer (n x 256 entries), non-retentive[1)]	Ring buffer (n x 256 entries), non-retentive[1)]	Ring buffer (n x 256 entries), non-retentive[1)]	Ring buffer (n x 256 entries), non-retentive[1)]
Recipes					
• Recipes	5	5	5	5	5
• Data records per recipe	20	20	20	20	20
• Entries per data record	20	20	20	20	20
• Recipe memory	40 KB integrated Flash	40 KB integrated Flash	40 KB integrated Flash	40 KB integrated Flash	40 KB integrated Flash
Number of process images					
• Process images	50	50	50	50	50
• Variables	250[1)2)]	500[1)2)]	500[1)2)]	500[1)2)]	500[1)2)]
• Limit values	Yes	Yes	Yes	Yes	Yes
• Multiplexing	Yes	Yes	Yes	Yes	Yes
Image elements					
• Text objects	500 text elements	500 text elements	500 text elements	500 text elements	500 text elements
• Graphics object	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics
• dynamic objects	Diagrams	Diagrams	Diagrams	Diagrams	Diagrams
Lists					
• Text lists	150	150	150	150	150
• Graphics list	100	100	100	100	100
• Libraries	Yes	Yes	Yes	Yes	Yes
Security					
• Number of user groups	50	50	50	50	50
• Passwords exportable	No	No	No	No	No
• Number of user rights	32	32	32	32	32
Data carrier support					
• PC card	No	No	No	No	No
• CF card	No	No	No	No	No
• Multi Media Card	No	No	No	No	No
Recording					
• Recording/Printing	PROFINET	PROFINET	PROFINET	PROFINET	PROFINET

1) WinCC flexible 2008 SP2 and higher
2) WinCC Basic V10.5 SP2 and higher (component of STEP 7 Basic V10.5 SP2)

Technical specifications (continued)

	6AV6 647-0AA11-3AX0	6AV6 647-0AB11-3AX0	6AV6 647-0AD11-3AX0	6AV6 647-0AF11-3AX0	6AV6 647-0AG11-3AX0
Product type designation	KTP400 Basic mono PN	KTP600 Basic mono PN	KTP600 Basic color PN	KTP1000 Basic color PN	TP1500 Basic color PN
Fonts					
• Keyboard fonts	US American (English)	US American (English)	US American (English)	US American (English)	US American (English)
Languages					
• Online languages	5	5	5	5	5
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, WinCC flexible Standard, symbol languages	Tahoma, WinCC flexible Standard, symbol languages	Tahoma, WinCC flexible Standard, symbol languages	Tahoma, WinCC flexible Standard, symbol languages	Tahoma, WinCC flexible Standard, symbol languages
Transfer (upload/download)					
• Transfer of configuration	Ethernet, automatic transfer recognition	Ethernet, automatic transfer recognition	Ethernet, automatic transfer recognition	Ethernet, automatic transfer recognition	Ethernet, automatic transfer recognition
Process coupling					
• Connection to controller	S7-200, S7-1200[2], S7- 300/400, Modicon (Modbus TCP/IP)[1], see catalog ST 80, chapter "System interfaces"	S7-200, S7-1200[2], S7- 300/400, Modicon (Modbus TCP/IP)[1], see catalog ST 80, chapter "System interfaces"	S7-200, S7-1200[2], S7- 300/400, Modicon (Modbus TCP/IP)[1], see catalog ST 80, chapter "System interfaces"	S7-200, S7-1200[2], S7- 300/400, Modicon (Modbus TCP/IP)[1], see catalog ST 80, chapter "System interfaces"	S7-200, S7-1200[2], S7- 300/400, Modicon (Modbus TCP/IP)[1], see catalog ST 80, chapter "System interfaces"
Expandability/openness					
• Open Platform Program	No	No	No	No	No
Dimensions					
Front of enclosure (W x H)	140 mm x 116 mm	214 mm x 158 mm	214 mm x 158 mm	335 mm x 275 mm	400 mm x 310 mm
Mounting cutout/ Device depth (W x H/D) in mm	123 mm x 99 mm/ 40 mm device depth	197 mm x 141 mm/ 44 mm device depth	197 mm x 141 mm/ 44 mm device depth	310 mm x 248 mm/ 60 mm device depth	367 mm x 289 mm/ 60 mm device depth
Weight					
Weight					
• Weight	0.32 kg	1.07 kg	1.07 kg	2.65 kg	4.2 kg

1) WinCC flexible 2008 SP2 and higher
2) WinCC Basic V10.5 SP2 and higher (component of STEP 7 Basic V10.5 SP2)

4

Ordering data		Order No.
SIMATIC KTP400 Basic mono PN	B	**6AV6 647-0AA11-3AX0**
Starter kit for SIMATIC KTP400 Basic mono PN	D	**6AV6 652-7AA01-3AA0**
SIMATIC KTP600 Basic mono PN	B	**6AV6 647-0AB11-3AX0**
Starter kit for SIMATIC KTP600 Basic mono PN	D	**6AV6 652-7BA01-3AA0**
SIMATIC KTP600 Basic color PN	B	**6AV6 647-0AD11-3AX0**
Starter kit for SIMATIC KTP600 Basic color PN	D	**6AV6 652-7DA01-3AA0**
SIMATIC KTP1000 Basic color PN	B	**6AV6 647-0AF11-3AX0**
Starter kit for SIMATIC KTP1000 Basic color PN	D	**6AV6 652-7FA01-3AA0**
SIMATIC TP1500 Basic color PN	B	**6AV6 647-0AG11-3AX0**
Starter kits consist of: • the relevant SIMATIC KTP Basic Panel • SIMATIC WinCC flexible Compact engineering software • SIMATIC HMI Manual Collection (DVD), 5 languages (English, French, German, Italian, Spanish), comprising: all currently available user manuals, manuals and communication manuals for SIMATIC HMI • Ethernet cable on PN devices		
Starter kit SIMATIC S7-1200 + KTP400 Basic consisting of: • SIMATIC HMI KTP400 Basic mono PN • SIMATIC S7-1200 CPU 1212C AC/DC/Rly • SIMATIC S7-1200 Simulator Module SIM 1274 • SIMATIC STEP 7 BASIC CD • SIMATIC S7-1200 HMI Manual Collection CD • Ethernet CAT5 cable, 2 m	D	**6AV6 651-7AA01-3AA0**
Starter kit SIMATIC S7-1200 + KTP600 Basic consisting of: • SIMATIC HMI KTP600 Basic color PN • SIMATIC S7-1200 CPU 1212C AC/DC/Rly • SIMATIC S7-1200 Simulator Module SIM 1274 • SIMATIC STEP 7 BASIC CD • SIMATIC S7-1200 HMI Manual Collection CD • Ethernet CAT5 cable, 2 m	D	**6AV6 651-7DA01-3AA0**

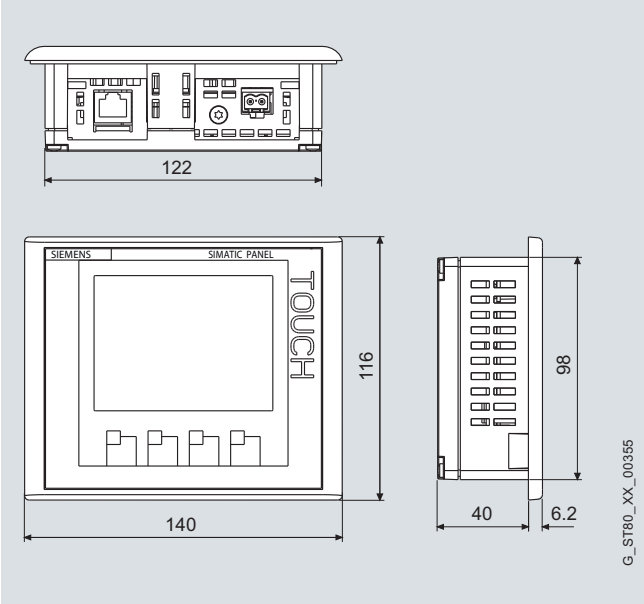
A: Subject to export regulations: AL: N and ECCN: EAR99S
B: Subject to export regulations: AL: N and ECCN: EAR99T

	Order No.
Configuration	
• All device versions: with SIMATIC WinCC flexible Compact	see catalog ST 80
• PROFINET-based device versions: with WinCC Basic V10.5 (component of STEP 7 Basic V10.5)	see STEP 7 Basic, page 7/2
Documentation (to be ordered separately)	
You can find the manual for the Basic Panels on the Internet at http://support.automation.siemens.com	
WinCC flexible Compact/ Standard/Advanced User Manual	
• German	**6AV6 691-1AB01-3AA0**
• English	**6AV6 691-1AB01-3AB0**
• French	**6AV6 691-1AB01-3AC0**
• Italian	**6AV6 691-1AB01-3AD0**
• Spanish	**6AV6 691-1AB01-3AE0**
User Manual WinCC flexible Communication	
• German	**6AV6 691-1CA01-3AA0**
• English	**6AV6 691-1CA01-3AB0**
• French	**6AV6 691-1CA01-3AC0**
• Italian	**6AV6 691-1CA01-3AD0**
• Spanish	**6AV6 691-1CA01-3AE0**
SIMATIC HMI Manual Collection A **Electronic documentation, on DVD** 5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI	**6AV6 691-1SA01-0AX0**
Accessories	
Accessories for supplementary ordering	See catalog ST 80, HMI software

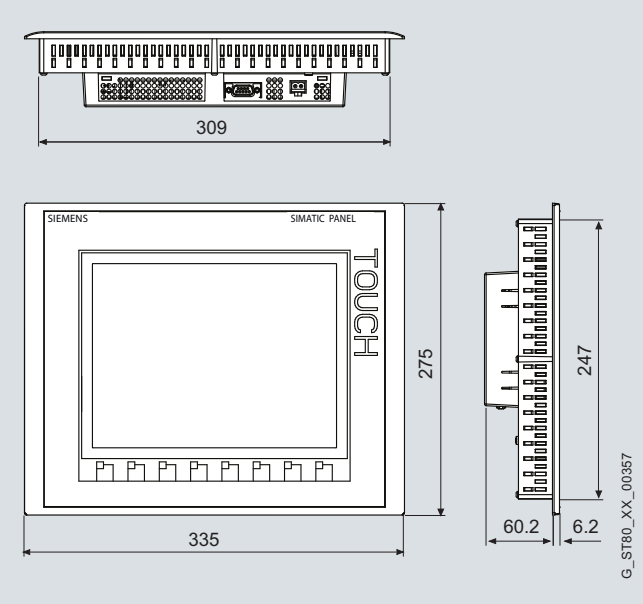
D: Subject to export regulations: AL: N and ECCN: 5D992

Dimensional drawings

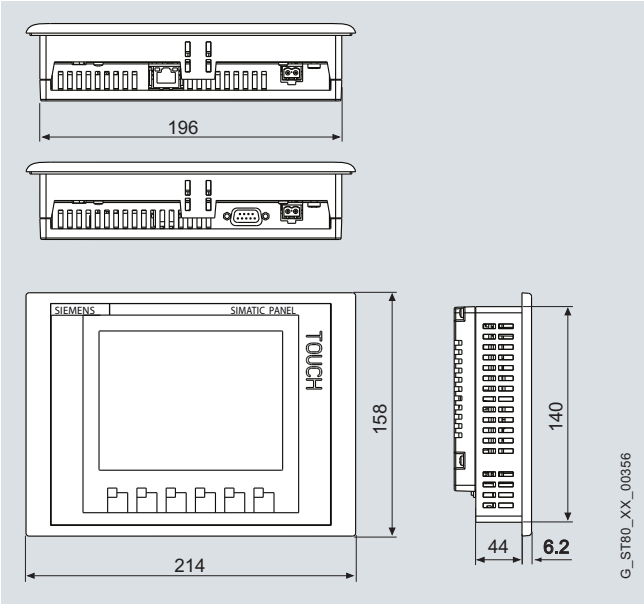
All dimensions in mm.



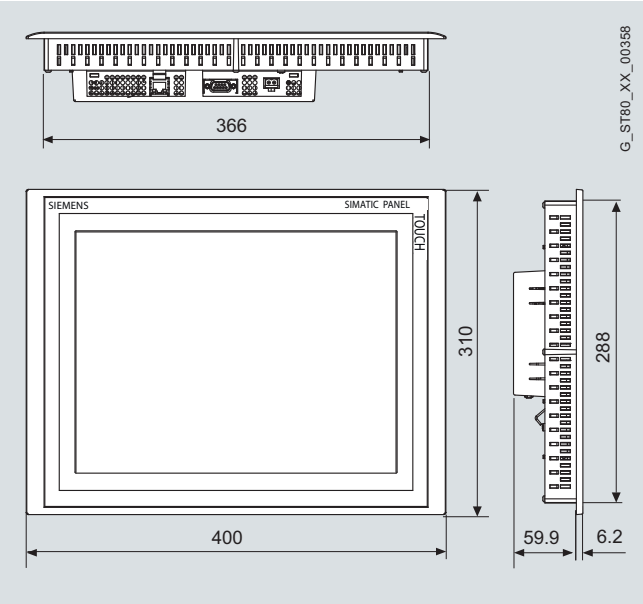
KTP400 Basic



KTP1000 Basic



KTP600 Basic



TP1500 Basic

More information

Additional information is available in the internet under:

http://www.siemens.com/panels

Note:

Do you require a specific modification to or supplement for the products described here? Look in the catalog ST 80 under "Customized products". We provide information there about additional and generally available sector products, and about the customer-specific modification and adaptation options.

Software

Overview

- Software for the SIMATIC S7-1200
- Functions for all phases of the automation project:
  - configuring and parameterizing the hardware
  - specifying the communication
  - programming in LAD (Ladder Diagram) and FBD (Function Block Diagram)
  - configuration of the visualization
  - test, commissioning, and service

The following is available:

- STEP 7 Basic

Additional informationen see page 7/2.

SIMATIC S7-300

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Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

Standard CPUs

Overview CPU 312

- The entry level CPU in Totally Integrated Automation (TIA)
- For smaller applications with moderate requirements for processing performance

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 315-2 DP

- The CPU with medium to large program memory and quantity structures for optional use of SIMATIC engineering tools
- High processing power in binary and floating-point arithmetic
- PROFIBUS DP master/slave interface
- For comprehensive I/O expansion
- For configuring distributed I/O structures

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 314

- For plants with medium requirements for program size
- High processing power in binary and floating-point arithmetic

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 315-2 PN/DP

- The CPU with mid-range program memory and quantity frameworks
- High processing power in binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- Combined MPI/PROFIBUS DP master/slave interface
- Isochronous mode on PROFIBUS

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 317-2 PN/DP

- The CPU with a large program memory and quantity framework for demanding applications
- For cross-sector automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- High processing power in binary and floating-point arithmetic
- Distributed intelligence in Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- PROFINET I/O Controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- Combined MPI/PROFIBUS DP master/slave interface
- For comprehensive I/O expansion
- For configuring distributed I/O structures
- Isochronous mode on PROFIBUS
- Optionally supports the use of SIMATIC engineering tools

SIMATIC Micro Memory Card required for operation of CPU.

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Technical specifications

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
Product version					
associated programming package	STEP 7 > V 5.4 + SP5 or STEP 7 as of V5.2 + SP1 with HSP 176	STEP 7 > V 5.4 + SP5 or STEP 7 as of V5.2 + SP1 with HSP 175	STEP 7 > V 5.4 + SP5 or STEP 7 as of V5.2 + SP1 with HSP 177	STEP 7 > V 5.4 + SP5 or STEP 7 as of V5.4 + SP4 with HSP 189	STEP 7 > V 5.4 + SP5 or STEP 7 as of V5.4 + SP4 with HSP 189
Supply voltages					
Rated value					
• 24 V DC	Yes	Yes	Yes	Yes	Yes
• permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	28.8 V	28.8 V
external protection for supply cables (recommendation)	Min. 2 A	Min. 2 A	Min. 2 A	Min. 2 A	Min. 2 A
Current consumption					
Current consumption (rated value)	650 mA	650 mA	850 mA	750 mA	750 mA
Current consumption (in no-load operation), typ.	140 mA	140 mA	150 mA	150 mA	150 mA
Inrush current, typ.	3.5 A	3.5 A	3.5 A	4 A	4 A
I^2t	1 $A^2 \cdot s$	1 $A^2 \cdot s$	1 $A^2 \cdot s$	1 $A^2 \cdot s$	1 $A^2 \cdot s$
from supply voltage L+, max.	650 mA	650 mA	900 mA		
Power loss					
Power loss, typ.	4 W	4 W	4.5 W		
Memory					
Work memory					
• integrated	32 Kibyte; For program and data	128 Kibyte; For program and data	256 Kibyte	384 Kibyte	1 Mbyte
• expandable	No	No	No	No	No

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
Work memory					
• Size of retentive memory for retentive data blocks	32 Kibyte	64 Kibyte	128 Kibyte	128 Kibyte	256 Kibyte
Load memory					
• pluggable (MMC)	Yes	Yes	Yes	Yes	Yes
• pluggable (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte
Backup					
• present	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data	Yes; Program and data	Yes; Program and data	Yes; Program and data	Yes; Program and data
CPU/ blocks					
DB					
• Number, max.	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	2 048; Number range: 1 to 16000
• Size, max.	32 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
FB					
• Number, max.	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	2 048; Number range: 0 to 7999
• Size, max.	32 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
FC					
• Number, max.	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	2 048; Number range: 0 to 7999
• Size, max.	32 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
OB					
• Size, max.	32 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
Nesting depth					
• per priority class	16	16	16	16	16
• additional within an error OB	4	4	4	4	4
CPU/ processing times					
for bit operations, min.	0.1 µs	0.06 µs	0.05 µs	0.05 µs	
for word operations, min.	0.24 µs	0.12 µs	0.09 µs	0.09 µs	0.03 µs
for fixed point arithmetic, min.	0.32 µs	0.16 µs	0.12 µs	0.12 µs	0.04 µs
for floating point arithmetic, min.	1.1 µs	0.59 µs	0.45 µs	0.45 µs	0.16 µs
Times/counters and their retentivity					
S7 counter					
• Number	256	256	256	256	512
• Retentivity					
- can be set	Yes	Yes	Yes	Yes	Yes
- lower limit	0	0	0	0	0
- upper limit	255	255	255	255	511
• Counting range					
- can be set	Yes	Yes	Yes	Yes	Yes
- lower limit	0	0	0	0	0
- upper limit	999	999	999	999	999
IEC counter					
• present	Yes	Yes	Yes	Yes	Yes
• Type	SFB	SFB	SFB	SFB	SFB

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
S7 times					
• Number	256	256	256	256	512
• Retentivity					
- can be set	Yes	Yes	Yes	Yes	Yes
- lower limit	0	0	0	0	0
- upper limit	255	255	255	255	511
- preset	no retentivity	no retentivity	no retentivity	no retentivity	no retentivity
• Time range					
- lower limit	10 ms	10 ms	10 ms	10 ms	10 ms
- upper limit	9 990 s	9 990 s	9 990 s	9 990 s	9 990 s
IEC timer					
• present	Yes	Yes	Yes	Yes	Yes
• Type	SFB	SFB	SFB	SFB	SFB
Data areas and their retentivity					
Flag					
• Number, max.	256 byte	256 byte	2 048 byte	2 048 byte	4 096 byte
• Retentivity available	Yes; MB 0 to MB 255	Yes; MB 0 to MB 255	Yes; MB 0 to MB 2047	Yes; MB 0 to MB 2047	Yes; MB 0 to MB 4095
• Number of clock memories	8; 1 memory byte	8; 1 memory byte	8; 1 memory byte	8; 1 memory byte	8; 1 memory byte
Data blocks					
• Number, max.	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	2 048; Number range: 1 to 16000
• Size, max.	32 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
• Retentivity adjustable	Yes; via non-retain property on DB	Yes; via non-retain property on DB	Yes; via non-retain property on DB	Yes; via non-retain property on DB	Yes; via non-retain property on DB
• Retentivity preset	yes	yes	yes	yes	yes
Local data					
• per priority class, max.	32 Kibyte; Max. 2 KB per block	32 Kibyte; Max. 2 KB per block	32 Kibyte; Max. 2 KB per block	32 Kibyte; Max. 2 KB per block	32 Kibyte; Max. 2 KB per block
Address area					
I/O address area					
• overall	1 024 byte	1 024 byte	2 048 byte	2 048 byte	8 192 byte
• Outputs	1 024 byte	1 024 byte	2 048 byte	2 048 byte	8 192 byte
• of which, distributed					
- Inputs			2 048 byte	2 048 byte	8 192 byte
- Outputs			2 048 byte	2 048 byte	8 192 byte
Process image					
• Inputs	1 024 byte	1 024 byte	2 048 byte	2 048 byte	8 192 byte
• Outputs	1 024 byte	1 024 byte	2 048 byte	2 048 byte	8 192 byte
• Inputs, adjustable	1 024 byte	1 024 byte	2 048 byte	2 048 byte	8 192 byte
• Outputs, adjustable	1 024 byte	1 024 byte	2 048 byte	2 048 byte	8 192 byte
• Inputs, default	128 byte	128 byte	128 byte	128 byte	256 byte
• Outputs, default	128 byte	128 byte	128 byte	128 byte	256 byte
Subprocess images					
• Number of subprocess images, max.			1	1	1
Digital channels					
• Inputs	256	1 024	16 384	16 384	65 536
• Outputs	256	1 024	16 384	16 384	65 536
• Inputs, of which central	256	1 024	1 024	1 024	1 024
• Outputs, of which central	256	1 024	1 024	1 024	1 024

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
Analog channels					
• Inputs	64	256	1 024	1 024	4 096
• Outputs	64	256	1 024	1 024	4 096
• Inputs, of which central	64	256	256	256	256
• Outputs, of which central	64	256	256	256	256
Hardware configuration					
Central devices, max.	1	1	1	1	1
Expansion devices, max.	0	3	3	3	3
Racks, max.	1	4	4	4	4
Modules per rack, max.	8	8	8	8	8
Number of DP masters					
• integrated	0	0	1	1	1
• via CP	4	4	4	4	4
Number of operable FMs and CPs (recommended)					
• FM	8	8	8	8	8
• CP, point-to-point	8	8	8	8	8
• CP, LAN	4	10	10	10	10
Time of day					
Clock					
• Hardware clock (real-time clock)		Yes	Yes	Yes	Yes
• Software clock	Yes				
• battery-backed and synchronizable	Buffered: No Can be synchronized: Yes	Yes	Yes	Yes	Yes
• Behavior of the clock following POWER-ON	The clock continues at the time of day it had when power was switched off				
• Behavior of the clock following expiry of backup period		The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off
• Deviation per day, max.	10 s; Typ.: 2 s	10 s; Typ.: 2 s	10 s; Typ.: 2 s	10 s; Typ.: 2 s	10 s; Typ.: 2 s
Runtime meter					
• Number	1	1	1	1	4
• Number/Number range	0	0	0	0	0 to 3
• Range of values	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)
• Granularity	1 hour	1 hour	1 hour	1 hour	1 hour
• retentive	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart
Clock synchronization					
• supported	Yes	Yes	Yes	Yes	Yes
• to MPI, master	Yes	Yes	Yes	Yes	Yes
• to MPI, slave	Yes	Yes	Yes	Yes	Yes
• to DP, master			Yes; on DP slave only time-of-day slave	Yes; on DP slave only time-of-day slave	Yes; on DP slave only time-of-day slave
• to DP, slave			Yes	Yes	Yes
• in AS, master	Yes	Yes	Yes	Yes	Yes
• in AS, slave				Yes	Yes
• on Ethernet via NTP				Yes; as client	Yes; as client

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
S7 message functions					
Number of login stations for message functions, max.	6; Depending on the connections configured for PG/OP and S7 basic communication	12; Depending on the connections configured for PG/OP and S7 basic communication	16; Depending on the connections configured for PG/OP and S7 basic communication	16; Depending on the connections configured for PG/OP and S7 basic communication	32; Depending on the connections configured for PG/OP and S7 basic communication
Process diagnostic messages	Yes	Yes	Yes	Yes	Yes
simultaneously active Alarm-S blocks, max.	300	300	300	300	300
Test commissioning functions					
Status/control					
• Status/control variable	Yes	Yes	Yes	Yes	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30	30	30	30	30
• of which status variables, max.	30	30	30	30	30
• of which control variables, max.	14	14	14	14	14
Forcing					
• Forcing	Yes	Yes	Yes	Yes	Yes
• Force, variables	Inputs, outputs	Inputs, outputs	Inputs, outputs	Inputs, outputs	Inputs, outputs
• Number of variables, max.	10	10	10	10	10
Status block	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously
Single step	Yes	Yes	Yes	Yes	Yes
Number of breakpoints	4	4	4	4	4
Diagnostic buffer					
• present	Yes	Yes	Yes	Yes	Yes
• Number of entries, max.	500	500	500	500	500
- can be set	No	No	No	No	No
- Of which powerfail-proof	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained
• Maximum number of entries that can be read in RUN					
- adjustable	Yes; from 10 to 499	Yes; from 10 to 499	Yes; from 10 to 499	Yes; from 10 to 499	Yes; from 10 to 499
- default	10	10	10	10	10
Service data					
• can be read out				Yes	Yes
Monitoring functions					
Status LEDs	Yes	Yes	Yes	Yes	Yes
Communication functions					
PG/OP communication	Yes	Yes	Yes	Yes	Yes
Data record routing			Yes	Yes	Yes
Routing	No	No	Yes; Max. 4	Yes	Yes
Global data communication					
• supported	Yes	Yes	Yes	Yes	Yes
• Size of GD packets, max.	22 byte	22 byte	22 byte	22 byte	22 byte
S7 basic communication					
• supported	Yes	Yes	Yes	Yes	Yes

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
S7 communication					
• supported	Yes	Yes	Yes	Yes	Yes
S5-compatible communication					
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Web server					
• Web server				Yes; Read-only function	Yes; Read-only function
• Number of HTTP clients				5	5
Open IE communication					
• TCP/IP				Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.				8	16
• ISO-on-TCP (RFC1006)				Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.				8	16
- Data length, max.				32 768 byte	32 768 byte
• UDP				Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.				8	16
- Data length, max.				1 472 byte	1 472 byte
Number of connections					
• overall	6	12	16	16	32
• usable for PG communication	5	11	15	15	31
• usable for OP communication	5	11	15	15	31
• usable for S7 basic communication	2	8	12	14	30
• usable for S7 communication				14	16
- reserved for S7 communication				0	0
- Adjustable for S7 communication, min.				0	0
- Adjustable for S7 communication, max.				14	16
• Max. total number of instances				32	32
• usable for routing				X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: max. 24	X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: max. 24
PROFINET CBA (at set setpoint communication load)					
• Setpoint for the CPU communication load				50 %	50 %
• Number of remote interconnection partners				32	32

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
PROFINET CBA (at set set-point communication load)					
• Number of functions, master/slave				30	30
• Total of all Master/Slave connections				1 000	1 000
• Data length of all incoming connections master/slave, max.				4 000 byte	4 000 byte
• Data length of all outgoing connections master/slave, max.				4 000 byte	4 000 byte
• Number of device-internal and PROFIBUS interconnections				500	500
• Data length of device-internal und PROFIBUS interconnections, max.				4 000 byte	4 000 byte
• Data length per connection, max.				1 400 byte	1 400 byte
• Remote interconnections with acyclic transmission					
- Sampling frequency: Sampling time, min.				500 ms	500 ms
- Number of incoming interconnections				100	100
- Number of outgoing interconnections				100	100
- Data length of all incoming interconnections, max.				2 000 byte	2 000 byte
- Data length of all outgoing interconnections, max.				2 000 byte	2 000 byte
- Data length per connection, max.				1 400 byte	1 400 byte
• Remote interconnections with cyclic transmission					
- Transmission frequency: Transmission interval, min.				10 ms	10 ms
- Number of incoming interconnections				200	200
- Number of outgoing interconnections				200	200
- Data length of all incoming interconnections, max.				2 000 byte	2 000 byte
- Data length of all outgoing interconnections, max.				2 000 byte	2 000 byte
- Data length per connection, max.				450 byte	450 byte
• HMI variables via PROFINET (acyclic)					
- Number of stations that can log on for HMI variables (PN OPC/iMap)				3; 2x PN OPC/1x iMap	3; 2x PN OPC/1x iMap
- HMI variable updating				500 ms	500 ms
- Number of HMI variables				200	200
- Data length of all HMI variables, max.				2 000 byte	2 000 byte

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
PROFINET CBA (at set set-point communication load)					
• PROFIBUS proxy functionality					
- supported				Yes	Yes
- Number of linked PROFIBUS devices				16	16
- Data length per connection, max.				240 byte; Slave-dependent	240 byte; Slave-dependent
1st interface					
Type of interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485	RS 485	RS 485
Isolated	No	No	No	Yes	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA	200 mA	200 mA	200 mA	200 mA
Functionality					
• MPI	Yes	Yes	Yes	Yes	Yes
• DP master	No	No	No	Yes	Yes
• DP slave	No	No	No	Yes	Yes
• Point-to-point connection	No	No	No	No	No
MPI					
• Number of connections	6	12	16	16	32
• Services					
- PG/OP communication	Yes	Yes	Yes	Yes	Yes
- Routing	No	No	Yes	Yes	Yes
- Global data communication	Yes	Yes	Yes	Yes	Yes
- S7 basic communication	Yes	Yes	Yes	Yes	Yes
- S7 communication	Yes	Yes	Yes	Yes	Yes
- S7 communication, as client	No	No	No	No; but via CP and loadable FB	No; but via CP and loadable FB
- S7 communication, as server	Yes	Yes	Yes	Yes	Yes
• Transmission speeds, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	12 Mbit/s	12 Mbit/s
DP master					
• Services					
- PG/OP communication				Yes	Yes
- Routing				Yes	Yes
- Global data communication				No	No
- S7 basic communication				Yes; I blocks only	Yes; I blocks only
- S7 communication				Yes	Yes
- S7 communication, as client				No	No
- S7 communication, as server				Yes	Yes
- Equidistance mode support				Yes	Yes
- Isochronous mode				Yes; OB 61	Yes; OB 61
- SYNC/FREEZE				Yes	Yes
- Activation/deactivation of DP slaves				Yes	Yes
- Number of DP slaves that can be simultaneously activated/deactivated, max.				8	8
- DPV1				Yes	Yes

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
DP master					
• Transmission speeds, max.				12 Mbit/s	12 Mbit/s
• Number of DP slaves, max.				124	124
• Address area					
- Inputs, max.				2 Kibyte	8 Kibyte
- Outputs, max.				2 Kibyte	8 Kibyte
• User data per DP slave					
- Inputs, max.				244 byte	244 byte
- Outputs, max.				244 byte	244 byte
DP slave					
• Services					
- PG/OP communication				Yes	Yes
- Routing				Yes; Only with active interface	Yes; Only with active interface
- Global data communication				No	No
- S7 basic communication				No	No
- S7 communication				Yes	Yes
- S7 communication, as client				No	No
- S7 communication, as server				Yes; Connection configured on one side only	Yes; Connection configured on one side only
- Direct data exchange (slave-to-slave communication)				Yes	Yes
- DPV1				No	No
• Transmission rate, max.				12 Mbit/s	12 Mbit/s
• Transfer memory					
- Inputs				244 byte	244 byte
- Outputs				244 byte	244 byte
• Address area, max.				32	32
• User data per address area, max.				32 byte	32 byte
2nd interface					
Type of interface			integrated RS 485 interface	PROFINET	PROFINET
Physics			RS 485	Ethernet RJ45	Ethernet RJ45
Isolated			Yes	Yes	Yes
Integrated switch				Yes	Yes
Number of ports				2	2
Power supply to interface (15 to 30 V DC), max.			200 mA		
automatic detection of transmission speed				Yes; 10/100 Mbit/s	Yes; 10/100 Mbit/s
Autonegotiation				Yes	Yes
Autocrossing				Yes	Yes
Functionality					
• MPI			No	No	No
• DP master			Yes	No	No
• DP slave			Yes	No	No
• PROFINET IO Controller				Yes	Yes
• PROFINET CBA				Yes	Yes
• Web server				Yes; only read function	Yes; only read function
- Number of HTTP clients				5	5
• Point-to-point connection			No	No	No

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
DP master					
• Number of connections, max.			16		
• Services					
- PG/OP communication			Yes		
- Routing			Yes		
- Global data communication			No		
- S7 basic communication			Yes; I blocks only		
- S7 communication			Yes		
- S7 communication, as client			No		
- S7 communication, as server			Yes		
- Equidistance mode support			Yes		
- Isochronous mode			Yes; OB 61		
- SYNC/FREEZE			Yes		
- Activation/deactivation of DP slaves			Yes		
- Number of DP slaves that can be simultaneously activated/deactivated, max.			8		
- DPV1			Yes		
• Transmission speeds, max.			12 Mbit/s		
• Number of DP slaves, max.			124; Per station		
• Address area					
- Inputs, max.			2 048 byte		
- Outputs, max.			2 048 byte		
• User data per DP slave					
- Inputs, max.			244 byte		
- Outputs, max.			244 byte		
DP slave					
• Number of connections			16		
• Services					
- PG/OP communication			Yes		
- Routing			Yes; Only with active interface		
- Global data communication			No		
- S7 basic communication			No		
- S7 communication, as client			No		
- S7 communication, as server			Yes		
- Direct data exchange (slave-to-slave communication)			Yes		
- DPV1			No		
• GSD file			The current GSD file can be obtained from: http://www.siemens.com/profibus-gsd		
• Transmission rate, max.			12 Mbit/s		
• automatic baud rate search			Yes; only with passive interface		
• Transfer memory					
- Inputs			244 byte		
- Outputs			244 byte		

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
DP slave					
• Address area, max.			32		
• User data per address area, max.			32 byte		
PROFINET IO Controller					
• Services					
- PG/OP communication				Yes	Yes
- Routing				Yes	Yes
- S7 communication				Yes; with loadable FBs, max. configurable connections: 14, max. number of instances: 32	Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32
- Isochronous mode				No	No
- Open IE communication				Yes; via TCP/IP, ISO on TCP and UDP	Yes; via TCP/IP, ISO on TCP and UDP
• Transmission rate, max.				100 Mbit/s	100 Mbit/s
• Total number of connectable IO Devices, max.				128	128
• Max. number of connectable IO devices for RT				128	128
- of which in line, max.				128	128
• Number of IO Devices with IRT and the option "high flexibility"				128	128
- of which in line, max.				61	61
• IRT, supported				Yes	Yes
• Prioritized startup supported				Yes	Yes
- Number of IO Devices, max.				32	32
• Activation/deactivation of IO Devices				Yes	Yes
- Number of IO Devices that can be simultaneously activated/deactivated, max.				8	8
• IO Devices changing during operation (partner ports), supported				Yes	Yes
- Max. number of IO devices per tool				8	8
• Device replacement without swap medium				Yes	Yes
• Updating time				250 µs - 128 ms (with send cycle of 250 µs); 500 µs - 256 ms (with send cycle of 500 µs); 1 ms - 512 ms (with send cycle 1 ms); minimum value of the send cycle is also dependent on the set communication share for PROFINET IO, on the number of IO Devices	250 µs - 128 ms (with send cycle of 250 µs); 500 µs - 256 ms (with send cycle of 500 µs); 1 ms - 512 ms (with send cycle 1 ms); minimum value of the send cycle is also dependent on the set communication share for PROFINET IO, on the number of IO Devices
• Address area					
- Inputs, max.				2 Kibyte	8 Kibyte
- Outputs, max.				2 Kibyte	8 Kibyte

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
PROFINET IO Controller					
• User data per address area, max.					
- User data consistency, max.				254 byte	254 byte
PROFINET CBA					
• acyclic transmission				Yes	Yes
• cyclic transmission				Yes	Yes
Open IE communication					
• Open IE communication, supported				Yes	Yes
• Number of connections, max.				8	8
• Local port numbers used at the system end				0, 20, 21, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535	0, 20, 21, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535
CPU/ programming					
Programming language					
• STEP 7	Yes; V5.2 SP1 or higher with HW update	Yes; V5.2 SP1 or higher with HW update	Yes; V5.2 SP1 or higher with HW update	Yes; V5.4 SP4 or higher with HW update	Yes; V5.4 SP4 or higher with HW update
• LAD	Yes	Yes	Yes	Yes	Yes
• FBD	Yes	Yes	Yes	Yes	Yes
• STL	Yes	Yes	Yes	Yes	Yes
• SCL	Yes	Yes	Yes	Yes	Yes
• CFC		Yes	Yes	Yes	Yes
• GRAPH	Yes	Yes	Yes	Yes	Yes
• HiGraph®	Yes	Yes	Yes	Yes	Yes
Command set	See instruction list	See instruction list	See instruction list	See instruction list	See instruction list
Nesting levels	8	8	8	8	8
User program protection/password protection	Yes	Yes	Yes	Yes	Yes
System functions (SFC)	see instruction list	see instruction list	see instruction list	see instruction list	see instruction list
System function blocks (SFB)	see instruction list	see instruction list	see instruction list	see instruction list	see instruction list
Environmental requirements					
Operating temperature					
• Min.				0 °C	0 °C
• max.				60 °C	60 °C
Dimensions and weight					
Dimensions					
• Width	40 mm	40 mm	40 mm	40 mm	40 mm
• Height	125 mm	125 mm	125 mm	125 mm	125 mm
• Depth	130 mm	130 mm	130 mm	130 mm	130 mm
Weight					
• Weight, approx.	270 g	280 g	290 g	340 g	340 g

Ordering data		Order No.
CPU 312 Main memory 32 KB, power supply 24 V DC, MPI; MMC required	C	**6ES7 312-1AE14-0AB0**
CPU 314 Main memory 128 KB, power supply 24 V DC, MPI; MMC required	C	**6ES7 314-1AG14-0AB0**
CPU 315-2 DP 256 KB main memory, 24 V DC power supply, MPI, PROFIBUS DP master/slave interface, MMC required		**6ES7 315-2AH14-0AB0**
CPU 315-2 PN/DP 384 KB main memory, 24 V DC power supply, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required		**6ES7 315-2EH14-0AB0**
CPU 317-2 PN/DP Main memory 1 MB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required		**6ES7 317-2EK14-0AB0**
Accessories		
SIMATIC Micro Memory Card		
64 KB		**6ES7 953-8LF20-0AA0**
128 KB		**6ES7 953-8LG11-0AA0**
512 KB		**6ES7 953-8LJ20-0AA0**
2 MB		**6ES7 953-8LL20-0AA0**
4 MB		**6ES7 953-8LM20-0AA0**
8 MB		**6ES7 953-8LP20-0AA0**
MPI cable for connecting SIMATIC S7 and the PG through MPI; 5 m in length		**6ES7 901-0BF00-0AA0**
Slot number plates		**6ES7 912-0AA00-0AA0**
S7-300 manual Design, CPU data, module data, instruction list		
German		**6ES7 398-8FA10-8AA0**
English		**6ES7 398-8FA10-8BA0**
French		**6ES7 398-8FA10-8CA0**
Spanish		**6ES7 398-8FA10-8DA0**
Italian		**6ES7 398-8FA10-8EA0**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: S7-200, S7-300, C7, S7-400, SIMATIC DP (Distributed I/O), SIMATIC PC, SIMATIC PG (Programming device), STEP 7, Engineering Tools, Runtime Software, SIMATIC PCS 7, SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication), SIMATIC Machine Vision, SIMATIC Sensors	A	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	D	**6ES7 998-8XC01-8YE2**
Power supply connector 10 units, spare part		**6ES7 391-1AA00-0AA0**
Manual "Communication for SIMATIC S7-300/-400"		
German		**6ES7 398-8EA00-8AA0**
English		**6ES7 398-8EA00-8BA0**
French		**6ES7 398-8EA00-8CA0**
Spanish		**6ES7 398-8EA00-8DA0**
Italian		**6ES7 398-8EA00-8EA0**
SIMATIC S7 demo case with mounting components for mounting S7-200 and S7-300		**6ES7 910-3AA00-0XA0**
PC adapter USB for connecting a PC to SIMATIC S7-200/300/400 via USB; with USB cable (5 m)		**6ES7 972-0CB20-0XA0**
PROFIBUS bus components		
PROFIBUS DP bus connector RS 485		
• with 90° cable outlet, max. transmission rate 12 Mbit/s		
- without PG interface		**6ES7 972-0BA12-0XA0**
- with PG interface		**6ES7 972-0BB12-0XA0**
• with 90° cable outlet for Fast-Connect connection system, max. transmission rate 12 Mbit/s		
- without PG interface, 1 unit		**6ES7 972-0BA52-0XA0**
- without PG interface, 100 units		**6ES7 972-0BA52-0XB0**
- with PG interface, 1 unit		**6ES7 972-0BB52-0XA0**
- with PG interface, 100 units		**6ES7 972-0BB52-0XB0**
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS		**6GK1 500-0EA02**
PROFIBUS Fast Connect bus cable Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m		**6XV1 830-0EH10**
RS 485 repeater for PROFIBUS Data transfer rate up to 12 Mbit/s; 24 V DC; IP20 housing		**6ES7 972-0AA01-0XA0**

A: Subject to export regulations: AL: N and ECCN: EAR99S
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

Standard CPUs

Ordering data	Order No.
PROFINET bus components	
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; Sold by the meter	**6XV1 840-2AH10**
FO Standard Cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter	**6XV1 873-2A**
SCALANCE X204-2 Industrial Ethernet Switch Industrial Ethernet Switches with integral SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports	**6GK5 204-2BB10-2AA3**
Compact Switch Module CSM 377 Unmanaged switch for connecting a SIMATIC S7-300, ET 200M and up to three other participants to Industrial Ethernet with 10/100 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	**6GK7 377-1AA00-0AA0**

	Order No.
IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 plug 145 145° cable outlet	
1 unit	**6GK1 901-1BB30-0AA0**
10 units	**6GK1 901-1BB30-0AB0**
50 units	**6GK1 901-1BB30-0AE0**
IE FC RJ45 plug 180 180° cable outlet	
1 unit	**6GK1 901-1BB10-2AA0**
10 units	**6GK1 901-1BB10-2AB0**
50 units	**6GK1 901-1BB10-2AE0**
PROFIBUS/PROFINET bus components for establishing MPI/PROFIBUS/PROFINET communication	see catalogs IK PI, CA 01

Overview CPU 315F-2 DP

- Based on the SIMATIC CPU 315-2 DP
- For setting up a fail-safe automation system in plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508 and up to Cat. 4 according to EN 954-1
- Distributed fail-safe I/O modules can be connected through the integral PROFIBUS DP interface (PROFIsafe)
- Fail-safe I/O modules of the ET 200M range can also be centrally connected
- Central and distributed use of standard modules for non safety-oriented applications

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 315F-2 PN/DP

- Based on CPU 315-2 PN/DP
- The CPU with medium-sized program memory and quantity structures for setting up a fail-safe automation system in plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508, PL e according to ISO 13849, and up to Cat. 4 according to EN 954-1
- Fail-safe I/O modules in distributed stations can be connected through the integrated PROFINET interface (PROFIsafe) and/or through the integrated PROFIBUS DP interface (PROFIsafe);
- Fail-safe I/O modules of the ET 200M range can also be centrally connected
- Central and distributed use of standard modules for non safety-relevant applications
- Component Based Automation (CBA) on PROFINET
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

Fail-safe CPUs

Overview CPU 317F-2 PN/DP

- Based on CPU 317-2 PN/DP
- The fail-safe CPU with a large program memory and quantity framework for demanding applications; for setting up a fail-safe automation system in plants with increased safety requirements.
- Complies with safety requirements up to SIL 3 according to IEC 61508, PL e according to ISO 13849-1, and up to Cat. 4 according to EN 954-1
- Fail-safe I/O modules in distributed stations can be connected through the integrated PROFINET interface (PROFIsafe) and/or through the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe I/O modules of the ET 200M range can also be centrally connected
- Central and distributed use of standard modules for non safety-relevant applications
- Component Based Automation (CBA) on PROFINET
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

Technical specifications

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
Product version			
associated programming package	STEP 7 > V 5.4 + SP5 or STEP 7 as of V5.2 + SP1 with HSP 177, S7 Distributed Safety as of V5.4		
Supply voltages			
Rated value			
• 24 V DC	Yes	Yes	Yes
• permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V
external protection for supply cables (recommendation)	Min. 2 A	Min. 2 A	Min. 2 A
Current consumption			
Current consumption (rated value)	850 mA	750 mA	750 mA
Current consumption (in no-load operation), typ.	150 mA	150 mA	150 mA
Inrush current, typ.	3.5 A	4 A	4 A
I^2t	1 $A^2 \cdot s$	1 $A^2 \cdot s$	1 $A^2 \cdot s$
from supply voltage L+, max.	900 mA		
Power loss			
Power loss, typ.	4.5 W		
Memory			
Work memory			
• integrated	384 Kibyte	512 Kibyte	1.5 Mbyte
• expandable	No	No	No
• Size of retentive memory for retentive data blocks	128 Kibyte	128 Kibyte	256 Kibyte
Load memory			
• pluggable (MMC)	Yes	Yes	Yes
• pluggable (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
Backup			
• present	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data	Yes; Program and data	Yes; Program and data
CPU/ blocks			
DB			
• Number, max.	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	2 048; Number range: 1 to 16000
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
FB			
• Number, max.	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	2 048; Number range: 0 to 7999
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
FC			
• Number, max.	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	2 048; Number range: 0 to 7999
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
OB			
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
Nesting depth			
• per priority class	16	16	16
• additional within an error OB	4	4	4
CPU/ processing times			
for bit operations, min.	0.05 µs	0.05 µs	
for word operations, min.	0.09 µs	0.09 µs	0.03 µs
for fixed point arithmetic, min.	0.12 µs	0.12 µs	0.04 µs
for floating point arithmetic, min.	0.45 µs	0.45 µs	0.16 µs
Times/counters and their retentivity			
S7 counter			
• Number	256	256	512
• Retentivity			
- can be set	Yes	Yes	Yes
- lower limit	0	0	0
- upper limit	255	255	511
• Counting range			
- can be set	Yes	Yes	Yes
- lower limit	0	0	0
- upper limit	999	999	999
IEC counter			
• present	Yes	Yes	Yes
• Type	SFB	SFB	SFB
S7 times			
• Number	256	256	512
• Retentivity			
- can be set	Yes	Yes	Yes
- lower limit	0	0	0
- upper limit	255	255	511
- preset	no retentivity	no retentivity	no retentivity
• Time range			
- lower limit	10 ms	10 ms	10 ms
- upper limit	9 990 s	9 990 s	9 990 s

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
IEC timer			
• present	Yes	Yes	Yes
• Type	SFB	SFB	SFB
Data areas and their retentivity			
Flag			
• Number, max.	2 048 byte	2 048 byte	4 096 byte
• Retentivity available	Yes; MB 0 to MB 2047	Yes; MB 0 to MB 2047	Yes; MB 0 to MB 4095
• Number of clock memories	8; 1 memory byte	8; 1 memory byte	8; 1 memory byte
Data blocks			
• Number, max.	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	2 048; Number range: 1 to 16000
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
• Retentivity adjustable	Yes; via non-retain property on DB	Yes; via non-retain property on DB	Yes; via non-retain property on DB
• Retentivity preset	yes	yes	yes
Local data			
• per priority class, max.	32 Kibyte; Max. 2 KB per block	32 Kibyte; Max. 2 KB per block	32 Kibyte; Max. 2 KB per block
Address area			
I/O address area			
• overall	2 048 byte	2 048 byte	8 192 byte
• Outputs	2 048 byte	2 048 byte	8 192 byte
• of which, distributed			
- Inputs	2 048 byte	2 048 byte	8 192 byte
- Outputs	2 048 byte	2 048 byte	8 192 byte
Process image			
• Inputs	2 048 byte	2 048 byte	8 192 byte
• Outputs	2 048 byte	2 048 byte	8 192 byte
• Inputs, adjustable	2 048 byte	2 048 byte	8 192 byte
• Outputs, adjustable	2 048 byte	2 048 byte	8 192 byte
• Inputs, default	384 byte	384 byte	1 024 byte
• Outputs, default	384 byte	384 byte	1 024 byte
Subprocess images			
• Number of subprocess images, max.	1	1	1
Digital channels			
• Inputs	16 384	16 384	65 536
• Outputs	16 384	16 384	65 536
• Inputs, of which central	1 024	1 024	1 024
• Outputs, of which central	1 024	1 024	1 024
Analog channels			
• Inputs	1 024	1 024	4 096
• Outputs	1 024	1 024	4 096
• Inputs, of which central	256	256	256
• Outputs, of which central	256	256	256
Hardware configuration			
Central devices, max.	1	1	1
Expansion devices, max.	3	3	3
Racks, max.	4	4	4
Modules per rack, max.	8	8	8

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
Number of DP masters			
• integrated	1	1	1
• via CP	4	4	4
Number of operable FMs and CPs (recommended)			
• FM	8	8	8
• CP, point-to-point	8	8	8
• CP, LAN	10	10	10
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes
• battery-backed and synchronizable	Yes	Yes	Yes
• Behavior of the clock following expiry of backup period	The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off
• Deviation per day, max.	10 s; Typ.: 2 s	10 s; Typ.: 2 s	10 s; Typ.: 2 s
Runtime meter			
• Number	1	1	4
• Number/Number range	0	0	0 to 3
• Range of values	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)
• Granularity	1 hour	1 hour	1 hour
• retentive	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart
Clock synchronization			
• supported	Yes	Yes	Yes
• to MPI, master	Yes	Yes	Yes
• to MPI, slave	Yes	Yes	Yes
• to DP, master	Yes; on DP slave only time-of-day slave	Yes; on DP slave only time-of-day slave	Yes; on DP slave only time-of-day slave
• to DP, slave	Yes	Yes	Yes
• in AS, master	Yes	Yes	Yes
• in AS, slave		Yes	Yes
• on Ethernet via NTP		Yes; as client	Yes; as client
S7 message functions			
Number of login stations for message functions, max.	16; Depending on the connections configured for PG/OP and S7 basic communication	16; Depending on the connections configured for PG/OP and S7 basic communication	32; Depending on the connections configured for PG/OP and S7 basic communication
Process diagnostic messages	Yes	Yes	Yes
simultaneously active Alarm-S blocks, max.	300	300	300
Test commissioning functions			
Status/control			
• Status/control variable	Yes	Yes	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30	30	30
• of which status variables, max.	30	30	30
• of which control variables, max.	14	14	14
Forcing			
• Forcing	Yes	Yes	Yes
• Force, variables	Inputs, outputs	Inputs, outputs	Inputs, outputs
• Number of variables, max.	10	10	10

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
Status block	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously
Single step	Yes	Yes	Yes
Number of breakpoints	4	4	4
Diagnostic buffer			
• present	Yes	Yes	Yes
• Number of entries, max.	500	500	500
- can be set	No	No	No
- Of which powerfail-proof	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained
• Maximum number of entries that can be read in RUN			
- adjustable	Yes; from 10 to 499	Yes; from 10 to 499	Yes; from 10 to 499
- default	10	10	10
Service data			
• can be read out		Yes	Yes
Monitoring functions			
Status LEDs	Yes	Yes	Yes
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes
Routing	Yes; Max. 4	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes
• Size of GD packets, max.	22 byte	22 byte	22 byte
S7 basic communication			
• supported	Yes	Yes	Yes
S7 communication			
• supported	Yes	Yes	Yes
S5-compatible communication			
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Web server			
• Web server		Yes; Read-only function	Yes; Read-only function
• Number of HTTP clients		5	5
Open IE communication			
• TCP/IP		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		8	16
• ISO-on-TCP (RFC1006)		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		8	16
- Data length, max.		32 768 byte	32 768 byte
• UDP		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		8	16
- Data length, max.		1 472 byte	1 472 byte
Number of connections			
• overall	16	16	32
• usable for PG communication	15	15	31
• usable for OP communication	15	15	31
• usable for S7 basic communication	12	14	30
• usable for S7 communication		14	16
- reserved for S7 communication		0	0
- Adjustable for S7 communication, min.		0	0
- Adjustable for S7 communication, max.		14	16

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
Number of connections			
• Max. total number of instances		32	32
• usable for routing		X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: max. 24	X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: max. 24
PROFINET CBA (at set setpoint communication load)			
• Setpoint for the CPU communication load		50 %	50 %
• Number of remote interconnection partners		32	32
• Number of functions, master/slave		30	30
• Total of all Master/Slave connections		1 000	1 000
• Data length of all incoming connections master/slave, max.		4 000 byte	4 000 byte
• Data length of all outgoing connections master/slave, max.		4 000 byte	4 000 byte
• Number of device-internal and PROFIBUS interconnections		500	500
• Data length of device-internal and PROFIBUS interconnections, max.		4 000 byte	4 000 byte
• Data length per connection, max.		1 400 byte	1 400 byte
• Remote interconnections with acyclic transmission			
- Sampling frequency: Sampling time, min.		500 ms	500 ms
- Number of incoming interconnections		100	100
- Number of outgoing interconnections		100	100
- Data length of all incoming interconnections, max.		2 000 byte	2 000 byte
- Data length of all outgoing interconnections, max.		2 000 byte	2 000 byte
- Data length per connection, max.		1 400 byte	1 400 byte
• Remote interconnections with cyclic transmission			
- Transmission frequency: Transmission interval, min.		10 ms	10 ms
- Number of incoming interconnections		200	200
- Number of outgoing interconnections		200	200
- Data length of all incoming interconnections, max.		2 000 byte	2 000 byte
- Data length of all outgoing interconnections, max.		2 000 byte	2 000 byte
- Data length per connection, max.		450 byte	450 byte
• HMI variables via PROFINET (acyclic)			
- Number of stations that can log on for HMI variables (PN OPC/iMap)		3; 2x PN OPC/1x iMap	3; 2x PN OPC/1x iMap
- HMI variable updating		500 ms	500 ms
- Number of HMI variables		200	200
- Data length of all HMI variables, max.		2 000 byte	2 000 byte
• PROFIBUS proxy functionality			
- supported		Yes	Yes
- Number of linked PROFIBUS devices		16	16
- Data length per connection, max.		240 byte; Slave-dependent	240 byte; Slave-dependent
1st interface			
Type of interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
Isolated	No	Yes	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA	200 mA	200 mA

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
Functionality			
• MPI	Yes	Yes	Yes
• DP master	No	Yes	Yes
• DP slave	No	Yes	Yes
• Point-to-point connection	No	No	No
MPI			
• Number of connections	16	16	32
• Services			
- PG/OP communication	Yes	Yes	Yes
- Routing	Yes	Yes	Yes
- Global data communication	Yes	Yes	Yes
- S7 basic communication	Yes	Yes	Yes
- S7 communication	Yes	Yes	Yes
- S7 communication, as client	No	No; but via CP and loadable FB	No; but via CP and loadable FB
- S7 communication, as server	Yes	Yes	Yes
• Transmission speeds, max.	187.5 kbit/s	12 Mbit/s	12 Mbit/s
DP master			
• Services			
- PG/OP communication		Yes	Yes
- Routing		Yes	Yes
- Global data communication		No	No
- S7 basic communication		Yes; I blocks only	Yes; I blocks only
- S7 communication		Yes	Yes
- S7 communication, as client		No	No
- S7 communication, as server		Yes	Yes
- Equidistance mode support		Yes	Yes
- Isochronous mode		Yes; OB 61	Yes; OB 61
- SYNC/FREEZE		Yes	Yes
- Activation/deactivation of DP slaves		Yes	Yes
- Number of DP slaves that can be simultaneously activated/deactivated, max.		8	8
- DPV1		Yes	Yes
• Transmission speeds, max.		12 Mbit/s	12 Mbit/s
• Number of DP slaves, max.		124	124
• Address area			
- Inputs, max.		2 Kibyte	8 Kibyte
- Outputs, max.		2 Kibyte	8 Kibyte
• User data per DP slave			
- Inputs, max.		244 byte	244 byte
- Outputs, max.		244 byte	244 byte
DP slave			
• Services			
- PG/OP communication		Yes	Yes
- Routing		Yes; Only with active interface	Yes; Only with active interface
- Global data communication		No	No
- S7 basic communication		No	No
- S7 communication		Yes	Yes
- S7 communication, as client		No	No
- S7 communication, as server		Yes; Connection configured on one side only	Yes; Connection configured on one side only
- Direct data exchange (slave-to-slave communication)		Yes	Yes
- DPV1		No	No
• Transmission rate, max.		12 Mbit/s	12 Mbit/s
• Transfer memory			
- Inputs		244 byte	244 byte
- Outputs		244 byte	244 byte
• Address area, max.		32	32
• User data per address area, max.		32 byte	32 byte

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
2nd interface			
Type of interface	integrated RS 485 interface	PROFINET	PROFINET
Physics	RS 485	Ethernet RJ45	Ethernet RJ45
Isolated	Yes	Yes	Yes
Integrated switch		Yes	Yes
Number of ports		2	2
Power supply to interface (15 to 30 V DC), max.	200 mA		
automatic detection of transmission speed		Yes; 10/100 Mbit/s	Yes; 10/100 Mbit/s
Autonegotiation		Yes	Yes
Autocrossing		Yes	Yes
Functionality			
• MPI	No	No	No
• DP master	Yes	No	No
• DP slave	Yes	No	No
• PROFINET IO Controller		Yes	Yes
• PROFINET CBA		Yes	Yes
• Web server		Yes; only read function	Yes; only read function
- Number of HTTP clients		5	5
• Point-to-point connection	No	No	No
DP master			
• Number of connections, max.	16		
• Services			
- PG/OP communication	Yes		
- Routing	Yes		
- Global data communication	No		
- S7 basic communication	Yes; I blocks only		
- S7 communication	Yes		
- S7 communication, as client	No		
- S7 communication, as server	Yes		
- Equidistance mode support	Yes		
- Isochronous mode	Yes; OB 61		
- SYNC/FREEZE	Yes		
- Activation/deactivation of DP slaves	Yes		
- Number of DP slaves that can be simultaneously activated/deactivated, max.	8		
- DPV1	Yes		
• Transmission speeds, max.	12 Mbit/s		
• Number of DP slaves, max.	124; Per station		
• Address area			
- Inputs, max.	2 048 byte		
- Outputs, max.	2 048 byte		
• User data per DP slave			
- Inputs, max.	244 byte		
- Outputs, max.	244 byte		
DP slave			
• Number of connections	16		
• Services			
- PG/OP communication	Yes		
- Routing	Yes; Only with active interface		
- Global data communication	No		
- S7 basic communication	No		

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
DP slave			
• Services			
- S7 communication, as client	No		
- S7 communication, as server	Yes		
- Direct data exchange (slave-to-slave communication)	Yes		
- DPV1	No		
• GSD file	The current GSD file can be obtained from: http://www.siemens.com/profibus-gsd		
• Transmission rate, max.	12 Mbit/s		
• automatic baud rate search	Yes; only with passive interface		
• Transfer memory			
- Inputs	244 byte		
- Outputs	244 byte		
• Address area, max.	32		
• User data per address area, max.	32 byte		
PROFINET IO Controller			
• Services			
- PG/OP communication		Yes	Yes
- Routing		Yes	Yes
- S7 communication		Yes; with loadable FBs, max. configurable connections: 14, max. number of instances: 32	Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32
- Isochronous mode		No	No
- Open IE communication		Yes; via TCP/IP, ISO on TCP and UDP	Yes; via TCP/IP, ISO on TCP and UDP
• Transmission rate, max.		100 Mbit/s	100 Mbit/s
• Total number of connectable IO Devices, max.		128	128
• Max. number of connectable IO devices for RT		128	128
- of which in line, max.		128	128
• Number of IO Devices with IRT and the option "high flexibility"		128	128
- of which in line, max.		61	61
• IRT, supported		Yes	Yes
• Prioritized startup supported		Yes	Yes
- Number of IO Devices, max.		32	32
• Activation/deactivation of IO Devices		Yes	Yes
- Number of IO Devices that can be simultaneously activated/deactivated, max.		8	8
• IO Devices changing during operation (partner ports), supported		Yes	Yes
- Max. number of IO devices per tool		8	8
• Device replacement without swap medium		Yes	Yes
• Updating time		250 µs - 128 ms (with send cycle of 250 µs); 500 µs - 256 ms (with send cycle of 500 µs); 1 ms - 512 ms (with send cycle 1 ms); minimum value of the send cycle is also dependent on the set communication share for PROFINET IO, on the number of IO Devices	250 µs - 128 ms (with send cycle of 250 µs); 500 µs - 256 ms (with send cycle of 500 µs); 1 ms - 512 ms (with send cycle 1 ms); minimum value of the send cycle is also dependent on the set communication share for PROFINET IO, on the number of IO Devices

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
PROFINET IO Controller			
• Address area			
- Inputs, max.		2 Kibyte	8 Kibyte
- Outputs, max.		2 Kibyte	8 Kibyte
• User data per address area, max.			
- User data consistency, max.		254 byte	254 byte
PROFINET CBA			
• acyclic transmission		Yes	Yes
• cyclic transmission		Yes	Yes
Open IE communication			
• Open IE communication, supported		Yes	Yes
• Number of connections, max.		8	8
• Local port numbers used at the system end		0, 20, 21, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535	0, 20, 21, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535
CPU/ programming			
Programming language			
• STEP 7	Yes; V5.2 SP1 or higher with HW update	Yes; V5.4 SP4 or higher with HW update	Yes; V5.4 SP4 or higher with HW update
• LAD	Yes	Yes	Yes
• FBD	Yes	Yes	Yes
• STL	Yes	Yes	Yes
• SCL	Yes	Yes	Yes
• CFC	Yes	Yes	Yes
• GRAPH	Yes	Yes	Yes
• HiGraph®	Yes	Yes	Yes
Command set	See instruction list	See instruction list	See instruction list
Nesting levels	8	8	8
User program protection/ password protection	Yes	Yes	Yes
System functions (SFC)	see instruction list	see instruction list	see instruction list
System function blocks (SFB)	see instruction list	see instruction list	see instruction list
Environmental requirements			
Operating temperature			
• Min.		0 °C	0 °C
• max.		60 °C	60 °C
Dimensions and weight			
Dimensions			
• Width	40 mm	40 mm	40 mm
• Height	125 mm	125 mm	125 mm
• Depth	130 mm	130 mm	130 mm
Weight			
• Weight, approx.	290 g		

Fail-safe CPUs

Ordering data		Order No.
CPU 315F-2 DP		**6ES7 315-6FF04-0AB0**
CPU for SIMATIC S7-300F; main memory 384 KB, power supply 24 V DC, MPI/PROFIBUS DP master/slave interface, incl. slot number plates		
CPU 315F-2 PN/DP		**6ES7 315-2FJ14-0AB0**
CPU for SIMATIC S7-300F; main memory 512 KB, power supply 24 V DC, MPI/PROFIBUS DP master/slave interface; Industrial Ethernet/PROFINET interface; incl. slot number labels		
CPU 317F-2 PN/DP		**6ES7 317-2FK14-0AB0**
Main memory 1.5 MB, power supply 24 V DC, MPI/PROFIBUS DP master/slave interface; Industrial Ethernet/PROFINET interface; MMC required		
Accessories		
Distributed Safety V5.4 programming tool		
Task: Software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, ET 200S Requirement: STEP 7 V5.3 SP3 and higher		
Floating license		**6ES7 833-1FC02-0YA5**
Software Update Service		**6ES7 833-1FC00-0YX2**
Distributed Safety Upgrade		
From V5.x to V5.4; Floating license for 1 user		**6ES7 833-1FC02-0YE5**
SIMATIC Micro Memory Card		
64 KB		**6ES7 953-8LF20-0AA0**
128 KB		**6ES7 953-8LG11-0AA0**
512 KB		**6ES7 953-8LJ20-0AA0**
2 MB		**6ES7 953-8LL20-0AA0**
4 MB		**6ES7 953-8LM20-0AA0**
8 MB		**6ES7 953-8LP20-0AA0**
MPI cable		**6ES7 901-0BF00-0AA0**
For connecting SIMATIC S7 and the PG through MPI; 5 m in length		
Slot number plates		**6ES7 912-0AA00-0AA0**
S7-300 manual		
Design, CPU data, module data, instruction list		
German		**6ES7 398-8FA10-8AA0**
English		**6ES7 398-8FA10-8BA0**
French		**6ES7 398-8FA10-8CA0**
Spanish		**6ES7 398-8FA10-8DA0**
Italian		**6ES7 398-8FA10-8EA0**
SIMATIC Manual Collection	A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: S7-200, S7-300, C7, S7-400, SIMATIC DP (Distributed I/O), SIMATIC PC, SIMATIC PG (Programming device), STEP 7, Engineering Tools, Runtime Software, SIMATIC PCS 7, SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication), SIMATIC Machine Vision, SIMATIC Sensors		
SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates		
Power supply connector		**6ES7 391-1AA00-0AA0**
10 units, spare part		
Manual "Communication for SIMATIC S7-300/-400"		
German		**6ES7 398-8EA00-8AA0**
English		**6ES7 398-8EA00-8BA0**
French		**6ES7 398-8EA00-8CA0**
Spanish		**6ES7 398-8EA00-8DA0**
Italian		**6ES7 398-8EA00-8EA0**
PC adapter USB		**6ES7 972-0CB20-0XA0**
for connecting a PC to SIMATIC S7-200/300/400 via USB; with USB cable (5 m)		
PROFIBUS bus components		
PROFIBUS DP bus connector RS 485		
• with 90° cable outlet, max. transmission rate 12 Mbit/s		
- without PG interface		**6ES7 972-0BA12-0XA0**
- with PG interface		**6ES7 972-0BB12-0XA0**
• with 90° cable outlet for FastConnect connection system, max. transmission rate 12 Mbit/s		
- without PG interface, 1 unit		**6ES7 972-0BA52-0XA0**
- without PG interface, 100 units		**6ES7 972-0BA52-0XB0**
- with PG interface, 1 unit		**6ES7 972-0BB52-0XA0**
- with PG interface, 100 units		**6ES7 972-0BB52-0XB0**
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS		**6GK1 500-0EA02**
PROFIBUS Fast Connect bus cable		**6XV1 830-0EH10**
Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m		
RS 485 repeater for PROFIBUS		**6ES7 972-0AA01-0XA0**
Data transfer rate up to 12 Mbit/s; 24 V DC; IP20 housing		

A: Subject to export regulations: AL: N and ECCN: EAR99S
D: Subject to export regulations: AL: N and ECCN: 5D992

Ordering data	Order No.
PROFINET bus components	
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; Sold by the meter	**6XV1 840-2AH10**
FO Standard Cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter	**6XV1 873-2A**
SCALANCE X204-2 Industrial Ethernet Switch Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports	**6GK5 204-2BB10-2AA3**
Compact Switch Module CSM 377 Unmanaged switch for connecting a SIMATIC S7-300, ET 200M and up to three other participants to Industrial Ethernet with 10/100 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	**6GK7 377-1AA00-0AA0**

	Order No.
IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 plug 145 145° cable outlet	
1 unit	**6GK1 901-1BB30-0AA0**
10 units	**6GK1 901-1BB30-0AB0**
50 units	**6GK1 901-1BB30-0AE0**
IE FC RJ45 plug 180 180° cable outlet	
1 unit	**6GK1 901-1BB10-2AA0**
10 units	**6GK1 901-1BB10-2AB0**
50 units	**6GK1 901-1BB10-2AE0**
PROFIBUS/PROFINET bus components for establishing MPI/PROFIBUS/PROFINET communication	see catalogs IK PI, CA 01

SIPLUS SM 322 digital output module

Overview

- Digital outputs
- For connecting solenoid valves, contactors, small-power motors, lamps and motor starters

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

Environmental conditions	**SIPLUS extreme**
Ambient temperature range	-40/-25 to +60/+70°C[1]
Relative humidity	100% Dewing, condensation and icing permissible
Contaminant concentration	EN60721-3-3 3C4 and ISA S71.04 G1, G2, G3, GX

	Constant load	Limit value[2]
SO_2	4.8 ppm	17.8 ppm
H_2S	9.9 ppm	49.7 ppm
Cl	0.2 ppm	1.0 ppm
HCl	0.66 ppm	3.3 ppm
HF	0.12 ppm	2.4 ppm
NH	49 ppm	247 ppm
O_3	0.1 ppm	1.0 ppm
NO_x	5.2 ppm	10.4 ppm

At RH < 75%, condensation permitted

Saline fog	Saline fog test (EN 60068-2-52)
Mechanically active substances	EN60721-3-3 3S4
• Dust (suspended substance content)	4.0 mg/m²h
• Dust (precipitation)	40 mg/m²h incl. conductive sand/dust ("Arizona dust")
Biologically active substances	EN60721-3-3 3B2 Mildew growth, Fungus, excluding fauna

1) Depends on the product family
2) 30 min/day

SIPLUS SM 322	**8 DO, 48 ... 125 V DC**
Order No.	**6AG1 322-1CF00-7AA0**
Order No. based on	**6ES7 322-1CF00-0AA0**
Ambient temperature range	-25 ... +70 °C, condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on this page) or go to www.siemens.com/siplus-extreme
Conforms with standard for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	Yes
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

Ordering data

	Order No.
SIPLUS SM 322 digital output module	
(extended temperature range and medial exposure)	
incl. labeling strips, bus connector	
8 outputs, 48 … 125 V DC, 1.5 A C	**6AG1 322-1CF00-7AA0**
Accessories	see catalog ST 70 · 2009, S7-300 digital output modules, page 4/82

C: Subject to export regulations: AL: N and ECCN: EAR99H

Overview

- Analog inputs
- For connection of voltage and current sensors, thermocouples, resistors and resistance thermometers

Technical specifications

	6ES7 331-1KF02-0AB0	6ES7 331-7PE10-0AB0
Current consumption		
from backplane bus 5 V DC, max.	90 mA	100 mA
Power loss		
Power loss, typ.	0.4 W	2.2 W
Connection method		
required front connector	40-pin	1x 40-pin
Isochronous mode		
Isochronous mode	No	No
Analog inputs		
Number of analog inputs	8	6
Number of analog inputs for resistance measurement	8	
Cable length, shielded, max.	200 m; max. 50 m at 50 mV	200 m
Input ranges (rated values), voltages		
• 0 to +10 V	Yes	
• 1 to 5 V	Yes	
• 1 to 10 V	No	
• -1 V to +1 V	Yes	Yes
• -10 V to +10 V	Yes	
• -2.5 V to +2.5 V	No	
• -250 mV to +250 mV	No	Yes
• -5 V to +5 V	Yes	
• -50 mV to +50 mV	Yes	Yes
• -500 mV to +500 mV	Yes	Yes
• -80 mV to +80 mV	No	Yes
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	
• -10 to +10 mA	No	
• -20 to +20 mA	Yes	
• -3.2 to +3.2 mA	No	
• 4 to 20 mA	Yes	
Input ranges (rated values), thermoelements		
• Type B	No	Yes
• Type E	No	Yes
• Type J	No	Yes
• Type K	No	Yes
• Type L	No	Yes
• Type N	No	Yes
• Type R	No	Yes
• Type S	No	Yes
• Type T	No	Yes
• Type U	No	Yes
• Type TXK/TXK(L) to GOST	No	Yes
• Input resistance (Type TXK/TXK(L) to GOST)		10 MΩ
Input ranges (rated values), resistance thermometers		
• Cu 10	No	
• Ni 100	Yes; Standard/climate	
• Ni 1000	Yes	
• LG-Ni 1000	Yes; Standard /climate	
• Ni 120	No	
• Ni 200	No	
• Ni 500	No	
• Pt 100	Yes; Standard /climate	
• Pt 1000	No	
• Pt 200	No	
• Pt 500	No	
Input ranges (rated values), resistors		
• 0 to 150 ohms	No	
• 0 to 300 ohms	No	
• 0 to 600 ohms	Yes	
• 0 to 6000 ohms	Yes	
Voltage input		
• permissible input voltage for voltage input (destruction limit), max.	30 V; 12 V continuous, 30 V for max. 1 s	35 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)
Current input		
• permissible input current for current input (destruction limit), max.	40 mA	
Characteristic linearization		
• parameterizable	Yes	Yes

Technical specifications (continued)

	6ES7 331-1KF02-0AB0	6ES7 331-7PE10-0AB0
Characteristic linearization		
• for current measurement		
- for thermocouples		Type B, E, J, K, L, N, R, S. T, U, C, TXK, XK(L)
- for resistance thermometer	yes; Pt100 standard/air con.; Ni100 standard/air con.; Ni1000 standard/air con.; LG-Ni1000 standard/air con.	
Temperature compensation		
• Temperature compensation parameterizable		Yes
• internal temperature compensation		Yes
• external temperature compensation with compensations socket		Yes
• external temperature compensation with Pt100		Yes
Analog value creation		
Measurement principle	integrating	integrating
Integrations and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	13 bit	16 bit; Two's complement
• Integration time, parameterizable	Yes; 60 / 50 ms	Yes
• Basic conversion time, ms	66 / 55 ms	30 / 50 / 60 / 300
• Integration time, ms		10 / 16,67 / 20 / 100
• Basic conversion time, including integration time, ms	66 / 55 ms	
• Interference voltage suppression for interference frequency f1 in Hz	50 / 60 Hz	
Encoder		
Connection of signal encoders		
• for current measurement as 2-wire transducer	Yes; with external supply	
• for current measurement as 4-wire transducer	Yes	
• for resistance measurement with 2-conductor connection	Yes	
• for resistance measurement with 3-conductor connection	Yes	
• for resistance measurement with 4-conductor connection	Yes	
Errors/accuracies		
Operational limit in overall temperature range		
• Voltage, relative to input area	+/- 0,6 %; +/-0.6% (+/-5 V, 10 V, 1 to 5 V, 0 to 10 V); +/-0.5% (+/-50 mV, 500 mV, 1 V)	+/- 1 %/K

	6ES7 331-1KF02-0AB0	6ES7 331-7PE10-0AB0
Errors/accuracies		
Operational limit in overall temperature range		
• Current, relative to input area	+/- 0,5 %; +/-20 mA, 0 to 20 mA, 4 to 20 mA	
• Impedance, relative to input area	+/- 0,5 %; 0 to 6 kohms, 0 to 600 kohms	
• Resistance-type thermometer, relative to input area	1 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic); 1.2 Kelvin (Pt100, Ni100, standard)	
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input area	+/- 0,4 %; 0.4% (+/-5 V, 10 V, 1 to 5 V, 0 to 10 V); 0.3% (+/-50 mV, 500 mV, 1 V)	
• Current, relative to input area	+/- 0,3 %; +/-20 mA, 0 to 20 mA, 4 to 20 mA	
• Impedance, relative to input area	+/- 0,3 %; 0 to 6 kohms, 0 to 600 kohms	
• Resistance-type thermometer, relative to input area	1 Kelvin (Pt100, Ni100, standard); 0.8 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic)	
Interrupts/diagnostics/ status information		
Alarms		
• Diagnostic alarm	No	Yes; Channel by channel
• Limit value alarm	No	Yes; Parameterizable
Diagnoses		
• Diagnostic information readable	No	Yes
Isolation		
Isolation checked with	500 V DC	
Galvanic isolation		
Galvanic isolation analog inputs		
• between the channels	No	Yes
• between the channels, in groups of		1
• between the channels and the backplane bus	Yes	Yes

Technical specifications (continued)

	6ES7 331-1KF02-0AB0	6ES7 331-7PE10-0AB0
Dimensions and weight		
Dimensions		
• Width	40 mm	40 mm
• Height	125 mm	125 mm
• Depth	117 mm	120 mm
Weight		
• Weight, approx.	250 g	272 g

Ordering data

		Order No.
SM 331 analog input modules		
Including labeling strips, bus connector, measuring range modules		
8 inputs, 13-bit resolution	C	**6ES7 331-1KF02-0AB0**
6 inputs, for thermal resistors, resolution 16 bits	C	**6ES7 331-7PE10-0AB0**
Accessories		
Measuring range module for analog inputs		**6ES7 974-0AA00-0AA0**
1 module for 2 analog inputs; 2 units (spare part)		
Front connectors		
20-pin, with screw contacts		
• 1 unit		**6ES7 392-1AJ00-0AA0**
• 100 units		**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts		
• 1 unit		**6ES7 392-1BJ00-0AA0**
• 100 units		**6ES7 392-1BJ00-1AB0**
20-pin, with FastConnect		
• 1 unit		**6ES7 392-1CJ00-0AA0**
40-pin, with screw contacts		
• 1 unit		**6ES7 392-1AM00-0AA0**
• 100 units		**6ES7 392-1AM00-1AB0**
40-pin with spring-loaded contacts		
• 1 unit		**6ES7 392-1BM01-0AA0**
• 100 units		**6ES7 392-1BM01-1AB0**
40-pin, with FastConnect		
• 1 unit		**6ES7 392-1CM00-0AA0**
Front door, elevated design		**6ES7 328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG wires		
SIMATIC TOP connect		see Catalog ST 70, page 4/218
Bus connectors		**6ES7 390-0AA00-0AA0**
1 unit (spare part)		
Shield connecting element		**6ES7 390-5AA00-0AA0**
80 mm wide, with 2 rows for 4 terminal elements each		
Terminal elements		
2 units		
for 2 cables with 2 … 6 mm diameter		**6ES7 390-5AB00-0AA0**
for 1 cable with 3 … 8 mm diameter		**6ES7 390-5BA00-0AA0**

		Order No.
Terminal elements		
for 1 cable with 4 … 13 mm diameter		**6ES7 390-5CA00-0AA0**
Label cover		**6ES7 392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector		
Labeling strips		**6ES7 392-2XX00-0AA0**
10 units (spare part), for modules with 20-pin front connector		
S7 SmartLabel V3.0		
Software for automatic labeling of modules based on data of the STEP 7 project		
Single license	A	**2XV9 450-1SL03-0YX0**
Upgrade single license	A	**2XV9 450-1SL03-0YX4**
Labeling sheets for machine labeling		
For 16-channel signal modules, DIN A4, for printing with laser printer; 10 units		
petrol		**6ES7 392-2AX00-0AA0**
light-beige		**6ES7 392-2BX00-0AA0**
yellow		**6ES7 392-2CX00-0AA0**
red		**6ES7 392-2DX00-0AA0**
For 32-channel signal modules, DIN A4, for printing with laser printer; 10 units		
petrol		**6ES7 392-2AX10-0AA0**
light-beige		**6ES7 392-2BX10-0AA0**
yellow		**6ES7 392-2CX10-0AA0**
red		**6ES7 392-2DX10-0AA0**
SIMATIC Manual Collection	A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, multilingual		
SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**
Current S7 Manual Collection DVD and the three subsequent updates		
S7-300 manual		
Design, CPU data, module data, instruction list		
German		**6ES7 398-8FA10-8AA0**
English		**6ES7 398-8FA10-8BA0**
French		**6ES7 398-8FA10-8CA0**
Spanish		**6ES7 398-8FA10-8DA0**
Italian		**6ES7 398-8FA10-8EA0**

A: Subject to export regulations: AL: N and ECCN: EAR99S
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

SM 326 F digital input module - Safety Integrated

Overview

- Digital inputs for the fail-safe SIMATIC S7 systems
- They are suitable for connecting:
  - Switches and 2-wire proximity switches (BEROs)
  - Sensors according to NAMUR and mechanical contacts, also for signals from hazardous areas
- With integral safety functions for fail-safe operation
- Can be used in fail-safe mode
  - Centrally: With S7-31xF-2 DP
  - Distributed in ET 200M: With SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-416F-2 and S7-400F/FH
- Can be used in standard mode as an S7-300 module

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Technical specifications

	6ES7 326-1BK02-0AB0
Supply voltages	
Supply voltage of electronics and encoders 1L+/2L+	
• Rated value (DC)	24 V
Current consumption	
from load voltage L+ (without load), max.	450 mA
from backplane bus 5 V DC, max.	100 mA
Power loss	
Power loss, typ.	10 W
Connection method	
required front connector	40-pin
Digital inputs	
Number of digital inputs	24
Number of simultaneously controllable inputs	
• all mounting positions	
- Concurrently controllable inputs, up to 40 °C	24
- Concurrently controllable inputs, up to 60 °C	24; (at 24 V) or 18 (at 28.8 V)
Input voltage	
• Rated value, DC	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	11 to 30 V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	10 mA
Input delay (for rated value of input voltage)	
• for standard inputs	
- at "0" to "1", max.	3.4 ms
- at "1" to "0", max.	3.4 ms
Cable length	
• Cable length, shielded, max.	200 m
• Cable length unshielded, max.	100 m

	6ES7 326-1BK02-0AB0
Encoder supply	
Number of outputs	4; Isolated
Output current, rated value	400 mA
Encoder	
Connectable encoders	
• 2-wire BEROS	Yes; if short-circuit test is deactivated
- permissible quiescent current (2-wire BEROS), max.	2 mA
Ex(i) characteristics	
Max. values of input circuits (per channel)	
• Ta (permissible ambient temperature), max.	60 °C
Interrupts/diagnostics/status information	
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Diagnostic information readable	Yes
Isolation	
Isolation checked with	500 V DC / 350 V AC
Galvanic isolation	
Galvanic isolation digital inputs	
• between the channels	Yes
• between the channels, in groups of	12
• between the channels and the backplane bus	Yes
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
• to DIN VDE 0801	AK 6
• acc. to EN 954	Cat. 4
• acc. to IEC 61508	SIL 3

Technical specifications (continued)

	6ES7 326-1BK02-0AB0
Dimensions and weight	
Dimensions	
• Width	80 mm
• Height	125 mm
• Depth	120 mm

	6ES7 326-1BK02-0AB0
Weight	
• Weight, approx.	442 g

Ordering data

	Order No.
F digital input module SM 326	
24 inputs, 24 V DC	**6ES7 326-1BK02-0AB0**
Accessories	
Distributed Safety V5.4 programming tool	
Task: Software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, ET 200S Requirement: STEP 7 V5.3 SP3 and higher	
Floating license	**6ES7 833-1FC02-0YA5**
Software Update Service	**6ES7 833-1FC00-0YX2**
Distributed Safety Upgrade	
From V5.x to V5.4; Floating license for 1 user	**6ES7 833-1FC02-0YE5**
Labeling sheet with strips for 10 electronic blocks	
• For 16-channel electronic blocks incl. add-on terminals	**6ES7 193-1BH00-0XA0**
• For 32-channel electronic blocks incl. add-on terminals	**6ES7 193-1BL00-0XA0**
Connecting cable for PROFIBUS	**6ES7 901-4BD00-0XA0**
12 Mbit/s, for connecting PG to PROFIBUS DP, pre-assembled with 2 x 9-pin Sub-D connector, 3 m	
PROFIBUS bus connector	
• 90° cable outlet, terminating resistor with isolating function, without PG socket, up to 12 Mbit/s	**6ES7 972-0BA12-0XA0**
• 90° cable outlet, terminating resistor with isolating function, without PG socket, up to 12 Mbit/s	**6ES7 972-0BB12-0XA0**
• 90° cable outlet, FastConnect terminating resistor with isolating function, without PG socket, up to 12 Mbit/s	
- 1 unit	**6ES7 972-0BA52-0XA0**
- 100 units	**6ES7 972-0BA52-0XB0**
• 90° cable outlet, FastConnect terminating resistor with isolating function, with PG socket, up to 12 Mbit/s;	
- 1 unit	**6ES7 972-0BB52-0XA0**
- 100 units	**6ES7 972-0BB52-0XB0**

A: Subject to export regulations: AL: N and ECCN: EAR99S
D: Subject to export regulations: AL: N and ECCN: 5D992

		Order No.
DIN rail for active bus modules		
for max. 5 active bus modules for hot swapping function		
• 483 mm (19") long		**6ES7 195-1GA00-0XA0**
• 530 mm long		**6ES7 195-1GF30-0XA0**
• 620 mm long		**6ES7 195-1GG30-0XA0**
• 2000 mm long		**6ES7 195-1GC00-0XA0**
Active bus module		**6ES7 195-7HC00-0XA0**
BM 1 x 80 for 1 module with 80 mm width		
SITOP power supply module		**6ES7 307-1EA00-0AA0**
for ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E		
Front connectors		
40-pin, with screw contacts		
• 1 unit		**6ES7 392-1AM00-0AA0**
• 100 units		**6ES7 392-1AM00-1AB0**
40-pin with spring-loaded contacts		
• 1 unit		**6ES7 392-1BM01-0AA0**
• 100 units		**6ES7 392-1BM01-1AB0**
40-pin, with FastConnect		
• 1 unit		**6ES7 392-1CM00-0AA0**
Labeling strips		**6ES7 392-2XX20-0AA0**
For fail-safe modules (spare part); 10 units		
Label cover		**6ES7 392-2XY20-0AA0**
For fail-safe modules (spare part); 10 units		
LK 393 cable guide		**6ES7 393-4AA10-0AA0**
For F modules; L+ and M connections; 5 units		
S7-300 manual		
Design, CPU data, module data, instruction list		
German		**6ES7 398-8FA10-8AA0**
English		**6ES7 398-8FA10-8BA0**
French		**6ES7 398-8FA10-8CA0**
Spanish		**6ES7 398-8FA10-8DA0**
Italian		**6ES7 398-8FA10-8EA0**
SIMATIC Manual Collection	A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, multilingual		
SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**
Current S7 Manual Collection DVD and the three subsequent updates		

SM 326 F digital output module - Safety Integrated

Overview

- Digital outputs for the fail-safe SIMATIC S7 systems
- Two versions (1 x current sourcing, 1 x current sinking)
- For connecting solenoid valves, DC contactors and indicator lights
- With integral safety functions for fail-safe operation
- Can be used in fail-safe operation
  - Centrally: with S7-31xF DP, S7-31xF PN/DP
  - Distributed in ET 200M: with SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-41xF-2 and S7-400F/FH

Technical specifications

	6ES7 326-2BF10-0AB0	6ES7 326-2BF41-0AB0
Supply voltages		
Load voltage L+		
• Rated value (DC)	24 V; 1L+, 2L+, 3L+	24 V; 1L+, 2L+, 3L+
Current consumption		
from load voltage1L+, max.	100 mA; from supply voltage	75 mA; from supply voltage
from load voltage 2L+ (without load), max.	100 mA	100 mA
from load voltage 3L+ (without load), max.	100 mA	100 mA
from backplane bus 5 V DC, max.	100 mA	100 mA
Power loss		
Power loss, typ.	6 W	12 W
Connection method		
required front connector	40-pin	40-pin
Digital outputs		
Number of digital outputs	10	8
Short-circuit protection	Yes; Electronic	Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-33 V)
Lamp load, max.	5 W	5 W
Output voltage		
• for signal "1" without series diode, min.		L+ (-1.0 V)
Output current		
• for signal "1" rated value	2 A	2 A
• for signal "1" permissible range for 0 to 40 °C, min.	7 mA	7 mA
• for signal "1" permissible range for 0 to 40 °C, max.		2 A; 2 A for horizontal installation, 1 A for vertical installation

	6ES7 326-2BF10-0AB0	6ES7 326-2BF41-0AB0
Output current		
• for signal "1" permissible range for 40 to 60 °C, min.	7 mA	7 mA
• for signal "1" permissible range for 40 to 60 °C, max.		1 A; for horizontal installation
• for signal "0" residual current, max.	0.5 mA	0.5 mA
Switching frequency		
• with resistive load, max.	25 Hz	30 Hz
• with inductive load, max.	25 Hz	2 Hz
• on lamp load, max.	10 Hz	10 Hz
Aggregate current of outputs (per group)		
• horizontal installation		
- up to 40 °C, max.	10 A	7.5 A
- up to 60 °C, max.	6 A	5 A
• vertical installation		
- up to 40 °C, max.	5 A	5 A
Cable length		
• Cable length, shielded, max.	1 000 m	200 m; 200 m for SIL3, AK 6, Cat 4
• Cable length unshielded, max.	600 m	
Interrupts/diagnostics/ status information		
Alarms		
• Diagnostic alarm	Yes	Yes; Parameterizable
Diagnoses		
• Diagnostic information readable	Yes	Yes
Isolation		
Isolation checked with	370 V for 1 min	500 V DC / 350 V AC

Technical specifications (continued)

	6ES7 326-2BF10-0AB0	6ES7 326-2BF41-0AB0
Galvanic isolation		
Galvanic isolation digital outputs		
• between the channels	Yes	Yes
• between the channels, in groups of	5	4
• between the channels and the backplane bus	Yes	Yes
• between the channels and the power supply of the electronics	Yes	Yes

	6ES7 326-2BF10-0AB0	6ES7 326-2BF41-0AB0
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
• to DIN VDE 0801	AK 5 and 6	
• acc. to EN 954	Cat. 4	Cat. 4
• acc. to IEC 61508	SIL 3	SIL 3
Dimensions and weight		
Dimensions		
• Width	40 mm	80 mm
• Height	125 mm	125 mm
• Depth	120 mm	120 mm
Weight		
• Weight, approx.	330 g	465 g

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Ordering data

		Order No.
F digital output module SM 326		
10 outputs, 24 V DC, 2 A PP; width 40 mm	C	**6ES7 326-2BF10-0AB0**
8 outputs, 24 V DC, 2 A PM; width 80 mm		**6ES7 326-2BF41-0AB0**
Accessories		
Distributed Safety V5.4 programming tool		
Task: Software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, ET 200S Requirement: STEP 7 V5.3 SP3 and higher		
Floating license		**6ES7 833-1FC02-0YA5**
Software Update Service		**6ES7 833-1FC00-0YX2**
Distributed Safety Upgrade		
From V5.x to V5.4; Floating license for 1 user		**6ES7 833-1FC02-0YE5**
Labeling sheet with strips for 10 electronic blocks		
• For 16-channel electronic blocks incl. add-on terminals		**6ES7 193-1BH00-0XA0**
• For 32-channel electronic blocks incl. add-on terminals		**6ES7 193-1BL00-0XA0**
Connecting cable for PROFIBUS		**6ES7 901-4BD00-0XA0**
12 Mbit/s, for connecting PG to PROFIBUS DP, pre-assembled with 2 x 9-pin Sub-D connector, 3 m		
PROFIBUS bus connector		
• 90° cable outlet, terminating resistor with isolating function, without PG socket, up to 12 Mbit/s		**6ES7 972-0BA12-0XA0**
• 90° cable outlet, terminating resistor with isolating function, without PG socket, up to 12 Mbit/s		**6ES7 972-0BB12-0XA0**

	Order No.
PROFIBUS bus connector	
• 90° cable outlet, FastConnect terminating resistor with isolating function, without PG socket, up to 12 Mbit/s;	
- 1 unit	**6ES7 972-0BA52-0XA0**
- 100 units	**6ES7 972-0BA52-0XB0**
• 90° cable outlet, FastConnect terminating resistor with isolating function, with PG socket, up to 12 Mbit/s;	
- 1 unit	**6ES7 972-0BB52-0XA0**
- 100 units	**6ES7 972-0BB52-0XB0**
DIN rail for active bus modules	
for max. 5 active bus modules, for function "Insertion and removal"	
• 483 mm (19") long	**6ES7 195-1GA00-0XA0**
• 530 mm long	**6ES7 195-1GF30-0XA0**
• 620 mm long	**6ES7 195-1GG30-0XA0**
• 2000 mm long	**6ES7 195-1GC00-0XA0**
Active bus module	**6ES7 195-7HC00-0XA0**
BM 1 x 80 for 1 module with 80 mm width	
SITOP power supply module	**6ES7 307-1EA00-0AA0**
for ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E	

C: Subject to export regulations: AL: N and ECCN: EAR99H

SM 326 F digital output module - Safety Integrated

Ordering data	Order No.
Front connectors	
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
40-pin, with FastConnect	
• 1 unit	**6ES7 392-1CM00-0AA0**
Labeling strips	**6ES7 392-2XX20-0AA0**
For fail-safe modules (spare part); 10 units	
Label cover	**6ES7 392-2XY20-0AA0**
For fail-safe modules (spare part); 10 units	
LK 393 cable guide	**6ES7 393-4AA10-0AA0**
For F modules; L+ and M connections; 5 units	

		Order No.
S7-300 manual		
Design, CPU data, module data, instruction list		
German		**6ES7 398-8FA10-8AA0**
English		**6ES7 398-8FA10-8BA0**
French		**6ES7 398-8FA10-8CA0**
Spanish		**6ES7 398-8FA10-8DA0**
Italian		**6ES7 398-8FA10-8EA0**
SIMATIC Manual Collection	A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: S7-200, S7-300, C7, S7-400, SIMATIC DP (Distributed I/O), SIMATIC PC, SIMATIC PG (programming device), STEP 7, Engineering Tools, Runtime Software, SIMATIC PCS 7, SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication), SIMATIC Machine Vision, SIMATIC Sensors		
SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**
Current S7 Manual Collection DVD and the three subsequent updates		

A: Subject to export regulations: AL: N and ECCN: EAR99S

D: Subject to export regulations: AL: N and ECCN: 5D992

Overview

- Digital inputs for the fail-safe SIMATIC S7 systems
- They are suitable for connecting:
  - switches and 2-wire proximity switches (BEROs)
  - Sensors according to NAMUR and mechanical contacts, also for signals from hazardous areas
- With integral safety functions for fail-safe operation
- Can be used in fail-safe mode
  - Centrally: With S7-31xF-2 DP
  - Distributed in ET 200M: With SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-416F-2 and S7-400F/FH
- Can be used in standard mode as an S7-300 module

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

SIPLUS SM 326 F digital input module	
Order No.	**6AG1 326-1BK02-2AB0**
Order No. based on	**6ES7 326-1BK02-0AB0**
Ambient temperature range	-25 ... +60 °C, condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 5/30) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

Ordering data

		Order No.
SIPLUS SM 326 F digital input module		
(extended temperature range and medial exposure)		
24 inputs, 24 V DC	C	**6AG1 326-1BK02-2AB0**
Accessories		see SM 326 F digital input module, page 5/35

C: Subject to export regulations: AL: N and ECCN: EAR99H

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SIPLUS SM 336 F analog input module

Overview

- Analog inputs for the fail-safe SIMATIC S7 systems
- Applicable in the ET 200M distributed I/O device with IM 153-2 HF as well as centrally with SIMATIC S7-31xF-2 DP
- Properties of the SM 336; F-AI 6 x 0/4 ... 20 mA HART:
  - 6 analog inputs with galvanic isolation between channels and backplane bus
  - Input ranges: 0 mA to 20 mA, 4 mA to 20 mA
  - Short-circuit proof power supply from 2 or 4-wire transmitter via the module
  - External encoder supply possible
  - Applicable in safety mode
  - HART communication
  - Firmware update using HW Config
  - Identification data

SIPLUS SM 336 F analog input module	
Order No.	**6AG1 336-4GE00-4AB0**
Order No. based on	**6ES7 336-4GE00-0AB0**
Ambient temperature range	0 ... +60 °C, condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 5/30) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

Ordering data

		Order No.
SIPLUS SM 336 F analog input module		
(extended temperature range and medial exposure)		
6 inputs, 15 bit, 0/4 ... 20 mA HART	C	**6AG1 336-4GE00-4AB0**
Accessories		see SM 336 F analog input module, catalog ST 70 · 2009, page 4/118

C: Subject to export regulations: AL: N and ECCN: EAR99H

Overview

- For connecting up to 4 drives with analog setpoint interface or pulse-direction interface to a controller
- Operation with isochronous PROFIBUS DP
- Connectable drives:
  - Electrical drives
  - Hydraulic drives
  - Stepper drives
- Can be used with:
  - SIMATIC CPU 41x-2 DP, CPU 31x-2 DP, CPU 31xT-2 DP, WinAC RTX 2008
  - SIMOTION C2xx, SIMOTION P350, SIMOTION D4x5
- Can also be used with external encoders

Technical specifications

	6ES7 174-0AA10-0AA0
Supply voltages	
Rated value	
• 24 V DC	Yes
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V
Current consumption	
Current consumption, max.	500 mA
from backplane bus 5 V DC, max.	100 mA
Power loss	
Power loss, typ.	12 W
Connection method	
required front connector	40-pin
Isochronous mode	
Isochronous mode	Yes
shortest clock pulse	1.5 ms
Digital inputs	
Number of digital inputs	10
Input voltage	
• for signal "0"	-3 to +5 V
• for signal "1"	11 to 30 V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	8 mA
Input delay (for rated value of input voltage)	
• for standard inputs - at "0" to "1", min.	15 µs
Cable length	
• Cable length, shielded, max.	100 m
Digital outputs	
Number of digital outputs	8
Short-circuit protection	Yes

	6ES7 174-0AA10-0AA0
Switching capacity of the outputs	
• with resistive load, max.	1 A
• on lamp load, max.	30 W
Lamp load, max.	30 W
Output voltage	
• Rated value (DC)	24 V; L+
• for signal "1", min.	L+ (-3 V)
• for signal "1" (DC), max.	3 V
Output current	
• for signal "1" permissible range for 0 to 55 °C, min.	5 mA
• for signal "1" permissible range for 0 to 55 °C, max.	300 mA
• for signal "0" residual current, max.	0.4 mA
Output delay with resistive load	
• 0 to "1", max.	500 µs
Switching frequency	
• with resistive load, max.	500 Hz
• with inductive load, max.	0.5 Hz
Cable length	
• Cable length, shielded, max.	600 m
Relay outputs	
Number of relay outputs	4
Number of operating cycles	50 000
Switching capacity of contacts	
• with resistive load, max.	1 A
Analog outputs	
Number of analog outputs	4
Output ranges, voltage	
• -10 to +10 V	Yes

Technical specifications (continued)

	6ES7 174-0AA10-0AA0
Analog value creation	
Integrations and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit
Encoder supply	
5 V encoder supply	
• 5 V	Yes
• Output current, max.	1.2 A
• Cable length, max.	25 m
24 V encoder supply	
• 24 V	Yes
• Output current, max.	1.4 A
• Cable length, max.	100 m
Absolute encoder (SSI) encoder supply	
• Absolute encoder (SSI)	Yes
• Short-circuit protection	Yes
Encoder	
Number of connectable encoders, max.	4
Connectable encoders	
• Incremental encoder (symmetrical)	Yes
• Absolute encoder (SSI)	Yes
• 2-wire BEROS	Yes
- permissible quiescent current (2-wire BEROS), max.	2 mA
Encoder signals, incremental encoder (symmetrical)	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input signal	5 V difference signal (phys. RS 422)
• Input frequency, max.	1 MHz
• Cable length, shielded, max.	35 m; 35 m at max. 500 kHz; 10 m at max. 1 MHz
Encoder signals, absolute encoder (SSI)	
• Input signal	5 V difference signal (phys. RS 422)
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Telegram length	13, 21, 24 bit
• Clock frequency, max.	187.5 KHz 1.5 MHz (parameterizable)
• Binary code	1
• Gray code	1
• Cable length, shielded, max.	250 m; 250 m at 187.5 kHz, 10 m at 1.5 MHz

	6ES7 174-0AA10-0AA0
Number of drive interfaces	4
Analog drive	
• Setpoint signal	
- Short circuit proof	Yes; max. 45 mA, min. 3.3 kOhm load impedance
- Range of rated voltage	-10.5 V to +10.5 V
- Output current	-3 to +3 mA
• Output controller release	
- Number of relay contacts	4
- Switching voltage, max.	30 V
- Switching current, max.	1 A
- Switching capacity, max.	30 V·A
- Number of switching cycles, min.	50 000; at 30 V DC, 1 A
- Cable length (shielded), max.	35 m
Signal output I	
• Type	
- Number of relay contacts	2
• Differential output voltage, min.	
- Switching voltage, max.	30 V
• Differential output voltage for signal "0", max.	
- Switching current, max.	1 A
• Differential output voltage, for signal "1", min.	
- Switching capacity, max.	30 V·A
- Number of switching cycles, min.	at 30 V DC, 1 A
• Load impedance	
- Cable length (shielded), max.	35 m
Signal output II	
• Differential output voltage, min.	2 V; R = 100 Ohm
• Differential output voltage for signal "1", min.	3.7 V; 3.7 V at I = -20 mA; 4.5 V at I = -100 µA,
• Differential output voltage for signal "0", max.	1 V; if I = -20 mA
• Load resistance, min.	55 Ω
• Output current, max.	60 mA
Signal output III	
• Pulse frequency	750 kHz
• Cable length (shielded), max.	50 m; in hybrid operation with analog axes 35 m, in asymmetrical transmission 10 m
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes

Technical specifications (continued)

	6ES7 174-0AA10-0AA0
Galvanic isolation	
Galvanic isolation digital inputs	
• Galvanic isolation digital inputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs
Galvanic isolation digital outputs	
• Galvanic isolation digital outputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs
Dimensions and weight	
Dimensions	
• Width	160 mm
• Height	125 mm
• Depth	118 mm
Weight	
• Weight, approx.	1 kg

Ordering data

		Order No.
IM 174 PROFIBUS module	C	**6ES7 174-0AA10-0AA0**
PROFIBUS module for connecting analog drives and stepper drives to a controller		
Accessories		
Setpoint cable		
for the connection between IM 174 and SIMODRIVE 611-A		**6FX2 002-3AD01-** ■ ■ ■ ■
for the connection between IM 174 with 3 stepper drives and one SIMODRIVE (end of cable cut off)		**6FX2 002-3AD02-** ■ ■ ■ ■
0 m		**1**
100 m		**2**
200 m		**3**
0 m		**A**
10 m		**B**
20 m		**C**
30 m		**D**
40 m		**E**
50 m		**F**
60 m		**G**
70 m		**H**
80 m		**J**
90 m		**K**
0 m		**A**
1 m		**B**
2 m		**C**
3 m		**D**
4 m		**E**
5 m		**F**
6 m		**G**
7 m		**H**
8 m		**J**
0 m		**K**
0,0 m		**0**
0,1 m		**1**
0,2 m		**2**
0,3 m		**3**
0,4 m		**4**
0,5 m		**5**
0,6 m		**6**
0,7 m		**7**
0,8 m		**8**

C: Subject to export regulations: AL: N and ECCN: EAR99H

5

SIPLUS SIWAREX U

Overview

SIPLUS electronic weighing system SIWAREX U

SIPLUS SIWAREX U is a flexible weighing module for all simple weighing and force measuring tasks. The compact module can be integrated into SIMATIC automation systems without any problems. Complete data access is possible via the SIMATIC.

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

SIPLUS SIWAREX U electronic weighing system	
Order No.	**6AG1 950-2AA01-4AA0**
Order No. based on	**7MH4 950-2AA01**
Ambient temperature range	0 ... +60 °C, condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 5/30) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

Ordering data

		Order No.
SIPLUS SIWAREX U		
(Medial exposure)		
for SIMATIC S7 and ET 200M, incl. bus connector		
Two-channel version for connecting two scales	C	**6AG1 950-2AA01-4AA0**
Accessories		see SIWAREX U, catalog ST 70 · 2009, page 4/169

C: Subject to export regulations: AL: N and ECCN: EAR99H

Overview

- The low-cost, complete solution for serial communication over a point-to-point connection
- RS 232C (V.24) and RS 422/485 (X.27)
- Implemented protocols:
  - ASCII
  - 3964 (R) (not for RS 485)
  - Printer driver
- Simple parameterization using tool integrated in STEP 7

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

SIPLUS CP 340 version	RS 422/485 (X.27)	RS 232 (V.24)	
Order No.	**6AG1 340-1CH02-2AE0**	**6AG1 340-1AH02-2AE0**	**6AG1 340-1AH02-2AY0**
Order No. based on	**6ES7 340-1CH02-0AE0**	**6ES7 340-1AH02-0AE0**	**6ES7 340-1AH02-0AE0**
Ambient temperature range	-25 ... +60 °C, condensation permissible		
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 5/30) or go to www.siemens.com/siplus-extreme		
Conforms with standard for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	No	Yes
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.		

Ordering data

	Order No.
SIPLUS CP 340 communications processor RS 232 C	
(extended temperature range and medial exposure)	
with one RS 232C interface (V.24)	**6AG1 340-1AH02-2AE0**
acc. to EN 50155 C	**6AG1 340-1AH02-2AY0**
RS 232 connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-1AB00-0AA0**
10 m	**6ES7 902-1AC00-0AA0**
15 m	**6ES7 902-1AD00-0AA0**

	Order No.
SIPLUS CP 340 communications processor RS 422/485	
(extended temperature range and medial exposure)	
With 1 RS 422/485 (X.27) interface	**6AG1 340-1CH02-2AE0**
RS 422/485 connecting cable	
for linking to SIMATIC S7	
5 m	**6ES7 902-3AB00-0AA0**
10 m	**6ES7 902-3AC00-0AA0**
50 m	**6ES7 902-3AG00-0AA0**

C: Subject to export regulations: AL: N and ECCN: EAR99H

CP 341

Overview

- For quick, high-performance data exchange via point-to-point coupling
- 3 versions with different transmission physics:
  - RS 232C (V.24),
  - 20 mA (TTY),
  - RS 422/RS 485 (X.27)
- Implemented protocols: ASCII, 3964 (R), RK 512
- The following protocols can also be loaded: Modbus RTU
- Easy configuration using a parameterizing tool integrated in STEP 7

Technical specifications

	6ES7 341-1AH02-0AE0	6ES7 341-1BH02-0AE0	6ES7 341-1CH02-0AE0
Product type designation	CP 341 V2 RS232	CP 341 V2 TTY	CP 341 V2 RS422/485
Supply voltages			
Rated value			
• 24 V DC	Yes	Yes	Yes
Current consumption			
from backplane bus 5 V DC, max.	70 mA	70 mA	70 mA
from supply voltage L+, max.	100 mA	100 mA	100 mA
Power loss			
Power loss, max.	2.4 W	2.4 W	2.4 W
Power loss, typ.	1.6 W	1.6 W	1.6 W
Interfaces			
Number of interfaces	1; Isolated	1; Isolated	1; Isolated
Interface physics, 20 mA (TTY)		Yes	
Interface physics, RS 232C (V.24)	Yes		
Interface physics, RS 422/RS 485 (X.27)			Yes
Transmission rate, max.	115.2 kbit/s	19.2 kbit/s	115.2 kbit/s
Transmission rate, min.	0.3 kbit/s	0.3 kbit/s	0.3 kbit/s
Connection method			
PtP	9-pin sub D connector	9-pin sub D socket	15-pin sub D socket
Power supply	3 screw terminals: L+, M, GND	3 screw terminals: L+, M, GND	3 screw terminals: L+, M, GND
Point-to-point			
Cable length, max.	15 m	1 000 m	1 200 m
supported printers	Serial printers	Serial printers	Serial printers
Integrated protocol driver			
• 3964 (R)	Yes	Yes	Yes; not with RS 485
• ASCII	Yes	Yes	Yes
• RK512	Yes	Yes	Yes; not with RS 485
Telegram length, max.			
• 3964 (R)	4 096 byte	4 096 byte	4 096 byte
• ASCII	4 096 byte	4 096 byte	4 096 byte
• RK 512	4 096 byte	4 096 byte	4 096 byte

Technical specifications (continued)

	6ES7 341-1AH02-0AE0	6ES7 341-1BH02-0AE0	6ES7 341-1CH02-0AE0
Product type designation	CP 341 V2 RS232	CP 341 V2 TTY	CP 341 V2 RS422/485
Transmission speed, 20 mA (TTY)			
• with 3964 (R) protocol, max.		19.2 kbit/s	
• with ASCII protocol, max.		19.2 kbit/s	
• with printer driver, max.		19.2 kbit/s	
• with RK 512 protocol, max.		19.2 kbit/s	
Transmission speed, RS 422/485			
• with 3964 (R) protocol, max.			115.2 kbit/s
• with ASCII protocol, max.			115.2 kbit/s
• with printer driver, max.			115.2 kbit/s
• with RK 512 protocol, max.			115.2 kbit/s
Transmission speed, RS232			
• with 3964 (R) protocol, max.	115.2 kbit/s		
• with ASCII protocol, max.	115.2 kbit/s		
• with printer driver, max.	115.2 kbit/s		
• with RK 512 protocol, max.	115.2 kbit/s		
Software			
Block			
• FB length in RAM, max.	6 100 byte; Data communication, sending and receiving	6 100 byte; Data communication, sending and receiving	6 100 byte; Data communication, sending and receiving
Dimensions and weight			
Dimensions and weight			
• Width	40 mm	40 mm	40 mm
• Height	125 mm	125 mm	125 mm
• Depth	120 mm	120 mm	120 mm
Weight			
• Weight, approx.	300 g	300 g	300 g

Ordering data

	Order No.
CP 341 communication module	**6ES7 341-1AH02-0AE0**
With one RS 232 C (V.24) interface	
RS 232 connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-1AB00-0AA0**
10 m	**6ES7 902-1AC00-0AA0**
15 m	**6ES7 902-1AD00-0AA0**
CP 341 communication module	**6ES7 341-1BH02-0AE0**
With one 20 mA (TTY) interface	
20 mA (TTY) connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-2AB00-0AA0**
10 m	**6ES7 902-2AC00-0AA0**
50 m	**6ES7 902-2AG00-0AA0**

	Order No.
CP 341 communication module	**6ES7 341-1CH02-0AE0**
With one RS 422/485 (X.27) interface	
RS 422/485 connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-3AB00-0AA0**
10 m	**6ES7 902-3AC00-0AA0**
50 m	**6ES7 902-3AG00-0AA0**
Loadable drivers for CP 341	
MODBUS master (RTU format)	
• Single license	**6ES7 870-1AA01-0YA0**
• Single license, without software or documentation	**6ES7 870-1AA01-0YA1**
MODBUS slave (RTU format)	
• Single license	**6ES7 870-1AB01-0YA0**
• Single license, without software or documentation	**6ES7 870-1AB01-0YA1**

SIPLUS CP 341

Overview

- For fast, high-performance serial data exchange via point-to-point coupling
- 3 versions with different physical transmission characteristics:
  - RS 232C (V.24),
  - 20 mA (TTY),
  - RS 422/RS 485 (X.27)
- Implemented protocols: ASCII, 3964 (R), RK 512, customized protocols (can be reloaded)
- Simple parameterization using tool integrated in STEP 7

SIPLUS CP 341	RS 232C interface (V.24)	RS 422/485 (X.27) interface
Order No.	**6AG1 341-1AH02-7AE0**	**6AG1 341-1CH02-7AE0**
Order No. based on	**6ES7 341-1AH02-0AE0**	**6ES7 341-1CH02-0AE0**
Ambient temperature range	- 25 ... +70 °C, condensation permissible	
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 5/30) or go to www.siemens.com/siplus-extreme.	
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.	

Ordering data

		Order No.
SIPLUS CP 341 communication module (extended temperature range and medial exposure) With one RS 232 C (V.24) interface	C	**6AG1 341-1AH02-7AE0**
SIPLUS CP 341 communication module (extended temperature range and medial exposure) With one RS 422/485 (X.27) interface	C	**6AG1 341-1CH02-7AE0**
Accessories		see CP 341, page 5/47

C: Subject to export regulations: AL: N and ECCN: EAR99H

Overview

ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
	●	●	●			●	●

- Interface for the SIMATIC S7-300 to Industrial Ethernet (not for SINUMERIK)
  - 2 x RJ45 interface for 10/100 Mbit/s full/half duplex connection (with autosensing for automatic switchover and autocrossover function)
  - Integral 2-port real-time switch ERTEC
  - Multi-protocol operation with TCP and UDP transport protocol and PROFINET I/O
  - Keep Alive function
- Communication services:
  - Open communication (TCP/IP and UDP)
  - PG/OP communication
  - S7 communication (server)
  - PROFINET IO Device
- Multicast for UDP
- Remote programming and initial start-up is possible exclusively over Industrial Ethernet
- IT communication
  - Web function
- Integration into network management through SNMP
- Configuring with STEP 7
- Cross-network programming device/operator panel communication through S7 routing
- Diagnostic possibilities in STEP 7 and with web browser

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

	SIPLUS CP 343-1 Lean	
Order No.	**6AG1 343-1CX10-4XE0**	**6AG1 343-1CX10-2XE0**
Order No. based on	**6GK7 343-1CX10-0XE0**	**6GK7 343-1CX10-0XE0**
Ambient temperature range	0 ... +60 °C, condensation permissible	-25 ... +60 °C, condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 5/30) or go to www.siemens.com/siplus-extreme.	
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.	

Ordering data

	Order No.
SIPLUS CP 343-1 Lean communications processor	
(extended temperature range and medial exposure)	
For connecting SIMATIC S7-300 to Industrial Ethernet through TCP/IP and UDP, Multicast, S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, PROFINET IO device, integral 2-port switch ERTEC, comprehensive diagnostics facilities, module replacement without PG, SNMP, initial commissioning over LAN; with electronic manual on CD-ROM	
0 ... +60 °C, condensation permissible	**6AG1 343-1CX10-4XE0**
-25 ... +60 °C, condensation permissible	**6AG1 343-1CX10-2XE0**

	Order No.
Accessories	see CP 343-1 Lean, catalog ST 70 · 2009, page 4/207

CP 343-1 ERPC

Overview

ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
	●					●	●

- The CP 343-1 ERPC (Enterprise Connect) is a communications processor for connecting the SIMATIC S7-300 to an Industrial Ethernet
- Support of a connection of the SIMATIC S7-300 to various database systems for the vertical integration by means of a firmware expansion from ILS-Technology to be ordered separately
- RJ45 interface for 10/100/1000 Mbit/s full/half duplex with autosensing/autonegotiation/autocrossover and sleeve
- Communication services
  - Open communication (SEND/RECEIVE)
  - PG/OP communication
  - S7 communication (client, server, multiplexing) incl. routing
- Access protection by means of a configurable IP access list
- Remote programming and first commissioning via Industrial Ethernet
- Configuring with STEP 7
- Time synchronization by means of NTP or SIMATIC procedure
- Support of module replacement without programming device; all configuration data is stored on the C-PLUG.
  When using the database function, the CP 343-1 ERPC must be prepared for the exchange, i.e. the firmware extension from ILS Technology must already be installed on the replacement module.
- Extensive diagnostics functions via STEP 7 or web browser
- Integration into network management systems through the support of SNMP V1 MIB-II

Technical specifications

	6GK7 343-1FX00-0XE0
Product type designation	**CP 343-1 ERPC**
Data transmission rate	
Transmission rate at interface 1	10 … 1 000 Mbit/s
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with Industrial Ethernet	1
• For power supply	1
Design of electrical connection	
• at interface 1 in accordance with Industrial Ethernet	RJ45 port
• For power supply	2-pin plug-in terminal strip
Design of the swap medium C-Plug	Yes
Supply voltage, current consumption, power loss	
Type of power supply	DC
Power supply	
• 1 from backplane bus	5 V
• External	24 V
Relative positive tolerance at 24 V DC	20 %
Relative negative tolerance at 24 V DC	15 %

	6GK7 343-1FX00-0XE0
Product type designation	**CP 343-1 ERPC**
Current consumed	
• Typical from backplane bus at 5 V DC	0.3 A
• Maximum from external power supply for 24 V DC	0.6 A
Effective power loss	14.7 W
Permitted ambient conditions	
Ambient temperature	
• During operating phase	0 … 60 °C
• During storage	-40 … +70 °C
• During transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	95 %
IP degree of protection	IP 20
Design, dimensions and weights	
Module format	Compact module S7-300 double width
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.8 kg

Technical specifications (continued)

	6GK7 343-1FX00-0XE0
Product type designation	**CP 343-1 ERPC**
Performance data	
Performance data Open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks, maximum	8
Data volume	
• As user data per connection for open communication by means of SEND/RECEIVE blocks, maximum	8 Kibyte
• As user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks, maximum	8 Kibyte
• As user data per TCP connection for open communication by means of SEND/RECEIVE blocks, maximum	8 Kibyte
• As user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks, maximum	2 Kibyte
Number of multicast stations	8
Performance data S7 communication	
Number of possible connections for S7 communication	
• Maximum	8
• For PG/OP connections, maximum	8
Performance data Multiprotocol operation	
Number of active connections for multiprotocol operation	32
Performance data IT functions	
Number of possible connections as server with HTTP, maximum	1
Number of possible write cycles of the flash memory cells	100 000

	6GK7 343-1FX00-0XE0
Product type designation	**CP 343-1 ERPC**
Performance data ERPC functions	
Number of configurable ERPC symbols for database access	
• Per CPU, maximum	2 000
• Per logical trigger, maximum	255
Data quantity as user data and header information per logical trigger	8 Kibyte
Product functions Management, configuration, programming	
Product function: MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software required	NCM S7 for Industrial Ethernet (is delivered with STEP 7 V5.x)
Product functions Diagnostics	
Product function: Web-based diagnostics	Yes
Product functions Redundancy	
Product function	
• Ring redundancy	No
Product functions Security	
Product function	
• ACL - IP-based	Yes
• Switching-off non-required services	Yes
• Blocking of communication via physical ports	Yes
Product functions Time	
Product function	
• SICLOCK support	No
• Passing-on of time synchronization	Yes
NTP protocol is supported	Yes

CP 343-1 ERPC

Ordering data		Order No.
CP 343-1 communications processor ERPC (Enterprise Connect) For the connection of SIMATIC S7-300 to Industrial Ethernet and for the support of the database connection of the SIMATIC S7-300 to various databases; TCP/UDP, S7 communication, open communication (SEND/RECEIVE), with and without RFC 1006, multicast, web server, setting of CPU's clock using SIMATIC procedures and NTP, access protection via IP access list, SNMP, DHCP, initialization over LAN 10/100/1000 Mbit/s; with electronic manual on DVD, C-PLUG included in scope of delivery		**6GK7 343-1FX00-0XE0**
Accessories		
C-PLUG Swap medium for simple replacement of devices in the event of a fault; for recording configuration or engineering and application data; can be used for SIMATIC NET products with C-PLUG slot		**6GK1 900-0AB00**
SOFTNET Edition 2008 for Industrial Ethernet Software for S7 and open communication, incl. OPC server, PG/OP communication and NCM PC, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English		
SOFTNET-S7 Edition 2008 for Industrial Ethernet up to 64 connections		
• Single license for 1 installation	D	**6GK1 704-1CW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version		**6GK1 704-1CW00-3AL0**
• Upgrade from Edition 2006 and higher to Edition 2008	D	**6GK1 704-1CW00-3AE0**
• Upgrade from V6.0, V6.1, V6.2 or V6.3 to Edition 2008	D	**6GK1 704-1CW00-3AE1**

		Order No.
SOFTNET Edition 2008 for Industrial Ethernet		
SOFTNET-S7 Lean Edition 2008 for Industrial Ethernet up to 8 connections		
• Single license for 1 installation	D	**6GK1 704-1LW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version		**6GK1 704-1LW00-3AL0**
• Upgrade from Edition 2006 and higher to Edition 2008	D	**6GK1 704-1LW00-3AE0**
• Upgrade from V6.0, V6.1, V6.2 or V6.3 to Edition 2008	D	**6GK1 704-1LW00-3AE1**
S7-1613 Edition 2008 Software for S7 and open communication, incl. PG/OP communication, OPC server and NCM PC; up to 120 connections, runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; for CP 1613/CP 1613 A2/ CP 1623; German/English		
• Single license for 1 installation	D	**6GK1 716-1CB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version		**6GK1 716-1CB00-3AL0**
• Upgrade S7-1613, Edition 2006 or higher, to S7-1613 Edition 2008	D	**6GK1 716-1CB00-3AE0**
• Upgrade S7-1613 from V6.0, V6.1, V6.2 or V6.3 to S7-1613 Edition 2008	D	**6GK1 716-1CB00-3AE1**
IE FC RJ45 Plug 180 RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface		
• 1 pack = 1 unit		**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units		**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units		**6GK1 901-1BB10-2AE0**

D: Subject to export regulations: AL: N and ECCN: 5D992

Ordering data	Order No.
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC outlet RJ45/ IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 1 000 m, minimum order 20 m	**6XV1 840-2AH10**
SCALANCE X308-2 Industrial Ethernet Switch 2 x 1000 Mbit/s multimode fiber-optic cable ports (SC sockets), 1 x 10/100/1000 Mbit/s RJ45 port, 7 x 10/100 Mbit/s RJ45 ports; for glass fiber-optic cable (multimode) up to 750 m long	**6GK5 308-2FL00-2AA3**
IE FC RJ45 Plug 4 x 2 RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbit/s) with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit	**6GK1 901-1BB11-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB11-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB11-2AE0**
IE FC TP standard cable GP 4 x 2 8-core, shielded TP installation cable for universal use; with UL approval; sold by the meter; max. length 1 000 m; minimum order 20 m	
• AWG 22, for connection to IE FC RJ45 Modular Outlet	**6XV1 870-2E**
• AWG 24, for connection to IE FC RJ45 Plug 4 x 2	**6XV1 878-2A**
IE FC TP Flexible Cable GP 4 x 2 8-core, shielded TP installation cable for occasional movement; with UL approval; sold by the meter; max. length 1 000 m; minimum order 20 m	
• AWG 24, for connection to IE FC RJ45 Plug 4 x 2	**6XV1 878-2B**
STEP 7 Version 5.4 *Target system:* SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC *Requirements:* Windows XP Prof., Vista Ultimate, Vista Business *Type of delivery:* German, English, French, Spanish, Italian; incl. license key on USB stick, with electronic documentation	
Floating license on DVD	**6ES7 810-4CC08-0YA5**
Rental license for 50 hours	**6ES7 810-4CC08-0YA6**
Software Update Service on DVD (requires current software version)	**6ES7 810-4BC01-0YX2**
Upgrade Floating License 3.x/4.x/5.x to V5.4; on DVD	**6ES7 810-4CC08-0YE5**
Trial License STEP 7 V5.4; on DVD, 14 day trial	**6ES7 810-4CC08-0YA7**
deviceWISE Embedded Edition for SIMATIC S7 Firmware extension for connection to various database systems	See deviceWISE Embedded Edition for SIMATIC S7 ILS Technology LLC; 5300 Broken Sound Blvd. Suite 150 Boca Raton, FL, USA, 33487 Tel.: +1-561-982-9898 x124 Fax.: +1-561-982-8638 E-Mail: devicewise@ilstechnology.com

CP 343-1 BACnet

Overview

BACnet	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●					●	●

G_IK10_XX_10275

BACnet (**B**uilding **A**utomation and **C**ontrol **Net**works) is a communication protocol for data networks in building automation and control developed by ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers Inc.). It is equally suitable for both the management and automation level and is recognized as an ANSI, CEN and ISO standard.

- The CP 343-1 BACnet is a communications processor for the connection of the SIMATIC S7-300 to the Industrial Ethernet and via the BACnet protocol it also permits the integration in systems that support the BACnet protocol
- 2 x RJ45 interfaces for 10/100 Mbit/s full/half duplex connection with autosensing/autonegotiation/autocrossover functionality
- Integrated 2-port switch
- Communication services
  - Open communication (SEND/RECEIVE)
  - PG/OP communication (TCP/IP)
  - S7 communication (server)
  - BACnet communication based on TCP/IP, BACnet server according to EN 16484, Part 5
- Extensive diagnostics functions via STEP 7
- Integration into network management systems through the support of SNMP V1 MIB-II

Technical specifications

	6FL4 343-1CX10-0XE0
Product type designation	**CP 343-1 BACnet**
Transmission rate	
Transmission rate at interface 1	10 … 100 Mbit/s
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with Industrial Ethernet	2
• For power supply	1
Design of electrical connection	
• at interface 1 in accordance with Industrial Ethernet	RJ45 port
• For power supply	2-pin plug-in terminal strip
Supply voltage, current consumption, power loss	
Type of power supply	DC
Power supply	
• 1 from backplane bus	5 V
• External	24 V
Relative positive tolerance at 24 V DC	20%
Relative negative tolerance at 24 V DC	15%
Current consumed	
• from backplane bus at 5 V DC, typical	0.2 A
• Maximum from external power supply for 24 V DC	0.2 A
Effective power loss	5.8 W

	6FL4 343-1CX10-0XE0
Product type designation	**CP 343-1 BACnet**
Permitted ambient conditions	
Ambient temperature	
• During operating phase	0 … 60 °C
• During storage	-40 … +70 °C
• During transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	95%
IP degree of protection	IP20
Design, dimensions and weights	
Module format	Compact module S7-300, single-width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.22 kg
Product properties, functions, components General	
Maximum number of modules per CPU	1
Number of modules - Note	Without BACnet protocol: Max. 8 per station
Performance data	
Performance data Open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks, maximum	8

Technical specifications (continued)

	6FL4 343-1CX10-0XE0
Product type designation	**CP 343-1 BACnet**
Data volume	
• As user data per TCP connection for open communication by means of SEND/RECEIVE blocks, maximum	8 Kibyte
• As user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks, maximum	2 Kibyte
Number of multicast stations	8
Performance data S7 communication	
Number of possible connections for S7 communication	
• Maximum	4
• Maximum with PG connections	2
• Maximum with PG/OP connections	2
Performance data Multiprotocol operation	
Number of active connections in multiprotocol mode	12
Performance data BACnet	
BACnet/IP protocol is supported	Yes
Product function	
• BACnet device type AAC (Advanced Application Controller)	Yes
• Peer-to-peer between BACnet automation stations	Yes
• BBMD (BACnet Broadcast Management Device)	Yes
Maximum number of BACnet I/O objects	800
Maximum number of BACnet objects, total	1 500
Influence on the cycle time of the automation system	No effect
Required storage capacity of S7 CPU's main memory	4 Kibyte
Standard for BACnet	Communication based on TCP/IP, BACnet server in accordance with EN 16484, Part 5

	6FL4 343-1CX10-0XE0
Product type designation	**CP 343-1 BACnet**
Product functions Management, configuration, programming	
Product function: MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software required	STEP 7 version V5.4 SP5 and higher plus HSP. An additional runtime license "Building Integration" (reference number S55372-C107) is required to use the BACnet protocol on the module. To order the license, please contact your regional Siemens partner.
Product functions Diagnostics	
Product function: Web-based diagnostics	No
Product functions Switch	
Product function: Switch	Yes
Product function	
• Switch-managed	No
• Configuration with STEP 7	Yes
Product functions Time	
Product function	
• SICLOCK support	Yes
• Passing-on of time synchronization	Yes
Protocol is supported NTP	Yes

CP 343-1 BACnet

Ordering data	Order No.
CP 343-1 BACnet communications processor for the connection of SIMATIC S7-300 to Industrial Ethernet and for the integration of the SIMATIC S7 into BACnet systems; BACnet protocol, S7 communication, open communication (SEND/RECEIVE), with/without RFC 1006; UDP, PG/OP communication	**6FL4 343-1CX10-0XE0**
Accessories	
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/IE FC RJ45 Plug; PROFINET-compatible; with UL approval; Sold by the meter; max. length 1 000 m, minimum order 20 m	**6XV1 840-2AH10**
IE FC RJ45 Plug 145 RJ45 plug connector 2 x 2 for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 145° cable outlet	
• 1 pack = 1 unit	**6GK1 901-1BB30-0AA0**
• 1 pack = 10 units	**6GK1 901-1BB30-0AB0**
• 1 pack = 50 units	**6GK1 901-1BB30-0AE0**

	Order No.
SCALANCE X204-2 Industrial Ethernet switch Industrial Ethernet switches with integrated SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager; incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM; four 10/100 Mbit/s RJ45 ports and two FO ports	**6GK5 204-2BB10-2AA3**
STEP 7 Version 5.4 *Target system:* SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC *Requirements:* Windows XP Prof., Vista Ultimate, Vista Business *Type of delivery:* German, English, French, Spanish, Italian; incl. license key on USB stick, with electronic documentation	
Floating license on DVD	**6ES7 810-4CC08-0YA5**
Rental license for 50 hours	**6ES7 810-4CC08-0YA6**
Software Update Service on DVD (requires current software version)	**6ES7 810-4BC01-0YX2**
Upgrade Floating License 3.x/4.x/5.x to V5.4; on DVD	**6ES7 810-4CC08-0YE5**
Trial License STEP 7 V5.4; on DVD, 14 day trial	**6ES7 810-4CC08-0YA7**

Overview

- Unmanaged switch for the connection of a SIMATIC S7-300 with integral PROFINET interface or with an Industrial Ethernet CP or ET 200M to an Industrial Ethernet in an electrical linear, tree or star structure
- As many as three additional nodes can be connected
- As an unmanaged switch, the CSM 377 is used for integrating small machines into existing automation networks or for the standalone operation of the machines
- Simple, space-saving attachment to S7-300 mounting rail due to design as single-width module in S7-300 format
- Low-cost solution for implementing small, local Ethernet networks
- Rugged, industry-standard node connections with PROFINET-compliant RJ45 connectors that latch onto the enclosure to offer additional strain and bending relief

Technical specifications

	6GK7 377-1AA00-0AA0
Product type designation	**CSM 377**
Transmission rate	
Transmission rate 1	10 Mbit/s
Transmission rate 2	100 Mbit/s
Interfaces	
Number of electrical/optical connections for network components or terminal equipment, maximum	4
Number of electrical connections	
• for network components or terminal equipment	4
• for power supply	1
Design of electrical connection	
• for network components or terminal equipment	RJ45 port
• for signaling contact	-
• for power supply	2-pin terminal block
Supply voltage, current consumption, power loss	
Type of voltage	
• of power supply	DC
Product type designation	**CSM 377**
External power supply	24 V
• Minimum	19.2 V
• Maximum	28.8 V
Current consumed, maximum	0.07 A
Product component: fusing at power supply input	Yes
Design of fusing at input for power supply	0.5 A / 60 V
Effective power loss at 24 V with DC	1.6 W
Permissible ambient conditions	
Ambient temperature	
• During operating phase	0 … 60 °C
• During storage	-40 … +70 °C
• During transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	95%
IP degree of protection	IP 20
Design, dimensions and weights	
Design	SIMATIC S7-300 design
Width	40 mm
Height	125 mm
Depth	118 mm
Net weight	0.2 kg
Type of mounting	
• 35 mm DIN rail mounting	No
• Wall mounting	No
• S7-300 rail mounting	Yes
Product properties, functions, components General	
Cascading with star topology	-
Product function: Switch-managed	No
Standards, specifications, approvals	
Standard	
• for EMC of FM	FM3611: Class 1, Division 2, Group A, B, C, D / T.., CL.1, Zone 2, GP. IIC, T.. Ta
• For hazardous zone	EN 60079-15, II 3 G Ex nA II T.., KEMA 06 ATEX 0021 X
• For CSA and UL safety	UL 508, CSA C22.2 No. 142
• for hazardous zone of CSA and UL	UL 1604 and UL 2279-15 (Hazardous Location)
• For emitted interference	EN 61000-6-4
• For noise immunity	EN 61000-6-2
Certificate of suitability	EN 61000-6-2, EN 61000-6-4
• CE mark	Yes
• C-Tick	Yes

CSM 377 unmanaged

Ordering data	Order No.
CSM 377 Compact Switch Module Unmanaged switch for the connection of a SIMATIC S7-300, ET200M and as many as three other nodes to an Industrial Ethernet operating at 10/100 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic equipment manual on CD-ROM	**6GK7 377-1AA00-0AA0**
Accessories	
IE TP cord RJ45/RJ45 TP cable 4 x 2 with 2 RJ45 connectors	
• 0.5 m	**6XV1 870-3QE50**
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC outlet RJ45/ IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. quantity 1 000 m, minimum order 20 m	**6XV1 840-2AH10**
IE FC Trailing Cable 2 x 2 (Type C) 4-core, shielded TP installation cable for connection to IE FC outlet RJ45/ IE FC RJ45 plug 180/90 for tow chain use; PROFINET-compliant; with UL approval; sold by the meter; max. quantity 1 000 m, minimum order 20 m	**6XV1 840-3AH10**

	Order No.
IE FC RJ45 Plug 180 RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 item	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 items	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 items	**6GK1 901-1BB10-2AE0**
IE FC stripping tool Pre-adjusted stripping tool for the fast stripping of Industrial Ethernet FC cables	**6GK1 901-1GA00**
IE FC RJ45 outlet For connecting Industrial Ethernet FC cables and TP Cords; block pricing for quantities of more than 10 or 50 units	**6GK1 901-1FC00-0AA0**
SIMATIC NET Manual Collection Electronic manuals for communication systems, communication protocols, and communication products; on DVD; German/English	**6GK1 975-1AA00-3AA0**

Overview

- Load current supplies for S7-300/ET 200M
- To convert the line voltage to the required operating voltage (24 V DC)
- Output current 2 A, 5 A or 10 A

Technical specifications

Power supply, type	2 A	5 A	10 A
Order number	**6ES7 307-1BA01-0AA0**	**6ES7 307-1EA01-0AA0**	**6ES7 307-1KA02-0AA0**
Input	1-phase AC	1-phase AC	1-phase AC
Rated voltage $V_{in\ rated}$	**120/230 V AC** automatic range switching	**120/230 V AC** automatic range switching	**120/230 V AC** automatic range switching
Voltage range	85 ... 132 V/170 ... 264 V	85 ... 132 V/170 ... 264 V	85 ... 132 V/170 ... 264 V
Overvoltage resistance	2.3 x V_{in} rated, 1.3 ms	2.3 x V_{in} rated, 1.3 ms	2.3 x V_{in} rated, 1.3 ms
Line buffering at $I_{out\ rated}$	> 20 ms at V_{in} = 93/187 V	> 20 ms at V_{in} = 93/187 V	> 20 ms at V_{in} = 93/187 V
Rated line frequency; rated line-frequency range	50/60 Hz, 47 ... 63 Hz	50/60 Hz; 47 ... 63 Hz	50/60 Hz; 47 ... 63 Hz
Rated current $I_{in\ rated}$	0.9/0.5 A	2.3/1.2 A	4.2/1.9 A
Switch-on current limit (+25 °C)	< 22 A, < 3 ms	< 20 A, < 3 ms	< 55 A, < 3 ms
I^2t	< 1.0 A^2s	< 1.2 A^2s	< 3.3 A^2s
Built-in line-side fuse	T 1.6 A/250 V (inaccessible)	T 3.15 A/250 V (inaccessible)	T 6.3 A/250 V (inaccessible)
Recommended miniature circuit-breaker (IEC 898) in the supply line	3 A, C Characteristic	At and above 6 A, C characteristic	At and above 10 A, C characteristic
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage $V_{out\ rated}$	**24 V DC**	**24 V DC**	**24 V DC**
Total tolerance	±3 %	±3 %	±3 %
• Static line smoothing	approx. 0.1 %	approx. 0.1 %	approx. 0.1 %
• Static load smoothing	approx. 0.2 %	approx. 0.5 %	approx. 0.5 %
Ripple content	< 50 m Vpp (typ. < 5 m Vpp)	< 50 mV_{pp} (typ. 10 mV_{pp})	< 50 mV_{pp} (typ. 15 mV_{pp})
Spikes (bandwidth: 20 MHz)	< 150 mV_{pp} (typ. < 20 mV_{pp})	< 150 mV_{pp} (typ. 20 mV_{pp})	< 150 mV_{pp} (typ. 60 mV_{pp})
Adjustment range	-	-	-
Status indicator	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK
Response on activation/deactivation	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay/voltage rise	< 2 s/typ. 10 ms	< 2 s/typ. 10 ms	< 2 s/typ. 10 ms
Rated current $I_{out\ rated}$	**2 A**	**5 A**	**10 A**
Current range			
• Up to +60 °C	0 ... 2 A	0 ... 5 A	0 ... 10 A
• Derating	-	-	-

Technical specifications (continued)

Power supply, type	2 A	5 A	10 A
Order number	**6ES7 307-1BA01-0AA0**	**6ES7 307-1EA01-0AA0**	**6ES7 307-1KA02-0AA0**
Dynamic overcurrent on			
• Power-up on short-circuit	Typ. 9 A for 90 ms	typ. 20 A for 100 ms	typ. 38 A for 80 ms
• Short-circuit during operation	Typ. 9 A for 90 ms	typ. 20 A for 100 ms	typ. 38 A for 80 ms
Parallel switching for enhanced performance	Yes	Yes	Yes
Efficiency			
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$	approx. 84 %	approx. 87 %	approx. 90 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$	approx. 9 W	approx. 18 W	approx. 27 W
Closed-loop control			
Dynamic line smoothing ($V_{in\ rated}$ ±15 %)	typ. ±0.1 % V_{out}	typ. ±0.1 % V_{out}	typ. ± 0.1 % V_{out}
Dynamic load smoothing (I_{out}: 50/100/50 %)	typ. ±0.8 % V_{out}	typ. ±1 % V_{out}	typ. ± 2 % V_{out}
Load-step settling time			
• 50 at 100 %	< 1 ms (typ. 0.5 ms)	typ. 0.3 ms	< 0.1 ms
• 100 at 50%	< 1 ms (typ. 0.5 ms)	typ. 0.3 ms	< 0.1 ms
Protection and monitoring			
Output overvoltage protection	Additional control loop, shutdown at approx. 28.8 V, automatic restart	Additional control loop, shutdown at approx. 28.8 V, automatic restart	Additional control loop, shutdown at approx. 28.8 V, automatic restart
Current limit	2.2 ... 2.6 A	5.5 ... 6.5 A	11 ... 12 A
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Sustained-short-circuit-current rms value	< 2 A	< 7 A	< 12 A
Overload/short-circuit indicator	-	-	-
Safety			
Primary/secondary galvanic isolation	Yes, safety extra-low output voltage Vout to EN 60950-1 and EN 50178	Yes, safety extra-low output voltage Vout to EN 60950-1 and EN 50178	Yes, safety extra-low output voltage $V_{out}$to EN 60950-1 and EN 50178
Protection class	Class I	Class I	Class I
Leakage current	< 3.5 mA (typ. 0.5 mA)	< 3.5 mA (typ. 0.5 mA)	< 3.5 mA (typ. 0.6 mA)
Safety test	Yes	Notified body	Yes
CE label	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-listed (UL 508, CSA C22.2 No. 142), file E143289	cULus-listed (UL 508, CSA C22.2 No. 142), file E143289	cULus-listed (UL 508, CSA C22.2 No. 142), file E143289
Explosion protection	ATEX 94/9/EC EX II 3G; EEx, nA, II, T4 U UL 1604 Class I Div. 2 Group A, B, C, D	ATEX 94/9/EC EX II 3G; EEx, nA, II, T4 U UL 1604 Class I Div. 2 Group A, B, C, D	ATEX 94/9/EC EX II 3G; EEx, nA, II, T4 U; UL 1604 Class I Div. 2 Group A, B, C, D
FM approval	Class I Div. 2 Group A, B, C, D T4	Class I Div. 2 Group A, B, C, D, T 4	Class I Div. 2, Group A, B, C, D, T4
Marine type approval	in S7-300 system	in S7-300 system	in S7-300 system
Degree of protection (EN 60529)	IP20	IP20	IP20
EMC			
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Supply-harmonics limitation	Not applicable	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data			
Ambient temperature range	0 ... +60 °C with natural convection	0 ... +60 °C with natural convection	0 ... +60 °C with natural convection
Transport/storage temperature range	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class	Climate class 3K3 to EN 60721, no condensation	Climate class 3K3 to EN 60721, no condensation	Climate class 3K3 to EN 60721, no condensation

Technical specifications (continued)

Power supply, type	2 A	5 A	10 A
Order number	**6ES7 307-1BA01-0AA0**	**6ES7 307-1EA01-0AA0**	**6ES7 307-1KA02-0AA0**
Mechanical system			
Ports			
• Supply input L, N, PE (DC input: L+1, M1, PE)	Solid/finely-stranded per screw-type terminal for 0.5 mm to 2.5 mm^2	Solid/finely-stranded per screw-type terminal for 0.5 mm to 2.5 mm^2	Solid/finely-stranded per screw-type terminal for 0.5 mm to 2.5 mm^2
• Output +	2 screw-type terminals for 0.5 mm to 2.5 mm^2	3 screw-type terminals for 0.5 mm to 2.5 mm^2	4 screw-type terminals for 0.5 mm to 2.5 mm^2
• Output -	2 screw-type terminals for 0.5 mm to 2.5 mm^2	3 screw-type terminals for 0.5 mm to 2.5 mm^2	4 screw-type terminals for 0.5 mm to 2.5 mm^2
Dimensions (W x H x D) in mm	40 x 125 x 120	60 x 125 x 120	80 x 125 x 120
Weight, approx.	0.4 kg	0.6 kg	0.8 kg
Assembly	Can be mounted onto S7 rail	Can be mounted onto S7 rail	Can be mounted onto S7 rail
Accessories	Mounting adapter for DIN rail (6EP1 971-1BA00)	Mounting adapter for DIN rail (6EP1 971-1BA00)	Mounting adapter for DIN rail (6EP1 971-1BA00)

Ordering data

	Order No.
PS 307 load power supply	
incl. power connector	
120/230 V AC / 24 V DC; 2 A	**6ES7 307-1BA01-0AA0**
120/230 V AC / 24 V DC; 5 A	**6ES7 307-1EA01-0AA0**
120/230 V AC / 24 V DC; 10 A	**6ES7 307-1KA02-0AA0**

	Order No.
Installation adapter	**6EP1 971-1BA00**
For snapping the PS 307 onto a 35 mm DIN rail (EN 50022)	

SIMATIC S7-400

6

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

SIPLUS CPU 417H

Overview

CPU for SIMATIC S7-400H and S7-400F/FH

- For use in S7-400H fault-tolerant systems
- Can be used with F-Runtime license as fail-safe CPU in safety-related S7-400F/FH systems
- With integral PROFIBUS DP master interface
- With 2 plug-in slots for sync modules

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

Environmental conditions	SIPLUS extreme
Ambient temperature range	-40/-25 to +60 °C
Relative humidity	100% Dewing, condensation and icing permissible
Contaminant concentration	EN60721-3-3 3C4 and ISA S71.04 G1, G2, G3, GX[1]

	Constant load	Limit value[2]
SO_2	4.8 ppm	17.8 ppm
H_2S	9.9 ppm	49.7 ppm
Cl	0.2 ppm	1.0 ppm
HCl	0.66 ppm	3.3 ppm
HF	0.12 ppm	2.4 ppm
NH	49 ppm	247 ppm
O_3	0.1 ppm	1.0 ppm
NO_x	5.2 ppm	10.4 ppm

	At RH < 75%, condensation permitted
Saline fog	Saline fog test (EN 60068-2-52)
Mechanically active substances	EN60721-3-3 3S4
• Dust (suspended substance content)	4.0 mg/m²h
• Dust (precipitation)	40 mg/m²h incl. conductive sand/dust ("Arizona dust")
Biologically active substances	EN60721-3-3 3B2 Mildew growth, Fungus, excluding fauna

1) ISA -S71.04 severity level GX from October 2010
2) 30 min/day

SIPLUS CPU 417-4H	
Order No.	**6AG1 417-4HT14-4AB0**
Order No. based on	**6ES7 417-4HT14-0AB0**
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on this page) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

1) ISA -S71.04 severity level GX from October 2010

Ordering data

		Order No.
SIPLUS CPU 417-4H (Medial exposure) for S7-400H and S7-400F/FH; 30 MB work memory, MPI/PROFIBUS DP master interface, 2 slots for sync modules, slot for memory card, incl. slot number plates	C	**6AG1 417-4HT14-4AB0**
Accessories		see S7-400 central processing units, catalog ST 70 · 2009, page 5/46

C: Subject to export regulations: AL: N and ECCN: EAR99H

SIPLUS sync module

Overview

- For interfacing the two CPU 414-4H/417-4H devices in the subunits of the S7-400H
- Pluggable directly into the CPU

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

SIPLUS sync module (up to 10 m)	
Order No.	**6AG1 960-1AA04-4XA0**
Order No. based on	**6ES7 960-1AA04-0XA0**
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on page 6/2) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

[1] ISA -S71.04 severity level GX from October 2010

Ordering data

	Order No.
SIPLUS sync module (Medial exposure) for coupling the CPU 41xH for S7-400H/F/FH; 2 modules required per CPU; for 6ES7 412-3HJ14-0AB0, 6ES7 414-4HM14-0AB0 and 6ES7 417-4HT14-0AB0; for patch cable, can be used for fiber-optic cables up to 10 m in length	**6AG1 960-1AA04-4XA0**
Accessories	see S7-400 sync module, catalog ST 70, page 5/56

SIPLUS SM 431 analog input modules

Overview

- Analog inputs for SIMATIC S7-400
- Connecting voltage sensors and current sensors, thermo elements, resistors and resistance thermometers
- Resolution 13 to 16 bit

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

SIPLUS SM 431 analog input modules		
Order No.	**6AG1 431-0HH00-4AB0**	**6AG1 431-1KF20-4AY0**
Order No. based on	**6ES7 431-0HH00-0AB0**	**6ES7 431-1KF20-0AB0**
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX[1]. For further information, refer to Environmental conditions of SIPLUS extreme (on page 6/2) or go to www.siemens.com/siplus-extreme	
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.	

[1] ISA -S71.04 severity level GX from October 2010

Ordering data

Ordering data	Order No.
SIPLUS SM 431 analog input modules	
(Medial exposure)	
16 inputs, non-floating, 13 bit	**6AG1 431-0HH00-4AB0**
8 inputs, floating, 14 bit	**6AG1 431-1KF20-4AY0**
Accesssories	see analog input modules SM 431, catalog ST 70 · 2009, page 5/78

SIMATIC Software

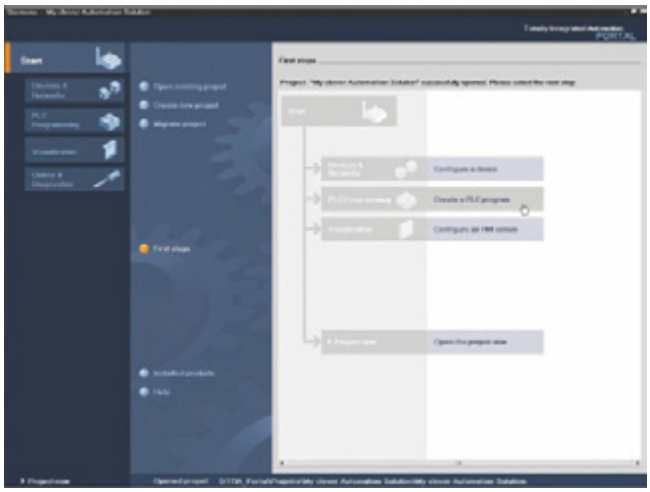
Brochures

For brochures serving as selection guides for SIMATIC products refer to:

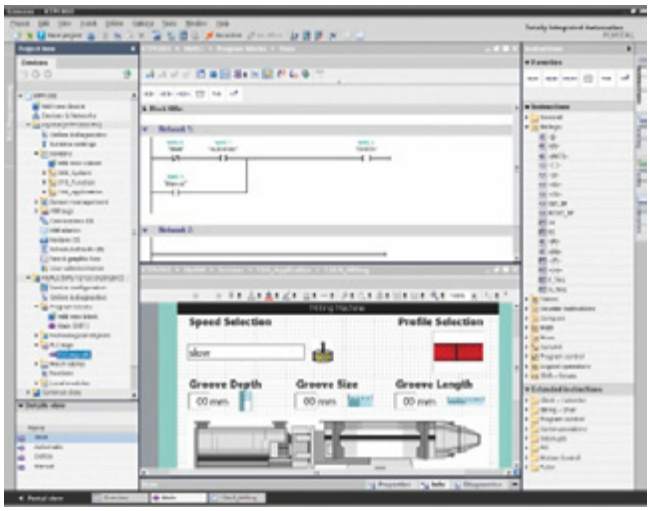
http://www.siemens.com/simatic/printmaterial

STEP 7 Basic

Overview



STEP 7 Basic, portal view



STEP 7 Basic, project view

The STEP 7 Basic software is the engineering system for programming the SIMATIC S7-1200. The WinCC Basic engineering system included in the package additionally allows configuration of SIMATIC HMI Basic Panels on the S7-1200.

STEP 7 Basic thus provides support in all phases of the automation project:

- Configuring and parameterizing the hardware
- Specifying the communication
- Programming in LAD (Ladder Diagram) and FBD (Function Block Diagram)
- Configuration of the visualization
- Test, commissioning, and service

Benefits

Optimized interaction of controller and HMI engineering

Efficient solving of complete automation task through:

- Integrated handling of controller programming and HMI configuration in one engineering framework
- Common data management
- Integral WinCC Basic configuration environment;
  the application can be supplemented seamlessly by SIMATIC HMI Basic Panels.

Fast startup using the portal view

The portal view facilitates navigation:

- It is also possible for beginners to access each task rapidly and specifically.
- In the event of maintenance, fast access to the online views directly in the portal overview;
  previous downloading of a project is unnecessary.

Intuitive user interface

Use of STEP 7 Basic is extremely intuitive:

- Editors matched to the tasks and sequence
- Use of the latest Windows technologies

Application

STEP 7 Basic is the engineering system for automation systems with SIMATIC S7-1200. In addition to programming of the controller, it permits configuration of the connected SIMATIC HMI Basic Panels in association with the integral WinCC Basic. It is thus possible to use the full performance of these systems simply and conveniently with just one tool.

STEP 7 Basic can be used for:

- Programming of the SIMATIC S7-1200 controller family:
  CPU 1211C, CPU 1212C, CPU 1214C
- Configuration of the PROFINET-based SIMATIC HMI Basic Panels:
  KTP400 Basic, KTP600 Basic mono and KTP600 Basic color, KTP1000 Basic, TP1500 Basic;
  KTP400 Basic and KTP600 Basic can also be configured for upright mounting.

Function

Device & network configuration

- Clear configuration of network and device functionalities in specialized views of the editor
- Device view
  - photorealistic representation and configuration of the hardware modules
  - clipboard for modules; for simple intermediate storage of respective module parameters
  - catalog; includes all panels, CPUs, and modules with firmware versions
- Network view
  - clear total view of all devices and network components used
  - intelligent drag&drop function for generation of connections

Controller programming

- Powerful editors for programming the S7-1200 in LAD and FBP
  - comprehensive catalog of instructions
  - configurable favorites area for frequently used instructions
  - table-based editor for configuration of block interfaces
  - intellisense for support during selection of tags
  - simple reuse of instructions or networks within a project
- Motion and technology functionalities
  - system support for integrated technology functions such as "Speed-controlled axis" and "Positioning axis"
  - PID controller with self-optimization (autotuning)

Visualization

- Powerful editors for configuration of Basic Panel functionalities
  - operating screens with touch/key operation and trend/vector graphics
  - bit and analog alarms
  - recipe management
- Multi-language (up to 5 languages online)
- Graphics library with off-the-shelf picture objects
- Intelligent drag&drop for efficient configuration of standard functionalities

Integration

- Integrated symbolic programming
- Direct use of control variables in the HMI to avoid multiple inputs
- Common cross-reference list for configuration objects (tags, blocks, etc.) for system-based project analysis or troubleshooting
- Automatic generation of connections when using the control variables in the HMI
- Global and local libraries for simple repeated use of preconfigured elements
- Intelligent drag&drop for importing and interconnecting data from different editors

Online diagnostics

- Clear representation of module diagnostics information
- Monitoring tables with "Force" and "Control" facilities
- Automatic display of all nodes accessible in the network
- Detailed comparison between online and offline projects

Technical specifications

	STEP 7 Basic
Licensing form	Single license
Software class	A
Current version	V10.5
Target system	SIMATIC S7-1200
Operating system	Windows XP Professional SP3 (32 bit) Windows Vista Ultimate SP1 (32 bit) Windows Vista Business SP1 (32 bit) Windows Vista Home Premium SP1 (32 bit)
Main memory size in programming device/PC, min.	1 GB
Disk memory requirement in programming device/PC	2 GB
Remark	Includes the IEC programming languages LAD and FBP

Ordering data

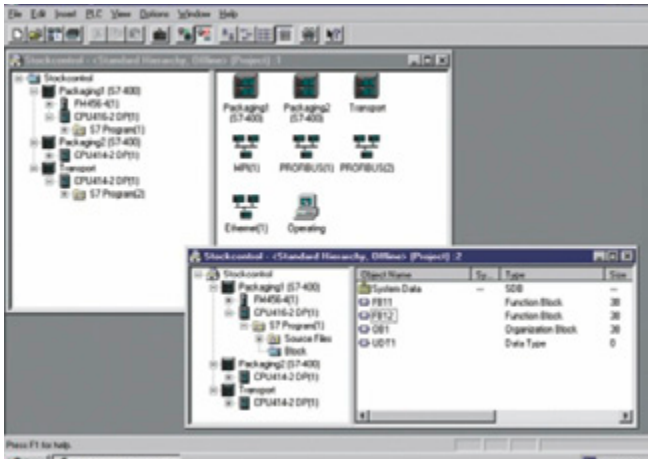
		Order No.
STEP 7 Basic V10.5 *Target system:* SIMATIC S7-1200, SIMATIC HMI Basic Panels *Requirement:* Windows XP SP3, Vista Ultimate SP1, Vista Business SP1, Home Premium SP1 *Type of delivery:* German, English		
STEP 7 Basic V10.5 on DVD	D	**6ES7 822-0AA00-0YA0**
Software Update Service (requires current software version)	D	**6ES7 822-0AA00-0YL0**
Trial License STEP 7 Basic V10.5; on DVD, 14-day trial	D	**6ES7 822-0AA00-0YA7**

D: Subject to export regulations: AL: N and ECCN: 5D992

7

STEP 7

Overview



- STEP 7 basic software:
  The standard tool for the SIMATIC S7, SIMATIC C7 and SIMATIC WinAC automation systems.
- Makes use of the full performance capabilities of the systems
- User-friendly functions for all phases of an automation project:
  - Configuring and parameterizing the hardware
  - Definition of communication
  - Programming
  - Testing, commissioning and service
  - Documentation, archiving
  - Operating, diagnostics functions

Components for connecting a PC to MPI and PROFIBUS

The components described below are used to connect programming devices and PCs (incl. notebooks) to PROFIBUS and to the multipoint SIMATIC S7 MPI interface in conjunction with STEP 7.

PC adapter USB

- To connect a PC to the SIMATIC S7 programmable controller via the USB port
- Connectable to USB 1.1 and 2.0 ports
- Applicable for SIMATIC S7-200, S7-300, S7-400 and C7
- Supports routing
- Automatic transmission rates and profile search
- Noticeably improved performance (up to three times faster than the PC adapter via RS 232)
- Including subsequently updatable firmware (e.g. for function expansions or troubleshooting)
- Applicable in Windows 2000, Windows XP Home and Windows XP Professional
- Scope of delivery:
  - PC adapter USB
  - CD "SIMATIC Software PC Adapter USB" including software and documentation
  - USB cable, 5 m
  - MPI cable, 0.3 m

CP 5512

- For programming devices/ PCs/notebooks with PCMCIA slot
- PCMCIA slot Type II (32 bit cardbus)
- Incl. adapter with 9-pin sub-D socket for connection to PROFIBUS

CP 5611/CP 5611-MPI

- For programming devices/PCs with PCI slot
- Short PCI card (32 bit)
- CP 5611-MPI including MPI cable

Components for connecting the PC to Industrial Ethernet

The PC modules described below are used to connect programming devices and AT-compatible PCs/notebooks to Industrial Ethernet in conjunction with STEP 7 and SOFTNET-PG (as of V6.0).

CP 1512

- For programming devices/ PCs/notebooks with PCMCIA slot
- PCMCIA slot Type II (32 bit cardbus); 10/100 Mbit/s
- Incl. adapter with RJ45 socket for connection to Industrial Ethernet

CP 1612

- For programming devices/PCs with PCI slot
- Short PCI card (32 bit); 10/100 Mbit/s
- Incl. RJ45 socket for connection to Industrial Ethernet

Please refer to the respective product catalog for technical information regarding product versions and supported operating systems.

You will find additional information about the online connection of PCs and SIMATIC S7/C7 controllers under "SIMATIC NET Communication Systems".

Technical specifications

	6ES7 972-0CB20-0XA0
Supply voltages	
Rated value	
• 24 V DC	Yes
Current consumption	
Current consumption, typ.	100 mA
Power consumption	
Power consumption, typ.	max. 2.5 W
EMC	
Interference immunity against discharge of static electricity	
• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	Yes; 6 kV, contact discharge (to IEC 61000-4-2); 8 kV, air discharge (to IEC 61000-4-2)
Interference immunity to cable-borne interference	
• on the supply lines acc. to IEC 61000-4-4	Yes; 2 kV (to IEC 61000-4-4, Burst)
• Interference immunity on signal lines acc. to IEC 61000-4-4	Yes; 1 kV (to IEC 61000-4-4; burst; length < 3 m); 2 kV (to IEC 61000-4-4; burst; length > 3 m)
• on the supply lines acc. to IEC 61000-4-5	Yes; 1 kV (to IEC 61000-4-5; surge symm.); 2 kV (to IEC 61000-4-5; surge asymm.)
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-3	Yes; 10 V/m, 80 to 1000 MHz (to IEC 61000-4-3); 10 V/m, 900 MHz, 1.89 GHz, 50% ED (to IEC 61000-4-3)
• Interference immunity against high frequency current feed acc. to IEC 61000-4-6	Yes; 10 V, 9 kHz to 80 MHz (to IEC 61000-4-6)
• Interference immunity to magnetic fields at 50 Hz	30 A/m; to IEC 61000-4-8
• Interference emission acc. to EN 55022, class B	Yes

	6ES7 972-0CB20-0XA0
Environmental requirements	
Operating temperature	
• Min.	5 °C
• max.	40 °C
• permissible temperature change	10 °C/h; Operation: 10 K/h; storage/transport: 20 K/h
Storage/transport temperature	
• Min.	-20 °C
• max.	60 °C
Relative humidity	
• Operation, min.	5 %
• Operation, max.	80 %; at 25 °C (no condensation)
• Storage/transport, min.	5 %
• Storage/transport, max.	95 %; at 25 °C (no condensation)
Vibrations	
• Operation, checked according to IEC 60068-2-6	Yes; 10 to 58 Hz: amplitude 0.075 mm; 58 to 500 Hz: acceleration 9.8 m/s^2
• Transport tested checked to IEC 60068-2-6	Yes; (packed) 5 to 9 Hz, amplitude 3.5 mm; 9 to 500 Hz, acceleration 9.8 m/s^2
Shock test	
• Shock test	Tested to DIN IEC 60068-2-2; Operation: 950 m/s^2 (10 g), 30 ms, 100 Shocks; Transport (packaged): 250 m/s^2 (25 g), 6 ms, 1000 shocks
Dimensions and weight	
Dimensions	
• Width	105 mm
• Height	58 mm
• Depth	26 mm
Weight	
• Weight, approx.	100 g

STEP 7

Ordering data		Order No.
STEP 7 Version 5.4		
Target system: SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC *Requirements:* Windows XP Prof., Vista Ultimate, Vista Business *Type of delivery:* German, English, French, Spanish, Italian; incl. license key on USB stick, with electronic documentation		
Floating license on DVD		**6ES7 810-4CC08-0YA5**
Rental license for 50 hours		**6ES7 810-4CC08-0YA6**
Software Update Service on DVD (requires current software version)		**6ES7 810-4BC01-0YX2**
Upgrade Floating License 3.x/4.x/5.x to V5.4; on DVD		**6ES7 810-4CC08-0YE5**
Trial License STEP 7 V5.4; on DVD, 14 day trial		**6ES7 810-4CC08-0YA7**
STEP 7 Version 5.4 Japanese		
Target system: SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC *Requirements:* Windows XP Professional Japanese *Delivery package:* English, Japanese; incl. license key on USB stick, with electronic documentation		
Floating License Japanese on DVD		**6ES7 810-4CC08-0JA5**
Upgrade Floating License Japanese 3.x/4.x/5.x to V5.4; on DVD		**6ES7 810-4CC08-0JE5**
STEP 7 Version 5.4, Chinese		
Target system: SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC *Requirements:* Windows XP Professional Chinese *Delivery package:* English, Chinese; incl. license key on USB stick, with electronic documentation		
Floating License Chinese on DVD		**6ES7 810-4CC08-0KA5**
Upgrade Floating License Chinese 3.x/4.x/5.x to V5.4; on DVD		**6ES7 810-4CC08-0KE5**
Documentation package STEP 7 basic information		
Comprising Getting Started, hardware configuration manual, programming manual, migration manual		
German		**6ES7 810-4CA08-8AW0**
English		**6ES7 810-4CA08-8BW0**
French		**6ES7 810-4CA08-8CW0**
Spanish		**6ES7 810-4CA08-8DW0**
Italian		**6ES7 810-4CA08-8EW0**
STEP 7 reference manuals		
Consisting of STL, LAD and FBD manuals as well as a reference manual for standard and system functions for SIMATIC S7-300/400		
German		**6ES7 810-4CA08-8AW1**
English		**6ES7 810-4CA08-8BW1**
French		**6ES7 810-4CA08-8CW1**
Spanish		**6ES7 810-4CA08-8DW1**
Italian		**6ES7 810-4CA08-8EW1**
SIMATIC Manual Collection	A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET		
SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates		
EPROM programming device, USB prommer		**6ES7 792-0AA00-0XA0**
For programming SIMATIC memory cards and EPROM modules		
MPI cable		**6ES7 901-0BF00-0AA0**
For linking SIMATIC S7 and PG through MPI (5 m)		
Components for connecting a PC to MPI and PROFIBUS		
For PCs with a free PCI slot:		
CP 5611		**6GK1 561-1AA01**
CP 5611 MPI	C	**6GK1 561-1AM01**
incl. MPI cable (5 m)		
For PCs with a free PCMCIA slot:		
CP 5512		**6GK1 551-2AA00**
For Windows XP Professional		
For PCs without a free PCI slot:		
PC adapter USB		**6ES7 972-0CB20-0XA0**
For connecting a PC to S7-300/-400/C7 through a USB interface; with USB cable (5 m)		
Components for connecting the PC to Industrial Ethernet		
For PCs with a free PCI slot:		
Layer 2 Ethernet cards		
For PCs with a free PCMCIA slot:		
SOFTNET-PG Edition 2006		**6GK1 704-1PW64-3AA0**

A: Subject to export regulations: AL: N and ECCN: EAR99S
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

Overview

STEP 7 Professional supports all IEC languages.

In addition to the languages recognized by STEP 7

- LAD
- FBD
- IL

The following are also available:

- "Sequential Function Chart"
- "Structured Text"

An offline simulation of programs created with these languages is included. STEP 7 Professional thus replaces the combination of the individual packages STEP 7, S7-GRAPH, S7-SCL and S7-PLCSIM.

A POWERPACK is offered to customers who use STEP 7 already and wish to change. A valid STEP 7 license is required for purchasing the POWERPACK. A separate update service is available for STEP 7 Professional .

Ordering data

	Order No.
STEP 7 Professional Edition 2006	
Target system: SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC *Requirements:* Windows XP Prof., Vista Ultimate, Vista Business *Type of delivery:* German, English, French, Spanish, Italian; license key on USB stick, with electronic documentation	
Floating license on DVD	**6ES7 810-5CC10-0YA5**
Rental license for 50 hours	**6ES7 810-5CC10-0YA6**
Software Update Service on DVD (requires current software version)	**6ES7 810-5CC04-0YE2**
Upgrade of Floating License to Edition 2006; on DVD	**6ES7 810-5CC10-0YE5**
Powerpack Floating License for upgrading from STEP 7 to STEP 7 Professional	**6ES7 810-5CC10-0YC5**
Trial License STEP 7 Professional Edition 2006; on DVD, runs for 14 days	**6ES7 810-5CC10-0YA7**
Documentation package STEP 7 basic information	
Comprising Getting Started, hardware configuration manual, programming manual, migration manual	
German	**6ES7 810-4CA08-8AW0**
English	**6ES7 810-4CA08-8BW0**
French	**6ES7 810-4CA08-8CW0**
Spanish	**6ES7 810-4CA08-8DW0**
Italian	**6ES7 810-4CA08-8EW0**

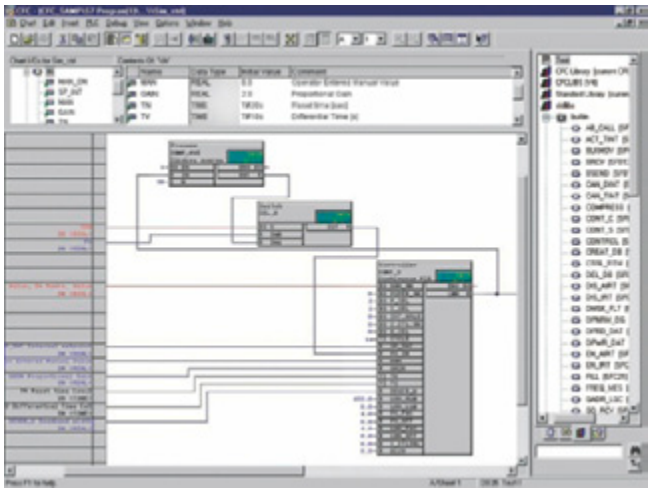
A: Subject to export regulations: AL: N and ECCN: EAR99S

	Order No.
STEP 7 reference manuals	
Consisting of STL, LAD and FBD manuals as well as a reference manual for standard and system functions for SIMATIC S7-300/400	
German	**6ES7 810-4CA08-8AW1**
English	**6ES7 810-4CA08-8BW1**
French	**6ES7 810-4CA08-8CW1**
Spanish	**6ES7 810-4CA08-8DW1**
Italian	**6ES7 810-4CA08-8EW1**
SIMATIC Manual Collection A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET	
SIMATIC Manual Collection update service for 1 year D	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
EPROM programming device, USB prommer	**6ES7 792-0AA00-0XA0**
For programming SIMATIC memory cards and EPROM modules	
MPI cable	**6ES7 901-0BF00-0AA0**
For linking SIMATIC S7 and PG through MPI (5 m)	
Components for connecting a PC to MPI and PROFIBUS	see STEP 7, page 7/6
Components for connecting the PC to Industrial Ethernet	see STEP 7, page 7/6

D: Subject to export regulations: AL: N and ECCN: 5D992

CFC

Overview



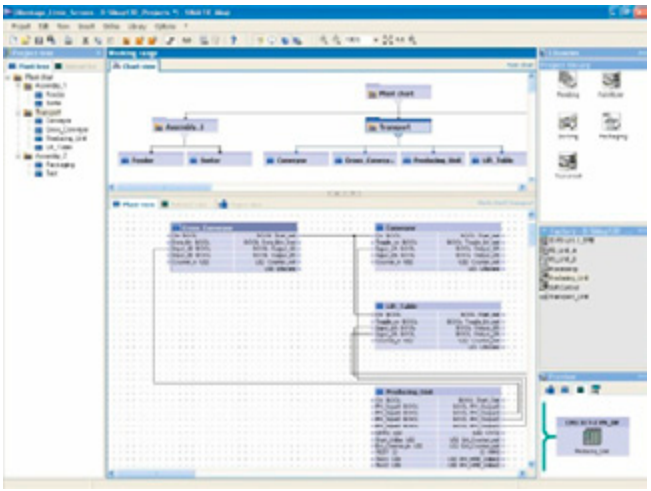
- For creating automation programs by drawing a function chart
- With extensive libraries of prefabricated function blocks to which function blocks created by the user can be added
- Reduced costs and fewer mistakes by simply interconnecting read-to-use function blocks
- Optimized integration in the world of automation, for example, through guaranteed compatibility with all STEP 7 tools
- Can be used for SIMATIC S7-300 (recommended for CPU 316 or CPU 314C or higher), SIMATIC S7-400, SIMATIC WinAC and D7-SYS

Ordering data

		Order No.
SIMATIC CFC, Version 7.1 *Task:* Graphic configuring and programming of automation applications in the form of technology-oriented diagrams *Target system:* SIMATIC S7-300/400, SIMATIC WinAC, D7-SYS *Requirements:* STEP 7 from V5.3 onwards *Delivery form:* Engineering software and electronic documentation on CD-ROM, License Key on USB stick, Certificate of License		
Floating license		**6ES7 658-1EX17-2YA5**
Floating license upgrade from V7.0 to V7.1		**6ES7 658-1EX17-2YE5**
Software Update Service (requires current software version)		**6ES7 658-1EX00-2YL8**
SIMATIC Manual Collection Electronic manuals on DVD, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET	A	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	D	**6ES7 998-8XC01-8YE2**

A: Subject to export regulations: AL: N and ECCN: EAR99S
D: Subject to export regulations: AL: N and ECCN: 5D992

Overview



- Component-based software tool for configuring the communication in distributed automation solutions
- For easy graphical configuration of the communication between subsystems and machine-to-machine communication in the production line
- Based on the PROFINET standard
- Open for PROFINET devices from various manufacturers on Industrial Ethernet
- Runs under Windows 2000, Windows XP Professional and Windows 2003 Server

Technical specifications

Engineering Tool	SIMATIC iMap
Current version	V3.0
Software class	A
Applications	
Keyword	SIMATIC iMap is an engineering tool for configuring communication between automation and field devices in distributed automation solutions.
Marketing message	"Time and cost savings in modular machine and plant construction with Component based Automation." "Modularization and machine-to-machine communication along the production line."
Advantages	• Open component-based engineering tool to the PROFINET standard. • Simple communication between intelligent automation and field devices on PROFIBUS DP and on Ethernet. • Graphical configuration of communication on PROFIBUS DP and on Ethernet • Extremely high reusability of software components (technology modules) • Graphical structuring of the plant using "chart-in-chart" function • Convenient navigation through the project tree • Easy creation and structuring of technology libraries • PROFIBUS and Ethernet in the overview of the network view • Fast start-up thanks to downloading and testing directly on Ethernet (also of PROFIBUS slaves)

Engineering Tool	SIMATIC iMap
Advantages (continued)	• Online display of values of the technology modules on the interfaces and in the variable table • Diagnosis of communication in the diagnostics window
Sectors	• Automotive industry (especially in assembly, conveyor systems and in the paint shop) • Complex food and packaging machines • Conveyor systems based on PROFIBUS DP • Production lines with several interlinked machines
Target systems	• SIMATIC S7 CPU 31x-2 PN/DP and SIMATIC S7 CPU 319-3 PN/DP (with integrated PROFINET interface. This can be used as a proxy function for the devices of a complete PROFIBUS segment, one line only) • SIMATIC WinAC PN (can be used as a proxy function for the devices of a complete PROFIBUS segment, one line only) • SIMATIC NET IE/PB Link (can be used as a proxy function for the devices of a complete PROFIBUS segment) • SIMATIC NET CP 343-1 and CP 343-1 Advanced (for connecting SIMATIC S7-300 to Ethernet), CP443-1 Advanced (for connecting SIMATIC S7-400 to Ethernet)

SIMATIC iMap

Technical specifications (continued)

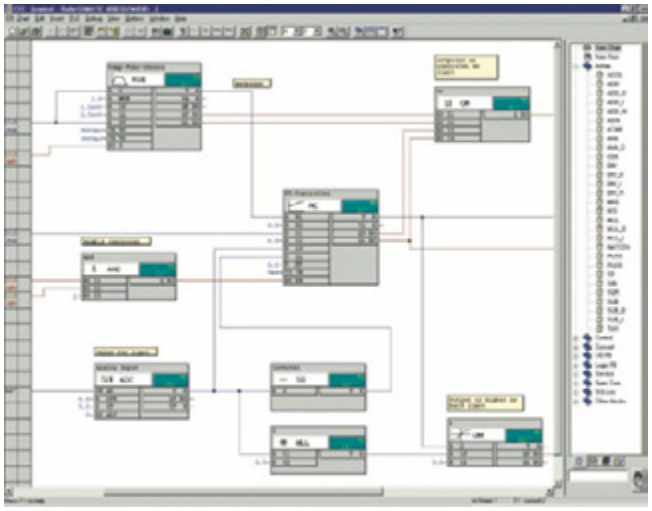
Engineering Tool	SIMATIC iMap
Target systems (continued)	• Distributed I/O stations with separate CPU (all intelligent field devices on PROFIBUS such as SIMATIC CPU 313C-2 DP, CPU 314C-2 DP, CPU 315-2 DP, CPU 316-2 DP, ET 200 IM 151 CPU, ET 200S BM 147 CPU), • PROFINET CBA OPC Server (for access from PC applications to data in PROFINET devices) • Devices on Industrial Ethernet based on the PROFINET CBA standard • SIMATIC OPs (within the components) • SIMATIC ProTool/Pro, WinCC or any other visualization system with OPC client function
System requirements	
Operating system	Windows 2000 Profesional Service Pack 4 and higher or Windows XP Professional Service Pack 1 and higher or Windows 2003 Server Service Pack 1 and higher; PC administration rights are required for installation
PG/PC hardware	Pentium processor, 1 GHz or higher
Recommended expansion of main memory in PG/PC	RAM: 512 MB or more
Hard disk space required in PG/PC	Approx. 200 MB
Software required	• STEP 7 V5.3 Service Pack 3 or higher • PN OPC server V6.3 or higher The following software must be installed before iMap (included in the iMap package): • MS Internet Explorer V6.0 Service Pack 1 and higher • Adobe Acrobat Reader V5.0
Delivery format	
Languages	English, German, French, Italian and Spanish
Single License (SL)	Yes
Upgrade License (UL)	Yes, from V2.0 to V3.0
Paper manuals	Electronically on CD
Authorization/licenses	
Authorization	Yes
Single License (SL)	Yes
Upgrade License (UL)	Yes
Software Update Service	Yes
Unlock Copy License	No

Ordering data

		Order No.
SIMATIC iMap V3.0		
Target system: CPU 31x-2 PN/DP, CPU 319-3 PN/DP, SIMATIC WinAC PN, SIMATIC NET IE/PB Link, SIMATIC NET CP 343-1, SIMATIC NET CP 343-1 Advanced, SIMATIC NET CP 443-1 Advanced, distributed I/O devices with own CPU, PROFINET CBA OPC server, devices on the Industrial Ethernet based on the PROFINET CBA standard, SIMATIC OPs, SIMATIC ProTool/Pro *Requirements:* Windows 2000 Professional with Service Pack 4 or later or Windows XP Professional with Service Pack 1 or later or Windows 2003 Server with Service Pack 1 or later; on PG or PC with Pentium processor, min. 1 GHz; STEP 7 V5.3 or later with Service Pack 3, PN OPC Server V6.3 or later *Delivery form:* German, English, with electronic documentation		
Floating License	D	**6ES7 820-0CC04-0YA5**
Software Update Service (requires current software version)	D	**6ES7 820-0CC01-0YX2**
Upgrade to V3.0, floating license	D	**6ES7 820-0CC04-0YE5**

D: Subject to export regulations: AL: N and ECCN: 5D992

Overview



- Add-on for STEP 7/CFC/SFC for configuration of control and automation tasks with T400, FM 458, SIMADYN D or SIMATIC TDC
- Contains function blocks for every application
- Scope of delivery: Software packages D7-SYS, CFC, SFC, TH-PO
- Optional:
  D7-FB-Gen, function block generator for the creation of customized function blocks

Ordering data

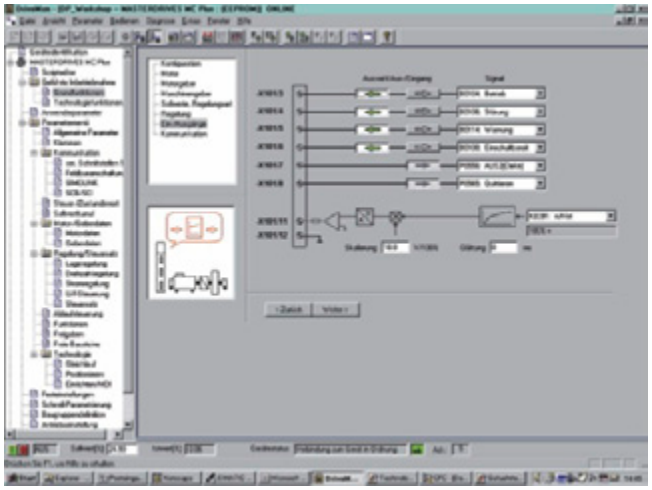
		Order No.
SIMATIC D7-SYS V7.1 *Task:* Function block library for configuring closed-loop control and automation tasks *Target system:* SIMATIC S7-400/FM 458/ SIMATIC TDC/T400/SIMADYN *Requirement:* Windows 2000/XP *Delivery package:* on CD, German, English, with electronic documentation		
Floating license		**6ES7 852-0CC02-0YA5**
Upgrade License V5.x and higher		**6ES7 852-0CC02-0YE5**
Software Update Service		**6ES7 852-0CC01-0YL5**
SIMATIC D7 FB Gen V2.1 Function block generator	A	**6DD1 805-5DA0**
SIMATIC Manual Collection Electronic manuals on DVD, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET	A	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	D	**6ES7 998-8XC01-8YE2**

A: Subject to export regulations: AL: N and ECCN: EAR99S
D: Subject to export regulations: AL: N and ECCN: 5D992

7

Drive ES engineering software

Overview



Drive ES is the engineering system used to integrate Siemens drive technology into the SIMATIC automation world easily, efficiently and cost-effectively in terms of communication, configuration and data management.

It is based on the operator interface of the STEP 7 Manager, the essential element when it comes to engineering.

Various software packages are available for selection.

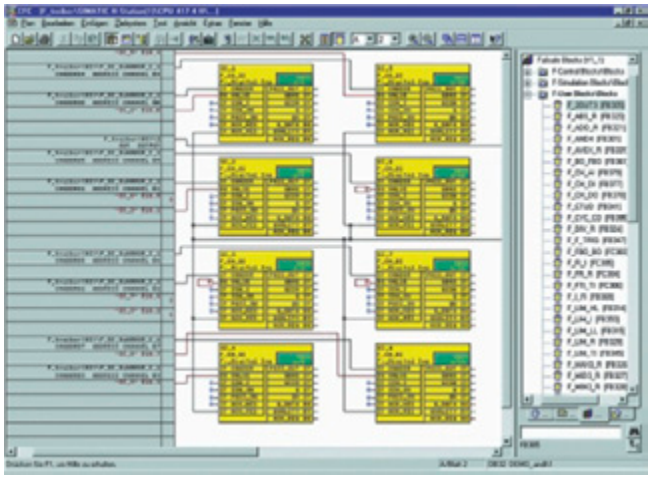
- Drive ES Basic -
  For entry into the world of Totally Integrated Automation and the capability of routing beyond network boundaries and the use of the SIMATIC teleservice.
- Drive ES SIMATIC -
  to simply parameterize the STEP 7 communication program instead of programming.
- Drive ES PCS7 -
  integrates drives with PROFIBUS interface into the SIMATIC PCS7 process control system.

Ordering data

	Order No.
Drive ES Basic V5.4 SPx *)	
• Configuration software for the integration of drives into Totally Integrated Automation • Precondition: STEP 7, V5.3 and higher, SP3 • Supplied as: DVD de, en, fr, es, it with electronic documentation	
Floating license, 1 user	**6SW1 700-5JA00-4AA0**
Floating license (copy license), 60 users	**6SW1 700-5JA00-4AA1**
Update service for single-user license	**6SW1 700-0JA00-0AB2**
Update service for copy license, 60 users	**6SW1 700-0JA00-1AB2**
Upgrade from V5.x to V5.4 SPx *)	**6SW1 700-5JA00-4AA4**
Drive ES SIMATIC V5.4 SPx *)	
• Block library for SIMATIC for the parameterization of communication with the drives • Precondition: STEP 7, V5.3 and higher, SP3 • Supplied as: CD-ROM de, en, fr, es, it with electronic documentation	
Single-user license incl. 1x runtime license	**6SW1 700-5JC00-4AA0**
Runtime license (without data carrier)	**6SW1 700-5JC00-1AC0**
Update service for single-user license	**6SW1 700-0JC00-0AB2**
Upgrade from V5.x to V5.4 SPx *)	**6SW1 700-5JC00-4AA4**
Drive ES PCS7 V6.1 SPx *)	
• Block library for PCS7 for the integration of drives • Precondition: PCS7, V6.1 and higher • Supplied as: CD-ROM de, en, fr, es, it with electronic documentation	
Single-user license incl. 1x runtime license	**6SW1 700-6JD00-1AA0**
Runtime license (without data carrier)	**6SW1 700-5JD00-1AC0**
Update service for single-user license	**6SW1 700-0JD00-0AB2**
Upgrade from V5.x to V6.1 SPx *)	**6SW1 700-6JD00-1AA4**
Drive ES PCS7 V7.0 SPx *)	
• Block library for PCS7 for the integration of drives • Precondition: PCS7, V7.0 and higher • Supplied as: CD-ROM de, en, fr, es, it with electronic documentation	
Single-user license incl. 1x runtime license	**6SW1 700-7JD00-0AA0**
Runtime license (without data carrier)	**6SW1 700-5JD00-1AC0**
Update service for single-user license	**6SW1 700-0JD00-0AB2**
Upgrade from V5.x to V7.0 SPx *)	**6SW1 700-7JD00-0AA4**

*) Orders are always automatically supplied with the latest SP.

Overview



The S7 F Systems engineering tool integrated in the SIMATIC Manager can be used to configure an S7 F/FH System. With this tool you can:

- Parameterize CPU and F-signal modules
- Create safety-related applications in the CFC.

Predefined, TÜV-approved blocks are available for this purpose. The safety-related blocks save the user having to perform redundant programming for detecting and reacting to errors.

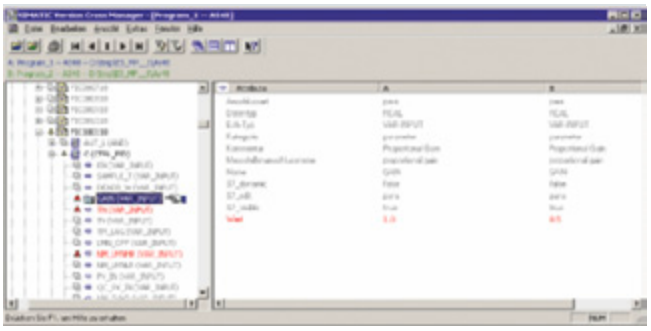
Ordering data

Ordering data	Order No.
S7 F Systems RT license For processing safety-related application programs, for one AS 412F/FH, AS 414F/FH or AS 417F/FH	**6ES7 833-1CC00-6YX0**
S7 F Systems V6.1 Programming and configuring environment for creating and operating safety-related STEP 7 programs for an S7 400H-based target system, floating license for 1 user, executable under Windows XP Prof SP2/SP3, Windows Server 2003 SP2 2 languages (German, English) *Type of supply:* Certificate of license as well as software and electronic documentation on CD	**6ES7 833-1CC02-0YA5**
S7 F systems upgrade from V5.x/V6.0 to V6.1 2 languages (German, English), floating license for 1 user *Type of supply:* Certificate of license as well as software and electronic documentation on CD	**6ES7 833-1CC02-0YE5**

Note:
In the case of an S7 F Systems Upgrade from V5.x to V6.1, the type of S7 F Systems license changes from single license to floating license.

Version Cross Manager

Overview



The SIMATIC Version Cross Manager is a user-friendly tool for determining the differences between various versions of individual projects or multi-projects by:

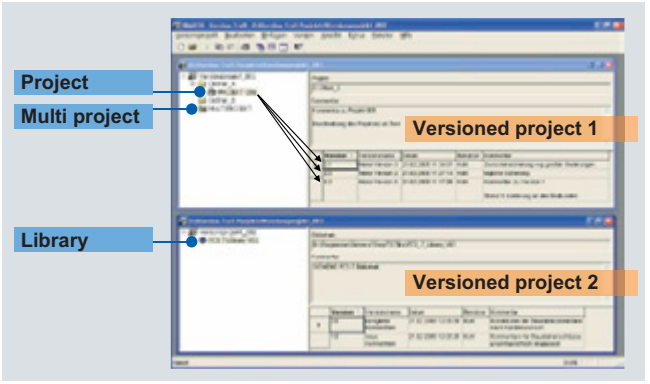
- Tracing missing, additional or differing objects by comparing hardware configuration, communication, technological hierarchy, CFC/SFC charts, SFC details, block types, alarms, global variables, signals and run sequences
- Graphic display of comparison results in a combination of tree and tabular formats
- Clear hierarchical structuring according to the technological hierarchy of the plant
- Color-coded identification of the differences

Ordering data

	Order No.
SIMATIC **Version Cross Manager V7.1** 6 languages (German, English, French, Italian, Spanish, Chinese), executes with Windows XP Professional or Windows Server 2003, floating license for 1 user Type of delivery: License Key Memory Stick, Certificate of License incl. Terms and Conditions as well as TIA Engineering Toolset CDs V7.1	**6ES7 658-1CX17-2YA5**

Version Trail

Overview

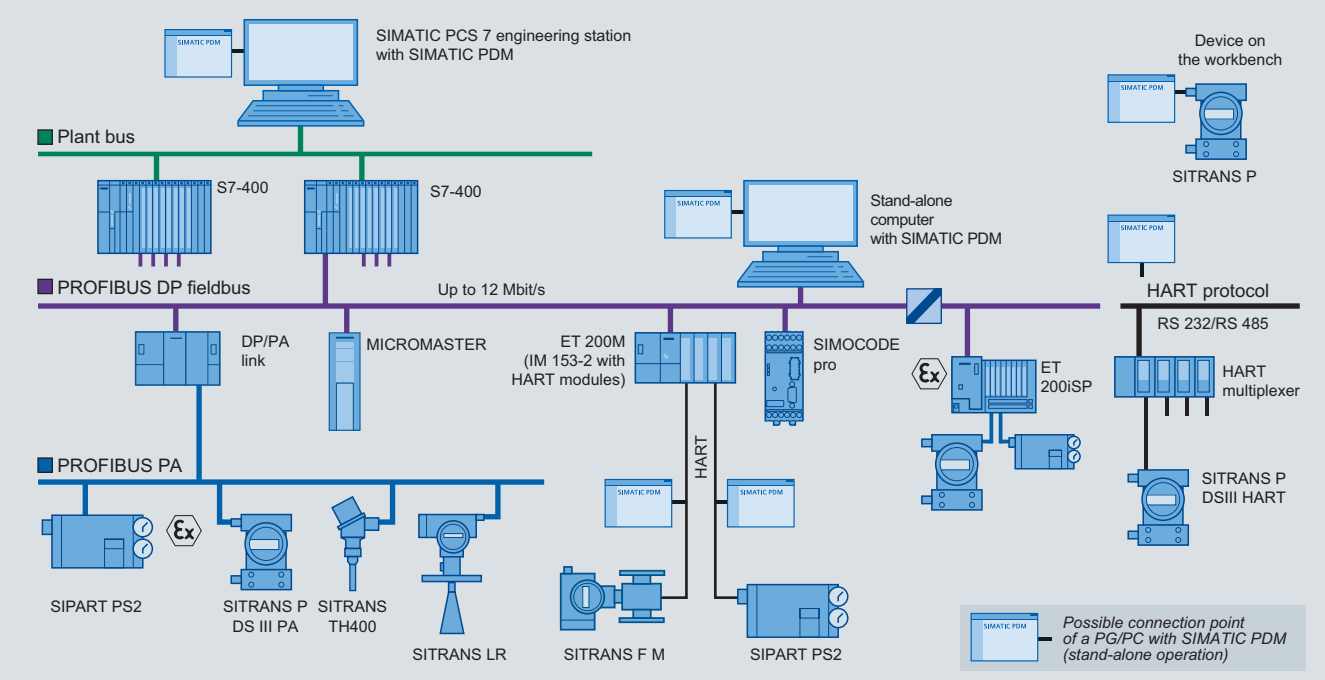


SIMATIC Version Trail is a software option for engineering which, together with the SIMATIC Logon central user administration, can assign a version history to libraries, projects and multi-projects.

Ordering data

	Order No.
SIMATIC Version Trail V7.1 6 languages (German, English, French, Italian, Spanish, Chinese), executes with Windows XP Professional or Windows Server 2003, floating license for 1 user Type of delivery: License Key Memory Stick, Certificate of License incl. Terms and Conditions as well as TIA Engineering Toolset CDs V7.1	**6ES7 658-1FX17-2YA5**

Overview



Configuration options with SIMATIC PDM

SIMATIC PDM (Process Device Manager) is a universal, vendor-independent tool for the configuration, parameterization, commissioning, diagnostics and servicing of intelligent field devices (sensors and actuators) and field components (remote I/Os, multiplexers, control-room devices, compact controllers), which in the following sections will be referred to simply as devices.

Using *one* software, SIMATIC PDM enables the processing of more than 1 300 devices from Siemens and over 120 vendors worldwide on *one* homogeneous user interface. Parameters and functions for all supported devices are displayed in a consistent and uniform fashion independent of their communications interface.

From the viewpoint of device integration, SIMATIC PDM is the most powerful open device manager available in the world. Devices which previously were not supported can be easily integrated in SIMATIC PDM at any time by importing their device descriptions (EDD). This provides security for your investment and saves you investment costs, training expenses and consequential costs.

SIMATIC PDM is integrated in the asset management of SIMATIC PCS 7. The Process Device Manager provides wider information for all devices described by the Electronic Device Description (EDD), e.g. detailed diagnostics information (vendor information, information on fault diagnostics and troubleshooting, further documentation), modification logbook (audit trial), parameter information. It is possible to change directly to SIMATIC PDM from the diagnostics faceplates in the maintenance station.

Technical specifications

Hardware minimum requirements	• PG/PC/notebook with processor corresponding to operating system requirements • Main memory 256 MB • Vacant hard disk 370 MB
Operating systems (alternative)	• Microsoft Windows 2000 Professional SP3/SP4 • Microsoft Windows XP Professional SP2/SP3 • Microsoft Windows Server 2003 SP2 (only for operation with a SIMATIC PCS 7 Engineering Station)
Further software components	
• SIMATIC PDM option "Integration in STEP 7/PCS 7"	STEP 7 V5.2 + SP1 STEP 7 V5.3 + SP3 STEP 7 V5.4 + SP4 SIMATIC PCS 7 V6.1 + SP2/SP3 SIMATIC PCS 7 V7.0 + SP2 SIMATIC PCS 7 V7.1

SIMATIC PDM process device manager

Ordering data	Order No.
Minimum configuration SIMATIC PDM Single Point	
SIMATIC PDM Single Point V6.0 for operation and parameterization of one field device; communication via PROFIBUS DP/PA or HART modem, including 1 TAG cannot be expanded with respect to functions or with TAG option/PowerPack 6 languages (German, English, French, Spanish, Italian, Chinese), executes with Windows 2000 Professional or Windows XP Professional Floating license for 1 user Type of delivery: License Key Disk, Certificate of License incl. Terms and Conditions; CDs with SIMATIC PDM V6.0 and device library	**6ES7 658-3HX06-0YA5**
Predefined SIMATIC PDM V6.0 product configurations for special applications	
SIMATIC PDM Service V6.0 Complete package for stand-alone users for servicing, with • SIMATIC PDM Basic V6.0 • 128 TAGs 6 languages (German, English, French, Italian, Spanish, Chinese), executes with Windows 2000 Professional or Windows XP Professional, floating license for 1 user Type of delivery: License Key Disk, Certificate of License incl. Terms and Conditions; CDs with SIMATIC PDM V6.0 and device library	**6ES7 658-3JX06-0YA5**
SIMATIC PDM S7 V6.0 Complete package for use in a SIMATIC S7 configuration environment, with • SIMATIC PDM Basic V6.0 • Integration in STEP 7 / PCS 7 • 128 TAGs 6 languages (German, English, French, Italian, Spanish, Chinese), executes with Windows 2000 Professional or Windows XP Professional, floating license for 1 user Type of delivery: License Key Disk, Certificate of License incl. Terms and Conditions; CDs with SIMATIC PDM V6.0 and device library	**6ES7 658-3KX06-0YA5**

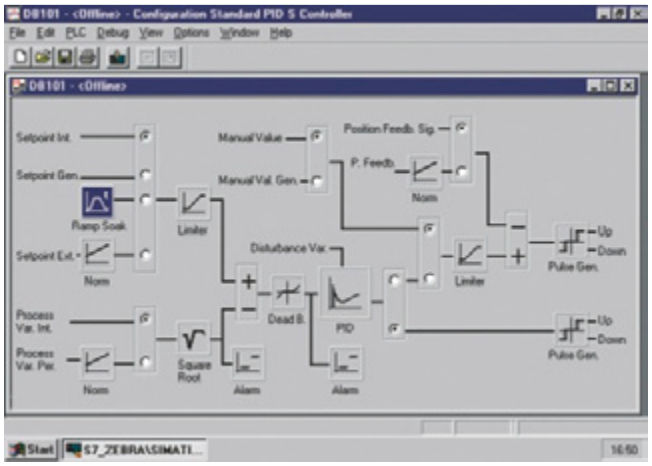
	Order No.
Components for individual configuration	
SIMATIC PDM Basic V6.0 for operation and parameterization of field devices and components, communication via PROFIBUS DP/PA, HART (modem, RS 232, PROFIBUS) and Modbus, including 4 TAGs 6 languages (German, English, French, Spanish, Italian, Chinese), executes with Windows 2000 Professional or Windows XP Professional Type of delivery: License Key Disk, Certificate of License incl. Terms and Conditions; CDs with SIMATIC PDM V6.0 and device library	
• Floating license for 1 user	**6ES7 658-3AX06-0YA5**
• Rental license for 50 hours	**6ES7 658-3AX06-0YA6**
Integration in STEP 7 / SIMATIC PCS 7 Only required if integration of SIMATIC PDM into HW-Config is to be used 6 languages (German, English, French, Spanish, Italian, Chinese), executes with Windows 2000 Professional or Windows XP Professional Type of delivery: License Key Disk, Certificate of License incl. Terms and Conditions	
• Floating license for 1 user	**6ES7 658-3BX06-2YB5**
Routing via S7-400 6 languages (German, English, French, Spanish, Italian, Chinese), executes with Windows 2000 Professional or Windows XP Professional Type of delivery: License Key Disk, Certificate of License incl. Terms and Conditions	
• Floating license for 1 user	**6ES7 658-3CX06-2YB5**
Communication via standard HART multiplexer 6 languages (German, English, French, Spanish, Italian, Chinese), executes with Windows 2000 Professional or Windows XP Professional Type of delivery: License Key Disk, Certificate of License incl. Terms and Conditions	
• Floating license for 1 user	**6ES7 658-3EX06-2YB5**

Ordering data	Order No.
TAG options / PowerPacks	
SIMATIC PDM TAG option for TAG expansion, additive to SIMATIC PDM Basic V6.0 6 languages (German, English, French, Spanish, Italian, Chinese), executes with Windows 2000 Professional or Windows XP Professional Floating license for 1 user Type of delivery: License Key Disk, Certificate of License incl. Terms and Conditions	
• Up to 128 TAGs	**6ES7 658-3XA06-2YB5**
• Up to 512 TAGs	**6ES7 658-3XB06-2YB5**
• Up to 1 024 TAGs	**6ES7 658-3XC06-2YB5**
• Up to 2 048 TAGs	**6ES7 658-3XD06-2YB5**
SIMATIC PDM PowerPack for subsequent TAG expansion of all SIMATIC PDM V6.0 product configurations 6 languages (German, English, French, Spanish, Italian, Chinese), executes with Windows 2000 Professional or Windows XP Professional Floating license for 1 user Type of delivery: License Key Disk, Certificate of License incl. Terms and Conditions	
• From 128 TAGs to 512 TAGs	**6ES7 658-3XB06-2YD5**
• From 512 TAGs to 1 024 TAGs	**6ES7 658-3XC06-2YD5**
• From 1 024 TAGs to 2 048 TAGs	**6ES7 658-3XD06-2YD5**
• From 2 048 TAGs to unlimited TAGs	**6ES7 658-3XH06-2YD5**

	Order No.
Demonstration software	
SIMATIC PDM Demo V6.0 without online communication and storage functionality 6 languages (German, English, French, Spanish, Italian, Chinese), executes with Windows 2000 Professional or Windows XP Professional Type of delivery: CDs with SIMATIC PDM V6.0 and device library	**6ES7 658-3GX06-0YC8**

Standard PID control

Overview



- For integrating continuous PID controllers, pulse controllers and step controllers in the application program
- Reduces engineering costs thanks to time-saving parameterization and optimization of the controller
- For use in SIMATIC S7-300 (CPU 313 or higher), S7-400 and WinAC

Technical specifications

Data parameterization tool

Prerequisites	STEP 7 V5.3 SP2 or higher

Standard function blocks	**PID_CP (FB 1)**		**PID_ES (FB 2)**		**LP_SCHED (FC 1)**	
Storage space requirements	Load memory	Work memory	Load memory	Work memory	Load memory	Work memory
• FB length in the memory	8956 byte	7796 byte	9104 byte	7982 byte	1064 byte	976 byte
• DB length in the memory	1168 byte	510 byte	1124 byte	484 byte	184 byte[2)]	100 byte[2)]
Runtimes						
• In S7-300[1)]	0.18 … 4.4 ms		0.2 … 5.1 ms		0.03 … 0.3 ms	
• In S7-400[1)]	0.13 … 0.35 ms		0.16 … 0.35 ms		0.03 … 0.08 ms	
PLC	SIMATIC S7-300, S7-400					

1) Depending on the CPU

2) With 5 control loops

Ordering data

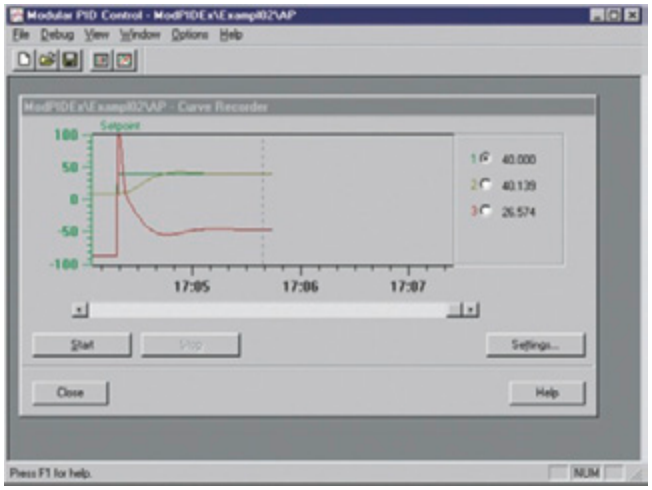
		Order No.
Standard PID Control parameterization tool, V5.2 SP1		
Task: Parameterization tool for standard closed-loop controls *Requirement:* STEP 7, V5.3 SP2 or higher *Delivery package:* With electronic manual/Getting Started English, German; incl. authorization diskette		
Floating license		**6ES7 830-2AA22-0YX0**
Software Update Service (requires current software version)		**6ES7 830-2AA00-0YX2**
Upgrade license from V5.x to V5.2 SP1		**6ES7 830-2AA22-0YX4**

A: Subject to export regulations: AL: N and ECCN: EAR99S

		Order No.
Standard function blocks for Standard PID Control, V5.2		
Task: Standard FBs for standard closed-loop controls *Target system:* SIMATIC S7-300 (CPU 313 or higher), S7-400 *Type of delivery:* With electronic manual/Getting Started English, German		
Single license		**6ES7 860-2AA21-0YX0**
Single license without software and documentation		**6ES7 860-2AA21-0YX1**
SIMATIC Manual Collection	A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, five languages: S7-200/300/400, WinAC, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET		
SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates		

D: Subject to export regulations: AL: N and ECCN: 5D992

Overview



- For creating complex closed-loop control structures
- Preferred for implementation in closed-loop control equipment in mid-range and high-end applications and in process engineering
- For use in SIMATIC S7-300 (CPU 313 or higher), S7-400 and WinAC

Technical specifications

Commissioning software	
Prerequisites	STEP 7 V5.3 SP2 and higher
RAM expansion	16 MB
Processor, at least	486
Windows swap area, approx.	20 MB (max. possible)

Standard function blocks	**A_DEAD_B**		**CRP_IN**		**CRP_OUT**	
Storage space requirements	Load memory	Work memory	Load memory	Work memory	Load memory	Work memory
• FB length in the memory	898 byte	692 byte	182 byte	70 byte	206 byte	96 byte
• DB length in the memory	186 byte	44 byte	122 byte	20 byte	114 byte	14 byte
Runtimes in S7-300	0.13 … 0.17 ms		0.06 ms		0.18 … 0.22 ms	
Runtimes in S7-400	0.01 … 0.03 ms		0.01 … 0.02 m		0.01 … 0.04 ms	
PLC	SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC	

Standard function blocks	**DEAD_T**		**DEAD_BAND**		**DIF**	
Storage space requirements	Load memory	Work memory	Load memory	Work memory	Load memory	Work memory
• FB length in the memory	532 byte	394 byte	232 byte	120 byte	410 byte	268 byte
• DB length in the memory	142 byte	22 byte	114 byte	16 byte	158 byte	30 byte
Runtimes in S7-300	0.26 … 0.33 ms		0.16 … 0.21 ms		0.55 … 0.71 ms	
Runtimes in S7-400	0.02 … 0.06 m		0.01 … 0.03 ms		0.03 … 0.09 ms	
PLC	SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC	

Standard function blocks	**ERR_MON**		**INTEG**		**LAG1ST**	
Storage space requirements	Load memory	Work memory	Load memory	Work memory	Load memory	Work memory
• FB length in the memory	558 byte	360 byte	488 byte	314 byte	534 byte	368 byte
• DB length in the memory	206 byte	52 byte	168 byte	36 byte	156 byte	30 byte
Runtimes in S7-300	0.27 … 0.35 ms		0.40 … 0.51 ms		0.52 … 0.67 ms	
Runtimes in S7-400	0.01 … 0.05 ms		0.02 … 0.07 ms		0.03 … 0.09 ms	
PLC	SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC	

Technical specifications (continued)

Standard function blocks	LAG2ND		LIMALARM		LIMITER	
Storage space requirements	Load memory	Work memory	Load memory	Work memory	Load memory	Work memory
• FB length in the memory	690 byte	516 byte	390 byte	240 byte	262 byte	140 byte
• DB length in the memory	190 byte	46 byte	152 byte	28 byte	124 byte	20 byte
Runtimes in S7-300	0.88 … 1.14 ms		0.47 … 0.61 ms		0.14 … 0.17 ms	
Runtimes in S7-400	0.04 … 0.16 ms		0.02 … 0.07 ms		0.03 … 0.01 ms	
PLC	SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC	

Standard function blocks	LMNGEN_C		LMNGEN_S		NONLIN	
Storage space requirements	Load memory	Work memory	Load memory	Work memory	Load memory	Work memory
• FB length in the memory	1576 byte	1280 byte	2578 byte	2152 byte	826 byte	672 byte
• DB length in the memory	276 byte	80 byte	360 byte	110 byte	138 byte	18 byte
Runtimes in S7-300	0.32 … 0.41 ms		1.16 … 1.47 ms		0.32 … 0.41 ms	
Runtimes in S7-400	0.02 … 0.06 ms		0.06 … 0.18 ms		0.02 … 0.07 ms	
PLC	SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC	

Standard function blocks	NORM		OVERRIDE		PARA_CTL	
Storage space requirements	Load memory	Work memory	Load memory	Work memory	Load memory	Work memory
• FB length in the memory	234 byte	122 byte	362 byte	214 byte	406 byte	232 byte
• DB length in the memory	130 byte	24 byte	146 byte	28 byte	234 byte	82 byte
Runtimes in S7-300	0.33 … 0.43 ms		0.15 … 0.18 ms		0.12 … 0.15 ms	
Runtimes in S7-400	0.02 … 0.07 ms		0.01 … 0.04 ms		0.01 … 0.03 ms	
PLC	SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC	

Standard function blocks	PID		PULSEGEN		RMP_SOAK	
Storage space requirements	Load memory	Work memory	Load memory	Work memory	Load memory	Work memory
• FB length in the memory	1560 byte	1242 byte	1110 byte	872 byte	1706 byte	1500 byte
• DB length in the memory	340 byte	98 byte	190 byte	34 byte	212 byte	62 byte
Runtimes in S7-300	1.15 … 1.46 ms		0.17 … 0.20 ms		0.16 … 0.20 ms	
Runtimes in S7-400	0.06 … 0.18 ms		0.01 … 0.05 ms		0.01 … 0.04 ms	
PLC	SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC	

Standard function blocks	ROC_LIM		SCALE		SP_GEN	
Storage space requirements	Load memory	Work memory	Load memory	Work memory	Load memory	Work memory
• FB length in the memory	1242 byte	980 byte	136 byte	32 byte	658 byte	484 byte
• DB length in the memory	222 byte	50 byte	114 byte	16 byte	164 byte	40 byte
Runtimes in S7-300	0.53 … 0.68 ms		0.10 … 0.13 ms		0.27 … 0.35 ms	
Runtimes in S7-400	0.02 … 0.09 ms		0.01 … 0.02 ms		0.02 … 0.06 ms	
PLC	SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC	

Technical specifications (continued)

Standard function blocks	SPLT_RAN		SWITCH		LP_SCHED	
Storage space requirements	Load memory	Work memory	Load memory	Work memory	Load memory	Work memory
• FB length in the memory	304 byte	180 byte	238 byte	116 byte	1104 byte	972 byte[1)]
• DB length in the memory	138 byte	28 byte	118 byte	18 byte	234 byte	64 byte[1)]
Runtimes in S7-300	0.09 … 0.11 ms		0.07 … 0.09 ms		0.28 … 0.34 ms	
Runtimes in S7-400	0.01 … 0.02 ms		0.01 … 0.03 ms		0.03 … 0.08 ms	
PLC	SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC		SIMATIC S7-300 (CPU 313 and higher), S7-400, WinAC	

1) With 5 control loops

Ordering data

	Order No.
Modular PID Control commissioning tool, V5.1 SP1 for SIMATIC S7 and WinAC	
Task: Start-up tool for modular PID controllers *Requirement:* STEP 7, V5.3 SP2 or higher *Delivery package:* With electronic manual, English, German; incl. authorization diskette	
Floating license	**6ES7 830-1AA11-0YX0**
Software Update Service (requires current software version)	**6ES7 830-1AA00-0YX2**
Upgrade license from V5.0 to V5.1 SP1	**6ES7 830-1AA11-0YX4**
Standard function blocks for Modular PID Control, V5.1	
Task: Standard FBs for modular PID controllers *Target system:* SIMATIC S7-300 (CPU 313 or higher), S7-400, WinAC *Type of delivery:* English, German; with electronic manual	
Single license	**6ES7 860-1AA10-0YX0**
Single license, without software and documentation	**6ES7 860-1AA10-0YX1**

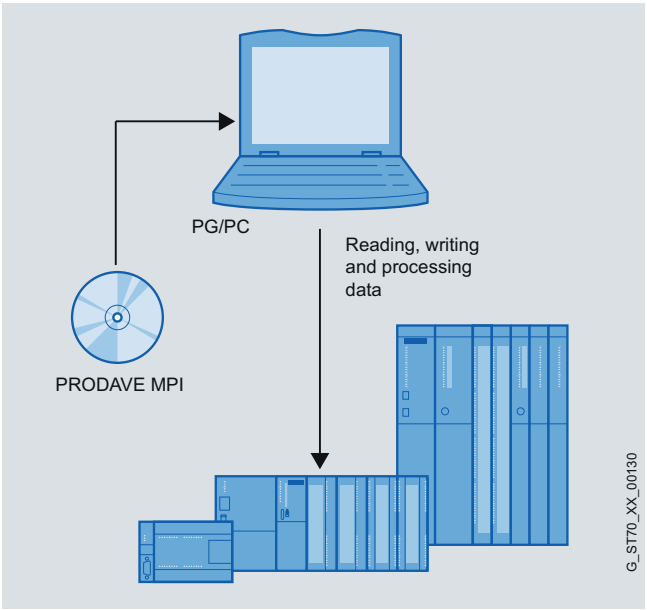
A: Subject to export regulations: AL: N and ECCN: EAR99S

		Order No.
SIMATIC Manual Collection	A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, five languages: S7-200/300/400, WinAC, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET		
SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates		

D: Subject to export regulations: AL: N and ECCN: 5D992

PRODAVE MPI

Overview



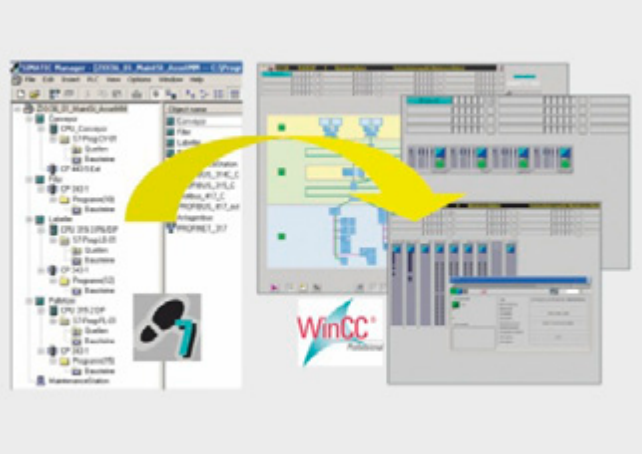
- The toolbox for exchange of process data between SIMATIC S7, SIMATIC M7, SIMATIC C7 and a PG/PC
- For autonomous handling of data traffic over MPI/PPI, PROFIBUS and Industrial Ethernet

Ordering data

		Order No.
PRODAVE MPI/IE V6.1 for Windows 95/98/ME/NT 4.0/ 2000 Prof./XP Prof. *Task:* Data link between PG/PC and SIMATIC S7/C7 via MPI (S7-200 via PPI) or Industrial Ethernet *Requirements:* Windows 2000 Prof./XP Prof./ Vista 32 Ultimate; CP 5611, integrated MPI or PC adapter *Delivery package:* CD incl. electr. documentation (German, English)		
Single license	A	**6ES7 807-4BA02-0YA0**
Copy license, without software and documentation	A	**6ES7 807-4BA02-0YA1**
PRODAVE MPI Mini V6.0 for Windows 95/98/ME/NT 4.0/ 2000 Prof./XP Prof. *Task:* Data link between PG/PC and SIMATIC S7/C7 over MPI (S7-200 over PPI); with reduced functional scope) *Requirements:* Windows 95/98/ME/NT 4.0/ 2000 Prof./XP Prof.; CP 5611, integrated MPI or PC adapter *Delivery package:* CD incl. electr. documentation (German, English)		
Single license	A	**6ES7 807-3BA01-0YA0**
Copy license, without software and documentation	A	**6ES7 807-3BA01-0YA1**
SIMATIC Manual Collection Electronic manuals on DVD, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET	A	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	D	**6ES7 998-8XC01-8YE2**

A: Subject to export regulations: AL: N and ECCN: EAR99S
D: Subject to export regulations: AL: N and ECCN: 5D992

Overview



System-integrated plant asset management system

- Automatic generation of a maintenance view in WinCC from the STEP 7 hardware configuration
- Plant-wide visualization of all automation components from the management level to the field level in ready linked, hierarchically arranged WinCC displays
- Mapping of central and distributed SIMATIC S7 components, PROFIBUS and PROFINET networks as well as associated bus nodes
- Ethernet network components and industrial PCs can be integrated through SIMATIC NET SNMP OPC Server
- Display of device status with group status generation in overview and detail displays
- The device statuses "Maintenance required" and "Maintenance request" are supported for status-based maintenance
- Provision of uniform faceplates showing detailed information for all components displayed
- Display of the device identification data (electronic rating plate)
- Integrated display of the status of the request

Technical specifications

Hardware requirements

System	Clock frequency	Main memory	Free hard disk space
Engineering station	2.8 GHz	1 GB	15 GB
Maintenance Station Stand-alone / WinCC-Station "Single-user Workstation"	2.8 GHz	1 GB	15 GB
Maintenance Station Server / WinCC Server	2.8 GHz	1 GB	15 GB
Maintenance Station Client / WinCC Client	2.8 GHz	512 MB	3 GB

Software requirements

System	Operating system
Engineering station "ES"	Windows XP Professional SP2 Windows Server 2003 SP1
Maintenance Station Stand-alone / WinCC-Station "Single-user Workstation"	Windows XP Professional SP2 Windows Server 2003 SP1
ES with Maintenance Station Stand-alone	Windows XP Professional SP2 Windows Server 2003 SP1

System	Operating system
Maintenance Station Server / WinCC Server	Windows Server 2003 SP1
Maintenance Station Client / WinCC Client	Windows XP Professional SP2 Windows Server 2003 SP1

Requirements for the integration of devices

Type	Integration	Comment
SIMATIC S7 controllers / I/O		
• S7-300 [1]	Yes	
• S7-400	Yes	
• WinAC	Yes	
Distributed devices		
• ET 200	Yes	PROFIBUS DP and PROFINET IO according to STEP 7 hardware catalog
• PROFIBUS standard slaves	Yes	Integration using a GSD file
• PROFINET standard devices	Yes	Integration using a GSD file

[1] With S7-300, PROFIBUS/PROFINET systems are supported if they are connected to the internal CPU interfaces

Technical specifications (continued)

***Requirements for the integration of devices** (continued)*

Type	Integration	Comment
Network components		
Ethernet network components	Yes	SIMATIC NET SNMP OPC Server and MIB also required
PROFINET network components	Yes	
PROFIBUS diagnostic repeater	Yes	
Personal Computer		
PC/Industrial PC	Yes	SIMATIC NET SNMP OPC Server also required
Drives		
Drives with PROFIBUS connection	Yes	For integrating devices designed to the PROFIDRIVE profile, Drive ES SIMATIC (V5.4 SP1 or higher) is required
Drives with PROFINET connection	Yes	For integrating devices designed to the PROFIDRIVE profile, Drive ES SIMATIC (V5.4 SP1 or higher) is required
Accessory devices		
Devices not configured in STEP 7 Hardware Config	Yes	Integrated via function block (asset proxy)

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Ordering data

		Order No.
SIMATIC Maintenance Station 2007		
Software for implementation of a plant-oriented asset management system		
Can be used with STEP 7 V5.4 or higher and WinCC V6.2		
• Basic package with engineering software (Floating License) and Runtime License for 100 devices	D	**6ES7 840-0WD00-0YA0**
• Powerpack 100 Runtime License for 100 additional devices	D	**6ES7 840-0WD10-0YD0**
• Powerpack 500 Runtime License for 500 additional devices	D	**6ES7 840-0WD20-0YD0**
• Powerpack 1000 Runtime License for 1000 additional devices	D	**6ES7 840-0WD30-0YD0**
• Basic demo package 2007	D	**6ES7 840-0WD00-0YA7**

		Order No.
SIMATIC Maintenance Station 2009		
Can be used with STEP 7 V5.4 or higher and WinCC V7		
• Basic package with engineering software (Floating License) and Runtime License for 100 devices	D	**6ES7 840-0WD01-0YA0**
• Powerpack 100 Runtime License for 100 additional devices	D	**6ES7 840-0WD11-0YD0**
• Powerpack 500 Runtime License for 500 additional devices	D	**6ES7 840-0WD21-0YD0**
• Powerpack 1000 Runtime License for 1000 additional devices	D	**6ES7 840-0WD31-0YD0**
• Basic demo package 2009	D	**6ES7 840-0WD01-0YA7**
• Upgrade from SIMATIC Maintenance Station 2007 to SIMATIC Maintenance Station 2009	D	**6ES7 840-0WD01-0YE0**

D: Subject to export regulations: AL: N and ECCN: 5D992

Overview

- Contains the most important engineering and runtime software packages for SIMATIC S7/C7, SIMATIC HMI, SIMATIC NET, SINUMERIK, SIRIUS and SIMATIC RFID on several data carriers (DVD)
- Permits the simultaneous, automatic installation of several software packages
- Permits the automatic updating of installed software packages
- Considerably reduces installation costs
- Optimal for company-wide rollout of identical engineering software versions using recording files of the master installation
- Supports company-wide rollout with simple installation options over the network
- General settings such as languages to be installed, installation path, etc. can be made using the Premium Studio Setup

Note:
The Premium Studio does not contain any licenses. These must be ordered separately, either by means of existing licenses for the corresponding version or by the separate ordering of new licenses.

Ordering data

		Order No.
Premium Studio 2009	A	**6ES7 815-8CD08-0YA7**
Task: Installation/updating of software packages for Engineering and Runtime for SIMATIC S7/C7, SIMATIC HMI, SIMATIC NET, SINUMERIK, SIRIUS, and SIMATIC RFID; without licenses; *Target system:* Windows XP Professional SP2, Windows Vista Business, Windows Vista Ultimate *Requirements:* PG/PC, PCU, S7-300/-400, C7 *Type of delivery:* on DVD; without licenses for the software packages (trial licenses are included for many software products)		

A: Subject to export regulations: AL: N and ECCN: EAR99S

7

KNX/EIB2S7

Overview

- Software for SIMATIC S7 communication with components of a building automation unit
- For use of industry automation components in building automation
- Allows the integration of actuators/sensors on a KNX/EIB bus in automation solutions with SIMATIC S7
- For the use of information from building automation for the automation of a production plant

Ordering data

	Order No.
KNX/EIB2S7 program package A *Task:* Software for connecting KNX/EIB building technology components to SIMATIC S7; *package includes:* Editor, function blocks for SIMATIC S7, samples, documentation on C; license for editor on USB flash memory	**6AV6 643-7AC10-0AA1**

A: Subject to export regulations: AL: N and ECCN: EAR99S

SIMATIC Programming devices

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Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

Field PG M2

Overview

- The mobile, industrial programming device with powerful Intel Core 2 Duo processor.
- Optimal for startup, service and maintenance of automation systems.
- Industrial notebook with wireless technology, large display, long battery service life, high-speed RAM, and integral data backup concept.
- With all commonly used interfaces for industrial applications.

Technical specifications

	SIMATIC Field PG M2
General features	
Design	Notebook
Processor	Intel Core 2 Duo processor with 2.0 GHz or 2.2 GHz, 800 MHz FSB; Intel Mobile GM 965 Express chipset
Main memory	1 x 2 GB DDR 2 RAM with 667 MHz
Free slots for expansions	1 x PC card type I/II and 1 x ExpressCard/54
Graphics	Intel GME 965 with Dual View (e.g. desktop via 2 screens)
Display	15" display; resolution SXGA+ (1400 x 1050)
Loudspeakers	Built-in stereo loudspeakers
Pointing device	Touch pad
Operating system	Windows XP Prof. SP3 Engl. MUI (Eng, Ger, Fr, Sp, It; additional languages can be installed later) or Windows VISTA Ultimate SP1 Engl. 32-bit
Power supply	Wide-range power supply unit 100 … 240 V AC, 50 … 60 Hz, high-power lithium-ion battery 73 Wh (running time 3.5 to 4 hours)
Warranty conditions	24 months for hardware components (6 months for battery[1])
Drives	
Hard disk	3.5" serial ATA with 120 GB or 250 GB; easily replaceable
DVD/CD	Multistandard DVD RW/CD RW
Disk drive	1.44 MB; 3.5"
Interfaces	
PROFIBUS DP/MPI	CP 5611-compatible, 9.6 Kbit/s to 12 Mbit/s, 9-pin Sub-D socket
COM 1	V.24/TTY (for SIMATIC S5); over supplied adapter on 9-pin Sub-D male connector
Programming interface	For memory cards, micro memory cards and S5 EPROM modules (over supplied adapter)
Ethernet	10/100/1000 Mbit/s Gigabit Ethernet (RJ45)
USB 2.0	2 x 2 interfaces for high speed universal serial bus, max. 2 high current (500 mA) – 1 interface can be used as high current in each interface block
PC card (PCMCIA)/ ExpressCard/54	1 x type I/II and 1 x Express Card/54
VGA	1 x (for connecting an external monitor)
Parallel (LPT)	ECP
WLAN[2]	Integrated, IEEE802.11 a,b,g
Modem	Analog, V.92 compatible
Headphones	1 x (stereo)
Microphone	1 x (stereo)
Environmental conditions	
Degree of protection in accordance with IEC 60529	Front IP30 when covers closed

1) The capacity of the battery decreases for technological reasons with each charging/discharging operation and also as the result of being stored at excessively high or low temperatures. The running time per charge therefore decreases in the course of time. In normal use the battery can be charged and discharged over a period of six months from when the field PG is purchased.
Capacity loss is not covered by the warranty. For the battery's operation we grant a warranty of six months. We recommend replacing the battery with an original Siemens battery at the end of these six months if there is a significant drop in performance.

2) The integral wireless LAN and modem are approved for operation in Europe. For operation in the U.S.A. and China there is a WLAN module with UL, FCC and CCC approvals. It can be ordered via the selection tool.
For operation outside these countries, the relevant national regulations must be observed.

Technical specifications (continued)

	SIMATIC Field PG M2
Vibrations	Tested in accordance with DIN IEC 60068-2-6
• Operation	10 … 58 Hz: Amplitude 0.0375 mm, 58 … 500 Hz: Acceleration 4.9 m/s^2
• Transport	5 … 9 Hz: Amplitude 3.5 mm; 9 … 500 Hz: Acceleration 9.8 m/s^2
Shock	Tested in accordance with IEC 60068-2-27, IEC 60068-2-29
• Operation	Half-sine 50 m/s^2, 30 ms, 100 shocks
• Storage/transport	Half-sine 250 m/s^2, 6 ms, 1000 shocks
Electromagnetic compatibility (EMC)	
• Interference emission	EN 55022 Class B, EN 61000-3-2 Class D and EN 61000-3-3
• Immunity to line-conducted interference on the supply cables	± 2 kV (in acc. with IEC61000-4-4; burst) ± 1 kV (in acc. with IEC 61000-4-5; surge pulse symm.) ± 2 kV (in acc. with IEC 61000-4-5; surge pulse asymm.)
• Interference immunity on signal lines	± 2 kV (in acc. with IEC 61000-4-4; burst; length > 3 m) ± 2 kV (in acc. with IEC 61000-4-5; surge pulse length > 20 m)
• Immunity to electrostatic discharges	± 4 kV discharge on contact (in acc. with IEC 61000-4-2: ESD) ± 8 kV discharge to air (in acc. with IEC 61000-4-2: ESD)

	SIMATIC Field PG M2
Electromagnetic compatibility (EMC)	
• Immunity to high-frequency irradiation	10 V/m; 80 to 1000 MHz and 1.4 GHz to 2 GHz; 80 % AM (in accordance with IEC 61000-4-3)
• Immunity to high-frequency emissions	10 V; 10 kHz to 80 MHz
• Immunity to magnetic fields	100 A/m; 50/60 Hz in accordance with IEC 61000-4-8
Temperature	Tested in accordance with IEC 60068-2-2, IEC 60068-2-1
• Operation[3)]	+5 … +40 °C
• Storage/transport	-20 … +60 °C
• Gradient, max.	20 °C/h (no condensation)
Relative humidity	Tested in accordance with IEC 60068-2-78, IEC 60068-2-30, IEC 60068-2-14
• Operation	5 % … 80 % at 25 °C (no condensation)
• Storage/transport	5 % … 95 % at 25 °C (no condensation)
Dimensions and weights	
Dimensions (W x H x D) in mm	328 x 294 x 52
Weight, approx.	3.9 kg

3) Battery charging and CD/DVD writing is only possible at temperatures up to 35 °C.

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Ordering data

		Order No.
SIMATIC Field PG M2 programming device		
Field PG M2 Standard: 2.0 GHz Core 2 Duo processor (T7250, 800 MHz, 2ML L2c), Multi Standard DVD-RW drive, 15" SXGA+ display (1400x1050), 120 GB serial ATA hard disk, 1 x 2 GB DDR2 RAM	D	**6ES7713-0AA0■-0■■4**
Field PG M2 Premium: 2.2 GHz Core 2 Duo processor (T7500, 800 MHz, 4MB L2c), Multi Standard DVD-RW drive, 15" SXGA+ display (1400x1050), 250 GB serial ATA hard disk, 1 x 2 GB DDR2 RAM	D	**6ES7713-1BB1■-0■■4**
Power cable (required)		
• for Germany, France, the Netherlands, Spain, Belgium, Austria, Sweden, Finland; Keyboard: International (& German); WLAN module with CE		**0**
• For Great Britain; Keyboard: International (& German); WLAN module with CE		**1**

		Order No.
SIMATIC Field PG M2 programming device		
Field PG M2 Standard	D	**6ES7713-0AA0■-0■■4**
Field PG M2 Premium	D	**6ES7713-1BB1■-0■■4**
Power cable (required)		
• For Switzerland; Keyboard: International (& German); WLAN module with CE		**2**
• for the U.S.A., Japan; Keyboard: International (& German); WLAN module with UL, FCC, CCC (no CE)		**3**
• For Italy; Keyboard: International (& German); WLAN module with CE		**4**
• for Germany, France, the Netherlands, Spain, Belgium, Austria, Sweden, Finland; keyboard: French (AZERTY) with country-specific labeling for France, Belgium, Switzerland; WLAN module with CE		**5**

D: Subject to export regulations: AL: N and ECCN: 5D992

Field PG M2

Ordering data

		Order No.
SIMATIC Field PG M2 programming device		
Field PG M2 Standard	D	**6ES7713-0AA0 - 0 4**
Field PG M2 Premium	D	**6ES7713-1BB1 - 0 4**
Power cable (required)		
• For Switzerland; Keyboard: French (AZERTY) with country-specific labeling for France, Belgium, Switzerland; WLAN module with CE		**6**
• For China; Keyboard: International (& German); WLAN module with UL, FCC and CCC (no CE!)		**7**
Operating system		
• Windows XP Professional SP3 English MUI (Fr., Span., Ital., Ger.; image stored on HD, other language packages available for downloading)		**A**
• Windows VISTA Ultimate SP1 Engl. 32-bit (Fr., Span., Ital., Ger.; image stored on HD, other language packages available for downloading. (Note: STEP 5 is not pre-installed and is included. STEP 5 is not executable under Windows VISTA.)		**B**
Licenses for the SIMATIC software		
• Trial license for STEP 7 Professional, WinCC flexible Advanced; without programming cable		**A**
• Upgrade license STEP 7 Professional, STEP 5, WinCC flexible Advanced (requires license for STEP 7 Prof./STEP 5 (at least V3.0)); incl. MPI cable		**B**
• Powerpack license STEP 7 Professional, upgrade license STEP 5 and WinCC flexible Advanced (requires license for STEP 7/STEP 5 (at least V3.0)); incl. MPI cable		**C**
• License STEP 7 Professional, STEP 5, STEP 7 Micro/WIN, WinCC flexible Advanced; incl. MPI cable, S5 online cable, and S5 EPROM programming adapter		**D**
• License for STEP 7, STEP 7 Micro/WIN, WinCC flexible Advanced; incl. MPI cable		**E**
• License for STEP 7 Professional, STEP 5, STEP 7 Micro/WIN, WinCC flexible Advanced; incl. MPI cable		**F**

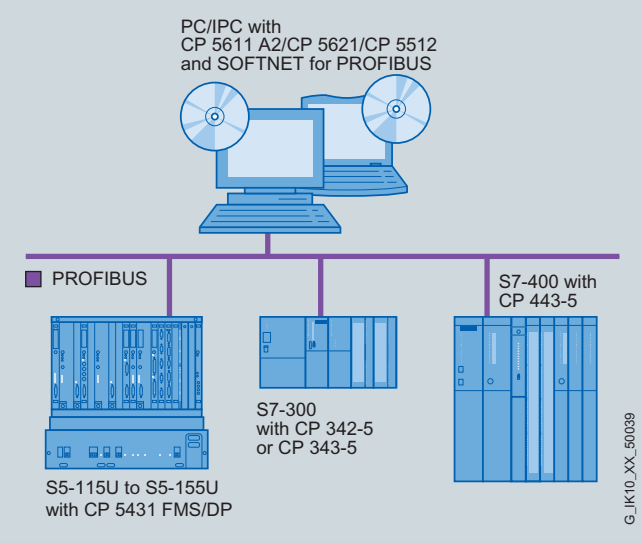
		Order No.
Accessories		
Memory expansion		
1 GB DDR 2 RAM 667 MHz	C	**6ES7 648-2AG40-0HA0**
2 GB DDR 2 RAM 667 MHz	C	**6ES7 648-2AG50-0HA0**
USB mouse (PS/2-compatible)	C	**6ES7 790-0AA01-0XA0**
AC/DC external power supply unit		**6ES7 798-0GA00-0XA0**
Power cord (length 3 m)		
for Germany, France, the Netherlands, Spain, Belgium, Austria, Sweden, Finland		**6ES7 900-5AA00-0XA0**
For Great Britain		**6ES7 900-5BA00-0XA0**
For Switzerland		**6ES7 900-5CA00-0XA0**
For U.S.A.		**6ES7 900-5DA00-0XA0**
For Italy		**6ES7 900-5EA00-0XA0**
for China		**6ES7 900-5FA00-0XA0**
Spare battery (lithium ion, 6.6 Ah)[1]		**6ES7 798-0AA05-0XA0**
MPI cable		**6ES7 901-0BF00-0AA0**
for connecting a PG and SIMATIC S7 via MPI; 5 m		
S5 EPROM programming adapter		**6ES7 798-0CA00-0XA0**
for SIMATIC S5 EPROM programming using the Field PG		
S5 PLC cable		**6ES5 734-2BF00**
For connecting programming devices to SIMATIC S5 PLCs, 5 m		
Hard disk kit	C	**6ES7 791-2BA00-0AA0**
Replaceable hard disk 200 GB serial ATA; with protective pocket and Torx screwdriver		
Adapter serial ATA to USB	C	**6ES7 790-1AA00-0AA0**
For using the replaceable hard disk of the hard disk kit as an external hard disk (only for Field PG M2 or Field PG M)		
Rucksack for Field PG		**6ES7 798-0DA00-0XA0**

[1] The capacity of the battery decreases for technological reasons with each charging/discharging operation and also as the result of being stored at excessively high or low temperatures. The running time per charge decreases therefore in the course of time. In normal use the battery can be charged and discharged over a period of six months from when the field PG is purchased.
Capacity loss is not covered by the warranty. For the battery's operation we grant a warranty of six months. We recommend replacing the battery with an original Siemens battery at the end of these six months if there is a significant drop in performance.

C: Subject to export regulations: AL: N and ECCN: EAR99H

D: Subject to export regulations: AL: N and ECCN: 5D992

Overview



DP-M	DP-S	FMS	OPC	PG/OP	S7/S5
●	●		●	●	●

- Software for coupling PCs/programming devices and notebooks to programmable controllers
- Communication services:
  - PROFIBUS DP master Class 1 and 2 with acyclic expansions
  - PROFIBUS DP slave
  - PG/OP communication
  - S7 communication
  - Open communication (SEND/RECEIVE) based on the FDL interface
- The appropriate OPC servers are included in the scope of supply of the respective communication software

Technical specifications

Performance data	CP 5611 A2/ CP 5621/CP 5512
Mono protocol mode	
Number of connectable DP slaves	max. 60
Number of FDL tasks waiting	max. 100
Number of PG/OP and S7 connections	max. 8
• DP-Master	DP-V0, DP-V1 with SOFTNET-DP
• DP-Slave	DP-V0, DP-V1 with SOFTNET-DP slave

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SOFTNET for PROFIBUS

Ordering data

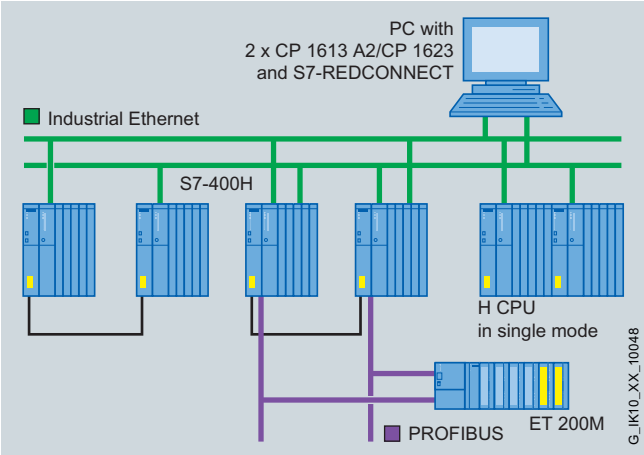
		Order No.
SOFTNET-S7 Edition 2008		
Software for S7 communication, including FDL protocol with OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A, for 32-bit Windows XP Professional SP2/3, Windows 2003 Server, R2, SP2, Windows Vista Business/Ultimate SP1; Windows 2008 Server, for CP 5512, CP 5611, CP 5611 A2, CP 5621 German/English		
• Single license for 1 installation	D	**6GK1 704-5CW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version		**6GK1 704-5CW00-3AL0**
• Upgrade SOFTNET-S7, Edition 2006 or higher, to SOFTNET-S7 Edition 2008	D	**6GK1 704-5CW00-3AE0**
• Upgrade SOFTNET-S7 from V6.0, V6.1, V6.2 or V6.3 to SOFTNET-S7 Edition 2008	D	**6GK1 704-5CW00-3AE1**
SOFTNET-DP Edition 2008		
Software for DP protocol (Master Class 1 and 2) including FDL protocol with OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on USB stick, Windows XP Professional SP2/3, Windows 2003 Server, R2, SP2, Windows Vista Business/Ultimate SP1; Windows 2008 Server, for CP 5512, CP 5611, CP 5611 A2, CP 5621 German/English		
• Single license for 1 installation	D	**6GK1 704-5DW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version		**6GK1 704-5DW00-3AL0**
• Upgrade SOFTNET-DP, Edition 2006 or higher, to SOFTNET-DP Edition 2008	D	**6GK1 704-5DW00-3AE0**
• Upgrade SOFTNET-DP from V6.0, V6.1, V6.2 or V6.3 to SOFTNET-DP Edition 2008	D	**6GK1 704-5DW00-3AE1**

		Order No.
SOFTNET-DP Slave Edition 2008		
Software for DP Slave, with DP-OPC server and NCM PC; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A, for 32-bit Windows XP Professional SP2/3, Windows 2003 Server, R2, SP2, Windows Vista Business/Ultimate; for CP 5512, CP 5611, CP 5611 A2, CP 5621 German/English		
• Single license for 1 installation	D	**6GK1 704-5SW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version		**6GK1 704-5SW00-3AL0**
• Upgrade SOFTNET-DP Slave, Edition 2006 or higher, to SOFTNET-DP Slave Edition 2008	D	**6GK1 704-5SW00-3AE0**
• Upgrade SOFTNET-DP Slave from V6.0, V6.1, V6.2 or V6.3 to SOFTNET-DP Slave Edition 2008	D	**6GK1 704-5SW00-3AE1**

D: Subject to export regulations: AL: N and ECCN: 5D992

Overview

- For connecting PCs over redundant Industrial Ethernet to the SIMATIC S7-400H
- Protected from communication failures arising from a fault in the double bus or in redundant rings
- For redundantly configured Industrial Ethernet
- Can also be implemented in non-redundant networks
- No additional programming overhead for the PC and in H systems
- The appropriate OPC server and configuration tools are included in the scope of supply of the respective communication software
- Enhanced redundancy over 4-way communication (STEP 7 V5.1 + SP4 and higher)



System configuration for S7-REDCONNECT

ISO	TCP/ UDP	PN	MRP	OPC	PG/OP	S7/S5	IT
●				●	●	●	

Ordering data

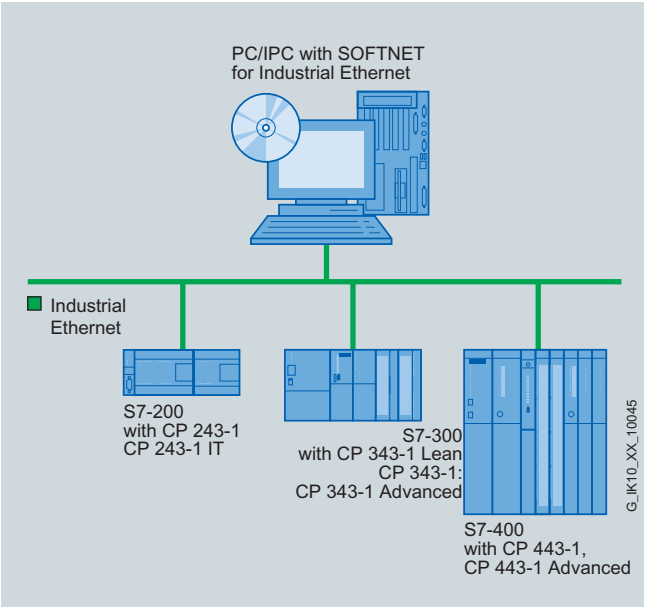
		Order No.
S7-REDCONNECT Edition 2008 Software for fail-safe S7 communication over redundant networks incl. S7-OPC server, S7-1613 2008, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English		
• Single license for 1 installation	D	**6GK1 716-0HB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version		**6GK1 716-0HB00-3AL0**
• Upgrade S7-REDCONNECT, 2006 Edition or higher, to S7-REDCONNECT 2008 Edition	D	**6GK1 716-0HB00-3AE0**
• Upgrade S7-REDCONNECT from V6.0, V6.1, V6.2 or V6.3 to S7-REDCONNECT Edition 2008	D	**6GK1 716-0HB00-3AE1**
Power Pack S7-REDCONNECT Edition 2008 For expanding S7-1613 2008 to S7-REDCONNECT, single license for 1 installation, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English	D	**6GK1 716-0HB71-3AC0**
CP 1613 A2 communications processor PCI card (32-bit, 33 MHz/66 MHz; 3.3 V/5 V universal keyed) for connection to Industrial Ethernet (10/100 Mbit/s) with ITP and RJ45 connection over S7-1613 and S7-REDCONNECT, incl. drivers for 32-bit Windows XP Professional SP 2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1		**6GK1 161-3AA01**
CP 1623 communications processor PCI Express x1 card (3.3 V/12) for connection to Industrial Ethernet (10/100/1000 Mbit/s) with 2-port switch (RJ45) connection via S7-1613 and S7-REDCONNECT, incl. driver for 32-bit Windows XP Professional SP 2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1		**6GK1 162-3AA00**

D: Subject to export regulations: AL: N and ECCN: 5D992

SOFTNET for Industrial Ethernet

Overview

- For coupling programming devices/PCs/workstations to programmable controllers
- Communication services:
  - PG/OP communication
  - S7 communication
  - Open communication (SEND/RECEIVE)
- Can be used with
  - Layer 2 Ethernet card (PCI/PCIe)
  - Integrated Industrial Ethernet interface
  - Modem (Remote Access Service RAS)
- Complete protocol stack as a software package
- The appropriate OPC server and configuration tools are included in the scope of supply of the respective communication software



System configuration SOFTNET for Industrial Ethernet

ISO	TCP/ UDP	PN	MRP	OPC	PG/OP	S7/S5	IT
●	●			●	●	●	

G_IK10_XX_10185

Technical specifications

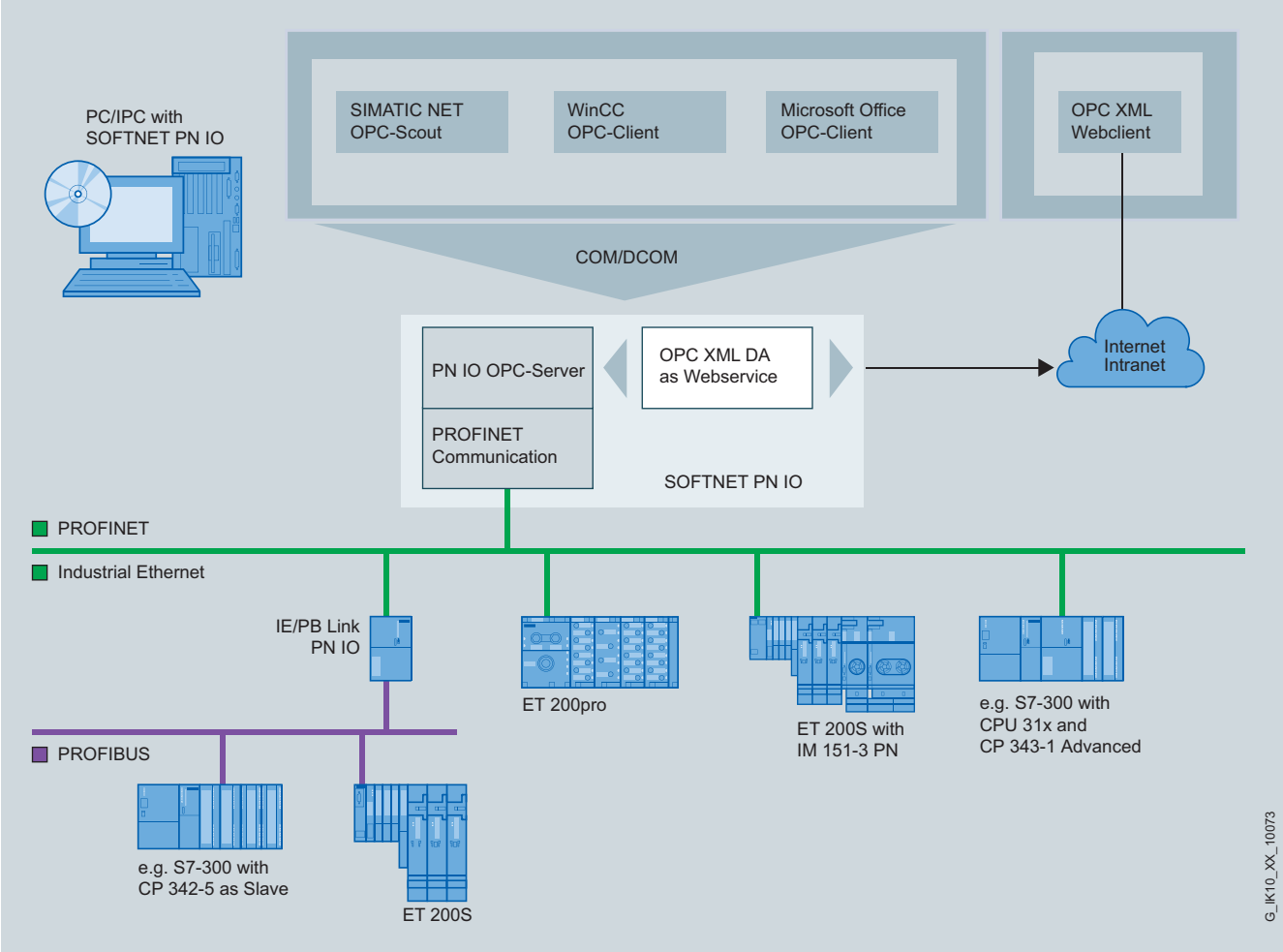
Performance data	
S7 and PG/OP communication (number of operable connections)	
• SOFTNET-S7	max. 64
• SOFTNET-S7 Lean	max. 8

Ordering data

		Order No.
SOFTNET Edition 2008 for Industrial Ethernet		
Software for S7 and open communication, incl. OPC server, PG/OP communication and NCM PC, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English		
SOFTNET-S7 Edition 2008 for Industrial Ethernet		
up to 64 connections		
• Single license for 1 installation	D	**6GK1 704-1CW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version		**6GK1 704-1CW00-3AL0**
• Upgrade from Edition 2006 to Edition 2008	D	**6GK1 704-1CW00-3AE0**
• Upgrade from V6.0, V6.1, V6.2 or V6.3 to Edition 2008	D	**6GK1 704-1CW00-3AE1**
SOFTNET-S7 Lean Edition 2008 for Industrial Ethernet		
up to 8 connections		
• Single license for 1 installation	D	**6GK1 704-1LW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version		**6GK1 704-1LW00-3AL0**
• Upgrade from Edition 2006 to Edition 2008	D	**6GK1 704-1LW00-3AE0**
• Upgrade from V6.0, V6.1, V6.2 or V6.3 to Edition 2008	D	**6GK1 704-1LW00-3AE1**
SOFTNET-PG Edition 2008 for Industrial Ethernet		
Software for PG/OP-communication; runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3, Windows 2003 Server R2, SP2, Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English		
• Single license for 1 installation	D	**6GK1 704-1PW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version		**6GK1 704-1PW00-3AL0**
• Upgrade from Edition 2006 to Edition 2008	D	**6GK1 704-1PW00-3AE0**
• Upgrade from V6.0, V6.1, V6.2 or V6.3 to Edition 2008	D	**6GK1 704-1PW00-3AE1**

D: Subject to export regulations: AL: N and ECCN: 5D992

Overview



PC with SOFTNET PN IO as PROFINET IO Controller

ISO	TCP/ UDP	PN	MRP	OPC	PG/OP	S7/S5	IT
	●	●		●			

- Software with PROFINET IO Controller function for coupling PG/PC and IPC with PROFINET IO Devices
- Possible applications:
  - PC-based control systems
  - HMI systems
  - Test applications
- Communication services:
  - PROFINET IO Controller
- Can be used with
  - Integrated interfaces of SIMATIC PG/PC
  - You can find more information about the environment of use at www.siemens.com/simatic-net/ik-info
- Cost-effective solution for the low-end performance range
- OPC server for I/O interfacing over PROFINET included in scope of supply

SOFTNET PN IO

Technical specifications

	SOFTNET PN IO
Performance data	
• Number of operable IO devices	Max. 64
• Number of external IO-lines in one central rack	Max. 1
• Size of IO data areas overall	
- I/O input area	Max. 2 KB
- I/O output area	Max. 2 KB
• Size of I/O data area per connected I/O device	
- I/O input range	Max. 1433 byte
- I/O output range	Max. 1433 byte

Ordering data

		Order No.
SOFTNET PN IO Edition 2008		
Software for PROFINET IO controller with OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A, for 32-bit Windows XP Professional SP 2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English		
• Single license for 1 installation	D	**6GK1 704-1HW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version		**6GK1 704-1HW00-3AL0**
• Upgrade SOFTNET PN IO, Edition 2006 or higher, to SOFTNET PN IO Edition 2008	D	**6GK1 704-1HW00-3AE0**
• Upgrade SOFTNET PN IO from V6.0, V6.1, V6.2 or V6.3 to SOFTNET PN IO Edition 2008	D	**6GK1 704-1HW00-3AE1**

D: Subject to export regulations: AL: N and ECCN: 5D992

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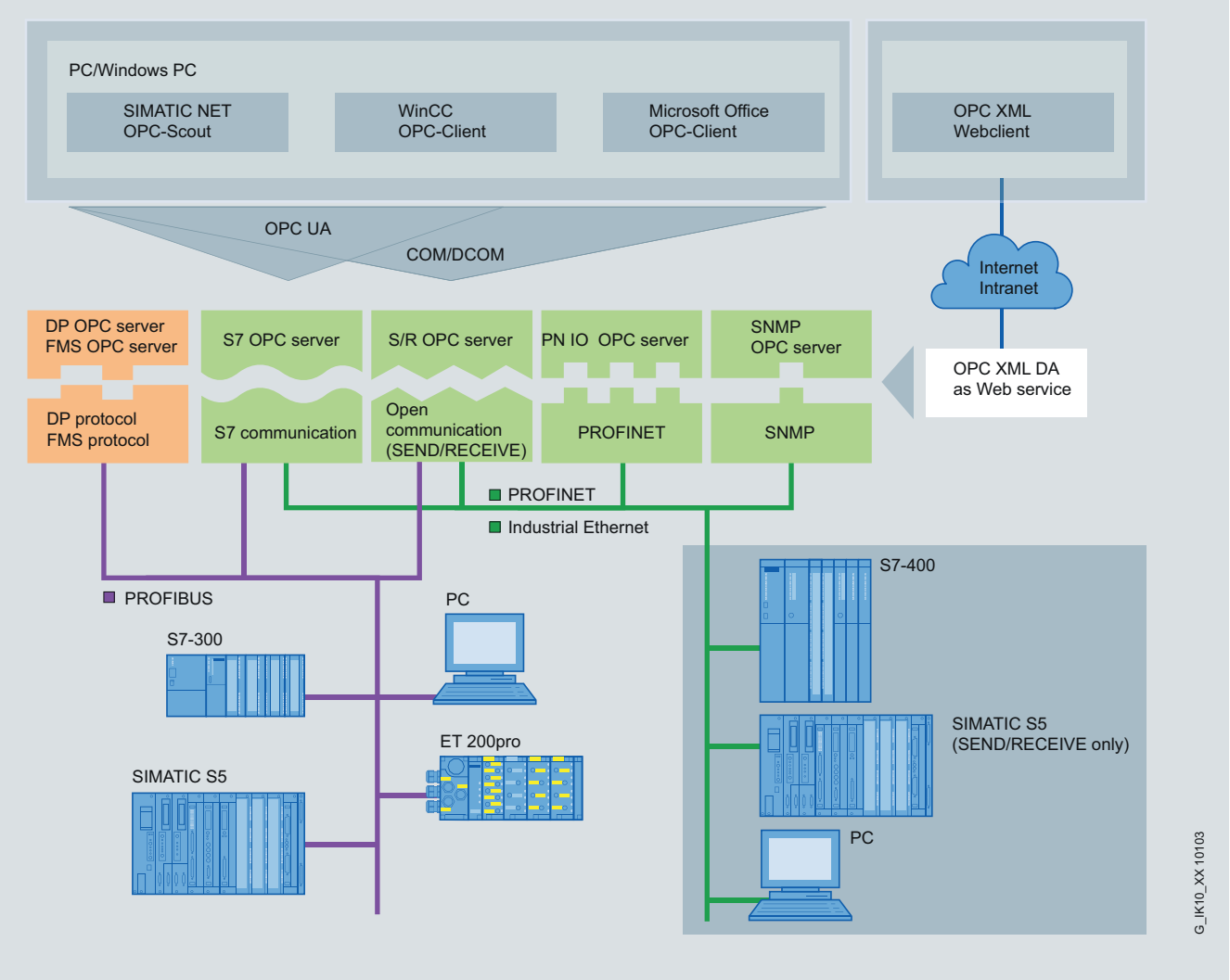
Overview

- The appropriate OPC servers are included in the scope of supply of the respective communication software
- Standardized, open multi-vendor interface
- It permits interfacing of OPC-capable Windows applications to S7-communication, open communication (SEND/RECEIVE), PROFINET and SNMP.
- OPC Scout with browser functionality as an OPC client and OCX Data Control



System integration with OPC server

OPC server for Industrial Ethernet

Technical specifications

Programming	• Synchronous and asynchronous reading and writing of variables • Monitoring of variables using the OPC server with a signal to the client when a change occurs • Use of quantity operations; so a large amount of data can be processed in a short time.
Interfaces	• Custom Interface (C++, NET) for high OPC performance • Automation Interface (VB, Excel, Access, Delphi, ...) for ease-of-use • Graphics with OCX for configuring instead of programming • OPC XML-Interface for Data Access
Products	**include OPC servers for:**
Industrial Ethernet	
• S7-1613, SOFTNET-S7 for Industrial Ethernet, SOFTNET-S7 Lean	S7-OPC server for S7 communication, XML-DA S5-OPC server for open communication[1], XML-DA SNMP OPC server for SNMP protocol access; XML-DA
PROFINET	
• SOFTNET PN IO	PN IO OPC server for PROFINET IO communication; XML-DA
• PN CBA OPC server	PN CBA OPC server for access to CBA components; XML-DA
PROFIBUS	
• DP-5613, SOFTNET-DP, SOFTNET-DP slave	DP-OPC server for PROFIBUS DP communication; XML-DA
• FMS-5613	FMS-OPC server for PROFIBUS FMS communication; XML-DA

[1] also S5-compatible communication

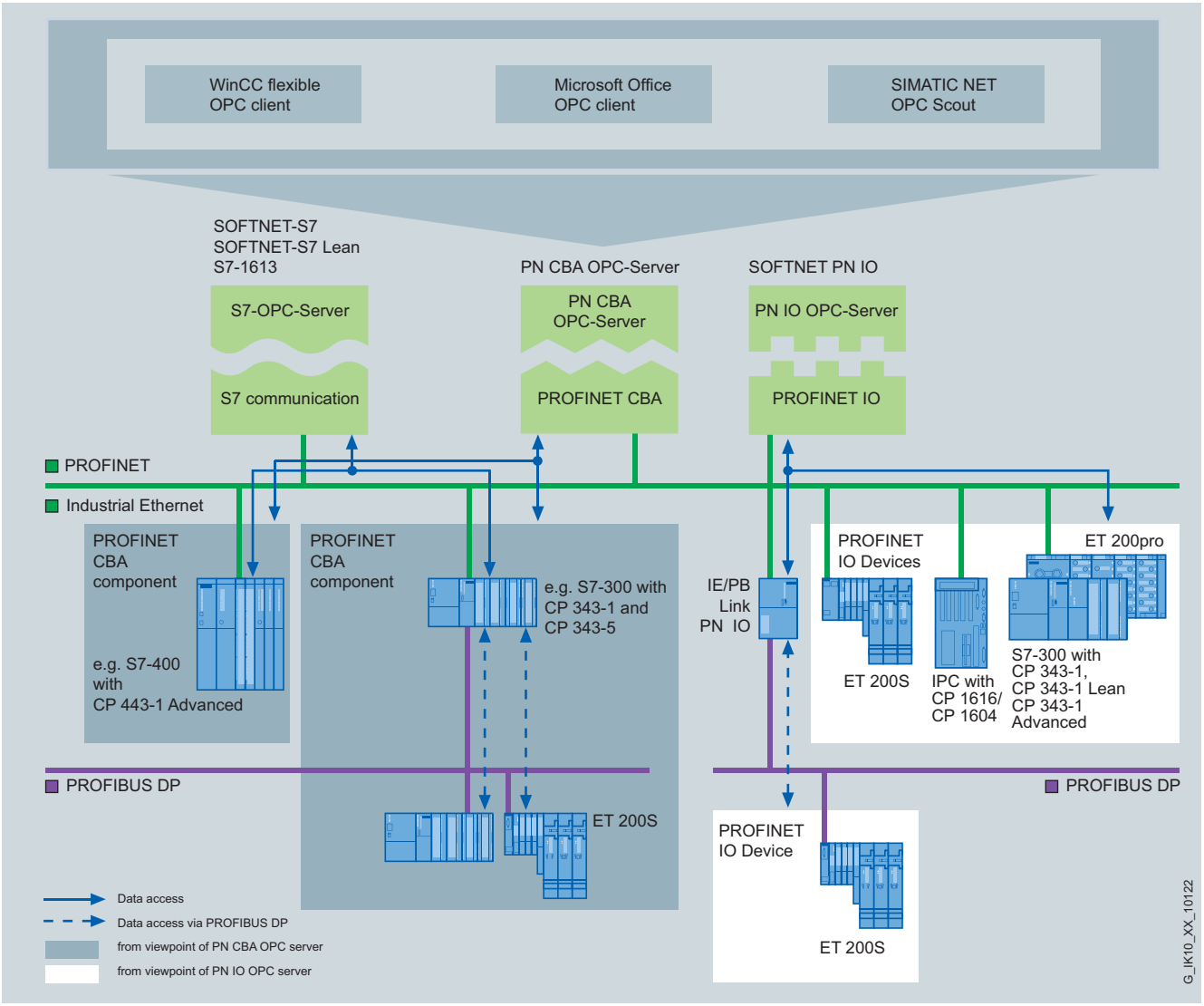
Ordering data

		Order No.
PN CBA OPC Server Edition 2008		
PROFINET OPC server for CBA; runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A, for 32-bit Windows XP Professional SP 2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English		
• Single license for 1 installation	D	**6GK1 706-0HB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version		**6GK1 706-0HB00-3AL0**
• Upgrade from Edition 2006 and higher to Edition 2008, single license	D	**6GK1 706-0HB00-3AE0**
• Upgrade from V6.0 to Edition 2008, single license	D	**6GK1 706-0HB00-3AE1**
SNMP OPC Server Edition 2008		
Including MIB compiler; single license for 1 installation of the runtime software, software and electronic manual on CD-ROM; license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP 2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English		
• **Basic 2008** Administration of up to 20 IP addresses; Single license for 1 installation	D	**6GK1 706-1NW71-3AA0**
- Software Update Service for 1 year, with automatic extension; requirement: current software version		**6GK1 706-1NX00-3AL0**
- Upgrade from Edition 2006 and higher to Edition 2008, single license	D	**6GK1 706-1NW00-3AE0**
- Upgrade from V6.0 to Edition 2008, single license	D	**6GK1 706-1NW00-3AE1**
• **Extended 2008** Administration of up to 200 IP addresses	D	**6GK1 706-1NX71-3AA0**
- Upgrade from Edition 2006 to Edition 2008, single license	D	**6GK1 706-1NX00-3AE0**
- Upgrade from V6.0 to Edition 2008, single license	D	**6GK1 706-1NX00-3AE1**
• **Power Pack 2008**; upgrade from SNMP OPC Server Basic to SNMP OPC Server Extended Edition 2008	D	**6GK1 706-1NX71-3AC0**

D: Subject to export regulations: AL: N and ECCN: 5D992

Overview

- Access to variables in PROFINET CBA components over the OPC interface
- Use of the objects and symbols defined using the PROFINET engineering tool SIMATIC iMap and STEP 7
- Adding PROFINET functionality to existing installations. This enables it to be used in parallel with other communication protocols such as S7 communication with SOFTNET-S7 for Industrial Ethernet.
- OPC Scout as an OPC client with browser functions for the variables of the PROFINET CBA components



System integration with the PN CBA OPC server

PN CBA OPC server

Technical specifications

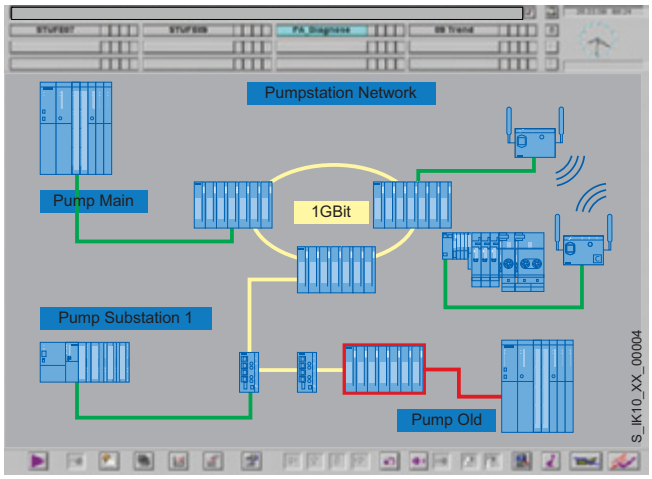
	PN CBA OPC server
Programming	• Open and standardized • Synchronous and asynchronous reading and writing of variables • Monitoring of variables by the OPC server with an alarm message to the client in the case of a change • Use of batch operations, so a large volume of data can be processed in a short time
Interfaces	• Custom Interface (C++, .NET) • Automation Interface (Visual Basic, Excel, Access,...) • OPC Data Control • OPC XML Interface for Data Access
Protocols	• DCOM protocol
Configuration	Configuring software for PROFINET SIMATIC iMap
PROFINET communication (CBA)	
• Number of communication partners	max. 228
• Number of connections	max. 10 000

Ordering data

		Order No.
PN CBA OPC Server Edition 2008		
PROFINET OPC server for CBA; runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP 2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English		
• Single license for 1 installation	D	**6GK1 706-0HB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version		**6GK1 706-0HB00-3AL0**
• Upgrade of PN CBA OPC Server, Edition 2006 or higher, to PN CBA OPC Server, Edition 2008	D	**6GK1 706-0HB00-3AE0**
• Upgrade of PN CBA OPC Server from V6.0, V6.1, V6.2 or V6.3 to PN CBA OPC Server Edition 2008	D	**6GK1 706-0HB00-3AE1**
Software iMap V3.0		
for configuring PROFINET CBA		
Requirement: Windows 2000 Prof. with Service Pack 4 or later or Windows XP Prof. with Service Pack 1 or later or Windows 2003 Server with Service Pack 1 or later; on PG or PC with Pentium processor, min. 1 GHz; STEP 7 V5.3 or later with Service Pack 3, PN OPC Server V6.3 or later		
Type of supply: German, English with electronic documentation		
• Single license	D	**6ES7 820-0CC04-0YA5**
• Software Update Service	D	**6ES7 820-0CC01-0YX2**
• Upgrade to V3.0, single license	D	**6ES7 820-0CC04-0YE5**

D: Subject to export regulations: AL: N and ECCN: 5D992

Overview



- Status monitoring and network management of SNMP-capable devices in any OPC client systems; e.g. SIMATIC HMI/SCADA, office application
- Easy access to SNMP-capable devices over the OPC interface
- Devices without SNMP agents can be monitored using the ping mechanism
- Complete integration in the SIMATIC NET OPC server environment
- SNMP can be implemented in parallel with other communications protocols such as PROFINET or S7 communication
- Configuring with STEP 7 or NCM PC
- Autodiscovery function for integrating accessible Ethernet devices (STEP 7 V5.3+SP3 or higher)

Ordering data

		Order No.
SNMP OPC Server Edition 2008 Including MIB compiler; single license for 1 installation of the runtime software, software and electronic manual on CD-ROM; license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP 2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English		
• **Basic 2008** Administration of up to 20 IP addresses; Single license for 1 installation	D	**6GK1 706-1NW71-3AA0**
- Software Update Service for 1 year, with automatic extension; requirement: current software version		**6GK1 706-1NW00-3AL0**
- Upgrade of SNMP OPC Server Basic, Edition 2006 or higher, to SNMP OPC Server Basic Edition 2008	D	**6GK1 706-1NW00-3AE0**
- Upgrade of SNMP OPC Server Basic from V6.0, V6.1, V6.2 or V6.3 to SNMP OPC Server Basic Edition 2008	D	**6GK1 706-1NW00-3AE1**
• **Extended 2008** Administration of up to 200 IP addresses	D	**6GK1 706-1NX71-3AA0**
- Software Update Service for 1 year, with automatic extension; requirement: current software version		**6GK1 706-1NX00-3AL0**
- Upgrade of SNMP OPC Server Extended, Edition 2006 or higher, to SNMP OPC Server Extended Edition 2008	D	**6GK1 706-1NX00-3AE0**
- Upgrade of SNMP OPC Server Extended from V6.0, V6.1, V6.2 or V6.3 to SNMP OPC Server Extended Edition 2008	D	**6GK1 706-1NX00-3AE1**
• **Power Pack 2008**; upgrade from SNMP OPC Server Basic to SNMP OPC Server Extended Edition 2008	D	**6GK1 706-1NX71-3AC0**

D: Subject to export regulations: AL: N and ECCN: 5D992

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Embedded/ PC-based Automation

9

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

SIMATIC S7 modular embedded controller

Overview

- Quick start in automation solutions with embedded PC platforms.
  - SIMATIC WinAC RTX or WinAC RTX F preinstalled on EC31 ready for switch-on
  - Prepared for use in a SIMATIC environment with PROFINET and Industrial Ethernet
  - Commissioning, as for S7-300, by automation specialists
  - Configuring and programming with SIMATIC STEP 7 over Industrial Ethernet
  - Optional visualization
- Modular expansion capability:
  Central expansion with
  - S7-300 I/O (SM modules of S7-300)
  - Expansion modules for additional PC interfaces, e.g. DVI-I, USB, Gigabit Ethernet networks and memory card slots, as well as PCI-104
- Rugged operation
  - Operation without a hard disk, based on flash disk and Windows XP embedded
  - Operation without a fan
- Flexibility of a PC-based automation environment
  - Free memory space on flash disk can be used for other PC applications
  - Use of WinAC ODK with SIMATIC WinAC RTX and WinAC RTX F (read-only in safety-related program part)
  - Connection option for USB devices
  - Memory capacity expandable using multimedia card
- Data retentivity for WinAC RTX and RTX F without uninterruptible power supply (UPS)

Technical specifications

	6ES7 677-1DD00-0BA0	6ES7 677-1DD00-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD00-0BF0	6ES7 677-1DD00-0BG0	6ES7 677-1DD00-0BH0
Product type designation	SIMATIC S7-mEC, EC31	S7-mEC, EC31-RTX	S7-mEC, EC31-RTX F	S7-mEC, EC31-HMI/RTX 128PT	S7-mEC, EC31-HMI/RTX 512PT	S7-mEC, EC31-HMI/RTX 2048PT
Product version						
Hardware product version	04	04	04	04	04	04
Firmware version	V1.3	V1.3	V1.3	V1.3	V1.3	V1.3
PC configuration						
Computer platform	SIMATIC S7 modular embedded controller	SIMATIC S7 modular embedded controller	SIMATIC S7 modular embedded controller	SIMATIC S7 modular embedded controller	SIMATIC S7 modular embedded controller	SIMATIC S7 modular embedded controller
Processor selection	Intel Core Duo 1.2 GHz	Intel Core Duo 1.2 GHz	Intel Core Duo 1.2 GHz	Intel Core Duo 1.2 GHz	Intel Core Duo 1.2 GHz	Intel Core Duo 1.2 GHz
Main memory	1 GB RAM	1 GB RAM	1 GB RAM	1 GB RAM	1 GB RAM	1 GB RAM
Flash Disk	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB
Operating systems	Windows XP embedded SP2 FP2007	Windows XP embedded SP2 FP2007	Windows XP embedded SP2 FP2007	Windows XP embedded SP2 FP2007	Windows XP embedded SP2 FP2007	Windows XP embedded SP2 FP2007
Power supply						
Input voltage						
• Rated value, 24 V DC	Yes	Yes	Yes	Yes	Yes	Yes
• permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V	20.4 V	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	28.8 V	28.8 V	28.8 V
Input current						
• Rated value at 24 V DC	800 mA; without backplane bus and USB power supply	800 mA; without backplane bus and USB power supply	800 mA; without backplane bus and USB power supply	800 mA; without backplane bus and USB power supply	800 mA; without backplane bus and USB power supply	800 mA; without backplane bus and USB power supply

Technical specifications (continued)

	6ES7 677-1DD00-0BA0	6ES7 677-1DD00-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD00-0BF0	6ES7 677-1DD00-0BG0	6ES7 677-1DD00-0BH0
Product type designation	SIMATIC S7-mEC, EC31	S7-mEC, EC31-RTX	S7-mEC, EC31-RTX F	S7-mEC, EC31-HMI/RTX 128PT	S7-mEC, EC31-HMI/RTX 512PT	S7-mEC, EC31-HMI/RTX 2048PT
Supply voltages						
Mains buffering						
• Mains buffering	5 ms	5 ms	5 ms	5 ms	5 ms	5 ms
Power loss						
Power loss, typ.	34 W	34 W	34 W	34 W	34 W	34 W
Memory						
Memory type	256 KB non-volatile memory for retentive data	512 KB non-volatile memory for retentive data	512 KB non-volatile memory for retentive data	512 KB non-volatile memory for retentive data	512 KB non-volatile memory for retentive data	512 KB non-volatile memory for retentive data
CPU/ blocks						
DB						
• Number, max.		Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each
• Size, max.		64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
FB						
• Number, max.		Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each
• Size, max.		64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
FC						
• Number, max.		Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each
• Size, max.		64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
OB						
• Number, max.		Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each
• Size, max.		64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
• Number of free cycle OBs		1; OB 1	1; OB 1	1; OB 1	1; OB 1	1; OB 1
• Number of time alarm OBs		1; OB 10	1; OB 10	1; OB 10	1; OB 10	1; OB 10
• Number of delay alarm OBs		1; OB 20	1; OB 20	1; OB 20	1; OB 20	1; OB 20
• Number of watchdog interrupts		9; OB 30-38	9; OB 30-38	9; OB 30-38	9; OB 30-38	9; OB 30-38
• Number of process alarm OBs		1; OB 40	1; OB 40	1; OB 40	1; OB 40	1; OB 40
• Number of startup OBs		2; OB 100, 102	2; OB 100, 102	2; OB 100, 102	2; OB 100, 102	2; OB 100, 102
• Number of asynchronous error OBs		7; OB 80, 82-85, 86, 88	7; OB 80, 82-85, 86, 88	7; OB 80, 82-85, 86, 88	7; OB 80, 82-85, 86, 88	7; OB 80, 82-85, 86, 88
• Number of synchronous error OBs		2; OB 121, 122	2; OB 121, 122	2; OB 121, 122	2; OB 121, 122	2; OB 121, 122
Nesting depth						
• per priority class		24	24	24	24	24
• additional within an error OB		24	24	24	24	24

Technical specifications (continued)

	6ES7 677-1DD00-0BA0	6ES7 677-1DD00-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD00-0BF0	6ES7 677-1DD00-0BG0	6ES7 677-1DD00-0BH0
Product type designation	SIMATIC S7-mEC, EC31	S7-mEC, EC31-RTX	S7-mEC, EC31-RTX F	S7-mEC, EC31-HMI/RTX 128PT	S7-mEC, EC31-HMI/RTX 512PT	S7-mEC, EC31-HMI/RTX 2048PT
CPU/ processing times						
for bit operations, min.		0.004 µs; typ.	0.004 µs; typ.	0.004 µs; typ.	0.004 µs; typ.	0.004 µs; typ.
for fixed point arithmetic, min.		0.003 µs; typ.	0.003 µs; typ.	0.003 µs; typ.	0.003 µs; typ.	0.003 µs; typ.
for floating point arithmetic, min.		0.004 µs; typ.	0.004 µs; typ.	0.004 µs; typ.	0.004 µs; typ.	0.004 µs; typ.
Times/counters and their retentivity						
S7 counter						
• Number		2 048	2 048	2 048	2 048	2 048
• Retentivity						
- can be set		Yes	Yes	Yes	Yes	Yes
- lower limit		0	0	0	0	0
- upper limit		2 047	2 047	2 047	2 047	2 047
- preset		8	8	8	8	8
• Counting range						
- can be set		Yes	Yes	Yes	Yes	Yes
- lower limit		0	0	0	0	0
- upper limit		999	999	999	999	999
IEC counter						
• present		Yes	Yes	Yes	Yes	Yes
• Type		SFB	SFB	SFB	SFB	SFB
S7 times						
• Number		2 048	2 048	2 048	2 048	2 048
• Retentivity						
- can be set		Yes	Yes	Yes	Yes	Yes
- lower limit		0	0	0	0	0
- upper limit		2 047	2 047	2 047	2 047	2 047
• Time range						
- lower limit		10 ms	10 ms	10 ms	10 ms	10 ms
- upper limit		9 990 s	9 990 s	9 990 s	9 990 s	9 990 s
IEC timer						
• present		Yes	Yes	Yes	Yes	Yes
• Type		SFB	SFB	SFB	SFB	SFB
Data areas and their retentivity						
retentive data area, total		512 KB	512 KB	512 KB	512 KB	512 KB
Flag						
• Number, max.		16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte
• of which retentive without battery		MB 0 to MB 16383	MB 0 to MB 16383	MB 0 to MB 16383	MB 0 to MB 16383	MB 0 to MB 16383
• Retentivity preset		MB 0 to MB 15	MB 0 to MB 15	MB 0 to MB 15	MB 0 to MB 15	MB 0 to MB 15
• Number of clock memories		8	8	8	8	8
Data blocks						
• Number, max.		Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each
• Size, max.		64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte

Technical specifications (continued)

	6ES7 677-1DD00-0BA0	6ES7 677-1DD00-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD00-0BF0	6ES7 677-1DD00-0BG0	6ES7 677-1DD00-0BH0
Product type designation	SIMATIC S7-mEC, EC31	S7-mEC, EC31-RTX	S7-mEC, EC31-RTX F	S7-mEC, EC31-HMI/RTX 128PT	S7-mEC, EC31-HMI/RTX 512PT	S7-mEC, EC31-HMI/RTX 2048PT
Address area						
I/O address area						
• overall		16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte
• Outputs		16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte
• of which, distributed						
- Inputs		8 Kibyte	8 Kibyte	8 Kibyte	8 Kibyte	8 Kibyte
- Outputs		8 Kibyte	8 Kibyte	8 Kibyte	8 Kibyte	8 Kibyte
Process image						
• Inputs, adjustable		16 Kibyte	16 Kibyte	8 Kibyte	8 Kibyte	8 Kibyte
• Outputs, adjustable		16 Kibyte	16 Kibyte	8 Kibyte	8 Kibyte	8 Kibyte
• Inputs, default		512 byte	512 byte	512 byte	512 byte	512 byte
• Outputs, default		512 byte	512 byte	512 byte	512 byte	512 byte
Subprocess images						
• Number of subprocess images, max.		15	15	15	15	15
Digital channels						
• Inputs		128 000	128 000	128 000	128 000	128 000
• Outputs		128 000	128 000	128 000	128 000	128 000
Analog channels						
• Inputs		8 000	8 000	8 000	8 000	8 000
• Outputs		8 000	8 000	8 000	8 000	8 000
Time of day						
Clock						
• Hardware clock (real-time clock)		Yes; Resolution: 1 s	Yes; Resolution: 1 s	Yes; Resolution: 1 s	Yes; Resolution: 1 s	Yes; Resolution: 1 s
Clock synchronization						
• supported		Yes	Yes	Yes	Yes	Yes
• on Ethernet via NTP		Yes	Yes	Yes	Yes	Yes
S7 message functions						
Number of login stations for message functions, max.		62; The alarm functions cannot currently be used for central bus modules	62; The alarm functions cannot currently be used for central bus modules	62; The alarm functions cannot currently be used for central bus modules	62; The alarm functions cannot currently be used for central bus modules	62; The alarm functions cannot currently be used for central bus modules
Process diagnostic messages		Yes; Alarm_S	Yes; Alarm_S	Yes; Alarm_S	Yes; Alarm_S	Yes; Alarm_S
Test commissioning functions						
Status/control						
• Status/control variable		Yes	Yes	Yes	Yes	Yes
Forcing						
• Forcing		No	No	No	No	No
Diagnostic buffer						
• present		Yes	Yes	Yes	Yes	Yes
Monitoring functions						
Status LEDs		Yes	Yes	Yes	Yes	Yes
Communication functions						
PG/OP communication		Yes	Yes	Yes	Yes	Yes
Global data communication						
• supported		No	No	No	No	No

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Technical specifications (continued)

	6ES7 677-1DD00-0BA0	6ES7 677-1DD00-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD00-0BF0	6ES7 677-1DD00-0BG0	6ES7 677-1DD00-0BH0
Product type designation	SIMATIC S7-mEC, EC31	S7-mEC, EC31-RTX	S7-mEC, EC31-RTX F	S7-mEC, EC31-HMI/RTX 128PT	S7-mEC, EC31-HMI/RTX 512PT	S7-mEC, EC31-HMI/RTX 2048PT
S7 basic communication						
• supported		No	No	No	No	No
S7 communication						
• supported		Yes	Yes	Yes	Yes	Yes
• as server		Yes	Yes	Yes	Yes	Yes
• as client		Yes	Yes	Yes	Yes	Yes
Open IE communication						
• TCP/IP		Yes; Via integrated PROFINET interface (X1) and loadable FBs	Yes; Via integrated PROFINET interface and loadable FBs	Yes; Via integrated PROFINET interface (X1) and loadable FBs	Yes; Via integrated PROFINET interface (X1) and loadable FBs	Yes; Via integrated PROFINET interface (X1) and loadable FBs
- Number of connections, max.		32	32	32	32	32
- Data length, max.		8 192 byte		8 192 byte	8 192 byte	8 192 byte
• ISO-on-TCP (RFC1006)		No	No	No	No	No
• UDP		Yes; Via integrated PROFINET interface (X1) and loadable FBs	Yes; Via integrated PROFINET interface and loadable FBs	Yes; Via integrated PROFINET interface (X1) and loadable FBs	Yes; Via integrated PROFINET interface (X1) and loadable FBs	Yes; Via integrated PROFINET interface (X1) and loadable FBs
- Number of connections, max.		32	32	32	32	32
- Data length, max.		1 472 byte		1 472 byte	1 472 byte	1 472 byte
Number of connections						
• overall		64	64	64	64	64
• usable for PG communication						
- reserved for PG communication		1	1	1	1	1
• usable for OP communication						
- reserved for OP communication		1	1	1	1	1
1st interface						
Type of interface		PROFINET	PROFINET	PROFINET	PROFINET	PROFINET
Physics		2x RJ45	2x RJ45	2x RJ45	2x RJ45	2x RJ45
automatic detection of transmission speed		Yes	Yes	Yes	Yes	Yes
Autonegotiation		Yes	Yes	Yes	Yes	Yes
Autocrossing		Yes	Yes	Yes	Yes	Yes
Number of connection resources		32	32	32	32	32
Functionality						
• MPI		No	No	No	No	No
• DP master		No	No	No	No	No
• DP slave		No	No	No	No	No
• PROFINET IO Device		No	No	No	No	No
• PROFINET IO Controller		Yes	Yes	Yes	Yes	Yes
• PROFINET CBA		Yes	Yes	Yes	Yes	Yes
• Open IE communication		Yes	Yes	Yes	Yes	Yes
• Point-to-point connection		No	No	No	No	No

Technical specifications (continued)

	6ES7 677-1DD00-0BA0	6ES7 677-1DD00-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD00-0BF0	6ES7 677-1DD00-0BG0	6ES7 677-1DD00-0BH0
Product type designation	SIMATIC S7-mEC, EC31	S7-mEC, EC31-RTX	S7-mEC, EC31-RTX F	S7-mEC, EC31-HMI/RTX 128PT	S7-mEC, EC31-HMI/RTX 512PT	S7-mEC, EC31-HMI/RTX 2048PT
PROFINET IO Controller						
• Services						
- PG/OP communication		Yes	Yes	Yes	Yes	Yes
- S7 routing		Yes	Yes	Yes	Yes	Yes
- S7 communication		Yes	Yes	Yes	Yes	Yes
- Isochronous mode		No	No	No	No	No
• Total number of connectable IO Devices, max.		256	256	256	256	256
• Number of IO Devices with IRT and the option "high flexibility", max.		64	64	64	64	64
• IRT, supported		Yes	Yes	Yes	Yes	Yes
• Prioritized startup supported		Yes	Yes	Yes	Yes	Yes
- Number of IO Devices, max.		32	32	32	32	32
• Activation/deactivation of IO Devices		Yes	Yes	Yes	Yes	Yes
- Number of IO Devices that can be simultaneously activated/deactivated, max.		8	8	8	8	8
• IO Devices changing during operation (partner ports), supported		Yes	Yes	Yes	Yes	Yes
- Max. number of IO devices per tool		8	8	8	8	8
- Send cycles		Setting options: 250 µs, 500 µs and 1 ms	Setting options: 250 µs, 500 µs and 1 ms	Setting options: 250 µs, 500 µs and 1 ms	Setting options: 250 µs, 500 µs and 1 ms	Setting options: 250 µs, 500 µs and 1 ms
- Refresh times		250 µs ... 128 ms (for 250 µs send cycle); 500 µs ... 256 ms (for 500 µs send cycle); 1 ms ... 512 ms (for 1 ms send cycle);	250 µs ... 128 ms (for 250 µs send cycle); 500 µs ... 256 ms (for 500 µs send cycle); 1 ms ... 512 ms (for 1 ms send cycle);	250 µs ... 128 ms (for 250 µs send cycle); 500 µs ... 256 ms (for 500 µs send cycle); 1 ms ... 512 ms (for 1 ms send cycle);	250 µs ... 128 ms (for 250 µs send cycle); 500 µs ... 256 ms (for 500 µs send cycle); 1 ms ... 512 ms (for 1 ms send cycle);	250 µs ... 128 ms (for 250 µs send cycle); 500 µs ... 256 ms (for 500 µs send cycle); 1 ms ... 512 ms (for 1 ms send cycle);
• Address area						
- Inputs, max.		16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte
- Outputs, max.		16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte
• User data per address area, max.		2 Kibyte	2 Kibyte	2 Kibyte	2 Kibyte	2 Kibyte
- User data consistency, max.		256 byte	256 byte	256 byte	256 byte	256 byte
PROFINET CBA						
• acyclic transmission		Yes	Yes	Yes	Yes	Yes
• cyclic transmission		Yes	Yes	Yes	Yes	Yes
Open IE communication						
• Open IE communication, supported		Yes	Yes	Yes	Yes	Yes
• Number of connections, max.		32	32	32	32	32
• Local port numbers used at the system end		0, 20, 21, 23, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535	0, 20, 21, 23, 25, 80, 102, 135, 161, 8 080, 34962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535	0, 20, 21, 23, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535	0, 20, 21, 23, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535	0, 20, 21, 23, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535

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Technical specifications (continued)

	6ES7 677-1DD00-0BA0	6ES7 677-1DD00-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD00-0BF0	6ES7 677-1DD00-0BG0	6ES7 677-1DD00-0BH0
Product type designation	SIMATIC S7-mEC, EC31	S7-mEC, EC31-RTX	S7-mEC, EC31-RTX F	S7-mEC, EC31-HMI/RTX 128PT	S7-mEC, EC31-HMI/RTX 512PT	S7-mEC, EC31-HMI/RTX 2048PT
PROFINET functions						
• Recognition of the accessible stations, supported		Yes; DCP	Yes; DCP	Yes; DCP	Yes; DCP	Yes; DCP
• Assignment of the IP address, supported		Yes; DCP	Yes; DCP	Yes; DCP	Yes; DCP	Yes; DCP
• Assignment of the device name, supported		Yes; DCP	Yes; DCP	Yes; DCP	Yes; DCP	Yes; DCP
• Topology recognition, supported		Yes; LLDP, LLDP MIB, SNMP	Yes; LLDP, LLDP MIB, SNMP	Yes; LLDP, LLDP MIB, SNMP	Yes; LLDP, LLDP MIB, SNMP	Yes; LLDP, LLDP MIB, SNMP
• Extended network diagnostics with Standard MIB II, supported		Yes; Standard MIB II, SNMP	Yes; Standard MIB II, SNMP	Yes; Standard MIB II, SNMP	Yes; Standard MIB II, SNMP	Yes; Standard MIB II, SNMP
2nd interface						
Type of interface		Integrated Ethernet interface	Integrated Ethernet interface	Integrated Ethernet interface	Integrated Ethernet interface	Integrated Ethernet interface
Physics		Ethernet RJ45	Ethernet RJ45	Ethernet RJ45	Ethernet RJ45	Ethernet RJ45
automatic detection of transmission speed		Yes	Yes	Yes	Yes	Yes
Autonegotiation		Yes	Yes	Yes	Yes	Yes
Autocrossing		No	No	No	No	No
Number of connection resources		32	32	32	32	32
Functionality						
• PROFINET IO Controller		No	No	No	No	No
• PROFINET IO Device		No	No	No	No	No
• PROFINET CBA		No	No	No	No	No
• PROFINET CBA-SRT		No	No	No	No	No
CPU/ programming						
Configuration software						
• STEP 7		Yes; V5.4 SP4 or higher + HW update/ iMap V3.0 SP1	Yes; STEP7 V5.4 SP5 or higher + HSP135 as basic requirement for the HSP178 for WinAC RTX F 2009 on Embedded Controller / iMap V3.0 SP1	Yes; V5.4 SP4 or higher + HW update/ iMap V3.0 SP1	Yes; V5.4 SP4 or higher + HW update/ iMap V3.0 SP1	Yes; V5.4 SP4 or higher + HW update/ iMap V3.0 SP1
Programming language						
• STEP 7		Yes	Yes; V5.4 SP5	Yes	Yes	Yes
• LAD		Yes	Yes	Yes	Yes	Yes
• FBD		Yes	Yes	Yes	Yes	Yes
• STL		Yes	Yes	Yes	Yes	Yes
• SCL		Yes	Yes	Yes	Yes	Yes
• CFC		Yes	Yes	Yes	Yes	Yes
• GRAPH		Yes	Yes	Yes	Yes	Yes
• HiGraph®		Yes	Yes	Yes	Yes	Yes
Installed software						
Visualization				WinCC flexible RT 2008	WinCC flexible RT 2008	WinCC flexible RT 2008

Technical specifications (continued)

	6ES7 677-1DD00-0BA0	6ES7 677-1DD00-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD00-0BF0	6ES7 677-1DD00-0BG0	6ES7 677-1DD00-0BH0
Product type designation	SIMATIC S7-mEC, EC31	S7-mEC, EC31-RTX	S7-mEC, EC31-RTX F	S7-mEC, EC31-HMI/RTX 128PT	S7-mEC, EC31-HMI/RTX 512PT	S7-mEC, EC31-HMI/RTX 2048PT
Control		SIMATIC WinAC RTX 2009	SIMATIC WinAC RTX F 2009	SIMATIC WinAC RTX 2009	SIMATIC WinAC RTX 2009	SIMATIC WinAC RTX 2009
Communication		Yes	Yes	Yes	Yes	Yes
EMC						
Emission of radio interference acc. to EN 55 011						
• Limit class A, for use in industrial environments	Yes	Yes	Yes	Yes	Yes	Yes
Environmental requirements						
Operating temperature						
• Min.	0 °C	0 °C	0 °C	0 °C	0 °C	0 °C
• max.	50 °C	50 °C	50 °C	50 °C	50 °C	50 °C
Storage/ transport temperature						
• Min.	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Vibrations						
• Operation, checked according to IEC 60068-2-6	Yes	Yes	Yes	Yes	Yes	Yes
• Transport tested checked to IEC 60068-2-6	Yes	Yes	Yes	Yes	Yes	Yes
Shock test						
• checked according to IEC 60068-2-27	Yes	Yes	Yes	Yes	Yes	Yes
• checked according to IEC 60068-2-29	Yes	Yes	Yes	Yes	Yes	Yes
Shock testing						
• checked according to IEC 60068-2-29	Yes	Yes	Yes	Yes	Yes	Yes
• Operation, checked according to IEC 60068-2-29	Operation, checked acc. to IEC 60068-2-27	Operation, checked acc. to IEC 60068-2-27	Operation, checked acc. to IEC 60068-2-27	Operation, checked acc. to IEC 60068-2-27	Operation, checked acc. to IEC 60068-2-27	Operation, checked acc. to IEC 60068-2-27
• Storage/transport, checked to IEC 60068-2-29	Yes	Yes	Yes	Yes	Yes	Yes
Degree of protection						
IP20	Yes	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates						
CE mark	Yes	Yes	Yes	Yes	Yes	Yes
CSA approval	Yes; included in cULus	Yes; included in cULus	Yes; included in cULus	Yes; included in cULus	Yes; included in cULus	Yes; included in cULus
C-TICK	Yes	Yes	Yes	Yes	Yes	Yes
cULus	Yes	Yes	Yes	Yes	Yes	Yes
FM approval	Yes	Yes	Yes	Yes	Yes	Yes
Dimensions and weight						
Dimensions						
• Width	160 mm	160 mm	160 mm	160 mm	160 mm	160 mm
• Height	125 mm	125 mm	125 mm	125 mm	125 mm	125 mm
• Depth	115 mm	115 mm	115 mm	115 mm	115 mm	115 mm
Weight						
• Weight	1.5 kg; Approx.	1.5 kg; Approx.	1.5 kg; Approx.	1.5 kg; Approx.	1.5 kg; Approx.	1.5 kg; Approx.

Technical specifications (continued)

	6ES7 677-1DD40-1AA0	6ES7 677-1DD50-2AA0
Product type designation	EM PCI-104	EM PC
Product version		
Hardware product version	01	01
Power supply		
Input voltage		
• Rated value, 24 V DC	Yes; Optional: external infeed	
• permissible range, lower limit (DC)	20.4 V	
• permissible range, upper limit (DC)	28.8 V	
Current consumption		
from expansion bus	100 mA	580 mA
Power loss		
Power loss, max.		14 W
Power loss, typ.	2.4 W; Without inserted PCI-104 cards	9 W
Interrupts/diagnostics/ status information		
Diagnoses		
• Diagnostic functions	Yes; POWER LED, status LED	Yes; POWER LED, CARD LED for indicating access to SD/MMC
EMC		
Emission of radio interference acc. to EN 55 011		
• Limit class A, for use in industrial environments	Yes	Yes
Environmental requirements		
Operating temperature		
• Min.	0 °C	0 °C
• max.	50 °C	50 °C
Storage/transport temperature		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Vibrations		
• Operation, checked acc. to IEC 60068-2-6	Yes	Yes
• Transport tested checked to IEC 60068-2-6	Yes	Yes

	6ES7 677-1DD40-1AA0	6ES7 677-1DD50-2AA0
Product type designation	EM PCI-104	EM PC
Shock test		
• checked according to IEC 60068-2-27	Yes	Yes
• checked according to IEC 60068-2-29	Yes	Yes
Shock testing		
• checked according to IEC 60068-2-29	Yes	Yes
• Operation, checked acc. to IEC 60068-2-29	Yes	Yes
• Storage/transport, checked to IEC 60068-2-29	Yes	Yes
Degree of protection		
IP20	Yes	Yes
Standards, approvals, certificates		
CE mark	Yes	Yes
CSA approval	Yes	Yes
C-TICK	Yes	Yes
cULus	Yes	Yes
FM approval	Yes	Yes
Dimensions and weight		
Dimensions		
• Width	120 mm; Without bus connector Extension-Bus	80 mm; Without bus connector Extension-Bus
• Height	125 mm; Without external voltage connecting terminal	125 mm
• Depth	115 mm	115 mm
Weight		
• Weight	0.5 kg	0.4 kg

Ordering data

		Order No.
SIMATIC S7-modular Embedded Controller		
EC31 Intel CoreDuo 1.2 GHz processor Memory configuration: 1 GB RAM, 2 GB Flash Disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 slot for multimedia card; Software: Windows XP embedded preinstalled, Software Development Kit (SDK) for creating C/C++ applications with accesses to central I/O modules	E	**6ES7 677-1DD00-0BA0**
EC31-RTX Intel CoreDuo 1.2 GHz processor Memory configuration: 1 GB RAM, 2 GB Flash Disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 slot for multimedia card; Software: Windows XP embedded and WinAC RTX 2009 preinstalled	E	**6ES7 677-1DD00-0BB0**
EC31-RTX F Intel CoreDuo 1.2 GHz processor Memory configuration: 1 GB RAM, 2 GB Flash Disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 slot for multimedia card; Software: Windows XP embedded and WinAC RTX F 2009 preinstalled	E	**6ES7 677-1FD00-0FB0**

C: Subject to export regulations: AL: N and ECCN: EAR99H

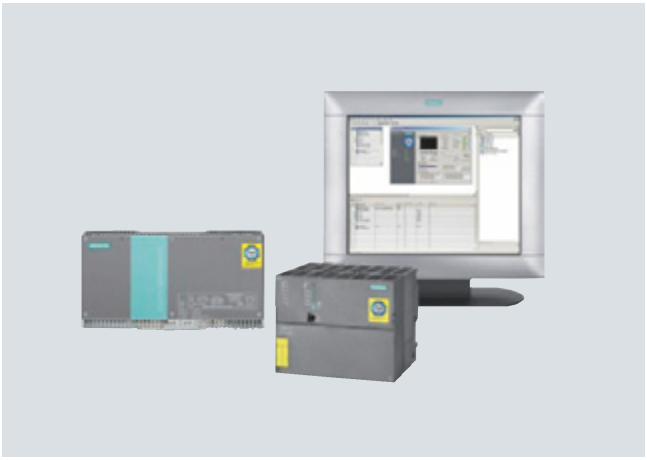
		Order No.
SIMATIC S7-modular Embedded Controller		
EC31-HMI/RTX Intel CoreDuo 1.2 GHz processor Memory configuration: 1 GB RAM, 2 GB Flash Disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 slot for multimedia card; Software: Windows XP embedded, WinAC RTX 2009, SIMATIC SOFTNET-S7/V7.0 Lean preinstalled		
• With WinCC flexible 2008 RT 128 PT	E	**6ES7 677-1DD00-0BF0**
• With WinCC flexible 2008 RT 512 PT	E	**6ES7 677-1DD00-0BG0**
• With WinCC flexible 2008 RT 2048 PT	E	**6ES7 677-1DD00-0BH0**
EM PCI-104 extension module For fitting up to 3 additional PCI-104 cards	C	**6ES7 677-1DD40-1AA0**
EM PC extension module Additional connection options: 2 USB interfaces, 1 Gigabit Ethernet interface, 1 serial interface, 1 slot for CF card, 1 slot for SD card/Micro Memory Card	C	**6ES7 677-1DD50-2AA0**

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

9

SIMATIC IPC427C bundles

Overview



- Quick start in automation solutions with embedded PC platforms.
  - SIMATIC WinAC RTX or SIMATIC WinAC RTX F preinstalled on SIMATIC IPC427C ready for switch-on
  - PROFINET, PROFIBUS and Industrial Ethernet prepared for use in a SIMATIC environment
  - Optional WinCC flexible for visualization tasks in parallel with SIMATIC WinAC RTX.
  - Configuration and programming with SIMATIC STEP 7 via Industrial Ethernet, PROFINET, or PROFIBUS
- Safety requirements up to SIL 3 according to IEC 61508/ 62061 or according to EN ISO 13849-1 up to PL e can be implemented with WinAC RTX F.
- Rugged operation
  - Operation without a hard disk, based on Compact Flash Card (CF Card) or Solid State Disk and Windows Embedded Standard
  - Operation without a fan
  - 128 KB retentive data for WinAC RTX, also without uninterruptible power supply (UPS)
- Flexibility of a PC-based automation environment
  - Free memory space on CF Card can be used for other PC applications
  - Use of WinAC ODK with SIMATIC WinAC RTX or SIMATIC WinAC RTX F (read-only for fail-safe program part)
  - Connection option for USB devices, flat panel monitor or screen
  - PCI 104 cards can be plugged in
- High-performance service concept
  - Replacement parts for preferred types available in exchange, ex stock

New

- New hardware basis SIMATIC IPC427C
- Cost-effective variants with PROFINET, based on the standard Ethernet interface
- Current product versions of the pre-installed software:
  - SIMATIC WinAC RTX 2009 or SIMATIC WinAC RTX F
  - SIMATIC WinCC flexible 2008 SP1 (WinAC RTX 2009 only)
  - SIMATIC NET Edition 2008

Ordering data

		Order No.
SIMATIC IPC427C bundles		
Preferred version with SIMATIC WinAC RTX F 2009		
(Replacement hardware unit available in exchange)		
SIMATIC IPC427C bundle with WinAC RTX F 2009 Processor Core2Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 8 GB CompactFlash	E	**6ES7 675-1DK30-0EP0**
Preferred versions with SIMATIC WinAC RTX 2009 and WinCC flexible 2008		
(Replacement hardware unit available in exchange)		
SIMATIC IPC427C bundles	E	**6ES7 675-1D ■ ■ 0- ■ ■ ■ 0**
Processor		
• Celeron M, 1.2 GHz, 2x PROFINET (IE)		**A**
• Celeron M, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS		**B**
• Core2Solo, 1.2 GHz, 2x PROFINET (IE)		**E**
• Core2Solo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS		**F**
• Core2Duo, 1.2 GHz, 2x PROFINET (IE)		**J**
• Core2Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS		**K**
Main memory		
• 2 GB RAM		**3**
Internal mass storage		
• Without		**0**
Externally accessible mass storage		
• 4 GB CompactFlash, Windows Embedded 2009 and preinstalled software		**D**
• 8 GB CompactFlash, Windows Embedded 2009 and preinstalled software		**E**
Software configurations		
• WinAC RTX		**B**
• WinCC flexible RT 128 PT		**C**
• WinCC flexible RT 512 PT		**D**
• WinCC flexible RT 2048 PT		**E**
• WinCC flexible RT 4096 PT		**F**
• WinAC RTX, WinCC flexible RT 128 PT		**K**
• WinAC RTX, WinCC flexible RT 512 PT		**L**
• WinAC RTX, WinCC flexible RT 2048 PT		**M**
• WinAC RTX, WinCC flexible RT 4096 PT		**N**

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

Ordering data

		Order No.
SIMATIC IPC427C bundles		
All versions with SIMATIC WinAC RTX 2009 and WinCC flexible 2008		
(Hardware: repair only is possible)		
SIMATIC IPC427C bundles	E	**6ES7 675-1D ■■ 0- ■■■ 0**
Processor		
• Celeron M, 1.2 GHz, 2x PROFINET (IE)		**A**
• Celeron M, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS		**B**
• Core2Solo, 1.2 GHz, 2x PROFINET (IE)		**E**
• Core2Solo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS		**F**
• Core2Duo, 1.2 GHz, 2x PROFINET (IE)		**J**
• Core2Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS		**K**
Main memory		
• 1 GB RAM		**2**
• 2 GB RAM		**3**
• 4 GB RAM		**4**
Internal mass storage		
• None (can only be ordered with externally accessible mass storage)		**0**
• 80 GB HDD SATA, also with externally accessible CF		**1**
• 32 GB Solid State Disk SATA, Windows Embedded 2009 and preinstalled software		**2**
• 4 GB internal CompactFlash, Windows Embedded 2009 and preinstalled software		**6**
• 8 GB internal CompactFlash, Windows Embedded 2009 and preinstalled software		**7**
Extern. accessible mass storage		
• None (can only be ordered with internal mass storage)		**A**
• 4 GB CompactFlash, Windows Embedded 2009 and preinstalled software		**D**
• 8 GB CompactFlash, Windows Embedded 2009 and preinstalled software		**E**
Software configurations		
• WinAC RTX		**B**
• WinCC flexible RT 128 PT		**C**
• WinCC flexible RT 512 PT		**D**
• WinCC flexible RT 2048 PT		**E**
• WinCC flexible RT 4096 PT		**F**
• WinAC RTX, WinCC flexible RT 128 PT		**K**
• WinAC RTX, WinCC flexible RT 512 PT		**L**
• WinAC RTX, WinCC flexible RT 2048 PT		**M**
• WinAC RTX, WinCC flexible RT 4096 PT		**N**

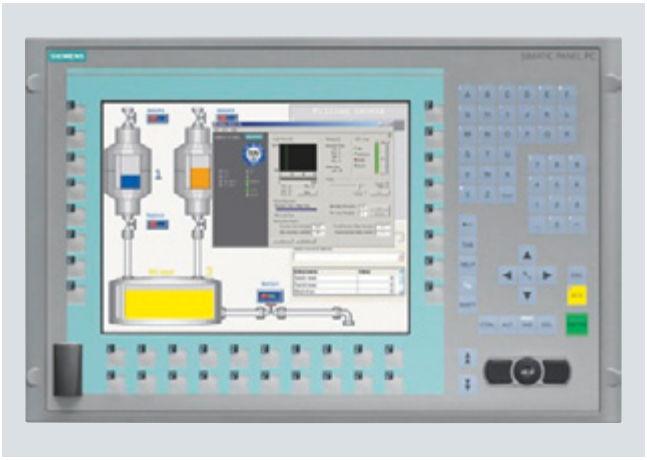
C: Subject to export regulations: AL: N and ECCN: EAR99H

		Order No.
Delivery versions (ex stock)		
(Replacement hardware units available in exchange)		
SIMATIC IPC427C bundle with WinAC RTX 2009		
Processor Core2Solo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 4 GB CompactFlash	E	**6ES7 675-1DF30-0DB0**
Processor Core2Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 4 GB CompactFlash	E	**6ES7 675-1DK30-0DB0**
Processor Core2Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 8 GB CompactFlash	E	**6ES7 675-1DK30-0EP0**
SIMATIC IPC427C bundle with WinAC RTX 2009 and WinCC flexible 2008 512 PT		
Processor Core2Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 4 GB CompactFlash	E	**6ES7 675-1DK30-0DL0**
Accessories		
CP 5603 Microbox Package Package for using the PROFIBUS CP 5603 in Microbox PCs; comprising a CP 5603 module and a Microbox expansion rack	C	**6GK1 560-3AU00**
CP 1604 Microbox Package Package for using the PROFINET CP 1604 in Microbox PCs; comprising CP 1604, connection board, power supply and expansion rack for Microbox PC; implemented with Development Kit DK-16xx PN IO; NCM P		**6GK1 160-4AU00**
Expansion kit PC/104 Expansion rack incl. mounting hardware; 6 items	C	**6AG4 070-0BA00-0XA0**
CompactFlash Cards		
4 GB	C	**6ES7 648-2BF02-0XG0**
8 GB	C	**6ES7 648-2BF02-0XH0**
SIMATIC PC keyboard		
German/international, USB connection		**6ES7 648-0CB00-0YA0**
German/International, USB connection, with 4-way USB HUB	C	**6ES7 648-0CD00-0YA0**
SIMATIC PC USB mouse Optical, 3 buttons, with PS/2 adapter	C	**6ES7 790-0AA01-0XA0**
SIMATIC PC USB flash drive 2 GB, USB 2.0, incl. SIMATIC PC BIOS manager, bootable, metal enclosure	C	**6ES7 648-0DC40-0AA0**
Book mounting kit Interfaces at the front	C	**6ES7 648-1AA20-0YB0**

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

SIMATIC HMI IPC477C embedded

Overview



Embedded PC platform with extremely high industrial compatibility for demanding tasks in the field of PC-based automation

- Maintenance-free (no rotating components such as fan and hard disk)
- Rugged construction: The PC is resistant to the harshest mechanical stress and is extremely reliable in operation
- Compact design (only 61-69 mm mounting depth for 12"-19")
- High degree of investment protection
- Fast integration capability
- Front panel versions:
  - 12" and 15" TFT Touch
  - 12" and 15" TFT Keys
  - 19" Touch

Technical specifications

	6AV7 884..	6AV7 883..PRO
General features		
Processors	Intel Celeron M 1.2 GHz, Intel Core2Solo 1.2 GHz or Core2Duo 1.2 GHz	Intel Celeron M 1.2 GHz, Intel Core2Solo 1.2 GHz or Core2Duo 1.2 GHz
Memory type	DDR3-RAM	DDR3-RAM
Main memory	1 GB, 2 GB or 4 GB	1 GB, 2 GB or 4 GB
Free slots	1 x CF card slot (externally accessible)	1 x CF card slot (externally accessible)
Operating system	Windows Embedded Standard 2009 (EN/DE) or Windows XP Professional Multi-Language	Windows Embedded Standard 2009 (EN/DE) or Windows XP Professional Multi-Language
Additional OS information	Language: EN/DE	Language: EN/DE
SIMATIC Software	Optionally with preinstalled bundle software SIMATIC WinCC flexible 2008 SP1 and/or WinAC RTX 2009 SIMATIC WinAC RTX F SIMATIC WinCC as web client or single-user station	Optionally with preinstalled bundle software SIMATIC WinCC flexible 2008 SP1 and/or WinAC RTX 2009 SIMATIC WinAC RTX F
Drives		
Floppy drive	Optional via external USB floppy drive	Optional via external USB floppy drive
Optical drives	Possible as external drive via USB	Possible as external drive via USB
Hard disk/mass storage	Compact Flash drive with 2, 4, or 8 GB and/or SSD (Solid State Disk) with 32 GB	Compact Flash drive with 2, 4, or 8 GB and/or SSD (Solid State Disk) with 32 GB
Interfaces		
Graphics interface	DVI-I for additional display unit: Color depth 32 bits	DVI-I for additional display unit: Color depth 32 bits
Connection for keyboard/mouse	USB / USB	USB / USB
Serial interface	COM1: 1 x V.24 (RS232)	COM1: 1 x V.24 (RS232)
PROFIBUS/MPI	Optionally onboard, isolated, max. 12 Mbit/s, no plug-in card required, CP5611-compatible, not upgradable	Optionally onboard, isolated, max. 12 Mbit/s, no plug-in card required, CP5611-compatible, not upgradable
PROFINET (RT/IRT)	Optional: 3 x RJ45, CP1616-compatible; not upgradable	Optional: 3 x RJ45, CP1616-compatible; not upgradable
USB	1 x on front, 4 x on rear, USB 2.0 (500 mA)	1 x on front, 4 x on rear, USB 2.0 (500 mA)
PROFINET (IE), Ethernet	onboard, 2 x 10/100/1000 Mbit (RJ45 with/without PROFIBUS), 1 x 10/100/1000 Mbit (RJ45 with PROFINET), no plug-in card required	onboard, 2 x 10/100/1000 Mbit (RJ45 with/without PROFIBUS), 1 x 10/100/1000 Mbit (RJ45 with PROFINET), no plug-in card required
Multimedia	No	No
Supply voltage		
Supply voltage	24 V DC	24 V DC
Monitoring functions		
Temperature	Yes	Yes
Watchdog	Yes	Yes

Technical specifications (continued)

	6AV7 884..	6AV7 883..PRO
DiagBit (similar to S.M.A.R.T.)	Yes (for CF cards and SSD)	Yes (for CF cards and SSD)
Status LEDs	Yes (on rear)	Yes
Front side according to EN 60529	IP65 (on the front) according to EN 60529 and NEMA4	IP65 all around according to EN 60529 and NEMA4
Ambient conditions		
Vibration load during operation	Tested according to DIN IEC 60068-2-6: 10 … 58 Hz: 0.075 mm, 58 … 200 Hz: 9.8 m/s² (1 g)	Tested according to DIN IEC 60068-2-6: 10 … 58 Hz: 0.075 mm, 58 … 200 Hz: 9.8 m/s² (1 g)
Shock loading during operation	Tested according to DIN IEC 60068-2-7: 50 m/s² (5 g), 30 ms, 100 shocks	Tested according to DIN IEC 60068-2-7: 50 m/s² (5 g), 30 ms, 100 shocks
Relative humidity	Tested according to DIN IEC 60068-78, DIN IEC 60068-2-30: 5% to 80% at 25 °C (no condensation)	Tested according to DIN IEC 60068-78, DIN IEC 60068-2-30: 5% to 80% at 25 °C (no condensation)
Maximum permissible installation angle +/-	30° over vertical	45° over vertical
Ambient temperature during operation	0 °C … +50 °C in maximum configuration; no fan	15“: 0 °C … +45°C in maximum configuration; no fan 19“: 0 °C … +40°C in maximum configuration; no fan
Certifications & standards		
Approvals	CE, cULus(508), marine engineering	CE, cULus(508)
EMC	CE, 55022A, EN 61000-6-4, EN 61000-6-2	CE, 55022A, EN 61000-6-4, EN 61000-6-2

	6AV7 884-0	6AV7 884-1	6AV7 884-2	6AV7 884-3	6AV7 884-5	6AV7 883-6 (PRO)	6AV7 883-7 (PRO)
Front panel	12" TFT Touch	12" TFT Key	15" TFT Touch	15" TFT Key	19" TFT Touch	15" TFT Touch	19" TFT Touch
Display							
Resolution (W x H in pixels)	800 x 600	800 x 600	1024 x 768	1024 x 768	1280 x 1024	1024 x 768	1280 x 1024
MTBF backlit display (at 25 °C)	50000 h at 24 h continous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent
Type of operation							
Function keys	No	36	No	36	No	No	No
Alphanumeric keyboard	No	Yes	No	Yes	No	No	No
Touch screen (analog/resistive)	Yes	No	Yes	No	Yes	Yes	Yes
Mouse on the front	No	Yes	No	Yes	No	No	No
Design							
Centralized configuration	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Distributed configuration	No	No	No	No	No	No	No
Dimensions							
Mounting dimensions in centralized configuration (W x H x D, without optical drive) in mm	368 x 290 x 61	450 x 290 x 61	450 x 290 x 64	450 x 321 x 59	450 x 380 x 71	400 x 310 x 98	483 x 400 x 115
Operator control unit (W x H) in mm	400 x 310 (7 HU)	483 x 310 (19", 7 HU)	483 x 310 (19", 7 HU)	483 x 355 (19", 8 HU)	483 x 400 (19", 9 HU)	483 x 400 (19", 9 HU)	483 x 400 (19", 9 HU)
Weights	6.1 kg	6.6 kg	7.0 kg	6.6 kg	7.2 kg	7.4 kg	10.9 kg
General features							
Accessories	Touch protective membranes	Insertable strips for keyboard	Touch protective membranes	Insertable strips for keyboard	Touch protective membranes	Touch protective membranes	Touch protective membranes
Power loss in maximum configuration	24 V DC: max. 45 W	24 V DC: max. 45 W	24 V DC: max. 55 W	24 V DC: max. 55 W	24 V DC: max. 60 W	24 V DC: max. 55 W	24 V DC: max. 55 W

SIMATIC HMI IPC477C embedded

Ordering data

Order No.

Preferred versions with spare parts in exchange

("Built to order" with delivery time of max. 15 working days and replacement devices in exchange)

		Order No.
SIMATIC HMI IPC477C embedded	E	**6AV7 884- ■ A ■ ■ ■ - ■ ■ ■ 0**
Without fan 5 x USB 2.0 (500 mA), one of which on the front 1 x COM (RS232) 24 V DC power supply with On/Off switch		
Front panels		
• 12" TFT Touch		**0**
• 15" TFT Touch		**2**
• 19" TFT Touch		**5**
Processors and fieldbus		
• Celeron M 1.2 GHz, 2 x PROFINET (IE)		**A**
• Celeron M1 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12		**B**
• Core2Solo 1.2 GHz, 2 x PROFINET (IE)		**D**
• Core2Solo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12		**E**
• Core2Duo 1.2 GHz, 2 x PROFINET (IE)		**G**
• Core2Duo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12		**H**
Main memory (DDR3 RAM), 1 database		
• 2 GB		**2**
Second mass storage (installed and formatted)		
• without		**0**
• CompactFlash 2 GB		**2**
• CompactFlash 4 GB		**3**
• CompactFlash 8 GB		**4**
• SSD (Solid State Drive) min. 32 GB		**6**
First mass storage (with pre-installed SIMATIC software)		
• CompactFlash 2 GB		**2**
• CompactFlash 4 GB		**3**
• CompactFlash 8 GB		**4**
• SSD (Solid State Drive) min. 32 GB		**6**
Operating system		
• Windows Embedded 2009, pre-installed		**B**
• Windows XP Professional Multi-Language, only with SSD; without SIMATIC software		**D A**

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

		Order No.
SIMATIC HMI IPC477C embedded	E	**6AV7 884- ■ A ■ ■ ■ - ■ ■ ■ 0**
Software packages, only with CF 4 GB or higher		
• without SIMATIC software		**B A**
• with operating system and RTX WinAC RTX 2009 pre-installed and configured		**B B**
• with operating system and HMI WinCC flexible 2008 SP1 RT (incl. archives/recipes) pre-installed and configured		
- Number of tags 128 PT		**B C**
- Number of tags 512 PT		**B D**
- Number of tags 2048 PT		**B E**
- Number of tags 4096 PT		**B F**
• with operating system and HMI WinCC flexible 2008 SP1 RT (incl. archives/recipes) pre-installed and configured		
- Number of tags 128 PT		**B K**
- Number of tags 512 PT		**B L**
- Number of tags 2048 PT		**B M**
- Number of tags 4096 PT		**B N**

Further bundles with SIMATIC HMI IPC477C and WinCC V7.0 SP1

		Order No.
SIMATIC HMI IPC477C without fan 4 x USB 2.0 on rear, 1 x USB 2.0 on front, 2 x 10/100/1000 Mbit/s Ethernet (RJ45); software pre-installed on CF/SSD: Windows Embedded Standard, SIMATIC WinCC V7.0 SP1		
Client Processor Celeron M 1.2 GHz, 1 GB DDR3 RAM, CF Card 8 GB, RT license 128 PT on USB stick	E	**6AV7 884- ■ AA10-4BX0**
• 15" TFT Touch		**2**
• 19" TFT Touch		**5**
Client and Single Station Processor Core 2 Solo 1.2 GHz, PROFIBUS DP, 2 GB DDR3 RAM, CF Card 8 GB, RT license 128 PT	E	**6AV7 884- ■ AE20-4BX0**
• 15" TFT Touch		**2**
• 19" TFT Touch		**5**

Ordering data

Further bundles with SIMATIC HMI IPC477C and WinCC V7.0 SP1 (continued)

		Order No.
SIMATIC HMI IPC477C (cont.)		
Single Station Processor Core 2 Duo 1.2 GHz, PROFIBUS DP, 4 GB DDR3 RAM	E	6AV7 884- ■ AH30- ■ B ■ 0
• 15" TFT Touch		2
• 19" TFT Touch		5
• 8 GB CF Card		4
• 32 GB SSD		6
• Runtime license 128 PT on USB stick		X
• Runtime license 2048 PT on USB stick		W
SIMATIC HMI IPC477C with WinAC RTX F Processor Core2Duo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP, 2 GB DDR3 RAM CompactFlashCard plugged in (internal); 8 GB. Software pre-installed on CF Card RTX F: WinAC RTX F 2009	E	6AV7 884- ■ AH20-4BP0
• 12" TFT Touch		0
• 12" TFT Key		1
• 15" TFT Touch		2
• 15" TFT Keys		3
• 19" TFT Touch		5

Further HMI IPC477C and IPC477C PRO as "Built to Order" versions

(max. delivery time is 15 working days and with identified repair).

		Order No.
SIMATIC HMI IPC477C embedded and without fan 5 x (500 mA), one of which on the front 24 V DC power supply with On/Off switch	E	6AV7 884- ■ A ■ ■ - ■ ■ 0
SIMATIC HMI IPC477C PRO embedded and without fan, fully enclosed according to IP65 5 x (500 mA), one of which on the front 24 V DC power supply with On/Off switch	E	6AV7 883- ■ A ■ ■ - ■ ■ 0
Front panels		
12" TFT Touch (not for PRO versions)		0
12" TFT Keys (not for PRO versions)		1
15" TFT Touch (not for PRO versions)		2
15" TFT Keys (not for PRO versions)		3
19" TFT Touch (not for PRO versions)		5
15" TFT Touch (IP65 enclosure; PRO)		6
15" TFT Keys (IP65 enclosure; PRO)		7
Processors and fieldbus		
• Celeron M 1.2 GHz, 2 x PROFINET (IE)		A
• Celeron M 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12		B
• Core2Solo 1.2 GHz, 2 x PROFINET (IE)		D
• Core2Solo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS		E
• Core2Solo 1.2 GHz, 1 x PROFINET (IE), 1 x PROFINET (3 ports)		F
• Core2Duo 1.2 GHz, 2 x PROFINET (IE)		G
• Core2Duo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS		H
• Core2Duo 1.2 GHz, 1 x PROFINET (IE), 1 x PROFINET (3 ports)		J
Main memory (DDR3 RAM), 1 database		
• 1 GB		1
• 2 GB		2
• 4 GB		3

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

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SIMATIC HMI IPC477C embedded

Ordering data

Further HMI IPC477C and IPC477C PRO as "Built to Order" versions

(max. delivery time is 15 working days and with identified repair).

		Order No.
SIMATIC HMI IPC477C embedded and without fan 5 x (500 mA), one of which on the front 24 V DC power supply with On/Off switch	E	**6AV7 884- ■ A ■ ■ ■ - ■ ■ ■ 0**
SIMATIC HMI IPC477C PRO embedded and without fan, fully enclosed according to IP65 5 x (500 mA), one of which on the front 24 V DC power supply with On/Off switch	E	**6AV7 883- ■ A ■ ■ ■ - ■ ■ ■ 0**
Second mass storage (installed and formatted)		
• without		**0**
• CompactFlash 2 GB		**2**
• CompactFlash 4 GB		**3**
• CompactFlash 8 GB		**4**
• SSD (Solid State Disk), min. 32 GB		**6**
Mass storage (installed, Windows XP embedded (EN/DE) preinstalled, optionally with SIMATIC software)		
• CompactFlash 2 GB		**2**
• CompactFlash 4 GB		**3**
• CompactFlash 8 GB		**4**
• SSD (Solid State Disk), min. 32 GB		**6**
Operating system		
Windows Embedded Standard 2009 pre-installed		**B A**
Windows XP Professional Multi-Language, only with SSD; without SIMATIC software		**D A**

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

		Order No.
SIMATIC HMI IPC477C embedded and without fan 5 x (500 mA), one of which on the front 24 V DC power supply with On/Off switch	E	**6AV7 884- ■ A ■ ■ ■ - ■ ■ ■ 0**
SIMATIC HMI IPC477C PRO embedded and without fan, fully enclosed according to IP65 5 x (500 mA), one of which on the front 24 V DC power supply with On/Off switch	E	**6AV7 883- ■ A ■ ■ ■ - ■ ■ ■ 0**
Software packages with CF 4 GB or higher		
with operating system and RTX Windows XP embedded pre-installed, WinAC RTX 2009 pre-installed and configured for PROFIBUS		**B B**
with operating system and HMI Windows XP embedded pre-installed, WinCC flexible 2008 SP1 RT (incl. archives/recipes) pre-installed and configured		
• Number of tags 128 PT		**B C**
• Number of tags 512 PT		**B D**
• Number of tags 2048 PT		**B E**
• Number of tags 4096 PT		**B F**
with operating system and HMI/RTX [1] Windows XP embedded pre-installed, WinCC flexible 2008 SP1 RT (incl. archives/recipes) and WinAC RTX 2009 pre-installed and configured		
• Number of tags 128 PT		**B K**
• Number of tags 512 PT		**B L**
• Number of tags 2048 PT		**B M**
• Number of tags 4096 PT		**B N**

[1] Not with Celeron M 1.2 GHz processor

Ordering data		Order No.
Acessories		
Protective membrane for Panel PCs 477/577/677 For protecting the touch screen against dirt/scratches		
• for 12" Touch		**6AV7 671-2BA00-0AA0**
• for 15" Touch (not for PRO)		**6AV7 671-4BA00-0AA0**
• for 19" Touch		**6AV7 672-1CE00-0AA0**
Labeling membranes for Panel PCs 477/577/677 For labeling soft keys and function keys, blank, supplied in sets of 10		**6AV7 672-0DA00-0AA0**
Touch pen Undetachable pen for operation of the touch devices, mounting of the support on the control cabinet or directly on the PRO unit	C	**6AV7 672-1JB00-0AA0**
Expansion components		
SIMATIC IPC DiagMonitor V4.1 Software tool for monitoring SIMATIC PCs, incl. manual, on CD-ROM (German/English)	A	**6ES7 648-6CA04-1YX0**
SIMATIC IPC Image & Partition Creator V3.0 Software tool for preventive data backup and hard disk partitioning for SIMATIC PCs, incl. manual on CD-ROM (German, English)	A	**6ES7 648-6AA03-0YA0**
SIMATIC IPC USB FlashDrive 2 GB, USB 2.0, metal enclosure, bootable	C	**6ES7 648-0DC40-0AA0**
SIMATIC IPC Service USB FlashDrive 2 GB, USB 2.0, metal enclosure, bootable With: Image & Partition Creator ready-installed, incl. CD	B	**6AV7 672-8JD00-0AA0**
3.5" USB disk drive with 1 m connecting cable	C	**6FC5 235-0AA05-1AA2**
Industrial USB Hub 4 4 x USB 2.0, IP65 for control cabinet door or DIN rail	C	**6AV6 671-3AH00-0AX0**
Compact Flash Card		
• 2 GB	C	**6ES7 648-2BF02-0XF0**
• 4 GB	C	**6ES7 648-2BF02-0XG0**
• 8 GB	C	**6ES7 648-2BF02-0XH0**

A: Subject to export regulations: AL: N and ECCN: EAR99S
B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H

Please note:

The HMI IPC477C is delivered as standard with an inserted CF card. The licenses are on the supplied USB stick.

Note:

Further embedded versions based on IPC427C and Embedded Controller (mEC) are listed under SIMATIC PC based Control.

SIMATIC Panel PC 477B Bundles

Overview

SIMATIC Panel PC 477B-HMI, 477B-RTX and 477B-HMI/RTX

- Quick start in automation solutions with Embedded Automation
  - SIMATIC WinCC flexible RT preinstalled and ready to switch on (Panel PC 477B HMI) or SIMATIC WinCC flexible and SIMATIC WinAC RTX preinstalled and ready to switch on (Panel PC 477B HMI/RTX)
  - PROFIBUS and Industrial Ethernet pre-configured for use in a SIMATIC environment
  - Configuration and programming with SIMATIC WinCC flexible ES and SIMATIC STEP 7 via Industrial Ethernet, PROFINET, or PROFIBUS
- Rugged operation
  - Hard-disk-free operation based on Compact Flash card (from 2 GB CF card) and Windows XP embedded
  - Operation without fan
- Flexibility of a PC-based automation environment
  - Open for additional PC applications
  - Can be expanded with PC/104+ cards
  - Connection option for USB devices, flat panel monitor or screen
  - Use of WinAC ODK with SIMATIC WinAC RTX
- Data retention for WinAC RTX without uninterruptible power supply (UPS)

9

Technical specifications

	6ES7 676 and 6AV7 85
General features	
Processor	Intel Pentium M technology; Intel Celeron M 1.0 GHz, Intel Pentium M 1.4 GHz
Memory type	DDR2-RAM
Main memory	1 GB, 2 GB
Free slots	3 x PC/104 (over spec. expansion frame)
Operating system	Windows XP Embedded
Additional OS information	Language: EN/DE
SIMATIC Software	Optional with pre-installed bundle software SIMATIC WinCC flexible 2008 or WinCC flexible/WinAC RTX 2008
Drives	
Floppy drive	Optional via external USB floppy drive
Optical drives	Possible as external drive via USB
Hard disk/mass storage	Compact Flash Drive with 2 GB or 4 GB
Interfaces	
Graphics interface	DVI-I can be used for additional display unit (only VGA via adapter); color depth 32 bits, graphics memory up to 128 MB, resolution as integral display in each case
Connection for keyboard/mouse	USB / USB
Serial interface	COM1: 1 x V.24 (RS232)
PROFIBUS/MPI	Onboard, floating, max. 12 Mbit/s, no plug-in card required, CP5611-compatible, not upgradeable
PROFINET	3 x RJ45, CP1616-compatible; not upgradeable
USB	1x on the front, 4x on rear, USB 2.0 (500mA)
Ethernet	onboard, 2 x 10/100/1000 Mbit (RJ45 with/without PROFIBUS), 1 x 10/100/1000 Mbit (RJ45 with PROFINET, 3 ports), no plug-in card required
Multimedia	No
Supply voltage	
Supply voltage	24 V DC
Monitoring functions	
Temperature	Yes
Watchdog	Yes
Status LEDs	Yes (on rear)
Front side according to EN 60529	IP65 (on the front) according to EN60529 and NEMA4
Ambient conditions	
Vibration load during operation	Tested in accordance with DIN IEC 60068-2-6: 10 … 58 Hz: 0.075 mm, 58 … 200 Hz: 9.8 m/s² (1 *g*)
Shock loading during operation	Tested in accordance with DIN IEC 60068-2-7: 50 m/s² (5 *g*), 30 ms, 100 shocks
Relative humidity	Tested in accordance with DIN IEC 60068-78, DIN IEC 68-2-30: 5 … 80% at 25 °C (no condensation)
Maximum permissible installation angle +/-	30° over vertical
Ambient temperature during operation	+5 °C … +50 °C in maximum configuration; no fan
Certifications & standards	
Approvals	CE, cULus(508)
EMC	CE, 55022A, EN 61000-6-4, EN 61000-6-2

Technical specifications (continued)

	6ES7 676-1 6AV7 851	6ES7 676-2 6AV7 852	6ES7 676-3 6AV7 853	6ES7 676-4 6AV7 854	6ES7 676-6 6AV7 856
Front panel	12" TFT Touch	12" TFT Key	15" TFT Touch	15" TFT Key	19" TFT Touch
Display					
Resolution (W x H in pixels)	800 x 600	800 x 600	1024 x 768	1024 x 768	1280 x 1024
MTBF backlit display (at 25 °C)	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent
Type of operation					
Function keys	No	36	No	36	No
Alphanumeric keyboard	No	Yes	No	Yes	No
Touch screen (analog/resistive)	Yes	No	Yes	No	Yes
Mouse on the front	No	Yes	No	Yes	No
Design					
Centralized configuration	Yes	Yes	Yes	Yes	Yes
Distributed configuration	No	No	No	No	No
Dimensions					
Mounting dimensions of the centralized configuration (W x H x D, without optical drive) in mm	368 x 290 x 75	450 x 290 x 75	450 x 290 x 75	450 x 321 x 75	450 x 380 x 88
Operator control unit (W x H) in mm	400 x 310 (7 HU)	483 x 310 (19", 7 HU)	483 x 310 (19", 7 HU)	483 x 355 (19", 8 HU)	483 x 400 (19", 9 HU)
Weights					
Panel PC in a centralized configuration approx.	7.3 kg	7.7 kg	8.3 kg	8.7 kg	14.3 kg
General features					
Accessories	Touch cover foils	Insertable strips for keyboard	Touch cover foils	Insertable strips for keyboard	Touch cover foils
Power loss in maximum configuration	24 V DC: max. 70 W (contains 3 W per slot)	24 V DC: max. 70 W (contains 3 W per slot)	24 V DC: max. 70 W (contains 3 W per slot)	24 V DC: max. 70 W (contains 3 W per slot)	24 V DC: max. 90 W, (contains 3 W per slot)

SIMATIC Panel PC 477B Bundles

Ordering data

Order No.

Versions for "Embedded Automation", TIA applications

(preferred versions from stock)

		Order No.
SIMATIC Panel PC 477B embedded	E	**6ES7 676- ■ BA00-0 ■ ■ 0**
Celeron M 1.0 GHz processor, main memory 1 GB DDR2 SDRAM, power supply 24 V DC, PROFIBUS DP interface		
Front panels		
• 12" TFT Touch		**1**
• 12" TFT Key		**2**
• 15" TFT Touch		**3**
• 15" TFT Key		**4**
• 19" TFT Touch		**6**
Mass storage		
• CompactFlash 2 GB		**C**
• CompactFlash 4 GB		**D**
• With Windows XP embedded operating system (EN/DE) preinstalled		**A**
• With operating system and RTX, Windows XP embedded (EN/DE) preinstalled, WinAC RTX 2008 preinstalled and configured for PROFIBUS (DP)		**B**
• With operating system and HMI (DP/PN), Windows XP embedded preinstalled, WinCC flexible 2008 RT (incl. archives/recipes) preinstalled		
- Number of tags 128 PT		**C**
- Number of tags 512 PT		**D**
- Number of tags 2048 PT		**E**
• With operating system and HMI/RTX (DP) Windows XP embedded preinstalled, WinCC flexible 2008 RT (incl. archives/recipes) preinstalled, WinAC RTX 2008 preinstalled and configured for PROFIBUS		
- Number of tags 128 PT		**F**
- Number of tags 512 PT		**G**
- Number of tags 2048 PT		**H**

Further Panel PCs as "built to order" versions

(max. delivery time 15 working days)

		Order No.
SIMATIC Panel 477B embedded	E	**6AV7 85 ■ - 0 A ■ ■ ■ - ■ ■ A 0**
24 V DC power supply		
Front panels		
• 12" TFT Touch		**1**
• 12" TFT Key		**2**
• 15" TFT Touch		**3**
• 15" TFT Key		**4**
• 19" TFT Touch		**6**
Processor		
• Celeron M 1.0 GHz		**D**
• Celeron M 1.0 GHz with PROFIBUS DB12		**E**
• Celeron M 1.0 GHz with PROFINET		**F**
• Pentium M 1.4 GHz		**G**
• Pentium M 1.4 GHz with PROFIBUS DB12		**H**
• Pentium M 1.4 GHz with PROFINET		**J**
Main memory		
• 1 GB DDR2 SDRAM		**2**
• 2 GB DDR2 SDRAM		**3**
Second CompactFlash slot fitted (externally accessible)		
- Not fitted		**0**
- With CF card 2 GB		**3**
- With CF card 4 GB		**4**
Software packages		
With Windows XP embedded operating system (EN/DE) preinstalled		
• With CF card 2 GB		**3 B**
• With CF card 4 GB		**4 B**
With operating system and RTX Windows XP embedded (EN/DE) preinstalled, WinAC RTX 2008 preinstalled and preconfigured		
• With CF card 2 GB		**3**
• With CF card 4 GB		**4**
• WinAC RTX (DP) configured for PROFIBUS		**C**
• WinAC RTX (PN) configured for PROFINET		**K**
With operating system and HMI (DP/PN), Windows XP embedded preinstalled, WinCC flexible 2008 RT (incl. archives/recipes) preinstalled		
• With CF card 2 GB		**3**
• With CF card 4 GB		**4**
• Number of tags 128 PT		**D**
• Number of tags 512 PT		**E**
• Number of tags 2048 PT		**F**

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

Ordering data

Further Panel PCs as "built to order" versions (continued)

(max. delivery time 15 working days)

		Order No.
SIMATIC Panel 477B embedded 24 V DC power supply	E	**6AV7 85 ■ - 0 A ■ ■ ■ - ■ ■ A 0**
With operating system and HMI/RTX (DP) Windows XP embedded preinstalled, WinCC flexible 2008 RT (incl. archives/recipes) preinstalled, WinAC RTX 2008 preinstalled and configured for PROFIBUS		
• With CF card 2 GB		**3**
• With CF card 4 GB		**4**
• Number of tags 128 PT		**G**
• Number of tags 512 PT		**H**
• Number of tags 2048 PT		**J**
• With operating system and HMI/RTX (PN) Windows XP embedded preinstalled, WinCC flexible 2008 RT (incl. archives/recipes) preinstalled, WinAC RTX 2008 preinstalled and configured for PROFINET		
• With CF card 2 GB		**3**
• With CF card 4 GB		**4**
• Number of tags 128 PT		**L**
• Number of tags 512 PT		**M**
• Number of tags 2048 PT		**N**

Accessories

		Order No.
Protective membrane for Panel PCs 477/577/677/877 For protecting the touch screen against dirt/scratches		
• for 12" Touch		**6AV7 671-2BA00-0AA0**
• for 15" Touch		**6AV7 671-4BA00-0AA0**
• for 19" Touch		**6AV7 672-1CE00-0AA0**
Labeling membranes for Panel PCs 477/577/677/877 For labeling soft keys and function keys, blank, supplied in sets of 10		**6AV7 672-0DA00-0AA0**
Touch pen Captive pen for operation of the touch devices, mounting of the support on the control cabinet	C	**6AV7 672-1JB00-0AA0**

Expansion components

		Order No.
SIMATIC IPC DiagMonitor V4.0 Software tool for monitoring SIMATIC PCs, incl. manual, on CD-ROM (German/English)	A	**6ES7 648-6CA04-0YX0**
SIMATIC IPC Image & Partition Creator V3.0 Software tool for preventive data backup and hard disk partitioning for SIMATIC PCs, incl. manual on CD-ROM (German, English)	A	**6ES7 648-6AA03-0YA0**
SIMATIC IPC USB FlashDrive 2 GB, USB 2.0, metal enclosure, bootable	C	**6ES7 648-0DC40-0AA0**
SIMATIC IPC Service USB FlashDrive 2 GB, USB 2.0, metal enclosure, bootable Image & Partition Creator ready-installed, incl. CD	B	**6AV7 672-8JD00-0AA0**
3.5" USB disk drive With 1 m connecting cable	C	**6FC5 235-0AA05-1AA2**
Industrial USB Hub 4 4 x USB 2.0, IP65 for control cabinet door or DIN rail	C	**6AV6 671-3AH00-0AX0**
Compact Flash Card		
• 2 GB	C	**6ES7 648-2BF01-0XF0**
• 4 GB	C	**6ES7 648-2BF01-0XG0**
Expansion kit PC/104 For integration of PC/104 modules (packing unit contains 6 expansion frames)	C	**6AG4 070-0BA00-0XA0**

A: Subject to export regulations: AL: N and ECCN: EAR99S
B: Subject to export regulations: AL: N and ECCN: EAR99T
C: Subject to export regulations: AL: N and ECCN: EAR99H
E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

Please note:

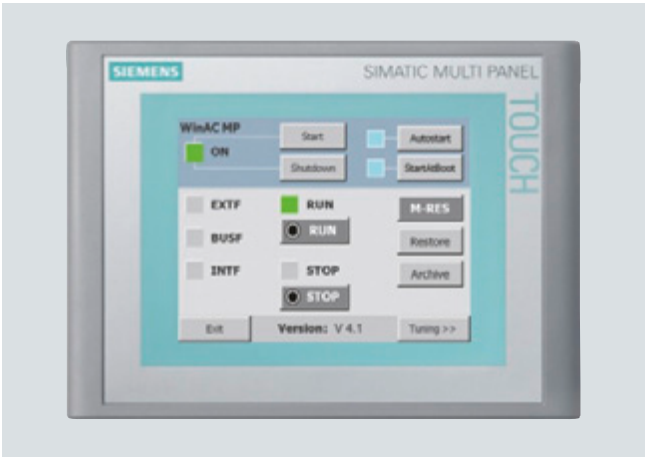
The scope of supply of the Panel PC 477B mainly comprises the Panel PC and a software pack that contains the CompactFlash card with preinstalled and configured software as well as all the necessary license keys. After the CompactFlash card has been inserted in the (internal) slot provided, the unit is ready for switching on.

Note:

Other complete turnkey solutions (the software is already installed and configured) on Microbox PC basis can be found under SIMATIC PC based Control.

SIMATIC WinAC MP

Overview



- WinAC MP, the software PLC based on Windows CE
- An optimized version is available for all current MP platforms
- The economical solution for all applications in combination with a rugged hardware platform
- Ideal for tasks on the machine level, saves space and costs
- Best service concept, backup/restore of all data on a standard SD card, standard Multi Media Card or standard USB stick

Technical specifications

	6ES7 671-4EE00-0YA0	6ES7 671-5EF01-0YA0	6ES7 671-7EG01-0YA0
Product type designation	WinAC MP 177	WinAC MP 277	WinAC MP 377
Memory			
Work memory			
• integrated	128 Kibyte	256 Kibyte	512 Kibyte
• expandable	No	No	No
Load memory			
• integrated RAM, max.	8 Mbyte	8 Mbyte	8 Mbyte
CPU/ blocks			
DB			
• Number, max.	512; FBs+FCs+ DBs=512	1 024; FBs+FCs+ DBs=1024	2 048; FBs+FCs+ DBs=2048
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
FB			
• Number, max.	512; FBs+FCs+ DBs=512	1 024; FBs+FCs+ DBs=1024	2 048; FBs+FCs+ DBs=2048
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
FC			
• Number, max.	512; FBs+FCs+ DBs=512	1 024; FBs+FCs+ DBs=1024	2 048; FBs+FCs+ DBs=2048
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
OB			
• Number, max.	18	18	18
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
Nesting depth			
• per priority class	8	8	16
• additional within an error OB	2	2	2
Times/counters and their retentivity			
S7 counter			
• Number	128	256	512

	6ES7 671-4EE00-0YA0	6ES7 671-5EF01-0YA0	6ES7 671-7EG01-0YA0
Product type designation	WinAC MP 177	WinAC MP 277	WinAC MP 377
S7 counter			
• of which retentive without battery			
- can be set	Yes	Yes	Yes
- lower limit	0	0	0
- upper limit	127	255	511
• Retentivity			
- can be set	Yes	Yes	Yes
- preset	8	8	8
• Counting range			
- lower limit	0	0	0
- upper limit	999	999	999
IEC counter			
• present	Yes; SFB0, SFB1, SFB2	Yes; SFB0, SFB1, SFB2	Yes; SFB0, SFB1, SFB2
S7 times			
• Number	128	256	512
• of which retentive without battery			
- can be set	Yes	Yes	Yes
- lower limit	0	0	0
- upper limit	127	255	511
• Retentivity			
- can be set	Yes	Yes	Yes
- preset	0	0	0
• Time range			
- lower limit	10 ms	10 ms	10 ms
- upper limit	9 990 s	9 990 s	9 990 s
IEC timer			
• present	Yes; SFB3, SFB4, SFB5	Yes; SFB3, SFB4, SFB5	Yes; SFB3, SFB4, SFB5
Data areas and their retentivity			
retentive data area in total (incl. times, counters, flags), max.	64 Kibyte	128 Kibyte	256 Kibyte

Technical specifications (continued)

	6ES7 671-4EE00-0YA0	6ES7 671-5EF01-0YA0	6ES7 671-7EG01-0YA0
Product type designation	WinAC MP 177	WinAC MP 277	WinAC MP 377
Flag			
• Number, max.	2 Kibyte	2 Kibyte	4 Kibyte
• Retentivity available	Yes	Yes	Yes
Data blocks			
• Number, max.	512	1 024	2 048
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
Local data			
• per priority class, max.	16 384 byte; for all priority classes	16 384 byte; for all priority classes	16 384 byte; for all priority classes
Address area			
I/O address area			
• overall	2 Kibyte	4 Kibyte	8 Kibyte
• Outputs	2 Kibyte	4 Kibyte	8 Kibyte
Process image			
• Inputs	1 Kibyte	2 Kibyte	2 Kibyte
• Outputs	1 Kibyte	2 Kibyte	2 Kibyte
• Inputs, adjustable	1 Kibyte	2 Kibyte	2 Kibyte
• Outputs, adjustable	1 Kibyte	2 Kibyte	2 Kibyte
• Inputs, default	512 byte	512 byte	512 byte
• Outputs, default	512 byte	512 byte	512 byte
• consistent data, max.	32 byte	32 byte	32 byte
Hardware configuration			
Number of DP masters			
• integrated	1	1	1
Time of day			
Runtime meter			
• Number	8	8	8
• Number/ Number range	0 to 7	0 to 7	0 to 7
S7 message functions			
Process diagnostic messages	Yes	Yes	Yes
Test commissioning functions			
Status/control			
• Status/control variable	Yes; Status blocks, single step, breakpoint	Yes; Status blocks, single step, breakpoint	Yes; Status blocks, single step, breakpoint
Forcing			
• Forcing	No	No	No
Diagnostic buffer			
• present	Yes	Yes	Yes
• Number of entries, max.	1 000; preset 120	1 000; preset 120	1 000; preset 120
- can be set	Yes	Yes	Yes

	6ES7 671-4EE00-0YA0	6ES7 671-5EF01-0YA0	6ES7 671-7EG01-0YA0
Product type designation	WinAC MP 177	WinAC MP 277	WinAC MP 377
Communication functions			
Number of logical connections (also in network), max.	8	16	32
PG/OP communication	Yes	Yes	Yes
Routing	Yes	Yes	Yes
Global data communication			
• supported	No	No	No
S7 basic communication			
• supported	No	No	No
S7 communication			
• supported	Yes; PUT/GET, BSEND/BRCV, USEND/URCV	Yes; PUT/GET, BSEND/BRCV, USEND/URCV	Yes; PUT/GET, BSEND/BRCV, USEND/URCV
• as server	Yes	Yes	Yes
• as client	Yes	Yes	Yes
• User data per job, max.	480 byte	480 byte	480 byte
Number of connections			
• overall	8; (max. 8 DP, rest PROFINET)	16; (max. 8 DP, rest PROFINET)	32; (max. 8 DP, rest PROFINET)
• usable for PG communication			
- reserved for PG communication	1	1	1
• usable for OP communication			
- reserved for OP communication	1	1	1
• usable for routing	6	14	30
1st interface			
DP master			
• Number of connections, max.	4	8	8
• Services			
- PG/OP communication	Yes	Yes	Yes
- Routing	Yes	Yes	Yes
- Global data communication	No	No	No
- S7 basic communication	No	No	No
- S7 communication	Yes	Yes	Yes
- Equidistance mode support	No	No	No
- SYNC/FREEZE	Yes	Yes	Yes
- Activation/deactivation of DP slaves	Yes	Yes	Yes
- DPV1	Yes	Yes	Yes
• Transmission speeds, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s

SIMATIC WinAC MP

Technical specifications (continued)

	6ES7 671-4EE00-0YA0	6ES7 671-5EF01-0YA0	6ES7 671-7EG01-0YA0
Product type designation	WinAC MP 177	WinAC MP 277	WinAC MP 377
DP master			
• Number of DP slaves, max.	32	32	32
• Address area			
- Inputs, max.	2 Kibyte	4 Kibyte	8 Kibyte
- Outputs, max.	2 Kibyte	4 Kibyte	8 Kibyte
CPU/ programming			
Configuration software			
• STEP 7	Yes; STEP7 V5.4 SP4 or higher	Yes; STEP7 V5.4 SP4 or higher	Yes; STEP7 V5.4 SP4 or higher
• WinCC flexible Compact	Yes; WinCC flexible 2008 SP1	No	No
• WinCC flexible Standard	Yes; WinCC flexible 2008 SP1	Yes; WinCC flexible 2008 SP1	Yes; WinCC flexible 2008 SP1
• WinCC flexible Advanced	Yes; WinCC flexible 2008 SP1	Yes; WinCC flexible 2008 SP1	Yes; WinCC flexible 2008 SP1
Programming language			
• LAD	Yes	Yes	Yes
• FBD	Yes	Yes	Yes
• STL	Yes	Yes	Yes
• SCL	Yes	Yes	Yes
• CFC	Yes	Yes	Yes
Software libraries			
• Process diagnostics	Yes; System error messages	Yes; System error messages, ProAgent (S7-Graph)	Yes; System error messages, ProAgent (S7-Graph)
Cycle time monitoring			
• can be set	Yes	Yes	Yes
• preset	6 000 ms	6 000 ms	6 000 ms
Operating systems			
Operating system			
• Windows CE	Yes; Version 5.0 or higher	Yes; Version 5.0 or higher	Yes; Version 5.0 or higher
Online languages			
Number	1; English	1; English	1; English

Ordering data

		Order No.
WinAC MP, version WinAC MP 177[2)] incl. a Single License for MP 177 on USB stick[1)] and electronic documentation		**6ES7 671-4EE00-0YA0**
WinAC MP, version WinAC MP 277[2)] incl. a Single License for MP 277 on USB stick[1)] and electronic documentation		**6ES7 671-5EF01-0YA0**
WinAC MP, version WinAC MP 377[2)] incl. a Single License for MP 377 on USB stick[1)] and electronic documentation		**6ES7 671-7EG01-0YA0**
Complete pre-assembled packages		
Package MP 177 6" Touch • MP 177 6" Touch • WinAC MP Version 177 • Electronic documentation • Single License for MP 177 on USB flash drive[1)] • Standard SD card 256 MB (empty)	E	**6AV6 652-2JC01-2AA0**
Package MP 277 8" Touch • MP 277 8" Touch • WinAC MP Version 277 • Electronic documentation • Single License for MP 277 on USB stick[1)] • Standard SD card 256 MB (empty)	E	**6AV6 652-3MC01-1AA0**
Package MP 277 8" Key • MP 277 8" Key • WinAC MP Version 277 • Electronic documentation • Single License for MP 277 on USB stick[1)] • Standard SD card 256 MB (empty)	E	**6AV6 652-3LC01-1AA0**
Package MP 277 10" Touch • MP 277 10" Touch • WinAC MP Version 277 • Electronic documentation • Single License for MP 277 on USB stick[1)] • Standard SD card 256 MB (empty)	E	**6AV6 652-3PC01-1AA0**
Package MP 277 10" Key • MP 277 10" Key • WinAC MP Version 277 • Electronic documentation • Single License for MP 277 on USB stick[1)] • Standard SD card 256 MB (empty)	E	**6AV6 652-3NC01-1AA0**

1) Can only be used for license handling
2) UCL version on request
E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

Ordering data		Order No.
Package MP 377 12" Touch • MP 377 12" Touch • WinAC MP Version 377 • Electronic documentation • Single License for MP 377 on USB stick[1] • Standard SD card 256 MB (empty)	E	**6AV6 652-4FC01-2AA0**
Package MP 377 12" Key • MP 377 12" Key • WinAC MP Version 377 • Electronic documentation • Single License for MP 377 on USB stick[1] • Standard SD card 256 MB (empty)	E	**6AV6 652-4EC01-2AA0**
Package MP 377 15" Touch • MP 377 15" Touch • WinAC MP Version 377 • Electronic documentation • Single License for MP 377 on USB stick[1] • Standard SD card 256 MB (empty)	E	**6AV6 652-4GC01-2AA0**
Package MP 377 19" Touch • MP 377 19" Touch • WinAC MP Version 377 • Electronic documentation • Single License for MP 377 on USB stick[1] • Standard SD card 256 MB (empty)	E	**6AV6 652-4HC01-2AA0**
Starter packages		
Starter package 613 WinAC MP • SIMATIC MP 177 6" Touch with installation accessories, mounting seal, power supply connector • SIMATIC WinAC MP incl. Single License on USB flash drive and electronic documentation • SD card 256 KB (empty) • ET 200M incl. • 16 DI, 16 DO, 8 AI, 2 AO • FM 350-2 8-channel counter • Front connector, bus connector, and mounting rail	E	**6AV6 652-2JD01-2AA0**
Starter package 635T WinAC MP • SIMATIC MP 177 6" Touch with installation accessories, mounting seal, power supply connector • SIMATIC WinAC MP incl. Single License on USB flash drive and electronic documentation • SD card 256 KB (empty) • ET 200M incl. 32 DI, 16 DO, 8 AI, 2 AO • FM 350-2 8-channel counter • Front connector, bus connector, and mounting rail	E	**6AV6 652-2JD01-2AA1**
Starter package 635K WinAC MP • SIMATIC MP 277 8" Key with installation accessories, mounting seal, power supply connector • SIMATIC WinAC MP incl. Single License on USB flash drive and electronic documentation • SD card 256 KB (empty) • ET 200M incl. 32 DI, 16 DO, 8 AI, 2 AO • FM 350-2 8-channel counter • Front connector, bus connector, and mounting rail	E	**6AV6 652-3LD01-1AA1**
Starter package 636K WinAC MP • SIMATIC MP 277 8" Key with installation accessories, mounting seal, power supply connector • SIMATIC WinAC MP incl. Single License on USB flash drive and electronic documentation • SD card 256 KB (empty) • ET 200M incl. 32 DI, 16 DO, 8 AI, 2 AO • Front connector, bus connector, and mounting rail	E	**6AV6 652-3LD01-1AA0**
Starter package 636T WinAC MP • SIMATIC MP 277 10" Touch with installation accessories, mounting seal, power supply connector • SIMATIC WinAC MP incl. Single License on USB flash drive and electronic documentation • SD card 256 KB (empty) • ET 200M incl. 32 DI, 16 DO, 8 AI, 2 AO • Front connector, bus connector, and mounting rail	E	**6AV6 652-3PD01-1AA0**

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

[1] Can only be used for license handling

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SIMATIC WinAC RTX

Overview

- SIMATIC WINAC RTX:
  Optimized for applications that require a high degree of flexibility and integration capability.
- The software solution for tasks that require hard deterministic behavior and high performance.
- With real-time expansion for assuring deterministic behavior for the control section.

New with WinAC RTX 2009:

- Hardware support for the new Embedded PC platforms SIMATIC IPC427C and SIMATIC HMI IPC477C for PROFINET and retentivity

Technical specifications

	6ES7 671-0RC07-0YA0
Product type designation	SIMATIC WinAC RTX 2009
Product version	
Hardware product version	-
Firmware version	4.5
associated programming package	STEP7 V5.4 SP4 or higher + HW update / iMap V3.0 SP1
Memory	
Work memory	
• integrated (for program)	4 Mbyte; Adjustable; depends on Non Paged Memory Pool
• integrated (for data)	4 Mbyte; Adjustable; depends on Non Paged Memory Pool
Load memory	
• integrated RAM, max.	Adjustable; depends on Non Paged Memory Pool
CPU/ blocks	
DB	
• Number, max.	65 535; Limited only by RAM set for data
• Size, max.	64 Kibyte
FB	
• Number, max.	65 536; Limited only by RAM set for code
• Size, max.	64 Kibyte
FC	
• Number, max.	65 536; Limited only by RAM set for code
• Size, max.	64 Kibyte
OB	
• Number, max.	Limited only by RAM set for code
• Size, max.	64 Kibyte
• Number of free cycle OBs	1; OB 1
• Number of time alarm OBs	1; OB 10
• Number of delay alarm OBs	1; OB 20
• Number of watchdog interrupts	9; OB 30-38
• Number of process alarm OBs	1; OB 40
• Number of ODK OBs	3; OB 52-54
• Number of DPV1 alarm OBs	3; OB 55-57
• Number of isochronous mode OBs	2; OB 61-62
• Number of startup OBs	2; OB 100, 102
• Number of asynchronous error OBs	7; OB 80, 82-85, 86, 88
• Number of synchronous error OBs	2; OB 121, 122
Nesting depth	
• per priority class	24
• additional within an error OB	24
CPU/ processing times	
for bit operations, min.	0.004 µs; typ.
for fixed point arithmetic, min.	0.003 µs; typ.
for floating point arithmetic, min.	0.004 µs; typ.
Reference platform	Pentium IV, 2.4 GHz
Times/counters and their retentivity	
S7 counter	
• Number	2 048
• Retentivity	
- can be set	Yes
- lower limit	0
- upper limit	2 047
- preset	8
• Counting range	
- can be set	Yes
- lower limit	0
- upper limit	999
IEC counter	
• present	Yes
• Type	SFB
S7 times	
• Number	2 048
• Retentivity	
- can be set	Yes
- lower limit	0
- upper limit	2 047
- preset	0
• Time range	
- lower limit	10 ms
- upper limit	9 990 s

Technical specifications (continued)

	6ES7 671-0RC07-0YA0
Product type designation	SIMATIC WinAC RTX 2009
IEC timer	
• present	Yes
• Type	SFB
Data areas and their retentivity	
Retentivity without UPS and PS Extension Board	128 KB with SIMATIC IPC427C and HMI IPC477C; further SIMATIC PCs on request
Retentivity with UPS	all data
Flag	
• Number, max.	16 Kibyte
• of which retentive	MB 0 to MB 16383
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8
Local data	
• adjustable, max.	32 Kibyte
• preset	16 Kibyte
• per priority class, max.	32 Kibyte
Address area	
I/O address area	
• overall	16 Kibyte
• Outputs	16 Kibyte
• of which, distributed	
- DP interface, inputs	16 Kibyte
- DP interface, outputs	16 Kibyte
- PN interface, inputs	16 Kibyte
- PN interface, outputs	16 Kibyte
Process image	
• Inputs, adjustable	8 Kibyte
• Outputs, adjustable	8 Kibyte
• Inputs, default	512 byte
• Outputs, default	512 byte
Subprocess images	
• Number of subprocess images, max.	15
Digital channels	
• Inputs	128 000
• Outputs	128 000
Analog channels	
• Inputs	8 000
• Outputs	8 000
Hardware configuration	
Submodules	
• Number of submodules, max	4
• of which PROFIBUS, max.	4; Supported interfaces: see 1st and 2nd interface
• of which Industrial Ethernet, max.	1; Supported interfaces: see 3rd and 4th interface
Number of operable FMs and CPs (recommended)	
• FM	FM distributed: FM 350-1 / 350-2, FM 351, FM 352, FM 353, FM 355 / 355-2
• CP, point-to-point	2; CP 340, CP 341 distributed

	6ES7 671-0RC07-0YA0
Product type designation	SIMATIC WinAC RTX 2009
Number of operable FMs and CPs (recommended)	
• CP, LAN	Over PC CP
Time of day	
Clock	
• Hardware clock (real-time clock)	Yes
• battery-backed and synchroniz-able	Yes
Runtime meter	
• Number	8
Clock synchronization	
• supported	Yes
• to PC-CP, slave	Yes
• on Ethernet via NTP	Yes
S7 message functions	
Number of login stations for message functions, max.	62
SCAN procedure	No
Process diagnostic messages	Yes; ALARM_S, ALARM_SQ, ALARM_D, ALARM_DQ
simultaneously active Alarm-S blocks, max.	20; of a total of 20 for all SFCs
Alarm 8-blocks	Yes
• Number of instances for alarm 8 and S7 communication blocks, max.	600
Process control messages	No
Test commissioning functions	
Status/control	
• Status/control variable	Yes
Forcing	
• Forcing	No
Status block	Yes
Single step	Yes
Diagnostic buffer	
• present	Yes
• Number of entries, max. preset	3 200 120
Communication functions	
PG/OP communication	Yes
Data record routing	No
Global data communication	
• supported	No
S7 basic communication	
• supported	No
S7 communication	
• supported	Yes
• as server	Yes
• as client	Yes
• User data per job, max.	64 Kibyte; Depends on which block is used: BSEND/USEND or PUT/GET

Technical specifications (continued)

	6ES7 671-0RC07-0YA0
Product type designation	SIMATIC WinAC RTX 2009
Web server	
• Web server	No
Open IE communication	
• TCP/IP	Yes
- Number of connections, max.	Dependent on interface
- Data length, max.	65 534 byte
• ISO-on-TCP (RFC1006)	No
• UDP	Yes
- Number of connections, max.	Dependent on interface
- Data length, max.	1 472 byte
Number of connections	
• overall	64
• usable for PG communication	
- reserved for PG communication	1
• usable for OP communication	
- reserved for OP communication	1
PROFINET CBA (at set setpoint communication load)	
• Setpoint for the CPU communication load	20 %
• Number of remote interconnection partners	64
• Number of functions, master/slave	30
• Total of all Master/Slave connections	1 000
• Data length of all incoming connections master/slave, max.	6 800 byte
• Data length of all outgoing connections master/slave, max.	6 800 byte
• Number of device-internal and PROFIBUS interconnections	500
• Data length of device-internal and PROFIBUS interconnections, max.	4 000 byte
• Data length per connection, max.	1 400 byte
• Remote interconnections with acyclic transmission	
- Sampling frequency: Sampling time, min.	500 ms
- Number of incoming interconnections	100
- Number of outgoing interconnections	100
- Data length of all incoming interconnections, max.	2 000 byte
- Data length of all outgoing interconnections, max.	2 000 byte
- Data length per connection, max.	1 400 byte
• Remote interconnections with cyclic transmission	
- Transmission frequency: Transmission interval, min.	10 ms
- Number of incoming interconnections	200
- Number of outgoing interconnections	200

	6ES7 671-0RC07-0YA0
Product type designation	SIMATIC WinAC RTX 2009
PROFINET CBA (at set setpoint communication load)	
• Remote interconnections with cyclic transmission	
- Data length of all incoming interconnections, max.	4 800 byte
- Data length of all outgoing interconnections, max.	4 800 byte
- Data length per connection, max.	250 byte
• HMI variables via PROFINET (acyclic)	
- Number of stations that can log on for HMI variables (PN OPC/iMap)	3
- HMI variable updating	500 ms
- Number of HMI variables	200
- Data length of all HMI variables, max.	2 000 byte
• PROFIBUS proxy functionality	
- supported	Yes
- Number of linked PROFIBUS devices	16
- Data length per connection, max.	240 byte; Slave-dependent
1st interface	
Type of interface	CP 5611-A2, CP 5621, integrated PB interface of the SIMATIC PC
Max. no. of simultaneously operable CPs	1
Physics	RS 485 / PROFIBUS
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	does not exist
Functionality	
• MPI	No
• DP master	Yes
• DP slave	No
DP master	
• Number of connections, max.	8
• Services	
- PG/OP communication	Yes
- Routing	Yes
- Global data communication	No
- S7 basic communication	No
- S7 communication	Yes
- Equidistance mode support	Yes; Only in conjunction with isochronous mode
- Isochronous mode	Yes
- SYNC/FREEZE	Yes
- Activation/deactivation of DP slaves	Yes
- Direct data exchange (slave-to-slave communication)	Yes
- DPV0	Yes
- DPV1	Yes
• Transmission speeds, max.	12 Mbit/s
• Number of DP slaves, max.	64

Technical specifications (continued)

	6ES7 671-0RC07-0YA0
Product type designation	SIMATIC WinAC RTX 2009
DP master	
• Address area	
- Inputs, max.	16 Kibyte
- Outputs, max.	16 Kibyte
• User data per DP slave	
- Inputs, max.	244 byte
- Outputs, max.	244 byte
2nd interface	
Type of interface	CP 5613, CP 5613-A2, CP 5603
Max. no. of simultaneously operable CPs	4
Physics	RS 485 / PROFIBUS
Isolated	Yes
Functionality	
• MPI	No
• DP master	Yes
• DP slave	No
DP master	
• Number of connections, max.	50
• Services	
- PG/OP communication	Yes
- Routing	Yes
- Global data communication	No
- S7 basic communication	No
- S7 communication	Yes
- Equidistance mode support	Yes; Only in conjunction with isochronous mode
- Isochronous mode	Yes
- SYNC/FREEZE	Yes
- Activation/deactivation of DP slaves	Yes
- Direct data exchange (slave-to-slave communication)	Yes
- DPV0	Yes
- DPV1	Yes
• Transmission speeds, max.	12 Mbit/s
• Number of DP slaves, max.	125
• Address area	
- Inputs, max.	16 Kibyte
- Outputs, max.	16 Kibyte
• User data per DP slave	
- Inputs, max.	244 byte
- Outputs, max.	244 byte
3rd interface	
Type of interface	PROFINET
Max. no. of simultaneously operable CPs	1; Intel Pro/1000 (Intel 82571EB, 82573L, 82574L, 82541PI; non shared IRQ required); integrated IE interface SIMATIC PC 4x7B, 6x7B, 8x7B and IPC4x7C
Physics	Ethernet
Isolated	Yes
automatic detection of transmission speed	Yes; 10/100 Mbit/s

	6ES7 671-0RC07-0YA0
Product type designation	SIMATIC WinAC RTX 2009
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	No
• PROFINET CBA	Yes
• Open IE communication	Yes
• Web server	No
PROFINET IO Controller	
• Services	
- PG/OP communication	Yes
- Routing	Yes; S7 routing
- S7 communication	Yes
- Open IE communication	Yes
• Transmission speeds, min.	100 Mbit/s
• Transmission rate, max.	100 Mbit/s
• Total number of connectable IO Devices, max.	128
• IRT, supported	No
• Prioritized startup supported	Yes
- Number of IO Devices, max.	32
• Activation/deactivation of IO Devices	Yes
- Number of IO Devices that can be simultaneously activated/ deactivated, max.	8
• IO Devices changing during operation (partner ports), supported	Yes
• Device replacement without swap medium	Yes
• Send clock times	1 ms
• Updating time	1 - 512 ms (minimum value depends on communication share set for PROFINET I/O, on the number of I/O devices, and on the volume of configured user data)
• Address area	
- Inputs, max.	16 Kibyte
- Outputs, max.	16 Kibyte
• User data per address area, max.	2 kbyte
- User data consistency, max.	256 byte
SIMATIC communication	
• PG/OP communication	Yes
• S7 routing	Yes
• S7 communication	Yes
• Number of connections, max.	16
Open IE communication	
• Open IE communication, supported	Yes
• Number of connections, max.	32
• Local port numbers used at the system end	0, 20, 21, 23, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535

Technical specifications (continued)

	6ES7 671-0RC07-0YA0
Product type designation	SIMATIC WinAC RTX 2009
4th interface	
Type of interface	PROFINET
Max. no. of simultaneously operable CPs	CP 1616 (HW release 8 or above), CP 1604 (HW release 7 or higher), integrated PN interface of SIMATIC PC and S7-mEC
Physics	Ethernet
Isolated	Yes
automatic detection of transmission speed	Yes; 10/100 Mbit/s
Functionality	
• PROFINET IO Controller	Yes
• PROFINET CBA	Yes
• Open IE communication	Yes
• Web server	No
PROFINET IO Controller	
• Services	
- PG/OP communication	Yes
- Routing	Yes; S7 routing
- S7 communication	Yes
- Open IE communication	Yes
• Transmission rate, min.	100 Mbit/s
• Transmission rate, max.	100 Mbit/s
• Total number of connectable IO Devices, max.	256
• Number of IO Devices with IRT and the option "high flexibility", max.	64
- of which in line, max.	32
• IRT, supported	Yes
• Prioritized startup supported	Yes
- Number of IO Devices, max.	32
• Activation/deactivation of IO Devices	Yes
- Number of IO Devices that can be simultaneously activated/ deactivated, max.	8
• IO Devices changing during operation (partner ports), supported	Yes
• Device replacement without swap medium	Yes
• Send clock times	250 µs, 500 µs, 1 ms
• Updating time	0.25...512 depending on the send cycle
• Address area	
- Inputs, max.	16 Kibyte
- Outputs, max.	16 Kibyte
• User data per address area, max.	2 kbyte
- User data consistency, max.	256 byte

	6ES7 671-0RC07-0YA0
Product type designation	SIMATIC WinAC RTX 2009
SIMATIC communication	
• PG/OP communication	Yes
• S7 routing	Yes
• S7 communication	Yes
• Number of connections, max.	32
Open IE communication	
• Open IE communication, supported	Yes
• Number of connections, max.	32
• Local port numbers used at the system end	0, 20, 21, 25, 80, 102, 135, 161, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535
Isochronous mode	
Isochronous mode	Yes; only PROFIBUS
Number of DP masters with isochronous mode	2
User data per isochronous slave, max.	128 byte
equidistance	Yes
shortest clock pulse	2.2 ms; 2.2 ms without partial process image; 2.2 ms with partial process image
CPU/ programming	
Programming language	
• STEP 7	Yes; V5.4, SP4 or higher, Engineering Tools (optional)
• LAD	Yes
• FBD	Yes
• STL	Yes
• SCL	Yes
• CFC	Yes
• GRAPH	Yes
• HiGraph®	Yes
Nesting levels	8
User program protection/ password protection	Yes
Software libraries	
• Easy Motion Control	Yes
• Software redundancy	Yes; from V1.2, operation of WinAC RTX with WinAC RTX only
Open Development interfaces	
• CCX (Custom Code Extension)	Yes; WinAC ODK V4.2 or higher
• SMX (Shared Memory Extension)	Yes; WinAC ODK V4.2 or higher
- Inputs	4 Kibyte
- Outputs	4 Kibyte
• CMI (Controller Management Interface)	Yes; WinAC ODK V4.2 or higher

Technical specifications (continued)

	6ES7 671-0RC07-0YA0
Product type designation	SIMATIC WinAC RTX 2009
Number of simultaneously active SFCs	
• DPSYC_FR	20; of a total of 20 for all SFCs
• D_ACT_DP	20; of a total of 20 for all SFCs
• RD_REC	20; of a total of 20 for all SFCs
• WR_REC	20; of a total of 20 for all SFCs
• WR_PARM	20; of a total of 20 for all SFCs
• PARM_MOD	20; of a total of 20 for all SFCs
• WR_DPARM	20; of a total of 20 for all SFCs
• DPNRM_DG	20; of a total of 20 for all SFCs
• RDSYSST	20; of a total of 20 for all SFCs
Number of simultaneously active SFBs	
• RD_REC	20; of a total of 20 for all SFBs
• WR_REC	20; of a total of 20 for all SFBs
Hardware requirements	
Hardware required	PC with color monitor, keyboard, mouse or pointing device for Windows
Required memory on hard disk, min.	100 Mbyte
Main memory, min.	1 Gbyte
Processor	Intel Celeron M, 900 MHz or compatible
• Multi-processor system	Yes; Dual Pentium, CoreDuo, Core2Duo or compatible
• Hyper-threading	Yes
Operating systems	
Operating system	
• Windows NT 4.0	No
• Windows 2000	No
• Windows XP	Yes; Professional, SP2 and SP3
• Windows XP embedded	Yes; With the delivery image of the SIMATIC PC
- supported HAL types under Windows XP	PC with single core processor without hyperthreading: ACPI-PC, ACPI uniprocessor PC; PC with multicore processors or hyper-threading: ACPI multiprocessor PC, MPS multiprocessor PC;
• Windows Vista	No
Dimensions and weight	
Weight	
• Weight, approx.	100 g; with packaging

Ordering data

		Order No.
SIMATIC WinAC RTX 2009 Software PLC for PC-based automation tasks with stringent deterministic requirements; PROFIBUS and PROFINET; CD-ROM with electronic documentation d, e, f; single license, executable under Windows XP SP2	A	**6ES7 671-0RC07-0YA0**
SIMATIC WinAC RTX 2009 Upgrade For upgrading from Basis/RTX V3.x, V4.0, V4.1 2005 and 2008; single license, executable under Windows XP SP2	A	**6ES7 671-0RC07-0YE0**
SIMATIC WinAC NV128 PC plug-in card with non-volatile memory for the storage of up to 128 KB of retentive data in the event of voltage failure	C	**6ES7 671-0AG00-1YA7**
CP 5611 A2 communications processor PCI card (32 bit) for connection of a programming device or PC to PROFIBUS		**6GK1 561-1AA01**
CP 5621 communications processor		
• PCI Express x1 card (32 bit) for connection of a programming device or PC to PROFIBUS	E	**6GK1 562-1AA00**
• PCI Express x1 card (32 bit) CP 5621 and MPI cable, 5 m	E	**6GK1 562-1AM00**
CP 5603 Microbox Package Comprising CP 5603 module and Microbox expansion rack	C	**6GK1 560-3AU00**
CP 5613 A2 communications processor PCI card (32 bit; 3.3 V/5 V) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master, incl. PG and FDL protocol; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, Class A, for 32 bit Windows 2000 Professional/ Server, Windows XP Professional, German/English		**6GK1 561-3AA01**
CP 1616 communications processor PCI Card (32 bit; 3.3/5 V universal key) with ASIC ERTEC 400 for connecting PCs to PROFINET IO with 4-port real-time switch (RJ45); incl. IO-Base software for PROFINET IO controller (RT operation) and NCM PC; single license for one installation, runtime software, software and electronic manual on CD-ROM, Class A, for 32 bit Windows XP Professional; German/English		**6GK1 161-6AA01**
CP 1604 Microbox Package Package for implementing the CP 1604 in the SIMATIC Microbox PC; comprising the CP 1604, connection board, power supply and expansion rack for Microbox PC; for use with Development Kit DK-16xx PN IO; NCM PC		**6GK1 160-4AU00**

A: Subject to export regulations: AL: N and ECCN: EAR99S
C: Subject to export regulations: AL: N and ECCN: EAR99H
E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

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SIMATIC WinAC RTX F

Overview

- SIMATIC WINAC RTX F:
  Optimized for applications that demand a high degree of flexibility and integration capability and that must also satisfy safety requirements up to SIL 3 (IEC 61508).
- The software solution for tasks that require hard deterministic behavior and high performance.
- With real-time expansion for assuring deterministic behavior for the control section.
- Distributed I/O can be connected over PROFIBUS and/or PROFINET, also safety-related over PROFIsafe.

Technical specifications

	6ES7 671-1RC07-0YA0
Product type designation	SIMATIC WinAC RTX F 2009
Product version	
Hardware product version	-
Firmware version	4.5
associated programming package	STEP7 V5.4 SP5 or higher + HSP135 as basic requirement for the HSP178 for WinAC RTX F 2009 on Embedded Controller + HSP179 for WinAC RTX F 2009 on PC station / iMap V3.0 SP1 / option package S7 Distributed Safety V5.4 SP5 or higher
Memory	
Work memory	
• integrated (for program)	4 Mbyte; Adjustable; depends on Non Paged Memory Pool
• integrated (for data)	4 Mbyte; Adjustable; depends on Non Paged Memory Pool
Load memory	
• integrated RAM, max.	8 Mbyte; Adjustable; depends on Non Paged Memory Pool
CPU/ blocks	
DB	
• Number, max.	65 535; Limited only by RAM set for data
FB	
• Number, max.	65 536; Limited only by RAM set for code
FC	
• Number, max.	65 536; Limited only by RAM set for code
OB	
• Number, max.	Limited only by RAM for code
• Number of free cycle OBs	1; OB 1
• Number of time alarm OBs	1; OB 10
• Number of delay alarm OBs	1; OB 20
• Number of watchdog interrupts	9; OB 30-38
• Number of process alarm OBs	1; OB 40

	6ES7 671-1RC07-0YA0
Product type designation	SIMATIC WinAC RTX F 2009
OB	
• Number of ODK OBs	3; OB 52-54
• Number of DPV1 alarm OBs	3; OB 55-57
• Number of isochronous mode OBs	2; OB 61-62
• Number of startup OBs	2; OB 100, 102
• Number of asynchronous error OBs	7; OB 80, 82-85, 86, 88
• Number of synchronous error OBs	2; OB 121, 122
Nesting depth	
• per priority class	24
• additional within an error OB	24
CPU/ processing times	
for bit operations, min.	0.004 µs; typ.
for fixed point arithmetic, min.	0.003 µs; typ.
for floating point arithmetic, min.	0.004 µs; typ.
Reference platform	Pentium IV, 2.4 GHz
Times/counters and their retentivity	
S7 counter	
• Number	2 048
• Retentivity	
- can be set	Yes
- lower limit	0
- upper limit	2047
- preset	8
• Counting range	
- can be set	Yes
- lower limit	0
- upper limit	999
IEC counter	
• present	Yes
• Type	SFB
S7 times	
• Number	2 048

Technical specifications (continued)

	6ES7 671-1RC07-0YA0
Product type designation	SIMATIC WinAC RTX F 2009
S7 times	
• Retentivity	
- can be set	Yes
- lower limit	0
- upper limit	2 047
- preset	0
• Time range	
- lower limit	10 ms
- upper limit	9 990 s
IEC timer	
• present	Yes
• Type	SFB
Data areas and their retentivity	
Retentivity without UPS and PS Extension Board	128 KB with SIMATIC IPC427C and HMI IPC477C; further SIMATIC PCs on request
Retentivity with UPS	all data
Flag	
• Number, max.	16 Kibyte
• of which retentive	MB 0 to MB 16383
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8
Local data	
• adjustable, max.	32 Kibyte
• preset	16 Kibyte
• per priority class, max.	32 Kibyte
Address area	
I/O address area	
• overall	16 Kibyte
• Outputs	16 Kibyte
• of which, distributed	
- DP interface, inputs	16 Kibyte
- DP interface, outputs	16 Kibyte
- PN interface, inputs	16 Kibyte
- PN interface, outputs	16 Kibyte
Process image	
• Inputs, adjustable	8 Kibyte
• Outputs, adjustable	8 Kibyte
• Inputs, default	512 byte
• Outputs, default	512 byte
Subprocess images	
• Number of subprocess images, max.	15
Digital channels	
• Inputs	128 000
• Outputs	128 000
Analog channels	
• Inputs	8 000
• Outputs	8 000
Hardware configuration	
Submodules	
• Number of submodules, max	4

	6ES7 671-1RC07-0YA0
Product type designation	SIMATIC WinAC RTX F 2009
Submodules	
• of which PROFIBUS, max.	4; Supported interfaces: see 1st and 2nd interface
• of which Industrial Ethernet, max.	1; Supported interfaces: see 3rd and 4th interface
Number of operable FMs and CPs (recommended)	
• FM	4; FM distributed: FM 350-1/350-2, FM 351, FM 352, FM 353, FM 355/355-2
• CP, point-to-point	2; CP 340, CP 341 distributed
• CP, LAN	Over PC CP
Time of day	
Clock	
• Hardware clock (real-time clock)	Yes
• battery-backed and synchroniz-able	Yes
Runtime meter	
• Number	8
Clock synchronization	
• supported	Yes
• to PC-CP, slave	Yes
• on Ethernet via NTP	Yes
S7 message functions	
Number of login stations for message functions, max.	62
SCAN procedure	No
Process diagnostic messages	Yes; ALARM_S, ALARM_SQ, ALARM_D, ALARM_DQ
simultaneously active Alarm-S blocks, max.	20; of a total of 20 for all SFCs
Alarm 8-blocks	Yes
• Number of instances for alarm 8 and S7 communication blocks, max.	600
Process control messages	No
Test commissioning functions	
Status/control	
• Status/control variable	Yes
Forcing	
• Forcing	No
Status block	Yes
Single step	Yes
Diagnostic buffer	
• present	Yes
• Number of entries, max.	3 200
- preset	120
Communication functions	
PG/OP communication	Yes
Data record routing	No
Global data communication	
• supported	No
S7 basic communication	
• supported	No

Technical specifications (continued)

	6ES7 671-1RC07-0YA0
Product type designation	SIMATIC WinAC RTX F 2009
S7 communication	
• supported	Yes
• as server	Yes
• as client	Yes
• User data per job, max.	64 Kibyte; Depends on which block is used: BSEND/USEND or PUT/GET
Web server	
• Web server	No
Open IE communication	
• TCP/IP	Yes
- Number of connections, max.	Dependent on interface
- Data length, max.	64 KB - 2 bytes = 65534 bytes
• ISO-on-TCP (RFC1006)	No
• UDP	Yes
- Number of connections, max.	Dependent on interface
- Data length, max.	1 472 byte
Number of connections	
• overall	64
• usable for PG communication	
- reserved for PG communication	1
• usable for OP communication	
- reserved for OP communication	1
PROFINET CBA (at set setpoint communication load)	
• Setpoint for the CPU communication load	20 %
• Number of remote interconnection partners	64
• Number of functions, master/slave	30
• Total of all Master/Slave connections	1 000
• Data length of all incoming connections master/slave, max.	6 800 byte
• Data length of all outgoing connections master/slave, max.	6 800 byte
• Number of device-internal and PROFIBUS interconnections	500
• Data length of device-internal and PROFIBUS interconnections, max.	4 000 byte
• Data length per connection, max.	1 400 byte
• Remote interconnections with acyclic transmission	
- Sampling frequency: Sampling time, min.	500 ms
- Number of incoming interconnections	100
- Number of outgoing interconnections	100
- Data length of all incoming interconnections, max.	2 000 byte
- Data length of all outgoing interconnections, max.	2 000 byte
- Data length per connection, max.	1 400 byte

	6ES7 671-1RC07-0YA0
Product type designation	SIMATIC WinAC RTX F 2009
• Remote interconnections with cyclic transmission	
- Transmission frequency: Transmission interval, min.	10 ms
- Number of incoming interconnections	200
- Number of outgoing interconnections	200
- Data length of all incoming interconnections, max.	4 800 byte
- Data length of all outgoing interconnections, max.	4 800 byte
- Data length per connection, max.	250 byte
• HMI variables via PROFINET (acyclic)	
- Number of stations that can log on for HMI variables (PN OPC/iMap)	3
- HMI variable updating	500 ms
- Number of HMI variables	200
- Data length of all HMI variables, max.	2 000 byte
• PROFIBUS proxy functionality	
- supported	Yes
- Number of linked PROFIBUS devices	16
- Data length per connection, max.	240 byte; Slave-dependent
1st interface	
Type of interface	CP 5611-A2, CP 5621, integrated PB interface of the SIMATIC PC
Max. no. of simultaneously operable CPs	1
Physics	RS 485 / PROFIBUS
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	does not exist
Functionality	
• MPI	No
• DP master	Yes
• DP slave	No
DP master	
• Number of connections, max.	8
• Services	
- PG/OP communication	Yes
- Routing	Yes
- Global data communication	No
- S7 basic communication	No
- S7 communication	Yes
- Equidistance mode support	Yes; Only in conjunction with isochronous mode
- Isochronous mode	Yes
- SYNC/FREEZE	Yes
- Activation/deactivation of DP slaves	Yes
- Direct data exchange (slave-to-slave communication)	Yes

Technical specifications (continued)

	6ES7 671-1RC07-0YA0
Product type designation	SIMATIC WinAC RTX F 2009
DP master	
• Services	
- DPV0	Yes
- DPV1	Yes
• Transmission speeds, max.	12 Mbit/s
• Number of DP slaves, max.	64
• Address area	
- Inputs, max.	16 Kibyte
- Outputs, max.	16 Kibyte
• User data per DP slave	
- Inputs, max.	244 byte
- Outputs, max.	244 byte
2nd interface	
Type of interface	CP 5613, CP 5613-A2, CP 5603
Max. no. of simultaneously operable CPs	4
Physics	RS 485 / PROFIBUS
Isolated	Yes
Functionality	
• MPI	No
• DP master	Yes
• DP slave	No
DP master	
• Number of connections, max.	50
• Services	
- PG/OP communication	Yes
- Routing	Yes
- Global data communication	No
- S7 basic communication	No
- S7 communication	Yes
- Equidistance mode support	Yes; Only in conjunction with isochronous mode
- Isochronous mode	Yes
- SYNC/FREEZE	Yes
- Activation/deactivation of DP slaves	Yes
- Direct data exchange (slave-to-slave communication)	Yes
- DPV0	Yes
- DPV1	Yes
• Transmission speeds, max.	12 Mbit/s
• Number of DP slaves, max.	125
• Address area	
- Inputs, max.	16 Kibyte
- Outputs, max.	16 Kibyte
• User data per DP slave	
- Inputs, max.	244 byte
- Outputs, max.	244 byte
3rd interface	
Type of interface	PROFINET
Max. no. of simultaneously operable CPs	1; Intel Pro/1000 (Intel 82571EB, 82573L, 82574L, 82541PI; non shared IRQ required); integrated IE interface SIMATIC PC 4x7B, 6x7B, 8x7B and IPC4x7C

	6ES7 671-1RC07-0YA0
Product type designation	SIMATIC WinAC RTX F 2009
Physics	Ethernet
Isolated	Yes
automatic detection of transmission speed	Yes; 10/100 Mbit/s
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	No
• PROFINET CBA	Yes
• Open IE communication	Yes
• Web server	No
PROFINET IO Controller	
• Services	
- PG/OP communication	Yes
- Routing	Yes; S7 routing
- S7 communication	Yes
- Open IE communication	Yes
• Transmission speeds, min.	100 Mbit/s
• Transmission rate, max.	100 Mbit/s
• Total number of connectable IO Devices, max.	128
• IRT, supported	No
• Prioritized startup supported	Yes
- Number of IO Devices, max.	32
• Activation/deactivation of IO Devices	Yes
- Number of IO Devices that can be simultaneously activated/ deactivated, max.	8
• IO Devices changing during operation (partner ports), supported	Yes
• Device replacement without swap medium	Yes
• Send clock times	1 ms
• Updating time	1 - 512 ms (minimum value depends on communication share set for PROFINET I/O, on the number of I/O devices, and on the volume of configured user data)
• Address area	
- Inputs, max.	16 Kibyte
- Outputs, max.	16 Kibyte
• User data per address area, max.	2 kbyte
- User data consistency, max.	256 byte
SIMATIC communication	
• PG/OP communication	Yes
• S7 routing	Yes
• S7 communication	Yes
• Number of connections, max.	16
Open IE communication	
• Open IE communication, supported	Yes
• Number of connections, max.	32

Technical specifications (continued)

	6ES7 671-1RC07-0YA0
Product type designation	SIMATIC WinAC RTX F 2009
Open IE communication	
• Local port numbers used at the system end	0, 20, 21, 23, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535
4th interface	
Type of interface	PROFINET
Max. no. of simultaneously operable CPs	CP 1616 (HW release 8 or above), CP 1604 (HW release 7 or higher), integrated PN interface of SIMATIC PC and S7-mEC
Physics	Ethernet
Isolated	Yes
automatic detection of transmission speed	Yes; 10/100 Mbit/s
Functionality	
• PROFINET IO Controller	Yes
• PROFINET CBA	Yes
• Open IE communication	Yes
• Web server	No
PROFINET IO Controller	
• Services	
- PG/OP communication	Yes
- Routing	Yes; S7 routing
- S7 communication	Yes
- Open IE communication	Yes
• Transmission rate, min.	100 Mbit/s
• Transmission rate, max.	100 Mbit/s
• Total number of connectable IO Devices, max.	256
• Number of IO Devices with IRT and the option "high flexibility", max.	64
- of which in line, max.	32
• IRT, supported	Yes
• Prioritized startup supported	Yes
- Number of IO Devices, max.	32
• Activation/deactivation of IO Devices	Yes
- Number of IO Devices that can be simultaneously activated/ deactivated, max.	8
• IO Devices changing during operation (partner ports), supported	Yes
• Device replacement without swap medium	Yes
• Send clock times	250 µs, 500 µs, 1 ms
• Updating time	0.25...512 depending on the send cycle
• Address area	
- Inputs, max.	16 byte; KB
- Outputs, max.	16 byte; KB
• User data per address area, max.	2 byte
- User data consistency, max.	256 byte; Byte

	6ES7 671-1RC07-0YA0
Product type designation	SIMATIC WinAC RTX F 2009
SIMATIC communication	
• PG/OP communication	Yes
• S7 routing	Yes
• S7 communication	Yes
• Number of connections, max.	32
Open IE communication	
• Open IE communication, supported	Yes
• Number of connections, max.	32
• Local port numbers used at the system end	0, 20, 21, 25, 80, 102, 135, 161, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535
Isochronous mode	
Isochronous mode	Yes; only PROFIBUS
Number of DP masters with isochronous mode	2
User data per isochronous slave, max.	128 byte
equidistance	Yes
shortest clock pulse	2.2 ms; 2.2 ms without partial process image; 2.2 ms with partial process image
CPU/ programming	
Programming language	
• STEP 7	Yes; V5.4 SP5 + HSP135 as basic requirement for the HSP178 for WinAC RTX F 2009 on Embedded Controller + HSP179 for WinAC RTX F 2009 on PC station, engineering tools (optional)
• LAD	Yes
• FBD	Yes
• STL	Yes
• SCL	Yes
• CFC	Yes
• GRAPH	Yes
• HiGraph®	Yes
Nesting levels	8
User program protection/ password protection	Yes
Software libraries	
• Easy Motion Control	Yes
• Software redundancy	Yes; from V1.2, operation of WinAC RTX with WinAC RTX only
Open Development interfaces	
• CCX (Custom Code Extension)	Yes; WinAC ODK V4.2 or higher
• SMX (Shared Memory Extension)	Yes; WinAC ODK V4.2 or higher
- Inputs	4 Kibyte
- Outputs	4 Kibyte
• CMI (Controller Management Interface)	Yes; WinAC ODK V4.2 or higher

Technical specifications (continued)

	6ES7 671-1RC07-0YA0
Product type designation	SIMATIC WinAC RTX F 2009
Number of simultaneously active SFCs	
• DPSYC_FR	20; of a total of 20 for all SFCs
• D_ACT_DP	20; of a total of 20 for all SFCs
• RD_REC	20; of a total of 20 for all SFCs
• WR_REC	20; of a total of 20 for all SFCs
• WR_PARM	20; of a total of 20 for all SFCs
• PARM_MOD	20; of a total of 20 for all SFCs
• WR_DPARM	20; of a total of 20 for all SFCs
• DPNRM_DG	20; of a total of 20 for all SFCs
• RDSYSST	20; of a total of 20 for all SFCs
Number of simultaneously active SFBs	
• RD_REC	20; of a total of 20 for all SFBs
• WR_REC	20; of a total of 20 for all SFBs
Hardware requirements	
Hardware required	PC with color monitor, keyboard, mouse or pointing device for Windows
Required memory on hard disk, min.	100 Mbyte
Main memory, min.	1 Gbyte
Processor	
• Multi-processor system	No
• Hyper-threading	Yes
Operating systems	
Operating system	
• Windows NT 4.0	No
• Windows 2000	No
• Windows XP	Yes; Professional, SP2 and SP3
• Windows XP embedded	Yes; With the delivery image of the SIMATIC PC
- supported HAL types under Windows XP	PC with single core processor without hyperthreading: ACPI-PC, ACPI uniprocessor PC; PC with multicore processors or hyperthreading: ACPI multiprocessor PC, MPS multiprocessor PC;
• Windows Vista	No
Dimensions and weight	
Weight	
• Weight, approx.	100 g; with packaging

Ordering data

		Order No.
SIMATIC WinAC RTX F 2009	A	**6ES7 671-1RC07-0YA0**
CP 5611 A2 communications processor PCI card (32 bit) for connection of a programming device or PC to PROFIBUS		**6GK1 561-1AA01**
CP 5621 communications processor		
PCI Express x1 card (32 bit) for connection of a programming device or PC to PROFIBUS	E	**6GK1 562-1AA00**
PCI Express x1 card (32 bit) CP 5621 and MPI cable, 5 m	E	**6GK1 562-1AM00**
CP 5603 Microbox Package Comprising CP 5603 module and Microbox expansion rack	C	**6GK1 560-3AU00**
CP 5613 A2 communications processor PCI card (32 bit; 3.3 V/5 V) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master, incl. PG and FDL protocol; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, Class A, for 32 bit Windows 2000 Professional/ Server, Windows XP Professional, German/English		**6GK1 561-3AA01**
CP 1616 communications processor PCI Card (32 bit; 3.3/5 V universal key) with ASIC ERTEC 400 for connecting PCs to PROFINET IO with 4-port real-time switch (RJ45); incl. IO-Base software for PROFINET IO controller (RT operation) and NCM PC; single license for one installation, runtime software, software and electronic manual on CD-ROM, Class A, for 32 bit Windows XP Professional; German/English		**6GK1 161-6AA01**
CP 1604 Microbox Package Package for implementing the CP 1604 in the SIMATIC Microbox PC; comprising the CP 1604, connection board, power supply and expansion rack for Microbox PC; for use with Development Kit DK-16xx PN IO; NCM PC		**6GK1 160-4AU00**

A: Subject to export regulations: AL: N and ECCN: EAR99S
C: Subject to export regulations: AL: N and ECCN: EAR99H
E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

9

SIMATIC WinAC ODK

Overview

- SIMATIC WinAC software PLCs support powerful interfaces which permit close meshing of the control task with PC-based applications.
- WinAC ODK allows the user to develop applications or to integrate already existing applications into the control task.

New with WinAC ODK V4.2:

- CCX interface:
  - New SFB 65003 for asynchronous execution of ODK applications
  - Expansion of data access functions
  - Creation of Windows DLL with C# and VB
- SMX interface:
  - Access to the Shared Memory interface under IntervalZero RTX
  - Expansion of data access functions
  - Creation of Windows applications with C# and VB
- Supports MS Visual Studio 2005 and 2008 (under Windows)

9

Technical specifications

	6ES7 806-1CC03-0BA0
Product type designation	SIMATIC WinAC ODK V4.2
Open Development interfaces	
• CCX (Custom Code Extension)	Yes; WinAC RTX 2008 (V4.4) or higher; programming languages: Microsoft Visual C++ V6.0 SP5 or higher, .net 2003, 2005, 2008; Microsoft Visual Basic 2005, 2008; Microsoft Visual C# 2005, 2008
• SMX (Shared Memory Extension)	Yes; WinAC RTX 2008 (V4.4) or higher; programming languages: Microsoft Visual C++ V6.0 SP5 or higher, .net 2003, 2005, 2008; Microsoft Visual Basic 2005, 2008; Microsoft Visual C# 2005, 2008
• CMI (Controller Management Interface)	Yes; WinAC RTX 2005 SP2 (V4.3) or higher; programming languages: Microsoft Visual C++ V6.0 SP5 or higher, .net 2003, 2005, 2008; Microsoft Visual Basic V6.0 SP5 or higher, .net 2003, 2005, 2008; Microsoft Visual C# .net 2003, 2005, 2008
Hardware requirements	
Hardware required	PC with color monitor, keyboard, mouse or pointing device for Windows
Required memory on hard disk, min.	30 Mbyte
Main memory, min.	512 Mbyte
Processor	Intel Pentium 800 MHz
Software requirement	
Software required	Microsoft Visual Developer Studio, for details see interfaces; CCX and SMX realtime applications in addition: IntervalZero SDK V8.1 (SDK version must match the WinAC RTX version)
Operating systems	
Operating system	
• Windows XP	Yes; Professional, SP2 and SP3
Dimensions and weight	
Weight	
• Weight, approx.	200 g

Ordering data

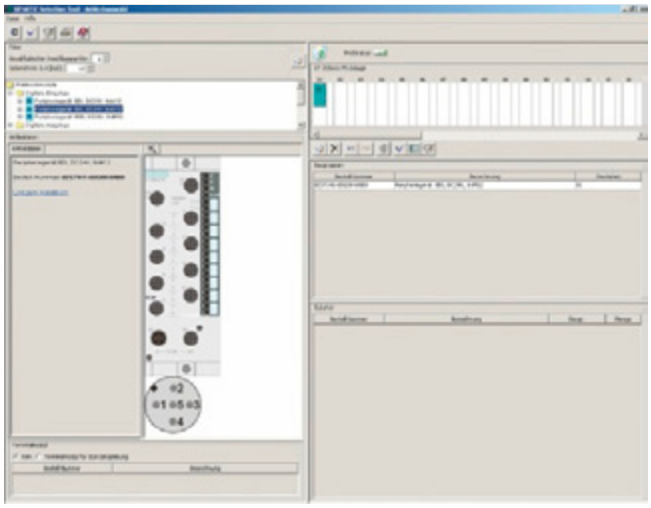
		Order No.
SIMATIC WinAC ODK V4.2		
for integration of C/C++ code in WinAC PLCs, executable under Windows XP SP2 or SP3; CD-ROM with electronic documentation		
Single license	A	**6ES7 806-1CC03-0BA0**

A: Subject to export regulations: AL: N and ECCN: EAR99S

Overview

SIMATIC ET 200 Configurator in the SIMATIC Selection Tool

Overview



Just a mouse click away from a tailor-made I/O station: With the SIMATIC ET 200 Configurator

The ET 200 Configurator of the SIMATIC Selection Tool provides first class support for configuring the ET 200 station. The software tool guides the user through the configuring process and automatically creates order lists complete with accessories. It also assists with compliance with limits such as load currents, slot rules and parameters.

The configuration created in the ET 200 Configurator can be imported into STEP 7 without any problems. This reduces the engineering costs and saves double inputs.

The software tool is structured in a clear, intuitive manner: Six configuring layers make the work easy and convenient.

- General notes: General station data as well as a graphical presentation of the configured station
- Module selection: Guided selection of modules, through module suggestions
- Limits: Station size, weight, number of modules, load voltage, parameters, etc. are all displayed
- Accessories: Guided selection of the necessary accessories (module-specific or station-wide)
- Potential distribution: Graphical presentation of the potentials within a station
- Parts list: Automatic generation of a clearly understandable parts list simplifies the ordering process

The ET 200 configurator is a component of the SIMATIC Selection Tool, which is available as a configurator in the Industry Mall:

www.siemens.com/industrymall

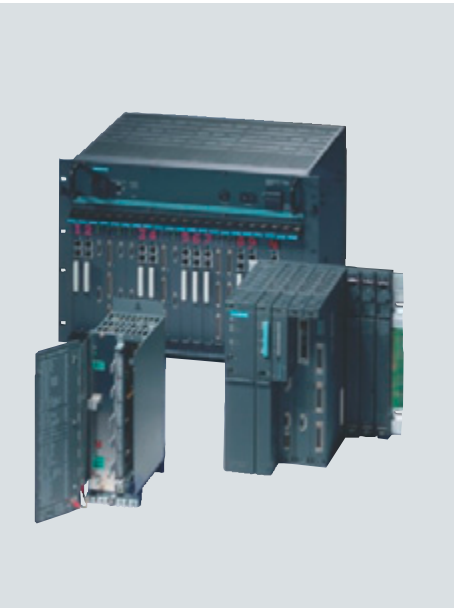
SIMATIC ET 200eco PN

Overview

- Compact block I/O for processing digital, analog and IO-Link signals for connecting to the PROFINET bus system
- Cabinet-free design with degree of protection IP65/66/67 with M12 connections
- Very rugged and resistant metal enclosure and encapsulated
- Compact module in two types of enclosures:
  - 30 mm x 200 mm x 37 mm (W x H x D, long and narrow enclosure), with 4 x M12 for digital signals
  - 60 mm x 175 mm x 37 mm (W x H x D, short and wide enclosure), with 8 x M12 for digital signals and IO-Link
  - 60 mm x 175 mm x 37 mm (W x H x D, short and wide enclosure) with 4 x M12 or 8 x M12 for analog signals
- PROFINET connection: 2 x M12 and automatic PROFINET address assignment
- Data transmission rate 100 Mbit/s
- LLDP proximity detection without PG and Fast Startup (boot up within approx 0.5 seconds)
- Supply and load voltage connection: 2 x M12
- Module variance:
  - 8 DI
  - 16 DI
  - 8 DO (2 A)
  - 8 DO (1.3 A)
  - 8 DO (0.5 A)
  - 16 DO (1.3 A)
  - 8 DI/DO (1.3 A),
  - 8 AI (U, I, TC, RTD)
  - 4 AO (U, I)
  - 4 IO-Link + 8 DI + 4 DO (1.3 A)
- Channel-specific diagnostics

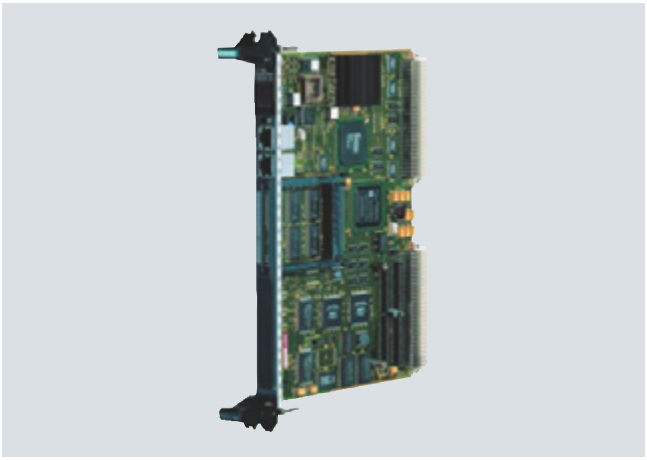
Further information:

- Catalogs IK PI, CA 01
- Internet:
  www.siemens.com/et200ecopn
  www.siemens.com/et200 (general)



CPU551 processor module

Overview



High-performance CPU module for open and closed-loop control and arithmetic tasks.

Technical specifications

	CPU551
Required space / width	1 slot
Weight	0.6 kg
Display	5x7 LED
Local service interface	Serial RS232 interface
Sampling intervals	from 100 µs
SDRAM	128 MB
Synchronous cache	8 MB
Clock frequency	500 MHz
CPU	64 Bit RISC CPU with floating point unit
SRAM	512 KB, battery buffered

	CPU551
Power supply	
Voltage / Power supply (at 250°C)	+3.3 V, 2.0 A typical +5 V, 1.5 A typical +12 V, 0.04 A typical –12 V, 0.04 A typical
Buffer battery	3.0 V, 3 µA typical
Power loss, typical	15 W
Digital inputs	
Number	8 inputs, 4 with alarm capability
Galvanic isolation	Only through optional interface modules
Input voltage	
• Rated voltage	24 V
• For 0-signal	-1 V ... +6 V
• For 1-signal	+13.5 V ... +33 V
Input power	
• At 0-signal	0 mA
• At 1-signal	3 mA
Delay time	100 µs
Real-time clock, resolution	0.1 ms

Ordering data

		Order No.
CPU551 processor module		**6DD1 600-0BA2**
Accessories		
MC500 memory module (4 MB)		**6DD1 610-0AH4**
MC510 memory module (8 MB)	C	**6DD1 610-0AH6**
MC521 memory module (2 MB)	C	**6DD1 610-0AH3**

C: Subject to export regulations: AL: N and ECCN: EAR99H

CP53M0 communications module

Overview

The CP53M0 communications module allows coupling of a SIMATIC TDC system to a SIMADYN D system for fast data exchange, e.g. when expanding existing SIMADYN D systems.

Technical specifications

CP53M0 communications module	
Memory	
Communication memory	SRAM, 128 KB
Communications buffer	SDRAM, 8 MB
FOC interface	
Number	2 (master mode) 1 (slave mode)
Data transfer rate	96 Mbit/s
Coding	5B/6B

CP53M0 communications module	
Voltage, currents	
Voltages / currents	+5 V / 0.3 A 3.3 V / 0.5 A
Power loss	
Power loss, typical	3.1 W
Dimensions	
Number of slots required in rack	1
Dimensions W x H x D (in mm)	20 x 233 x 160
Weight	0.6 kg

Ordering data

		Order No.
CP53M0 communications module For connection of a SIMATIC TDC system to a SIMADYN D system or to two additional SIMATIC TDC racks	C	**6DD1 660-0BJ0**

C: Subject to export regulations: AL: N and ECCN: EAR99H

Appendix

14

Faster and more applicable know-how: Hands-on training from the manufacturer

SITRAIN® – the Siemens Training for Automation and Industrial Solutions – provides you with comprehensive support in solving your tasks.

Training by the market leader in automation and plant engineering enables you to make independent decisions with confidence. Especially where the optimum and efficient use of products and plants are concerned. You can eliminate deficiencies in existing plants, and exclude expensive faulty planning right from the beginning.

First-class know-how directly pays for itself: In shorter startup times, high-quality end products, faster troubleshooting and reduced downtimes. In other words, increased profits and lower costs.

Achieve more with SITRAIN

- Shorter times for startup, maintenance and servicing
- Optimized production operations
- Reliable configuration and startup
- Minimization of plant downtimes
- Flexible plant adaptation to market requirements
- Compliance with quality standards in production
- Increased employee satisfaction and motivation
- Shorter familiarization times following changes in technology and staff

Contact

Visit our site on the Internet at:

http://www.siemens.com/sitrain

or let us advise you personally.

SITRAIN Customer Support Germany:

Phone: +49 (0)1805 / 23 56 11

Fax: +49 (0)1805 / 23 56 12

(0.14 €/min. from a German landline network, mobile telephone prices may vary)

E-Mail: info@sitrain.com

SITRAIN highlights

Top trainers

Our trainers are skilled teachers with direct practical experience. Course developers have close contact with product development, and directly pass on their knowledge to the trainers.

Practical experience

The practical experience of our trainers enables them to teach theory effectively. But since theory can be pretty drab, we attach great importance to practical exercises which can comprise up to half of of the course time. You can therefore immediately implement your new knowledge in practice. We train you on state-of-the-art methodically/didactically designed training equipment. This training approach will give you all the confidence you need.

Wide variety

With a total of about 300 local attendance courses, we train the complete range of Siemens Industry products as well as interaction of the products in systems.

Tailor-made training

We are only a short distance away. You can find us at more than 50 locations in Germany, and in 62 countries worldwide. You wish to have individual training instead of one of our 300 courses? Our solution: We will provide a program tailored exactly to your personal requirements. Training can be carried out in our Training Centers or at your company.

The right mixture: Blended learning

"Blended learning" means a combination of various training media and sequences. For example, a local attendance course in a Training Center can be optimally supplemented by a teach-yourself program as preparation or follow-up. Additional effect: Reduced traveling costs and periods of absence.

SIMATIC trend topics at SITRAIN

Siemens starts a systematic initiative to build up your knowledge in the area of automation. In different events, which are harmonized with each other, SIMATIC trend topics are examined.

You get first impressions in an information session: With application examples, the topics are clarified. Building up on it SITRAIN offers courses to deepen your acquired knowledge.

You find detailed information about this initiative at:
www.siemens.com/sitrain-know-how-initiative

Siemens Certified Service Technician Level 1

The Siemens Certified Service Technician Level 1 is based on basic know how of SIMATIC PLC service training.

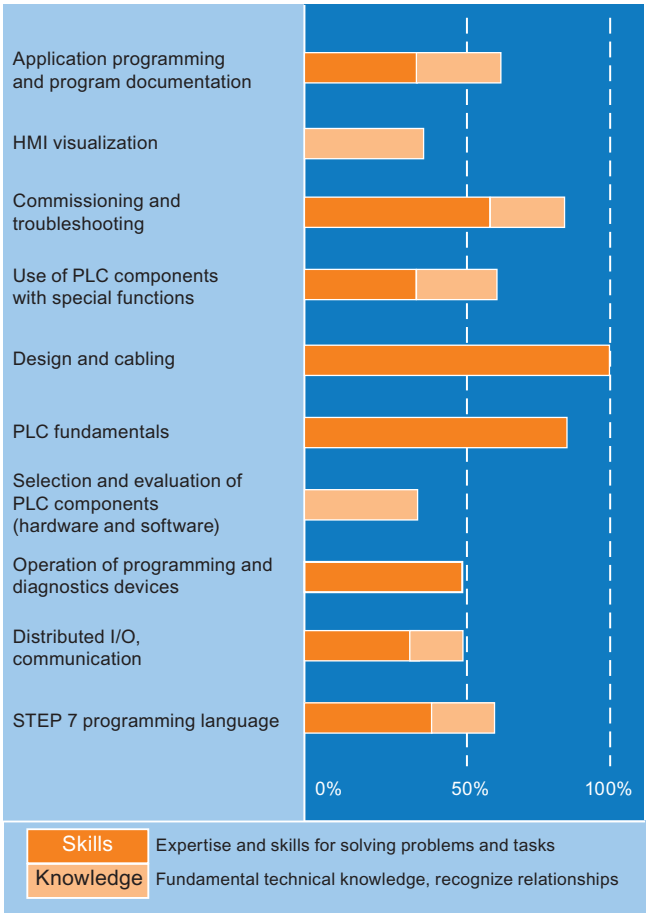
Requirements profile

Tasks

Professional assembly, connection of programmable logic controls, program changes, error diagnostics.

Capabilities of a Siemens Certified Service Technician Level 1

- You know the assembly and functionality of a PLC and the basic operations of the respective program language
- You know who to assemble and connect programmable logic devices, how to control in- and outputs and – with tutorial help – how to realize startups



Siemens Certified Service Technician Level 2

The Siemens Certified Service TechnicianLevel 2 is based on know how of Siemens Certified Service Technician Level 1 (Factory Automation).

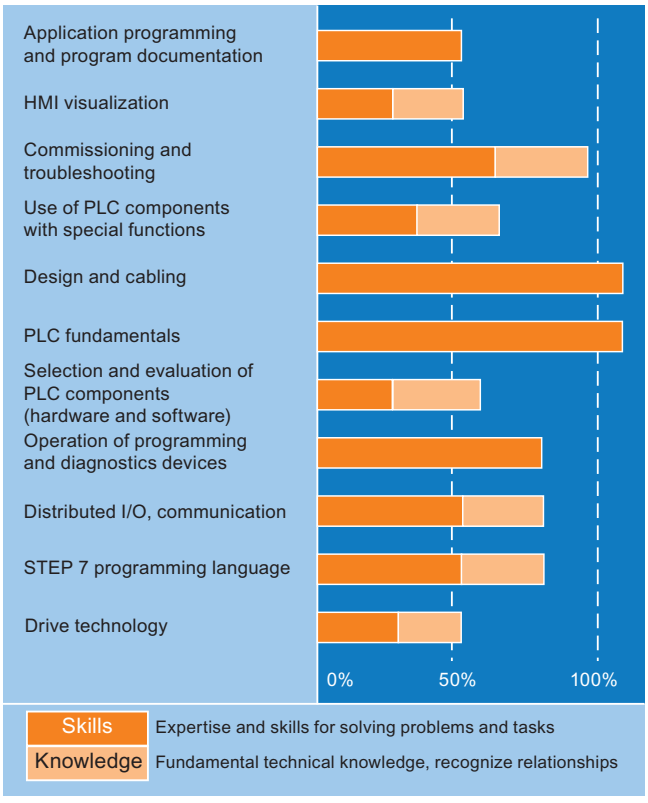
Requirements profile

Tasks

- Professional assembly, connection of programmable logic controls, program changes, troubleshooting
- Startup of Distributed I/O
- Startup of a drive
- Startup of human machine interface devices

Capabilities of a Siemens Certified Service Technician Level 2

- You know the assembly and functionality of a PLC and the basic operations of the respective program language
- You know who to assemble and connect programmable logic devices, how to control in- and outputs and how to realize startups



Expertise and skills for solving problems and tasks
Fundamental technical knowledge, recognize relationships

SITRAIN Certification Program

Siemens Certified Programmer

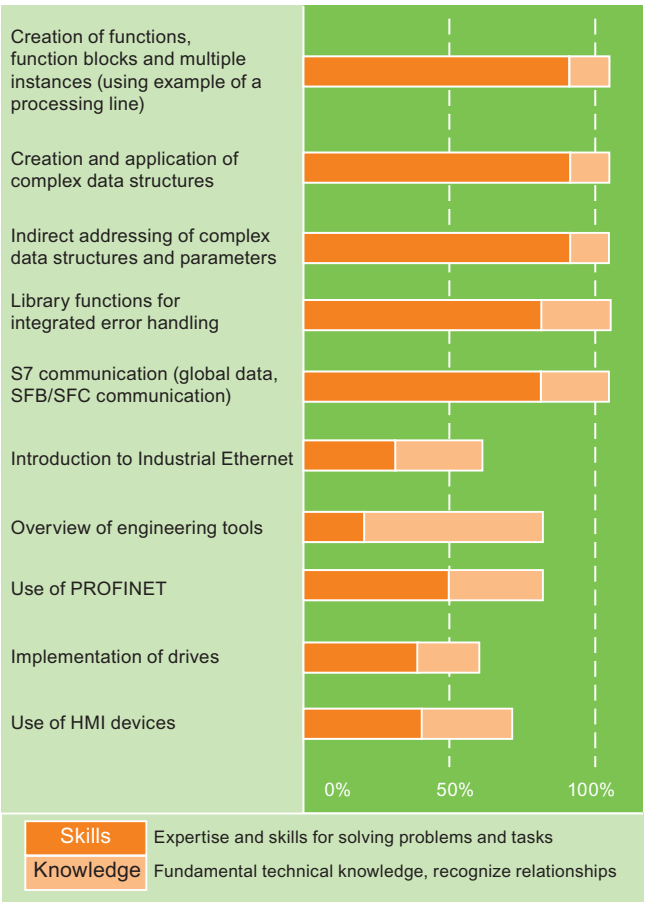
Requirements profile

Tasks

- Engineer-like tasks with need of complex programming possibilities with SIMATIC S7
- Use of distributed I/O (PROFIBUS DP, PROFINET)
- Use of drives
- Use of human machine interface devices (WinCC flexible)

Capabilities of a Siemens Certified Programmer

- You know the assembly and functionality of a PLC and the basic and complex operations of the respective program language
- You know who to use this know how for complex tasks



SIMATIC trend topics at SITRAIN

In different events, which are harmonized with each other, Siemens offers you further education covering SIMATIC trend topics to enlarge your knowledge in the area of automation. You have the choice of SITRAIN courses on the topics Diagnosis and Service, Machine Safety, Industrial Communication, or PC-based Automation.

Training "Diagnosis & Service":

By means of an application example, we show you SIMATIC service and diagnostic functions. You get to know both; standard diagnosis possibilities and individually programmable diagnostic facilities. As further components of the course, decentralised servicing concepts (network general access, teleservice, WLAN ...) are taught.

Training "Machine Safety":

You get to know the application of the new norms IEC 62061 and ISO 13849 for machine safety as well as an overview of the range of applications of SIMATIC Safety Integrated products.

Training "Industrieller Kommunikation":

You get to know from Siemens, a member of the PROFINET user organisation (PNO), by means of an application example, the trend-setting PROFINET as the open Industrial Ethernet standard of the automation.

In the subsequent practical exercises, you parameterize a PROFINET net, put it into action and remove disturbances.

In the course you learn ways to recognize endangering safety and weak points so you can ensure information and communication security.

Training "PC-based Automation":

By means of an application example, we show you the use of the PC-based system and the realization of an automation solution with SIMATIC IPC (industry PC).

In the subsequent practical exercises, you configure, parameterize and programme a plant model.

Overview

Technical books provide sound knowledge in the various sectors of automation engineering. Textbooks, reference books and dictionaries are available, for example.

You can use them to specifically increase your knowledge or to become acquainted with special areas.

Ordering data

	Order No.
Milestones in Automation	
Easy to read and creatively designed, the book offers technicians, engineers and managers a profound look into the development history and possibilities for use of a technology which left its mark like no other on industrial processes and a huge range of technical systems.	
German	**6ZB3 500-0AQ01-0AA0**
English	**6ZB3 500-0AQ02-0AA0**
Automating with SIMATIC	
The book is highly suitable for all those who have no extensive previous experience and who wish to become rapidly acquainted with the field of programmable controllers.	
German	**6ZB3 500-0AE01-0AA0**
English	**6ZB3 500-0AE02-0AA0**
Automating with STEP 7 in STL and SCL	
Now in its fifth edition, this book presents the most recent version of the STEP 7 programming software. It is intended for all users of SIMATIC S7 controllers.	
German	**6ZB3 500-0AA01-0AA0**
English	**6ZB3 500-0AA02-0AA0**
Automating with STEP 7 in LAD and FBD	
The book describes elements and applications of the graphic-oriented programming languages LAD (ladder diagram) and FBD (function block diagram) for SIMATIC S7-300/400. It is aimed at all users of SIMATIC S7 controllers.	
German	**6ZB3 500-0AB01-0AA0**
English	**6ZB3 500-0AB02-0AA0**
Controlling with SIMATIC	
This book discusses the practical aspects of control engineering as a subdomain of automation and control using as example the SIMATIC S7 control system.	
German	**6ZB3 500-0AD01-0AA0**
English	**6ZB3 500-0AD02-0AA0**

	Order No.
Decentralization with PROFIBUS-DP/DPV1	
With its practical orientation the book is ideal for PROFIBUS planners, configuration experts and programmers. Its comprehensive description of the fundamentals involved also makes it interesting for students and docents alike.	
German	**6ZB3 500-0AC01-0AA0**
English	**6ZB3 500-0AC02-0AA0**
Automating with PROFINET	
This book serves as an introduction to PROFINET technology. Decision-makers and plant planners, pupils and students are given a compact overview of the concept and the fundamentals. Configuring engineers, commissioning engineers and technicians are provided with the comprehensive knowledge they need to solve their own PROFINET-based automation tasks.	
German	**6ZB3 500-0AP01-0AA0**
English	**6ZB3 500-0AP02-0AA0**
Electrical Feed Drives in Automation	
This book provides a comprehensive introduction to the physical and technical fundamentals of control and drive technology. Particular attention is given to the computation and measurement of electric feed drives in automation technology.	
German	**6ZB3 500-0AF01-0AA0**
English	**6ZB3 500-0AF02-0AA0**
Industrial Ethernet in industrial automation	
This book provides plant planners, programmers and commissioning engineers with the necessary basics and terms to use Ethernet LAN technologies in industrial automation using SIMATIC.	
German	**6ZB3 500-0AM01-0AA0**
Electrical feed drives in production/automation engineering	
This book describes individual and up-to-date components for feed drives such as motors and mechanical transfer elements in a practical context.	
German	**6ZB3 500-0BC01-0AA0**

Technical books for automation engineering

Ordering data (continued)

	Order No.
Dictionary of Drive Technology and Mechatronics	
The dictionary offers a comprehensive collection of terms from the fields of drives and automation and related fields, completed by entries from business administration, marketing, advertising and technical training.	
German/English	**6ZB3 500-0AG01-0AA0**
German/English, on CD-ROM	**6ZB3 500-0AH01-0AA0**
Dictionary of Electrical Engineering, Power Engineering and Automation	
This dictionary is the standard work for all those requiring a comprehensive and reliable compilation of terms from the fields of power generation, transmission and distribution, drive engineering, automation, switchgear and installation engineering, power electronics as well as measurement, analysis and test engineering.	
German-English	**6ZB3 500-0AJ01-0AA0**
English-German	**6ZB3 500-0AJ02-0AA0**
German-English/ English-German; on CD-ROM	**6ZB3 500-0AJ03-0AA0**

SIMATIC Manual Collection

Overview

The SIMATIC manual collection brings together the manuals of Totally Integrated Automation in the smallest possible package. It is eminently suitable for startup and service, replaces the space-consuming paper version in the office and provides fast access to the information.

The manual collection contains manuals in 5 languages for

- LOGO!
- SIMADYN
- SIMATIC bus components
- SIMATIC C7
- SIMATIC Distributed I/O
- SIMATIC HMI
- SIMATIC Sensors
- SIMATIC NET
- SIMATIC PC Based Automation
- SIMATIC PCS 7
- SIMATIC PG/PC
- SIMATIC S7
- SIMATIC Software
- SIMATIC TDC

Manuals that are not yet available in all 5 languages will at least be included in English and German.

There is an update contract for the SIMATIC Manual Collection that encompasses supply of the up-to-date collection and three subsequent updates which is valid for one year. If the update contract is not cancelled, it is automatically extended and the list price will be charged to the customer.

Ordering data

		Order No.
SIMATIC Manual Collection	A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, in 5 languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET		
SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**
Current Manual Collection DVD as well as the three following updates		

A: Subject to export regulations: AL: N and ECCN: EAR99S
D: Subject to export regulations: AL: N and ECCN: 5D992

Overview

The electronic products described in this catalog comply with the requirements and protection objectives of the following EU guidelines and with the harmonized European standards (EN) which have been published for programmable controllers in the official Journal of the European Union:

- 89/336/EWG “Electromagnetic Compatibility” (EMC guideline).
- 73/23/EWG “Electrical Equipment for Use Within Specific Voltage Limits” (low voltage guideline).

We have declarations of conformity available for the responsible authorities.

The SIMATIC products are designed for operation in industrial environments and comply with the following requirements:

Noise emissions: EN 50081-2: 1993
Noise immunity: EN 50082-2: 1995

The products can also be used in the domestic environment (household, business and trade area, small plants) with individual approval:

Emitted interference: Individual approval
Immunity: EN 50082-1: 1992

For household use an individual approval from the respective national authority or testing body is required as far as emitted-interference is concerned. In Germany this approval is issued by the Federal Post and Telecommunications Office and its subsidaries.

For the installation and operation of the products described in this catalog, the installation guidelines described in the manuals and the important notes concerning installation in cabinets and concerning the use of shielded cable must be complied with.

Notes for machine manufacturers

The SIMATIC automation system is not a machine within the context of the EU machine guidelines. Therefore a declaration of conformity with regard to the EU machine directive 89/392/EEC or 2006/42/EU (new edition, applicable from end of 2009) may not be provided for SIMATIC.

The EU machine directive regulates the requirements placed on a machine or a part thereof. A machine is understood for the purposes of this guideline to be a combination of interconnected parts or mechanisms (see also EN 292-1, Paragraph 3.1).

SIMATIC is part of the electrical equipment of a machine, and must therefore be integrated into the evaluation of the complete machine by the machine manufacturer.

As electrical equipment, SIMATIC is subject to the low-voltage directive which, as a "total safety directive", covers all dangers just like the machine directive.

The EN 60204-1 standard (safety of machines, general requirements for the electrical equipment of machines) is applicable to the electrical equipment of machines.

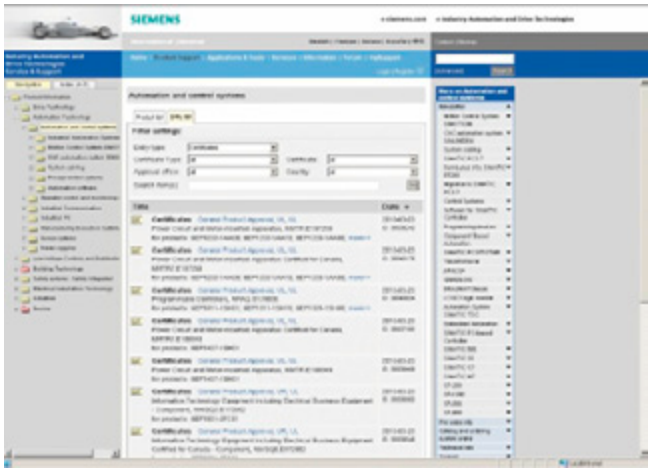
The following table will help you in the provision of your declaration of conformity, and shows which criteria according to EN 60204-1 (2006-06) apply to SIMATIC. You can obtain further information from the enclosed declaration of conformity according to the low-voltage and EMC directives (with list of included standards).

EN 60204-1	Topic/criterion	Notes
Paragraph 4	General requirements	The requirements are met when the equipment is assembled/ installed in accordance with the installation guidelines. Please note the relevant information in the manuals.
Paragraph 11.2	Digital input/output interfaces	The requirements are met
Paragraph 12.3	Programmable equipment	The requirements are met when the equipment is installed in lockable cabinets to protect against alteration of the memory contents by unauthorized persons
Paragraph 20.4	Voltage tests	The requirements are met

Certificates, authorizations, approbations, declarations of conformity

An overview of the certificates available for SIMATIC products (CE, UL, CSA, FM, shipping authorizations) can be found in the internet at

http://www.siemens.com/simatic/certificates



The lists are continously updated. The data for products which have not yet been included in the overview is continously collected and prepared for the subsequent edition.

You can also find certificates, approbations, verification certificates or characteristic curves by going directly to the Link Box:

Quality management

The quality management system of the Industry Sector, Industry Automation Division, complies with the international standard ISO 9001.

The products and systems described in this catalog are sold under application of a quality management system certified by DQS in accordance with DIN EN ISO 9001.

The DQS certificate is recognized in all EQ Net countries.

DQS Registered Certificate Nos.:

Siemens AG

- I IA AS Industrial Automation Systems
  Reg. No.: 001323 QM

Overview

At Siemens Industry Automation and Drive Technologies, more than 85 000 people are resolutely pursuing the same goal: long-term improvement of your competitive ability. We are committed to this goal. Thanks to our commitment, we continue to set new standards in automation and drive technology. In all industries - worldwide.

At your service locally, around the globe for consulting, sales, training, service, support, spare parts... on the entire Industry Automation and Drive Technologies range.

Your personal contact can be found in our Contacts Database at:
http://www.automation.siemens.com/mcms/aspa-db/

You start by selecting a

- Product group,
- Country,
- City,
- Service.

Siemens Solution Partner
Automation, Power Distribution and PLM

Overview

Siemens Solution Partner
Solution Partner Automation, Power Distribution and PLM

The products and systems from Siemens Industry Automation and Drive Technologies offer the ideal platform for all automation applications.

Under the name Siemens Solution Partner, selected system integrators operate around the world as uniformly qualified solution providers for the portfolio of Siemens automation, power distribution and product lifecycle management products. Day after day, they utilize their qualified product and system know-how as well as their excellent industry expertise to your advantage – for all requirements.

The Solution Partner emblem is a guarantee of quality.
The basis for this is to be found in four defined quality features:

- Solution quality:
  A good result in every case based on proven solution know-how.
- Expert quality:
  Certified technical competence guarantees maximum efficiency.
- Project quality:
  Straight to the goal with proven project experience.
- Product range quality:
  Comprehensive portfolio for state-of-the-art solutions from a single source.

Solution Partner Finder

The Siemens Solution Partner Program helps you to find the optimum partner for your specific requirements. Support is provided by the Solution Partner Finder, a comprehensive online database that showcases the profiles of all our solution partners. You can convince yourself of the competence of the respective Solution Partner by means of the references provided.

The following search criteria are possible:

- Country
- Technology
- Sector
- Company
- Zip code

Once you have located a partner, you are only one small step from contacting them.

You can locate the Solution Partner Finder as follows:

http://www.siemens.com/automation/partnerfinder

Additional information on the Siemens Solution Partner Program is available online at:

http://www.siemens.com/automation/solutionpartner

Siemens Industry Automation and Drive Technologies in the WWW

A detailed knowledge of the range of products and services available is essential when planning and configuring automation systems. It goes without saying that this information must always be fully up-to-date.

Siemens Industry Automation and Drive Technologies has therefore built up a comprehensive range of information in the World Wide Web, which offers quick and easy access to all data required.

Under the address

http://www.siemens.com/automation

you will find everything you need to know about products, systems and services.

Product Selection Using the Offline Mall of Industry

Detailed information together with convenient interactive functions:
The Offline Mall CA 01 covers more than 80 000 products and thus provides a full summary of the Siemens Industry Automation and Drive Technologies product base.

Here you will find everything that you need to solve tasks in the fields of automation, switchgear, installation and drives.
All information is linked into a user interface which is easy to work with and intuitive.

After selecting the product of your choice you can order at the press of a button, by fax or by online link.

Information on the Offline Mall CA 01 can be found in the Internet under

http://www.siemens.com/automation/ca01

or on DVD.

Easy Shopping with the Industry Mall

The Industry Mall is the virtual department store of Siemens AG in the Internet. Here you have access to a huge range of products presented in electronic catalogs in an informative and attractive way.

Data transfer via EDIFACT allows the whole procedure from selection through ordering to tracking of the order to be carried out online via the Internet.

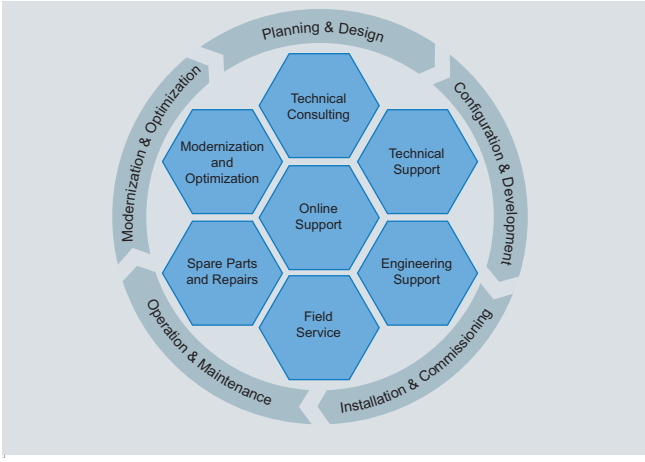
Numerous functions are available to support you.

For example, powerful search functions make it easy to find the required products, which can be immediately checked for availability. Customer-specific discounts and preparation of quotes can be carried out online as well as order tracking and tracing.

Please visit the Industry Mall on the Internet under:

http://www.siemens.com/industrymall

Services covering the entire life cycle



Our Service & Support accompanies you worlwide in all concerns related to the automation and drive technology of Siemens. In more than 100 countries directly on site and covering all phases of the life cycle of your machines and plants. Round the clock.

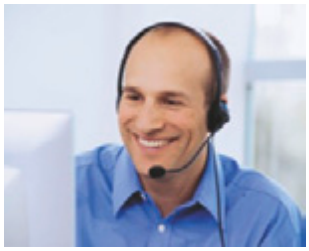
An experienced team of specialists with their combined know-how is ready to assist you. Regular training courses and a close contact of our employees among each other - also across continents - assure a reliable service for multifaceted scopes.

Online Support

The comprehensive information system available round the clock via Internet ranging from Product Support and Service & Support services to Support Tools in the Shop.

http://www.siemens.com/automation/service&support

Technical Support



Competent consulting in technical questions covering a wide range of customer-oriented services for all our products and systems.

http://www.siemens.com/automation/support-request

Technical Consulting

Support in the planning and designing of your project from detailed actual-state analysis, target definition and consulting on product and system questions right to the creation of the automation solution.

Engineering Support

Support in configuring and developing with customer-oriented services from actual configuration to implementation of the automation project.

Field Service

With Field Service, we offer services for startup and maintenance essential for ensuring system availability.

Spare Parts and Repairs

In the operating phase of a machine or automation system, we provide a comprehensive repair and spare parts service ensuring the highest degree of plant availability.

Optimization and Upgrading

After startup or during the operating phase, additional potential for inceasing the productiviy or for reducing costs often arises. For this purpose, we offer you high-quality services in optimization and upgrading.

You find contact details in the Internet under:
http://www.siemens.com/automation/service&support

Knowledge Base on DVD

For locations without online connections to the Internet there are excerpts of the free part of the information sources available on DVD (Service & Support Knowledge Base). This DVD contains all the latest product information at the time of production (FAQs, Downloads, Tips and Tricks, Updates) as well as general information on Service & Support.

The DVD also includes a full-text search and our Knowledge Manager for targeted searches for solutions. The DVD will be updated every 4 months.

Just the same as our online offer in the Internet, the Service & Support Knowledge Base on DVD comes complete in 5 languages (German, English, French, Italian, Spanish).

You can order the **Service & Support Knowledge Base** DVD from your Siemens contact.

Order no. **6ZB5310-0EP30-0BA2**

Automation Value Card

Small card - great support

The Automation Value Card is an integral component of the comprehensive service concept with which Siemens Automation and Drives will accompany you in each phase of your automation project.

It doesn't matter whether you want just specific services from our Technical Support or want to purchase something on our Online portal, you can always pay with your Automation Value Card. No invoicing, transparent and safe. With your personal card number and associated PIN you can view the state of your account and all transactions at any time.

Services on card. This is how it's done.

Card number and PIN are on the back of the Automation Value Card. When delivered, the PIN is covered by a scratch field, guaranteeing that the full credit is on the card.

By entering the card number and PIN you have full access to the Service & Support services being offered. The charge for the services procured is debited from the credits on your Automation Value Card.

All the services offered are marked in currency-neutral credits, so you can use the Automation Value Card worldwide.

Order your Automation and Value Card easily and comfortably like a product with your sales contact.

Automation Value Card order numbers	
Credits	Order no.
200	C **6ES7 997-0BA00-0XA0**
500	C **6ES7 997-0BB00-0XA0**
1 000	C **6ES7 997-0BC00-0XA0**
10 000	C **6ES7 997-0BG00-0XA0**

C: Subject to export regulations: AL: N and ECCN: EAR99H

Detailed information on the services offered is available on our Internet site at:

http://www.siemens.com/automation/service&support

Service & Support à la Card: Examples

Technical Support	
"Priority"	Priority processing for urgent cases
"24 h"	Availability round the clock
"Extended"	Technical consulting for complex questions
"Mature Products"	Consulting service for products that are not available any more
Support Tools in the Support Shop	
	Tools that can be used directly for configuration, analysis and testing

Overview

Software types

Software requiring a license is categorized into types.
The following software types have been defined:

- Engineering software
- Runtime software

Engineering software

This includes all software products for creating (engineering) user software, e.g. for configuring, programming, parameterizing, testing, commissioning or servicing.

Data generated with engineering software and executable programs can be duplicated for your own use or for use by third-parties free-of-charge.

Runtime software

This includes all software products required for plant/machine operation, e.g. operating system, basic system, system expansions, drivers, etc.

The duplication of the runtime software and executable programs created with the runtime software for your own use or for use by third-parties is subject to a charge.

You can find information about license fees according to use in the ordering data (e.g. in the catalog). Examples of categories of use include per CPU, per installation, per channel, per instance, per axis, per control loop, per variable, etc.

Information about extended rights of use for parameterization/configuration tools supplied as integral components of the scope of delivery can be found in the readme file supplied with the relevant product(s).

License types

Siemens Industry Automation & Drive Technologies offers various types of software license:

- Floating license
- Single license
- Rental license
- Trial license

Floating license

The software may be installed for internal use on any number of devices by the licensee. Only the concurrent user is licensed.
The concurrent user is the person using the program. Use begins when the software is started.
A license is required for each concurrent user.

Single license

Unlike the floating license, a single license permits only one installation of the software.

The type of use licensed is specified in the ordering data and in the Certificate of License (CoL). Types of use include for example per device, per axis, per channel, etc.

One single license is required for each type of use defined.

Rental license

A rental license supports the "sporadic use" of engineering software. Once the license key has been installed, the software can be used for a specific number of hours (the operating hours do not have to be consecutive).
One license is required for each installation of the software.

Trial license

A trial license supports "short-term use" of the software in a non-productive context, e.g. for testing and evaluation purposes.
It can be transferred to another license.

Factory license

With the Factory License the user has the right to install and use the software at one permanent establishment only. The permanent establishment is defined by one address only.The number of hardware devices on which the software may be installed results from the order data or the Certificate of License (CoL).

Certificate of license

The Certificate of License (CoL) is the licensee's proof that the use of the software has been licensed by Siemens. A CoL is required for every type of use and must be kept in a safe place.

Downgrading

The licensee is permitted to use the software or an earlier version/release of the software, provided that the licensee owns such a version/release and its use is technically feasible.

Delivery versions

Software is constantly being updated.
The following delivery versions

- PowerPack
- Upgrade

can be used to access updates.

Existing bug fixes are supplied with the ServicePack version.

PowerPack

PowerPacks can be used to upgrade to more powerful software. The licensee receives a new license agreement and CoL (Certificate of License) with the PowerPack. This CoL, together with the CoL for the original product, proves that the new software is licensed.
A separate PowerPack must be purchased for each original license of the software to be replaced.

Upgrade

An upgrade permits the use of a new version of the software on the condition that a license for a previous version of the product is already held.
The licensee receives a new license agreement and CoL with the upgrade. This CoL, together with the CoL for the previous product, proves that the new version is licensed.
A separate upgrade must be purchased for each original license of the software to be upgraded.

ServicePack

ServicePacks are used to debug existing products.
ServicePacks may be duplicated for use as prescribed according to the number of existing original licenses.

License key

Siemens Industry Automation & Drive Technologies supplies software products with and without license keys.

The license key serves as an electronic license stamp and is also the "switch" for activating the software (floating license, rental license, etc.).

The complete installation of software products requiring license keys includes the program to be licensed (the software) and the license key (which represents the license).

Detailed explanations concerning license conditions can be found in the "Terms and Conditions of Siemens AG" or under
http://www.siemens.com/automation/mall
(Industry Mall Online-Help System)

I IA&DT/Software licenses/En 02.12.09

Fax form

To

Siemens AG
I IA CE ITS PRI 1
Mr. Fregien
Gleiwitzer Str. 555
90475 Nürnberg
Germany

Fax: +49 (911) 895-154830

E-mail: dirk.fregien@siemens.com

Your address

Name

Job

Company/Department

Street/No.

Postal code/City

Tel. No./Fax

E-mail address

Your opinion is important to us!

Our catalog should be an important and frequently used document. For this reason we are continuously endeavoring to improve it.

A small request on our part to you:
Please take time to fill in the following form and fax it to us.

Thank You!

We invite you to grade our catalog on a point system from 1 (= good) to 6 (= poor):

Do the contents of the catalog live up to your expectations? ☐

Do the technical details meet your expectations? ☐

Is the information easy to find? ☐

How would you assess the graphics and tables? ☐

Can the texts be readily understood? ☐

Did you find any printing errors?

Notes

Notes

Conditions of sale and delivery, Export regulations

Terms and Conditions of Sale and Delivery

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to the following terms. Please note! The scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside of Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following terms apply exclusively for orders placed with Siemens AG.

For customers with a seat or registered office in Germany

The "General Terms of Payment" as well as the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry" shall apply.

For software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or registered Office in Germany" shall apply.

For customers with a seat or registered office outside of Germany

The "General Terms of Payment" as well as the "General Conditions for Supplies of Siemens, Automation and Drives for Customers with a Seat or registered Office outside of Germany" shall apply.

For software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or registered Office outside of Germany" shall apply.

General

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches only apply to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the corresponding pages, - especially with regard to data, dimensions and weights given - these are subject to change without prior notice.

The prices are in € (Euro) ex works, exclusive packaging.

The sales tax (value added tax) is not included in the prices. It shall be debited separately at the respective rate according to the applicable legal regulations.

Prices are subject to change without prior notice. We will debit the prices valid at the time of delivery.

Surcharges will be added to the prices of products that contain silver, copper, aluminum, lead and/or gold if the respective basic official prices for these metals are exceeded. These surcharges will be determined based on the official price and the metal factor of the respective product.

The surcharge will be calculated on the basis of the official price on the day prior to receipt of the order or prior to the release order.
The metal factor determines the official price as of which the metal surcharges are charged and the calculation method used. The metal factor, provided it is relevant, is included with the price information of the respective products.

An exact explanation of the metal factor and the text of the Comprehensive Terms and Conditions of Sale and Delivery are available free of charge from your local Siemens business office under the following Order Nos.:

- 6ZB5310-0KR30-0BA1
  (for customers based in Germany)
- 6ZB5310-0KS53-0BA1
  (for customers based outside Germany)

or download them from the Internet
www.siemens.com/industrymall
(Germany: Industry Mall Online-Help System)

Export regulations

The products listed in this catalog / price list may be subject to European / German and/or US export regulations.

Therefore, any export requiring a license is subject to approval by the competent authorities.

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Catalogs

Industry Automation, Drive Technologies and Low Voltage Distribution

Further information can be obtained from our branch offices listed in the appendix or at www.siemens.com/automation/partner

Interactive Catalog on DVD

	Catalog
for Industry Automation, Drive Technologies and Low Voltage Distribution	**CA 01**

Drive Systems

Variable-Speed Drives	
SINAMICS G110, SINAMICS G120 Standard Inverters SINAMICS G110D, SINAMICS G120D Distributed Inverters	D 11.1
SINAMICS G130 Drive Converter Chassis Units SINAMICS G150 Drive Converter Cabinet Units	D 11
SINAMICS GM150, SINAMICS SM150 Medium-Voltage Converters	D 12
SINAMICS S120 Chassis Format Units and Cabinet Modules SINAMICS S150 Converter Cabinet Units	D 21.3
SINAMICS DCM Converter Units	D 23.1
Three-phase Induction Motors • H-compact • H-compact PLUS	D 84.1
Asynchronous Motors Standardline	D 86.1
Synchronous Motors with Permanent-Magnet Technology, HT-direct	D 86.2
DC Motors	DA 12
SIMOREG DC MASTER 6RA70 Digital Chassis Converters	DA 21.1
SIMOREG K 6RA22 Analog Chassis Converters	DA 21.2
PDF: SIMOREG DC MASTER 6RM70 Digital Converter Cabinet Units	*DA 22*
SIMOVERT PM Modular Converter Systems	DA 45
SIEMOSYN Motors	DA 48
MICROMASTER 420/430/440 Inverters	DA 51.2
MICROMASTER 411/COMBIMASTER 411	DA 51.3
SIMOVERT MASTERDRIVES Vector Control	DA 65.10
SIMOVERT MASTERDRIVES Motion Control	DA 65.11
Synchronous and asynchronous servomotors for SIMOVERT MASTERDRIVES	DA 65.3
SIMODRIVE 611 universal and POSMO	DA 65.4
SIMOTION, SINAMICS S120 and Motors for Production Machines	PM 21
SINAMICS S110 The Basic Positioning Drive	PM 22
Low-Voltage Three-Phase-Motors	
IEC Squirrel-Cage Motors	D 81.1
MOTOX Geared Motors	D 87.1
Automation Systems for Machine Tools SIMODRIVE • Motors • Converter Systems SIMODRIVE 611/POSMO	NC 60
Automation Systems for Machine Tools SINAMICS • Motors • Drive System SINAMICS S120	NC 61
Drive and Control Components for Hoisting Equipment	HE 1
Mechanical Driving Machines	
Flender Standard Couplings	MD 10.1

Electrical Installation Technology

PDF: ALPHA Distribution Boards and Terminal Blocks	*ET A1*
PDF: ALPHA 8HP Molded-Plastic Distribution System	*ET A3*
PDF: BETA Low-Voltage Circuit Protection	*ET B1*
PDF: DELTA Switches and Socket Outlets	*ET D1*
PDF: GAMMA Building Management Systems	*ET G1*

PDF: These catalogs are only available as pdf files.

Motion Control

	Catalog
SINUMERIK & SIMODRIVE Automation Systems for Machine Tools	NC 60
SINUMERIK & SINAMICS Equipment for Machine Tools	NC 61
SIMOTION, SINAMICS S120 and Motors for Production Machines	PM 21
SINAMICS S110 The Basic Positioning Drive	PM 22

Low-Voltage

Controls and Distribution – SIRIUS, SENTRON, SIVACON	LV 1
Controls and Distribution – Technical Information SIRIUS, SENTRON, SIVACON	LV 1 T
SICUBE System Cubicles and Cubicle Air-Conditioning	LV 50
SIDAC Reactors and Filters	LV 60
SIVACON 8PS Busbar Trunking Systems	LV 70

Power Supply and System Cabling

Power supply SITOP	KT 10.1
System cabling SIMATIC TOP connect	KT 10.2

Process Instrumentation and Analytics

Field Instruments for Process Automation	FI 01
PDF: Indicators for panel mounting	*MP 12*
SIREC Recorders and Accessories	MP 20
SIPART, Controllers and Software	MP 31
PDF: Products for Weighing Technology	*WT 10*
Process Analytical Instruments	PA 01
PDF: Process Analytics, Components for the System Integration	*PA 11*

Safety Integrated

Safety Technology for Factory Automation	SI I0

SIMATIC HMI

Human Machine Interface Systems	ST 80

SIMATIC Industrial Automation Systems

Products for Totally Integrated Automation and Micro Automation	ST 70
SIMATIC PCS 7 Process Control System	ST PCS 7
Add-ons for the SIMATIC PCS 7 Process Control System	ST PCS 7.1
PDF: Migration solutions with the SIMATIC PCS 7 Process Control System	*ST PCS 7.2*
PC-based Automation	ST PC

SIMATIC NET

Industrial Communication	IK PI

SIMATIC Sensors

Sensor Technology for Factory Automation	FS 10
Industrial Identification Systems	ID 10

System Solutions

Applications and Products for Industry are part of the interactive catalog CA 01

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